



footprint support
for local authorities



Local Footprints is a joint project between WWF Scotland and the Sustainable Scotland Network, with funding and support from Eco Schools Scotland, the Improvement Service, the Scottish Government and ScottishPower.

Local Footprints
Islay House
Livilands Lane
Stirling FK8 2BG

t: 01786 433083
www.localfootprints.org

Local Footprints Briefing

Measuring and influencing area-wide emissions indicators

Local Footprints provides advice and training to local authorities on using the footprint data in awareness raising and policy development. Local authorities have asked the LFP to provide a briefing note on area-wide emissions indicators to help with their use in Single Outcome Agreements. This briefing builds on the workshop, *Consistent Area Wide Emissions Profiles and Reporting for Scottish Local Authorities*, hosted by the Sustainable Development Commission Scotland and the Improvement Service in March 2008¹.

Area-wide emissions indicators - what are they and why are they important?

There are many ways of looking at area-wide emissions. Two are commonly used and available in Scotland. The first - the **carbon or greenhouse gas footprint** - looks at all the activities of residents. 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. These are known as consumption-based emissions. 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 communities.

The second - a measure of our **territorial or direct emissions** - looks at the activities of sectors - industry, transport, domestic energy use, and land management. This is useful for sector-based analysis and can be used to look at the impact of domestic energy use.

It is important to consider the 'consumption-based' emissions alongside our territorial emissions to understand the global impact of our lifestyles. After all, many of our goods - televisions, cars, and food - are produced, and emissions caused, in other parts of the world.

What about the Ecological Footprint - how does it relate to these measures?

The Ecological Footprint is an indicator of the total environmental burden we place on the planet. It represents the area of land needed to provide raw materials, energy and

¹ www.localfootprints.org



*footprint support
for local authorities*

food, and to absorb pollution and waste created. It is measured in global hectares² and is usually expressed as a per person measure.

The Ecological Footprint does take account of carbon emissions associated with UK consumption activities and expresses them as an area of land or bio-capacity required to sequester (through photosynthesis) the carbon dioxide emissions from fossil fuel consumption. This is the fastest growing component of the ecological footprint on a global scale and in the UK.

What do these indicators mean for local authorities?

Until recently, most local authorities have focused on reducing the emissions of their estate and related operations. Yet whereas an average council produces at least 30,000 tonnes of carbon dioxide per annum, its community generates just over 1.8 million tonnes. Action on mitigating climate change therefore must address the consumption behaviour of local communities.

The **National Performance Framework** and the **Scottish Climate Change Declaration** reflect this need. The National Performance Framework includes a purpose target on reducing emissions and a national indicator of reducing overall ecological footprint. The declaration commits signatories to ensure emission reduction measures are included in strategies and plans.

The Scottish Government is looking into the feasibility of developing Scottish economic-environmental accounts which will improve future Scottish footprint calculations.

The majority of local authorities have included footprint reduction in the first draft of their Single Outcome Agreements, demonstrating their commitment to take action. However, a particular challenge for Local Authorities is establishing a baseline for emissions and projecting the impacts of policy decisions.

Which indicator should local authorities use?

The starting point is to understand what policy question needs to be answered. In the context of Single Outcome Agreements and the National Performance Framework, there are two main questions:

1) What carbon emissions are emitted in my local authority area, on a per capita basis?

This helps the local authority know what contribution its area is making to the Climate Change Bill targets. It measures direct or territorial emissions based on four main sectors: home energy use, transport, land use and industry.

² A hectare of land with world average productivity



*footprint support
for local authorities*

2) What is the global environmental impact of our residents' lifestyles?

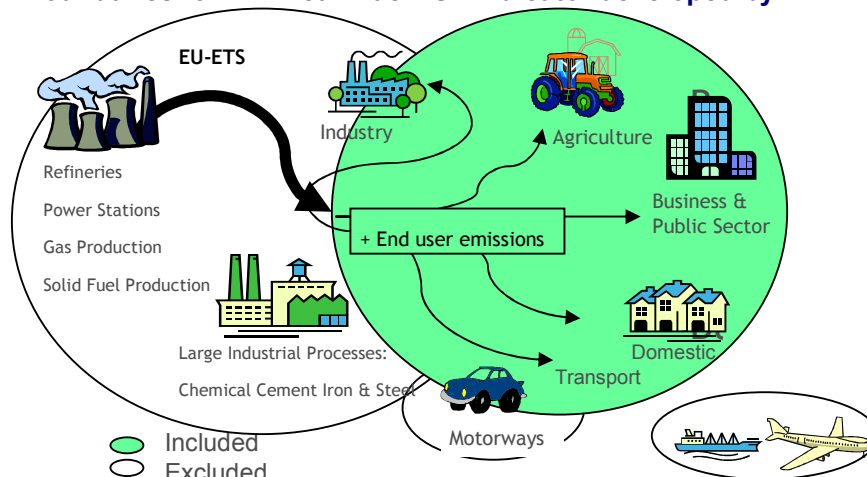
This tells the local authority what resources are required to support resident's lifestyles. This information can help local governments understand how service provision can contribute to reducing Scotland's overall footprint. It can be measured with the Ecological Footprint. It can also be expressed only in terms of carbon or greenhouse gas emissions with a Carbon or Greenhouse Gas Footprint indicator.

