

## Carbon update for the health and care sector in England 2015

- Reduction of 12% in carbon emissions between 1990 and 2015
- The carbon footprint of the health and care sector is 26.6 MtCO<sub>2</sub>e in 2015
- Updates include using the latest international carbon intensity factors
- The Sustainable Development Strategy identifies 28% reduction by 2020 on a 2013 baseline, in line with Climate Change Act target



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## Introduction

Since 2008 the move towards a more sustainable health system has been supported by the development of a carbon footprint which now includes the whole NHS, public health and social care sector. 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 Protocol<sup>1</sup>. The best available methods have been used following Defra guidance<sup>2</sup>, including directly measured data where this is available and supplemented with average carbon intensities from an input-output model.

The Climate Change Act 2008<sup>3</sup> target of an 80% reduction by 2050 has been overlaid with the time series from 1990. A combination of backcasting and forecasting has been used based on the detailed datasets. Carbon budget targets<sup>4</sup> have also been 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.

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

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

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

<sup>4</sup> 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>



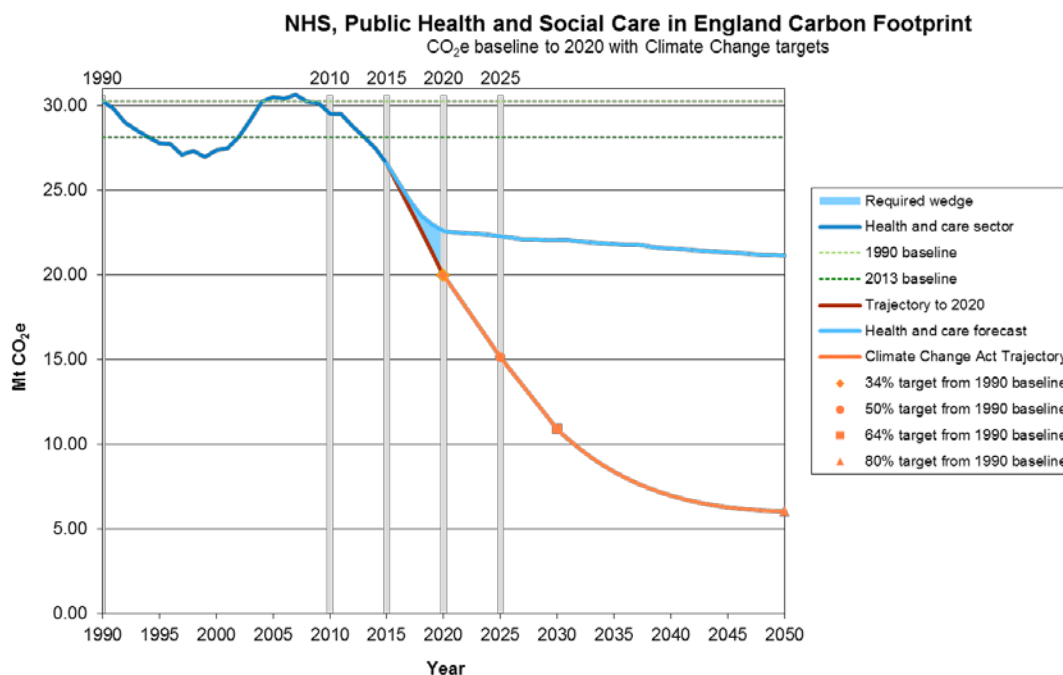
This report updates the health and care sector carbon footprint and shows a 13% reduction between 2007 and 2015 compared to an NHS target of 10% reduction. The narrower carbon footprint for the NHS has been published alongside this update<sup>5</sup>.

## Health and care England footprint 2015 – summary

The carbon footprint for NHS, public health and social care in England is 26.6 MtCO<sub>2</sub>e in 2015. The carbon footprint has fallen by 12% between 1990 and 2015 and is predicted to fall by a further 15% by 2020 and 20% by 2050 because carbon intensities are reducing. The latest methods have been used in line with Defra's updates. Improvements in the method used for measurement mean this is lower than previous calculations (see Appendix 1 – Overview of major changes for the 2012 update for more information).

