Sustainability in Healthcare
Innovator Guide

delivered by Yorkshire and Humber Academic Health Science Network

Yorkshire & Humber AHSN

Accelerated Access Collaborative

This guide builds on feedback obtained from small and medium-sized enterprises (SME) innovator interviews conducted with innovators involved in NHS England programmes.

The full report is available on the Yorkshire & Humber Academic Health Science Network website.
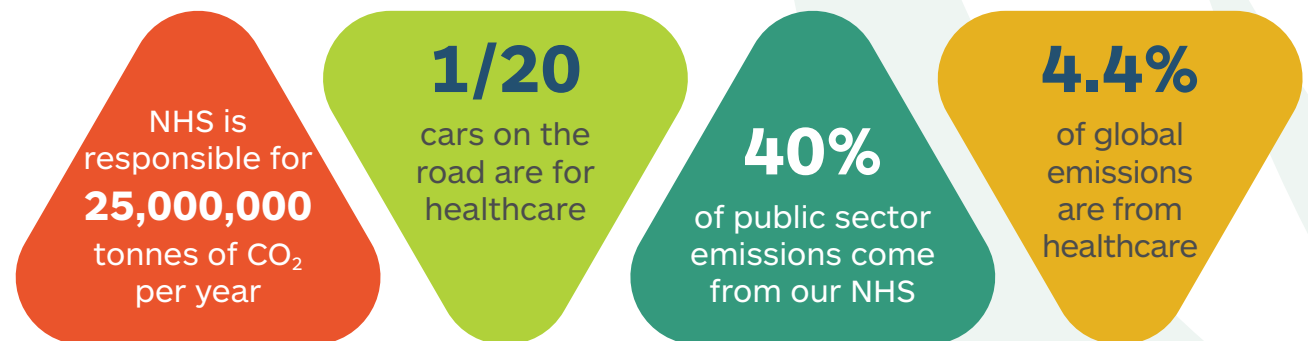
Contents

Introduction

Climate change and the impact we have on the environment has been a discussion topic for centuries. However, despite this fact, it was only in the 20th century that we really started to see public acknowledgement of the issue.

As a publicly funded, national entity sponsored by the Department of Health and Social Care, NHS England's support of UK government policy on climate change is essential. NHS England has committed to exceeding government targets with its net zero ambition, and there are now some legal duties outlined in the Health and Care Act 2022.

The guide is intended to support innovators navigate initial sustainability considerations.

NHS environmental impact

NHS is responsible for **25,000,000** tonnes of CO_2 per year

1/20 cars on the road are for healthcare

40% of public sector emissions come from our NHS

4.4% of global emissions are from healthcare

The NHS has made significant commitments to net zero, and healthcare innovators need to demonstrate alignment and embrace the opportunities sustainable practice provides – including;

- **Competitive advantage**
- **Improved efficiency**

Feedback from SMEs highlighted the following considerations:

When to invest in sustainability?

The evolution of your innovation and considering the right time to focus on sustainability

Financial implications of being green

Sustainability is becoming a priority for large organisations – but what about the financial implications from start-ups, and how do you keep up?

NHS and the triple-bottom line?

How big a priority is sustainability to the NHS? And what is the NHS doing to support sustainable healthcare?

Trusted resources

"The NHS is unique as it has a cohesive ambition"

SME Innovator Interview – July 2022

Greener NHS

In 2020, Greener NHS was formed to evolve the work of Sustainable Development Unit (SDU) and focus on delivery of all aspects of NHS work on sustainability. The Greener NHS National Programme exists to drive transformation while delivering against broader environmental health priorities.

Following the Greener NHS strategy publication Delivering a net zero National Health Service in October 2020, the 2021/2022 NHS Standard Contract set out requirements for trusts to develop a green plan. Green Plans are a mechanism to prioritise interventions which simultaneously improve patient care and community wellbeing while tackling climate change and broader sustainability issues.

How to produce a Green Plan: A three-year strategy towards net zero (england.nhs.uk)

NHS

How to produce a Green Plan: A three-year strategy towards net zero

www.england.nhs.uk/greenemhs

Updated guidance - June 2021

Our climate has been an evolving focus for the United Nations for decades, with the formation of Conference of the Parties (COP), partial adoption of Kyoto Protocol (UK Climate Change Act), and the fully ratified Paris Agreement.

