



Sustainability in Dentistry

September 2025

Introduction

1. Climate change has been called “the greatest global health threat facing the world in the 21st century” by the Lancet Commission on Health and Climate Change¹; a statement echoed by the World Health Organization (WHO).²
2. It affects humanity, the planet and biodiversity, with environmental health, such as clean air, water and soil, inextricably linked to human health and wellbeing.
3. Changing climatic conditions affects health both directly and indirectly, and increases the risk of non-communicable diseases, spread of infectious diseases and deaths, likely exacerbating existing health inequalities.
4. Internationally, healthcare is responsible for approximately 4 – 5 per cent of global greenhouse gas emissions³, and so has a key role to play in mitigating the environmental impact.
5. In the UK, the NHS contributes to around 4 per cent of the country’s carbon emissions and as of November 2021, all health services across the four UK nations have committed to net zero carbon emissions.⁴ This aligns with the UK’s commitment to reach net zero carbon emissions by 2050.⁵
 - a. [NHS England](#) has developed plans to meet net zero targets, set out in the 2008 Climate Change Act.
 - b. [NHS Scotland](#) aims to become a net zero carbon emissions health service by 2040 at the latest.
 - c. [NHS Wales](#) have set out an ambition to be net zero by 2030 and carbon negative by 2035, which was set out in their long-term strategy.
 - d. For NHS Northern Ireland, the [Climate Change Act \(Northern Ireland\) 2022](#) The Climate Change Act (Northern Ireland) was enacted in June 2022, which supports the UK target under the Climate Change Act (2008) in relation to NI’s contribution to the UK net zero by 2050.

The impact of dentistry on climate change

¹ [The Lancet Countdown on health and climate change, established 2015](#)

² [The World Health Organization - Climate Change and noncommunicable diseases, 2023](#)

³ [Health care’s response to climate change: a carbon footprint assessment of the NHS in England - PMC \(nih.gov\)](#)

⁴ [UK health services make landmark pledge to achieve net zero - GOV.UK \(www.gov.uk\)](#)

⁵ [UK’s path to net zero set out in landmark strategy - GOV.UK \(www.gov.uk\)](#)

6. The provision of all oral healthcare has a direct impact on climate change, through its contribution to energy consumption, greenhouse gas emissions, resource use and waste production.
7. In 2018, Public Health England (PHE) commissioned the Centre for Sustainable Healthcare to calculate and analyse the carbon footprint of key dental procedures carried out by NHS England commissioned dental teams, using 2013/14 carbon emission data.⁶
8. The total greenhouse gas emissions of NHS dental services in England measured in tonnes of carbon dioxide equivalents (tCO₂e) was 675,706. This is equivalent to flying 50,000 times from the UK to Hong Kong and makes up 3 per cent of the overall carbon footprint of the NHS in England.
9. According to the PHE/Centre for Sustainable Healthcare report, in 2013/14, the largest contributors to the carbon footprint of NHS dental services in England were travel (both patient and staff), procurement, and energy use (Figure 1).³

