

Sustaining a Healthy Future

Taking action
on climate
change

Special focus
on the NHS



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Be the change you want to see in the world.

Gandhi

Foreword by Jonathan Porritt

The Chinese consider it a curse to find oneself living in 'interesting times'. What they must think about living in apocalyptic times is anybody's guess!

But the dramatic events that have unfolded in the 12 months since the first edition of *Sustaining a Healthy Future* will necessitate equally dramatic changes for public services in the UK – and for the NHS in particular.

Worryingly, the prevailing view seems to be that economic recession means that everything else – including climate change and the wider sustainability agenda – must go on the back burner. Like many of today's prevailing views, this is rubbish. The truth of it is, is that one of the very best ways of countering the effects of the recession is to get the basics of a low-carbon, sustainable economy properly sorted out.

The case for a more sustainable NHS couldn't be stronger:

- reduced energy costs at a time of unprecedentedly high electricity and gas bills;
- reduced waste and water bills, which will continue to rise regardless of the state of the economy;
- low carbon strategies to support the government's Carbon Reduction Commitment – when the cost of CO₂ emissions will turn up on the balance sheet of all health bodies;

- strategic interventions to improve diets and increase physical activity are just as relevant now (in terms of both reduced costs and improved quality of life) as they have ever been;
- finally get on top of health inequalities;
- reinforce collaboration with local authorities and other public sector bodies, delivering real improvements for communities and all users of public services.

Historically, the NHS did not feel it had that much of a role in this area, but that's now changing. The need to reduce energy costs and cut waste and water bills, the *Climate Change Act*, the NHS carbon reduction strategy, *Saving Carbon, Improving Health* (in support of which this excellent publication makes such an important contribution), the growing enthusiasm for the Department of Health's Good Corporate Citizenship initiative – all demonstrate a crucial turning point.

Everyone now recognises that addressing the challenge of climate change will demand urgent interventions by the whole of the public sector. The NHS, with its huge potential impact, should be setting the pace. Securing a healthy future in these 'interesting times' requires full commitment and strong leadership.

And the time to act is now.



Jonathon Porritt
Founder Director of Forum
for the Futureⁱ

Chairman of the UK Sustainable
Development Commissionⁱⁱ

Author of *Capitalism as if the World
Matters; Revised Edition 2007*ⁱⁱⁱ

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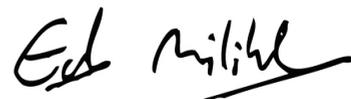
ⁱⁱⁱEarthscan paperback – available through the Forum for the Future website.

Rt Hon Ed Miliband Secretary of State for Energy and Climate Change

Climate change is the biggest long-term challenge we face. For Britain to do its bit, the science says we must cut our greenhouse gas emissions by 80 per cent by 2050 – and a shift of that scale will require action from every section of our society.

When economic times are tough and budgets are constrained, some argue we should retreat from climate change. But I believe now is precisely not the time to row back. Of course, there are trade-offs but there are also solutions that save both carbon and money, from energy savings to new technologies to generate power on-site. And globally, we know from the Stern report in 2006 that the costs of not acting on climate change are greater than the costs of acting.

The public sector can show the way. Public sector leaders can seize the opportunities to be brave and bring about big changes. Those who work directly with the public can help spread the message. Every person working in the public sector can contribute ideas. And together, with government, businesses and communities working together, Britain can show the path to a sustainable economy and society.



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Introduction

Climate change is the most important public health challenge of the 21st Century. It threatens the basic elements of our existence – food, air and water – with huge implications for our health and wellbeing.¹ With the global population set to rise to over nine billion by 2050,² it is a public health imperative to develop and implement effective strategies to minimise the damage, not only to our own health and wellbeing, but that of future generations.

Recent evidence suggests that climate change is accelerating faster than previously estimated, and that we now have very little time in which to stabilise greenhouse gas emissions enough to reduce the catastrophic consequences of global warming.³

Achieving this will require determined action by all of us, and strong leadership from those who make the big decisions across the world, particularly from those countries such as the UK which have very high levels

of carbon emissions. It's a huge challenge. But it can be done – and the NHS, and all who work in it, can help lead the way.

This special edition of *Sustaining a Healthy Future*, produced in association with the NHS Sustainable Development Unit and the NHS Confederation, sets out the impact of climate change and how the health sector contributes to it. It also shows how the NHS, through a sustained programme of practical,

cost-saving action, can lead the way to lower carbon emissions. But each of us must play our part and demonstrate our commitment to a sustainable future – which is why the guide also contains tips and advice to help everyone reduce their own carbon footprint. The good news is that many of the changes needed, like walking more and driving less, can also directly benefit our health.

Although the scale of transformation can seem daunting, by taking practical action *together*, we – and the communities and organisations we live and work in – can become part of a healthy, sustainable, low-carbon future.

Climate change is happening now, on our watch. It will be our legacy. And we have a duty to act. Now.

There is still time to avoid the worst impacts of climate change if strong collective action starts now.

Stern Review

1. Climate change Causes and consequences

- The effects of climate change on the environment
- The effects of climate change on health
- Carbon emissions – the causes

Our dependence on fossil fuels such as oil, coal and gas, and other natural resources such as forests, has substantially increased our emissions of greenhouse gases, especially carbon dioxide (which makes up approximately 85 per cent of UK greenhouse gas emissions⁴).

Carbon dioxide (CO₂) and other gases that cause climate change (eg. methane and nitrous oxide) let in heat from the sun more readily than they let it out, leading to a rise in the earth's temperature – commonly known as *global warming*. 'Climate chaos' is a term also used to describe the effects of unpredictable weather with extremes of heat and cold, violent storms, flooding and drought (as a consequence of rising greenhouse gas emissions).

It is widely accepted that climate change is primarily a result of human activity. Between 1970 and 2004, global greenhouse gas emissions, as a consequence of human activity, increased by 70 per cent and are predicted to continue to grow over the next few decades.⁵

The assessment report of the United Nations' Intergovernmental Panel on Climate Change (IPCC)⁵ in 2007 concluded that if CO₂ concentrations in the atmosphere remain as high as they are today, the likely result is two degrees centigrade of global warming (above pre-industrial levels) by 2030.

It may not seem very much, but an increase *by just two degrees* is the recognised 'tipping point' beyond which catastrophic – and in some cases irreversible – impacts are likely (see *Effects of climate change on the environment* p10).

In order to avoid two degrees of warming, CO₂ levels need to be stabilised between 350 and 400 parts per million (ppm). In 2008, levels reached 386ppm. However, recent evidence suggests **that an urgent reduction of CO₂ levels to 350ppm is required** in order to prevent catastrophic climate change.⁶ Another widely-used measure is 'carbon-dioxide equivalent'. This is the level of all greenhouse gases including, for example, methane and nitrous oxide as well as CO₂. Carbon-dioxide equivalent levels must be stabilised between 445 and 490ppm (of CO₂) equivalent. In 2008, levels rose to 455ppm.⁷

It has been estimated that we have less than ten years in which to stabilise greenhouse gas emissions, to avoid reaching the 'two degrees' tipping point.⁸

Climate change: what we know

It is widely accepted that climate change and its consequences:^{9,10,11}

- are happening *now*, both in the UK and worldwide;
- are primarily a result of human activity;
- pose a serious threat to health and the future security of resources;
- will result in a major ecological and humanitarian crisis if they continue unchecked, affecting every one of us;
- appear to be happening more quickly than previously estimated.

The effects of climate change on the environment

If climate change continues at the current rate and greenhouse gases are not stabilised at the levels outlined on page 9, its effects will very soon be beyond our control, with catastrophic environmental consequences. Warming in the Arctic and Antarctic, which is happening faster than anywhere else, is having particularly devastating results:

- substantial disintegration of the West Antarctic and Greenland Ice Sheets, causing rising sea levels and flooding, threatening low-lying coastal areas, including in the UK (it has been estimated that if all the ice in Greenland melted, there would be a rise in sea levels of as much as six metres);¹²
- melting of all Arctic sea ice in the summer (resulting in the possible extinction of certain species such as polar bears);
- melting of the permafrost in the far north, releasing CO₂ and methane, accelerating climate change;
- flooding, displacing up to 200 million people, including in the UK;
- drying out of what's left of the Amazon rainforest, releasing massive amounts of CO₂ from forest fires and tree decay;
- global food insecurity as a consequence of agricultural losses, extending to the world's largest exporters of food, including the US;
- water scarcity affecting two billion people (NB: the provision of adequate water supplies is already a problem in parts of England, particularly in the south and east).¹³

These impacts are documented in the report of the United Nations' Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2007: Impacts, Adaptation and Vulnerability*.¹⁴

Current biodiversity changes are the fastest in human history and we are currently in what many term the 'sixth mass extinction' – an extinction which is entirely anthropogenic ie. caused by human activity. It has been estimated that *three species become extinct every hour*.¹⁵

However, we can take effective, collective action to protect the environment but **we need to choose to do so**. For example, 12 per cent of the Earth's surface is now within protected areas such as nature reserves, and we have reduced the production of ozone-damaging chemicals by 95 per cent.¹⁶

The effects of climate change on health

Global impacts on health

The IPCC lists the following major health effects of climate change, which are "*likely to affect the health status of millions of people*" across the globe:^{17,18}

■ Increased risk of:

- heat-related mortality, especially for older, chronically ill, very young and socially isolated people;
- food and water shortages;

- malnutrition;
- water- and food-borne diseases;
- deaths and injuries from flooding.