Following the publication of the Climate Change Act in 2008, the SDU was formed to better understand the links between health, healthcare and climate change. Many of the resources developed by SDU underpin current climate tools – such as carbon calculators.

In 2019, the UK government declared a climate emergency and became the first major economy to commit to Net Zero by 2050 (Climate Change Act 2008 – 2050 Target Amendment).

NHS

NHS net zero Milestones
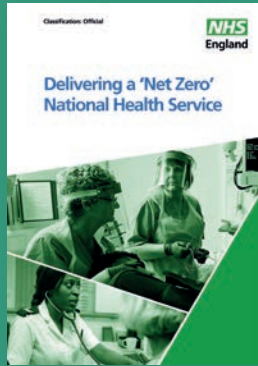
Delivering a Net Zero NHS

The NHS has made the following commitments

2040
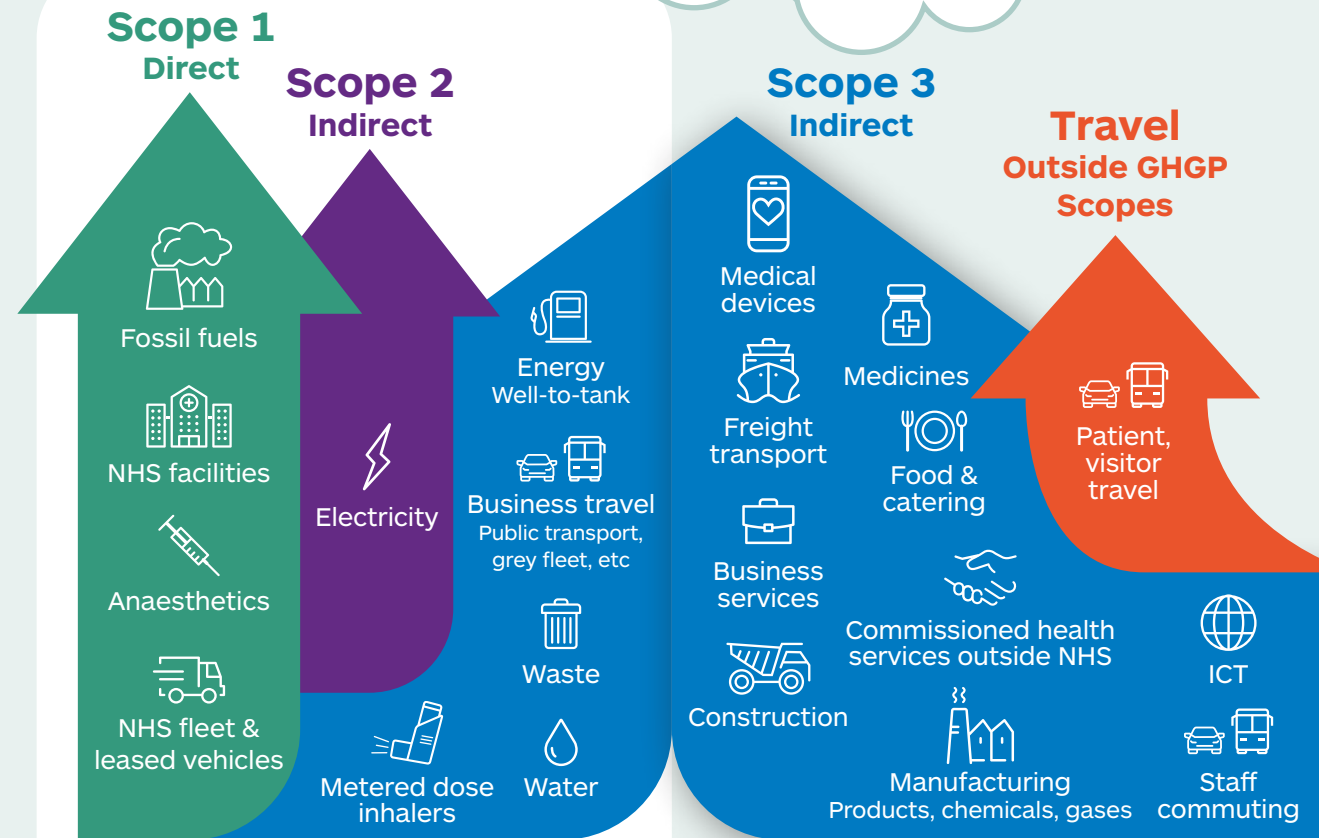**NHS Carbon Footprint**

Net Zero for emissions the NHS controls directly.

