

NHS, Public Health and Social Care Carbon Footprint 2012

- The carbon footprint of the NHS, Public Health and Social Care system is 32 MtCO₂e in 2012
- A 28% reduction by the year 2020 would be in line with the Climate Change Act.
- The carbon footprint has fallen by 12% between 1990 and 2012



Contents

Introduction	2
Footprint 2012 - summary	3
Comparison with UK emissions.....	3
NHS, Public Health and Social Care breakdown.....	4
Footprint breakdown – summary	5
Footprint breakdown – detail	6
Carbon intensity per £ spend on system	7
Carbon intensity per person	8
International breakdown	9
Appendices.....	10
Appendix 1. Glossary of terms	10
Appendix 2. Data and definitions.....	11
Appendix 3. Backcast and forecast methods summary	12
Appendix 4. Procurement international breakdown	13

Introduction

Since 2008 the move towards a more sustainable health system has been supported by the development of a carbon footprint for the NHS in England. For the first time this footprint has been expanded to include the NHS, public health and social care system. This consumption carbon footprint includes emissions from building energy use; travel to and from sites; as well as goods and services purchased by the NHS, public health and social care system. This hybrid approach covers scopes 1, 2 and 3 as identified by the GHG Protocol¹. The best available methods have been used following Defra guidance², including directly measured data where this is available and supplemented with average carbon intensities from an input-output model.

The Climate Change Act 2008³ target of an 80% reduction by 2050 is compared with the time series from 1990 to 2025. A combination of backcasting and forecasting is used for the detailed datasets. Carbon budget targets⁴ are overlaid showing the scale of change required to meet the Climate Change Act 2008.

Consumption carbon footprint – includes embedded carbon emissions from goods and services as well as direct carbon emissions e.g. through burning fossil fuels.

Input-output –using an input-output model carbon intensities have been calculated using expenditure and carbon emissions from different economic sectors.

¹ Greenhouse Gas Protocol accounting tool, available at: <http://www.ghgprotocol.org/>

² Defra reporting guidance, available at: <https://www.gov.uk/measuring-and-reporting-environmental-impacts-guidance-for-businesses>

³ Climate Change Act 2008, available at: <http://www.legislation.gov.uk/ukpga/2008/27/contents>

⁴ Carbon Budgets, available at: <https://www.gov.uk/government/policies/reducing-the-uk-s-greenhouse-gas-emissions-by-80-by-2050/supporting-pages/carbon-budgets>

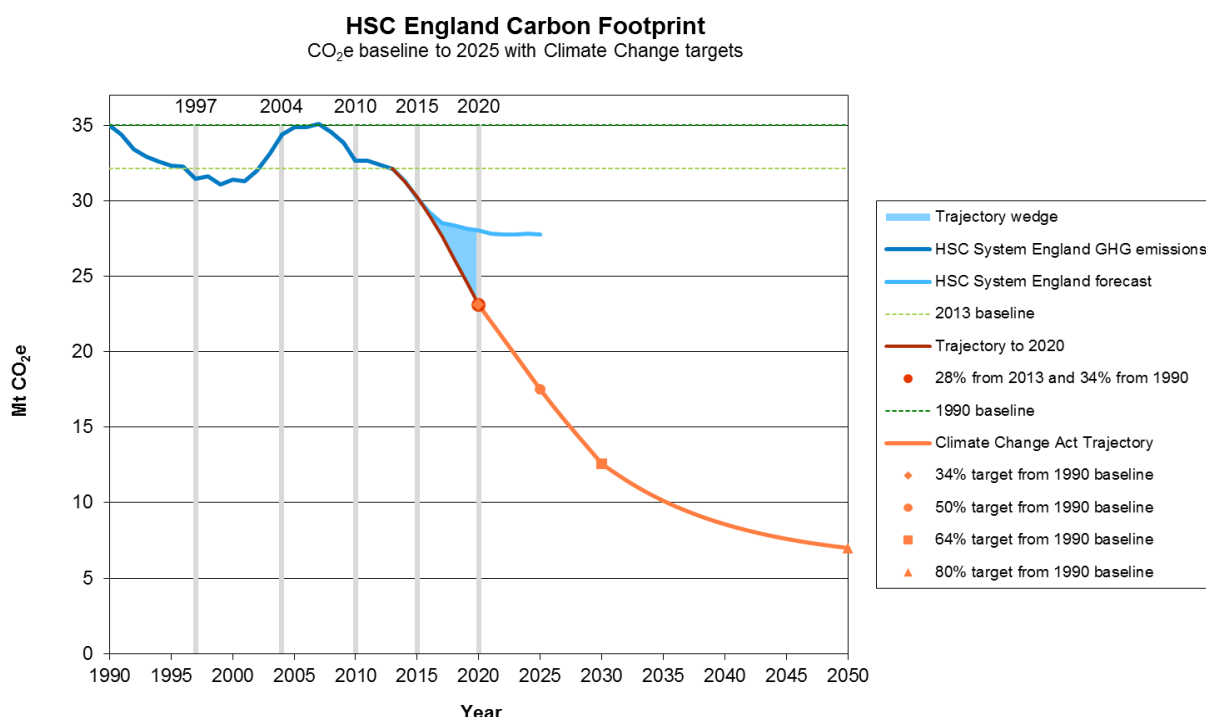


Footprint 2012 - summary

The carbon footprint for NHS, public health and social care in England is 32 MtCO₂e in 2012. The carbon footprint has fallen by 12% between 1990 and 2012 and is predicted to fall by a further 12% by 2020 because carbon intensities are reducing.

