



York Green Neighbourhood Challenge

**A Targeted Social Marketing Approach for Community
Pro-Environmental Behavioural Change**

Gary Haq and Anne Owen

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Gary Haq and Anne Owen

Stockholm Environment Institute
Kräftriket 2B
SE 106 91 Stockholm
Sweden

Tel: +46 8 674 7070
Fax: +46 8 674 7020
Web: www.sei-international.org

Head of Communications: Ylva Rylander
Publications Manager: Erik Willis
Layout: Richard Clay

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EXECUTIVE SUMMARY

- The York Green Neighbourhood Challenge was a community engagement initiative conducted in the City of York in the period May 2009 to September 2010. The project was funded by the Without Walls Partnership Local Area Agreement (LAA) Delivery Fund on behalf of the York Environment Partnership (an environmentally focused partnership within the Without Walls Partnership). The general aim of the Challenge was to achieve a measurable reduction in household carbon emissions, raise public awareness of low carbon lifestyles and foster community cohesion.
- The Initiative consisted of three phases. Phase I produced a detailed understanding of per person CO₂ emissions by neighbourhood (super output area or ward) in York. Phase II identified selected neighbourhoods which had the potential for the greatest carbon reduction. Each selected neighbourhood was encouraged to form a team. Phase III provided an evaluation of the initiative. This involved undertaking a follow-up survey to see if the initiative had produced a measurable reduction in CO₂e emissions.
- Approximately 42 per cent of UK CO₂ emissions result directly from actions taken by individuals. The lifestyles we lead are made up of the different personal practices that allow us to differentiate ourselves from others in society. The largest environmental impacts of day-to-day personal actions are associated with housing, food, energy and personal travel.
- The carbon footprint of individual neighbourhoods was calculated using existing national level socio-economic household expenditure data on goods and services together with local data on energy use and travel behaviour. Experian's Greenaware attitudinal data was used to determine the predominant environmental attitudes held in each neighbourhood of the city.
- Those neighbourhoods that held pro-environmental attitudes but had a high carbon footprint action were identified as being more likely to engage in pro-environmental actions. For each neighbourhood, data were collected on local infrastructure that could support pro-environmental behavioural change. These include proximity to local services, potential of housing stock for energy conservation measures and access to transport links.
- The carbon footprint is the total amount of CO₂e emissions resulting directly and indirectly from an individual's use of goods and services. The carbon footprint covers both an individual's immediate emissions (e.g. energy used for home heating and lighting) as well as emissions arising during the production process of the goods they buy which have been manufactured at home and abroad (e.g. DVD player from China and clothing from India). It is measured in tonnes of CO₂e per person per year with the average UK resident having a carbon footprint of 16.24 tonnes of CO₂e. The average York resident has a carbon footprint of 16.73 tonnes of CO₂e per year
- In promoting greener lifestyles, "high potential" neighbourhoods were targeted with regard to reducing CO₂ emissions from transport and housing. Participants were recruited from the following neighbourhoods: South Bank Central and Holgate East.
- The sample population was based on those residents who lived on streets in the two selected areas. Questionnaire surveys on household consumption over a 12 month period were used before the intervention to measure its effect on the household carbon footprint in the areas of home energy, travel, consumables etc.
- Participants were recruited on the doorstep from the selected neighbourhoods in November-December 2009. Approximately 500 households were targeted in the two areas and residents were then invited to a neighbourhood workshop where their carbon footprint was calculated based on their completed questionnaire survey. Those residents who could not attend the workshop were invited to return the completed questionnaire by post.
- All residents who had completed and returned their questionnaire survey were invited to a local team meeting where they received an assessment of their carbon footprint and a chance to meet fellow participants. The personalised carbon footprint showed their total carbon footprint, where they were in relation to other members of the team and

highlighted actions they could take to achieve a 10 per cent reduction in their CO₂e emissions.

- In addition, participants were asked to pledge to undertake a number of pro-environmental actions over a six month intervention period to help reduce their household carbon emissions. As well as door-step recruitment, participants were also recruited from existing communities including two primary schools and one church.
- The doorstep recruitment rate in the York Green Neighbourhood Challenge resulted in 20.4 per cent (102/500) of the target population expressing an interest in the project. However, 48 participants did not wish to participate in the project and did not complete the first questionnaire.
- The final participation rate from the doorstep recruitment that returned a completed questionnaire was 10.8 per cent (54/500). Recruitment for existing communities resulted in a further 42 participants joining the project. A total of 96 residents therefore completed the baseline questionnaire. A further 7 participants decided to drop out of the project which left a total sample of 89 participants.
- The six teams that participated in the Challenge consisted of three neighbourhood teams, two primary school teams and one church team. Each team had a mentor who, with the assistance of expert speakers, provided information and practical advice on green actions in areas such as energy, transport, recycling and composting. The teams met on a monthly basis. Some teams held a range of awareness raising activities in their local area such as a Recycled Scarecrow Trail and a World Environment Day stall.
- The participants were asked to complete a second questionnaire at the end of the intervention period. The post-intervention questionnaire survey examined activities of the last six months and this was standardised over a 12 month period to allow a comparison of change. The results therefore provide an estimate of the potential reduction in CO₂e emissions if the behavioural change achieved in the six month intervention period were continued for the rest of the year.
- A total of 39 participants did not return the second questionnaire at the end of the intervention period – a 44 per cent dropout rate. The final results of

the pilot study were therefore based on a total of 50 individuals from the intervention group who had returned both questionnaire surveys. However, one participant only completed the attitudinal part of the survey and not the section on the carbon footprint. The attitudinal results are there based on 50 participants and the changes in the carbon emissions based on 49 participants.

- The 49 participants who completed the challenge have an estimated average carbon footprint reduction of 2.0 tonnes of CO₂e/year. This is a total reduction of 11.3 per cent. The largest reductions were seen in the area of shopping, housing (heating and powering the home) with an average reduction of over 20 per cent in both cases. The area of food showed the smallest reduction (4.6 per cent).
- The change in the impact of housing could be due to the fact that the initial survey was undertaken in summer. In order to minimise the effect of seasonal variations in heating, participants were asked to provide details of their kWh usage for the previous twelve months. However, of the 49 questionnaires returned, only 25 gave details of their fuel bills. For the other participants, the kWh usage was estimated using details of house size, energy efficiency behaviour and other measures.
- A t-test was performed on the pre- and post-intervention data. This is a statistical hypothesis test to determine whether there was a statistically significant change in mean carbon footprint during the six month intervention period.
- Overall, the Green Neighbourhood Challenge was effective in reducing the carbon footprint of the participants and achieved an estimated total emission reduction of 98 tonnes of CO₂e/year. The t-tests showed that these reductions in residents' footprints by the end of the project were statistically significant. However, when these are divided into the constituent parts, not every aspect of the residents' lifestyles changed. When we consider the residents' transport impact, the change was not shown to be statistically significant. Similarly, when the project is considered by team, not every team's level of footprint reduction was significant. Indeed, for one team (Park Grove Primary), the mean footprint actually increased slightly, although this was not statistically significant.

- The project used a targeted approach to engage community groups on green issues and to encourage them to take action to reduce their CO₂e emissions by 10 per cent. The total projected reduction in CO₂e emissions achieved as a result of the project is 98 tonnes/year. This is a cost of £472.57 per tonne of CO₂e. However, this figure does not include non-monetary benefits such as community spirit and the impact the project had in raising awareness of the issue more generally to local residents who were not participating in the project.
- From the experience gained from implementing the approach and the feedback received, a more cost-effective and comprehensive model of community engagement can be proposed.
- There is now a need for a new, re-energised, concerted and joined-up approach that places environmental issues in a wider context that appeals to a broader section of the community. The future vision should be positive and appealing and one that wins hearts and minds. This approach should improve the quality of life for all members of the community.



ACRONYMS AND ABBREVIATIONS

CO ₂ e	CO ₂ equivalent
LAA	Local Area Agreement
LSOA	Lower Layer Super Output Area (LSOA)
kWg	Kilowatt hours
REAP	Resources Energy Analysis Programme
SEI	Stockholm Environment Institute
SOA	Super Output Area
UK	United Kingdom

ACKNOWLEDGEMENTS

We are grateful to the City of York Council and the York Environment Partnership for the opportunity to undertake such an inspiring project. Thanks to all our mentors who worked so hard and to our external experts for their support and contribution. Also, thanks to Howard Cambridge for his support throughout, to Richard Clay and Erik Willis for their help in preparing this final report, and to Owen Brears for helping with the data analysis. Finally, we would like to thank all the participants for staying with the project, providing feedback and making the project a success.

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INTRODUCTION

The *York Green Neighbourhood Challenge* was a community engagement initiative conducted in the City of York in the period May 2009 to September 2010. The project was funded by the Without Walls Partnership Local Area Agreement (LAA) Delivery Fund on behalf of the York Environment Partnership (an environmentally focused partnership within the Without Walls Partnership). The aim of the Challenge was to achieve a measurable reduction in household carbon emissions, raise public awareness of low carbon lifestyles and foster community cohesion. Specific objectives of the initiative were to:

- undertake a detailed understanding of carbon emissions of York residents by socio-economic group and neighbourhood to inform future policy;
- gain an understanding of attitudes and barriers to achieving low carbon lifestyles in York;
- achieve a measurable reduction in equivalent CO₂ (CO₂e). This is the concentration of CO₂ that would cause the same level of global warming as the concentration of other greenhouse gases such as methane, perfluorocarbons and nitrous oxide. It therefore provides a more comprehensive indicator of the global warming impact of emissions from everyday activities;
- reduce emissions by targeting specific groups who can achieve reductions with information, support and encouragement; and
- pilot a community engagement approach to carbon reduction.

The Initiative consisted of three phases:

Phase I produced a detailed understanding of per person CO₂ emissions by neighbourhood (super output area or ward) in York. The outputs from Phase I included an emissions profile of York residents by socio-economic group and neighbourhood; a breakdown of emission activities by neighbourhood; a profile of resident groups and attitudes to climate change by neighbourhood; a profile of access to low carbon infrastructure and services throughout York; and an assessment of the relationship between infrastructure and carbon emissions in York.

Phase II identified selected neighbourhoods which had the potential for the greatest carbon reduction. Each neighbourhood was initially encouraged to form a team. In addition, existing communities were also encouraged to form a team. A total of six teams were recruited. A baseline assessment of the current carbon footprint of each team was undertaken. An action plan was given to each team member on areas where they could take action to reduce their carbon emissions. Each participant pledged the actions they would take over the intervention period.

Each team was allocated a mentor who, with the assistance of expert speakers, provided information and practical advice at monthly meetings on green actions such as energy consumption and energy efficiency, waste generation and recycling, and car use.

Phase III provided an evaluation of the initiative. This involved undertaking a follow-up survey to see if the initiative led to a measurable reduction in CO₂e emissions. It also included an analysis of the participants' feedback on how the approach of the initiative could be improved. The results of Phase III are presented in this report.



BEHAVIOURAL CHANGE

Approximately 42 per cent of UK CO₂ emissions result directly from actions taken by individuals. The lifestyles we lead are made up of the different personal practices that allow us to differentiate ourselves from others in society. The largest environmental impacts of day-to-day personal actions are associated with housing, food, energy and personal travel. These activities generate waste and polluting emissions that are a major cause of environmental degradation and contribute to global climate change. Table 1 presents the different actions individuals can take to lead a greener lifestyle.