■ Migration-related health effects such as:

- increase in communicable disease in both the receiving and/or migrant population;
- increase in mental health problems such as stress, anxiety and depression in both migrant and receiving populations;
- increased pressure on infrastructure and resources, including health services, social and welfare services, employment, food and water;
- increased risk of violent conflict.¹⁹

UK impacts on health

The impacts of climate change on health in the UK will be of two major types:

Global impacts affecting the UK

- Crop failures, in the UK and in other countries, causing food insecurity through long-term rises in food prices and possibly food shortages;
- Armed conflict over water, land and food supplies, and major flooding, leading to mass migration, creating potentially huge numbers of displaced people.¹⁹

¹⁹An International Alert report, *A Climate of Conflict*, identified 46 countries, home to 2.7 billion people, in which "the effects of climate change interacting with economic, social and political problems will create a high risk of violent conflict". See http://www.international-alert.org/climate_change/index.php

Direct impacts within the UK

The Department of Health and the Health Protection Agency published in 2008 a report on the *Health Effects of Climate Change in the UK*.¹⁹ From this and other sources, climate change can be expected to have the following impacts on the health of people in the UK:²⁰

- heat-related health problems and worsening air quality, causing increased pollution-related illness and deaths, including more people at risk from asthma, respiratory infections and allergic reactions;
- river, coastal flooding and flash floods causing injury, death, social disruption and psychological stress. Increased risk of contaminated drinking water, water-borne infections and exposure to toxic pollutants;
- increased prevalence of food poisoning and water-borne disease linked to warmer weather;
- increased rates of sunburn and skin cancer;
- social disruption, injury, disability and death as a consequence of extreme weather-related events eg. hurricanes.

At particular risk are older people, children, the chronically ill and socially isolated people.

In 2003, the major heatwave in Europe caused more than 70,000 excess deaths, including almost 11,500 in France alone.²¹

Climate change and inequalities

Climate change encapsulates major issues of inequality and inequity – both in the UK and globally. Inevitably, it will be the most disadvantaged and vulnerable within our society who will feel the effects most acutely. **Climate change has, quite accurately, been described as 'poverty's new ally'.**²²

Carbon emissions – the causes

The UK's 'big hitters'

Each of the following accounts for about one quarter of the UK's greenhouse gas emissions. Together they present clear priorities for action:²³

- **Energy:** the energy used to heat, light and run our homes and workplaces;
- **Transport:** for shopping and leisure, at work and to distribute goods;
- **Food and drink:** production, transportation, and retail;
- **Consumption:** production and usage of all other goods and services (excluding food and drink).

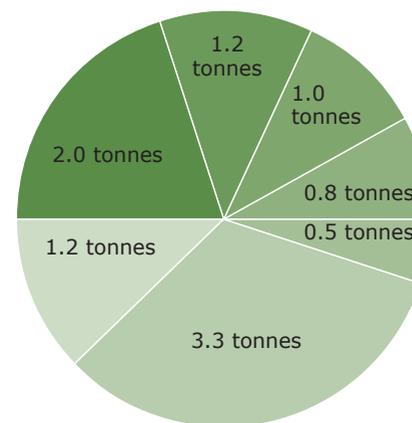
Individual carbon emissions

Although estimates vary,^v we can say in simple terms that each person in the UK, on average, is responsible for approximately ten tonnes of carbon emissions a year. Just over

half is from our personal travel and household energy needs. On average, just under half of each person's carbon emissions is our individual share of the emissions resulting from the production of goods and services, and national infrastructure which we use – see figure 1:

Between 1990 and 2004, household emissions increased by 12 per cent, and emissions from transport by nine per cent.²⁴ Carbon dioxide emissions from cars make up 13 per cent of the UK total by source, and if there is no change, transport CO₂ emissions would be expected to rise by 35 per cent between 1990 and 2030.²⁵

Figure 1: Our 10-tonne carbon footprint^{vi} – how we clock up 10 tonnes of carbon emissions per head per year.



3.3 tonnes – production and transportation costs associated with our purchase of food, clothes, new houses, new cars, other consumable goods (including the manufacture and transportation of steel, concrete, plastic etc)

2.0 tonnes – household gas consumption

1.2 tonnes – car travel

1.2 tonnes – public services infrastructure, eg. the NHS and schools

1.0 tonnes – air travel

0.8 tonnes – household electricity consumption

0.5 tonnes – public transport

^vEstimates of annual average UK per capita carbon emissions vary from 9 tonnes to 12 tonnes. The Marches Energy Agency, using World Bank 2005 figures, gives the UK as 9 tonnes, the USA as 20 tonnes, France 6 tonnes, India 1 tonne, China 3 tonnes, and the world average as 4 tonnes.

See also: Lynas M. 2007. *Carbon counter: calculate your carbon footprint*. Collins Gem; Goodall C. 2007. *How to live a low-carbon life: the individual's guide to stopping climate change*. Earthscan; and Monbiot G. 2006. *Heat: how to stop the planet burning*, Penguin Books, Allen Lane.

^{vi}A carbon footprint is a measure of the impact that human activities have on the amount of carbon dioxide produced through the combustion of fossil fuels, expressed as weight of carbon dioxide emissions, usually in tonnes.

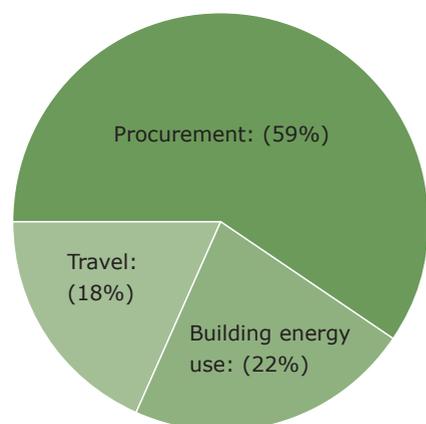
Carbon footprint of the NHS

Being responsible for a huge property portfolio and also the largest workforce in Europe – with 1.3 million staff – the NHS has a significant carbon footprint, calculated at over 18 million tonnes of CO₂.²⁶ This makes it the biggest single public sector contributor to climate change. Altogether, the NHS causes about 3.2 per cent of total CO₂ emissions for the whole of England. Figure 2 shows the three main areas which contribute to the NHS's carbon footprint, the largest of which is procurement – the purchasing of goods and services – clearly illustrating the immense spending power (about £17bn), and therefore influence, of the NHS.²⁷

Another key area where carbon emissions can be reduced is waste. Annually, the NHS produces, on average, 250,000 tonnes of waste at a cost of more than £40 million. This equates to three per cent of total NHS greenhouse gas emissions eg. from landfill, incineration and the environmental impact of producing the original product.²⁸

Altogether, the carbon footprint of the NHS diminishes that of many large cities – over 18 million tonnes of CO₂!

Figure 2: The NHS carbon footprint



Procurement: (59%, 11.07MtCO₂) supply chain activities of companies producing goods and services for the NHS, including waste

Building energy use: (22%, 4.14MtCO₂) heating, hot water and electricity consumption

Travel: (18%, 3.41MtCO₂) patient, visitors and staff

Source: NHS Sustainable Development. 2008. Saving carbon, improving health – a draft carbon reduction strategy for the NHS in England.

An average temperature rise of just two degrees centigrade will have a catastrophic impact on human health. It will be the most vulnerable societies, and the most vulnerable people within those societies, who will suffer most. This makes tackling climate change at all levels – individually, organisationally, locally, regionally and globally – a public health imperative and an urgent priority for NHS leadership.

We are calling on all health professionals, wherever they are, to unite in urging their colleagues, employers and institutions to reduce their carbon footprint, and to set an example in their own personal lives...Only by firm and decisive action right now, can we, as a global community, hope to avert or mitigate an impending public health catastrophe of immense proportions.

Professor Alan Maryon-Davis, President, UK Faculty of Public Health
 Professor Ian Gilmore, President, Royal College of Physicians of London
 Dr Patricia Hamilton, Former President, Royal College of Paediatrics and Child Health (in a joint letter to the British Medical Journal)⁵⁵

2. Sustaining a healthy future

Protecting health, protecting resources

- Reducing carbon, improving health

Reducing carbon, improving health

Tackling climate change brings many benefits for the health of people in the UK as well as globally.

Increases in major long-term conditions such as asthma, obesity, diabetes and high blood pressure are, in part, caused by environmental factors such as poor air quality, a lack of healthy food choices, a badly designed environment and inadequate facilities for safe walking and cycling. Badly designed environments and ill-health are found disproportionately amongst the disadvantaged in society, and contribute to health inequalities. Disadvantaged communities are more exposed to hazards, such as pollution and poor air quality, and will often lack access to safe green spaces.²⁹ Factory emissions,

high traffic levels and consequent respiratory problems are also more prevalent in disadvantaged areas.

We therefore need to develop common solutions to differing problems. We need health and healthcare services which simultaneously improve, protect and restore both human and environmental health, and which contribute to reducing health inequalities.

