THE NHS: CARBON FOOTPRINT

Sources of NHS carbon emissions

Healthcare internationally has a large climate footprint, estimated to account for 4.4% of global net CO2 emissions[1]. Similarly, in England, the NHS accounts for 4% of the country's emissions greenhouse gas emissions[3]. For more detail see ref 3 – the report *Delivering a net-zero-carbon NHS 2020.*

Key sources of information and guidance
For a Greener NHS:
https://www.england.nhs.uk/greenernhs/
Sustainable Development Unit:
www.sduhealth.org.uk
Centre for Sustainable Healthcare:
https://sustainablehealthcare.org.uk

Goals, targets and progress
The net zero target for the NHS carbon footprint in England is by 2040, with an ambition for an 80% reduction (compared with a 1990 baseline) by 2028 to 2032[3]. Northern Ireland[4] are committed to this target, Wales[5] is committing to a 95% reduction by 2050 but with a net zero ambition, and Scotland[6] net zero by 2045.

In England, the health and social care system reduced its **carbon** footprint by an estimated 62% between 1990 and 2020[3.] It reduced its **water** footprint by 21% between 2010 and 2017[7].

The Sustainable Development Unit has interactive online maps that show how different regions are performing[8] Wales also publishes Sustainability Performance[9].

The triple bottom line
Sustainable healthcare delivers on the 'triple bottom line' - simultaneous financial, social and environmental return on investment. For example, in the UK in 2018, improved energy, water and waste efficiency in the NHS and wider health sector saved £90 million compared to 2013/14, as well as cutting emissions[2] . See the companion NHS Action Resource A9 for information about what actions can be taken.