The Climate Change Act 2008³ requires a reduction in emissions of 80% by 2050 based on a 1990 baseline, supported by reductions of 34% by 2020 and 50% by 2025. An ambitious aspiration for the health and care system is to achieve a 34% reduction in carbon dioxide equivalent emissions from building energy use, travel and procurement of goods and services by 2020.

Using a 2013 baseline highlights the following ambitious trajectory, with a 28% reduction by 2020. The wedge shown in blue corresponds to a 13% reduction beyond the current forecast by 2020:



Comparison with UK emissions

The NHS, public health and social care system is over a third (38%) of public sector emissions in England (79 MtCO₂e⁵) and 3.6% of England consumption emissions (823 MtCO₂e).

Geography	Emissions	Unit
NHS, public health and social care England	32	MtCO ₂ e
UK public sector	94	MtCO ₂ e
England public sector (84% of UK)	79	MtCO ₂ e
England public sector percentage	38	%
UK consumption	980	MtCO ₂ e
England consumption (84% of UK)	823	MtCO ₂ e
England consumption percentage	3.6	%

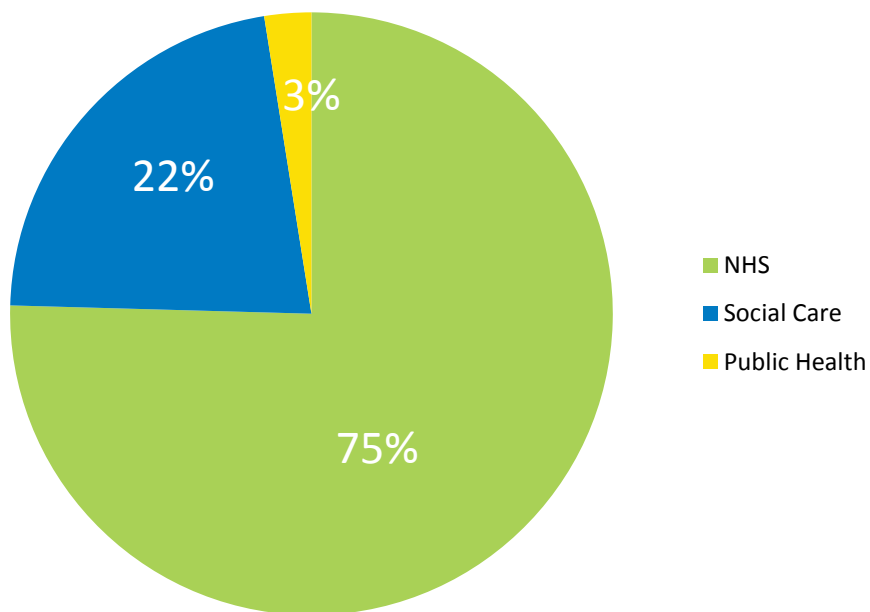
⁵ Defra research ENV12 – UK Carbon footprint, 2012. Available at: <https://www.gov.uk/government/statistical-data-sets/uk-carbon-footprint-1993-2010>



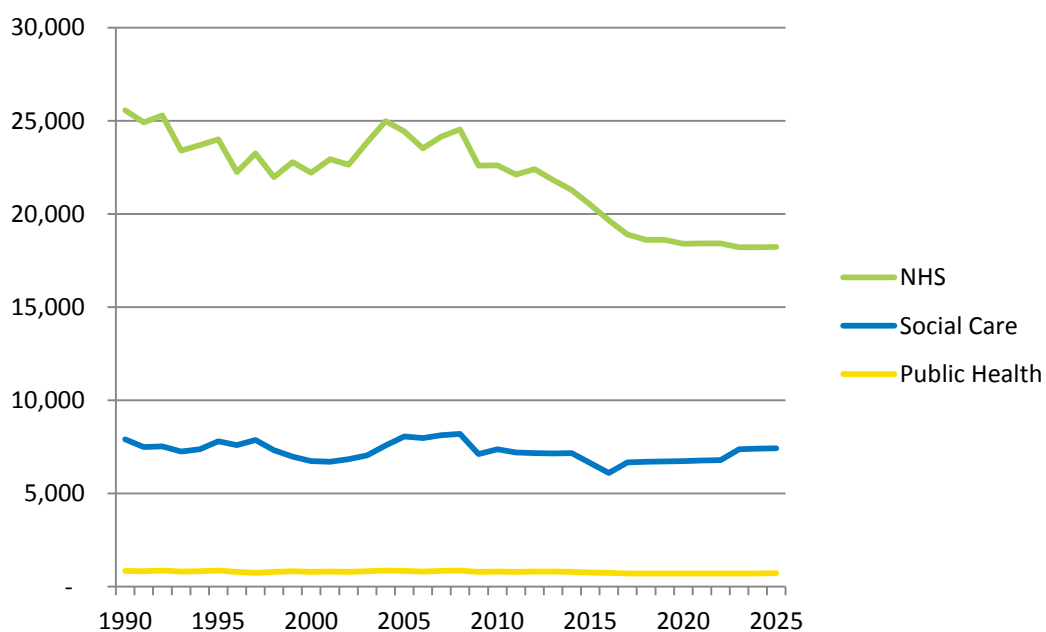
NHS, Public Health and Social Care breakdown

NHS services are 75% of the carbon footprint for the system with social care accounting for 22% and public health a further 3%. Public health and social care services can help reduce demand for care and NHS services and therefore can have a large impact on the system carbon footprint.