The Climate Change Act 2008<sup>Error! Bookmark not defined.</sup> 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 9% reduction beyond the current forecast by 2020:



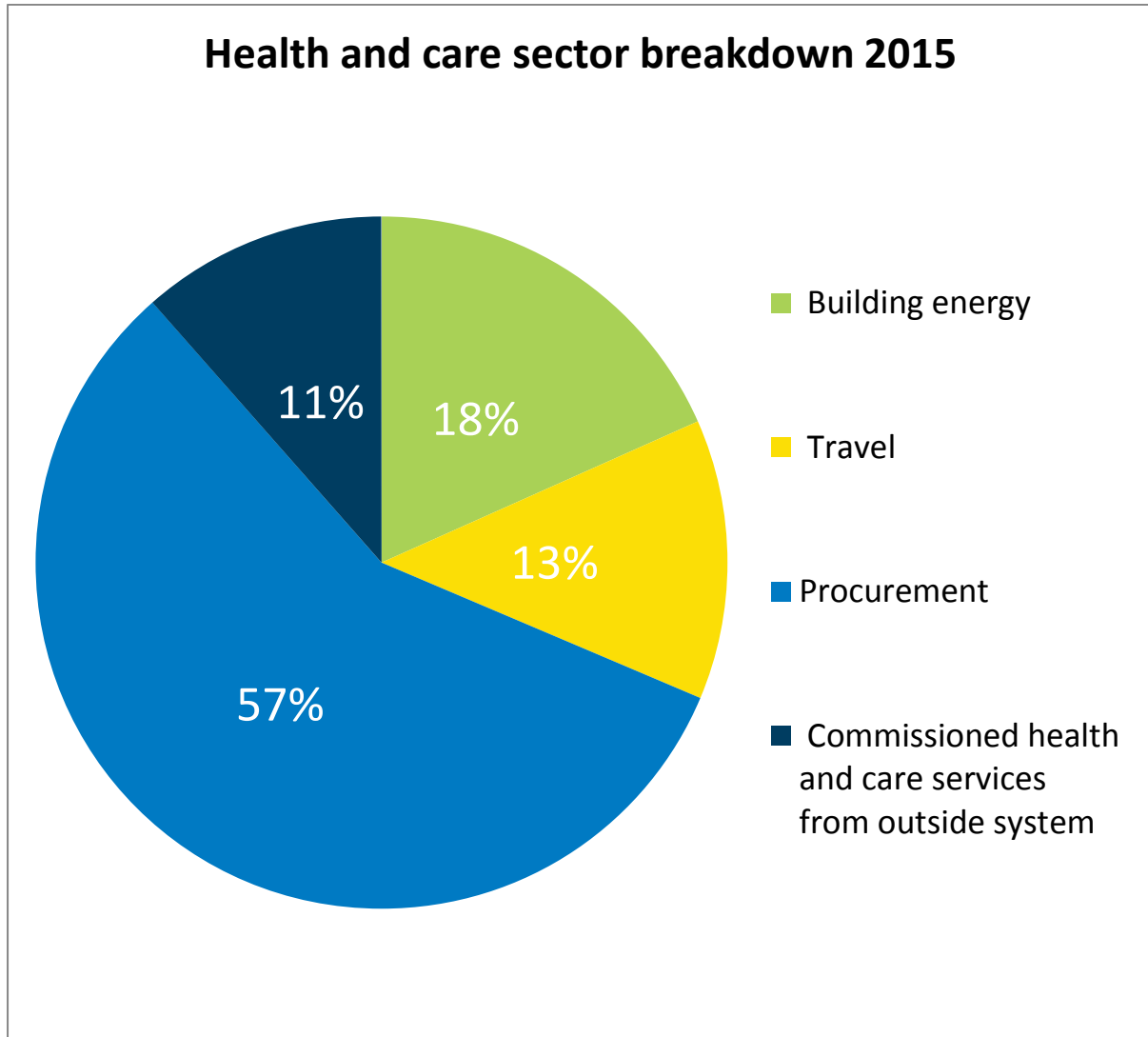
Further reductions will be required for the health and care sector to be in line with the Climate Change Act 2008 targets. A breakdown of both expected reductions in the carbon footprint and potential actions are documented in the Sustainable development in the health and care system Health Check 2016 and Carbon Footprint summary HCS wedges 2015<sup>6</sup>.