The best indicator to answer the first question is **National Indicator 186, Per Capita CO₂ emissions in the local authority area³**. This indicator is part of the Local Authority Performance Framework in England, and is produced by AEA Energy and Environment for DEFRA for all of the UK. It is a source of information rather than a 'tool' and does not allow for scenarios and projections based on policy options. Its main purpose is to track whether the UK is on course to meet national or international climate change targets. At the sub-national level it can be used to show if reductions are aligned with the aims of national policy and also what are the key drivers for emissions.

The most recent results are based on 2006 data and 2005 results have been revised to account for changes in methodology so they can be compared. AEA estimate the local authority area-wide emissions by developing a local subset of the NAEI database and allocate emissions in sectors that can be influenced by local actions. For example, AEA allocate emissions from fuel producers to fuel users (e.g. power station emissions to users of electricity), and then use spatial datasets to allocate these emissions to local authority areas. EU-ETS emissions (energy supply industries, large processes and some other industrial/commercial operations), motorways, shipping and aviation emissions are also excluded.

³ <http://www.defra.gov.uk/environment/localgovindicators/ni186.htm>

Figure 1 Boundaries for LA Area-wide CO2 Indicator developed by AEA



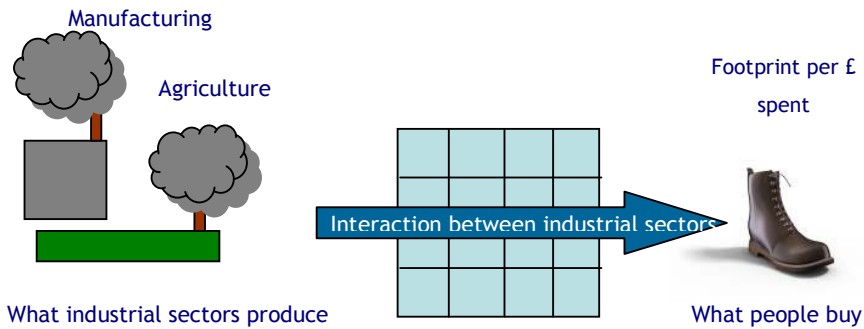
The best tool to answer the second question is the Resource Energy Analysis Programme⁴, developed by the Stockholm Environment Institute (SEI) at the University of York. It offers a consumption-focused approach inclusive of indirect emissions and enables local authorities to develop scenarios to achieve carbon emission and Ecological Footprint reductions. The REAP tool can help to identify and model policies and strategies for reduction. A community version of REAP, 'REAP Petite' is also available.

The most recent results are based on 2004 data and new results based on 2006 data are expected to be released in May 2009. SEI plans to produce annual updates with no more than a three year time lag in data. At the moment results are not comparable year on year due to methodological improvements, though this is hoped to be resolved in the near future. UK and devolved government results are backcast to 1992 and can be compared year on year.

The REAP methodology works by attributing all supply chain impacts to household or government expenditure. Businesses are treated as part of the supply chain so their impact is embedded in the footprint of the goods and services and attributed to the people that buy them (see Figure 2). REAP simplifies extraordinarily complex economic interactions and provides consistent footprint results which are particularly useful for two reasons. First, they illustrate the environmental burden associated with the spending of different socio-economic groups in society. Second, they can be used to identify the often unseen 'big hitters', those areas of people's lifestyle which have large footprints.

⁴ <http://resource-accounting.org.uk>

Figure 2: What REAP takes into account



What other tools can help address area-based greenhouse gas emissions?

The GRIP tool (**Greenhouse Gas Regional Inventory Project**)⁵ helps raise awareness and build consensus with strategic partners of the underlying assumptions, limits and opportunities for area wide emission reductions. It does not provide an outcome indicator or allow for exploration of specific policy scenarios at the local authority level. GRIP has been used at a practical level on a number of projects including the Glasgow and Clyde Valley Structure Plan and through workshops with SEPA and Scottish Enterprise.

