

Sustainable income standards: towards a greener minimum?

December 2011

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This research explores whether changes towards 'greener' forms of consumption are compatible with preserving a minimum acceptable standard of living.

Previous analysis of the Minimum Income Standard for the UK (MIS) has shown that there is scope to reduce household carbon emissions while maintaining basic living standards. However, meeting emissions targets will also require fundamental changes in consumption patterns, including changes in how we define the minimum.

The research, which focused on household energy, food and transport, used a combination of:

- consultation with experts and desk-based research to identify consumption changes that offered the greatest potential for reducing the environmental impact of the MIS; and
- focus groups with members of the public to explore the acceptability of these changes in terms of maintaining a socially acceptable minimum living standard.

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Background, aims and approach

Present environmental commitments, such as the Climate Change Act 2008, imply profound changes in the way that we live and consume. One way to think about such change is to consider how we define our minimum needs. The Minimum Income Standard (MIS) for the United Kingdom describes the composition of household budgets required for a minimum acceptable standard of living. Analysis by Druckman and Jackson (2010) estimated that if every household consumed at the MIS level, greenhouse gas (GHG) emissions in the UK would be cut by around 37 per cent – showing potential for reducing emissions but not enough to meet the long-term target of an 80 per cent reduction by 2050. Even taking account of technological developments that allow similar consumption levels with fewer emissions, evidence suggests that targets will not be met without fundamental changes by consumers.

This research set out to explore the extent to which changes to ‘greener’ forms of consumption may be seen by the public as compatible with preserving a minimum acceptable standard of living, using MIS as a baseline.

There were two stages to the project. The first stage sought to identify a set of options and scenarios that offered the greatest potential for reducing the environmental impact of the MIS. An average urban MIS household’s largest contributors to GHG emissions are household energy, food and transport. These three areas were therefore chosen to explore ‘green possibility’. The research was conducted by reviewing the literature, consulting key experts and making additional calculations from this evidence.

Stage 2 took these options to four groups of members of the public to explore the extent to which such changes were compatible with maintaining a socially acceptable minimum living standard. The groups were recruited to cover both urban and rural areas and to represent different household types, including parents, pensioners and younger adults (under 35) without children.

Reducing emissions from household energy consumption (Chapter 1)

Analysis at Stage 1 identified behaviours and practices that could reduce energy consumption and therefore emissions, such as if households:

- wear more clothes in the house;
- maintain separate temperature zones (for example, by turning off the heating in an unused room);
- have appliances that use less energy, and turn them off rather than leaving them on standby;
- have showers instead of baths; and
- wash clothes at 30 degrees Celsius.

Focus groups tended to respond favourably to the idea of making adjustments to save energy, particularly in relation to space heating, lighting and appliances. With rising energy prices, participants were very conscious of the need to economise on energy use. Areas where groups were less receptive to energy-saving adjustments were hot water and cooking. Groups favoured retaining the right to choose to pay less for less energy-efficient appliances and were opposed to being restricted to buying the most energy-efficient appliances.

The Stage 1 analysis of household energy consumption also found that emissions could be reduced if households with children lived in flats with communal gardens rather than in houses. The views of the two parent groups on this issue were very different – the rural parents group considered it to be acceptable, while the urban parents group strongly disagreed.

Reducing emissions from food (Chapter 2)

Specifying consumer practices that could reduce the carbon footprint of food was difficult because of a number of complex interacting factors. However, the Stage 1 analysis concluded that two main guidelines could be applied to the MIS diet to make it more sustainable:

- reducing meat consumption and especially the consumption of red meat from cows and sheep; and
- favouring UK field-grown fruit and vegetables that are in season.

There was little support among the focus-group participants for reducing meat consumption in the MIS diet. The overriding reason given was that choice should not be restricted. Other reasons included: the enjoyment of eating meat, the ability to follow British culture and traditions, giving support to rural meat-producing communities, and maintaining a healthy diet since red meat was viewed as a nutritional requirement. Resistance to reducing meat consumption was also influenced by the perception that it is already at a very modest level in the MIS diet.

Views about eating a more seasonal diet were mixed. There was consensus on the idea of only eating in-season UK strawberries, but discussions about only eating apples when they are in season were more complicated. There was a similar split about whether it was acceptable to eat salad vegetables only when they are in season. Overall, three of the groups agreed that it would be acceptable for the MIS diets to move towards being more seasonal, but not to become exclusively so.

Reducing emissions from travel (Chapter 3)

In order to inform discussions at Stage 2, a hierarchy of preferred travel modes for different lengths of journeys was drawn up. Issues to be explored with the focus groups included whether there are more cases where foot or cycle journeys would be viable, whether community transport could replace some taxi journeys in urban areas (where owning a car is not seen as essential) and how public transport could be kept a viable option in these areas. In the rural groups, the main issue was to consider the conditions under which car travel, which is presently seen as a necessity, could be replaced by other modes of transport.

Groups were more positive about the scope for more cycling than for more walking. The main barriers to more walking were weather and time. An issue raised by the rural parents group was that, beyond the outskirts of the town, country lanes without footpaths were not safe to walk along. With improved infrastructure, the groups thought there was scope to increase cycling, both for adults and children.

In terms of ensuring that urban MIS households could continue to meet their needs using buses rather than cars or taxis, cost and service timetables were key issues. Faster journey times and extended service times would encourage people to consider travelling by bus. For the urban parents, a school bus service that picked children up from a nearby bus stop and took them all the way to school would enable some parents to let their children travel to school by bus rather than by car. In rural villages, a regular daily bus service into town would help pensioners in villages be less reliant on having a car. Participants in the rural groups spoke positively about community transport schemes.

Cross-cutting influences on green acceptability (Chapter 4)

From the research it was possible to identify a number of factors that influenced the acceptability of greener consumption patterns, both positively and negatively.

Choice – greener consumption options were rejected where they were seen as unreasonably taking away people’s choice. People have got used to having a high degree of choice and do not want to be told what to consume. However, this does not prevent a degree of restriction of choice from being introduced where it seems reasonable.

A recurring theme in the research was that people need better **education** and **knowledge** about the environmental consequences of various forms of consumption.

Cost was a key driver in making greener options more acceptable. Where creating more emissions is reflected in substantially higher cost to the consumer, this makes it obvious to individuals that reducing emissions is desirable.

Cultural and social norms were discussed as both barriers and drivers of green acceptability. Some forms of consumption seemed to be closely associated with traditional aspects of British culture – for example, food. In contrast, there was a strong feeling that, under the right conditions, cycling as a form of transport could become far more part of normal British behaviour than it has been in the recent past. This suggests that cultural norms affecting consumption can be strong but have the potential to become a dynamic of change.

The themes of **enjoyment**, **pleasure** and **comfort** arose across a number of areas. Participants were reluctant to accept environmental considerations that clearly reduced quality of life by denying people a pleasure that they take for granted. This suggests that green acceptability needs to demonstrate that similar benefits can be gained in different ways.

Health was a main barrier to accepting more sustainable food options. This finding suggests that the government and other agencies need to be careful to construct clear and integrated messages about consumption, so that one campaign does not seem to contradict another.

Safety was also raised as an issue, in particular as a barrier to cycling but also as a reason for not leaving appliances and gadgets on standby. In some cases it will be necessary to reduce these barriers by making more sustainable practices safer; in others it may be possible to inform people about practices that are already relatively safe.

Technology was a driver of green acceptability. The discussions showed that there are ways of engaging consumers themselves as partners in the use of technology and energy-saving behaviour.

Time and **convenience** were key drivers of acceptability, especially in relation to moving towards greener modes of travel. The importance of these factors points to the need for those who promote greener solutions to make them as compatible as possible with the busy lives that people lead today.

Policy implications and conclusions (Chapter 5)

While the focus-group participants showed a real openness to the idea of greener behaviour, they were not always ready to accept changes in lifestyle that require adaptations such as cultural shifts, reduced choice or greater expenditure of time on certain activities. At the same time, the research found that at

least as serious an obstacle is the difficulty of identifying green measures that have predictable and substantial benefits for the environment and can be presented as clear-cut options to members of the public. Thus, formulating 'green possibilities' proved as problematic as identifying 'green acceptability'. This not only makes it difficult to research a 'greener minimum' but also illustrates how difficult it can be to present and promote greener lifestyles to the public.

The most promising area where a minimum standard of living could be maintained with substantially fewer emissions was the consumption of heat and power in the home. Two aspects contributed to this 'green acceptability': first, messages about the effects of actions were well understood; second, the financial benefit to individuals was a strong motivating factor. We estimated that an average household would save around £250 a year by adopting the measures suggested.

Introduction

Background

Have people in the United Kingdom come to expect living standards that are incompatible with global environmental objectives? There is no doubt that present environmental commitments, such as the Climate Change Act 2008,¹ imply profound changes in the way that we live and consume. To achieve such changes, must we reduce living standards to below what we currently find acceptable? Or could we perhaps achieve comparable living standards more sustainably, through improved technologies and different patterns of consumption?

The Minimum Income Standard for the United Kingdom (MIS) offers a useful prism through which to explore these issues. Based on ongoing research, it specifies which goods and services households need to be able to buy in order to reach a minimum acceptable standard of living, according to members of the public (Bradshaw, *et al.*, 2008; Hirsch, 2011). It thus describes a contemporary social consensus about the things that people expect to be able to consume, as a minimum.

An initial question about the sustainability of this baseline socially acceptable level of household consumption was whether it would be possible to meet environmental objectives if everyone in the UK was consuming this minimum amount. Druckman and Jackson (2010) considered this issue by estimating the carbon footprint of the MIS baskets of goods and services. They estimated that if every household consumed at the MIS level, carbon emissions in the UK would be cut by around 37 per cent – showing some potential for reducing emissions while achieving minimum living standards. However, the potential for such reduction is greatly reduced by the fact that no society has an equal distribution of consumption, so there will always be people consuming above the minimum with a greater carbon footprint. Moreover, the full 37 per cent reduction is less than half the long-term target of an 80 per cent reduction by 2050.

Even taking account of technological developments that allow similar consumption levels with fewer emissions, evidence suggests that targets will not be met without fundamental changes by consumers. Jackson (2009) argues that the unsustainability of our present economic growth model means that we must rethink radically how we define prosperity rather than that we need to reduce our standard of living. This can mean both consuming in greener ways and rethinking what we value – for example, by developing lifestyles that make us happy because we fulfil community and social relationships rather than because we maximise material consumption.

Aims

This report presents the results of a research project that set out to explore the extent to which changes towards 'greener' forms of consumption may be seen by the public as compatible with preserving a minimum acceptable standard of living. The interpretation of 'green' consumption focused on the emission of greenhouse gases (GHGs). While this is by no means the only environmentally damaging impact of household consumption, it offered a relatively straightforward measure of sustainability against which to explore the issue of greener living.

- The project first sought to identify a set of options and scenarios that offered the greatest potential for reducing the environmental impact of specified minimum levels of consumption, taking MIS baskets as a starting point.

