

THE USE OF THE ECOLOGICAL FOOTPRINT & CARBON FOOTPRINT IN YORK TO TACKLE CLIMATE CHANGE

Summary

1. The purpose of this paper is to explore the use of the Ecological Footprint and Carbon Footprint in York in tackling climate change. It is clearly implicit that tackling these areas will be a major contribution to tackling climate change. It will briefly provide details on the Ecological Footprint and Carbon Footprint, the impacts of our current lifestyles on them and what changes need to occur to bring about a reduction in York's footprints. The later section will provide options and possibly more questions than answers to stimulate debate. This paper has been produced thanks to extensive research by the Stockholm Environmental Institute.

Background

2. What is the Ecological Footprint?

According to World Wildlife Fund's [Living Planet Index 2004](#), a third of the Earth's natural wealth has been destroyed since 1972. This includes our wildlife, forests, rivers and seas. Much, if not all, of this destruction results from human consumption - which is now completely unsustainable, and is posing a serious threat not only to the natural world, but also to all of us.

- 2.1 In order to develop sustainable initiatives, we need to understand and measure the global environmental impact of our everyday decisions and actions. We also need to know where change is most beneficial and most needed - whether at a policy, economic, business or personal level. The use of Ecological Foot printing can help meet this need.
- 2.2 The Ecological Footprint is one way of measuring how our lifestyles impact not only on the planet, but also on other people. It calculates how much productive land and sea is needed to feed us and provide all the energy, water and materials we use in our everyday lives. It also calculates the emissions generated from the oil, coal and gas we burn at ever-increasing rates, and it determines how much land is required to absorb our waste. Today, the global Ecological Footprint is over 25% larger than that which the planet can regenerate. In other words, it now takes more that one year and

three months for the Earth to regenerate what is used in a single year. This overshoot is maintained by liquidating the planet's ecological resources, which is clearly unsustainable in the long term.

2.3 Research evidence from SEI in Scotland links the size of the Ecological Footprint and Carbon Footprint to income levels, the higher the income the greater the Ecological and Carbon Footprints.

3. What is a Carbon Footprint?

The Carbon Footprint measures the carbon dioxide emitted based on the domestic consumption of goods and services, rather than production. These arise in stages throughout production, distribution, use and disposal. It is therefore crucial to cover various stages of the lifecycle in a systematic way. The coverage of the complete supply chain of product groups in this way provides a full Carbon Footprint.

3.1 When calculating carbon emissions according to international climate change agreements, the responsibility for the emissions is attributed to the producer. Therefore, a country with a large industrial base will often have higher per capita emissions than countries based on service economy. In York, we have seen a significant shift towards service-based economy and a decline in manufacturing. This trend has been partly responsible for the reduction in carbon emissions (from a production perspective). However, the emissions calculated from a consumption perspective have not declined since people are importing more carbon intensive goods rather than producing them locally.

3.2 The flip side of the coin is the increasing carbon emissions in China and other parts of Asia. A good proportion of those emissions are created by demand for Chinese goods and services in York and elsewhere in the developed world. However, due to the current accounting system, these are not attributed to the consumers. When based on consumption the UK emissions have increased by between 10 and 16%.

4. Current local context.

The CYC adopted the Ecological Footprint as a measure of success in the Community Strategy in 2004, the first council to do so and the policy profiling tool called REAP has been purchased. A new officer has been appointed with responsibility for this and the council's Environmental Management System. In addition sustainability indicators relating to carbon emissions have been included in the Local Area Agreement and the council signed the Nottingham Declaration on Climate Change in 2005. Currently officers are producing a Sustainable Development Strategy and Action Plan which will provide a vision and coordinated approach to sustainable development in the council. The action plan will include a Climate Change Strategy in which actions will be identified to reduce emissions and adapt to the climate change we will and are experiencing. This is not something the council can produce in isolation but should be something they will form part of the LSP process. However the information and options presented in this paper provide a sound foundation for that work. As mentioned above reducing the Ecological and

Carbon Footprints of York will be play a major part of the Climate Change Strategy.

4.1 Currently IT compatibility is being finalise for the REAP tool and training for staff and councillors organised. Officers are working closely with the developers of the tool, the Stockholm Environmental Institute (SEI) based at the University of York. The REAP tool provides information on the Ecological Footprint and Carbon Footprint.

4.2 The Ecological Footprint per capita for York is currently 5.33. The target in the Community Strategy is

‘A progressive reduction of York’s Ecological Footprint to 3.5 hectares per person by 2033 (that is a 33% reduction on 2004 level) and by 70% over the next 50 years.’