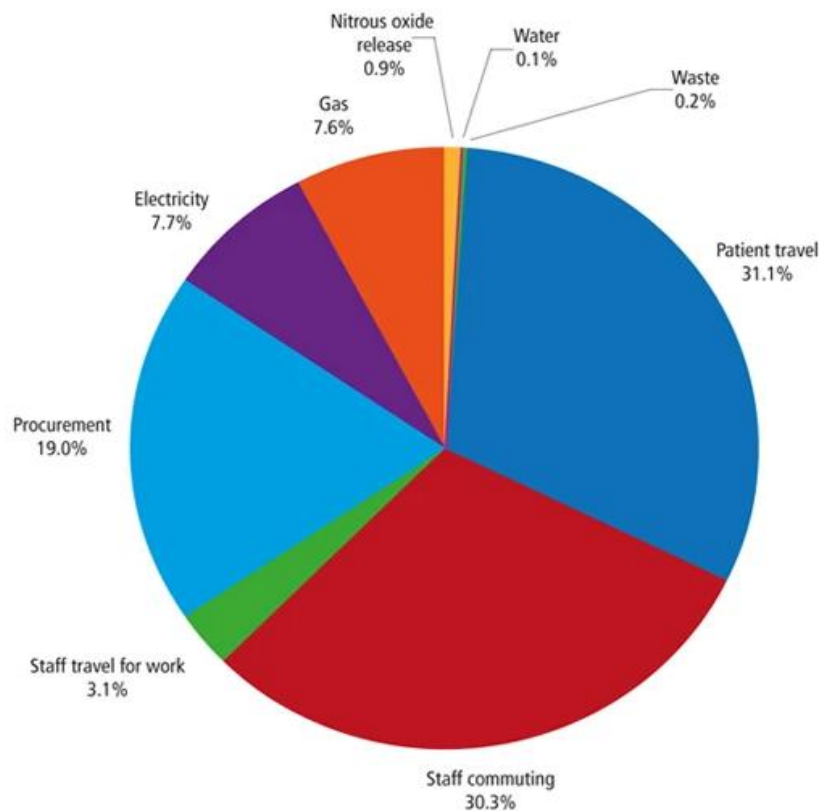


Figure 1. Contributors to the total carbon footprint of dental services in England for 2013/2014

10. As patient travel is the largest contributor to the carbon footprint of NHS dental services, consideration must also be given to the creation of multi-clinic centres at

⁶ [Carbon modelling within dentistry: towards a sustainable future - GOV.UK \(www.gov.uk\)](http://www.gov.uk)

the cost of local services. This would lead to more patients (and potentially staff) travelling to a centralised location, rather than their existing provider, thus adding to the environmental impact.

11. Dental procurement costs can be split into 3 different costs, i.e. administrative, material and laboratory service costs, and if patient or staff travel was excluded, the greenhouse gas emissions attributed to procurement would contribute 55.1% to the total carbon footprint.
12. Whilst not one of the largest contributors to the carbon footprint of NHS dental services, dentistry produces a significant amount of waste, which must be managed to enhance sustainability. According to the PHE/Centre for Sustainable Healthcare report, the waste stream with the highest contribution to the greenhouse gas emissions of dental waste disposal is domestic waste, which would be delivered to landfills.
13. With regard to dental procedures, the dental examination contributes the highest proportion (27.1 per cent) to the overall carbon footprint, followed by scale and polish with 13.4 per cent, amalgam and composite fillings with 9.7 per cent and 9.5 per cent respectively.
14. There are several challenges and barriers to the implementation of a more sustainable oral healthcare system, including economic feasibility and knowledge base. These are set out in the [FDI World Dental Federation Consensus Statement on Environmentally Sustainable Oral Healthcare](#), alongside the drivers and opportunities to move towards more sustainable practice.
15. Sustainability is not just about carbon reduction, but ensuring high quality care is delivered, within economic, social and environmental limits, and requires a whole system approach.

Policy action to support sustainability in dentistry

16. There is growing recognition of the role oral healthcare professionals can play in encouraging and facilitating sustainable healthcare.
17. The BDA have signed up to the [FDI Pledge for Sustainable Oral Healthcare](#), where we will seek to engage with, commit and contribute to global, national and local efforts to mitigate the impact of oral healthcare on the environment.
18. Whilst travel is the largest contributor to the carbon footprint of NHS dentistry, the proposed action will focus on national policies and measures that should be taken to support the delivery of sustainable healthcare.
19. The BDA is a member of the UK Health Alliance on Climate Change ([UKHACC](#)). We have so far been relatively dormant; we do participate in policy meetings but not in Council meetings which are open to us. We are reviewing the relevance of the organisation and the opportunities of bringing our concerns into their work more strongly, specifically with regard to sugar and wider prevention matters.
20. The BDA is also a member of the UK One Health Co-ordination Group (UKOHCG), which exists to improve liaison and collaboration between the UK veterinary, human healthcare and environmental sectors towards One Health aims. The Group seeks to bring relevant stakeholders together and provide a platform for new ideas and connections.

Prevention

21. Improvement of oral health of the population has been recognised as the key driver for environmental sustainability, where there will be a reduced need for

intervention and operative treatments which use high levels of energy and produce much waste.