- The research took these options to groups of members of the public to explore the extent to which such changes are compatible with maintaining a socially acceptable minimum living standard, and whether the public would consider them to be reasonable responses to environmental considerations.

The research was an experimental exercise. Its aim was to find examples of changes in a minimum basket of goods and services that could bring appreciable environmental benefits, and to listen to the ways in which members of the public responded to such changes. The way that groups discussed the acceptability of greener consumption gives clues about the future interaction between sustainable and socially acceptable ways of living. For organisations wanting to develop greener products or encourage greener behaviours, the research helps to identify the factors that may cause the public to accept or resist such change. Moreover, the attitudes expressed in this research give a snapshot of ‘green acceptability’ at a point in time, which could potentially be compared with similar attitudes in future research in order to monitor changes in social norms.

For MIS itself, the research explores the readiness or otherwise of the public to take environmental factors into account when defining a minimum, which could influence the level of this standard in the future. The groups were not tasked with making firm changes to published MIS budgets, which will not be altered as a result of this exercise.

An important issue in relation to defining a ‘greener minimum’ is that much of the environmental impact of UK household consumption results from people consuming above what is defined as a minimum living standard. Why, then, the interest in how a minimum is defined? It should be noted that the research does not simply address the sustainable behaviour of low-income households that are just able to reach a minimum standard. Instead, it focuses on a minimum required baseline of consumption for society as a whole. The fact is that even if everyone were just at this baseline, as defined by the public in the MIS, we would still be consuming above our long-term target level of GHGs. This makes greener consumption an issue for everyone in society by challenging us to find a more sustainable definition of what comprises an essential. Moreover, by exploring attitudes to what is acceptable as a minimum, we may understand more widely the kinds of consumption to which people are most attached and the ways that they may be willing to adapt.

Methodology: a two-stage process

The MIS is grounded in decisions made by members of the public but also draws on expert knowledge to ensure that these decisions are well informed. This research similarly used public consultation combined with expert knowledge and was conducted in two stages.

Stage 1: green possibility

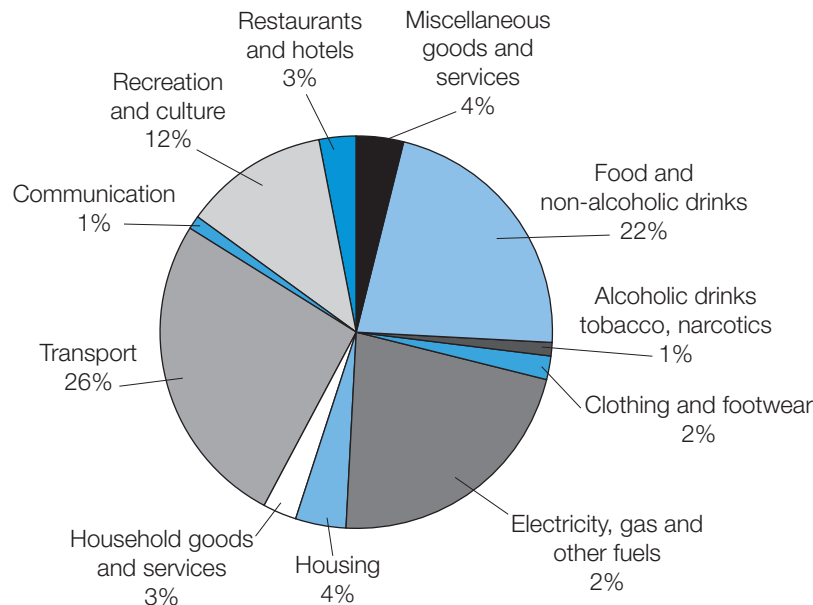
Stage 1 of the research, called ‘green possibility’, addressed the first research aim of identifying a set of options and scenarios that offered the greatest potential for reducing the environmental impact of the MIS.

Previous analysis to calculate the carbon footprint of an average urban MIS household (Druckman and Jackson, 2010) showed that the largest contributors to GHG emissions were household energy (around 22 per cent), food (around 22 per cent) and transport (around 25 per cent). Thus each contributes about a quarter to the overall footprint (see Figure 1). These three areas were therefore chosen as the areas in which to explore ‘green possibility’.

This part of the research was led by RESOLVE (ESRC Research Group on Lifestyles Values and Environment) at the University of Surrey, supported by desk research at the Centre for Research in Social Policy (CRSP) at Loughborough University. Stage 1 involved:

Figure 1: Carbon footprint of an average urban MIS household

Total size of footprint estimated at 17 tonnes of CO₂ for the average household



- a review of the relevant literature;
- consultation with key experts as individuals and in groups at a number of seminars and meetings; and
- additional calculations based on the evidence and discussions with experts.

A full account of the findings of the 'green possibility' phase of the research, and of the evidence used to produce them, can be found in Druckman, *et al.* (2011a).

The original intention was to identify both immediate possibilities for changing consumer behaviour and longer-term scenarios for changes in living patterns that could reduce carbon emissions. However, in the research it proved very difficult to define future scenarios that both brought clear-cut gains and could be clearly and succinctly presented to groups for consideration. The options for change presented to groups at Stage 2 therefore focused on specific switches in consumption compared with present patterns.

Stage 2: green acceptability

Stage 2 of the research, called 'green acceptability', addressed the second research aim of exploring the public acceptability of the changes identified at Stage 1 and the extent to which these changes were compatible with maintaining a socially acceptable minimum living standard.

Four focus groups were held with members of the public. The groups were recruited to represent a range of geographical areas and to cover different household types:

- parents in a rural town in North Yorkshire;
- parents in an urban town in Leicestershire;

- pensioners in a rural town in Lincolnshire; and
- younger adults (under 35) without children in an urban town in Leicestershire.

These groups were asked to reflect on the extent to which particular changes would be compatible with maintaining a minimum acceptable standard of living. Participants were asked to think about whether a change would be acceptable for a hypothetical 'case-study' family, rather than for themselves. In this sense, participants drew on their own experiences and preferences, but were also asked to think more widely about the values of society and about social norms.

Most participants had been involved in MIS research in the past and so understood what was meant by a minimum living standard. However, it is important to note that they did not know they would be asked about environmental considerations. This means that the participants were not a self-selected group of people interested in environmental and sustainability issues.

Report outline

The research findings are presented in Chapters 1 to 3, with a separate chapter dedicated to each of the three different areas of the MIS household budget. Chapter 1 covers household energy, Chapter 2 covers food and Chapter 3 covers transport and travel. Within each chapter the findings from Stages 1 and 2 of the research are reported separately but follow on from each other to provide a coherent and integrated story. Chapter 4 provides an overview of the common factors that influence the acceptability of greener consumption patterns, alongside their policy implications. Overall conclusions from the research are drawn in Chapter 5.

1 Reducing emissions from household energy consumption

Saving energy within the home

Stage 1: green possibility

The most direct way in which households produce carbon emissions is through energy consumed in homes. As shown in Figure 2, over half of an average UK household's direct energy use keeps the home warm, and over half of the remainder heats water. The MIS assumes a well-insulated home with an efficient boiler, and household energy emissions will largely depend on whether these assumptions are true. However, these particular aspects are not relevant to whether a greener minimum is publicly 'acceptable' since living in a better-insulated home does not imply a change to one's living standard. On the other hand, the size of home, heating behaviours, the use of appliances and cooking practices are all features of energy use that can potentially affect quality of life.

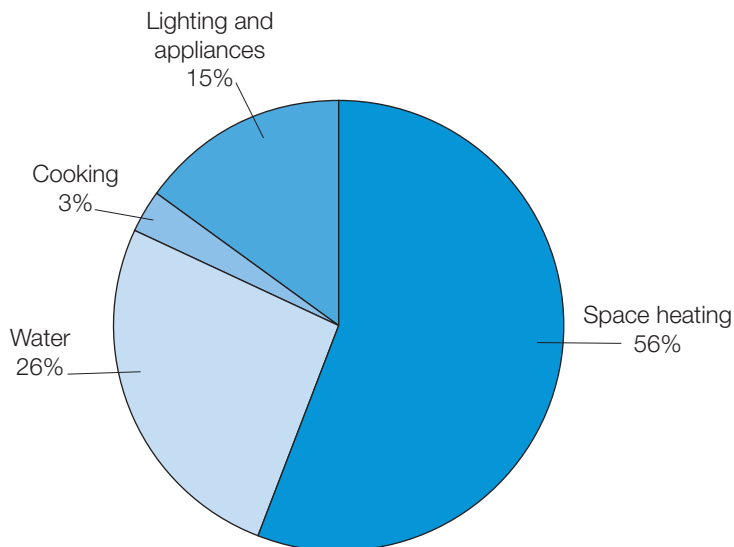
Electricity use for lighting and appliances is shown in more detail in Figure 3. Over a third of electricity use by an average UK household is for powering 'brown' appliances such as televisions and computers, with a quarter being used for lights, and around a fifth each for cold and wet appliances.

Space heating

The energy required to heat a home can vary significantly according to its type of construction and the choices made by the occupants (Peacock, *et al.*, 2010). The significant influence of householder behaviour on system performance was illustrated by a study of twelve identical houses with identical heating systems in which it was found that the energy consumption of the highest-consuming household was almost twice that of the lowest-consuming household (Carbon Trust, 2007, Table 13). The variations can be due either to householder actions (such as leaving windows open or leaving a large number of appliances running) or to system control settings (such as the setting of the thermostat).

Average room temperatures in the UK are now around 19 degrees Celsius (Goodall, 2007), whereas the average winter-time temperature in British houses in 1970 was 13 degrees Celsius (MacKay, 2009). The standard MIS assumes internal temperatures of 20–21 degrees Celsius, based on World Health Organization guidelines. The appropriate internal temperature for any specific household depends on the characteristics of its occupants and on factors such as their activity levels. Also, people adapt to different temperatures through coping measures such as wearing extra clothes or drinking hot drinks. Rather than maintaining a dwelling at a constant temperature throughout, it is more energy efficient for temperatures to vary, with living rooms being warmest, bedrooms cooler and unoccupied rooms coolest (Hong, *et al.*, 2006; Summerfield, *et al.*, 2007). Precise control of internal temperatures assumes availability of a room thermostat supplemented by thermostatic radiator valves (TRVs), and an adequate understanding of how to use them.