In contrast if all the Earth’s resources were divided equally among the world’s population, each person would have just under two hectares. The 3.5 hectare target was considered by SEI as the level that was possible for the council to achieve without changes in UK and international policies and legislation.

4.3 The current York Carbon Footprint is 11 tonnes of CO² per person per year. There is no Carbon Footprint target for York but working on the governments targets of

‘reducing GHG emissions by 20% (on 1990 levels) by 2010 and 60% by 2050’

This translates crudely into 20% reduction on York’s Carbon Footprint brings it down to 8.8 tonnes per person by 2010 and 60% reduction to 4.4 tonnes per person by 2050.

4.4 The impact of current lifestyles on the Ecological Footprint and Carbon Footprint.

Here are some examples of how current lifestyles are having a negative impact on the Ecological Footprint and Carbon Footprint. The 7 domestic consumption activities with the highest Ecological Footprint and Carbon Footprint are shown below. These activities account for over 53% of the total footprints in York.

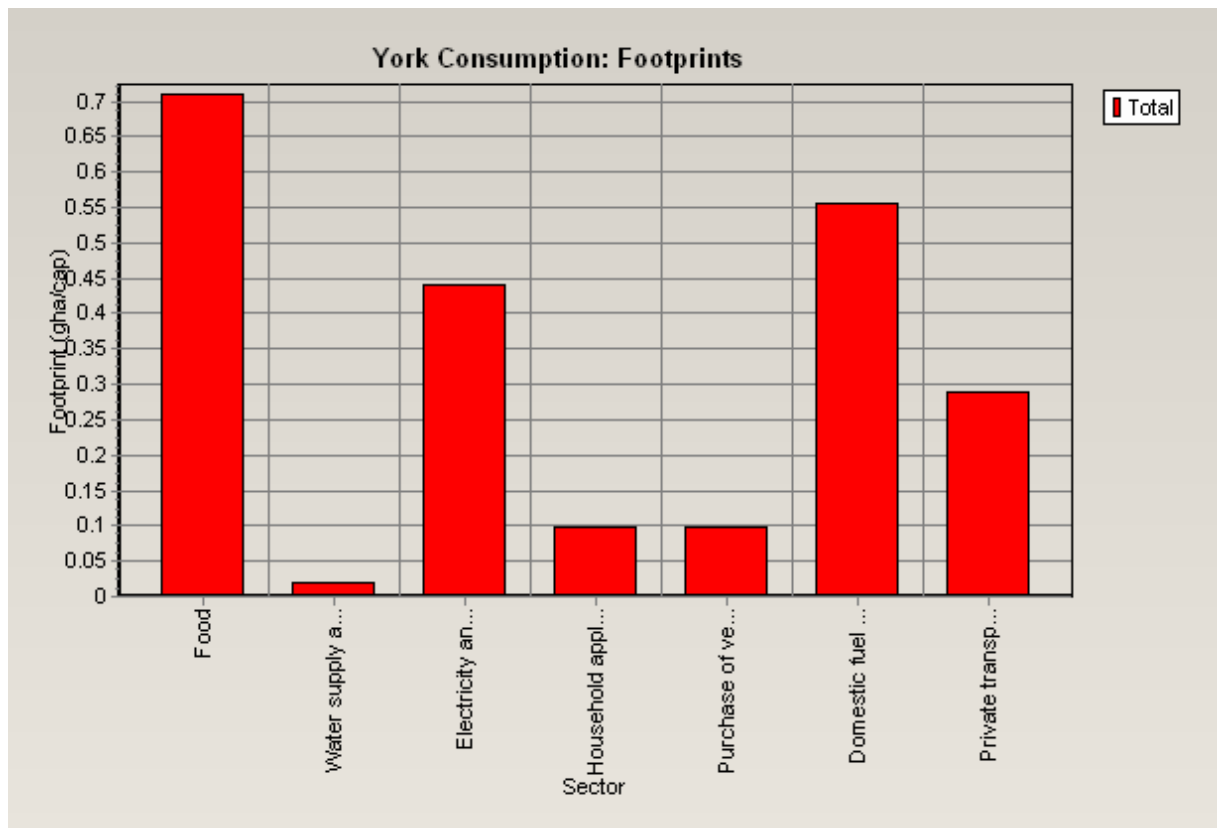


Table 1 The highest impact consumer items in York, for Ecological Footprint

Food, Water supply, Electricity and gas distribution, household appliances, purchase of vehicles, domestic fuel, private transport (fuel use)