Community engagement on climate adaptation and mitigation has been used to change attitudes and foster individual behavioural change. Traditional Government campaigns have been typified by a one-way approach based on providing information to the public. Other more deliberative two-way approaches have been based on social marketing and providing personal information (e.g. via a carbon footprint calculator). To foster attitudinal and behavioural change requires an understanding of the factors that shape behaviour. These include knowledge (e.g. how individuals interpret information based on existing beliefs), psychological factors (e.g. beliefs, values, attitudes and emotions affect behaviour and give a sense of responsibility), habits (e.g. behaviour that contributes to CO₂ emissions is often habitual and routine), structural conditions (e.g. infrastructure - or



lack of - can lead to “lock-in” situations providing an obstacle to behavioural change) and socio-demographic patterns (e.g. the influence of these factors vary with individual circumstances).

Evidence suggests that, in designing engagement strategies, information provided should: enable practical action (e.g. personalised carbon reduction plans); impacts of behaviour should be made visible (e.g. use of smart meters); new behaviours should fit within existing routines (e.g. targeting people at different life stages such as retirement/moving home); provide feedback and rewards on the changes made; target a whole community or neighbourhood to instil collective change, and take account of the rebound

Table 1: Actions to achieve a greener lifestyle

Energy	Food and Products	Transport	Water	Waste
Switch from electric to gas cookers and condensing boilers	Reduce meat and dairy consumption	Modal shift or reduce air travel	Fit a toilet water-saving device	Recycle household waste
Insulate homes and fit double glazing	Reduce fish consumption and purchase fish from sustainable stocks	Modal shift from cars to public transport	Install low flow taps and showers	Dispose of toxic materials safely
Reduce temperature of the home environment	Purchase locally grown produce	Walking and cycling short distances	Reduce use of water (e.g. car washing, lawn sprinklers, dish washers)	Compost organic waste
Purchase energy efficient appliances and do not leave appliances on, even in standby mode	Reduce levels of highly processed food	Using smaller, fuel efficient cars and car share		
Reduce temperature of clothes washer cycles to 40°C	Purchase certified sustainable wood and paper products			
	Living in multiple person households			

Box 1: The carbon footprint of every day activities

Every single day, each person living in York contributes to the city's carbon footprint. Here are just some of the ways in which each of us contributes to the carbon footprint of York:

- The food we eat.
- The clothes we wear.
- The way we travel.
- How we heat and light our homes, and the electrical appliances we use.
- The pollution and waste we create.

All of these activities use energy which requires the burning of fossil fuels that produces carbon dioxide, the gas responsible for global warming and climate change.



Take the simple example of a York resident enjoying a cup of tea or coffee:

- Tea and coffee plantations require land.
- Most plantations are found in tropical countries such as India, Brazil and Malaysia.
- Energy is required to harvest and then process the leaves and beans into tea bags and instant coffee.
- The products are then packaged for freshness and to help us recognize them on the shelf.
- More energy is then used in transporting the finished products to York.
- We may drive to the supermarket to buy the tea or coffee.
- We use energy and water to make the drink.
- We create waste (from the empty packaging) which has to be collected from our homes for disposal.

Every stage of this process requires energy from the burning of oil products, coal or gas, and these activities in turn, produce emissions and waste which impact upon the environment and contribute to global climate change.

effect (e.g. money saved on energy being used to buy new energy-using devices).

Local authorities need to develop policies that encourage their citizens to adopt low carbon lifestyles if local and national CO₂ emission targets are to be achieved. However, different groups within the population have different values, attitudes and understanding of the issue. Therefore the challenges associated with changing individual attitudes and behaviour should not be underestimated. Understanding how and why decisions are made and the willingness and potential to change the way we live is critical to achieving sustained attitudinal and behavioural change.

With limited financial resources and the pressure to meet CO₂ emission reduction targets local authorities need to have a targeted approach to fostering pro-environmental behavioural change. This requires identifying those neighbourhoods that have appropriate infrastructure (e.g. recycling schemes, vicinity to public transport routes and housing type), and are receptive to green issues, but have not acted on the values they hold thus resulting in a 'value action gap'. Taking a targeted community engagement approach that uses personalised social marketing techniques could provide cost-effective reductions in neighbourhood CO₂ emissions.



GHG EMISSION PROFILE OF NEIGHBOURHOODS IN YORK

The carbon footprint is the total amount of CO₂e emissions¹ resulting directly and indirectly from an individual's use of goods and services (see Box 1). The carbon footprint covers both an individual's immediate emissions (e.g. energy used for home heating and lighting) as well as emissions arising during the production process of the goods they buy which have been manufactured at home and abroad (e.g. DVD player from China and clothing from India). It is measured in tonnes of CO₂e per person per year with the average UK resident having a carbon footprint of 16.24 tonnes of CO₂e .

THE CARBON FOOTPRINT OF YORK

The average York resident has a carbon footprint of 16.73 tonnes of CO₂e per year. It can be broken down into themes of housing, transport, food, consumables and services:

- **Housing** (4.01 tonnes) covers gas, electricity and fuel use in the home but also includes construction, rental and maintenance of dwellings.
- **Transport** (4.41 tonnes) incorporates car use and maintenance, as well as that of other private vehicles and public transport.
- **Food** (2.51 tonnes) covers spending on food and drink and includes catering, eating out and alcoholic beverages.
- **Consumables** (1.98 tonnes) covers spending on seventeen categories of household items such as clothing, tobacco, newspapers and household appliances.
- **Services** (1.16 tonnes) covers spending on thirteen categories of service from insurance to financial advice to private education.

An additional 2.65 tonnes of CO₂e is added to every individual's footprint to complete the total footprint. This covers Government and capital spending (e.g.

on the building of roads, hospitals and schools and on employing teachers, doctors and nurses) which are not addressed by the other themes above.

YORK NEIGHBOURHOOD PROFILE

To gain an understanding of variation in the neighbourhood carbon footprint of the City of York the project adopted the unit of geography used by the UK government for statistical analysis. These units are called Super Output Areas (SOA). There are 118 SOAs in the City of York with each unit containing approximately 1,600 residents. There are three layers of SOAs (i.e. three different but related geography boundaries). The smallest reporting layer called the Lower Layer Super Output Area (LSOA) was used to provide a detailed assessment of the neighbourhood carbon footprint. Each ward in the City of York is divided into a number of LSOAs.

The carbon footprint of individual neighbourhoods was calculated using existing national level socio-economic household expenditure data on goods and services together with local data on energy use and travel behaviour. National Experian's Greenaware attitudinal data was used to determine the pre-dominant environmental attitudes held in each neighbourhood of the city (as per the national classifications used by Experian Greenaware).

Neighbourhood footprint

Households in Dringhouses Central (Dringhouses and Woodthorpe) on average have the highest carbon footprint in York followed by Bishophill (Micklelegate),

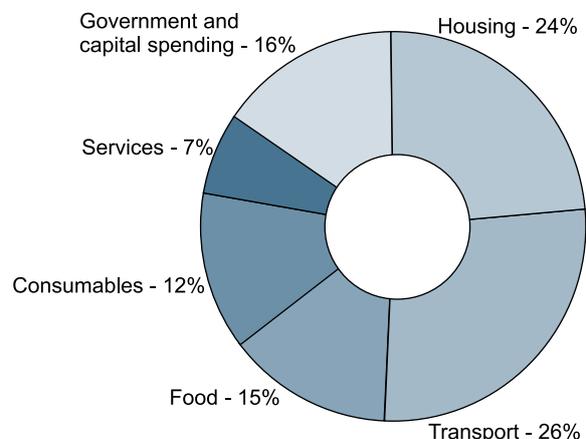
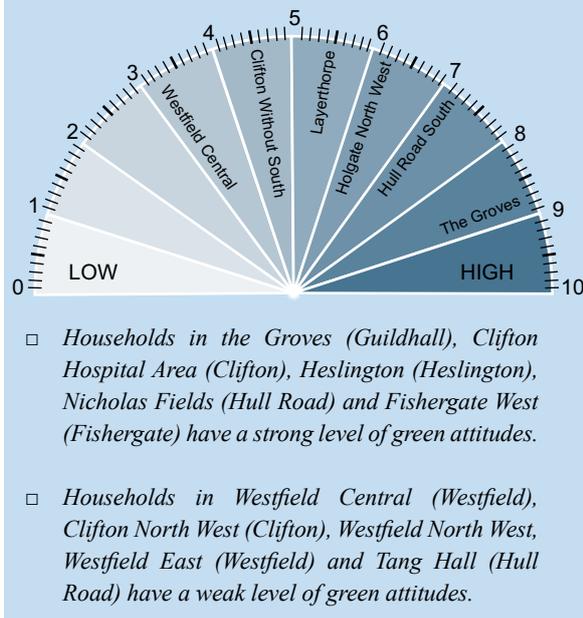


Figure 1: The carbon footprint of an average York resident

¹ Equivalent CO₂ (CO₂e) is the concentration of CO₂ that would cause the same global warming potential as a given type and concentration of greenhouse gas (e.g. methane, perfluorocarbons and nitrous oxide).

Box 2: The Green-o-Meter

Heworth Without (Heworth Without), Wheldrake North East (Wheldrake) and Bishopthorpe North (Bishopthorpe).

Households in Heslington (Heslington) on average have the lowest carbon footprint in York followed by Clifton North West (Clifton), Tang Hall (Hull road), Westfield North West and Westfield Central (Westfield).

Neighbourhoods with the highest carbon footprint tend to be in the city centre or in rural and commuter areas.

Neighbourhoods with the lowest carbon footprint tend to be in the low income areas of the city or those areas with a high concentration of students.

Table 2: Neighbourhoods with the highest green attitude

Name Of Area/Ward	Green Score
The Groves (Guildhall)	8.97
Clifton Hospital Area (Clifton)	8.89
Heslington (Heslington)	8.60
Nicholas Fields (Hull Road)	8.55
Fishergate West (Fishergate)	8.51

Table 3: Neighbourhoods with the lowest green attitude

Name Of Area/Ward	Green Score
Westfield Central (Westfield)	3.15
Clifton North West (Clifton)	3.16
Westfield North West (Westfield)	3.28
Westfield East (Westfield)	3.31
Tang Hall (Hull Road)	3.31

Neighbourhood green attitudes

By scoring attitudes on a scale of one to ten it was possible to provide each neighbourhood with an overall numerical value that reflects the predominant level of greenness. A score close to ten indicates strong greenness while a score close to one indicates weak greenness (see Box 2 and Tables 2 and 3).

There is a tendency for those neighbourhoods which have a strong level of greenness to also have a larger



carbon footprint. This indicates that while there is understanding of the importance of green issue issues and a willingness to be green this is not necessarily translated into action.

Those neighbourhoods that held pro-environmental attitudes but had a high carbon footprint action were identified as being more likely to engage in pro-environmental actions. For each neighbourhood, data were collected on local infrastructure that could support pro-environmental behavioural change. These include proximity to local services, potential of housing stock for energy conservation measures and access to transport links.