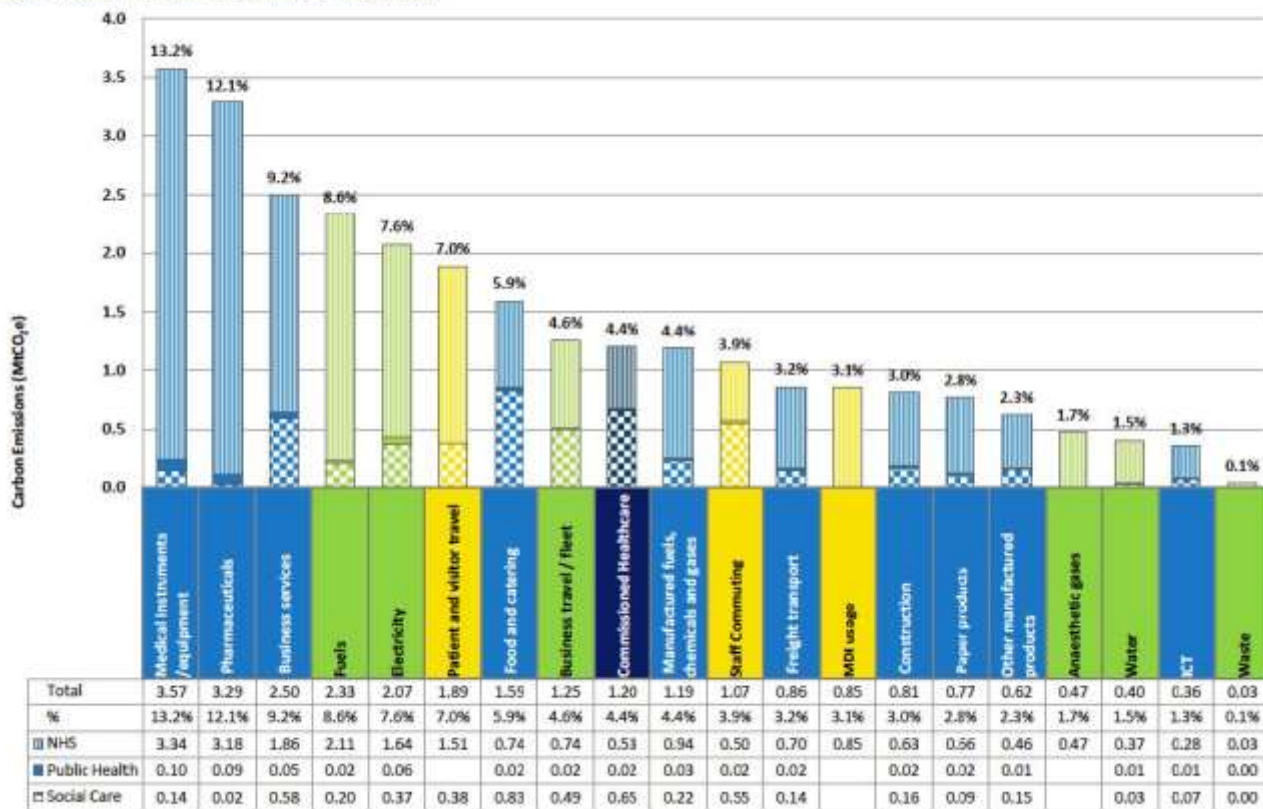## Main sources of NHS emissions (England)[3]
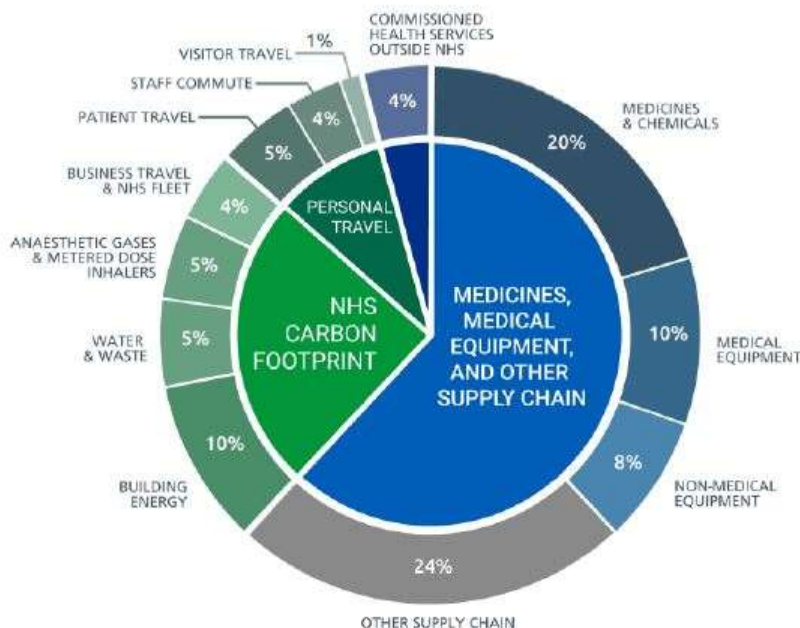
Medicines, equipment and "other supply chain" account for the majority of health care emissions. *See also A7, the FPH Sustainable NHS Commissioning and Procurement resource.*

Key sources of healthcare emissions (more on p 2)
1. Prescribing
It has been estimated that pharmaceuticals contribute around 20% of the NHS England carbon footprint of which 79% is prescribed in primary care and community services, 13% in acute services and 5% in mental health services[10]. Prescribing represents the major carbon hotspot for primary care with the carbon footprint from the manufacture and use of pharmaceuticals (excluding inhalers) contributing to around 40% of the total carbon footprint of primary care and metered-dose inhalers (MDIs) contributing 22%[11]. Pharmaceuticals have wider impacts on the environment and pharmaceutical products have been found in measurable concentrations in soil samples and drinking water[12]. It has been estimated that over £300 m of medicines go unused each year in England[13] which has both economic and environmental impacts as well as representing a potential threat to patients' health through sub-optimal therapeutics. Over prescribing and over medicalisation have been highlighted by the 'Too much medicine'[14] and 'Choosing Wisely' campaigns[15] whilst the risks posed by 'medical excess' in threatening the sustainability of healthcare systems are outlined in a recent call to action by the Cochrane Library[16].