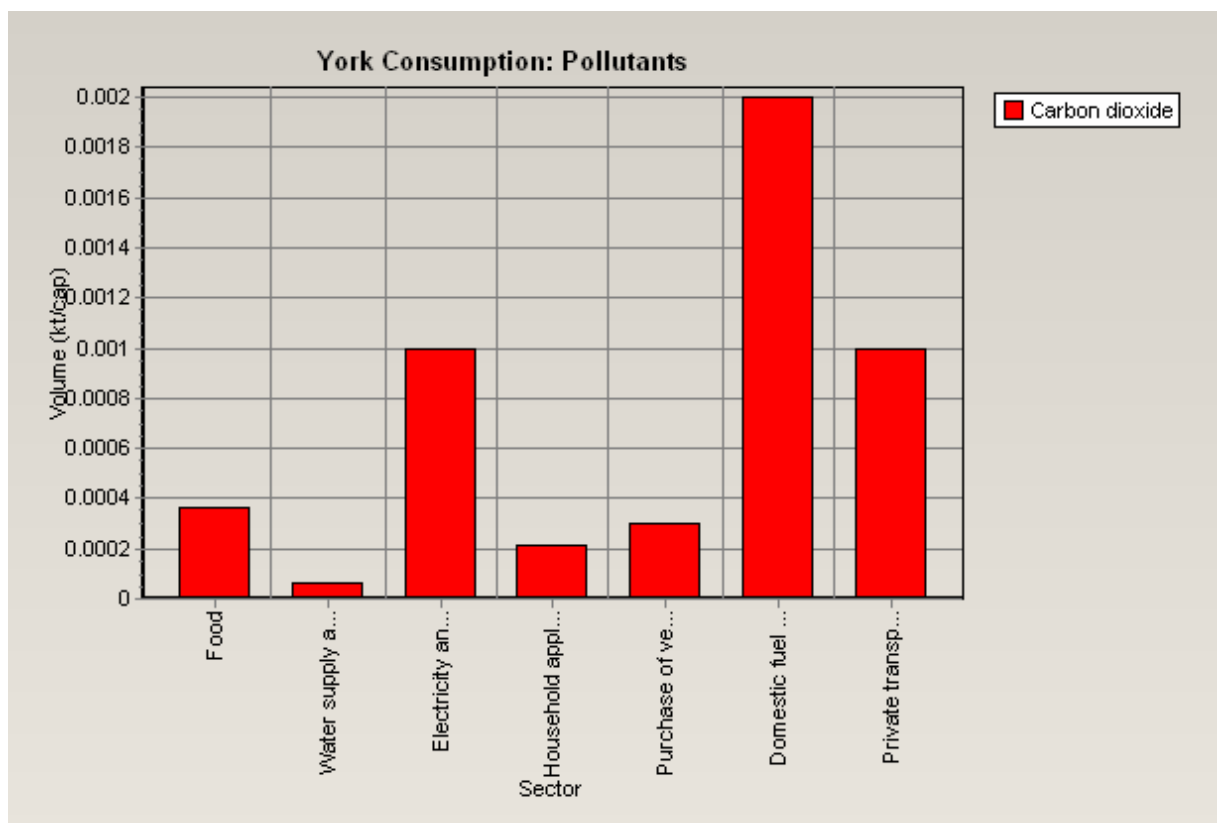


Table 2 The highest impact consumer items in York, for Carbon Footprint

Food, Water supply, Electricity and gas distribution, household appliances, purchase of vehicles, domestic fuel, private transport (fuel use)

Consultation

5.0 This paper has been produced based on extensive research by the Stockholm Environment Institute.

Options

6.0 From the Tables 1 and 2 it is clear to see that the biggest impacts for both ecological and carbon footprints are:

- Housing (Domestic fuel & Electricity and gas distribution)
- Food
- Transport (fuel use).

As these have the biggest impacts they provide a good starting point for possible action.

Analysis

7.0 Clearly the 'do nothing' option is not one that the council would propose. It makes sense to address the aspects of current lifestyle that have the greatest impact on the Ecological Footprint and Carbon Footprint and therefore climate change. However, the challenge is not a simple 'reduce your footprint' message. It is how to achieve a good quality of life for all in York, while reducing the overall footprint. It may mean that parts of York with already lower footprints will seek to eradicate poverty without increasing footprints while more affluent areas seek an outright reduction. Using the list above provides the priorities for action. The options below are not mutually exclusive or exhaustive but proposed to stimulate debate.