An understanding of York’s neighbourhood carbon footprint, green attitudes and local infrastructure allows those neighbourhoods in York that have the greatest potential to adopt greener lifestyles to be identified (see Figure 2). Those households that have the largest potential contribution to make will tend to have a:

- large carbon footprint;
- willingness to make changes in order to lead greener lifestyles; and
- local infrastructure that makes “green” behaviour easier.

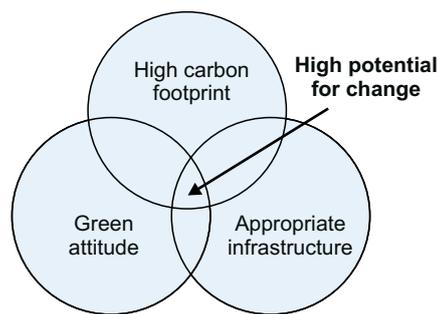


Figure 2: Characteristics that determine neighbourhoods which have the highest potential for change

Figures 3 and 4 present the predominant green attitudes and carbon footprint by neighbourhood.

In promoting greener lifestyles, effort should be made to target “high potential” neighbourhoods with regard to reducing CO₂ emissions from transport and housing. Based on this analysis, the following neighbourhoods of York were targeted for recruitment of participants:

- South Bank Central
- Holgate East.



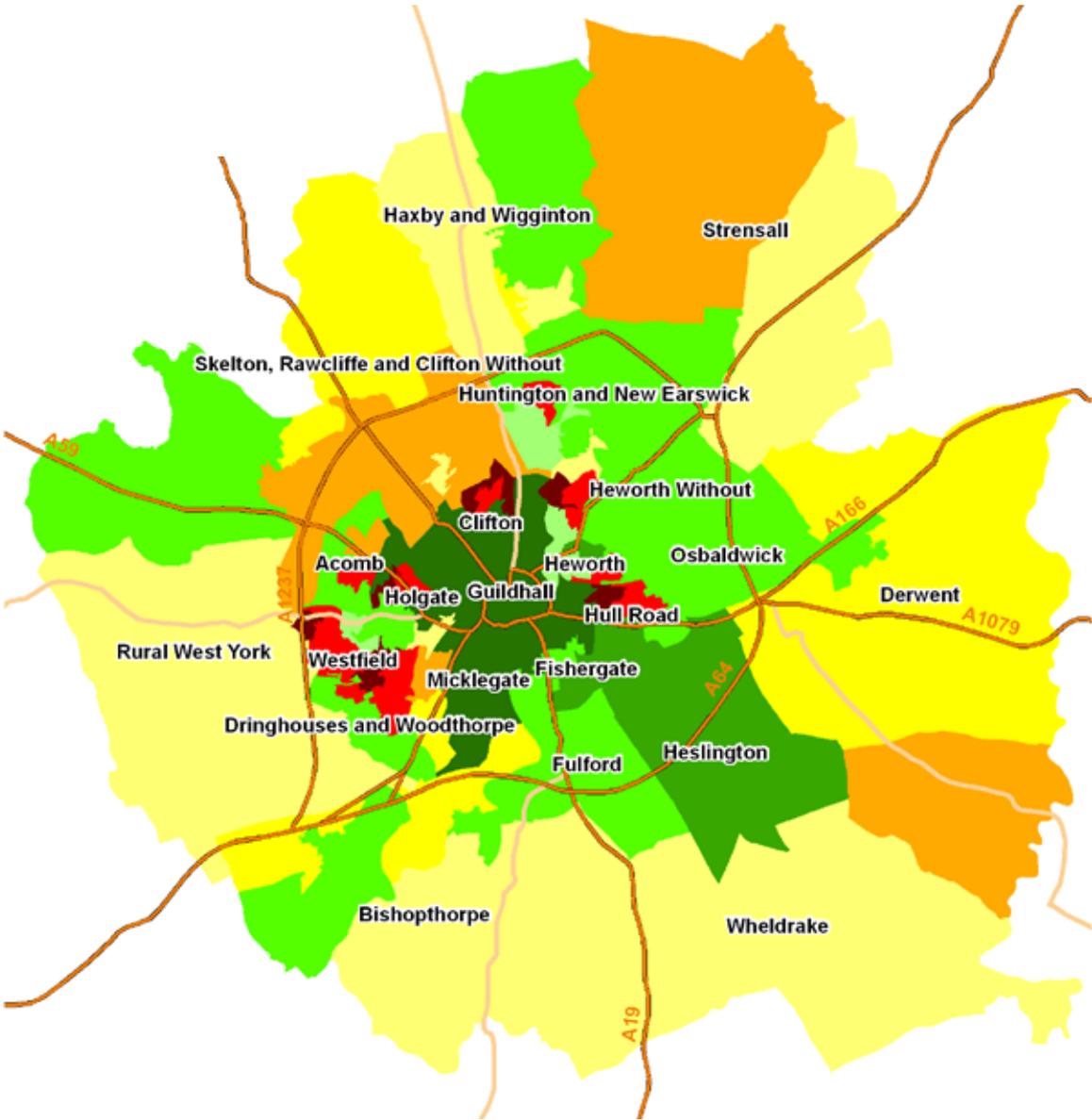
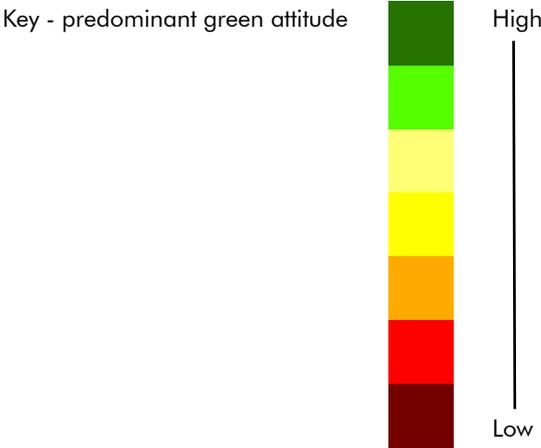


Figure 3: Predominant green attitudes by neighbourhood



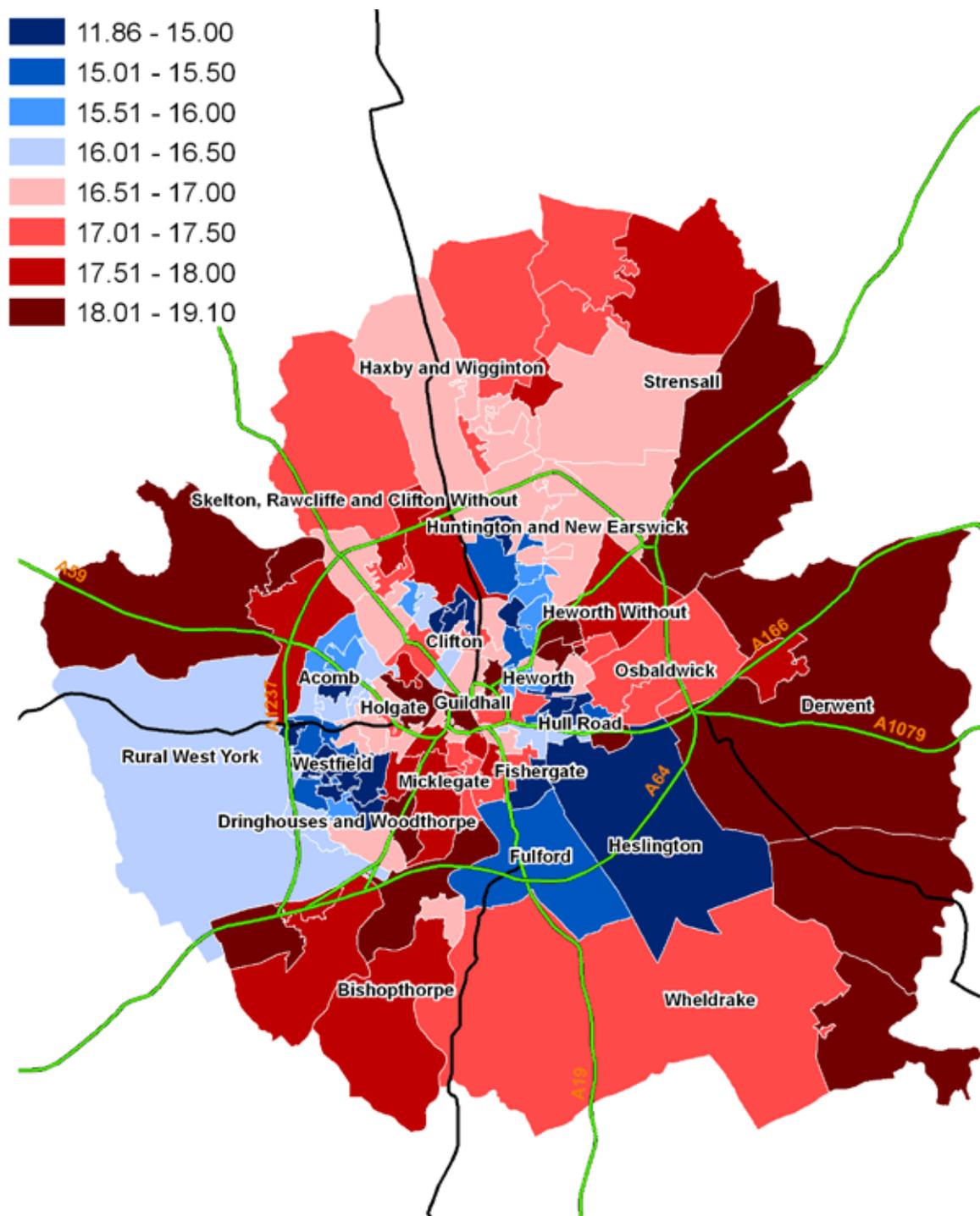


Figure 4: Total carbon footprint in tonnes of CO₂e per person in York

RECRUITMENT

The sample population was based on those residents who lived on streets in the two selected neighbourhoods. Questionnaire surveys on household consumption over a 12 month period were used before the intervention to measure the household carbon footprint in the areas of home energy, travel, consumables etc. A copy of the pre- and post-intervention questionnaire is presented in Annex I. Participants were recruited on the doorstep from the selected neighbourhoods in November-December 2009. Approximately 500 households were targeted in the two areas and residents were then invited to a neighbourhood workshop where their carbon footprint was calculated based on their completed questionnaire survey. Those residents who could not attend the workshop were invited to return the completed questionnaire by post.

All residents who had completed and returned their questionnaire survey were invited to a local team meeting where they received an assessment of their carbon footprint and a chance to meet fellow participants. The personalised carbon footprint showed their total carbon footprint, where they were in relation to other members of the team and highlighted actions they could take to achieve a 10 per cent reduction in their CO₂e emissions. An example of an Action Plan is presented in Annex II.

In addition, participants were asked to pledge to do a number of pro-environmental actions over a six month intervention period to help reduce their household carbon emissions. The Pledge Card is presented in Annex III. As well as door-step recruitment, participants were also recruited from existing communities including two primary schools and one church.

