

Sustainability Considerations for Technical Services

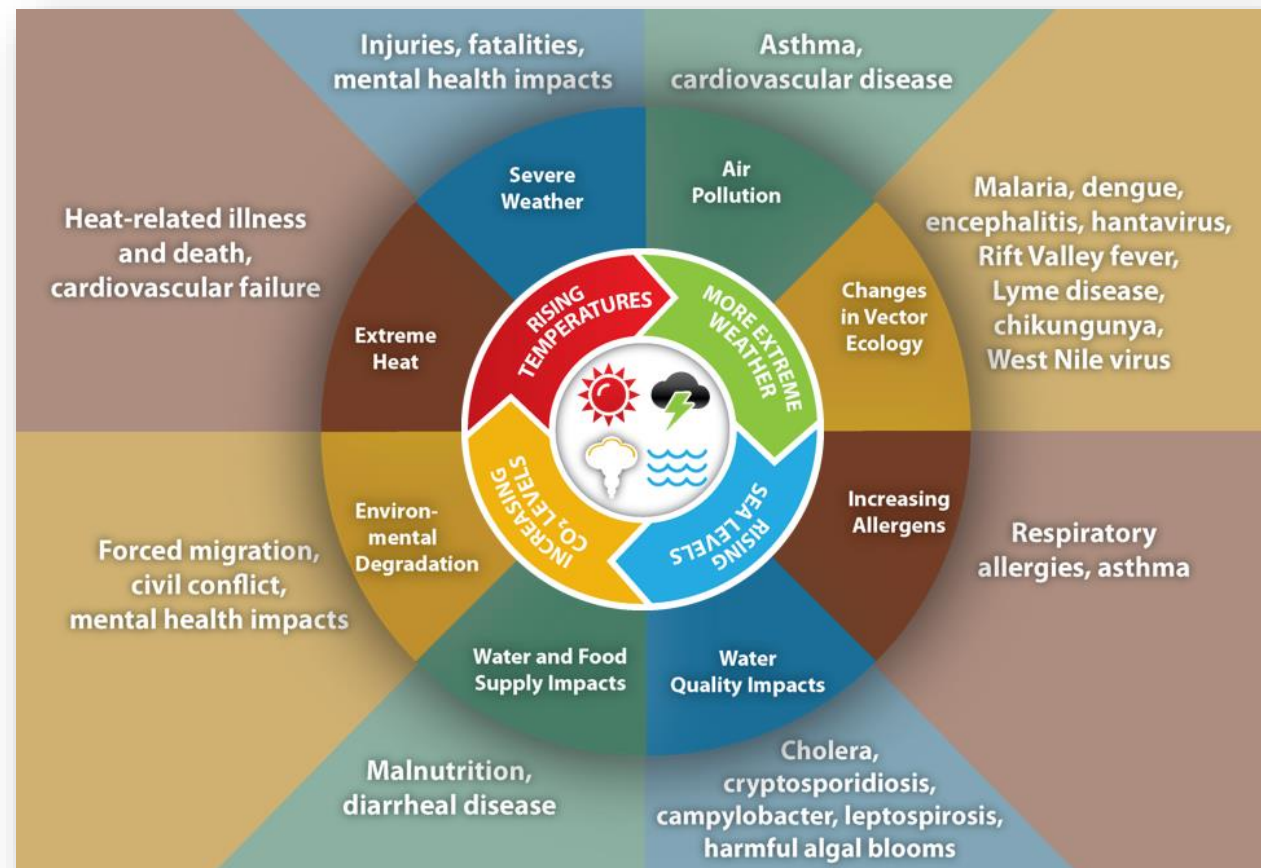
A call to action

Peter Morgan

Medicines Net Zero Assistant Director

About Greener NHS

Climate emergency is a health emergency, and unabated, it will disrupt care, and affect patients and the public at every stage of our lives.