The GRIP approach is comprised of two parts: 1) a regional greenhouse gas inventory methodology, 2) an energy emissions scenario tool that allows a user to assess the carbon implications of different energy futures. All emissions associated with the consumption and combustion of fuel within the region are accounted for in GRIP as emissions from the Energy sector. This includes energy consumed in the home, by industry and commerce, as well as from transportation, agriculture and offshore and onshore fuel extraction. For the purposes of GRIP, emissions associated with the production of electricity are attributed to the consumer.

So, which indicator do I use and how do they compare?

To effectively reduce the emissions of their area, the local authority needs a good baseline and a means to explore scenarios for change.

- **NI 186** is an outcome indicator which can tell us if local authority area emissions reducing in line with national government commitment to an 80% cut by 2050.
- **REAP footprint indicators** are outcome indicators which can tell us if a local authority's footprint is contributing to the overall reduction of Scotland's

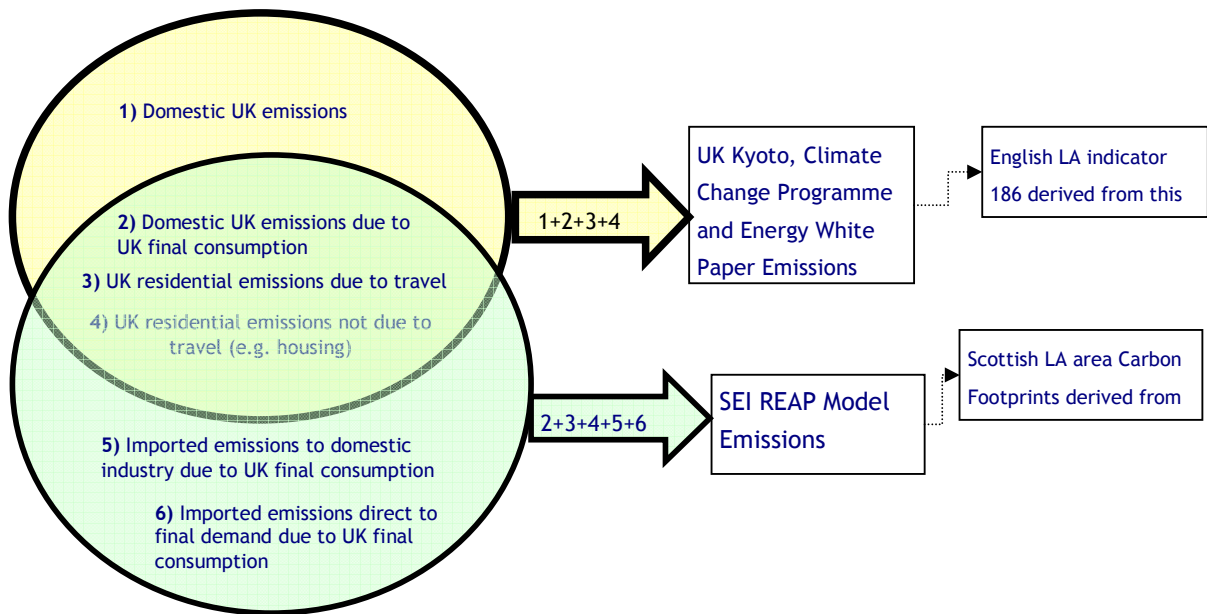
⁵ <http://www.grip.org.uk>

footprint. It can guide local authority service provision to drive area-wide reductions through behaviour change.

Both are essential pieces of information to inform the local authority contribution to reducing Scotland’s environmental impact on the world. While closely related, and using similar data sets, these indicators cannot be directly compared. The REAP carbon footprint is more inclusive, incorporating all direct and indirect emissions caused by residents’ activity. For travel it is more specific to the residents as it measures residents’ travel as opposed to traffic flow through the area, though with home energy the results should be the same. Industry emissions are covered through the consumption approach (domestic emissions due to UK final consumption).

In addition to providing outcome indicators, it is important to note that REAP can inform policy and practice through creating different scenarios for the future.

Figure 3 Emissions Boundaries and complementary data approaches between NAEI and REAP datasets



The Local Footprints Project is working with local authorities interested in nesting these tools and indicators to provide the best information and approach to informing climate change and sustainable consumption policies. Ideally, there needs to be connection between individual, household, community, area, local authority and community planning partnership measures, indicators and targets, thereby enabling collective decision making.