The doorstep recruitment rate in the York Green Neighbourhood Challenge resulted in 20.4 per cent (102/500) of the target population expressing an interest in the project (see Table 4). However, 48 participants did not wish to participate in the project and did not complete the first questionnaire. Therefore the final participation rate from the doorstep recruitment that returned a completed questionnaire was 10.8 per cent (54/500). Recruitment for existing communities resulted in a further 42 participants joining the project. A total of 96 residents therefore completed the baseline questionnaire. A further 7 participants decided to drop out of the project which left a total sample of 89 participants.

The participants were asked to complete a second questionnaire at the end of the intervention period.



The post-intervention questionnaire survey examined activities of the last six months and this was standardised over a 12 month period to allow a comparison of change. The results therefore provide an estimate of the potential reduction in CO₂e emissions if the behavioural change achieved in the six month intervention period were continued for the rest of the year.

A total of 39 participants did not return the second questionnaire at the end of the intervention period – a 44 per cent dropout rate. The final results of the pilot study were therefore based on a total of 50 individuals from the intervention group who had returned both questionnaire surveys. However, one participant only completed the attitudinal part of the survey and not the section on the carbon footprint. The attitudinal results are therefore based on 50 participants and the changes in the carbon emissions based on 49 participants.

The intervention group was approximately evenly split between male and female respondents with over half aged below 50 years old and of the remainder, 16 per cent were over the age of 65 years.

Table 4: York Green Neighbourhood Challenge Recruitment

Doorstep Recruitment	
Total contacted	500
Expressed interest in participation	102
Completed and returned pre-intervention questionnaire	54
Existing communities recruitment	42
Drop out	7
Total sample population	89
Total returned post-intervention questionnaire (49 completed both sections)	50

Main contact milestones	
Initial contact	Mail drop Door knocking (November – December 2009)
Second contact	Local workshop November – December 2009)
Third contact	Local team meeting November – December 2009)
Fourth contact	Launch event all teams together (January 2010) 50 people
Fifth Contact	Mid Term event for all teams (April 2010)
Sixth Contact	Final event and award ceremony (September 2010)



COMPARISON OF ESTIMATED AND MEASURED NEIGHBOURHOOD FOOTPRINT

Table 5 compares the estimated carbon footprint of York neighbourhoods from the Phase I of the project with the measured footprint of those participants who completed the pre-intervention questionnaire. It shows that the estimated footprints and those calculated from the pre-intervention survey of participant's footprints are very similar for four out of the six areas whilst for the remaining two neighbourhoods, the survey results are somewhat higher than the estimated footprint.



Table 5: Comparison of the estimated and measured pre-intervention carbon footprint (in tonnes CO₂e)

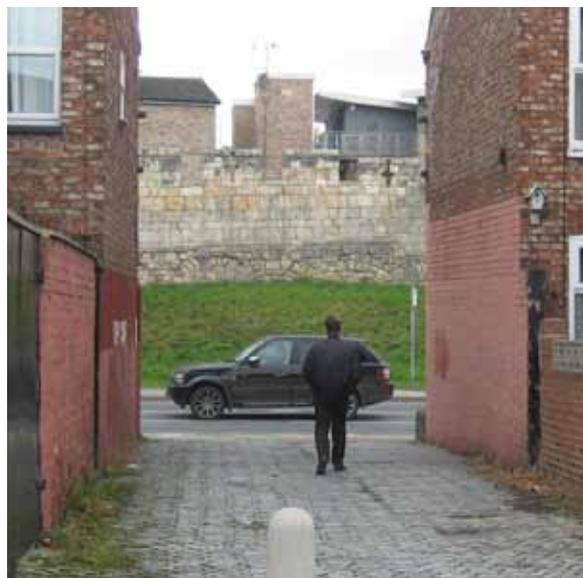
Team name	York Neighbourhood	Estimated Footprint	Footprint from pre-intervention survey	
Bishopthorpe Road	South Bank Central	17.27	19.33	12%
	Micklegate Ward			
Heworth Primary	Heworth North East	18.31	18.27	0%
	Heworth Ward			
Holgate	Holgate South East	16.56	16.6	0%
	Holgate Ward			
Park Grove Primary	The Groves	16.87	16.27	-4%
	Clifton Ward			
Scarcroft Road	South Bank Central	17.27	20.2	17%
	Micklegate Ward			
St Edwards Church	Dringhouses Central	19.1	17.87	-6%
	Dringhouses and Woodthorpe ward			



RESULTS

The 49 participants who completed the challenge achieved an estimated average carbon footprint reduction of 2.0 tonnes of CO₂e/year. This is a total reduction of 11.3 per cent. The largest reductions were seen in the areas of shopping and housing (heating and powering the home) with an average reduction of over 20 per cent in both cases. The area of food showed the smallest reduction (4.6 per cent).

The change in the impact of housing could be due to the fact that the initial survey was undertaken in summer. In order to minimise affect of seasonal variations in heating, participants were asked to provide details of their kWh usage for the previous twelve months. However, of the 49 questionnaires returned, only 25 gave details of their fuel bills. For the other participants, the kWh usage was estimated using details of house size, energy efficiency behaviour and other measures.



significance of the test was assessed using a two-tailed probability test.

SIGNIFICANCE TESTING

A t-test was performed on the pre- and post-intervention data. This is a statistical hypothesis test to determine whether there was a statistically significant change in mean carbon footprint during the six month intervention period.

A paired samples t-test was chosen because samples are not independent, each pair referring to the same person. No assumption was made about the direction of change over the period of the intervention and so the

The mean reduction in the carbon footprint was 2.0 t CO₂e with a 95 per cent confidence interval of ± 0.9 t CO₂e (See Table 6). Thus we can be 95 per cent confident that on average, households reduced their carbon footprint somewhere between 1.1 and 2.9 t CO₂e/year. This provides evidence that the York Neighbourhood Challenge was effective in reducing a household's carbon footprint. Statistical analysis showed this reduction to be highly significant.

Table 6: Difference between mean footprint before and after the intervention for all 49 challenge participants combined

	Survey 1 mean foot- print (t CO ₂ e)	Survey 2 mean foot- print (t CO ₂ e)	Mean change in footprint \pm 95% confidence interval	% reduction	Significance of difference between means for the 2 surveys
Activities	2.21	2.05	0.16 \pm 0.16	7.2	p = 0.047 *
Food	3.23	3.08	0.15 \pm 0.14	4.6	p = 0.036 *
Housing	3.80	3.03	0.77 \pm 0.43	20.3	p = 0.001 *
Travel	3.79	3.18	0.61 \pm 0.56	16.2	p = 0.07
Shopping	1.78	1.39	0.39 \pm 0.13	22.2	p < 0.001 *
Total	17.66	15.65	2.00 \pm 0.87	11.3	p < 0.001 *

* If p is less than 0.05 then the result is considered statistically significant



When the five components that make up the carbon footprint are examined separately, the intervention achieved statistically significant reductions in the areas of activities, food, housing and shopping. However, the intervention did not achieve a statistically significant reduction in the carbon footprint for travel. When data for each neighbourhood were analysed separately, three out of the six teams achieved a statistically significant reduction (See Table 7).

Overall, the Green Neighbourhood Challenge was effective in reducing the carbon footprint of the participants and achieved an estimated total emission

reduction of 98 tonnes of CO₂e/year. Statistical analysis showed that there were significant reductions in residents' footprints by the end of the project. However, when these are divided into the constituent parts, not every aspect of the residents' lifestyles changed. When we consider the residents' transport impact, the change was not shown to be statistically significant. Similarly, when the project is considered by team, not every team's level of footprint reduction was significant. Indeed, for one team (Park Grove Primary), the mean footprint actually increased slightly although this was not statistically significant.

Table 7: Difference between mean footprint before and after the intervention shown for the six challenge teams separately

	Survey 1 mean foot- print (t CO ₂ e)	Survey 2 mean foot- print (t CO ₂ e)	Mean change in foot- print ± 95% confi- dence interval	% reduction	Significance of dif- ference between means for the two surveys
Bishopthorpe Road	19.3	16.6	2.70 ± 1.52	14.0	p = 0.003 *
Heworth Primary	17.1	14.1	2.96 ± 2.13	17.3	p = 0.018 *
Holgate	16.2	16.1	0.13 ± 3.36	0.8	p = 0.925
Park Grove Pri- mary	15.6	15.6	- 0.01 ± 2.69	- 0.03	p = 0.994
Scarcroft Road	18.1	15.8	2.35 ± 2.58	13.0	p = 0.071
St Edwards	17.3	15.3	1.92 ± 1.65	11.5	p = 0.022 *

* If p is less than 0.05 then the result is considered statistically significant

PARTICIPATION

Each group was encouraged to meet on a monthly basis throughout the six month intervention period. In addition, all six teams were invited to three milestone events which were held at the beginning, middle and end of the intervention period (see Table 8). Each team had access to a pool of experts who, on request, could attend local meetings and provide further advice on reducing their carbon footprint (see Table 9).

Some teams embraced the spirit of the initiative and organised local awareness raising events in addition to their monthly meetings which further fostered a sense of community (see Table 10).

Meetings held by the teams were well attended by the participants although only half attended one or two meetings. A total of 7 out of the 50 participants did not attend any meeting while a nearly a quarter attended more than five. Of the main York Green Neighbourhood Events held in January and April, 20 per cent attended the January event only, 18 per cent attended the April event only and an additional 24 per cent attended both while 20 per cent attended neither. Time was a main reason why participants did not attend the meetings. Only 3 people said they had other commitments.



Table 8: Milestone events

Launch Event	9 January 2010
Mid-term event	March 2010
End event	25 September 2010

Table 9: External Experts

Energy saving in the home	Energy Saving Trust
Micro generation	Solarwall and Energy Saving Trust
Locally sourced food	The Soil Association
Recycling in York	City of York Council
Composting	York Rotters

Table 10: Initiatives organised by Neighbourhood Teams

Event	Description	Impact
Neighbourhood Eco-evening	The Neighbourhood Eco-Evening was held at a local venue with presentations on waste/recycling from the City of York Council, energy/insulation from the Energy Saving Trust and home composting from York Rotters. Easy and not-so-easy/more challenging actions were suggested by each of the three speakers.	The event provided an opportunity to ask questions and to access further information on the practical matters relating to each topic. Stalls with information leaflets were available so members could take literature home.
Information stalls on a neighbourhood street corner	To mark World Environment Day and to promote the Green Neighbourhood Challenge, information stalls was set up on a key road corner in the neighbourhood. The stalls provided information on energy efficiency and composting to local residents. It also provided the opportunity to recruit new members to the team. The two stalls gave away light bulbs, plants and cakes; ran a quiz; gave out leaflets and advice and raffled a wormery and compost bin.	The information stalls generated a lot of interest from local people and resulted in 24 new households signing up to the team. The stalls helped to promote good relations with local shops (donated food) and raised awareness of home insulation, energy use and reducing personal emissions.
Scarecrow Festival	A Scarecrow Festival was held in the local area over the Bank Holiday weekend. The aim of the event was to raise the profile of the Green Neighbourhood Challenge and the climate change issues. Streets in the local neighbourhood were leafleted inviting them to create an 'Eco Scarecrow'. A total of forty household took part and 140 trails were sold. Each household taking part displayed a poster completing the sentence 'We are doing our bit to save the planet by..' As people were doing the trail they therefore read 40 different messages about what can be done - ranging from '... growing our own vegetables', '... recycling our paper', '... giving up our car' to '... promoting hydropower'.	The Festival raised awareness of the project and the climate change issue, showing people there are lots of little things which ordinary people can do. It also gave people an environmentally friendly activity to do in the area over the bank holiday and it helped to build community links as people walked around doing the trail. The money raised from the trails went towards buying fruit trees in the local park. The event was very popular with residents (many did the trail in the rain!) and local shopkeepers took part which encouraged good community bonding. It also brought the two local Green Neighbourhood teams closer (social invitations followed).
Eco-Fun Night	An Eco Fun night was held, attended by parents and pupils, where a range of activities were organised. Activities included junk modelling, recycling sorting activity, guess how many worms in the compost, pledge tree, eco quiz and refreshments.	The Eco-Fun Night raised awareness of climate change issues and raised money to go towards environmental resources for school.
Recycling at the School Summer Fair	Each year the school holds a Summer Fair. This year the Green Neighbourhoods team addressed the issue of what is done with the rubbish by putting out labelled bins so the rubbish could be sorted and more easily recycled.	More of the waste from the summer fair was recycled.
Allotment sharing	Through the team meetings one group discovered that a member of their team had an allotment and was struggling to manage it. Three people from the team agreed to share the allotment.	The three were able to grow their own vegetables as well as compost their food waste.