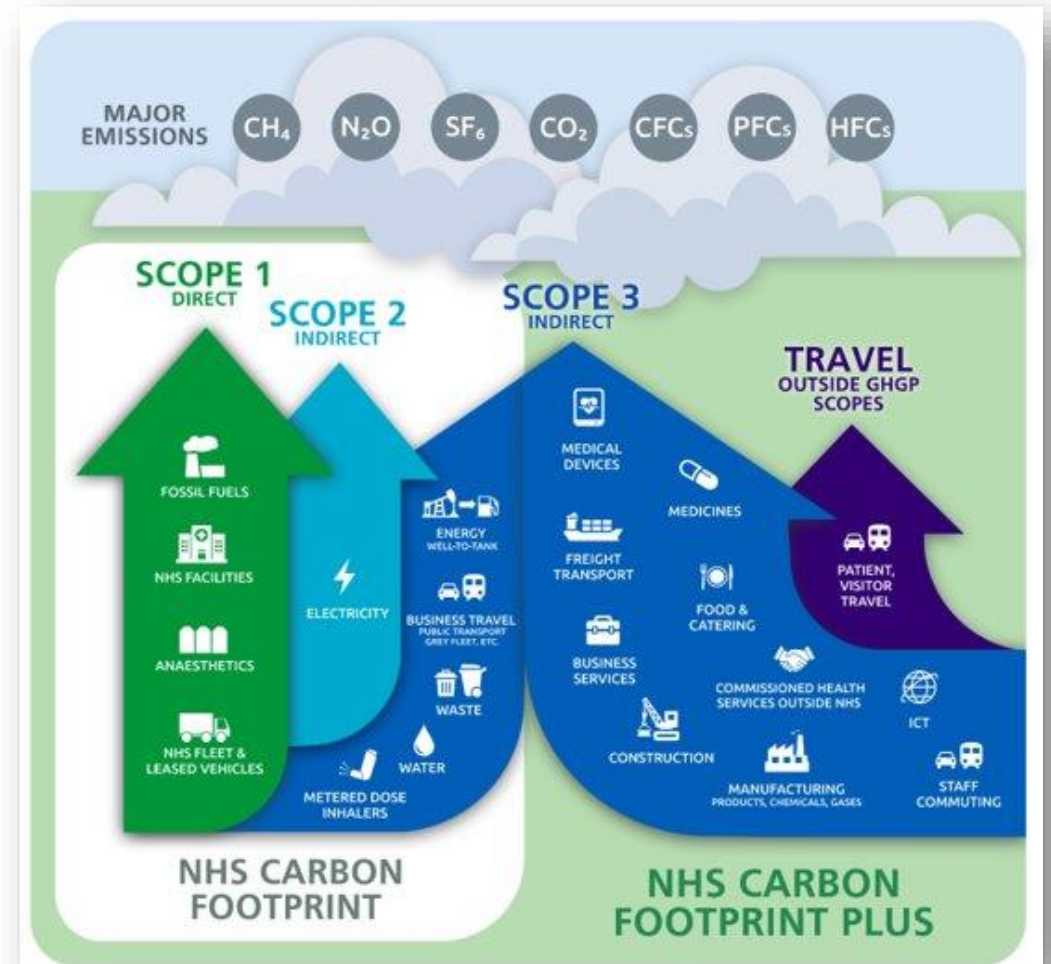
The NHS Net Zero targets

Net zero by 2040 for the emissions we control directly, with an 80% reduction by 2028-2032.