<sup>5</sup> Carbon Footprint summary NHS update 2015, available at: <http://www.sduhealth.org.uk/report>  
<sup>6</sup> Carbon Footprint summary HCS wedges 2015, available at: <http://www.sduhealth.org.uk/report>



## Summary footprint breakdown

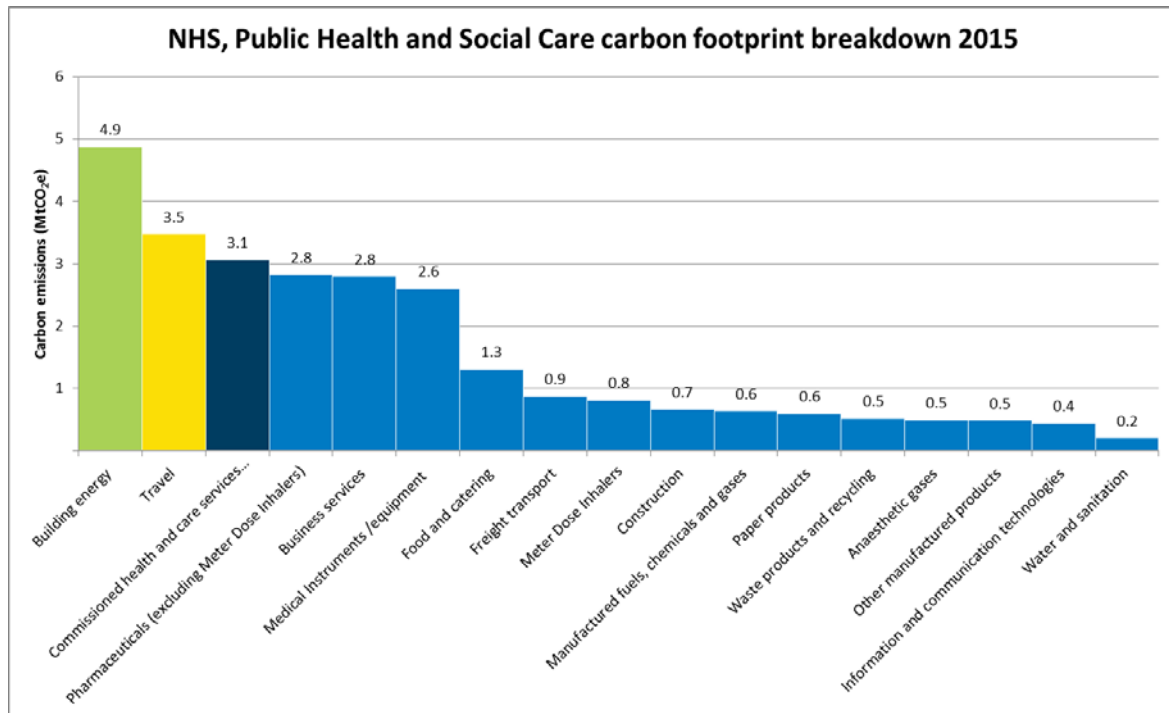
Embedded carbon in goods and services bought by the NHS contributes 57% of the carbon footprint. Travel to and from NHS sites by patients, visitors, staff commuting and business travel contribute 13%. Heating, lighting and providing power for NHS sites contributes 18% of the carbon footprint. Health services commissioned from outside the NHS contributes a further 11%.