Figure 2: Direct energy use by an average UK household (2007)



Source: DECC (2009)

Measures that would reduce emissions and could be adopted as a matter of routine by MIS households, if the public think this is reasonable, include:

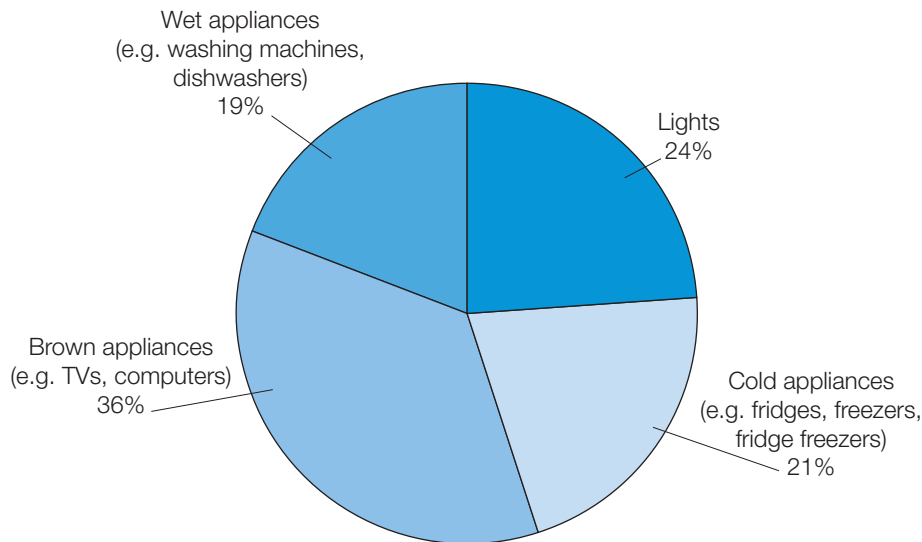
- creating different temperature zones by shutting doors: living room warmest, other occupied areas quite warm; unoccupied rooms not heated;
- using a timer to control the heating and provide heat when it is required. This is more efficient than keeping the temperature constant 24 hours a day;
- wearing warm clothing such as a jersey indoors during the winter;
- using a rug to keep warm while sitting in the living room (for example, while watching TV);
- reducing the heating if a room gets too hot, rather than opening windows;
- not using secondary space heaters such as electric heaters. In cold weather an adequately insulated dwelling with efficient central heating should render secondary space heaters unnecessary and MIS does not include allowance for secondary heaters (Oldfield, 2008);
- closing curtains or shutters at dusk.

Hot water

Hot water consumption, like space heating, will be determined to a large degree by fixed structural conditions such as the efficiency of the boiler. However, simple behavioural changes have a great deal of potential. For example, spending less time in the shower and doing the washing-up in a bowl rather than under a running tap can have more impact than installing water-saving technology. Indeed, without addressing behaviour, technology alone may not deliver the expected savings (Clarke, *et al.*, 2009).

In some cases there is a trade-off between water conservation and energy reduction. For example, dishwashers use less water than washing up by hand but result in higher carbon-dioxide emissions due

Figure 3: Electricity use by an average UK household (2007)



Source: DECC (2009)

to energy use. Electric showers generally use less water than baths or other types of shower but may have higher carbon emissions because water is heated by electricity (Clarke, *et al.*, 2009). The Energy Saving Trust advocates use of showers instead of baths.² The suggested actions for the focus groups to consider were:

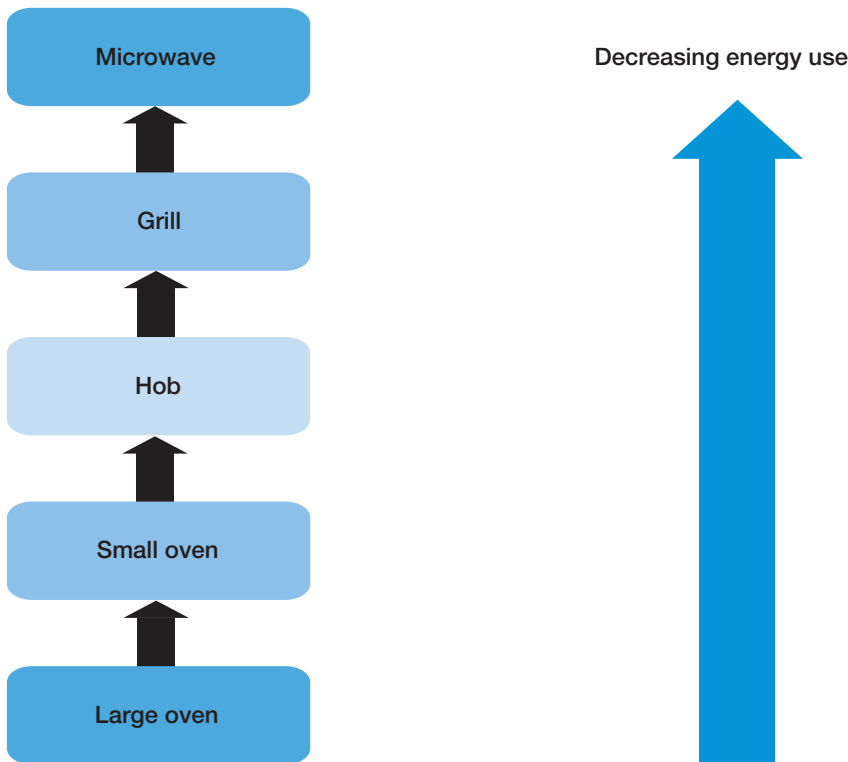
- taking a quick shower (three minutes) instead of a bath;
- washing clothes at 30 degrees Celsius;
- washing up in a bowl rather than under a running tap.

Lights, appliances and gadgets

Although appliances and lights consume only around 15 per cent of home energy (see Figure 2), this is an area where there is considerable scope for savings. This applies both to the appliances that households own and the way in which they are used. The following are ways in which emissions could be minimised:

- ensuring that all appliances have at least an 'A' rating. The initial purchase price of the appliance may be higher but the running cost should make up for this over time;
- turning off appliances and gadgets when not in use, and not leaving them on standby;
- disposing of old appliances in a responsible manner. Increasingly, households that buy more energy-efficient TVs or fridges use the old energy-inefficient models as 'spares' rather than taking them out of use. The items therefore continue to consume energy (Garnett, 2007);
- favouring a small-screen LCD when purchasing a new TV. (This condition is fulfilled in MIS at present.) Energy consumption increases with screen size and plasma TVs have higher energy consumption than LCD TVs;³
- having only one TV per household (which is an assumption in the standard MIS at present);

Figure 4: An energy-saving cooking hierarchy



Source: based on information from MTP (2009)

- installing energy-saving light bulbs;
- switching off lights in unoccupied rooms;
- drying clothes naturally rather than using a tumble drier. (This is already an assumption in the standard MIS.)

Cooking

While cooking consumes only around three per cent of home energy, more efficient cooking methods would achieve reductions in energy use. The chart in Figure 4 shows a hierarchy that can be used for guidance. It is estimated that moving from use of electric ovens and hobs to microwaves could save around 10 per cent of energy and its associated costs (MTP, 2009).⁴

Summary of short-term household energy 'green possibilities'

As outlined above, all homes have the scope to limit their energy use by making adjustments to their daily living. Overall, it was estimated that the combination of measures shown in Table 1 could reduce household energy emissions by about a quarter compared with households where none of these measures was adopted.

A household that adopted all these measures would not necessarily have a fuel bill 25 per cent lower than at present, since the marginal cost of fuel to householders tends to be less than its average cost. Nor would it necessarily save the specified amount compared with the MIS estimates, which do not

Table 1: Estimated reduction in GHG emissions through selected measures

Action	% reduction in household energy GHGs
Put on a thicker sweater in winter ⁱ	7%
Install energy-efficient light bulbs	6%
Shower instead of bath	5%
Use a small LCD TV instead of plasma	3%
Turn appliances off rather than leaving them on standby	3%
Reduce heating by one hour a day ^{i, ii}	2%
Turn heating off in one unused room ^{i, ii}	2%
Wash clothes at 30 °C	1%
Increase use of microwave in place of other forms of cooking	<1%
Only boil required quantity of water in kettle	<1%
Total	~25%

Notes:

Estimates (except for i) are calculations by the authors, based on information from a variety of publications.

For more details see Appendix I

ⁱ Allinson and Lomas (2011)

ⁱⁱ These measures are not included in the total as they cannot be assumed to be mutually exclusive with others

specify behaviours.⁵ However, as shown, the environmental benefits of adopting the measures would be considerable compared with not doing so.⁶ Moreover, Table 1 is useful in showing that some adaptive behaviours, notably wearing warmer clothes in the home, have far more impact than others, such as changing cooking practices.

It is not easy to calculate accurately the average amount of difference it would make to household bills and to the environment if these measures were adopted. Cost savings are influenced by the precise tariff structure of the plan sold to the household. However, for a broad illustration of the impact, we can consider what would happen if the typical gas and electricity emissions of a UK household were cut by a quarter. This would push consumption down from 16,500 to 12,375 kWh of gas and from 3,300 to 2,475 kWh of electricity a year.⁷ Based on a standard dual-fuel tariff paid on a monthly direct debit, this would save the household about £250 a year at October 2011 energy prices.⁸ This represents a substantial saving to households, as well as a significant reduction in emissions.

Stage 2: green acceptability

The focus groups were asked whether these practices were compatible with maintaining a minimum acceptable standard of living. Overall, participants tended to respond favourably to the idea of making adjustments to save energy, particularly in relation to space heating, lighting and appliances and gadgets. In the light of rising energy prices, participants were very conscious of the need to economise on fuel and not to waste energy. In this context, the idea of taking measures to use less energy seemed to make sense, other than where there was a good reason not to. Areas where groups were less receptive to making adjustments to save energy use were hot water and cooking.

These positive attitudes to energy saving were particularly clear cut in the case of heating.

- Practices such as turning heating down rather than opening a window, and using timers to control heating, were seen as common sense.

- Keeping different areas of the home at different temperatures according to need was seen as acceptable other than by some parents who thought that, with small children at home, it would be hard to separate temperature zones.
- Turning radiators off in unused rooms was seen as acceptable by most, although practically it required households to have radiators with control valves. Some concerns were voiced about encouraging damp and mould in unused rooms.⁹
- Wearing a jumper rather than a T-shirt indoors in winter was seen as acceptable, but using a rug or blanket to keep warm was not. Even though some people found it cosy to sit under a blanket when watching television, having to do so to keep warm was seen as unacceptable.

Because it's not just watching television, you could be working at home using your computer for example, which is a very static occupation, so you've got to be able to keep warm to do that. But personally I think jumpers are perfectly reasonable.

Rural parent

In other cases of home energy use for hot water, lighting, appliances and cooking, a general willingness to reduce usage sometimes came up against cultural norms or practical considerations.