NHS, Public Health and Social Care carbon footprint breakdown 2012



Health, Public Health and Social Care

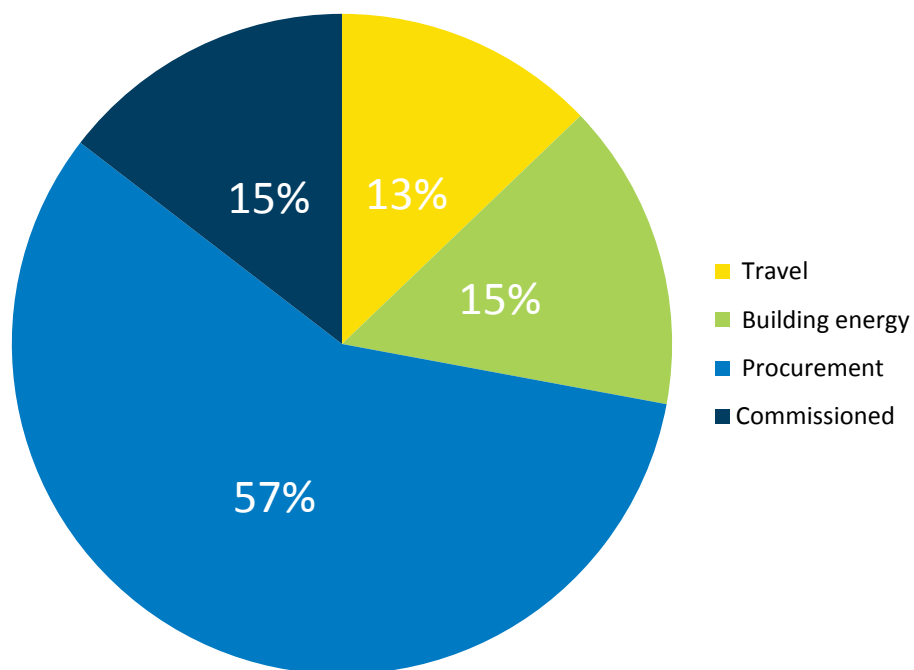




Footprint breakdown – summary

Embedded carbon in goods and services procured by the NHS, public health and social care system contributes 57% of the carbon footprint. Travel to and from sites by service users, visitors, staff commuting and business travel contribute 13%. Heating, lighting and providing power for sites contributes 15% of the carbon footprint. Health and care services commissioned from outside the public sector contribute a further 15%.

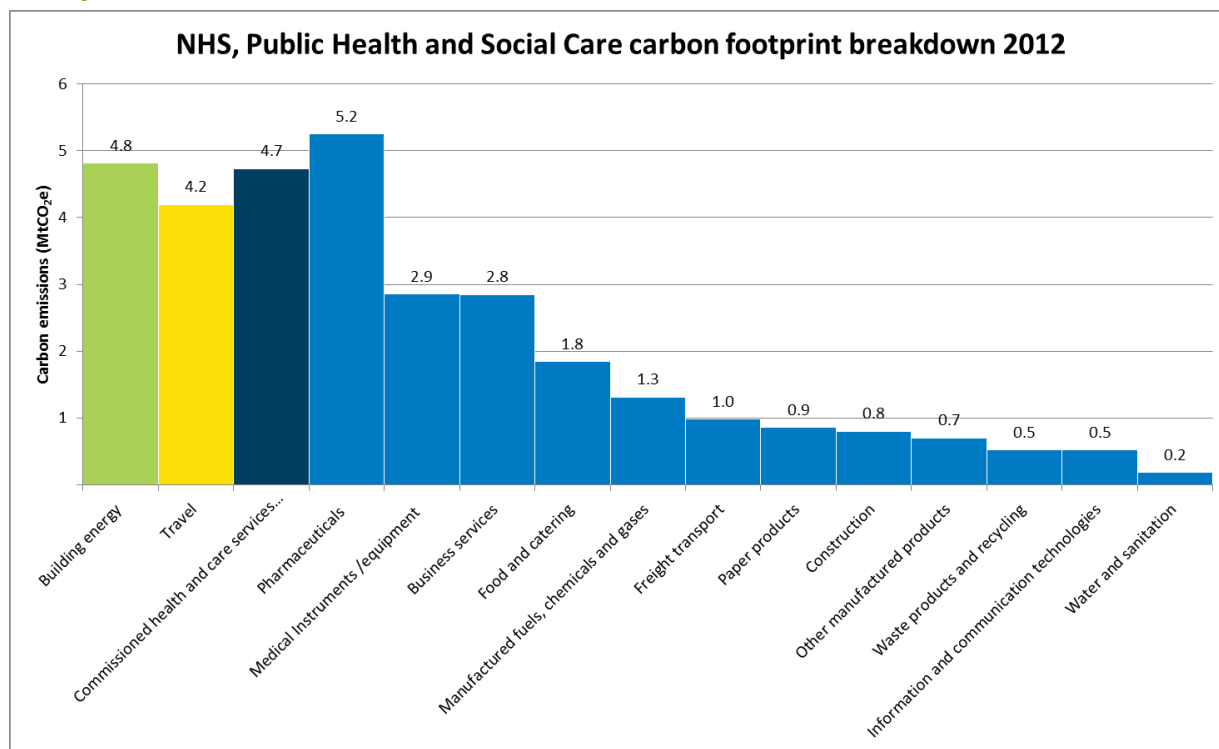
NHS, Public Health and Social Care carbon footprint breakdown 2012



Category	2012 (MtCO ₂ e)	%
Travel	4.20	13%
Building energy	4.93	15%
Procurement	18.81	57%
Commissioned	4.76	15%