7.1 Housing represents 27% of York's Ecological Footprint and 3 tonnes of CO² per person per year and is therefore has one of the highest footprints across household consumption categories. The significance of this figure becomes clear as soon as we consider that a declared goal of the UK government is to reduce the TOTAL CO² emissions per person in the UK to 3 tonnes by 2050 (current CO² emissions per person in York is 11 tonnes). The technology is available and economically viable to do this, but only very modest progress has been made so far.

7.2 The major barriers to change are:

- Lack of price incentives as energy is relatively cheap. For example in 1970 an average household spent 6.3% of its income on energy, this was

only 2.9% in 2001. We now spend more on alcohol than we do on energy, and energy use continues to rise.

- Lack of enforcement and institutional barriers. New houses built at EcoHomes Excellent standard require greater capital investment of about 2% more than conventional build. There has been little progress in this area however with the new Code for Sustainable Homes and the target of all new homes being 'zero-carbon' by 2016 hopefully substantial gains will be made.
- Turnover of houses. There are an increasing number of households each with increasing energy demands. In the UK less than 1% of the housing stock is replaced by new homes, even if these were EcoHomes Excellent standard they would not compensate for the energy demands of the increasing numbers of households.
- Lack of knowledge. A significant reduction in CO₂ emissions from housing would therefore come from retrofitting the whole of the existing housing stock with better insulation, draught proofing, boilers etc. The lack of environmental knowledge and the perceived difficulty of finding appropriate information are important issues behind the lack of willingness to invest in the energy efficiency of our homes. In addition the current incentive systems for utilities is to sell as many units as possible.

7.3 The options for action that the council could have influence over are:

- Encouraging and enforcing through the planning system the building of better homes,
- Encouraging and enforcing better energy efficiency and renewable energy technologies in work to existing properties via the planning system,
- Undertake exemplar retrofit of energy efficiency and renewable energy technologies to our own stock,
- Reward energy efficiency measures in properties via eligibility to grants or reduced council tax payments.

7.4 Transport represents 18.8% of York's Ecological Footprint and 2 tonnes of CO₂ per person per year. Despite fuel efficiency improvements in the range of 10% since 1997, the direct emissions from private transport have risen. However, people not only travel more by car, they also fly more and travel more by train. We are travelling further and further each year. More roads, better train connections and more airports stimulate demand for travel. Even though there is technological potential to make travelling more efficient, there is a need to reduce the absolute amount of travel to reduce the footprints.

7.5 There are two major barriers to change:

- The price signals in the transport market are distorted. For example with aviation fuels not taxed the true cost of flying is not clear so people will spend holidays further and further away from home.
- We have locked ourselves into an infrastructure that favours car travel, but also long distance travel in general. It gets easier to commute long distances and we need to drive further to buy goods.

7.6 An option for change that is within the remit of the council is that of 'the compact city'. Instead of just identifying a range of transport options such as car sharing, restricted parking, road pricing and car clubs it is argued by SEI that the greatest opportunities exist in urban planning based on the concept of a 'compact city'. This is where distances between residential areas, working and shopping locations are short. Policy measures include National Planning Framework and Regional Spatial Strategies that focus on mixed use developments which are accessible and supported by public transport. A holy grail that planners have been seeking for many decades, some would suggest but there are examples of where it has been successful. Groningen in the Netherlands is one of the best where incorporation of environmental criteria into traffic control policy and the systematic creation of infrastructure that favours bicycle use have ensured that 66% of all journeys are undertaken by walking or cycling.

7.7 Food represents 27% of York's Ecological Footprint and 11 tonnes of CO² per person per year. Much of this is made up of increasing amounts of meat, dairy and processed food in our diets. In addition a 'Bogof' culture (buy one get one free) results in large amounts of food being thrown away. However it has been demonstrated that a healthy diet is not only good for the individual but also for the environment. For example, research in Scotland shows that a healthy diet based on nutrition recommendations can reduce the footprint by 15 to 25% compared to an average Scottish diet. The Ecological Footprint can be reduced further by choosing vegetarian options and by buying local and organic food.

7.8 The main barriers to change are:

- Food is a very complex issue, for example a diet that does not contain meat but is high in dairy and eggs can have a higher Footprint than a healthier option that includes meat in moderation from organic and/or local sources.
- Food and shopping for it, is a very personal issue and affected by lifestyle – 'too busy to shop locally or cook' culture.
- Although views are changing slowly now our relationship to food has changed over the last few decades linked to the loss of cookery classes in schools.