- While groups were favourable in general to the use of showers rather than baths, they did not feel it was acceptable to cut out baths altogether. Although baths were seen as an occasional luxury, associated with relaxation and pleasure, it was felt that people should be able to choose to have a bath if they wanted to. Parents also emphasised that small children needed to be bathed. The minimum acceptable length of a shower was seen by some participants as too personal to generalise, but the prevailing view was that it should be between five and ten minutes.
- Groups did not agree that washing all clothes at 30 degrees Celsius was acceptable. They thought that dirty clothes had to be washed at a higher temperature. Success at washing at 30 degrees also depended on the detergent used and some worked better than others – for example, plastic capsules of liquid detergent did not dissolve at 30 degrees.
- Groups agreed that lights and appliances should be turned off when not in use, both for energy use (that is, cost) and safety reasons. For some types of gadget there were practical concerns about switching them off. For example, settings could be lost and it was perceived that cordless and mobile phones needed to be left on charge overnight.
- Three groups agreed that a 21-inch LCD television (the kind identified in MIS research as adequate in 2008) was still sufficient today. However, the rural parents' group disagreed, arguing that these days a 32-inch TV was the minimum that people expected to have.
- In general, groups were unwilling to consider changing cooking behaviour in favour of using microwaves. Cooking was an emotive issue, associated with quality of life in terms of diet. Microwave cooking was viewed negatively, associated with ready meals which were considered to be less healthy and went against the current trend of encouraging people to cook healthy meals from scratch. They were also said to produce inferior-tasting food. Using a microwave was thought to restrict what people could eat, which was not acceptable. There was less awareness of the energy use associated with different cooking methods and, as some participants noticed (when shown Figure 2), cooking

only accounts for around three per cent of direct household energy use. Thus, reducing energy costs was not a driver of behaviour. Doubts were also expressed as to whether microwave cooking was really a net benefit.

... but if you cut your oven you spend twice as much on these pre-packed meals ... so although it might appear to be greener to cut the oven it's not because you've got all your packaging.

Urban parent

Note that these responses to the energy-saving measures in Table 1 give full or qualified approval to all but the measures with the least potential for saving. The only measures rejected outright – washing clothes at 30 degrees and cooking in the microwave – are each estimated to account for one per cent or less of home emissions. Thus, while it is impossible to use these mixed responses to make a precise calculation of the proportion of the energy-saving measures accepted, it is clear that most of the 25 per cent reduction in energy saving is compatible with an acceptable living standard.

A final issue considered in relation to home energy use was whether, in the long term, it would be acceptable if only the most energy-efficient A+++ rated appliances were available. These were expected to be more expensive than less efficient products. Such 'choice editing' was generally opposed by groups in favour of retaining the right to choose to pay less for less energy-efficient items.

It's affordability, it depends what you might be depriving people of the opportunity to buy, or ... make people live without if they couldn't afford that purchase.

Rural parent

Groups spontaneously talked about being proactive in saving energy and talked very positively about different gadgets that can help households to reduce their energy use, such as home energy monitors and plugs that enable several pieces of electrical equipment to be turned off from a single switch. Participants thought that people would change their behaviour if they could see the amount of energy they were using and if it was made easier to turn off electrical gadgets.

Type of home

Stage 1: green possibility

The review of household energy consumption also found that emissions could be reduced if households lived in flats rather than houses. The category of home that a household occupies is a fundamental aspect of how the MIS is specified. In MIS, families with children are assumed to live in terraced houses and households without children are assumed to live in flats. A two-bedroom flat is estimated to consume 58 per cent fewer emissions than a two-bedroom end-of-terrace house.¹⁰ This raises the important issue of whether living in a flat with children would be socially acceptable as a way of reducing carbon emissions.

Stage 2: green acceptability

The parent groups were therefore asked whether it would be acceptable for an MIS case-study family with two children, who live in a three-bedroom house with a small garden, to live instead in a flat with a communal garden. The views of the two groups were very different. The rural parents group thought that it would be acceptable and that it would not compromise living standards, provided there was sufficient living space. It was also felt that a garden was not a necessity if there were lots of local open spaces

available. The urban parents group, however, strongly disagreed. These parents associated flat dwelling with social housing tenants and anti-social behaviour and felt that a private garden was a necessity. Earlier MIS research has shown that families in urban areas have very mixed views about this issue (Hirsch and Smith, 2010, pp. 18–19), but agree that it hinges on the quality of outdoor space. All groups of parents in this earlier research agreed that, if outdoor space is adequate, a house is not a necessity.

2 Reducing emissions from food

The Stage 1 analysis found that changing the content of the MIS diet is one of the most important contributions to reducing GHG emissions caused by food because there are large variations in carbon emissions associated with different food categories. It was also found that other factors, such as the way food is grown, packaged and transported, can also make a significant difference in some cases. Stage 1 therefore concluded that two main guidelines could be applied to a minimum diet to make it more sustainable:

- reducing meat consumption, and especially the consumption of red meat from cows and sheep; and
- favouring UK¹¹ field-grown fruit and vegetables that are in season.

Further research at Stage 1 found that other possible ways of reducing the environmental impacts of food were less straightforward. This is because the impact of any one specified action is contingent on so many other complex, interacting factors. For example, buying organic food can have environmental benefits in terms of preserving biodiversity but can potentially produce negative impacts resulting from less efficient use of arable land and therefore the clearing of forests. Buying fresh produce from the UK can reduce the damaging impacts of transporting it but, if consumed out of season, these can be offset by the energy cost of chilled storage. These considerations are discussed in detail in Druckman, *et al.* (2011a).

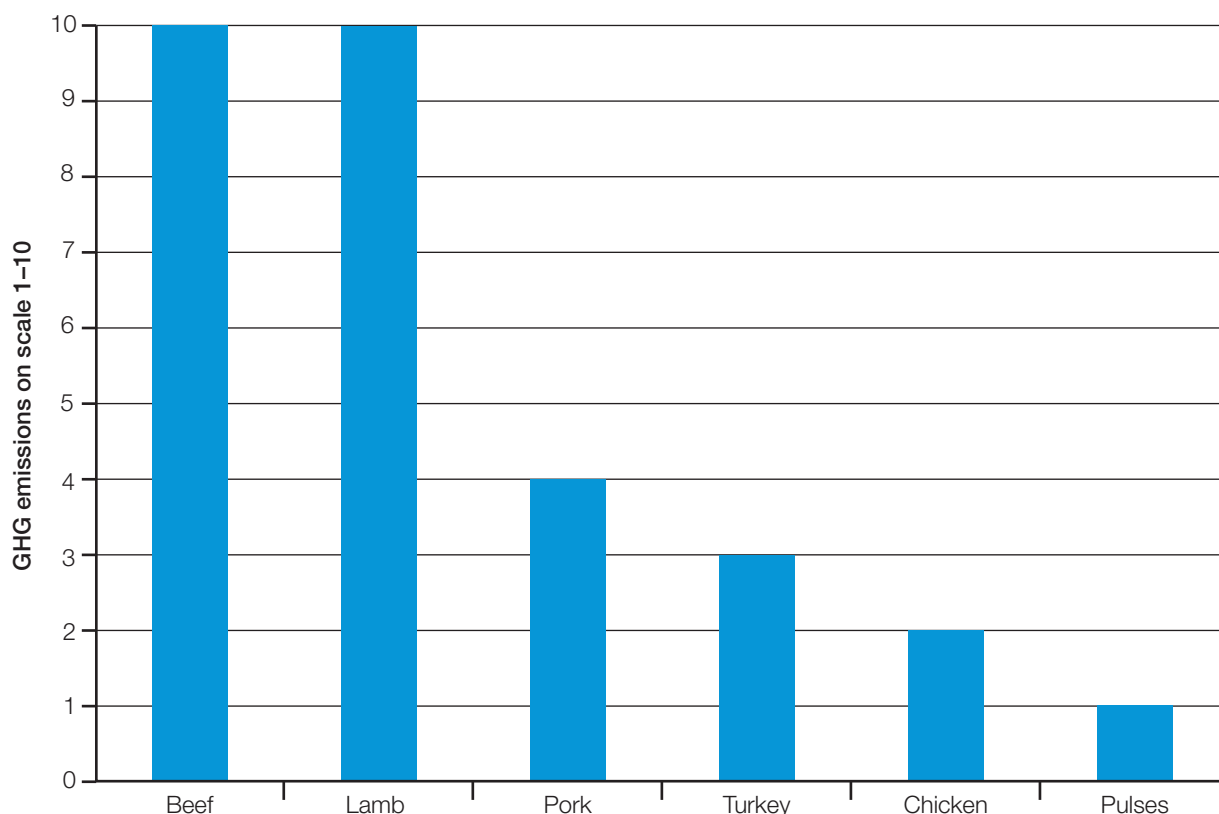
Reducing meat consumption

Stage 1: green possibility

The value of reducing consumption of beef and lamb is based on Audsley, *et al.*'s (2010a) research. Figure 5 illustrates the GHG emissions on a scale of one to ten for various different types of protein: it indicates that GHG emissions from beef and lamb are at least three times as high per unit weight as other types of protein.¹² The dietary change suggested was therefore to reduce meat consumption, in particular meat from ruminant animals such as cows and sheep. Any dietary change away from meat consumption will need to be accompanied by an increase in the intake of cereals and pulses in compensation. This would introduce significant changes in land use (both in the UK and potentially overseas) that would need careful management. Audsley, *et al.* (2010b) show that without such management there is the potential for the benefits of dietary switches to be largely cancelled out by other environmental costs associated mainly with land use. This suggests that dietary switches need to be co-ordinated with other aspects of food production and distribution, and hence these aspects (explored later in this chapter) need to be seen as complementary to changes in diet itself.

The discussions about changing diets to a 'greener' version of the MIS were therefore based on the acceptability of a diet of the type outlined as 'Consumption Scenario 1' in Audsley, *et al.* (2010b). However, the dietary choices made by the original MIS groups (which were moderated by a nutritionist) were also taken into account. The Audsley diet recommends a 50 per cent reduction in consumption of livestock products (meat, eggs and dairy) compared with current UK diets, balanced by increases in

Figure 5: GHG emissions of protein foods on a scale 1–10



Source: Authors' calculations based on Audsley, *et al.* (2010a)

plant-based food – milk and egg consumption reduces to 60 per cent, and meat reduces to 36 per cent of current UK consumption.

The MIS plate is very close to the Audsley recommendations with regards to the proportion made up by high-starch foods and fruit and vegetables. It also matches them in that the livestock component (meat, eggs and dairy) is half that of the current UK diet (16 per cent compared with 33 per cent). However, the beef component was only 25 per cent lower than the UK diet, whereas poultry and egg consumption were 81 per cent and 74 per cent lower respectively. As a consequence, the emissions associated with the current MIS diet are lower than the UK diet but not as low as the Audsley scenario. We suggest bringing the MIS menus in line with Audsley through a further 50 per cent cut in the beef element (there were no lamb-based meals). This could be offset by a modest increase (of about 14 per cent) in 'other animal protein' foods. As the fish element of the current MIS diet is lower than recommended by Audsley, we would include this in the 'other animal protein' category. Compared with current MIS diets, this greener diet has around five per cent lower GHG emissions and is around two per cent cheaper.

From the various ways of presenting this choice to the groups, a 'traffic light' system was developed. Table 2 shows examples of 'good', 'medium' and 'bad' sources of protein in the MIS diets.

Stage 2: green acceptability

There was little support for reducing meat consumption in the MIS diet. Only one group, urban parents, agreed to reduce the number of red-meat meals in the MIS menus and increase the number of vegetable- and pulse-based meals (lunches and dinners) from once a week to four or five times a week. In each of the two rural groups, there was just one participant willing to reduce the amount of red meat consumed. Across all the groups, there was no support for completely excluding meat of any type from the MIS diets.