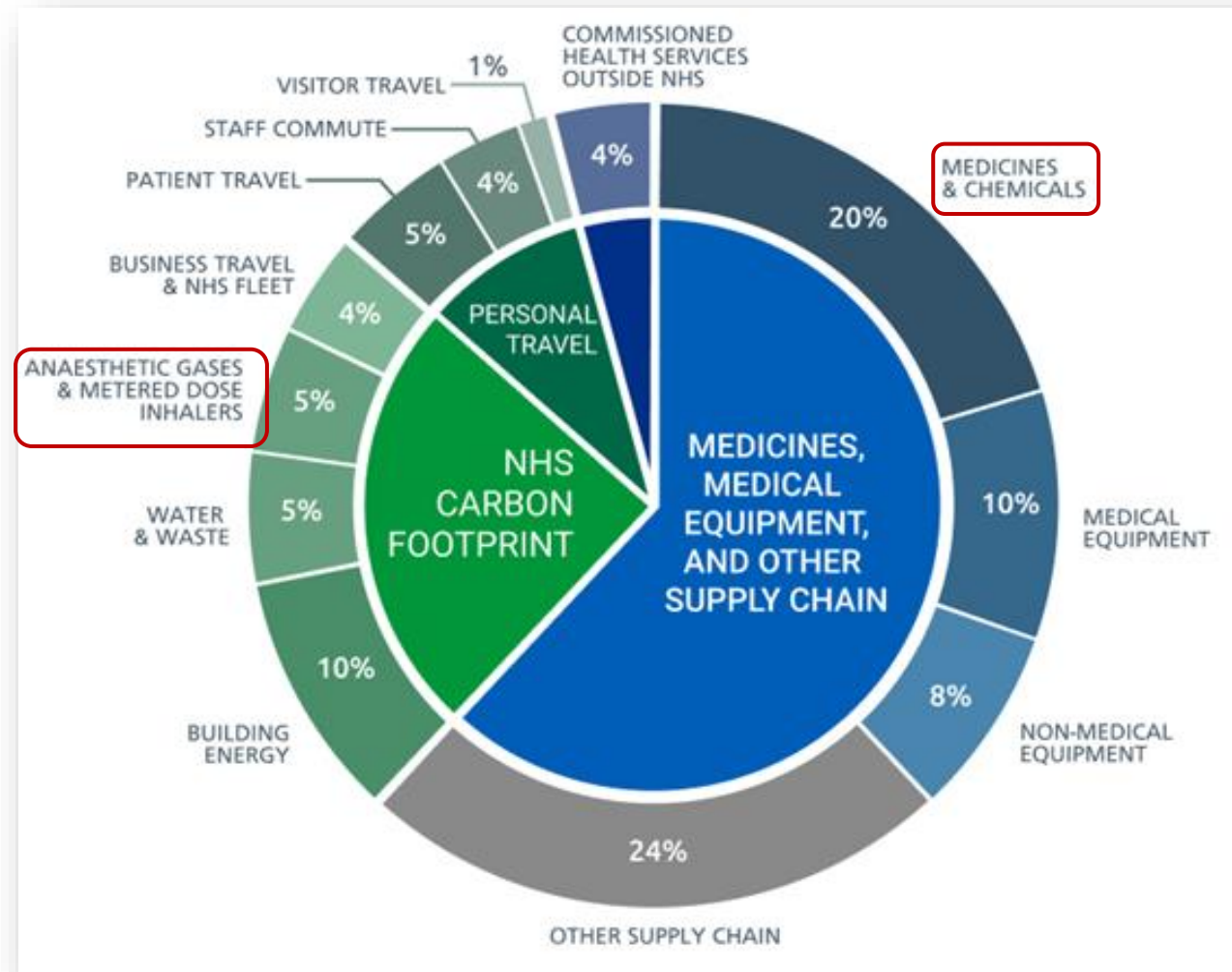
Net zero by 2045 for the broader emissions we can influence, with an 80% reduction by 2036-2039.

Every intervention will seek to:

- improve health and patient care outcomes
- reduce system inefficiencies
- reduce health inequalities
- deliver a more resilient healthcare system.



Medicines Net Zero



Quality Assurance and Technical Services

Technical services

- People
- Waste
- Energy
- Facilities
- Procurement

Quality minded staff

- Quality
- Risk
- Safety
- Regulation
- Measured

Priority medicines

Inhalers

Inhaler choices

Did you know that by managing your lung condition well you can feel your best and help the environment?

1

Use your inhalers as prescribed

Taking your inhalers as prescribed, even if you feel well, is the best thing you can do for your lung condition.

If you have asthma, taking your preventer inhaler every day as prescribed keeps down inflammation and swelling in your airways. This will cut your risk of asthma symptoms and an asthma attack.

If you have COPD or another lung condition and you're given an inhaler for regular daily use, it's important to take it as prescribed. This can help you control your symptoms and reduce the risk of a flare up.

If your condition is well managed, you'll use fewer reliever (or 'rescue') inhalers to deal with symptoms, which is good for you and helps to reduce carbon emissions.