By implementing such strategies we will create a 'virtuous circle' – because actions to reduce carbon emissions will also improve public health, lowering demands for services and improving the NHS's capacity to be an organisation that promotes and sustains health and wellbeing. See Table 1: It's all connected – the health benefits of tackling climate change (p18-19).

The NHS is central to our society, touching almost every aspect of our lives. It therefore has a special responsibility to lead on action on climate change.

David Nicholson CBE, NHS Chief Executive, Department of Health, England

Table 1: It's all connected – the health benefits of tackling climate change

More active travel	Healthier, sustainable eating	Improved urban design	Better insulation in homes ³⁹	Reduced material consumption ⁴⁰
<p>Reducing the use of cars, and shifting to more walking and cycling will:</p> <ul style="list-style-type: none"> ■ Lower carbon emissions ■ Increase physical activity – which will help lower blood pressure and reduce obesity, heart disease, strokes, diabetes, osteoporosis (and associated injuries such as fractures) and cancer³⁰ ■ Reduce traffic-related injuries and deaths (approximately 250,000 people are killed or injured in road accidents in the UK each year³¹) ■ Result in less air pollution which can lead to less respiratory disease, such as asthma and chronic obstructive pulmonary disease (annual global deaths from air pollution are estimated to be 800,000³²) ■ Reduce noise which will help protect from hearing loss and reduce stress ■ Improve mental wellbeing (and reduce depression) and social cohesion 	<p>Eating less processed food will reduce intake of saturated fats, added sugar and salt, thus lowering the risk of obesity, heart disease, stroke, diabetes, and colon and breast cancers:</p> <ul style="list-style-type: none"> ■ Eat more locally produced, fresh, seasonal food. It has been estimated that the environmental, social and economic costs of 'food miles' – including greenhouse gas emissions, air pollution, congestion and accidents – is over £9 billion.³³ The UK is increasingly dependent on imported food. Our self-sufficiency has fallen by nearly 30 per cent since 1990, and by seven per cent since 2002³⁴ ■ Reducing consumption of animal products (meat and dairy foods), and eating more vegetables instead, will reduce CO₂ and methane emissions. Livestock farming is one of the biggest producers of methane due to the digestive processes of the animals. Reducing meat consumption would reduce the number of farmed livestock (and therefore emissions). The World Health Organization suggests that industrialised countries need to reduce their meat consumption from the current 224g/person/day to 90g/person/day which would have a positive effect on both carbon levels and health (eg. through a reduction in saturated fat consumption)³⁵ 	<p>Increasing green space in urban environments:^{36,37}</p> <ul style="list-style-type: none"> ■ Provides shade during heatwaves ■ Aids flood absorption ■ Improves air quality and reduces CO₂ ■ Improves mental wellbeing ■ Provides space for more physical activity, thus reducing obesity ■ Reduces inequalities in health <p>Improving the built environment:</p> <ul style="list-style-type: none"> ■ Improves public transport infrastructure, pavements and paths, reducing the need to use the car and therefore reducing CO₂ emissions ■ Increases social mobility and cohesion ■ Improves public safety (eg. well-lit streets) which encourages more people to walk or cycle³⁸ and improves accessibility (to facilities and amenities) 	<ul style="list-style-type: none"> ■ Reduces CO₂ emissions through reduced energy requirements ■ Reduces fuel poverty^{vii} and saves money in the long term ■ Improves resilience to both cold and hot weather ■ Reduces excess seasonal deaths and health inequalities ■ Promotes health and wellbeing <p><small>^{vii}A household is said to be in 'fuel poverty' if it needs to spend more than 10% of its income on fuel to maintain a satisfactory heating regime (usually 21°C for the main living area, and 18°C for other occupied rooms).</small></p>	<ul style="list-style-type: none"> ■ Reduces waste (and therefore environmental impacts eg. from landfill) ■ Saves money ■ Reduces emotional distress, dissatisfaction and alienation

3. Cutting the carbon, achieving change

- National targets
- Individual targets
- NHS targets and performance
- What is sustainable development?

It has been said that we are at an historical and ecological crossroads.⁴¹ If we carry on as we are – with CO₂ emissions continuing to rise – we face a dangerously uncertain future, particularly with regards to our health and wellbeing.

We need to implement strategies which will effect real and lasting change. But, as we described on p9, time is running out. Government has set a number of important targets for carbon reduction but we, as individuals, and the organisations we work for, must take responsibility for the CO₂ we produce, and do everything we can to help meet those targets.

If we are going to manage a sustainable future, we need nothing less than a total cultural change.

Sir David King, former Government Chief Scientific Advisor (at the UK Faculty of Public Health Annual Conference, 2007)

National targets

The *Climate Change Act 2008* introduces one of the world's first long-term, legally binding frameworks to tackle the dangers of climate change, putting into statute the UK's targets to reduce carbon dioxide emissions through domestic and international action. A target of at least 80 per cent reduction in

greenhouse gases by 2050 has been set against a 1990 baseline.⁴²

The Committee on Climate Change, established as an independent body, has taken account of the latest observed acceleration of climate change and included all six greenhouse gases covered by the Kyoto agreement^{viii} (rather than CO₂ alone). The Act requires that both international aviation and shipping be included in the new target (or to explain why not to Parliament by end of 2012) and seeks a wide range of other 'decarbonisation' measures.⁴³

The Act also requires government to set a series of five-year 'carbon budgets' with binding limits on CO₂ emissions. The government will have to produce annual statements on UK emissions, outlining progress towards targets and produce five-yearly reports on measures to adapt to climate change.

The Scottish Government has introduced its own *Climate Change Bill* which also commits to an 80 per cent reduction in carbon emissions by 2050. This will, in part, be related to the huge potential in Scotland for generating renewable energy.⁴⁴

^{viii}Methane, nitrous oxide, sulphur hexafluoride, hydrofluorocarbons and perfluorocarbons as well as carbon dioxide.

Individual targets

A sustainable carbon footprint for each person on the globe has been estimated at no more than two tonnes each year.⁴⁵ (This calculation is based on a complex analysis of consumption of natural resources in different countries around the world.) As described on p13, the average UK citizen uses approximately ten tonnes per year – that is, about *five times* what is sustainable for the planet. Experts also suggest that we may need to **cut our carbon emissions by as much as 80 or 90 per cent by 2030**,⁴⁶ in order to prevent the catastrophic consequences of climate change from two degrees centigrade of warming (see pages 10-11).

Experience suggests that shorter term targets (rather than long-term goals such as the 80 per cent by 2050) are more effective in motivating us. The government will set interim targets in due course, but in the meantime a ***pro rata* trajectory for individuals to adopt would be a ten per cent reduction in individual CO₂ emissions over the next five years.**

NHS targets and performance

In support of the national (and international) targets, the UK departments of health have set specific targets for the NHS. For England these include:⁴⁷

- *reducing the level of primary energy consumption* by 15 per cent (or 0.15 million tonnes of carbon) by 2010 (against 2000 levels). (This target has also been adopted by the NHS in Wales);
- *for new capital developments, major redevelopments and/or refurbishments* – 35-55Gj/100m³ energy efficiency;
- *for all existing facilities* – 55-65Gj/100m³.

The Scottish Government has also committed the NHS in Scotland to a two per cent reduction in energy consumption *per year* until 2010.⁴⁸

How are we doing so far?

Despite many good examples of better energy efficiency, overall energy consumption in the NHS continues to increase. This discrepancy is largely due to the continuing major investment programme in the NHS infrastructure, with increasing numbers of new healthcare buildings.⁴⁹ Other trends are also likely to increase NHS carbon emissions – for example, the increased energy intensity of healthcare delivery (eg. through new technology), greater emphasis on community care, and increased total NHS activity.

Saving Carbon, Improving Health provides the first ever estimation of the carbon footprint of the NHS. In addition to meeting the government's national target, the strategy sets the NHS the challenge

of reducing its carbon emissions by ten per cent by 2010 (based on 2007 levels).⁵⁰ Experience in Scotland suggests this is quite achievable. The NHS in Scotland has made significant strides in reducing energy consumption – down by nearly 36 per cent in the past 20 years. Carbon dioxide emissions have also fallen by almost 39 per cent.⁵¹

The Carbon Trust

www.carbontrust.co.uk

Since its creation in 2006, the Carbon Trust's NHS Carbon Management Programme has worked with 49 NHS Trusts to help them develop and implement Board-approved carbon management plans. Previous participants have identified annual savings of more than £14 million and 125,000 tonnes of carbon dioxide – or about 20 per cent of total energy use. The Trusts all follow a robust programme involving measurement, strong engagement with staff and firm project management. They also support NHS Trusts to design and build low-carbon hospitals.

Both the Department of Health in England and the Scottish Government have set up funds to help the NHS in these countries to make energy savings and meet their targets.

Yet how do we achieve these targets? As described above, we need to develop strategies that will promote and improve health whilst protecting scarce resources, and which will enable us to make the transition to a healthier, lower-carbon society. The most widely accepted strategy is **sustainable development**.

What is sustainable development?