Category	2015 (MtCO <sub>2</sub> e)	%
Building energy	4.9	18%
Travel	3.5	13%
Procurement	15.2	57%
Commissioned health and care services from outside system	3.1	11%
NHS, Public Health and Social Care system	26.6	100%

A more detailed breakdown is presented overleaf:

## Detailed footprint breakdown



Category	Carbon emissions breakdown	2015 (MtCO <sub>2</sub> e)	%
	Building energy	4.9	18%
	Travel	3.5	13%
	Commissioned health and care services from outside system	3.1	11%
Procurement of goods and services	Pharmaceuticals (excluding Meter Dose Inhalers)	2.8	11%
	Business services	2.8	11%
	Medical Instruments /equipment	2.6	10%
	Food and catering	1.3	5%
	Freight transport	0.9	3%
	Meter Dose Inhalers	0.8	3%
	Construction	0.7	2%
	Manufactured fuels, chemicals and gases	0.6	2%
	Paper products	0.6	2%
	Waste products and recycling	0.5	2%
	Anaesthetic gases	0.5	2%
	Other manufactured products	0.5	2%
	Information and communication technologies	0.4	2%
	Water and sanitation	0.2	1%
	<b>Total Procurement</b>	<b>15.2</b>	<b>57%</b>
	<b>NHS, Public Health and Social Care system</b>	<b>26.6</b>	



## Hotspots – organisation type breakdown

The ‘hotspots’ for different types of organisation depend on the services being provided. Healthcare purchased from outside the NHS is the single biggest hotspot.





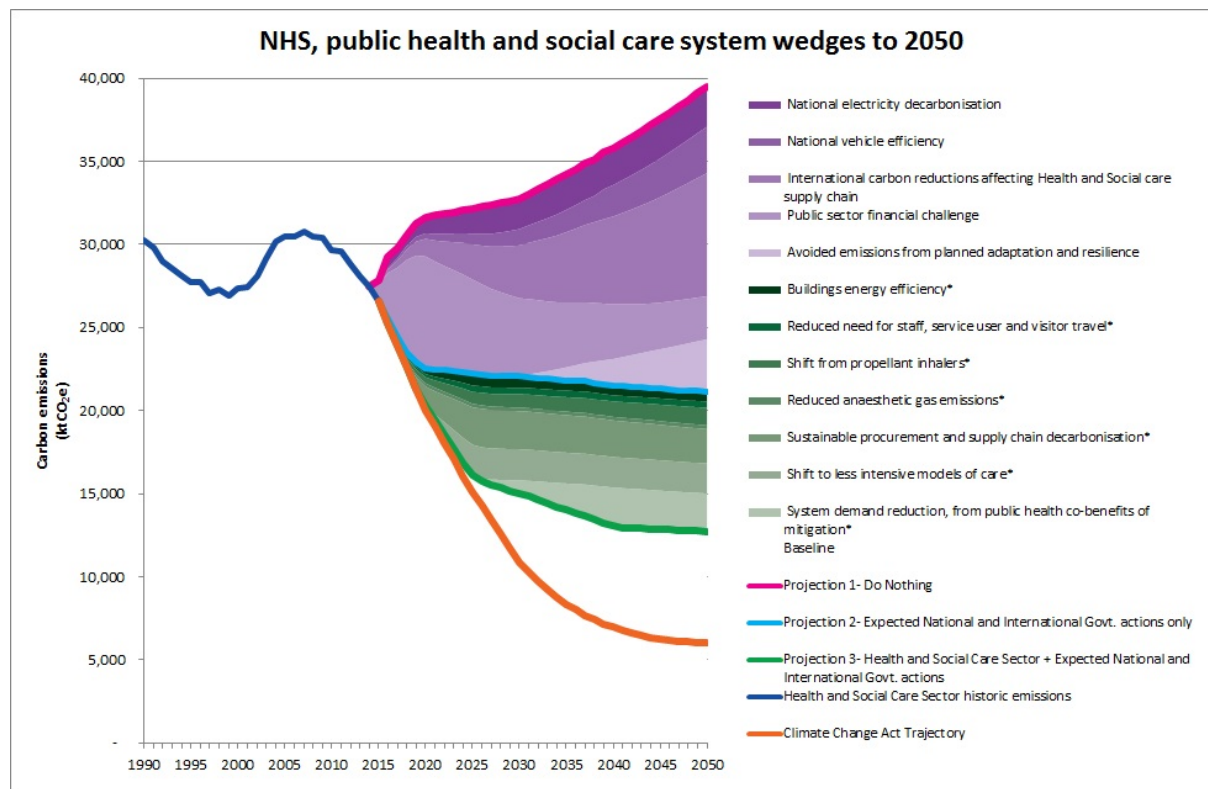
Pharmaceuticals are the biggest hotspot for GPs. Electricity, gas and medical instruments are all significant for acute organisations. Dentists have high emissions from patient and staff travel while CCGs have high direct emissions from business travel along with commissioned services within the health and care sector.