Footprint breakdown – detail

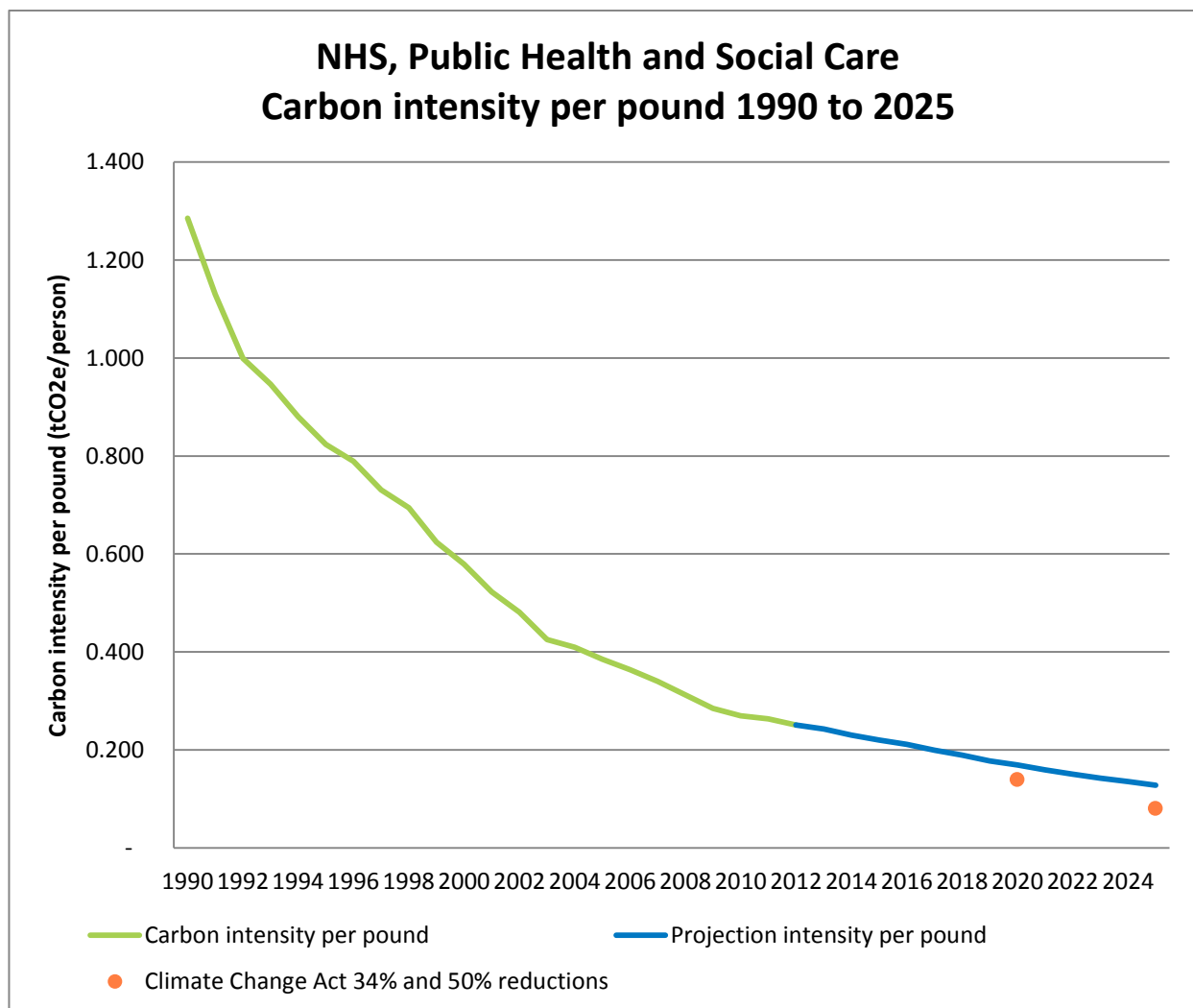


Category	Carbon emissions breakdown	2012 (MtCO ₂ e)	%
Building energy		4.8	15%
Travel		4.2	13%
Commissioned health and care services from outside system		4.7	15%
Procurement of goods and services	Pharmaceuticals	5.2	16%
	Medical Instruments /equipment	2.9	9%
	Business services	2.8	9%
	Food and catering	1.8	6%
	Manufactured fuels, chemicals and gases	1.3	4%
	Freight transport	1.0	3%
	Paper products	0.9	3%
	Construction	0.8	2%
	Other manufactured products	0.7	2%
	Waste products and recycling	0.5	2%
	Information and communication technologies	0.5	2%
	Water and sanitation	0.2	1%
Total Procurement		18.6	57%
NHS, Public Health and Social Care system		32.4	100%



Carbon intensity per £ spend on system

Increasing activity across the social care, public health and NHS system provides a context for the carbon footprint. Carbon intensity was five times higher in 1990 than 2012, based on public spend on the health and care system.