Although it appears to be big on government agendas, fewer than one in three people have heard of the term 'sustainable development', and even fewer can explain what it means.⁵²

In the business community, the language of 'corporate social responsibility' or 'corporate citizenship' is often used to describe using corporate powers and resources in ways that benefit the social, economic and physical environment in which we all live. In local government, the terms 'wellbeing' or 'social harmony' are frequently linked to sustainable development. The meaning, generally speaking, is the same.

In this guide, we define sustainable development as **the integration of environmental, social, political and economic considerations and impacts within decision-making**. It also includes notions of social justice and equity. Plans and decisions should meet the needs of the present without compromising

the ability of future generations to meet their needs. (This was the definition first fully articulated in 1987 by Dr Gro Harlem Brundtland, who chaired the World Commission on Environment and Development.⁵³)

Sustainable development means that we have to start 'living within our means' with regard to natural resources. We must avoid putting unbearable stress on environmental systems and thereby endangering the health and wellbeing of future generations.

For most people sustainable development can be defined as: **meeting the needs of people today without compromising the ability to meet the needs of people in the future.**

The UK's sustainable development strategy

Securing the Future is the UK government's strategy for sustainable development and an important public health strategy.⁵⁴ Its aims are "to live within environmental limits and achieve a just society". The government believes that this can only be achieved through a sustainable economy, by using sound science responsibly and through promoting good governance.

The strategy identifies four priority areas:

Sustainable consumption and production – achieving more with less: consuming far fewer material goods; using locally produced goods and services which are not only energy-efficient but are produced in an energy-efficient way with minimal waste.

Addressing climate change and energy usage: changing to low-carbon lifestyles and travel habits, using only the most energy-efficient goods and services, and investing in energy from sustainable sources.

Protecting natural resources and enhancing the environment: ensuring that economic growth is not at the expense of natural resources, preventing environmental degradation and understanding environmental limits.

Creating sustainable communities and a fairer world: developing a global framework to ensure that everyone, particularly the disadvantaged and those in developing countries, has access to the same health, social, economic and environmental benefits.

4. The NHS Leading the way to a healthy, sustainable future

- Making it happen
- The NHS – leading by example
- The NHS as community partner

Sustainable development is the supreme test of partnership.

Sir Neil McKay, Chief Executive, NHS East of England

The NHS, with its massive workforce, large number of buildings, procurement power and extensive fleet of vehicles, has a significant impact on carbon emissions in the UK. But also, in working to restore, maintain, improve and protect people's health, we have a moral imperative to lead the way and set an example to others.

Making it happen

To meet the targets outlined on p22 we must take action to reduce our own carbon emissions – including a degree of 'self-rationing' – and to promote low-impact lifestyles in our communities and workplaces.

But we also need to see that our individual efforts are part of a wider campaign of action by national, regional and local governments and organisations including hospitals, clinics and practices. We therefore need to continue to press at local,

national and international level for resolute action to tackle climate change.

Structural change is undoubtedly required to facilitate substantial alterations in organisational and individual behaviour and for this we need strong, effective leadership. The health sector, in particular the NHS, can lead the way in shifting values and expectations, and in helping us respond to a world in which climate change and 'energy resilience'^{ix} are major concerns.

Tackling climate change is an increasingly important issue for all organisations and individuals. The NHS, as a healthcare provider with the largest workforce in Europe, is well placed to lead the public sector by example and take a leading role to stimulate action to improve public health by addressing climate change; promoting sustainable communities; and reducing health inequalities.

Phil Hope MP, Minister of State for Care Services and Minister for the East Midlands

^{ix}Oil is a finite resource and we are either at or very close to the peak of production of conventional oil (also known as 'peak oil'), which is creating difficult issues of energy security for governments.

The NHS – leading by example

The NHS is the largest single organisation in the UK, representing on average ten per cent of regional economies in England alone.⁵⁶ Its purchasing power on goods and services is vast – with an annual budget of around £100 billion, responsible for nearly 60 per cent of its total CO₂ emissions.⁵⁷ Because it is directly responsible for the health of the population, the NHS can provide a powerful example for other organisations to follow. It is in a prime position to act as a force for change through promoting sustainable consumption, combating climate change, protecting natural resources and enhancing the environment, all of which will benefit patients, staff and the wider communities they service.

As *Saving Carbon, Improving Health* states:⁵⁸

"How the NHS behaves – as an employer, a purchaser of goods and services, a manager of transport, energy, waste and water, as a provider of services, as a landholder and commissioner of building work and as an influential neighbour in many communities – can make a big difference to people's health and to the wellbeing of society, the economy and the environment. Behaving as a good corporate citizen can save money, can benefit population health and can help reduce health inequalities."

A survey conducted by Ipsos MORI revealed that 63 per cent of the public agreed that the NHS should do more to reduce its carbon footprint.⁵⁹ Another survey of 336 chief executives and chairs of NHS organisations also showed that 70 per cent believed that local NHS organisations should make reducing their carbon footprint a major priority.⁶⁰

The business case for NHS action is compelling. Taking action will:

- save money and insulate against price increases in fuel, food, waste disposal and other goods and services;
- reduce the negative health consequences of climate change;
- improve physical and mental health and wellbeing (reducing the need for health services);
- improve staff morale;
- promote the sustainability credentials of the NHS as a public sector employer and 'Good Corporate Citizen';
- demonstrate compliance with legislation.

Saving Carbon, Improving Health identified the following priority areas that will deliver immediate savings – both carbon and financial – and which, importantly, will also benefit patients and staff:⁶¹

- **Sustainable procurement:** supply chain activities of companies producing goods and services procured by NHS England. For example, the annual food budget for the NHS is about £500 million, making it the largest purchaser of food in the UK. Much of it is imported, some from as far afield as Argentina and New Zealand, with consequent high 'food miles', eg. the ingredients for a typical steak and kidney pie served in the NHS travel approximately 31,200 kilometres.
- **Reducing building energy use:** heating, hot water and electricity consumption. The NHS currently spends nearly £500 million annually on its energy bill.
- **Reducing travel:** by patients, visitors and staff – approximately 10.5 billion kilometres are travelled each year in relation to the NHS. By 2010 all NHS organisations are expected to have a Board-approved travel plan in place (see *Action list 3: the basics of a sustainable travel plan*).
- **Reducing waste:** levels of which have actually been increasing in recent years. For example, in 2005-06, over 13 million patient meals were wasted – equating to about nine meals wasted per patient. As the cost of waste disposal rises, there is a financial imperative to reduce waste to landfill.

We need to develop an ingrained carbon-reduction culture throughout all levels of all NHS organisations, including primary and secondary care.

Plymouth Hospitals NHS Trust – encouraging greener travel

Plymouth Hospitals NHS Trust is encouraging both patients and staff to travel 'greener'. Patient letters include advice on using public transport to travel to the hospital where possible: "The hospital is well served by public transport... If you live close by and are fit we would encourage you to walk to the hospital." The appointment letter now gives more details of public transport. In addition to using public transport, staff are also encouraged to car share – single car occupancy has reduced from 78% in 1995 to 51% in 2007.

Source: Andrew Davies, Plymouth Hospitals NHS Trust

The NHS Sustainable Development Unit makes a compelling case that the NHS should operate on a framework of clinical, financial **and** carbon governance – all of which would contribute to sound financial management, improved patient safety and ultimately good corporate citizenship. Carbon management should be treated as a cross-cutting

The NHS needs to put in place the actions, research and development necessary to ensure that a reduction in carbon emissions by 80 per cent by 2050 is an achievable goal.

David Pencheon, Director, NHS Sustainable Development Unit

issue in policy and strategy within NHS management, in the same way as equality and diversity, which have rightly been accorded very high corporate status in recent years.

The NHS as community partner

The NHS is a key partner in many local partnerships. For example, in England it is a key partner in local strategic partnerships (LSPs). LSPs bring together local public, private, community and voluntary sectors. They are required to develop a Community Strategy, which should include joined-up action on climate change. LSPs also provide important opportunities for direct engagement in the local planning system which is vital to developing health-promoting, low-carbon environments, such as creating local cycle routes to promote cycling (which is good for both health and the environment). Comprehensive area assessments in England will assess how well local partnerships are working and how well local public sector organisations

use their resources.* Health impact assessments should also be integrated into environmental impact assessments, which are carried out on all proposed developments to ensure that local communities are health promoting, accessible and environmentally sustainable.

Cornwall Food Programme

www.cornwallfoodprogramme.co.uk

Run by the NHS in Cornwall in partnership with the Soil Association. Sourcing of local, fresh and organic food has resulted in a two-thirds cut in carbon emissions from road transportation of food to local healthcare facilities, and a boost to patient recovery, the local economy and the environment. Over 80% of the Trust's food budget is now spent through Cornish companies, and over 40% goes on Cornish produce.

*For further information on comprehensive area assessments visit: www.idea.gov.uk/idk/core/page.do?pageId=8811993

5. A brief word on carbon offsetting and adaptation

- Carbon offsetting
- Adaptation

Carbon offsetting

Carbon offsetting is a way of 'compensating' for the emissions produced. It involves calculating your emissions and then purchasing 'credits' from emission reduction projects. These projects can take various forms, including renewable power, energy efficiency, fuel switching (eg. from oil to natural gas), reforestation, or deep storage of greenhouse gases.⁶² However, although they may allow for some re-distribution of resources to sustainable initiatives, mainly in developing countries, carbon offsetting schemes are not a long-term solution to reducing carbon emissions. This is because they are all too often used to assuage guilt without inducing lower-carbon policies, practices or personal lifestyle habits. Basically, people see these schemes as a 'let-out' so that they can carry on their high-carbon lifestyles without feeling too bad about it.^{xi}

Carbon offsetting is not the solution. Only by undertaking urgent and sustained action, such as outlined in this guide, will we reduce carbon emissions.