22. **The BDA is calling for reform** to NHS Dentistry contracts, towards a prevention-focused, patient centred model of care. The promotion and provision of effective evidence-based preventive oral healthcare would have a positive impact on the oral health of the population, support sustainable healthcare and help mitigate the environmental impact.
23. Alongside prevention-focused care, the **BDA is campaigning** for action to be taken to reduce the nation's sugar intake.
24. Tooth decay is largely preventable yet is the number one reason for hospital admissions among young children. Sugar is the leading risk factor for tooth decay and both the WHO and the Scientific Advisory Committee on Nutrition made recommendations on sugar reduction particularly based on the evidence that it causes caries, and on the level of consumption required to benefit oral health.
25. In addition to the impact of sugar on oral (and general) health, the domestic production of sugar beet – which provides the UK with over half its sugar supply – is having a negative impact on the environment, through the decimation of UK topsoil, and damage to biodiversity through the use of neonicotinoids.⁷
26. **Research** conducted by Sustainable Health Food Systems (SHEFS) and the Recipe for Change campaign considered the environmental impact of substituting frequently consumed foods for lower salt and sugar alternatives. The findings indicated that even small swaps could have a notable impact on both health and the environment, such as lowering the average food-related emissions of an adult in the UK by to 2-3%.
27. To support prevention and sustainability, **the BDA is calling for the introduction of national policies**, including the expansion of the Soft Drinks Industry Levy to other products such as milk-based drinks; legislation to ban the use of cartoon and animation on packaging; and mandatory guidelines for sugar content in baby foods.

Dental amalgam

28. Dental amalgam remains one of the range of restorative materials available to dentists, enabling the profession to provide the most appropriate treatment for the individual needs of each patient. There is currently no ideal replacement material that can compete with amalgam on speed and ease of placement (and repairment), longevity or cost.
29. Whilst there is no evidence that exposure to mercury from amalgam fillings has any harmful effects on health, the mercury in dental amalgam may be released into the environment through amalgam production and restorations, when placed or removed.
30. Regulations are in place in the UK to prevent mercury exposure to the environment and the UK along with over 140 other countries signed the Minamata Convention on Mercury, which came into force on the 16 August 2017. The global treaty sets out measures to phase down the use of dental amalgam.
31. The UK dental profession has a longstanding commitment to environmental responsibility and the **BDA continues to support the pragmatic phase down** of dental amalgam, at a rate appropriate for each country.

Decontamination processes

⁷ <https://www.actiononsugar.org/sugar-and-health/sugar-availability/sugar-pollution/>

32. The importance of patients being treated in a safe and clean environment is underscored by legislation and practice standards, which guide practices and staff.
33. In 2013, the Department of Health published the latest version of Health Technical Memorandum (HTM) 01-05 providing dental practices with advice on patient safety when decontaminating reusable instruments in primary care.
34. It is important that the risk of infection transmission in healthcare settings, including dentistry, be minimised, however, it is also essential that environmental harm is minimised, and measures to improve patient safety consider this, where feasible and appropriate.
35. The COVID-19 pandemic saw the introduction of more stringent infection control measures, the increased use of single-use instruments and resources, and excessive waste.
36. **The BDA is calling for a move to more sustainable approaches**, whilst being guided by opportunities to reduce the overall burden on the profession. Alongside this, the economic landscape has dramatically altered, and consideration should be given to waste management costs in England, which recent evidence indicates has increased 58% since the introduction of HTM 01-05.
37. The BDA is calling for a review of HTM 01-05 from a sustainability perspective, given the urgent need to ensure current infection control measures do not contribute to climate change, which will help ensure we achieve the NHS commitment of carbon net zero.

Antimicrobial Resistance (AMR)

38. The WHO has identified antimicrobial resistance (AMR) as one of the top ten threats to global public health. Whilst antibiotics are needed to treat life-threatening infections, resistance is driven by their overuse, in people, animals and the environment.
39. In the UK, the Government has published the AMR National Action Plan, 2024 – 2029: [UK 5-year action plan for antimicrobial resistance 2024 to 2029](#) to support action across all sectors (human health, animal health, agriculture and the environment).
40. Alongside the threat to health, antibiotics can have an impact on the environment, through improper disposal promoting the spread of resistant microorganisms in soil, water ways and food chains.
41. Dentists are responsible for about 10 per cent of antibiotic prescribing in the UK and reducing antibiotic prescribing is vital to minimise the emergence of antimicrobial resistance bacteria, alongside supporting the sustainability agenda.
42. **The BDA works [nationally and internationally](#)** to address the role of dentistry in AMR, including promoting a range of tools and guidance to support dental antimicrobial stewardship, and calling for appropriately funded urgent care slots to reduce the pressure to prescribe antibiotics when they are not indicated.

Summary

43. Dentistry contributes to climate change through energy consumption, greenhouse gas emissions, resource use, and waste production, however, by adopting national approaches which would support the sustainability agenda, such as a focus on prevention and tackling AMR, the dental profession can mitigate its impact on the environment and contribute to efforts to support a healthier population and combat climate change.