Further information about the organisation breakdown and carbon intensity of services has also been published separately<sup>7</sup>.

## Wedges – projection to 2050

The graph below shows the carbon trajectories since 1990 with forecast emissions to 2050 (blue line) and the CCA trajectory (orange line).

The graph also depicts a forecast of factors contributing to the carbon calculations. These have been split into two: Global and national actions and Health sector actions. However, as shown by the white section there is a gap predicted and more opportunities will need to be identified in the future to reach the CCA targets shown by the orange line.



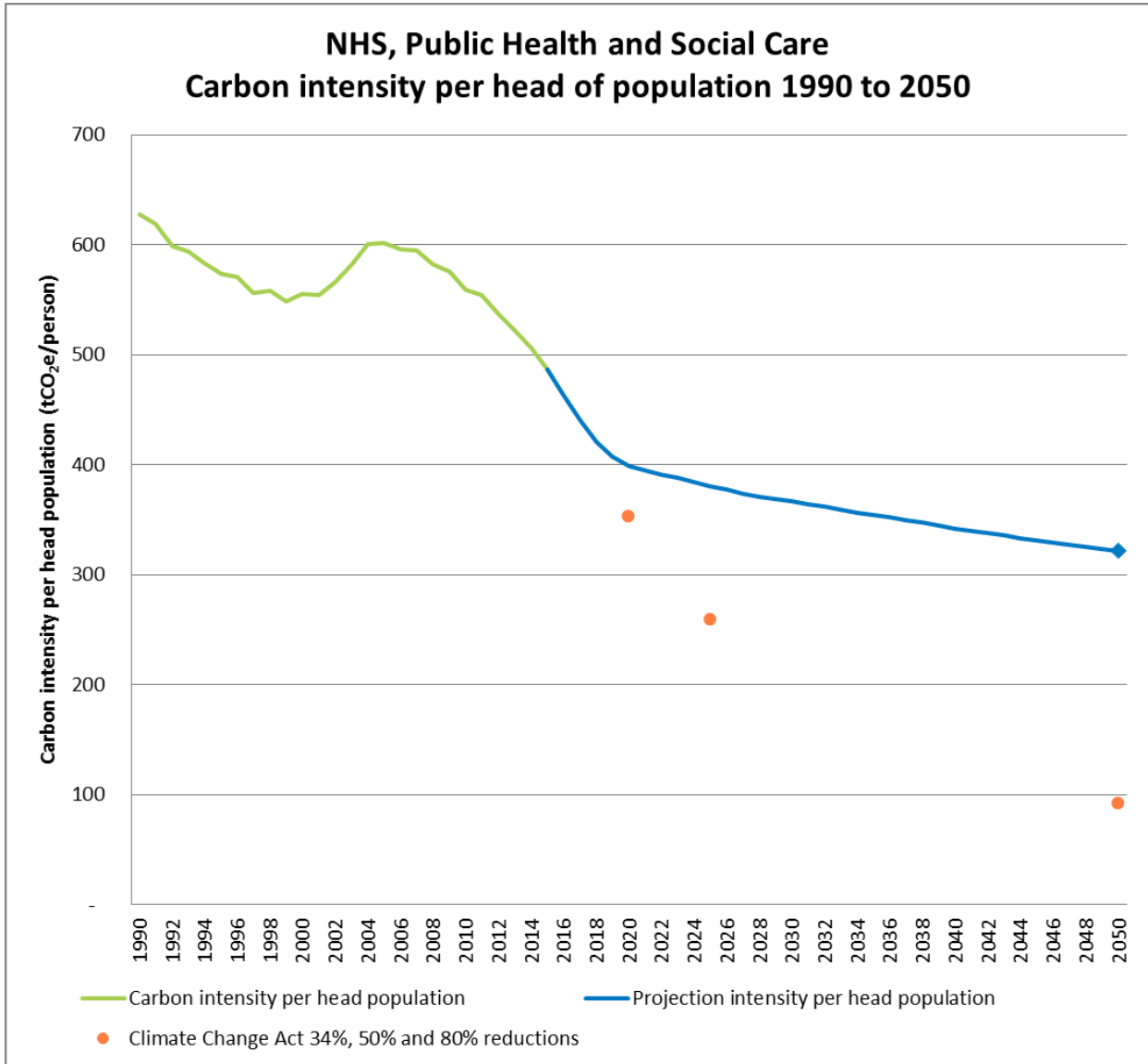
Further information on the contribution of these wedges has been published in a separate document<sup>8</sup>.