Adaptation^{xii}

This guide has focused on so-called mitigation strategies – aimed at tackling the causes of climate change whilst there is still time. But even if we all take action to keep global warming below the crucial threshold of two degrees see p9, the effects of past emissions will continue to be felt, for decades to come. For example, sea levels will continue to rise and there will be more frequent and intense extreme weather events.⁶³

We therefore also need to develop adaptation strategies to help us to cope effectively with the inevitable impacts of climate change, some of which are gradual and predictable (eg. rising sea levels), others of which are sudden and cataclysmic (eg. heatwaves, flash floods).^{xiii}

The NHS has a crucial part to play in responding to the various crises triggered by climate change. It needs adaptation strategies to demonstrate its preparedness. These are most likely to be integrated into emergency preparedness and business continuity planning.

^{xi}If you must purchase offsets, it is recommended that you buy credits which have been certified by the Gold Standard (for example, energy efficiency or renewable energy projects). For further information visit: www.cdmgoldstandard.org. The government has also developed a framework for a voluntary Code of Best Practice for carbon offsetting schemes, to enable people to make informed choices about the most effective products on the market (see www.defra.gov.uk/environment/climatechange/uk/carbonoffset/).

^{xii}Adaptation is a crucially important set of actions needed to prepare for, and respond to, the consequences of climate change. We aim to focus more fully on adaptation in the future.

^{xiii}For a list of resources on adapting to climate change, see *Resources* p51.

Key components of an adaptation strategy include:⁶⁴

- **Identification of vulnerable groups** – to target adaptation initiatives most effectively (it will be the most vulnerable in our society which will be hardest hit by the effects of climate change see p10).
- **Heatwave planning** – an important component of overall emergency planning and is particularly important for vulnerable at-risk groups such as children, older people, and those with chronic and severe illness.
- **Flood resilience and management** – flood warnings, reservoir safety, evacuation plans, the maintenance of essential services such as drinking water and electricity, emergency support and information.
- **Changes in infrastructure** – such as designing buildings that stay cool in hot weather, warm in winter and which are flood-resilient.
- **Contingency planning** – ensure resilience to potential disruption of energy and food supplies.

Although adaptation and mitigation are often discussed separately they do, of course, overlap. Adaptation strategies can contribute to mitigation and the opposite is also true. For example, insulation reduces carbon emissions and also helps stabilise building temperatures, as well as protect against heatwaves and fuel poverty; urban green space and planting of trees and shrubs helps cooling in heatwaves as well as absorbing carbon from the atmosphere.

This brief overview has put forward the arguments for prioritising action on climate change, implementing sustainable development strategies in the health sector, and for the NHS to lead the way. The following pages set out some practical steps we can all take to join the transition to a healthy, sustainable, low-carbon future.

I fully support the general aims of this document, and endorse the need for the NHS and other Healthcare organisations to take climate change seriously.

Justin McCracken, CEO, Health Protection Agency

What you can do



We want to show that if we all make small changes, together we can make a big difference.

John Grimshaw CBE, President, Sustrans

6. Tools for challenging climate change

- Action list 1: planning and business management
- Action list 2: achieving change within organisations
- Action list 3: the basics of a sustainable travel plan
- Action list 4: the local community
- Action list 5: individuals
- Action list 6: sustainability and health-check tool for policies and strategies

✓ **Develop a Board-approved strategy on sustainable development and carbon management** covering the key areas in the action plan suggested in *Action list 2*, and include targets and dates for monitoring progress. The NHS carbon reduction strategy, *Saving Carbon, Improving Health* proposes that all NHS organisations should have a Board-approved strategy in place by 2009. By 2010, all NHS bodies should have a Board-approved sustainable travel plan (see *Action list 3: the basics of a sustainable travel plan*).⁶⁵

✓ **Appoint a senior manager to drive forward development and delivery of the strategy – backed by the chief executive (who should be accountable for the overall strategy)**. It is a whole organisation responsibility and should not be left only to estates and facilities management – important though their contribution is.

✓ **Set up a Sustainable Development (or Corporate Citizenship) Committee or Taskforce** to drive through the changes across the whole organisation in collaboration with other local partner organisations.

Action list 1: planning and business management

By making sustainable development and carbon management integral parts of strategic planning and business processes, we can develop organisations that will lead the transition to a healthy, sustainable, low-carbon future.

✓ **Identify a non-executive board member as ‘Sustainability Champion’** (or Corporate Citizen Champion) to promote good carbon governance as a corporate responsibility of the whole board. In England, this could be combined with the ‘Design Champion’.^{xiv}

✓ **Integrate carbon management** into your corporate governance arrangements, including risk assessment and risk management. This is the notion of ‘carbon governance’.

✓ **Include action on sustainable development and climate change in:**

- **organisational business plans;**
- **annual reports;**
- **director of public health annual reports** (highlighting the links with reducing inequalities);

^{xiv}For further information visit: www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4122848

■ service specifications

eg. between commissioners in NHS organisations, and health and social care providers;

■ the redesign of patient care and treatment pathways

eg. reducing the number of visits required will also reduce carbon emissions;

■ public health commissioning

eg. some primary care trusts are commissioning walking and cycling programmes.

✔ Become a 'Good Corporate Citizen' organisation

Visit www.corporatecitizen.nhs.uk for a web-based self-assessment model (developed by the Sustainable Development Commission and funded by the Department of Health) providing support for NHS organisations to embrace sustainable development and tackle health inequalities through their daily activities. It shows why sustainable behaviour makes business sense: it saves money; improves staff wellbeing and productivity; reduces demand for health services; and provides guidance on six key areas: transport, procurement, facilities management, employment and skills, community engagement, and new buildings.

✔ Incorporate environmental improvement

(ie. the ideas listed in each of the action lists) into the design of new buildings and refurbishments.

✔ Undertake health and environmental impact assessments

or, better still, an **integrated appraisal** routinely on all plans and developments.^{xv}

✔ Include sustainable development in the competences for knowledge and practice of courses and qualifications

run by the organisation, or with which it is involved.

✔ Work in partnership with others

– the NHS, local authorities, voluntary groups, communities and the business sector – to create momentum for change, including through:

- **Local Strategic Partnerships and Local Area Agreements;**
- **Regional strategies and initiatives**, eg. through the Government Office, Regional Director of Public Health or Regional Development Agency;
- **Local community groups.**

(See also *Action list 4: the local community*).

^{xv}Examples of the application of different types of appraisal can be found at: www.londonhealth.gov.uk/lhc/hia. The Strategic Environmental Assessment Directive came into force across the European Union in 2004.⁶⁶ The Department of Health in England, in association with the Health Protection Agency, has published draft guidance on including health in assessments, available from www.dh.gov.uk⁶⁷

Action list 2: achieving change within organisations^{xvi}

We can all help and encourage the organisations we work for (or have links with through our work and community activities) to implement simple strategies to move them towards a sustainable, low-carbon future:

✔ Undertake a carbon audit

– strongly recommended for organisations by the Carbon Trust.

✔ Communicate the business case for tackling climate change:

saving money, especially with current and likely future rises in energy prices, complying with legislation, meeting targets, advertising sustainability or corporate social responsibility credentials, improving staff morale.

✔ Set up a staff group

identifying departmental or team 'champions', to implement the Board-approved action plan which could include:

- **reducing energy consumption** – fit energy-efficient appliances and lightbulbs, switch to an energy supply from renewable sources. Seek advice from the Carbon Trust – see *Further Information*;
- **setting an organisational recycling target** – at least 60 per cent for non-clinical waste;
- **reducing water consumption** – fit water-efficient taps, toilets etc;
- **implementing a travel plan** to include initiatives, incentives and

targets to promote walking and cycling;^{xvii} using public transport;^{xviii} car sharing and car pools (see *Action list 3*);

- **using teleconferencing and videoconferencing** wherever possible – increasing flexibility, saving travelling time and money;
- **procuring fresh, seasonal foods** to reduce 'food miles' and carbon emissions;^{xix}
- **sourcing eco-friendly products and services** to reduce carbon emissions and boost the local economy;

^{xvi}With acknowledgement to Giffiths J. 2006. Environmental sustainability in the NHS in England. *Public Health*. 120:609-612.

^{xvii}Any employer can sign up to the national Cycle to Work scheme to loan staff tax-free bicycles which the employee can then buy for a nominal fee at the end of the loan period. Visit: <http://dft.gov.uk/pgp/sustainable/cycling/cycletoworkschemeimplementat5732>

^{xviii}Case studies have shown that NHS and other organisations really can achieve a shift in travel behaviour – for the NHS this is particularly important, as nearly one in 20 journeys in the UK is associated with it.