ATTITUDES OF THE PARTICIPANTS

WORKING AS A TEAM

When the participants were asked about working as a team a total of 36 per cent of participants felt it was “much better” working in a team in reducing their carbon footprint than alone while 22 per cent felt it was a “little better”. However, 34 per cent of participants felt working in a team made no difference at all. When asked how likely they were to continue working as a group after the initiative ended opinion was split. A total of 46 per cent of participants felt it was “fairly” or “very likely” they would continue to work in the team. In contrast, 50 per cent of the participants felt it was “fairly” or “very unlikely” to continue to with their team.

CARBON FOOTPRINT SURVEY

The majority of the participants felt that understanding their initial carbon footprint was helpful in making decisions to meet the challenge. A total of 38 per cent of participants “strongly agreed” while 54 per cent “slightly agreed” that the carbon footprint was useful. The majority of participants felt they were likely to continue in reducing their carbon footprint beyond the project period (62 per cent very likely, 32 per cent likely) even if it is not as part of their team.

ATTITUDES TO THE PROJECT

The overall attitude to the project was positive with 80 per cent of participants feeling they benefited from taking part in the neighbourhood challenge. Approximately three quarters of participants felt they were “greener” after participating in the project while a minority disagreed and felt they were already ‘green’ and that further significant reductions were difficult to achieve.

ATTITUDES TO CLIMATE CHANGE

Nearly half of the participants (48 per cent) felt their attitude to climate change remained more or less the same after participating in the challenge. In contrast, 34 per cent of participants considered climate change to be a “little more serious” and 12 per cent “much more serious” issue after the challenge.

WHAT THE PROJECT DID WELL

The York Green Neighbourhood Challenge was a pilot project and the participants were asked to outline what the initiative did well and what things could have been done better. The project received positive feedback in a total of seven areas: information and awareness rising, meetings, motivation and encouragement, mentoring, working as a team, community spirit, carbon footprint, targets and pledges (see Table 11). The initiative successfully met its objective of raising awareness of the carbon footprint and encouraging individuals to take action to reduce their emissions. A co-benefit of the approach was the increased feeling of community spirit that the project instilled in the participants. The project provided the opportunity for participants to meet and get to know their neighbours

WHAT THE PROJECT COULD HAVE DONE BETTER

Respondents were asked to provide information on areas where the project could have done better (see Table 12). The over-riding area participants felt needed improving was a higher degree of communication between the management team and the groups. They wanted more information on how the carbon footprints were calculated; they would have liked more feedback and regular updates on how the other teams were progressing. They would have liked the scheme to have run over a longer period.



Table 11: What the project did well

Meetings	<p>Meetings were good to get to know neighbours, everyone could contribute</p> <p>Meetings with new information</p> <p>Sparked meetings with like-minded neighbours, ideas and information on how to save energy, starting in winter a good idea!</p> <p>Kick off meeting, setting out its vision and objectives</p> <p>Having two central meetings</p> <p>Regular meetings enabled and encouraged group formation, provided information and criteria, provided motivation</p> <p>School events were organised that wouldn't have been, helped to change attitudes, made individuals more aware of green initiatives</p> <p>Initial concept, first meeting, enthusiasm</p>
Information and awareness	<p>Provided speakers, provided impetus and backup</p> <p>Communication, sharing of information</p> <p>Awareness raising</p> <p>Provision of information</p> <p>Giving information and having organised groups</p> <p>Presenting the issues, talking to people, advising on progress made</p> <p>Flagged up need to save energy, met 'like-minded' people, reminded me of my responsibilities</p> <p>Communication, awareness, thought provoking</p> <p>Provision of information, encouragement, communication from the organisers</p> <p>Raised awareness, got people talking</p> <p>Raised awareness, useful tips, felt part of a group</p> <p>Information, meetings, meeting other people</p> <p>Made people aware</p> <p>Provided information</p> <p>Raising my awareness of green issues. I may not always take the right action but at least I think about it!</p> <p>Awareness of issues, team effort</p> <p>Sharing information with others in similar houses</p> <p>Sharing of understanding and enthusiasm</p> <p>Information gained - hearing from others about their activities - getting (a few) other schoolchildren and parents involved</p> <p>Raised awareness, some useful tips</p>
Motivation and encouragement	<p>Encouragement to make changes. Interesting to hear what others doing and suggestions</p> <p>Has focussed my mind on changes I want to make anyway, but have not got round to</p> <p>Will look into micro generation</p> <p>Joining york freecycle, getting an electricity monitor</p> <p>It is a step along a continuing path of raising awareness and reducing carbon footprint</p> <p>Focussed on energy saving</p> <p>To recycle more</p> <p>It makes you look at your lifestyle and question 'need' against 'want'</p> <p>I have been more motivated to change my lifestyle. I have enjoyed the community spirit we have had in our team</p> <p>Made me consider the use of energy and food wastage more seriously - slight lifestyle change</p>
Mentoring	<p>Mentor (facilitator) support, attempts to provide input from relevant organisations, initial carbon footprint analysis by household and team</p> <p>Meeting local people, slow to start but then well organised, helped by motivating organisers</p>
Working as a team	<p>Local community focus is good - similar circumstances and no travel needed, mentor was effective</p> <p>Creating team effort, raising awareness</p> <p>Getting teams together, giving useful local information, maintained my hope</p> <p>Met a group of strongly 'green' individuals</p> <p>Comparison with other groups</p> <p>energy and commitment of teams members which mattered and good facilitation</p>

Community Spirit	<p><i>Encouraged neighbours to work together as a team, measuring our carbon footprint, provided a mentor</i></p> <p><i>Really enjoyed Green Neighbourhood Spring event, sense of local community of like-minded people</i></p> <p><i>Makes you think of all aspects of a greener lifestyle, good to talk to others from other groups</i></p> <p><i>Local cohesion, clear target</i></p> <p><i>I met neighbours and developed a better sense of community</i></p> <p><i>Meeting neighbours and sharing ideas</i></p> <p><i>We have got to know our neighbours and have been pushed to do things that we had (intended) to do</i></p> <p><i>Making relationships with our neighbours</i></p> <p><i>Meeting like minded people in my area</i></p> <p><i>Meeting neighbours and support network</i></p> <p><i>Feeling more connected to my community</i></p> <p><i>Meeting local people who understand green issues</i></p> <p><i>Meeting other people with same interests</i></p> <p><i>Shared energy saving ideas and got to know neighbours better</i></p> <p><i>Meeting others who claim to be interested</i></p>
Carbon footprint, targets and pledges	<p><i>Initial assessment work, forming the teams</i></p> <p><i>Highlighted areas to improve, advice on reducing footprint</i></p> <p><i>Mentoring and the comparisons of teammates carbon footprints, gave us the impetus and framework with which to engage with our neighbours</i></p> <p><i>Set targets and pledges to work against, provided speakers on subjects, and encouraged neighbours to work together</i></p> <p><i>Gave a detailed footprint to each household, access to information and speakers, got a community team to work together</i></p> <p><i>Awareness of carbon footprint</i></p> <p><i>It gave me ideas on what to do to reduce my carbon footprint</i></p> <p><i>Learning more about reducing my carbon footprint</i></p>



Table 12: What the project could have done better

Carbon footprint, data and information	<p>More transparent methodology, how do you calculate the footprint?</p> <p>Better access to team data so we could more accurately pinpoint areas to work on, recruiting teams - maybe follow up with a second round of door knocking</p> <p>Provide more detail on the carbon footprint results; found this confusing, travel and energy should have been over a longer period e.g. one year rather than six months</p> <p>Provide more detail on how carbon footprint is calculated; offer resources and information on science of climate change because membership self-selecting suffers from 'preaching to the choir' those already committed. To make a real impact need to target communities not already trying to reduce footprint.</p> <p>The initial carbon footprint survey could have been explained better. Some seemed to complete it as an individual others a household</p> <p>Analysis should have shown bus, train etc travel (i.e. group use of fuel) separately from car figures</p>
Support	<p>Better support for team - our team did not get (going) as no-one really wanted to be in charge etc and we needed more push from the coordinating team</p> <p>Poor meetings, lack of support and contacts</p>
Communication	<p>Communications, support without a pre-existing 'group' - where motivation (inclination) to is naturally lower and failure to recognise this challenge, commitment from guest speakers and mentor, sharing evidence of successes from other groups during the project</p> <p>More email communications</p> <p>More feedback</p> <p>Advertising the events</p> <p>More communication, meeting times not convenient</p> <p>Communication, tackle fewer topics at a time, spend longer in run-up</p> <p>More advertising</p>
Time	<p>Longer time frame needed</p> <p>More time needed</p>
Information	<p>Higher level information at meeting information was too basic</p> <p>Arranging speakers (most couldn't make it to our Sunday church meetings)</p> <p>More advice on ways to cut energy use. Too much emphasis on finding info yourself, too much emphasis on composting! Briefing Energy Saving Trust on information required so that the information session would have been more useful.</p> <p>Clearer initial feedback on the survey for the team so we could share learning on who was good at what to support conversations and action, maybe some actual freebies, better marketing to get people involved and to sustain interest</p> <p>At times we felt done to by the project (rather than empowered)</p>
Target group	<p>Should be aimed at high carbon footprint people. I already do most of the things suggested. Haven't replaced anything major i.e. boiler, car etc but will look for greenest option</p>
Planning	<p>At times felt a little rushed or disorganised, provide more ideas and contacts</p> <p>Had fewer events, kept up with communication, changed strategy when perhaps not going as originally planned</p> <p>Hard to keep momentum, more central 'fun' events would have been good</p> <p>Encouraging more people to come to the meetings, have more meetings locally, update on progress more frequently</p>

YORK GREEN NEIGHBOURHOOD CHALLENGE AWARDS

At the end of the intervention period, teams were awarded cash prizes for their effort. The York Green Neighbourhood Awards recognised the effort and achievement teams made in reducing the carbon footprint of their neighbourhood. The level of activity of each team varied with some teams holding a number of local awareness raising events while others rarely met. An analysis of the data from the questionnaires was undertaken to determine the reduction in the carbon footprint of different teams. The results of the analysis give an indication the level of the carbon reduction achieved due to the intervention. In addition the teams provided evidence of the range of activities they had undertaken during the intervention period.