<sup>7</sup> Carbon Footprint summary HCS hotspots 2015. Available at: <http://www.sduhealth.org.uk/policy-strategy/reporting.aspx>

<sup>8</sup> Carbon Footprint summary HCS wedges 2015. Available at: <http://www.sduhealth.org.uk/policy-strategy/reporting.aspx>

## Carbon intensity projection to 2050

Increasing health and care activity driven by increasing population and demographics will contribute to the absolute carbon reduction challenge. The graphic below shows the carbon emissions of the health and care sector per head of population with projections through to 2050. Overlaying the Climate Change Act reductions shows this carbon per head of population will still need to be a quarter of the current level by 2050.







## Appendix 1 – Overview of major changes for the 2012 update

To maintain alignment with the latest methods and information available a number of changes have been included in the 2015 update:

Update	Previous 2012 (MtCO <sub>2</sub> e)	Updated 2012 (MtCO <sub>2</sub> e)	Difference (MtCO <sub>2</sub> e)	%
Correction to social care for expenditure on pay	6.8	3.4	-3.5	-51%
Revision of Meter Dose Inhalers footprint in line with NAEI reporting	1.4	0.8	-0.6	-44%
National Travel Survey breakdown of staff, patient and visitor travel by mode	2.7	2.3	-0.4	-15%
Pharmaceuticals carbon intensity improvement	3.9	3.1	-0.8	-20%
Inclusion of GP, Dentists and CCG buildings	4.2	4.7	0.5	11%
Improved estimate for other procurement	10.3	11.2	0.9	9%
Commissioning (excluding above)	2.4	2.5	0.1	3%
Business travel (excluding above)	0.8	0.8	0.0	-1%
<b>Total</b>	<b>32</b>	<b>29</b>	<b>-0.3</b>	<b>-1%</b>

The main change has been a correction to social care expenditure figures as pay spend was not accounted for correctly.

Initial calculations for Meter Dose Inhalers have been revised in line with national reporting by NAEI.

Travel survey information has been updated with travel modes for patients, visitors and staff commute.

Pharmaceuticals figures have been updated including additional information provided by pharmaceuticals companies however the level of information provided has not altered the overall pharmaceuticals carbon footprint significantly.

Premises of GPs, Dentists and CCGs were previously excluded from the carbon footprint of buildings, this has now been estimated and included.