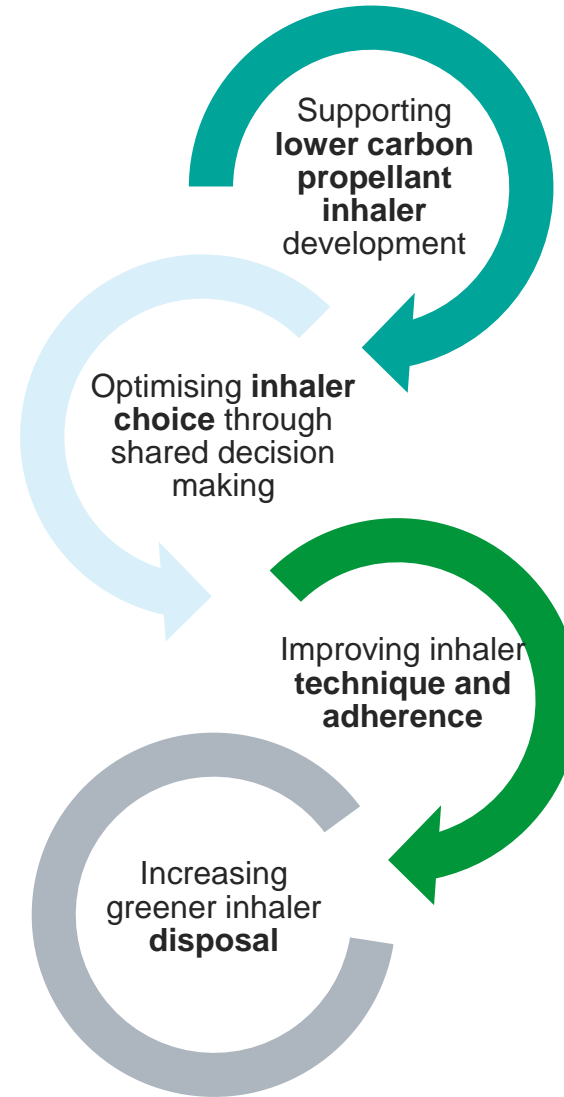
2

Use the right inhaler technique

Using the correct technique every time you take your inhalers means more of the medicine goes straight to your lungs, where it's needed. This reduces your symptoms, prevents side effects, and wastes less medicine.



Visit the Asthma + Lung UK website to check your inhaler technique



Desflurane



Putting anaesthetic emissions to bed: commitment on desflurane

📅 13 January 2023 🧑‍🎓 [Dr Nick Watts](#), [Professor Ramani Moonesinghe](#) and [Claire Foreman](#)

Since its introduction in 1846, anaesthesia has saved countless lives. It has enabled the safe and humanitarian delivery of procedures and operations that simply could not have happened otherwise.

Today, anaesthetists provide general, regional and local anaesthesia, as well as lead preparation for and recovery from surgery. They provide support for women and babies around the time of childbirth, help with the management of acute and chronic pain, and offer lifesaving support for the most unwell emergency patients both inside and outside hospitals.

Anaesthetics – and anaesthetists – are here to stay. But the specialty faces another health challenge: the climate crisis.

Anaesthetic and analgesic practices account for 2% of the NHS carbon footprint. If the NHS is to deliver on its world-first net zero ambition – and play its crucial part in reducing the health impacts of climate change – it must address emissions associated with this specialty.

Desflurane, a volatile anaesthetic used for surgery, is a good place to start. It's one option used by anaesthetists to put patients to sleep safely, but it has a global warming potential 2,500 times greater than carbon dioxide.

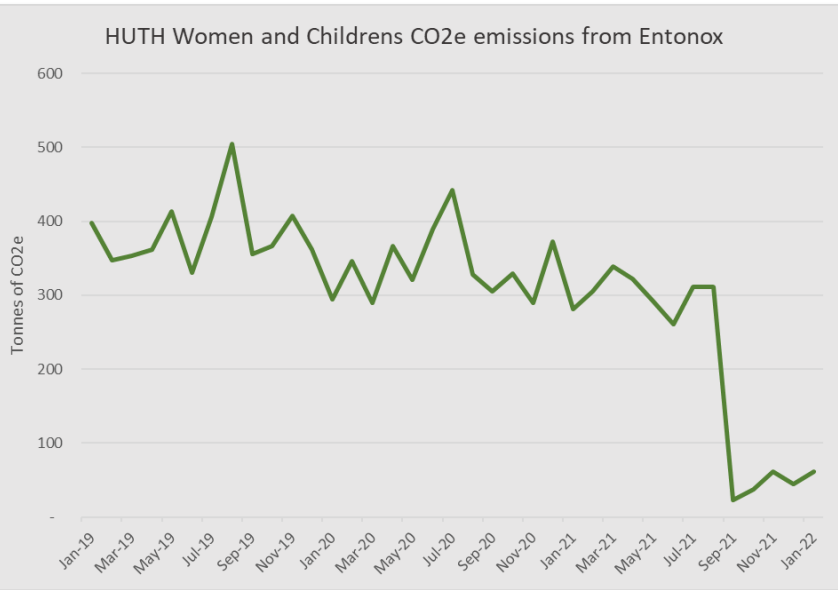
Nitrous Oxide Waste Mitigation

Reducing waste emissions from piped nitrous oxide products:

A toolkit for acute NHS hospitals



NHS England and NHS Improvement



Title Reducing our medicines carbon footprint at King's College Hospital by tackling nitrous oxide waste.