^{xix}For advice on sustainable procurement in the NHS in the England, go to <http://www.pasa.nhs.uk/susprohealth>

- **providing staff training on organisational, local and national sustainable development and climate change strategies** – eg. in continuing professional development programmes, staff induction programmes;
- **having more indoor plants and outdoor gardens** – there is increasing evidence that green spaces can improve the patient experience and speed recovery, and improve staff wellbeing, as well as helping to counteract carbon emissions;
- **asking for a sustainability health-check to be included** in organisational, local, regional and national policy and strategy documents (see *Action list 6*);

Sustainable event management

- Do you need a face-to-face meeting? Would a video or teleconference work?
- Include sustainability clauses in contracts with suppliers.
- Seek to minimise the impacts of travel eg. is the venue accessible by public transport?
- Be energy and water-efficient.
- Provide tap water rather than bottled water.
- Source food carefully – locally produced and seasonal as a general rule.
- Delegate packs and giveaways – minimise content or, ideally, don't provide at all.
- Consider providing only meat-free meals and snacks.

Go to Defra 2007. Sustainable Events Guide. <http://www.sustainable-development.gov.uk/advice/documents/SustainableEventsGuide.pdf> for further information.

- **lobbying for implementation of the recommendations in Action list 1;**
- **including information on the socially responsible use of natural resources** and tackling climate change in workplace health programmes.

You don't need to wait to form a staff group or formal action plan – there are things you can do to reduce your carbon emissions in the workplace – see *Action list 5: individuals*.

There are also many things we can do to ensure sustainable development becomes an integral part of our organisation's strategic planning and business processes – see *Action list 1: planning and business management* for some ideas on how.

A well-designed travel plan can save organisations' money, significantly reduce staff car use (for journeys to work), promote physical activity (and therefore health and wellbeing).

The four key areas for action are:

Reducing the need to travel

eg. increased use of teleconferencing and videoconferencing for meetings, home-working.

Promoting 'active travel' such as cycling and walking to and from work, and to meetings (including patients and visitors where appropriate), using public transport rather than the car, 'guaranteed ride home' schemes (such as emergency taxis for staff who car share or use public transport); reimbursing cycle mileage.

Incentives to share cars and drive smaller, more fuel-efficient cars including reducing single occupancy through promoting car share schemes, car pool schemes.

Incentives for active travel and lower-carbon methods of transport rather than schemes which financially reward high-emission cars.

Action list 3: the basics of a sustainable travel plan^{xx}

A sustainable travel plan aims to reduce car use (and therefore carbon emissions) by promoting and supporting all the possible alternatives.

✓ Essential elements for a successful travel plan:

- **Appoint a travel plan co-ordinator** – a named person, with a clear remit to engage with organisational decision-makers;
- **Commit resources** – financial and non-financial – for development and implementation of the plan;
- **Set SMART targets** – targets that are specific, measurable, attainable, realistic and time-bound;
- **Implement visible measures to support sustainable travel** – cycle storage, teleworking, showers, database of car sharers, bike loan schemes;
- **Publish your travel plan** – make sure staff and visitors have access to the plan;

^{xx}Sources: Department for Transport. *The essential guide to travel planning*. Available from: www.dft.gov.uk; Energy Saving Trust. *Transport in business*. Available from: <http://www.energysavingtrust.org.uk/business/Business/Transport-in-business>

- **Establish a baseline** – conduct a staff and visitor travel survey, and a site audit at the start of planning to establish who travels where, when and by what means and support monitoring of progress;

- **Develop a monitoring mechanism** – a systematic approach to measuring the impact of the travel plan and identifying opportunities for improvement.

✓ **Developing the business case for a sustainable travel plan.**

Financial savings:

- Savings in reimbursed car mileage;
- Productivity improvements from staff time saved in travel (eg. teleconferencing, videoconferencing, home-working);
- Avoiding land purchase or costs of building and maintaining car parks;
- Maintenance of car parks.

Operational benefits:

- Improved access for patients, visitors and deliveries;
- Reducing staff time on problems caused by parking shortages;
- Increased resilience.

Human resources:

- Improved staff retention, a more attractive recruitment package, reduction in staff sick days through better staff health, improved staff morale.

Corporate social responsibility:

- Reduced carbon emissions;
- Benefits to community relations from contribution to reducing congestion, pollution and road traffic accidents;
- Can assist when making planning applications to expand.

Useful calculators for estimating emissions from travel:

Fuel and cars:

www.defra.gov.uk/environment/business/envrp/pdf/conversion-factors.pdf

Aviation emissions from flights:

www.carbonneutral.com/cncalculators/flightcalculator.asp

Top ten travel tips to get you started

1. Post up-to-date local bus and train timetables on notice boards.
2. Raise awareness of travel issues through newsletters, bulletins etc.
3. Be flexible about start and finish times for work if this enables use of public transport.
4. Identify staff who can work at home, even if just once a fortnight.
5. Promote the health benefits of walking and cycling (include shower facilities and covered bicycle racks).
6. Move cycle racks near the entrance of your building. This shows cyclists you value them and provides a statement of intent for employees and the public.
7. Encourage meeting venues that are accessible via public transport.
8. Log the number of miles and hours saved by the use of teleconferencing and videoconferencing.
9. Support national initiatives such as 'Bike2Work' or the work of Sustrans (see p46).
10. Promote car sharing informally until you can set up a formal scheme (which should include priority multi-occupancy vehicle car parking spaces close to the front door).

Action list 4: the local community

Talk to people about the benefits of a healthy, low carbon lifestyle.

Your own changes in behaviour can influence behaviour in wider society. Involve other groups, such as health trainers and health visitors, community groups and leaders, to promote sustainable living as part of a healthier lifestyle.

Work through local partnerships to:

- **plan, design and manage sustainable communities** (eg. through Local Strategic Partnerships and Local Area Agreements);^{xxi}
- **ensure that transport and planning are better integrated**, so that people can travel to healthcare facilities, work, shops and schools by walking, cycling or using public transport;
- **reduce fuel poverty and improve household energy efficiency** – damp and cold housing causes many unnecessary deaths, and improving the energy efficiency of houses will reduce carbon emissions.^{xxii}

✓ **Include messages about locally-produced, seasonal food, reducing consumption of animal products and processed food, in nutrition and obesity programmes** and initiatives – and inform people that a healthy diet produces less methane and carbon dioxide (see Table 1 p18-19).

✓ **Promote the links between physical activity, health and combating climate change** – as outlined in this guide.

✓ **Link mental health promotion with access to nature and physical activity** – both of which have a positive effect on mental health (see see Table 1 p18-19).

✓ **Bring together the ideas in the eco-schools programme (www.eco-schools.org.uk) and healthy schools programmes,^{xxiii} into an integrated programme encompassing health and the environment in schools.**

✓ **Consider becoming a 'Transition Town'.** This initiative seeks to build local self-reliance to prepare for the future, meet the challenges posed by 'peak oil' and climate change, and reduce carbon emissions. There are already over 100 transition towns/cities/ areas across the world, including the UK. Visit: <http://transitiontowns.org/>

^{xxi}The Department of Health in England provides a useful summary of the planning system: *A Guide to Town Planning for NHS Staff*. Available from: www.dh.gov.uk

^{xxii}For information on home energy grants: England (Warmfront): www.warmfront.co.uk; Wales (Home Energy Efficiency Scheme) and Northern Ireland (Warm Homes): www.eaga.com; Scotland (Central Heating Programme/Warm Deal): www.chwdp-scottishexecutive.co.uk

^{xxiii}For England visit: www.healthyschools.gov.uk; Scotland: www.healthpromotingschools.co.uk; Northern Ireland: www.healthpromotionagency.org.uk/work/hpschools/menu.htm, and Wales: <http://new.wales.gov.uk/topics/health/improvement/children/schools/?lang=en>

Action list 5: individuals

We don't need to wait for the organisations we work for to take that first step.

Learning and Teaching Scotland (www.ltscotland.org.uk/sustainabledevelopment)

Although developed for schools, it can readily translate to the workplace. Includes detailed action checklists.

✓ Develop an action plan

Once you've worked out your carbon footprint, develop an action plan. Here are some ideas:

Energy

- Use energy-efficient lightbulbs. (Using one 20 watt energy saving lightbulb (equivalent to a 100 watt ordinary bulb) can save as much as £60 and 172kg of CO₂ over its lifetime).
- Use energy-efficient appliances. (Appliances such as washing machines, fridges etc now have energy efficiency ratings.^{xxiv})

There are lots of practical steps we can all take that can, straight away, contribute to tackling climate change and make a really big difference. Some ideas are set out in this action list:

✓ **Talk to people** – family, friends, colleagues – about the importance of climate change, sustainable development and health. Give them a copy of this guide to help explain things.

✓ **Know your carbon footprint – carry out a carbon audit**

Carbon calculators help you to work out just how much carbon dioxide you're emitting (your 'carbon footprint'). Key online calculators include:

Act On CO₂ (<http://actonco2.direct.gov.uk>)

Government calculator measuring home energy, appliances and transport. Provides action plans to cut CO₂ emissions.

World Wildlife Fund (www.footprint.wwf.org.uk)

Uses data modelling provided by the respected Stockholm Environment Institute. Linked to WWF 'One Planet Future' Campaign.