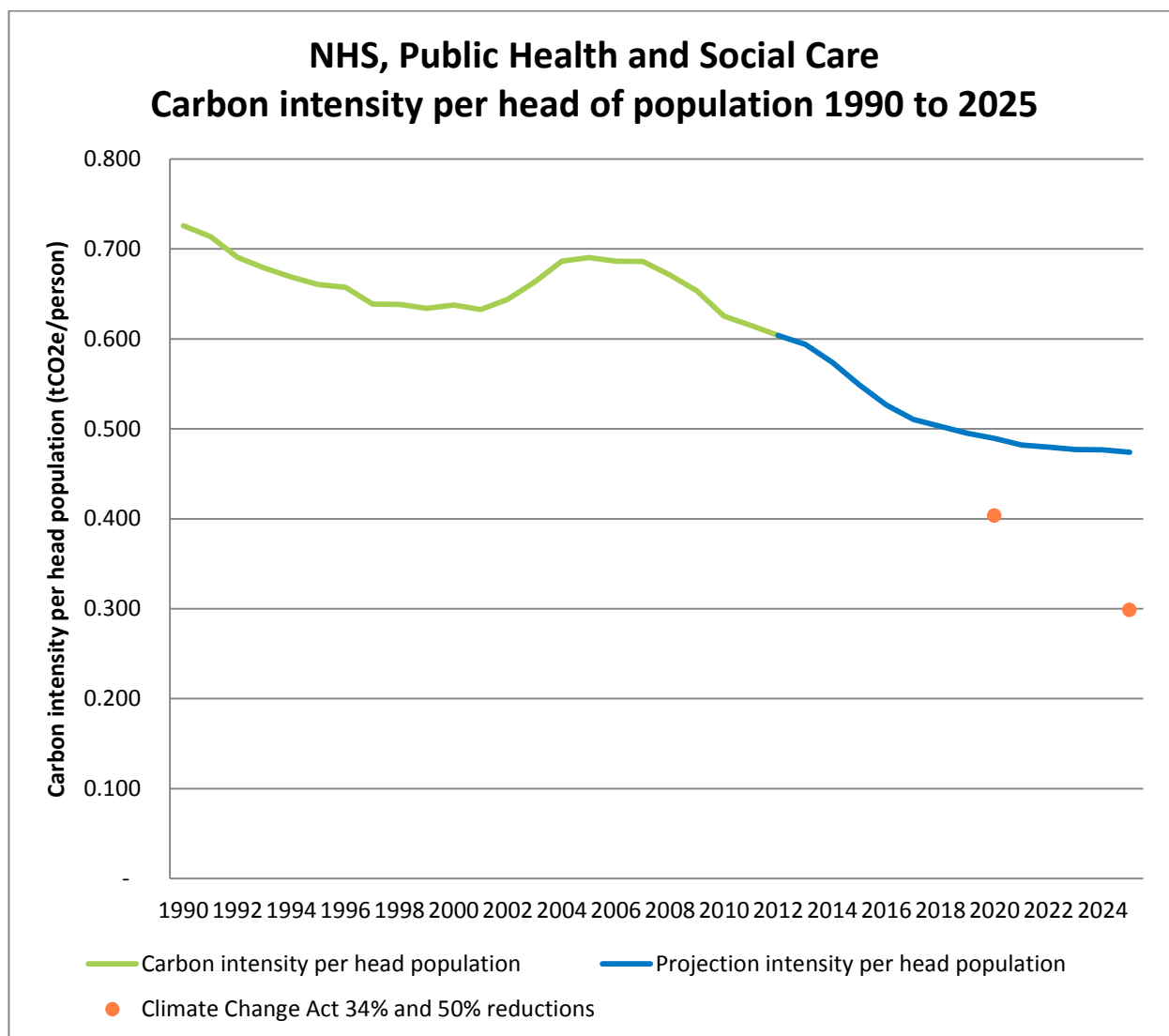
Carbon intensities will need to improve by a further 44% on 2012 levels if the NHS, public health and social care system is to meet the 34% reduction by 2020. (Further information on spend forecast see Appendix 2 - Data and definitions)

Year	Emissions (MtCO ₂ e)	Public sector spend (£b)	Intensity (kgCO ₂ e/£)
1990	35.0	27	1.29
2012	32.4	129	0.25
2020 projection	28.0	166	0.17
2020 with 34% reduction	23.1		0.14
2025 projection	27.8	217	0.13
2025 with 50% reduction	17.5		0.08



Carbon intensity per person

With increasing population the carbon intensity per head of population has reduced by 20% since 1990.



A further 33% reduction on current levels will be needed if the NHS, public health and social care system is to meet the 34% reduction by 2020 given current population projections⁶.

Year	Emissions (MtCO ₂ e)	Population England projection (millions)	Intensity (tCO ₂ e/person)
1990	35.0	48	0.73
2012	32.4	54	0.60
2020 projection	28.0	57	0.49
2020 with 34% reduction	23.1		0.40
2025 projection	27.8	59	0.47
2025 with 50% reduction	17.5		0.30