There is now a focus on the NHS becoming greener which is underpinned by the NHS Green Plan and the move towards the NHS closing the gap to net zero. One of the biggest contributors to the NHS carbon footprint is medicines, accounting for 25% of the total footprint¹. Nitrous oxide confers the largest carbon footprint of the anaesthetic gases within the acute sector accounting for at least 75% of the total anaesthetic gas footprint².

It is crucial we work to reduce our carbon footprint as the climate crisis is a health crisis, and it is our duty as health care professionals to act to protect our patients and planet.

Introduction

At King's College Hospital, as part of the trust's Green Plan, our aim is to reduce our anaesthetic gas footprint. The project aimed to tackle the largest cause of these emissions, nitrous oxide. Volatile anaesthetic agents are known to be environmentally harmful, and NHS England announced in early 2023 that desflurane would be decommissioned in England by 2024³. However, Nitrous oxide is a much bigger problem due to frequency of use and reliance in dental and paediatric procedures. Our goal was to reduce our carbon footprint of nitrous oxide gases by tackling waste, through leaks in piped systems, theft and over-ordering of gas cylinders.

Method

We carried out a clinical audit across all clinical areas that are served by piped nitrous oxide, 1605 litres were used weekly on average (83,460 litres per year). As BOC provide supply and return data of nitrous oxide gases to all trusts in England, we were able to compare our clinical audit data with the total gas bought into the trust (915,000 litres per year). Figure 2 shows clinical use of 5%, and therefore 95% waste.



Figure 2: Overall clinical usage and manifold consumption of nitrous oxide at KCH in 2021/22

Our data collection revealed that wastage from piped manifold systems is a far more significant problem than that of persistent clinical usage.

Conclusions

From switching to a leaner supply of medical gases, we have saved over 250 tonnes of CO₂e since the beginning of our project, as well as over £20,000. The project continues with aims to reduce to less than 100 tonnes of CO₂ emissions per year from our nitrous oxide footprint.

Laura Stevenson, Associate Chief Pharmacist – Aseptic Services at King's College Hospital

References

- Greener NHS » Areas of focus (england.nhs.uk)
 - Nitrous oxide could be harming people as much as the planet - The Pharmaceutical Journal (pharmaceuticaljournal.com)
 - NHS England » Putting anaesthetic emissions to bed: commitment on desflurane
- All data referenced belongs to the King's College Hospital anaesthetic gas waste reduction project working group.

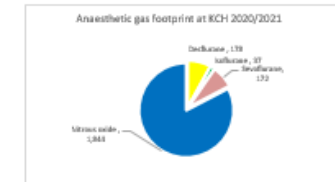


Figure 1: Tonnes of CO₂ produced per gas at KCH in 2020/21

Results

In establishing a solution to the problem we knew the main source of waste of nitrous oxide was from the piped supply. Therefore, our plan was to completely decommission areas that had zero clinical usage and convert anaesthetic gas machines to take portable cylinders in all other areas. Converting to smaller, portable cylinders we could provide a leaner supply with no change in patient care or experience. Figure 3 shows an overall reduction in our carbon footprint at KCH since removing piped supply and switching to smaller nitrous cylinders.

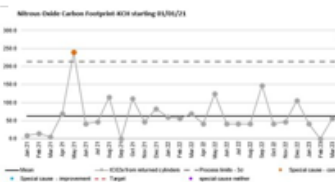


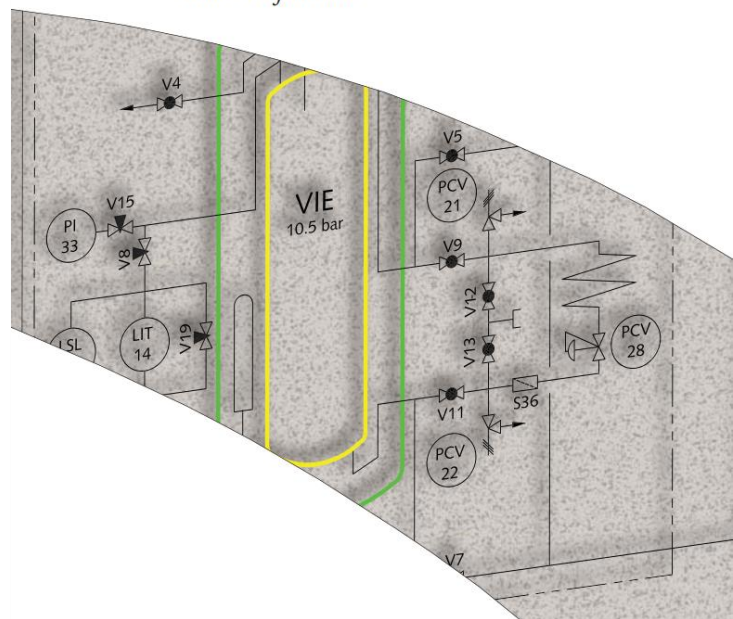
Figure 3: Nitrous oxide carbon footprint from 2021 to 2023