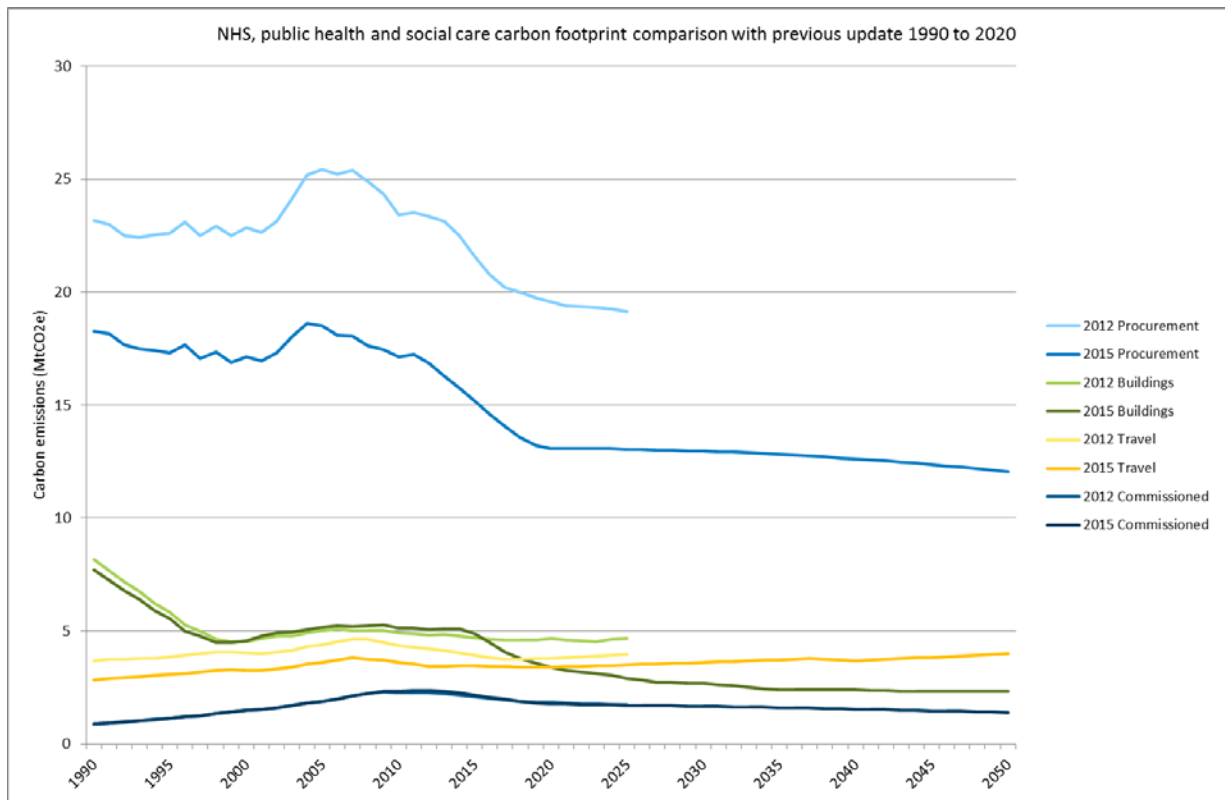
Other updates were made to the carbon factors for procurement, commissioning and business travel to align with the latest information published by Defra.

The forecast has also been extended to 2050 with the use of the following datasets:

- Green book for electricity factors
- HM Treasury Public Expenditure Statistical Analysis



The graph below shows the breakdown of the changes between the methods used in 2012 and 2015 over the whole time series:





## Appendix 2 – Glossary

**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 the NHS.

**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.

**MDI** – Meter Dose Inhaler used for the treatment of asthma and Chronic obstructive pulmonary disease (COPD) uses propellant which is a potent greenhouse gas.

**Procurement** – in this document this is referring to goods and services purchased by the NHS.

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

**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

**Wedges** – potential level of change over a period of time. Socolo created stabilisation wedges in 2004 <https://www.princeton.edu/mae/people/faculty/socolow/Science-2004-SW-1100103-PAPER-AND-SOM.pdf>



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