There were a total of three awards to indicate level of effort and achievement:

GOLD £600 to spend as a team to continue activities

SILVER £400 to spend as a team to continue activities

BRONZE £200 to spend as a team to continue activities



Based on the evidence presented, prizes were awarded according to the level of effort and reductions achieved by each team in reducing their carbon footprint by an expert panel. Table 13 presents the winning teams and panel comments.

Table 13: Comments on the Award Panel

Award	Winner	Comment
GOLD AWARD	Bishop-thorpe Road	A very creditable average reduction in CO ₂ emissions associated with an impressively wide and varied list of activities which have the potential to embed the reduction virus in the DNA of all the participants for the foreseeable future. This was the only team who managed to retain all the original participants throughout the initiative – very impressive!
SILVER AWARD	Scarcroft Road	Also a very creditable CO ₂ reduction and lots of energy devoted to varied activities
BRONZE AWARD	Park Grove Primary	Schools are an important part of the process of organisational change to shift our thinking in the direction of one-planet living. The carbon reduction performance was disappointing but the list of activities is creative and shows great promise for the future
	St Edwards	St Edwards Church has good average CO ₂ reduction and very low drop out. Also had two of the biggest reducers out of the top five.
OTHER TEAMS		All teams are to be congratulated on staying the course and making the effort. Progress on green thinking or one-planet living will not be made by government reports but will be made by citizens working together. Everyone really deserves a medal for setting this example and showing that green living and carbon reduction is not only possible but also great fun

THE WAY FORWARD

At the final meeting the project participants discussed how to maintain momentum and get other neighbourhoods involved. Two of the neighbourhood teams decided to join forces and have now become a larger team called “Planet Southbank”. The church team is interested in exploring the possibility of reaching out to neighbourhoods in their local area and hosting a public event such as an Eco Family day. Based on the discussion, the participants made the following recommendations to continue the initiative and encourage other neighbourhoods to join existing teams or set up their own team:

- recruit from existing groups with a shared common purpose;
- involve the local council and ward committees as way to promote local teams and encourage others to join;
- use social media to create a virtual forum for discussion and connection;
- ensure teams have an enthusiastic leadership that can delegate tasks;
- develop a creative and inclusive programme that is fun and interesting. This would need to have ‘sizzle’ and be attractive to different age groups such as children, teenagers as well as older people;
- gain informal support from external experts;
- hold high profile local events to attract new recruits;
- provide more incentives to attract people to take part; and
- use an on-line carbon calculator and ensure greater transparency on results and allow teams to monitor their own developments.



DISCUSSION

COST-EFFECTIVENESS

The project used a targeted approach to engage community groups on green issues and to encourage them to take action to reduce their CO₂e emissions by 10 per cent. The total projected reduction in CO₂e emissions achieved as a result of the project is 98 tonnes/year. This is a cost of £472.57 per tonne of CO₂e. However, this figure does not include non-monetary benefits such as community spirit and the impact the project had in raising awareness of the issue more generally to local residents who were not participating in the project.

From the experience gained from implementing the approach and the feedback received, a more cost-effective model of community engagement can be proposed. This is discussed in the next section of this report.

NEIGHBOURHOOD PROFILING

The use of CO₂ profiling of different neighbourhoods together with attitudinal data provided a top-down assessment of the general responsiveness of neighbourhood to pro-environmental behavioural change initiatives. Estimates of the average carbon footprint with actual survey data are similar for four out of the six areas whilst for the other two neighbourhoods, the survey results were somewhat higher than the predicted footprint. However, the sample size for each neighbourhood varied. A greater sample size would have been more effective in determining the accuracy of the top-down approach.

The accuracy of the top-down attitudinal assessment was not assessed in the same way as no attitudinal data were collected in the pre-intervention questionnaire survey. However, a door-step recruitment campaign and feedback from residents gave a general impression that residents in the target areas were on the whole supportive of green actions even though they did not want to commit themselves to participating in the project. An initial 102 people from the door-step recruitment expressed an interest in participating in the project and were given information. However, only 54 people actually completed and returned the pre-intervention questionnaire survey. To some extent this confirms why these neighbourhoods were selected; people have a positive attitude to green issues but these are not always converted into action due to the so-called 'value-action gap'.

RECRUITMENT

The door-step recruitment aimed to form a community team for each street of 10-15 people. Unfortunately, there was not enough interest to achieve this at a street-level. Instead participants formed a neighbourhood team with members from different streets.

The door-step campaign involved informing residents that recruitment was going to take place on a specific day. Despite this pre-notification many residents were unfamiliar with the project and did not read the information beforehand or were not at home when a recruiter called.

While the recruitment of neighbourhood teams succeeded in bringing participants together, there are more cost effective approaches to achieve this, utilising existing groups that could be used for future projects. In order to increase the number of teams, existing communities of two schools were contacted to see if they wanted to participate. Due to the general publicity about the project one church team actually contacted the project team requesting to be involved.

There were enthusiastic individuals in five out of the six teams who contributed to moving teams forward. However, in one neighbourhood team no natural leadership emerged and as a consequence it did not gain the same level of momentum.

Participants were self-selecting and as a result some people who took the challenge were already undertaking a number of green actions. This meant that there were fewer additional actions they could take compared to the rest of the team. However, these experienced members were able to provide additional support, advice and insight to those less experienced and provided an informal level of mentoring in particular teams.

QUESTIONNAIRE SURVEY

The project used a questionnaire survey to gather pre- and post-intervention information to determine the carbon footprint of each participant. This required inputting the information in the SEI REAP Model. It also provided some delay for participants. An on-line questionnaire survey and calculator would have given the participants more power to calculate their footprint,



to gain immediate results and to be able to monitor their progress and follow on-line advice.

USE OF EXTERNAL EXPERTS

Each group was given access to a number of external experts with the initial idea to provide an input to their month meetings. However, one group wanted to have all the advice and information at the beginning of the intervention period rather than on-going throughout the period. A local neighbourhood Eco-evening was held with guest speakers and this event was open to all residents.

Due to having a wide range of participants with different levels of knowledge some people found the advice given was too basic. All teams attended a milestone event where more detailed information was given at the request of the participants.

It would have been beneficial if all participants had received the same level of basic information at the start of the intervention period and then more detailed information given on request.

PARTICIPANT DROP-OUT

A total of 50 participants out of 89 returned the post-intervention questionnaire which equates to a 44 per

cent drop out. It is inevitable that during the intervention period people would drop out of the project. Those teams that lacked momentum had the greatest dropout rate indicating the importance of enthusiastic leaders.

MEASURABLE REDUCTION IN CO₂ EMISSIONS

On the whole, the project achieved a measurable reduction in CO₂e emissions and surpassed the objective of a 10 per cent reduction. The results were statistically significant. However this significance varied by teams and by area – there was no statistically significant change for transport. Transport was only indirectly discussed in the project because City of York Council was unable to provide expert advice at the time of the project delivery. Where expert advice on other aspects of the transport footprint was given a reduction in CO₂e emissions was achieved which further indicates the success of the approach.

CO-BENEFITS OF THE PROJECT

In addition, the project had the benefit of fostering community spirit. The initiative gave a reason and provided an opportunity for local neighbourhoods to come together. The local meetings, helped by outside facilitation, allowed members of the team to bond and to share experiences and advice. A number of participants remarked that they felt they knew their neighbours more after being involved in the project.

BARRIERS TO PARTICIPATION

The survey also highlighted the barriers to change. Some participants were unable to attend local meetings. Lack of time, or other commitments, were the main reasons given.

REWARDING TEAMS

The Green Neighbourhood Awards were given to those teams that had made the most progress. This has provided seed money to continue their work and to allow the teams to encourage more people to get involved. Two neighbourhood teams have joined together to form one team over a larger area. The church team are using their funds to provide a Lent course on environmental issues to their congregation and other parishioners.

CONCLUSION

Since 2007, there has been increased public awareness about climate change, its potential impacts and what actions individuals can take to reduce their carbon footprint. While more people are aware of climate change, this awareness has not always been translated into action. The challenge for behavioural change initiatives is now even greater given recent public scepticism of the science behind climate change.

While some members of the public will always be receptive to green issues, others have switched off due to “issue fatigue”. As a consequence many actions required to implement community climate change strategies and achieve more sustainable communities tend to be taken by a minority of people.

There is now a need for a new, re-energised, concerted and joined-up approach that places environmental issues in a wider context and appeals to a broader section of the community. The future vision should be positive and appealing and one that wins hearts and minds. This approach should improve the quality of life for all members of the community.

Based on the experience gained from the York Green Neighbourhood Challenge, a model of community engagement on environmental issues can be outlined which is based on a team approach.

A MODEL OF COMMUNITY ENGAGEMENT

Go beyond carbon

While the focus is on CO₂e reduction, this will only appeal to a minority of the population. With higher levels of public scepticism about climate change, it is, perhaps, time to place CO₂e reduction in the wider context of improving general quality of life. This can be presented in a better way without using the word ‘green’ or ‘environment’. Initiatives should attempt to demonstrate that actions can save money, be fun and provide an opportunity to socialise and gain new skills as well as being directly beneficial to the local neighbourhood.

Select the target audience that is most responsive

With limited resources it is not possible to target all audiences. As much information as possible should be collated about the target audience. This should be information on general attitudes and type of neighbourhood to ensure that this group would be

responsive to the initiative. This increases the chances of obtaining a measurable reduction in CO₂e.

Recruit from existing communities

While a door-step campaign is beneficial in creating new team formations, targeting existing communities may provide a more cost-effective approach. Whether this be a local school, church, lunch club, business or youth club it provides an opportunity to maximise the use of existing networks. Word-of-mouth would be the cheapest and most effective approach to recruitment.

Have a clear target

Having a clear target can provide focus and purpose to a team. It allows them to direct their efforts towards achieving a particular goal.

Establish a baseline

In order to determine the effectiveness of an initiative, a good baseline needs to be established. This should be a combination of qualitative and quantitative questions to determine current attitudes and carbon footprint. A pre- and post intervention questionnaire should be conducted.

Get participants to pledge

Participants should be encouraged to pledge what actions they would like to undertake during the intervention period. This acts as a social contract between themselves and their team.

Use mentors and local champions

The use of paid mentors or volunteer local champions can be effective in facilitating, inspiring and motivating teams. Having an independent facilitator can be helpful in ensuring new teams develop a bond and common purpose.

Provide ‘foundation Information’

Providing all basic information on particular actions at the beginning of the intervention period (e.g. in the form of a booklet or seminar/workshop) will ensure that all participants are starting from the same point. It will also allow more detailed information to be given throughout the intervention period.

Outline a programme of activities

A programme of activities should be established at the beginning of the intervention period; this will inform teams in advance and will also act as an incentive to get them involved in the initiative. The activities should aim at appealing to all sections of the community.