Nitrous Oxide - Identifying Leaks



Medical gases
Health Technical Memorandum
02-01: Medical gas pipeline
systems

*Part A: Design, installation, validation
and verification*



15.27 - For total system pressure tests on oxygen, nitrous oxide and nitrous oxide/oxygen mixture, the system under test must be physically isolated from the source of supply (for example by the use of spades).



Lean nitrous oxide supply

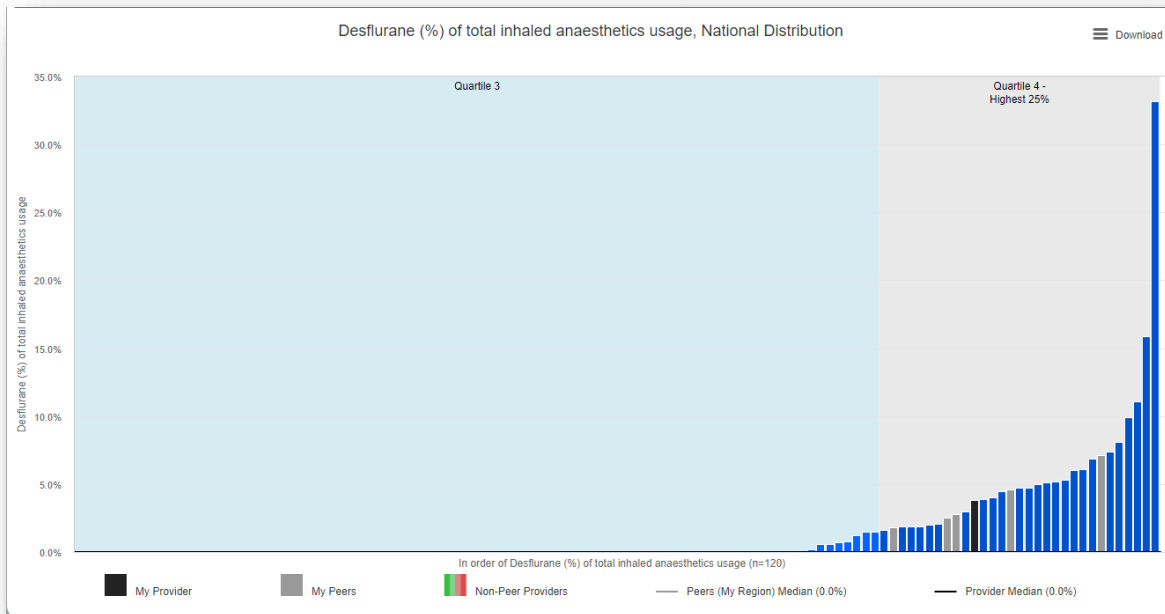
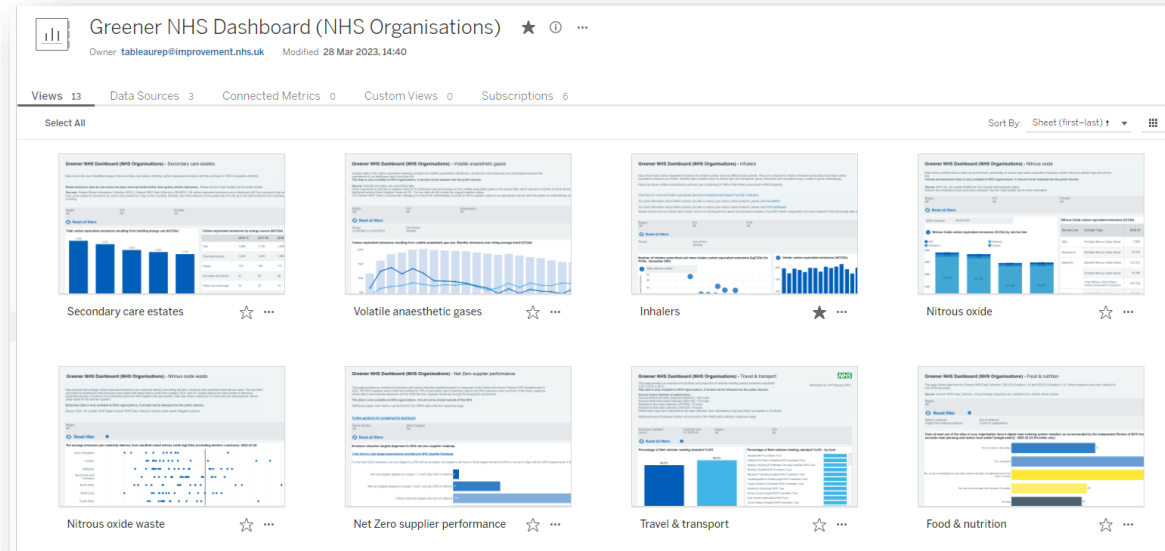
From this