Table 2: Examples of contents of MIS meals shown to groups

	Beef & lamb	Other meat & animal protein	Pulses or no protein
Light meals	Cornish pasty	Tuna salad Chicken salad	Vegetable-based soup, e.g. tomato, leek & potato, pumpkin
		Sandwiches, e.g. ham, cheese, egg, tuna, turkey	Hummus sandwich
		Jacket potatoes with beans & cheese or tuna	Jacket potatoes with beans or hummus
		Pasta, tomato sauce & cheese	Pasta & tomato sauce
Main meals	Spaghetti Bolognese Chilli Lasagne Steak Roast beef or lamb	Pork chop Chicken breast Roast chicken Chicken casserole Chicken pasta	Quorn curry Quorn chilli
		Fried eggs, chips & beans Bacon, sausage & egg Hawaiian pizza Stir-fry chicken	Vegetable & bean chilli ⁱ Vegetable stir fry ⁱ Bean burger, chips & beans ⁱ
		Fish pie Cod in breadcrumbs	
Children's meals			Spaghetti hoops and beans

Note:

i Are not part of the MIS menus, but were included as additional vegetarian examples

The overriding reason given for not excluding meat from the MIS diets was choice.

I'm sure there's plenty of vegetarians that are having a decent standard of living, but it's a choice.
Urban young adult

Participants did not think there should be unlimited choice – for example, to have a roast or steak several times a week. However, being able to have red meat three times in various forms, including mince, fitted well with their conception of a minimum acceptable standard.

Participants also mentioned the enjoyment of eating food and the ability to follow culture and traditions as part of an acceptable lifestyle. The culture of the British diet was described as being largely meat based, including pies, steaks and roast dinners, and it was normal to have a weekly Sunday roast.

... if you talk about British food then you've got something like Shepherd's pie ... pies in general, steaks and roast meals.
Urban young adult

The rural pensioner group also felt that diets had already changed significantly from meals that were based on 'meat and two veg' to meals such as vegetable pastas and curries, and so were not willing to reduce the meat content further.

I think over the years ... certainly our diets have changed. I was brought up and it was meat and two veg and that was it, whereas now we have a veg curry, we have a vegetable lasagne.

Rural pensioner

A further reason not to restrict meat consumption was the need to sustain rural meat-producing communities (farmers and butchers), which was mentioned in both of the rural groups. Health was also cited: some saw eating red meat as a nutritional requirement. However, the urban parents group took the opposite view, believing that it would be more healthy to reduce meat consumption, and this group was the only one that believed meat consumption could be less than in MIS diets.

Participants also talked about a lack of knowledge of the carbon emissions associated with red meat and how educating people might change their decisions about what they ate.

Sustainable purchasing of fresh produce

Stage 1: green possibility

The fruit and vegetables that create the lowest GHGs are likely to be seasonal, field-grown UK produce that are cultivated without additional heating or protection and that are not fragile or easily spoilt. For imports, seasonal, field-grown produce that requires only a short sea or road journey will also be fairly low in GHG intensity (Garnett, 2008). It is particularly important to avoid foods that have been air freighted (Jungbluth, *et al.*, 2000).

The way in which food is stored and packaged influences its overall environmental impact. For example, the environmental benefit of reducing the packaging may be offset by increased wastage if it compromises shelf life. It is therefore important that appropriate storage and packaging is used to reduce losses.

- Fruit and vegetables tend to be refrigerated. Those transported long distances or stored for long periods tend to have high GHG emissions associated with refrigeration (Garnett, 2008).
- The highest supply-chain losses occur for foods such as salads, which are delicate and have a short shelf life. Pre-prepared produce (such as trimmed vegetables or mixed salad) are especially vulnerable to damage and require more refrigeration (Garnett, 2008).

Several factors interact to affect sustainability: how a product is farmed, stored and transported influence its environmental impact. This makes it difficult to extract a single dimension of sustainability as a criterion for 'green possibility': for example, simply using 'food miles' as a criterion would miss the fact that food can be grown locally but stored in energy-intensive ways to be consumed out of season.

One way to present this would be to give ratings on a scale of one to ten to indicate negative impacts of particular purchases, with greener products having lower values. For example, tomatoes would have a low rating while in season in the UK but a higher rating out of season when they may be grown in a hothouse that is heated by electricity. The scale itself was not in the event considered suitable for presentation to members of the public at Stage 2. However, the concept of products being greener at some times of the year than others was presented effectively. The desirability of eating fruit and vegetables at times when they are in season in the UK or in nearby countries was at the heart of the possibilities for more sustainable consumption presented to the groups.

Stage 2: green acceptability

The concept of eating seasonal fruit and vegetables was explored for strawberries, apples and salads. Views about eating a more seasonal diet were mixed.

There was consensus on the idea of only eating in-season UK strawberries – partly because they tasted nicer and also because eating strawberries out of season was expensive and considered a luxury.

We accept that we're only going have strawberries for four weeks of the year. It's accepted.

Rural pensioner

Discussions about eating apples only when they are in season (in the UK or in other nearby countries), or until they can be stored without artificial refrigeration, were more complicated. In contrast to strawberries, apples were seen as an everyday fruit that is affordable all year round. Some thought it would be acceptable to move towards buying cheaper seasonal alternatives if apples were priced higher out of season. Others rejected this view, considering that round-the-year apples were an affordable way of eating healthily and that choice was important.

There was a similar split over whether it was acceptable to eat salad vegetables only when they are in season. Some participants agreed on the basis that salad items could be replaced with other raw vegetables and that preferences in winter change to include more soups and hot food. Those who disagreed felt that salad vegetables should be available to people all year and that choice should not be restricted if they were to be encouraged to eat a varied healthy diet.

Overall, three of the groups agreed that it would be acceptable for the MIS diets to move towards being more seasonal, but not to become exclusively so. The exception was the urban young adult group where some participants were willing to move towards eating more seasonally, but other participants strongly disagreed and felt that it was unfair to take choice away from people.

Could we accept less food choice in the long term?

The Stage 2 groups were asked more generally how they would feel if food choices were more limited. Overall, the groups agreed that there was too much choice offered in supermarkets and they did not see the need for so many different varieties of the same item, such as ten kinds of orange and satsuma. Pensioners especially recalled when far less choice was available in local shops. However, increased choice was viewed positively in terms of the increased range of foods and ingredients from around the world, such as herbs and spices and exotic fruits and vegetables. This increased choice was thought to be a reflection of today's more multicultural and ethnically diverse society.

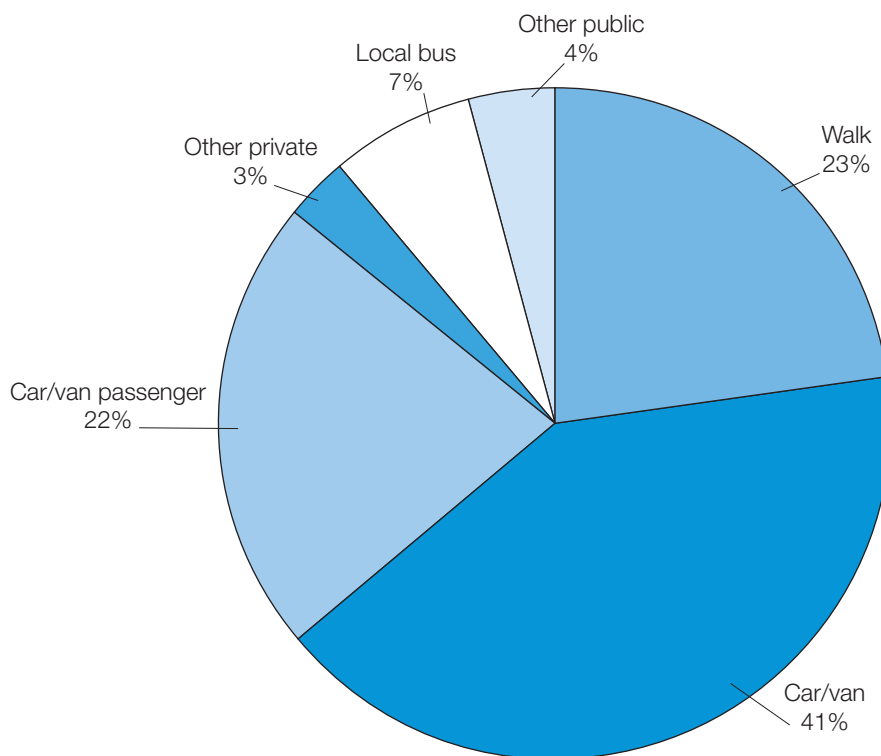
3 Reducing emissions from travel

Stage 1: green possibility

There are two major ways of reducing emissions due to travel. The first is to improve the carbon efficiency of the transport, either by changing modes from, say, car to walking, or by improving the efficiency of the mode, such as by using cars that consume less fuel. In 'greening' the MIS, we are interested particularly in changing mode, since adopting technologies that make a particular mode more efficient tends not to affect consumer experiences or living standards. The second major way of reducing emissions is to travel less.

Figure 6 illustrates the extent to which cars are the predominant form of transport in Great Britain, accounting for nearly two-thirds of trips, whereas less than a quarter of trips are made by walking and around one tenth are made by public transport. Car travel accounted for 79 per cent of the distance travelled on land (DfT, 2010).

Figure 6: Average number of trips by main mode of transport in Great Britain (2007)¹³



Source: DfT (2010)

Table 3: Preferred green MIS travel options by distance

Distance travelled	Preferred green choice	Otherwise	Or else
0–2 miles	Walk/cycle	Bus	Community transport, taxi, car share
2–5 miles	Cycle	Bus, train	Community transport, taxi, car share
5–10 miles	Electric bike	Bus, train	Community transport, taxi, car share
10+ miles	Public transport	Community transport, taxi	Community transport, taxi, car share

Table 3 shows a hierarchy of preferred travel modes for different lengths of journey. In urban areas, all groups involved in the MIS research have agreed that it is possible to do without a car by using a combination of public transport and occasional taxis for particular types of journey. For these groups, the main issues to be explored at Stage 2 were whether there are more cases where foot or cycle journeys would be viable and whether community transport could replace some journeys that might otherwise have to be made by taxi. At Stage 2, it was also relevant to explore the need to keep public transport a viable option in urban areas. In most cases in rural areas, MIS groups have said that a car is essential (Smith, *et al.*, 2010). Here, the main issue was therefore the conditions in which other modes of transport could replace car travel.

Table 4 shows very rough guidance on carbon dioxide emissions associated with different transport modes, separated into emissions per mile and embedded emissions per year. (Embedded emissions are those associated with manufacture of the vehicle and its spare parts.) The embedded emissions for an electric bicycle are surprisingly high. This is thought to result from the short lifetime of the battery, which is estimated to last for only around 1–2 years, so we have assumed 1.5 years. However, the per-mile emissions of an electric bike are over thirty times lower than those of a car. The table also illustrates that buses are generally environmentally better per mile than cars, although this depends on the bus loading. With current average local bus loadings, a bus produces around half the carbon emissions per mile compared with a car with single occupancy.