Figure 4. Health and Social care detailed breakdown 2017

	Medical instruments / equipment	Pharmaceuticals	Business services	Fuels	Electricity	Patient and visitor travel	Food and catering	Business travel / fleet	Commissioned Healthcare	Manufactured fuels, chemicals and gases	Staff Commuting	Freight transport	MDI usage	Construction	Paper products	Other manufactured products	Anaesthetic gases	Water	ICT	Waste
Total	3.57	3.29	2.50	2.33	2.07	1.89	1.59	1.25	1.20	1.19	1.07	0.86	0.85	0.81	0.77	0.62	0.47	0.40	0.36	0.03
%	13.2%	12.1%	9.2%	8.6%	7.6%	7.0%	5.9%	4.6%	4.4%	4.4%	3.9%	3.2%	3.1%	3.0%	2.8%	2.3%	1.7%	1.5%	1.3%	0.1%
NHS	3.34	3.18	1.86	2.11	1.64	1.51	0.74	0.74	0.53	0.94	0.50	0.70	0.85	0.63	0.56	0.46	0.47	0.37	0.28	0.03
Public Health	0.10	0.09	0.05	0.02	0.06		0.02	0.02	0.02	0.03	0.02	0.02		0.02	0.02	0.01		0.01	0.01	0.00
Social Care	0.14	0.02	0.58	0.20	0.37	0.38	0.83	0.49	0.65	0.22	0.55	0.14		0.16	0.09	0.15		0.03	0.07	0.00

Breakdown of carbon emissions across sectors and activities for NHS England in 2017[2]
The diagram above highlights the relative contributions of key areas across health and social care, including public health, and gives an indication of the range of opportunities available to reduce the carbon footprint. NB The carbon footprint of physical waste is relatively small, notwithstanding concerns about the wider environmental impact of healthcare-associated waste, including single-use plastics.

Key sources of healthcare emissions contd.

2. Healthcare delivery
The environmental impact of healthcare is influenced by the setting in which it is delivered. Secondary care is associated with an inherently higher impact as well as higher costs than primary care; for example, the carbon footprint of an average GP appointment is 6kg CO_2e (18kg CO_2e with prescribing) whereas each elective inpatient stay is estimated at 708kg CO_2e (not including patient, visitor and staff travel)[17]. Therefore, transforming health systems to have a stronger focus on disease prevention and chronic disease management in order to reduce emergency admissions can result in lower environmental impacts as well as lower financial costs. Ensuring that low value healthcare procedures are avoided (for example using the NICE 'Do Not Do' list[17]) and ensuring that the care delivered is based on high quality evidence is crucial in aligning the economic, health and environmental goals of healthcare through the avoidance of wasted clinical activity[18].

3. Travel
There are over 9.5bn NHS related road miles per year in England which makes up around 3.5% of all road travel in England. Staff, visitor and patient travel therefore also negatively impacts on air quality and an economic impact figure of £345 m has been estimated for the potential mortality effects and costs to society of air pollution from NHS related travel[17]. Adopting active transport can have health co-benefits for staff (see FPH SIG Resource K5 on co-benefits) and changing where healthcare is delivered through providing consultations by phone or online can also reduce 'care miles' and therefore a reduction in the emissions associated with patient travel[19].

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Professional Development Questions

1a) What percentage of total emissions in the UK are generated by the NHS?

1b) And what are the main sources of emissions in the NHS?

2. What do you understand to be the 'triple bottom line', on which sustainable healthcare delivers?

For answers, see separate document "Model Answers to CPD Questions" on the Sustainable Development Resources introductory page
https://www.fph.org.uk/policy-campaigns/special-interest-groups/special-interest-groups-list/sustainable-development-special-interest-group/resources-on-sustainable-development-and-climate-change/

FPH General CPD Questions

1. What did I learn from this activity or event?

2. How am I going to apply this learning in my work?

3. What am I going to do in future to further develop this learning and/or meet any gaps in my knowledge, skills or understanding?