^{xxiv}DEFRA produce a shopper's guide to environmental labels on products, including energy efficiency ratings: <http://www.defra.gov.uk/environment/business/pdf/shopper-guide.pdf>

- Turn off appliances (eg. TVs, computers) – leaving them on standby uses more energy than actually using them.
- Wash your clothes at 30°C or lower – it uses less energy and your clothes will be just as clean. Avoid tumble drying.
- Insulation (eg. cavity wall and loft insulation of at least 270mm thickness) and simple draught proofing measures (such as heavy curtains, double glazing) can really make a difference – and will save you money (see the Energy Saving Trust website for possible savings).
- Turn down the thermostat – even by just one degree Celsius – which not only cuts carbon emissions but also saves money on fuel bills. Just make sure you wear an extra jumper.^{xxv}
- Switch to an energy provider that uses renewable resources such as solar and wind energy.

Check out

Your local council to find out if grants are available to help improve the energy efficiency of your home.

Energy Saving Trust (www.energysavingtrust.org.uk)

Carbon Trust (www.carbontrust.co.uk) for practical advice for organisations.

Your energy supplier for help and support: the Carbon Emissions Reduction Target scheme puts an obligation on energy suppliers to achieve targets in carbon reduction in UK households by installing subsidised, approved energy saving measures in the homes of their consumers, including insulation.

- Replace open fires with wood burning stoves, and burn waste wood.
- Generate your own energy using, for example, solar panels for heating water, and if you can afford them, solar photovoltaic cells.

If everyone in the UK installed one energy saving light bulb, we'd save enough CO₂ to fill the Albert Hall nearly 1,200 times.⁶⁸

Travel

- Walking or cycling whenever and wherever you can cuts carbon emissions and is also good for your health.
- Use public transport rather than the car.

^{xxv}NB: vulnerable groups such as older people, people with ill health, and young children are at risk from the cold. Seek further advice if you're not sure.

Carbon-conscious driving:

- drive as small and as energy-efficient a car as possible
- limit your speed – it uses up to 25 per cent more fuel to drive at 70mph than at 50mph
- limit the use of air conditioning – it uses up more fuel
- drive with the windows up – to maintain a comfortable temperature and reduce drag
- keep luggage to a minimum
- keep tyres properly inflated (for every 6psi that a tyre is under-inflated, the fuel consumption increases by one per cent)
- remove roof racks if not needed as they create drag and use more fuel
- share rides wherever possible

- Consider if your journey is really necessary – think twice about making it.
- Try videoconferencing and teleconferencing – it could also save you valuable travelling time. And it's often cheaper.
- Try to avoid flying – particularly short-haul air travel. Take the train in the UK and to Europe.

- Join or start a car sharing scheme.
- If your organisation has a home-working scheme, give it a try.

Food

- A healthy diet is good for the environment! Eating more vegetables and reducing consumption of animal products (meat and dairy) can also cut

Check out

Sustrans (www.sustrans.org.uk) for practical walking and cycling initiatives, including Safe Routes to Schools and the National Cycle Network.

Your local school to see if they are involved in a 'walking bus' scheme.

Seat 61 (www.Seat61.com) for rail travel in Europe and beyond.

Walking the Way to Health scheme (www.whi.org.uk)

Liftshare – car sharing scheme. (www.liftshare.com.uk)

methane levels (produced by animals) which contribute to global warming (and it's also good for your health as you'll reduce your intake of saturated fat).

- Fresh, locally produced, seasonal products generally use less energy to produce. Local produce also burns up fewer 'food miles' – the distance food has travelled – requiring less fuel.
- Try not to waste food – only buy (or order in restaurants) what you need.
- Avoid bottled water – it has huge environmental costs from plastic bottles and transportation.

Every **day** the UK throws away: 5.1 million potatoes; 4.4 million apples; 2.8 million tomatoes; 7 million slices of bread; 1.3 million unopened yoghurts; 1.2 million sausages; 1 million slices of ham; and 700,000 whole eggs.⁶⁹

Waste prevention

Reduce, reuse, recycle

- Purchase fewer new goods for the office and home – only buy energy efficient electrical goods; get your supplier to recycle your old equipment; try buying second-hand items.
- Print as little as possible. If you do, print two pages to one sheet/double-sided and use scrap paper where possible.
- Compost as much waste as you can – you'll be surprised at what you can compost.
- Recycle (including printer cartridges, mobile phones) – although recycling also consumes energy, it's better than sending waste to landfill.

Did you know you can also compost: shredded newspaper, leather shoes, pet bedding, cotton and wool clothes and vacuum dust?

Check out

Sustain (www.sustainweb.org) the alliance for food and farming.

Recyclenow (www.recyclenow.com) for advice on recycling and composting.

Freecycle (www.freecycle.org) – where people swap and give away items they no longer need.

Your local council policies on recycling, including garden waste, paper etc.

Action list 6: sustainability and health-check tool for policies and strategies

This tool helps assess whether plans and projects (either proposed or implemented) will take forward sustainable development.

Initiatives should have at least one 'tick' under each of the headings: **environmental, social and economic**. To combat climate change, it's important to have as many ticks as possible under the 'environmental' heading.

Environmental

1. Will the initiative minimise the use of energy, especially from fossil fuels?
2. Will the initiative encourage walking, cycling and use of public transport?
3. Will the initiative protect and enhance green space and biodiversity (including wildlife)?
4. Will the initiative minimise the production of waste, and increase the re-use and recycling of materials?
5. Will the initiative encourage the careful use of water resources?

Social

6. Will the initiative reduce crime and fear of crime, and improve public safety?
7. Will the initiative encourage social networks and social inclusion?

Economic

8. Will the initiative improve local conditions, especially in disadvantaged areas, eg. develop business and social enterprise, or develop the workforce and labour market?
9. Will the initiative help to alleviate poverty, and therefore reduce social and health inequalities?
10. Will the initiative improve housing (quality, affordability, energy efficiency)?

Further information

Health networks

Sustainable Development Network Group

<http://new.fph-groups.org.uk>

Email discussion group hosted by FPH, providing a forum for debate, knowledge-sharing and networking with others interested in the health and sustainable development agenda.

Health & Sustainable Development Network

<http://www.healthandsustainability.net>

The Network aims to enable people and organisations in the health community to support each other to give sustainable development a much higher priority; members can communicate through a newsletter and occasional highly participative events are organised.

Climate and Health Council

www.climateandhealth.org

For health professionals interested in fighting climate change and promoting sustainable development.

Key organisations and resources

Academy of Medical Royal Colleges

www.aomrc.org.uk

Association of Directors of Public Health

www.adph.org.uk

BTCV

www2.btcv.org.uk

CABE

www.cabe.org.uk

Carbon Trust

www.carbontrust.co.uk

Chartered Institute of Environmental Health

www.cieh.org

Department of Health

www.dh.gov.uk

Good Corporate Citizen

www.corporatecitizen.nhs.uk

Every Action Counts

<http://everyactioncounts.org.uk>

Institute of Public Health in Ireland

www.publichealth.ie

Intergovernmental Panel on Climate Change

www.ipcc.ch

National Heart Forum

www.heartforum.org.uk

NHS Confederation

www.nhsconfed.org

NHS East of England

www.eoe.nhs.uk

NHS Sustainable Development Unit

www.sdu.nhs.uk

Northern Ireland Executive

www.northernireland.gov.uk

Royal College of General Practitioners

www.rcgp.org.uk

Royal College of Paediatrics and Child Health

www.rcpch.ac.uk

Royal College of Physicians (Edinburgh)

www.rcpe.ac.uk

Royal College of Physicians (Ireland)

www.rcpi.ie

Royal College of Physicians (London)

www.rcplondon.ac.uk

Royal College of Physicians and Surgeons (Glasgow)

www.rcpsg.ac.uk

Royal Society for Public Health

www.rsph.org.uk

Scottish Environmental Protection Agency

www.sepa.org.uk

Scottish Government

www.scotland.gov.uk

Scottish Healthy Environment Network

www.healthscotland.com

Sustain

www.sustainweb.org

Sustainable Development Commission

www.sd-commission.org.uk

Sustainable Development

(Government website)

www.defra.gov.uk/sustainable/government

Sustrans

www.sustrans.org.uk

UK Public Health Association

www.ukpha.org.uk

Welsh Assembly Government

www.wales.gov.uk

Adaptation resources

Climate change adaptation

Scottish Government

www.scotland.gov.uk/topics/environment/climatechange/scotlands-action/adaptation

Climate change adaptation strategy 2008-11

Environment Agency

www.environment-agency.gov.uk/static/documents/leisure/adaptation_strategy_2083410.pdf

Heatwave plan for England (2008)

Department of Health

www.dh.gov.uk

The Pitt review lessons learned from the 2007 floods (2007)

<http://www.cabinetoffice.gov.uk/thepittreview.aspx>

UK Climate Impacts Programme

www.ukcip.org.uk

Other publications

Climates and change – the urgent need to connect health and sustainable development (2007)

www.ukpha.org.uk

Shoppers guide to green labels – understanding environmental labels on products DEFRA

www.defra.gov.uk/environment/business/pdf/shoppers-guide.pdf

Sustainable development: environmental strategy for the National Health Service (2005)

NHS Estates

www.dh.gov.uk

Taking the temperature.