Community transport is non-profit transport developed by local communities to serve their local needs. It serves routes where there is either no existing conventional public transport or where existing public transport cannot be used, for example because of limited wheelchair access. Community transport services generally run during daytimes to provide access to shops, hospitals, social activities and so on, but some organisations are now providing, or considering providing, evening services. The primary advantage of community transport is that it involves shared vehicle use and thus efficiencies should, in theory, be achieved. Taxis also involve shared vehicle use but can be an expensive option and do not generally achieve the same efficiencies because they provide private individual service rather than communal journeys.

‘Car share’ (see Table 3) can apply either to lift-sharing schemes in a privately owned car or the use of car clubs. One of the drawbacks of lift-sharing schemes is that they rely on private ownership of vehicles by at least some households – which in many cases will lead to increased mileage because of the convenience of having a private vehicle parked outside. A car club provides people with a fleet of vehicles parked in their neighbourhood and gives them access to a car whenever they need it but without the high fixed costs of individual car ownership (DfT, 2011). The number of car clubs is growing but they are often not available or useful in rural areas, where the vehicle may be too far from the place it is needed.

Table 4: Estimated carbon emissions of transport options

	Carbon emissions	
	Per mile (kgCO ₂ e per mile)	Embedded (kgCO ₂ e per year)
Walk	0	0
Cycle	0	<1
Electric bike	0.01	400
Bus	0.16	–
Car (small petrol car)	0.33	800

Source: Author's calculations based on Cherry, *et al.* (2009), Barrett and Scott (2003), www.globalchangeblog.com, www.ford.co.uk, Department for Transport (various years)

Note: Figure for embedded emissions for travel by bus is missing due to lack of available data

If car ownership is deemed necessary, it is important that the vehicle has as low emissions as possible. According to the Green Car Guide,¹⁴ a suitable small family car might be a Toyota Auris HSD and a suitable estate car might be a Skoda Fabia Estate SE 1.2 TSI 86 PS. We do not suggest electric cars, as the battery-charging infrastructure is not yet in place. Hybrid vehicles tend to be expensive to purchase and do not give high enough fuel savings to warrant the extra capital cost.

In cases where a car is required, we suggest that eco-driving techniques could be assumed when estimating the miles per gallon. Eco-driving involves measures such as: driving smoothly; driving slower and maintaining a steady speed in as high a gear as possible; switching off the engine when stationary for more than a minute, and keeping tyres properly inflated. Such measures can reduce fuel use by 15 per cent.¹⁵

Stage 2: green acceptability

Increasing walking and cycling

In relation to increasing walking and cycling, the groups were more positive about the scope for cycling than for walking.

The main barriers to walking more were weather and time. The scope for relying on travelling on foot was felt to be limited in winter or when it is raining. Some parents did not think it was realistic for children to walk two miles to school and back, which could take 30 to 40 minutes each way. Taking children to school by car saved time and prevented them from getting wet in the rain. The rural parents group raised the issue that, beyond the outskirts of the town, country lanes without footpaths were not safe to walk along.

In contrast, the groups thought that with improved infrastructure there was scope to increase cycling, both for adults and children. Necessary measures included:

- cycle training for children to improve their road sense and confidence;
- well-designed cycle paths because safety is a key concern;
- shower and changing facilities at workplaces and promotion of existing workplace facilities by employers; and
- integrated transport systems allowing bicycles to be taken on buses.

Electric bikes were not seen as a solution for increasing bicycle use because, without improvements to the infrastructure, roads would still be unsafe to ride on.

As with household energy, the rising cost of fuel was mentioned and there was a perception that cycling had increased as people sought to save money. It was also suggested that making town and city-centre car parking very expensive would encourage people to travel by bicycle.

A change in attitudes was also needed to encourage cycling. One participant thought there was a widespread misperception that cycling was dangerous, which made people more wary of cycling than they need be. In contrast, in places where there are lots of cyclists, other people feel encouraged to join in. However, as with walking, cycling was seen as being dependent on the weather.

... you do cycling proficiency when you're in school, you learn to do all your arm signals, and stuff, and then you kind of get told it's a bit dangerous to be out on a bike, and wear your helmet and watch out for this and you have all these cycle paths and it kind of makes you more wary than maybe you need to be.

Urban young adult

Maintaining and increasing bus use and reducing car and taxi use

All groups were asked what kind of bus service would be required to ensure that MIS households could meet their needs using buses rather than cars or taxis.

Cost was a key issue. The free bus pass for pensioners would need to be maintained. Some bus journeys were considered to be expensive, such as longer journeys and journeys involving the whole family, where the car worked out cheaper. Discounted 'Oyster card'-type payment systems were also suggested.¹⁶

Service times meant that some participants could not travel by bus. Those who worked shifts needed a bus service that ran early enough in the morning and late enough at night to get to and from work. It was also thought that later evening services could reduce MIS households' reliance on taxis. Faster journey times would also encourage people to consider travelling to work by bus. In rural villages where MIS households require a car, the rural pensioner group thought that a regular daily bus service into town (four times a day) would help pensioners in villages be less reliant on having a car.

I think it's got to be fast and efficient and reliable. I mean if you're just working 10 miles away ... thinking of my wife, it will take an hour to get a bus to where she needs to go to work and then she's got to walk about a mile to get to where she works. So it's just no good really. If you get in a car you're there in 20 minutes.

Urban parent

Participants in both the rural groups spoke positively about community transport schemes that they had used or knew about. The main benefit was that they picked people up from outside their home and dropped them off outside their destination. This overcame the difficulty (raised more generally in the group discussions) of having to walk a long way at either end of the bus journey. However, the requirement to pre-book community transport meant that it would not be suitable for reducing the MIS taxi budget in relation to emergency trips to hospital. For the urban parents, a school bus service that picked children up from a nearby bus stop and took them all the way to school would enable some parents to let their children travel to school by bus rather than car.

Although the discussions focused on the type of service the MIS case-study household would need, a few participants admitted that they themselves would not easily be persuaded to give up travelling by car because of its convenience.

Longer-term changes – reducing the need to travel

Groups were asked to imagine how things would need to change in order to reduce the amount they needed to travel. Travelling to work was the main area where participants felt they could improve their quality of life by travelling less. This would require them to live closer to their place of work. In both the urban and rural groups, participants reported that there were few local employers. Other possible changes to reduce the need for travel included:

- changes in employer attitudes – employers expected people at job interviews to have a car to get to work and back;
- changes in accepted working patterns – it could be desirable to condense work into four days a week to reduce travelling time; and
- more opportunities for home working – some employers did not view home working favourably but participants also identified less tractable barriers, including feeling isolated from colleagues and being distracted at home.

Participants would like to reduce the need to ‘ferry’ children to different social activities and shopping. The layout of towns contributed to the need to travel by car because supermarkets and large DIY stores are located on the edge of town rather than in the centre. For the rural parents group, online supermarket shopping was not felt to be a solution for reducing car journeys because participants preferred to be able to check the quality and sell-by dates of fresh foods themselves. The rural pensioner group thought that it would be desirable to have more local shops and services. They could remember having a village shop where they did all their shopping, a post office and a local community hospital, and thought that this had been ‘better’. While more local services would reduce the need to travel, the group did not think it would remove it altogether. They would still need a car for visiting friends and family, for emergency trips to the hospital, dentist and vets, and for day trips out to the coast.

4 Cross-cutting influences on green acceptability

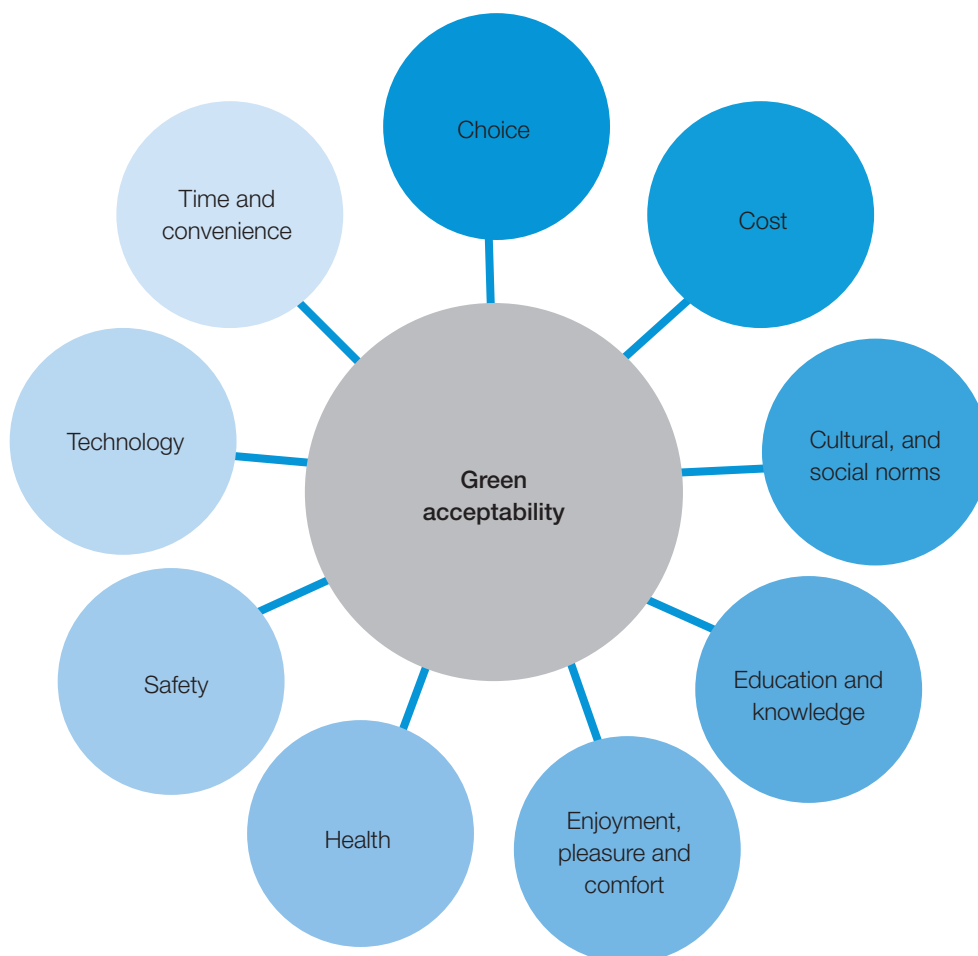
From the group discussions it was possible to identify common drivers and barriers that influenced whether greener modes of consumption were considered to be acceptable, as shown in Figure 7.

The following discussion looks at each factor in turn, together with some implications for policy and practice for each of these themes.

Choice was a key issue raised throughout the research. It is an integral part of the MIS, which uses the following operational definition shown to all groups:

A minimum standard of living in Britain today includes, but is more than just, food, clothes and shelter. It is about having what you need in order to have the opportunities and choices necessary to participate in society.