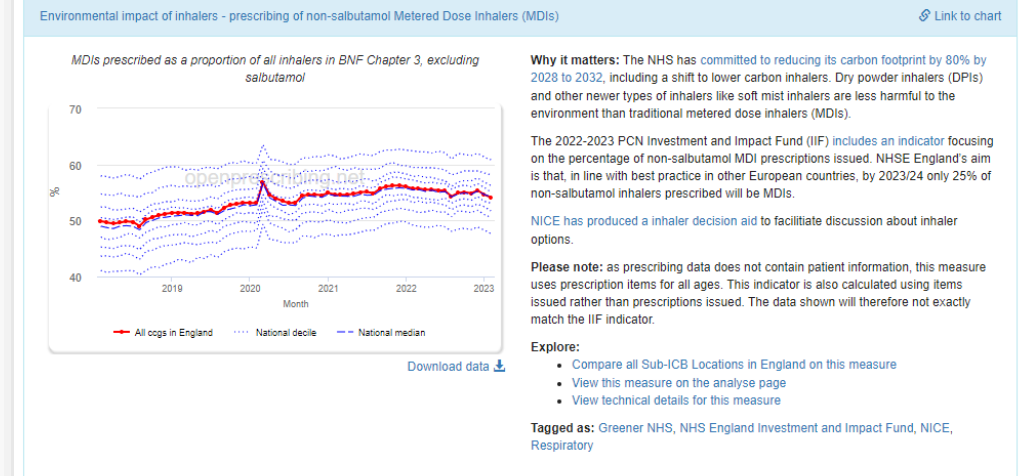
To this



Data



Environmental impact of inhalers - prescribing of non-salbutamol Metered Dose Inhalers (MDIs)



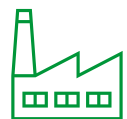
Medicines Suppliers

Procurement of Medicines within NHSE

- NHS medicines for secondary care (hospitals) are generally procured through frameworks, owned by NHS England.
- Approximately there are:



50 different framework agreements in use



950 different suppliers



9,000 different products

The NHS Net Zero Supplier Roadmap: setting clear expectations

2022

From April 2022, all NHS procurements will include a minimum 10% net zero and social value weighting. The [net zero and social value guidance for NHS procurement teams](#) will help unlock health-specific outcomes (building on [PPN 06/20](#)).

2023/24

From April 2023, for all contracts above £5 million per annum, the NHS will require suppliers to publish a [carbon reduction plan](#) for their UK Scope 1 and 2 emissions and a subset of scope 3 emissions as a minimum (aligning with [PPN 06/21](#)).

From April 2024, the NHS will extend this requirement to cover all procurements.

2027

From April 2027, all suppliers will be required to publicly report targets, emissions and publish a carbon reduction plan for global emissions aligned to the NHS net zero target, for all of their Scope 1, 2 and 3 emissions.

2028

New requirements will be introduced overseeing the provision of carbon foot printing for individual products supplied to the NHS. The NHS will work with suppliers and regulators to determine the scope and methodology.

Quality Assurance and Technical Services

Technical Services

Sustainable
by design

Embedded
in processes

Balanced
with quality
and safety

Minimising
waste

Resource
use



Net Zero Tech Services

- John Landers
- Laura Stevenson
- Mark Jackson
- Linda Hardy
- Anne Black
- Matt Greening

Call for evidence

NHS Net Zero Aseptic Services Initiatives - Call for Evidence

The NHS has committed to deliver the world's first net zero health service and respond to climate change, improving health now and for future generations.