Towards an NHS response to global warming (2007)

www.nhsconfed.org

References

1. World Health Organization. 2008. *Protecting health from climate change. World Health Day 2008*. Geneva: WHO.
2. United Nations Population Division. *World population prospects. The 2006 Revision Population Database*. Accessed on 20/08/07 from: <http://esa.un.org/unpp>
3. Hansen J et al. *Target atmospheric CO₂: where should humanity aim?* Accessed on 5/11/08 from: <http://arxiv.org/abs/0804.1126v3>
4. Department for Environment, Food and Rural Affairs. *e-Digest statistics about climate change*. Accessed on 6/11/08 from: www.defra.gov.uk/environment/statistics/globalatmos/gagccukem.htm
5. Intergovernmental Panel on Climate Change. 2007. Summary for policymakers. In: *Climate change 2007: impacts, adaptation and vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Parry ML, Canziani OF, Palutikof JP, van der Linden PJ and Hanson CE (eds). Cambridge: Cambridge University Press.
6. Hansen *op cit*.
7. Hansen *op cit*.
8. NEF on behalf of 100 Months. *Technical note*. Accessed on 18/12/08 from: www.onehundredmonths.org
9. Intergovernmental Panel on Climate Change *op cit*.
10. Hansen *op cit*.
11. WHO *op cit*.
12. Gregory J et al. 2004. Climatology: threatened loss of the Greenland ice-sheet. *Nature*. 428: 616.
13. Department for the Environment, Food and Rural Affairs/National Statistics. 2007. *Sustainable development indicators in your pocket 2007*. London: DEFRA.
14. Intergovernmental Panel on Climate Change *op cit*.
15. Secretariat of the Convention on Biological Diversity. *Statement by Ahmed Djoghlaif to the second meeting of the advisory group on Article 8(j) and related provision of the Convention on Biological Diversity*. Accessed on 22/12/08 from: <http://www.cbd.int/doc/speech/2007/sp-2007-04-30-8j-en.pdf>
16. United Nations Environment Programme. *GEO4 media brief – planet's tougher problems persist*. Accessed on 18/12/08 from: http://www.unep.org/geo/geo4/media/media_briefs/Media_Briefs_Geo-4%20Global.pdf
17. Intergovernmental Panel on Climate Change *op cit*.
18. Intergovernmental Panel on Climate Change. 2007. *Summary for policymakers of the synthesis report of the IPCC Fourth Assessment Report*. Accessed on 16/11/07 from: www.ipcc.ch
19. Department of Health/Health Protection Agency *op cit*.

20. Department of Health. *The health impact of climate change: promoting sustainable communities guidance document*. Accessed on 6/11/08 from: www.dh.gov.uk/en/publicationsandstatistics/publications/publicationspolicyandguidance/DH_082690
21. Robine JM *et al.* 2008. Death toll exceeded 70,000 in Europe during the summer of 2003. *Comptes Rendues Biologie* 331:171-28
22. Speech by the Rt. Hon. Hilary Benn MP at the Environmental Industries Commission. *Climate Change Bill – implications for business, London 24 April 2008*. Accessed on 6/11/08 from: <http://www.defra.gov.uk/corporate/ministers/speeches/hilary-benn/hb080424b.htm>
23. Sustainable Development. *Advice and support for householders*. Accessed on 14/11/07 from: www.sustainable-development.gov.uk/advice/householders.htm
24. Department for the Environment, Food and Rural Affairs/National Statistics *op cit.*
25. Department for Transport/National Statistics. 2006. *Transport statistics Great Britain 2006 edition*. London: The Stationery Office.
26. NHS Sustainable Development Unit. 2009. *Saving carbon, improving health: NHS carbon reduction strategy for England*. Cambridge: NHS SDU.
27. NHS Sustainable Development Unit *op cit.*
28. NHS Sustainable Development Unit *op cit.*
29. Environment Agency. 2004. *Deprived communities experience disproportionate levels of environmental threat. R&D technical summary E2-064/1/TS*. Bristol: Environment Agency.
30. Department of Health. 2004. *At least five a week: the impact of physical activity and its relationship to health. A report from the Chief Medical Officer*. London: DH.
31. Department for Transport. 2007. *Road casualties Great Britain: 2007*. Accessed on 6/11/08 from: www.dft.gov.uk/pgr/statistics/datatablespublications/accidents/casualtiesgbar/roadcasualtiesgreatbriatin20071
32. World Health Organization *op cit.*
33. Department for Environment, Food and Rural Affairs. 2006. *Food industry sustainability strategy*. London: DEFRA.
34. Simms A, Johnson V, Smith J on behalf of the New Economics Foundation and Open University. 2007. *Chinadependence: the second UK interdependence report*. London: NEF.
35. World Health Organization *op cit.*
36. Department of Health. 2008. *Heatwave plan for England. Protecting health and reducing harm from extreme heat and heatwaves*. London: DH.
37. National Heart Forum, Living Streets, CABE. 2007. *Building health. Creating and enhancing places for healthy, active lives*. London: NHF.

38. Jacobsen O. 2003. Safety in numbers: more walkers and bicyclists, safer walking and bicycling. *Inj Prev*. 9(3): 205-209.
39. Regional Public Health Group in the South East. *Health and winter warmth – reducing health inequalities*. Accessed on 6/11/08 from: www.dh.gov.uk/en/socialcare/deliveringadultsocialcare/olderpeople/DH_4076849
40. Jackson T. 2008. The challenge of sustainable lifestyles. Chapter 4 in: *The Worldwatch Institute. State of the world 2008: innovations for a sustainable economy*. Washington: Worldwatch Institute.
41. Monbiot G. 2006. *Heat: How to stop the planet burning*. London: Penguin, Allen Lane. [See review of evidence]
42. Department for Environment, Food and Rural Affairs. *Climate Change Bill – key provisions*. Accessed on 10/9/08 from <http://www.defra.gov.uk/environment/climatechange/uk/legislation/provisions.htm>
43. Committee on Climate Change. *Interim advice by the Committee on Climate Change. Letter from Lord Turner of Ecchinswell to Secretary of State*. Accessed on 6/11/08 from: <http://www.theccc.org.uk>
44. Scottish Government. *Climate Change Bill – current action*. Accessed on 10/09/08 from: <http://www.scotland.gov.uk/Topics/Environment/Climate-Change/16327/Climate-Change-Bill/Proposals-Timescales>
45. Lynas M. 2007. *Six degrees. Our future on a hotter planet*. London: Fourth Estate.
46. Monbiot G. 2006. *op cit.*
47. NHS Sustainable Development Unit *op cit.*
48. Scottish Executive. 2000. *NHS in Scotland: energy consumption target 2000-2010 letter: NHS MEL (2000) 19*. Accessed on 20/08/07 from http://www.sehd.scot.nhs.uk/mels/2000_19.htm
49. NHS Sustainable Development Unit *op cit.*
50. NHS Sustainable Development Unit *op cit.*
51. Scottish Executive. 2007. *Energy efficiency and microgeneration: achieving a low carbon future: a strategy for Scotland*. Accessed on 20/08/07 from: <http://www.scotland.gov.uk/Publications/2007/03/09144516/9>
52. Sustainable Development Roundtable. 2006. *Shifting opinions and hanging behaviours*. London: SDR.
53. Brundtland GH *et al.* 1987. *Our common future. Report of the World Commission on Environment and Development*. Oxford: Oxford University Press.
54. Department for the Environment, Food and Rural Affairs. 2005. *Securing the future. The UK government sustainable development strategy*. London: TSO.

55. Maryon-Davis A, Gilmore I, Hamilton P. 2007. Joint letter. *BMJ*. 335:1110.
56. East of England Regional Assembly/ East of England Sustainable Development Round Table. 2001. *A sustainable development framework for the East of England*. East Sussex: EERA.
57. NHS Sustainable Development Unit *op cit*.
58. NHS Sustainable Development Unit *op cit*.
59. NHS Confederation. 2008. *Saving carbon, improving Health: a draft carbon reduction strategy for the NHS in England – consultation. Response from the NHS Confederation*. London: NHS Confederation
60. NHS Confederation *op cit*.
61. NHS Sustainable Development Unit *op cit*.
62. Sustainable Development Commission. 2007. *Healthy futures #6. The natural environment, health and well-being*. London: SDC.
63. UN Association of the UK. UNA-UK briefing paper series on climate change. Climate change: an introduction. Accessed on 6/11/08 from: <http://www.una.org.uk/climate/pdf/UNA%20climate%20overview.pdf>
64. Department of Health *op cit*.
65. NHS Sustainable Development Unit *op cit*.
66. Office of the Deputy Prime Minister *et al*. 2005. *A practical guide to the strategic environmental assessment directive*. London: ODPM.
67. Department of Health. 2007. *Draft guidance on health in strategic environmental assessment. Consultation document*. Accessed on 6/11/08 from: www.dh.gov.uk/en/consultations/closedconsultations/DH_073261
68. Energy Saving Trust. *Surprising statistics*. Accessed on 13/11/07 from: http://www.energysavingtrust.org.uk/your_impact_on_climate_change/surprising_statistics/
69. WRAP. *The food we waste*. Accessed on 6/11/08 from: www.wrap.org.uk/retail/food_waste/research/the_food_we_waste.html

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