7.9 An option for change that the council has some control over is the introduction of a 'Best diet' to serve both health and environment that

combines all four criteria of healthy, vegetarian, local and organic to all publicly provided meals i.e. school dinners.

8. Options for change – general.

It is clear that there are specific actions required to tackle the main impacts on York's Ecological Footprint and Carbon Footprint. Some ideas are provided above however there are more general areas of action needed for the above to be effective. It is also expected that the suggestions below will help to reduce other environmental impacts and have an additional impact on tackling climate change.

- 8.1 The council needs to lead by example through the management of its own activities to reduce its own impact on the Ecological Footprint and Carbon Footprint. This work has started with agreement to implement an Environmental Management System, the use of REAP and the appointment of an officer to manage these. Work is also taking place on improving policies and management of its own buildings. All of this work needs to be fully integrated into the council and will form part of the Sustainable development Strategy and Action Plan and Climate Change Strategy mentioned in 4. above.
- 8.2 Encouraging residents to change their behaviour, consumption levels and to reduce York's Footprints will require coordinated and prolonged engagement. This will be via awareness raising, grants and other benefits. Engaging with the community and residents has proved time consuming and difficult. The Ecological Footprint can be a clear way to demonstrate to the general public the impact of their actions, both positive and negative on climate change. Increasingly the public are being made aware of climate change and carbon counting however we should not over estimate the level of understanding. Continuous awareness raising is required. Providing support for sustainable development and climate change education is resource hungry but the council needs to respond to the recent announcement about the inclusion of these issues in the National Curriculum.
- 8.3 The business community in York also has a role to play and again engaging with them on sustainability issues has proved very time consuming and difficult. The Local Agenda 21 process attempted this but eventually went down the route of using established partnerships to start the York Green Business Club. This is an area where partnership working is vital, needs to be sustained and requires resources. However we are very fortunate in York to have companies and organisations of international and national reputation such as Shepards and Persimmons, the Joseph Rowntree Foundation and SEI. All have a role to play.

Corporate Priorities

- 9.1 York has an opportunity to bring the above actions together as part of the review of the Community Strategy that will take place this year.

- 9.2 The use of ecological and carbon footprinting directly support Priority 1,2 and 13 of the corporate strategy. They also indirectly support all other priorities in their support of a more sustainable city.

Implications

10. This is an information paper only, with consideration of options, and therefore at this stage there are no implications in the following areas:
- Financial
 - Human Resources (HR)
 - Equalities
 - Legal
 - Crime and Disorder
 - Information Technology (IT)
 - Property

Risk Management

11. This is an information paper therefore there are no direct risks.

Recommendations

12. Conclusions and questions for the future.

This paper has sought to demonstrate the areas where council actions could have the biggest impact in reducing York's Ecological and Carbon Footprints and tackling climate change. Options for actions have been provided but the areas chosen will depend on many factors not least political. However there are great opportunities for substantial change in the near future which include the implementation of the council's Environmental Managements system, the use of REAP and a staff member to manage them and the review of the Community Strategy. The whole question of tackling climate change and reducing York's Ecological and Carbon Footprints has been mostly accepted as the right thing to do it is how it is achieved that is key and it could include some difficult and unpopular decisions. It also raises some longer-term fundamental questions that challenge some of York's givens.

- Do we accept that peak oil is here/on its way and plan for it?
- How can we square the need to reduce carbon emissions and the city's Ecological Footprint with the current reliance economically on retail (promoting consumption) and tourism (promoting travel)

- The values of the city currently have a heavy bias towards protecting the historic built environment how compatible is this with sustainable design and construction, highly efficient buildings and renewable energy? At some point will we need to decide which is more important?
- There is a fundamental question about travel, traffic levels and congestion, how are these to be managed and what are the catalysts for change? Is it improving air quality or reducing carbon emissions or both?
- How do we effectively influence regional and national policies to provide the policy support for our vision of a more sustainable city?
- How do we plan for and adapt for the climate change we are/will be experiencing? In physical terms do we put land aside to deal with increased flood levels? How do we work with neighbouring more rural authorities for them to provide land to help protect the city?
- Should the council be taking on roles not traditional for local government such as energy generators and public transport providers?
- How do we plan for the social consequences of climate change, displaced populations not just internationally but also those who have to move due to sea level rise in the UK and in the region?

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Specialist Implications Officer(s)

None

Wards Affected:

All

For further information please contact the author of the report