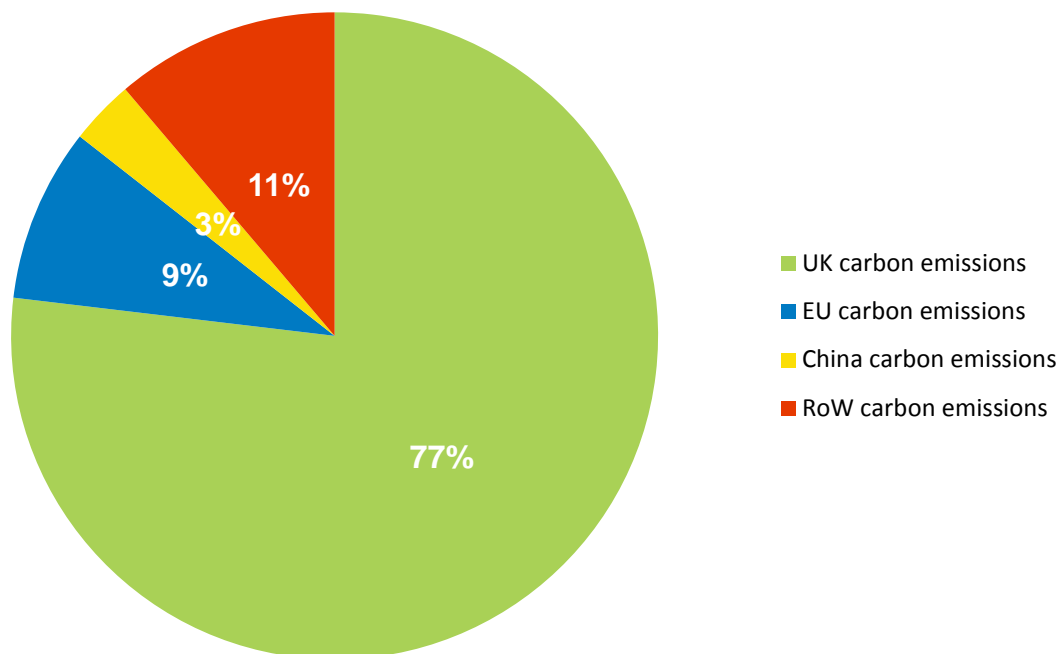
⁶ ONS, National Population Projections, 2012-based Statistical Bulletin, 2013. Available at: <http://www.ons.gov.uk/ons/rel/npp/national-population-projections/2012-based-projections/stb-2012-based-npp-principal-and-key-variants.html>



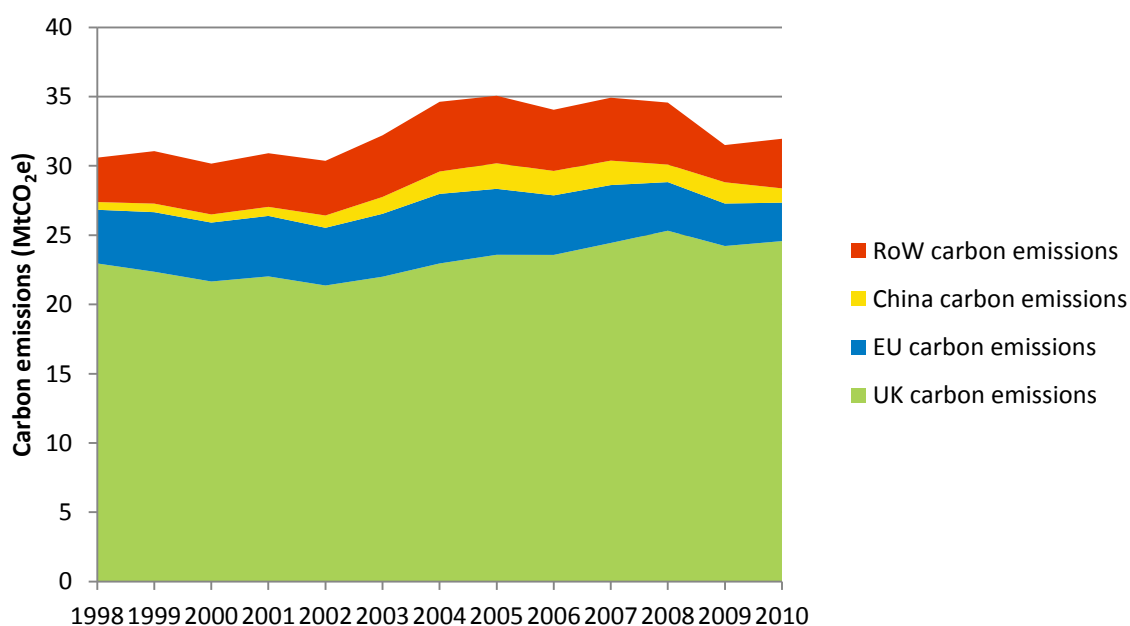
International breakdown

The chart below shows emissions by the NHS, public health and social care system, showing the country where the emissions occur. The analysis includes procurement alongside travel and building energy use which both occur in the UK. The chart shows that over three quarters of emissions are in the UK:

HSC emissions UK and international 2010



HSC emissions UK and international 1997 - 2010





Appendices

Appendix 1. Glossary of terms

Carbon footprint – carbon emissions, carbon and carbon footprint have been used interchangeably in this document to mean the carbon dioxide equivalent greenhouse gas emissions. The carbon dioxide equivalent greenhouse gas emissions is a standard measure of the impact of various activities on climate change.

Carbon intensity – carbon dioxide equivalent emissions per pound spent for an economic sector

Consumption carbon footprint – includes direct carbon emissions e.g. through burning fossil fuels as well as embedded carbon emissions from goods and services bought.

Defra – Department of Environment, Food and Rural Affairs produces the UK consumption carbon footprint and guidance on carbon footprinting.

Embedded – embedded carbon emissions is a term used for the carbon emissions generated from the manufacture, transport and provision of services and in this case includes all goods and services bought by social care, public health and NHS.

Emissions – absolute emissions of carbon dioxide equivalent (CO₂e)

Greenhouse gas – atmospheric gases known to cause climate change and global warming

Input-output – carbon intensities have been calculated using an input-output model. This uses expenditure and carbon emissions from different economic sectors (using SIC codes) to calculate the embedded carbon emissions in purchased goods and services for each economic sector.

Procurement – in this document this is referring to goods and services purchased by the social care, public health and NHS system.

RoW – rest of world: the carbon intensity input-output model uses four world regions: UK, EU, China and RoW.