Stay in touch

Throughout the intervention period participants should be kept up-to-date on developments. Social media (e.g. Twitter, Facebook and YouTube) should be used to encourage an on-line community and to provide a internet-based forum for discussion. As well as newsletters and publicity using local media to those participants who do not have access to the internet.

Provide incentives

Incentives should be provided to demonstrate that the initiative has benefits at the individual and neighbourhood level (e.g. seed money for teams that have made the most effort, smart meters).

Hold milestone events

A number of milestone events should be held throughout the intervention period (e.g. at the beginning, middle and end). These will provide an opportunity for all participants from different teams to join together. These events provide a chance to socialise, share experiences and reinforces a common purpose.

Provide feedback

Providing feedback during the intervention period enables participants to know whether they are on track

to meet the set target and to take appropriate action if they are not making as much progress as they intended.

Reward success

The results of the pre- and post- questionnaire survey will determine change in behaviour and attitudes. This information should be used to determine which teams made the most progress. As well as results of the questionnaire survey, additional information on other activities that the team have initiated on their own should be included in the final assessment.

Those teams that have made the most progress (e.g. based on Gold, Silver, Bronze) should be rewarded to allow and inspire them to continue after the end of the project (e.g. seed money).

Follow-up

The long-term success of the initiative will depend on whether the participants have continued with their actions after the end of the project. Therefore a follow-up of the participants after 12 months who have completed both pre- and post- intervention questionnaires would be worthwhile to determine whether changes have been short-lived or not



ANNEXES

1. Questionnaire
2. Action Plan
3. Pledge card

Calculate your Footprint

Your Information

1. Name: _____

Address: _____

Telephone: _____ Email: _____

2. Sex: Male Female

3. Age: 5 – 10 19 – 29 50 - 64
11 – 18 30 - 49 65 plus

4. Yearly Household Income: (leave blank if you wish)

£0 <input type="checkbox"/>	£10,000 – £19,999 <input type="checkbox"/>	£50,000 – £74,999 <input type="checkbox"/>
£1 – £4999 <input type="checkbox"/>	£20,000 – £29,999 <input type="checkbox"/>	£75,000 plus <input type="checkbox"/>
£5000 – £9999 <input type="checkbox"/>	£30,000 – £49,999 <input type="checkbox"/>	

5. Postcode: _____

6. How many people aged 17 and over live in your home?

1 <input type="checkbox"/>	3 <input type="checkbox"/>
2 <input type="checkbox"/>	4 or more <input type="checkbox"/>

7. How many children live in your home?

0 <input type="checkbox"/>	2 <input type="checkbox"/>	4 or more <input type="checkbox"/>
1 <input type="checkbox"/>	3 <input type="checkbox"/>	

Your Heat and Power

1. What kind of home do you live in?

Detached house	2 beds <input type="checkbox"/>	3 beds <input type="checkbox"/>	4 or more beds <input type="checkbox"/>
Semi detached house	2 beds <input type="checkbox"/>	3 beds <input type="checkbox"/>	4 or more beds <input type="checkbox"/>
Mid terrace	2 beds <input type="checkbox"/>	3 or more beds <input type="checkbox"/>	
End terrace	2 beds <input type="checkbox"/>	3 or more beds <input type="checkbox"/>	
Detached bungalow	2 beds <input type="checkbox"/>	3 beds <input type="checkbox"/>	4 or more beds <input type="checkbox"/>
Semi detached bungalow	2 beds <input type="checkbox"/>	3 or more beds <input type="checkbox"/>	
Flat with 3 external walls -	1 bed <input type="checkbox"/>	2 beds <input type="checkbox"/>	3 or more beds <input type="checkbox"/>
Flat with 2 external walls	1 bed <input type="checkbox"/>	2 beds <input type="checkbox"/>	3 or more beds <input type="checkbox"/>

2. **How do you heat your home?**

gas oil coal
electricity lpg wood

3. **Do you have your energy bills available?**

Yes No

If yes, how much energy do you use?

Fuel	Amount
Gas	KWh per year
Electricity	KWh per year
Oil	Litres per year
Lpg	Litres per year
Coal	Tonnes per year
Wood	Tonnes per year

4. **Which of your appliances have a high energy efficiency rating (A and above)?**

Fridge Washing Machine
Freezer Dishwasher

5. **How many of your light bulbs are energy efficient?**

All of them Some of them
Most of them None of them

6. **Which of these home energy efficiency improvements are installed?**

Thick Loft insulation (150mm – 270mm)
Thin Loft insulation (less than 150mm)
Cavity Wall Insulation Condensing boiler
External Wall Insulation CHP (district heating)
Hot water tank insulation Double Glazing

7. **Which of these renewable technologies do you use?**

Photo Voltaics Ground source heat pump
Solar water heating Biomass Boiler

8. **Does your electricity come from 'Green' sources?**

Yes No

9. **Do you turn lights and electrical items off when not in use?**

All the time Some of the time
Most of the time I leave things on

Your Food

In one week, how many meals usually contain meat (please circle)?

Breakfast	0	1	2	3	4	5	6	7
Lunch	0	1	2	3	4	5	6	7
Dinner	0	1	2	3	4	5	6	7

2. **Per week, the average household in Yorkshire and Humber spends,** on food and non alcoholic drinks:

One adult	Two adults	Three adults	Four or more adults
£26.00	£52.00	£78.00	£104.00

Do you think **your household** spends:

Less than this about this amount More than this

3. **What proportion of your food is organic**

Fruit/vegetables none around ¼ around ½ all
 Dairy products none around ¼ around ½ all
 Other none around ¼ around ½ all

4. **Do you grow your own fruit and vegetables?**

No a small amount I have a large vegetable patch/allotment

5. **Per week, the average household in Yorkshire and Humber spends** on food and drink consumed outside the home. Include canteen food, takeaways, drinks at the pub:

One adult	Two adults	Three adults	Four or more adults
£18.90	£37.80	£56.70	£75.60

Do you think **your household** spends:

nothing about this amount
 less than this up to double this amount

Your Travel

1. **What type of car do you travel in most often?**

I never travel by car
 Small petrol car up to 1.4 Small diesel car up to 1.7l
 Medium petrol car 1.4l to 2.0l Medium diesel car 1.7l to 2.0l
 Large petrol car over 2.0l Large diesel car over 2.0l
 Medium petrol hybrid car Medium LPG or CNG car
 Large petrol hybrid car Large LPG or CNG car

2. How often do you travel alone in a car?

- All the time Rarely
 Some of the time I always travel with at least one other person

3. Please estimate the number of miles you travel by different modes of transport in one week:

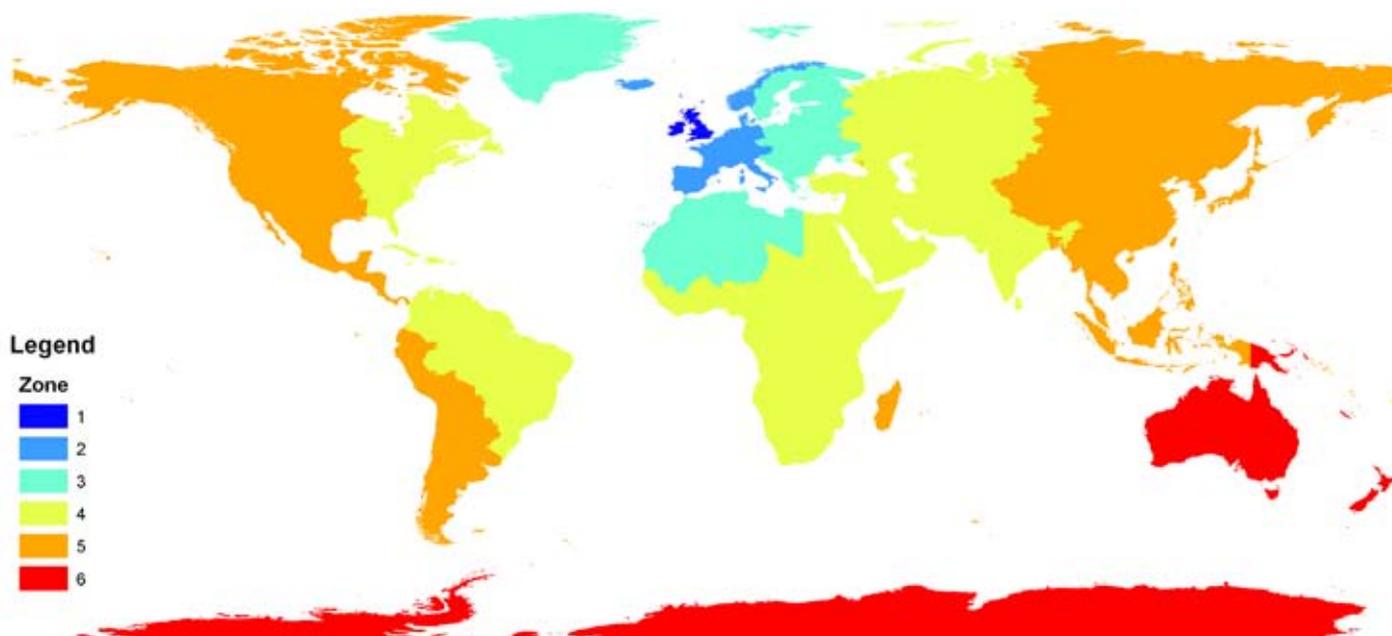
Mode of transport	Total Miles travelled
Car	
Bus	
Train	
Light rail / tram	
Underground	
Ferry – foot passenger	
Ferry – car passenger	

4. How many return trips of more than 100 miles each way do you make each month by each mode:

Mode of transport	Number of trips
Car	
Bus	
Train	
Light rail / tram	
Underground	
Ferry – foot passenger	
Ferry – car passenger	

5. Using the map, decide how many return flights you made to each zone in the last year

- Zone 1 ___ Zone 3 ___ Zone 5 ___
 Zone 2 ___ Zone 4 ___ Zone 6 ___



Your Shopping

1. **Per month, the average household in Yorkshire and Humber spends, on clothing:**

One adult	Two adults	Three adults	Four or more adults
£49.50	£99.00	£148.50	£198.00

Do you think **your household** spends:

Nothing Up to double this amount Less than this
 More than double this amount About this amount

2. **Per month, the average household in Yorkshire and Humber spends, on newspapers, books and stationery:**

One adult	Two adults	Three adults	Four or more adults
£18.90	£37.80	£56.70	£75.60

Do you think **your household** spends:

Nothing Up to double this amount Less than this
 More than double this amount About this amount

3. **Last year, which of these items did you buy?**

Large item of furniture (eg sofa/bed/wardrobe)
 Small item of furniture (eg bookcase/coffee table)
 small kitchen appliance (kettle/juicer/food processor)
 small household appliance (iron, electric fan)
 fridge washing machine freezer dishwasher

4. **Per year, the average household in Yorkshire and Humber spends, on jewellery and watches:**

One adult	Two adults	Three adults	Four or more adults
£93.60	£187.20	£280.80	£374.40

Do you think **your household** spends:

Nothing Up to double this amount Less than this
 More than double this amount About this amount

5. **Per month, the average household in Yorkshire and Humber spends, on footwear:**

One adult	Two adults	Three adults	Four or more adults
£9.70	£19.40	£29.10	£38.80

Do you think **your household** spends:

Nothing Up to double this amount Less than this
 More than double this amount About this amount

6. **Per month, the average household in Yorkshire and Humber spends**, on soaps, shampoo, make up, shaving stuff, toothpaste etc. :

One adult	Two adults	Three adults	Four or more adults
£24.40	£48.80	£73.20	£97.60

Do you think your household spends:

Nothing Up to double this amount Less than this
 More than double this amount About this amount

7. **Last year, which of these items did you buy?**

mobile phone lap top camera desk top MP3 player
 hi fi flat screen television DVD player regular television
 camcorder digital box 10 or more CDs

8. **Per year, the average household in Yorkshire and Humber spends**, on power tools and equipment for house and garden:

One adult	Two adults	Three adults	Four or more adults
£70.30	£140.60	£210.90	£281.20

Do you think your household spends:

Nothing Up to double this amount Less than this
 More than double this amount About this amount

Your Activities

1. **Per month, the average household in Yorkshire and Humber spends**, on games, computer games, sports equipment and hobbies:

One adult	Two adults	Three adults	Four or more adults
£27.00	£54.00	£81.00	£108.00

Do you think your household spends:

Nothing Up to double this amount Less than this
 More than double this amount About this amount

2. **Per month, the average household in Yorkshire and Humber spends**, on sports admissions, sports participation and the gym:

One adult	Two adults	Three adults	Four or more adults
£16.20	£32.40	£46.60	£64.80

Do you think your household spends:

Nothing Up to double this amount Less than this
 More than double this amount About this amount

3. **Per month, the average household in Yorkshire and Humber spends**, on making phone calls including mobiles.:

One adult	Two adults	Three adults	Four or more adults
£23.20	£46.40	£69.60	£92.80

Do you think your household spends:

- Nothing Up to double this amount Less than this
 More than double this amount About this amount

4. **Per month, the average household in Yorkshire and Humber spends**, on betting and the lottery:

One adult	Two adults	Three adults	Four or more adults
£8.80	£17.60	£26.40	£35.20

Do you think your household spends:

- Nothing Up to double this amount Less than this
 More than double this amount About this amount

5. **Per month, the average household in Yorkshire and Humber spends**, on the cinema, theatre and other cultural entertainment, TV licenses and subscriptions and the internet.:

One adult	Two adults	Three adults	Four or more adults
£23.40	£46.80	£70.20	£93.60

Do you think your household spends:

- Nothing Up to double this amount Less than this
 More than double this amount About this amount

6. **If your household contains smokers**, how much is spent on cigarettes and tobacco per week?

- Nothing £20.00 to £40.00
 Less than £20.00 More than £40.00

7. **How frequently do you redecorate your home?**

- Rarely, I haven't decorated in years Occasionally – I redecorate a room per year
 Often – I always have a redecorating job on the go

Your Recycling

1. How much of your **glass** do you recycle?

- All of it Some of it Most of it None of it

2. How much of your **paper** do you recycle?

- All of it Some of it Most of it None of it

3. How much of your **cardboard** do you recycle?
 All of it Some of it Most of it None of it
4. How much of your **plastic** do you recycle?
 All of it Some of it Most of it None of it
5. How much of your **aluminium** do you recycle?
 All of it Some of it Most of it None of it
6. How much of your **steel** do you recycle?
 All of it Some of it Most of it None of it
7. How much of your **organic waste** do you recycle?
 All of it Some of it Most of it None of it

Your Water

1. Which of these do you use most often?
 bath shower power shower
2. Which of these looks most like your toilet?



Picture A
 Large cistern



Picture B
 Small modern post 1990 cistern



Picture C
 Dual flush

3. Have you installed a water saving devise in your toilet such as a hippo?
 yes no
4. Do you have a water efficient washing machine?
 yes no
5. In summer how many times a week do you use a hose or water sprinkler to water your garden?
 none twice
 once more than twice

Thank You!



Your Carbon Footprint Action Plan

WITHOUT WALLS
building a future for york

SUSTAINABLEWOW

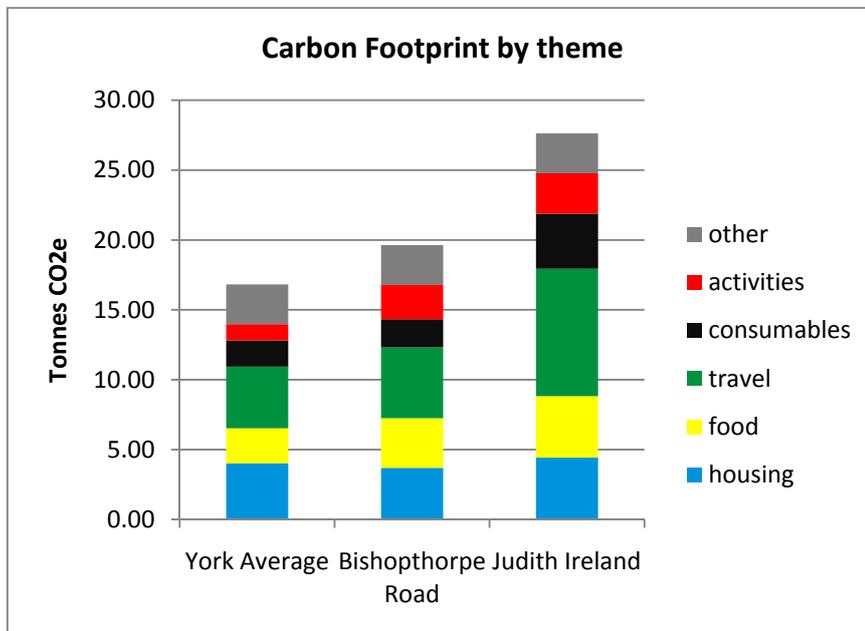
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INSTITUTE

Your Carbon Footprint

Your **Carbon Footprint** is a measure of the yearly amount of carbon dioxide and other harmful greenhouse gas emissions associated with heating and powering your home, travelling in cars and other modes of transport and producing the food, goods and services you buy.

In this study we have calculated the impact of your whole household but divided the emissions by the number of adults in the household to allow comparisons to be made between households of differing sizes.

Carbon Footprint	(tonnes CO ₂ e per person)
Your household average	27.62
Your neighbourhood average	19.62
York average	16.73
UK average	15.99



This chart shows how your footprint compares to the rest of York and the average for your street. It also shows the breakdown of your footprint by housing, food, travel, consumables, activities and other.

Housing includes the emissions associated with heating, powering and maintaining your home.

Food includes the emissions associated with producing all the food and drink you consume both in the home and catered food.

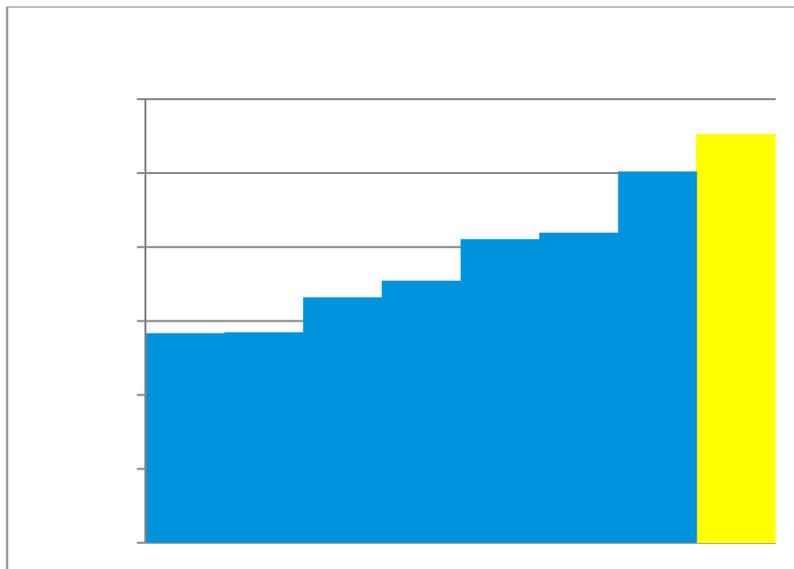
Travel includes all the emissions associated with running a car, using public transport and air travel.

Consumables include the emissions associated with producing goods ranging from shoes to shampoo.

Activities include the emissions associated with running a theatre or hosting a football match.

Other is the emissions associated with Government spend on areas such as education or health and is shared equally across the UK's population.

Your Community's Footprint



This chart shows your position (in yellow) when your street's footprints are lined up in order of size.

What next?

Reducing your footprint by 10% means reducing your footprint by **2.8 tonnes**.

Using your pledge card, please think about what actions you would be willing to do. Over the course of the Challenge our team of experts will provide further information to help you achieve your target.

We look forward to working with you and helping support your team in reducing its footprint by 10% in 2010.

Thank you

www.climatetalk.org.uk

info@climatetalk.org.uk

01904 432917

I pledge to do the following to help my Green Street Team achieve the target of a 10% reduction in our carbon footprint

My Pledge **10%** in 20**10**

Activities

- 1. Keep fit by walking, jogging and cycling in my local area
- 2. Quit smoking
- 3. Recycle all my waste wherever possible

Energy

- 1. Use less energy at home
- 2. Replace my lights and appliances with energy efficient ones (at end of useful life)
- 3. Switch to a green electricity tariff
- 4. Make my home well insulated
- 5. Replace boiler with a condensing boiler
- 6. Generate my own power from a renewable source

Food

- 1. Reduce the food I waste
- 2. Increase the proportion of organic food in my diet
- 3. Eat a low meat diet
- 4. Join a community allotment scheme
- 5. Buy locally sourced foods

Shopping

- 1. Buy good quality clothing and electrical goods that will last rather than need replacing
- 2. Share tools and equipment and pass on furniture and clothes locally
- 3. Keep my mobile phone rather than replacing it every year
- 4. Use ebay and York freecycle

Travel

- 1. Reduce driving short distances (less than 3 miles)
- 2. Walk to my local shops rather than drive to the supermarket
- 3. When replacing my car, to buy an A rated low emissions car
- 4. Travel by train more often (for half my trips) for medium to long distances (over 100 miles)
- 5. Reduce my flights in the UK
- 6. Take my holiday in the UK rather than abroad
- 7. Join a community car sharing club

Signed

SEI - Africa
Institute of Resource Assessment
University of Dar es Salaam
P.O. Box 35097, Dar es Salaam
Tanzania
Tel: +255-(0)766079061

SEI - Asia
15th Floor Withyakit Building
254 Chulalongkorn University
Chulalongkorn Soi 64
Phyathai Road Pathumwan
Bangkok 10330
Thailand
Tel: +(66) 22514415

SEI - Oxford
Suite 193
266 Banbury Road,
Oxford, OX2 7DL
UK
Tel: +44 1865 426316

SEI - Stockholm
Kräffriket 2B
SE -106 91 Stockholm
Sweden
Tel: +46 8 674 7070

SEI - Tallinn
Lai 34, Box 160
EE -10502, Tallinn
Estonia
Tel: +372 6 276 100

SEI - U.S.
11 Curtis Avenue
Somerville, MA 02144
USA
Tel: +1 617 627-3786

SEI - York
University of York
Heslington
York YO10 5DD
UK
Tel: +44 1904 43 2897

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