Figure 7: Green acceptability – barriers and drivers



Greener consumption options were rejected where they were seen as unreasonably taking away people's choice – whether preventing them from having a bath, eating certain kinds of food or buying appliances that were not energy efficient. Indeed, in some cases, participants were more willing to restrict their own behaviour than to restrict the choice of a hypothetical MIS household. For example, participants who were happy only to take showers did not want to prevent other people from having the choice of a bath. On the other hand, they ultimately had to come to a view about how much choice people should have, and some choices were not considered to be necessities. They did not think that someone on a low income needed enough money to choose to wear a T-shirt indoors in winter or to buy strawberries in December. Moreover, it was felt that in some cases there was an excessive choice of products in supermarkets.

A lesson here is that people have got used to having a high degree of choice and do not want to be told what to consume (although they might benefit from greater information about the implications of their choices – see 'education and knowledge' below). However, this does not prevent the introduction of some restriction of choice where it seems reasonable. For example, participants did not object in general to regulators raising the energy efficiency standards of appliances, but they did not always want to be restricted to buying the single most energy-efficient appliance, which was likely to be more expensive. This suggests that the range of choices can change over time in a socially acceptable way but that too much prescription would seem objectionable.

Cost was a key driver of green acceptability. Where creating more emissions is reflected in substantially higher cost to the consumer, it is obvious to individuals that reducing emissions is desirable. For this reason, participants, who are keenly aware of rising domestic energy costs, were more open to changes that reduced home energy use and hence household energy bills than to any other category of change.

In the case of transport too, the rising cost of fuel could be starting to have an effect. Some participants mentioned that higher petrol prices were encouraging people to cycle more. However, whereas people saw plenty of small ways in which savings could be made in home energy consumption, changing from, say, a car to a bike was a bigger barrier. Moreover, in the case of public transport, cost was sometimes seen as a barrier despite the fact that it is greener than using a car.

The cost issue was least prominent in discussions about food because there is a weaker relationship between emissions levels and price. In particular, participants' perceptions were that the higher GHG levels associated with beef and lamb (compared with other meats or non-meat dishes) are not reflected in pricing – they did not see beef and lamb as expensive options. The closest relationship between price and sustainability came with certain seasonal produce, such as strawberries, where people could see that eating them out of season was more expensive. They generally regarded this as a luxury rather than a necessity. On the other hand, despite the higher environmental cost of apples when out of season, this was not reflected in price in a way that caused participants to see it as a consideration when deciding whether or not to buy them.

An overall implication for policy and practice is that attitudes to necessities are most likely to accommodate green considerations if environmental impacts are reflected in the price. It seems unlikely, for example, that beef will be seen as something we should eat less of as long as it remains relatively cheap. This is particularly the case because cultural norms, as discussed below, can be influenced by what is affordable. In contrast, the rising prices of petrol and domestic energy are having an important effect on how much of these things people can afford, on their actual behaviours and on their attitudes to what we should consider to be essential for an acceptable standard of living. Rising prices put pressure on people to think carefully about their own expenditures, and therefore to reflect more on what is really a necessity.

This distinction between behaviours and attitudes is an important one. People constrained by income and price from consuming something that they believe is essential (thus making them dissatisfied) will consume more of this thing once they can afford to. On the other hand, if the constraints cause them to reconsider what they think is socially necessary, the change may be more permanent.

Cultural and social norms were discussed both as barriers and as drivers of green acceptability. On the one hand, some forms of consumption seem to be strongly associated with traditional aspects of British culture that remain strongly entrenched. This was most clearly the case with food, for which norms sometimes seem to have a strong emotional aspect – some things seem to be particularly ‘British’, for example, such as eating an oven-cooked Sunday roast or traditional fruits such as apples. Having said that, participants noted that many features of the British diet are changing and ‘meat and two veg’ is no longer the norm for every meal. People are becoming more varied in their diet but regard it as important that the choice of traditional types of meal remains, even if it is only exercised occasionally. There is a parallel with retaining the opportunity to have a bath rather than a shower, even though the bath is used much less than in the past.

Cultural norms may be seen as potential drivers of green acceptability where they are most pliable. When it comes to home energy, the research seemed to show that there are few absolute barriers outside the kitchen (where traditional means of cooking are important to people). People can adapt relatively easily to innovations such as energy-saving light bulbs and, while central heating may have caused people to wear less indoors, there was no resistance in principle to reversing this where it can help to save energy. Some aspects of consumption, such as larger televisions than in the past, were important to some participants as a new cultural norm. However, the fact that there has been such rapid recent change towards bigger screens suggests that this value is not deeply held – and most groups did not accept that a television larger than that specified three years ago was necessary.

When it came to transport, there were mixed messages. There was certainly a strong feeling that, under the right conditions, cycling could become far more part of normal British behaviour than it has been in the recent past. However, many people feel culturally attached to the car and to the sense of convenience and independence that it gives them. All groups found there were many barriers to using alternative modes of transport, and cultural resistance to switching can feed on the perception that it would bring major inconveniences.

This evidence suggests that cultural norms affecting consumption can be strong but are not set in stone. Efforts by suppliers and public agencies to address what are seen as cultural barriers do not therefore seem to be a waste of time. Cultural norms can potentially become a dynamic of change, not just a barrier.

In this and other respects, a recurring theme in the research was that people need better **education** and **knowledge** about the consequences of various forms of consumption. In particular, there was a striking lack of knowledge about the impacts of various kinds of food consumption, and especially the greater level of GHG emissions resulting from eating beef and lamb. It was also evident that people sometimes got mixed messages about the amount of energy consumption involved, for example, in keeping radiators on low all the time or switching them on and off as they are needed.

The themes of **enjoyment**, **pleasure** and **comfort** arose across a number of areas. They were particularly mentioned in relation to cooking and food but also in relation to space heating and feeling warm, having a bath, and the undesirability of getting wet in the rain when walking or cycling. When thinking about necessities, people were reluctant to accept environmental considerations that clearly reduced quality of life by denying people a pleasure that they take for granted. This suggests that green acceptability needs to demonstrate that similar benefits can be gained in different ways, rather than that we need to increase austerity.

Health was a significant barrier to accepting more sustainable food options. Red meat was considered by some participants to be a nutritional requirement, although urban parents (who reduced the amount of red meat in the MIS diet) were aware that healthy eating messages recommended reducing the consumption of red meat. Eating a healthy diet consisting of a variety of fruit and vegetables was a barrier to eating more seasonally, reflected in the adage ‘an apple a day keeps the doctor away’. Participants were particularly aware of the strong messages coming from government about eating plenty of fruit and vegetables. Thus messages about restricting intake of out-of-season produce for environmental purposes could prove counter-productive. This finding suggests that the government and other agencies need to be careful to construct clear and integrated messages about consumption, so that one campaign does not seem to contradict another.

Safety was also raised as an issue, in particular as a barrier to cycling but also as a reason for not leaving appliances and gadgets on standby. In some cases it will be necessary to reduce these barriers by making recommended practices safer; in others it may be possible to inform people about practices that are already relatively safe.

Technology was a driver of green acceptability. For example, having thermostatic radiator valves was necessary for people to create temperature zones in the home, and technology such as home energy monitors and energy-saving plugs were perceived as helping people to use less energy. An area where poor 'technology' prevented people from behaving more sustainably was laundry detergents, where some participants had negative experiences of washing clothes at 30 degrees Celsius. At one level, technology can be seen as an 'external' means of reducing household emissions – for example, by raising the energy efficiency of appliances. However, the discussion showed that there are ways of engaging consumers themselves as partners in the use of technology and energy-saving behaviour. The fact that members of these groups spontaneously mentioned innovations such as home energy monitors, and responded positively to them, suggests that they felt involved in the process rather than expecting the scientists to be green on their behalf.

Time and **convenience** were key drivers of acceptability in relation to moving towards greener modes of travel. The longer journey times involved when walking or travelling by bus were a disincentive to switch to greener methods of travel. Convenience was also raised in relation to energy-saving plugs, which made it very easy to turn off electrical gadgets. The importance of these factors points to the need for those who promote greener solutions to make them as compatible as possible with the busy lives that people lead today. There will be some severe limits to how far this is possible – some journeys will always be much longer by bus than by car, for example. However, in seeking to change behaviours such as power usage in the home, there is great potential for using smarter technologies to allow people to conserve energy without major inconvenience.

5 Policy implications and conclusions

This research has explored the extent to which a greener formulation of a minimum standard of living in the UK can be recognised as acceptable by members of the public. It has shown that public attitudes are, in principle, receptive to various changes in consumption patterns compatible with lower emissions but that it is not always easy in practice to achieve such a formulation.

Public attitudes can themselves be a barrier. While our participants showed a real openness to the idea of greener behaviour, they were not always ready to accept changes in lifestyle requiring a cultural shift, reduced choice or greater expenditure of time on certain activities. At the same time, the research found that at least as serious an obstacle is the difficulty of identifying green measures that have predictable and substantial benefits for the environment and can be presented as clear-cut options to members of the public. Thus, formulating 'green possibilities' proved as problematic as identifying 'green acceptability'. This not only makes it difficult to research a 'greener minimum' but also illustrates how difficult it can be to present and promote greener lifestyles to the public.

The most promising area where a minimum standard of living could be maintained with substantially fewer emissions was the consumption of heat and power in the home. By adopting practices such as putting on extra clothes rather than turning up the heat, and taking showers instead of baths, households could reduce their emissions from household energy consumption by around a quarter. We estimated that adopting the measures suggested would save an average household around £250 a year. Although not all the proposed measures were seen as acceptable, those with the greatest impact were generally seen as compatible with a minimum living standard. Two aspects contributed to this 'green acceptability'. First, messages about the effects of actions were well understood: wearing a sweater, turning the heating down and using less energy is easy to grasp and has quantifiable benefits. Second, the financial benefit was a strong motivating factor that made people think this was reasonable behaviour.

On the other hand, the research revealed a number of obstacles that prevented us from demonstrating large potential environmental benefits from the formulation of a 'greener minimum'.

- Complexity can prevent straightforward calculations of the energy savings that result from greener consumer behaviours. In particular, when it came to carbon emissions arising from food, it was extremely difficult to demonstrate simple relationships since the 'carbon footprint' of any one product is the result of multiple aspects of its production and distribution. This helps explain why we also found that awareness of the carbon impact of diet among the public is low. Even in more straightforward areas, such as home energy, it can be hard to generalise the effect of various behaviours in different homes, and participants were sometimes confused about what they regarded as mixed messages.
- It proved difficult to present fundamental changes in lifestyle and behaviour to the public and, as a result, the potential for energy reductions was often small. For example, it is easier to ask people whether better cycle lanes would allow more commuting to work by bike than to ask what kind of settlement patterns would reduce the need for travel. Groups naturally connected more readily with the first type of question. It therefore does not make sense to explore the 'public acceptability' of the big changes that may be needed in society in the long term to meet environmental goals; only as society changes do notions of what is acceptable adapt.