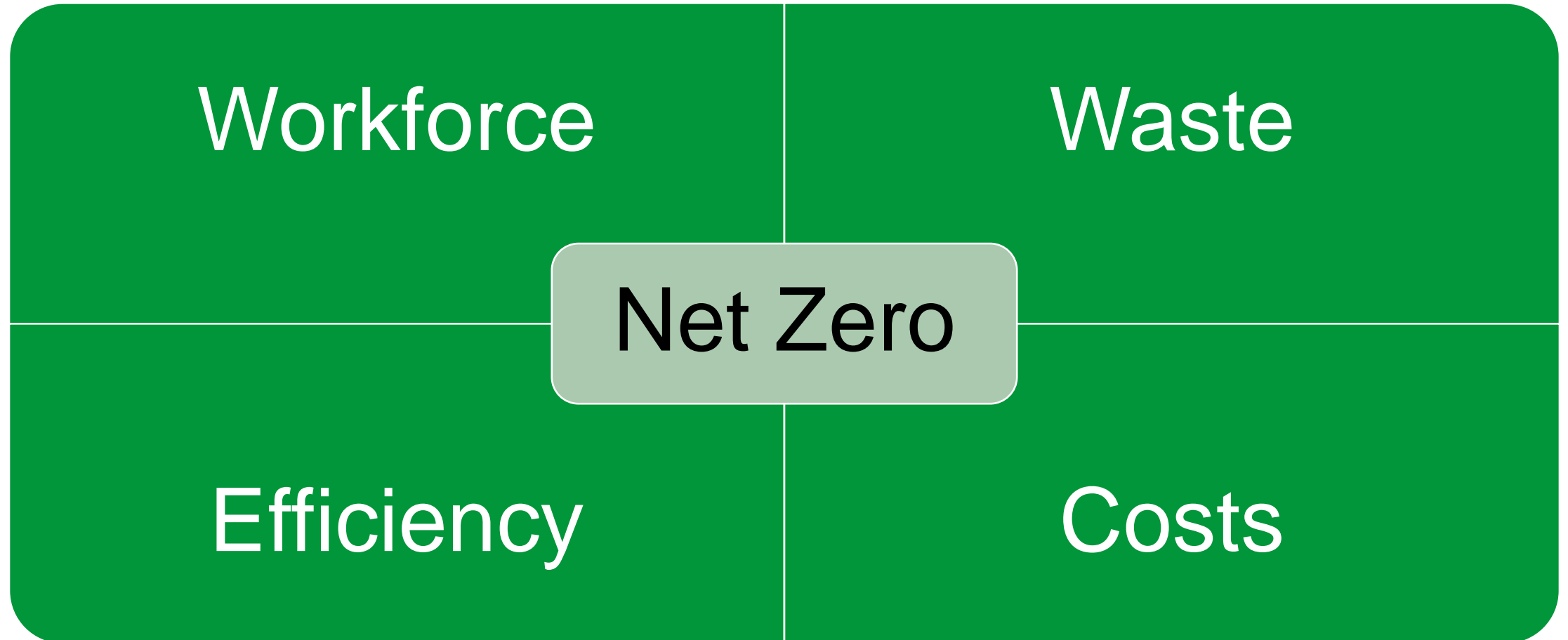
Aseptic Services teams provide a critical service, ensuring patients receive safe, efficacious prepared injectable medication; but this service is inherently high resource and energy intensive. The pathway to a more sustainable service also aligns with wider initiatives like reduction in waste, cheaper operating costs and improved staff engagement.

This call for evidence seeks to understand work already being undertaken or planned within the system to reduce the environmental impacts of aseptic services, the level of understanding and engagement in Net Zero and any blockers to progress.

A joint call from: NHE England, PASG and Regional Quality Assurance.



Co-benefits



Call to action

Knowledge
& Education

Reduce
waste

Embed
sustainability

How can I find out more?

Find out more about the work of the Greener NHS team, and the progress towards the net zero goal:

- Visit www.england.nhs.uk/greenernhs
- Sign up to our newsletter – www.england.nhs.uk/email-bulletins/greener-nhs
- Follow us on social media - [@GreenerNHS](https://twitter.com/GreenerNHS)

E-Learning module from Health Education England

The Greener NHS has endorsed this [E-Learning Module on Environmentally Sustainable Healthcare](#), developed by NHS Health Education England and E-Learning for Healthcare, in partnership with the Centre for Sustainable Healthcare.