Spend – money spent on goods and services or on the social care, public health and NHS system as a whole.

SIC – Standard Industrial Classification: The Office for National Statistics (ONS) publish the SIC codes to classify economic sectors.

Travel – movement of people to and from NHS sites including patients, visitors, staff commute and business travel



Appendix 2. Data and definitions

Spend prediction

The following datasets have been used for NHS, public health and social care spend:

- HM Treasury PESA actual spend figures have been used 1990/91 to 2010/11⁷
- HM Treasury PESA plan spend figures 2011/12 to 2014/15¹
- Flat proportion of GDP assumption 2015/16 to 2017/18
- Office for Budgetary Responsibility proportion of GDP assumptions 2018/19 to 2025/26⁸

Public health and NHS use a combined health expenditure model. Social Care model is using 'Long term care' proportions from Office for Budgetary Responsibility forecasts.

Carbon modelling sources

Modelling the carbon footprint has used a number of data sources. Here is a summary of the carbon modelling used:

	Buildings	Travel	Procurement	Commissioning
NHS	ERIC	Patient, Visitor and Staff commute - National Travel Survey Business – Input-Output	Input-Output (96% of health)	Input-Output
Social Care	Input-Output	Service users, Visitor and Staff commute - National Travel Survey Business – Input-Output	Input-Output Social Care (local, central and	Input-Output
Public Health	Input-Output	Business – Input-Output	Input-Output (4% of health)	Input-Output

Social Care scope definition

Social care services are purchased privately by households, provided by voluntary organisations and by the public sector. Only services provided through public money have been included in the Social Care carbon footprint. This includes both services provided directly by Local Authorities and commissioned by Local Authorities from other organisations.

⁷ HM Treasury PESA, Table 1.8 Total Departmental Expenditure Limits (1), 2007-08 to 2014-15, 2012. Available at: <https://www.gov.uk/government/publications/public-expenditure-statistical-analyses-2012>

⁸ Office for Budgetary Responsibility, Fiscal Sustainability Report, Chart B.7 (FSR-2012 Tables and Charts), 2013. Available at: <http://budgetresponsibility.independent.gov.uk/data/>