- Price signals do not always support attitudes that encourage greener consumption. The research suggested people's perceptions of the items that are 'ordinary', and should be available as choices, are influenced by price. The awareness that out-of-season strawberries are produced in resource-intensive ways, and the sense that these are luxuries not necessities, was influenced by the fact that they are expensive. On the other hand, few participants had thought of out-of-season apples in this way, even though the fruit may have been stored in temperature-controlled conditions for several months. Similarly, people did not see red meats as luxuries because their price does not reflect their greater environmental impact compared with other meats. This lack of price signals has implications both for the interpretation of a green minimum and more widely for the promotion of greener behaviour. The MIS work addresses the minimum standard of living that people should be able to afford. Since MIS is about choices, a budget designed for purchasing green products has limited meaning if it also gives the choice of buying identically priced non-green products. A wider implication is that governments and companies could use price signals more, not just to influence behaviours directly but also to influence attitudes. Over the long term, higher beef prices might not just deter people with budget constraints from buying beef, but also slowly cause beef to be seen more as a luxury and less as a necessity.
- Greener options are not always compatible with how we live today. For example, while there are many who espouse 'slow living', a bus service that makes a journey three times as long as driving may not be seen as an acceptable commuting option. Safety issues, especially for children, prevent walking and cycling from being acceptable in some situations where they may have been in the past. Choice is important to people, particularly in relation to diverse personal preferences. The more that green products and options can be made compatible with criteria such as time efficiency, safety and choice, the more they will be seen as acceptable.

This research was experimental. How useful has it been to use the MIS as a starting point for formulating a greener minimum for UK households? The research has shown the effectiveness of a focus-group technique in areas where specific changes can be formulated. This could potentially be used to explore whether particular innovations are consistent with what the public regards as an acceptable way of living. It would also be possible to use a similar exercise in a few years' time to identify how attitudes to these areas of greener consumption have changed. On the other hand, the research has also shown that it is only possible to quantify partially the extent to which a socially acceptable greener minimum could contribute to meeting environmental targets.

It has been difficult in many cases to match environmental considerations to specific features of the content of MIS budgets. At a broader level, asking the public about the acceptability of longer-term changes to society does not produce clear-cut results. As a consequence, it is not suggested that more detailed investigation of a 'green MIS' should be pursued at this stage.

Notes

Introduction

- 1 According to the Climate Change Act 2008, the UK has a legally binding commitment to reduce its greenhouse gas emissions by at least 80 per cent on 1990 levels by 2050 (HM Government, 2008). For these purposes, accounting is from the 'production perspective', which accounts for the UK's carbon emissions on a territorial basis, regardless of the location of final consumption. However, when considering the carbon footprint of UK households, accounting from the 'consumption perspective' is more appropriate: this takes account of carbon emissions embedded in UK imports and excludes emissions embedded in exports. Although the Climate Change Act applies to production perspective emissions, the 80 per cent target should, arguably, also be applied to consumption perspective emissions. This is even more of a challenging task because consumption perspective emissions have generally risen since 1990 whereas production perspective emissions have fallen (Druckman and Jackson, 2009).

Chapter 1

- 2 A typical bath can use over 100 litres of water, while a shower uses only about a third of that amount. www.energysavingtrust.org.uk/Resources/Features/Features-archive/Top-five-green-New-Year-resolutions [Accessed 27 October 2011]
- 3 CNET Energy Efficiency Guide. Available at: <http://reviews.cnet.com/green-tech/tv-consumption-chart/> [Accessed 27 October 2011]
- 4 Gas ovens and hobs are more carbon efficient than their electric counterparts but the general advice in this section is still expected to hold.
- 5 One feature, energy-efficient light bulbs, is already specified in MIS.
- 6 Reducing consumption in one area frees up household resources to spend in other areas that create new emissions – the so-called 'rebound effect' (Druckman, *et al.*, 2011b). Such an effect will not arise through moving from the standard MIS to the green MIS because minimum incomes are, by definition, constrained to fit the MIS expenditure budgets. The only types of rebound that may arise through a large-scale move from general to green MIS are, in theory, 'economy-wide' rebound effects (Sorrell, 2007). Estimation of these effects is beyond the scope of this project but the likelihood of backfire is extremely small. Even if there were some economy-wide rebound, it can therefore be concluded that movement from the general MIS to the green minimum standard is worthwhile.
- 7 Based on Ofgem's 'medium consumption' figure, which is used as a basis for price comparisons. This was updated in 2011 (Ofgem, 2011).

- 8 Calculated using a price comparison site for an address in Loughborough. The saving is the average difference across the 'big six' energy suppliers between the charge for the higher and the lower usage figure. The mean difference between the cost of higher and lower usage is £249.75 and the range of differences across suppliers is £242.51 to £257.23.
- 9 The opinion of home energy experts consulted at Stage 1 was that heat leakage from adjacent rooms would provide sufficient heat to prevent mould forming in unheated unused rooms, provided the building was reasonably insulated.
- 10 Estimated from Tables 1 and 2 in Oldfield (2008).

Chapter 2

- 11 Or from nearby countries.
- 12 Although this comparison does not directly show the relationship between emissions and actual protein content in different foods, it gives a rough idea of the emissions effects of switching from one food category to another.

Chapter 3

- 13 This chart refers to average British travel, not to MIS households.
- 14 www.green-car-guide.com/guide/small-family-cars-2.html [Accessed 27 October 2011]
- 15 www.energysavingtrust.org.uk/scotland/Scotland-Welcome-page/At-Home/Transport-Eco-driving/Eco-driving-Tips [Accessed 27 October 2011]
- 16 An Oyster card is a plastic smartcard that, when loaded with credit, can be used instead of paper tickets. See www.tfl.gov.uk/tickets/14836.aspx [Accessed 27 October 2011]

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Appendix I

Sources of assumptions used for Table 1

Shower instead of bath

Energy Savings Trust. Available at: www.energysavingtrust.org.uk/Resources/Features/Features-archive/Top-five-green-New-Year-resolutions [Accessed 22 May 2011]

'A typical bath can use over 100 litres of water, while a shower uses only about a third of the quantity.'

Install energy-efficient light bulbs

Energy Savings Trust. A simple guide to lighting. Available at: www.energysavingtrust.org.uk/Publication-Download/?oid=1992656&aid=6771242 [Accessed 19 May 2011]

'Energy saving light bulbs use up to 80% less electricity than a traditional bulb but produce the same amount of light.'

Small LCD TV instead of plasma

Market Transformation Programme, 2010. BNCE TV04: Televisions (TVs) Government Standards Evidence Base 2009: Best Available Technology Scenario. Available at: <http://efficient-products.defra.gov.uk/cms/product-strategies/subsector/televisions#viewlist> [Accessed 19 May 2011]

Appliances not on standby

Market Transformation Programme, 2008. BNXS15: Standby Power Consumption – Domestic Appliances. V 1.4

Wash clothes at 30 degrees C

Renewable Energy UK, 2011. Available at: www.reuk.co.uk/Wash-Most-Clothes-at-30-Degrees.htm [Accessed 23 May 2011]

'Washing clothes at 30 degrees instead of 40 degrees reduces electricity consumption on average by 41%.'

Increase use of microwave instead of other forms of cooking

Market Transformation Programme, 2009. BNCK07: Comparing Energy Use in Microwave Ovens with Traditional Electric Fuelled Methods. Version 1.2. Available at: www.efficient-products.defra.gov.uk/spm/download/document/id/786 [Accessed 22 May 2011]

'It is estimated that moving from use of electric ovens and hobs to microwaves could save around 10% of energy and its associated costs.'

Only boil required quantity of water in kettle

Empirical research.

Put on a thicker sweater in winter; reduce heating by one hour a day; turn heating off in one unused room

These values were very kindly estimated for us by David Allinson and Kevin Lomas, Department of Civil and Building Engineering, Loughborough University, to whom we are extremely grateful. The CO₂ emission reductions were estimated using a standard SAP 2009 calculationⁱ for 575 houses in Leicester. The house descriptions were from the EPSRC 4M project.ⁱⁱ Thermal insulation values for typical clothing and the corresponding reduction in acceptable operative temperature for sedentary occupants were taken from Table 1.3 of CIBSE Guide A.ⁱⁱⁱ

Notes:

- i DECC (2010) *The Government's Standard Assessment Procedure for Energy Rating of Dwellings*, SAP 2009. Available at: www.bre.co.uk/filelibrary/SAP/2009/SAP-2009_9-90.pdf [Accessed 30 October 2011]
- ii Lomas, K. J., Bell, M., Firth, S. K., Gaston, K. J., Goodman, P., Leake, J. R., Namdeo, A., Rylatt, M., Allinson, D., Davies, Z. G., Edmondson, J. L., Galatioto, F., Brake, J. A., Guo, L., Hill, G., Irvine, K. N., Taylor, S. C. and Tiwary, A. (2010) *The Carbon Footprint of UK Cities 4M: Measurement, Modelling, Mapping and Management*. ISOCARP Review 06, International Society of City and Regional Planners, pp. 168–91
- iii CIBSE (2006) *Guide A: Environmental Design*. London: The Chartered Institute of Building Services Engineers

Acknowledgements

We would like to thank all the people who assisted with the first stage of the project by providing us with expert advice:

Professor Liz Dowler (University of Warwick)

Tara Garnett (University of Surrey)

Dr Gary Haq (University of York)

Ian Christie (University of Surrey)

Professor Tim Lang (City University)

Eric Audsley (Cranfield University)

Dr Christian Brand, Dr Sarah Derby, Dr Yael Parag (Environmental Change Institute, University of Oxford)

Gordon Stokes, Professor David Banister, Dr Robin Hickman, Dr Tim Jones, Carey Newson (Transport Studies Group, University of Oxford)

Peter Headicar (Oxford Brookes University)

Dr David Allinson, Dr Liyan Guao, Professor Kevin Lomas, Keyur Vadodaria (Department of Civil and Building Engineering, Loughborough University)

Victoria Haines (Loughborough Design School, Loughborough University)

Durk Nijdam (PBL Netherlands Environmental Assessment Agency)

We are particularly grateful to David Allinson and Kevin Lomas (Loughborough University) who did some calculations on home energy savings especially for us.

Thanks also go to the Project Advisory Group members who provided constructive comments and helped steer the project: Professor Robert Walker (University of Oxford), Nina Oldfield (University of York) and Chris Goulden (JRF).

We would like to acknowledge the invaluable contribution of our colleagues Dr Noel Smith, Jackie Beckhelling, Nicola Selby and Sharon Walker at the Centre for Research in Social Policy (CRSP), and Tim Jackson and Scott Milne (RESOLVE, University of Surrey). We would also like to thank Josh Stott and Katharine Knox at JRF for their support and contribution to the project.

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The Joseph Rowntree Foundation has supported this project as part of its programme of research and innovative development projects, which it hopes will be of value to policy-makers, practitioners and service users. The facts presented and views expressed in this report are, however, those of the authors and not necessarily those of JRF.

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First published 2011 by the Joseph Rowntree Foundation

ISBN: 978-1-85935-891-7 (pdf)

Original design by Draught Associates

Project managed and typeset by Cambridge Publishing Management Limited



Joseph Rowntree Foundation
The Homestead
40 Water End
York YO30 6WP
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