Appendix 3. Backcast and forecast methods summary

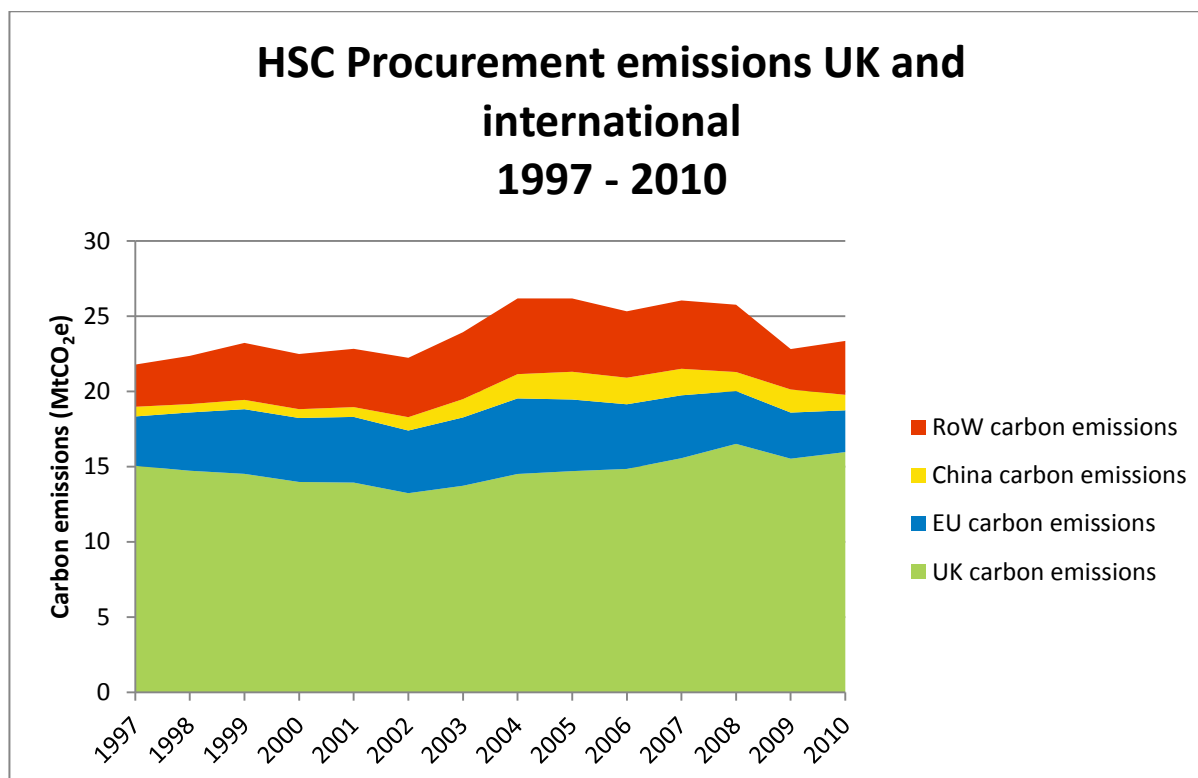
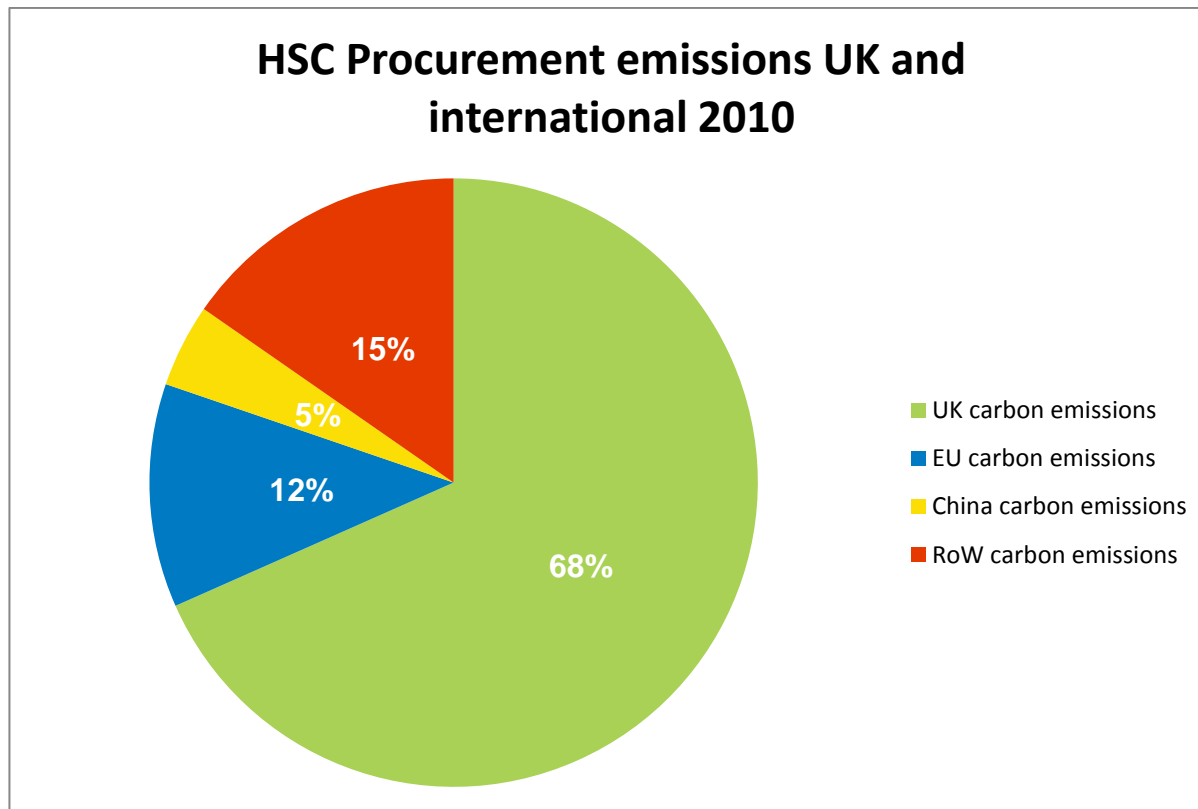
NHS/PH/SC	Category	Spend/Intensity/ Emissions	Time period	Method
NHS	Procurement, Building Energy and Travel	Emissions	1990-1997	Backcast using projection of previous of emissions
NHS	Commissioned	Emissions	1990-1997	Backcast growth based on 1998 to 2010
NHS	Travel	Intensity	2011-2025	Exponential decrease based on 1997 to 2010
NHS	Travel	Spend	2011-2025	GDP and health spend % as proxy for scale of NHS
NHS	Electricity	Spend	2012-2025	GDP and health spend % as proxy for scale of NHS
NHS	Electricity	Intensity	2012-2025	Growth based on 1990 to 2011
NHS	Fossil fuel: Gas, Oil, Coal	Energy use	2012-2025	Trend based on 2000 to 2011 with zero as minimum (trend suggests zero use by 2014 for both oil and coal)
Social Care	Patient, Visitor and Staff commute Travel	Distance	1990-2006	Trend based on 2007 to 2011
Social Care	Patient, Visitor and Staff commute Travel	Intensity	1990-2002	Flat based on 2003
Social Care	Business Travel	Emissions	1990-1996	Trend based on 1997 to 2010
Social Care	Building Energy use	Emissions	1990-1996	Backcast using NHS buildings electricity and fossil fuel emissions changes
Social Care	Procurement and Commissioned	Intensity	1990-1996	Backcast using NHS procurement emissions intensity changes 1990 to 1996
Social Care	Procurement and Commissioned	Spend	1990-1996	Local Authority net spend on Adult Social Care
Social Care	Travel	Intensity	2011-2025	Exponential decrease based on 1997 to 2010
Social Care	Travel	Spend	2011-2025	GDP and social care spend % as proxy for scale of social care
Social Care	Building Energy use	Intensity	2011-2025	Exponential decrease based on 1997 to 2010
Social Care	Building Energy use	Spend	2011-2025	GDP and social care spend % as proxy for scale of social care
Social Care	Procurement and Commissioned	Intensity	2011-2025	Exponential decrease based on 1997 to 2010
Social Care	Building Energy use	Spend	2011-2025	GDP and social care spend % as proxy for scale of social care
Public Health	Travel	Emissions	1990-1996	Exponential decrease based on 1997 to 2010
Public Health	Building Energy use	Emissions	1990-1996	Growth based on 1997-2010
Public Health	Procurement	Emissions	1990-1997	Backcast using projection of previous of emissions for NHS



Appendix 4. Procurement international breakdown

The chart below shows emissions from goods and services bought by the NHS, public health and social care system, showing the country where the emissions occur. Emissions in the UK from service user, visitor and staff travel and building energy use by the NHS, public health and social care have not been included in this analysis.

The latest international dataset is from 2010 so this is the basis of this analysis:





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