2045
NHS Carbon Footprint Plus

Net Zero for emissions the NHS influences

Major Greenhouse Gases, as per the GHG protocol

CH_4 N_2O SF_6 CO_2 CFC_s PFC_s HFC_s

Scope 1
Direct

Scope 2
Indirect

Scope 3
Indirect

Travel
Outside GHGP Scopes

Fossil fuels

NHS facilities

Anaesthetics

NHS fleet & leased vehicles

Electricity

Energy Well-to-tank

Business travel
Public transport, grey fleet, etc

Waste

Metered dose inhalers

Water

Medical devices

Freight transport

Business services

Construction

Medicines

Food & catering

Commissioned health services outside NHS

Manufacturing
Products, chemicals, gases
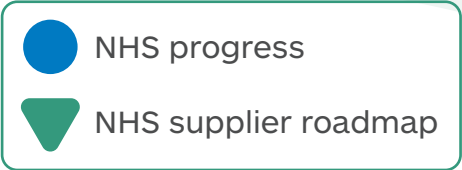
Patient, visitor travel

ICT

Staff commuting

NHS Carbon Footprint

- **GHGP scope 1:** Direct emissions from owned or directly controlled sources, on site
- **GHGP scope 2:** Indirect emissions from the generation of purchased energy, mostly electricity

NHS Carbon Footprint Plus

- **GHGP scope 3:** All other indirect emissions that occur in producing and transporting goods and services, including the full supply chain.

NHS – Sustainability Timeline

NHS progress

NHS supplier roadmap

January 2008
NHS Sustainable Development Unit

January 2020
Greener NHS National Programme formed *(Replacement for SDU)*

October 2020
Greener NHS Regional Teams formed

January 2022
Evergreen sustainable supplier assessment pilot

April 2023
Suppliers required to publish a Carbon Reduction Plan on their scope 1, 2 and subset of scope 3 emissions for new contracts above £5M per annum.

April 2022
NHS procurements will include 10% net zero and social value weighting.

April 2022
NHS Green Plans (ICS / trust)

April 2024
The NHS will extend the requirement for a Carbon Reduction Plan to cover all procurements.

April 2027
All suppliers required to publicly report targets, emissions and publish a Carbon Reduction Plan for global emissions aligned to the NHS net zero target for all emissions scopes.

April 2028
New requirements will be introduced overseeing the provision of carbon foot printing for individual products supplied to the NHS.

April 2030
All suppliers to demonstrate progress through published progress report and the Evergreen sustainable supplier assessment.

Greener NHS » Suppliers (england.nhs.uk)

As a healthcare provider it is essential to remember that the NHS will always prioritise patient health outcomes, and as a publicly funded organisation will always scrutinise value for money.

When seeking to establish your innovation in a healthcare setting you will need to ensure your offer meets all criteria - your sustainable credentials will not be the first priority but will be an important consideration in the process. Therefore, innovators should know what they are offering and be able to demonstrate these important impacts to healthcare providers.

NHS Priorities

- **Patient outcomes**
- **Efficiency within the NHS**
- **Cost benefits**
- **Environmental and societal impact**

Sustainable Practice

Carbon reduction plan

The NHS Carbon Reduction Plan (CRP) requirements apply to the commissioning and purchasing of goods, works and services (including healthcare services) by in-scope organisations. A CRP is a publicly shared document in which a supplier identifies their current carbon footprint and their plan to achieve net zero emissions.

Carbon quantification

Carbon quantification allows to evaluate the potential global warming impact of suppliers' activities and products and can be estimated using C02 equivalents.

Life cycle analysis

Life cycle analysis (LCA) is a method used to evaluate and identify hotspots in the environmental impact of a product through its life cycle encompassing extraction and processing of the raw materials, manufacturing, distribution, use, recycling, and final disposal.
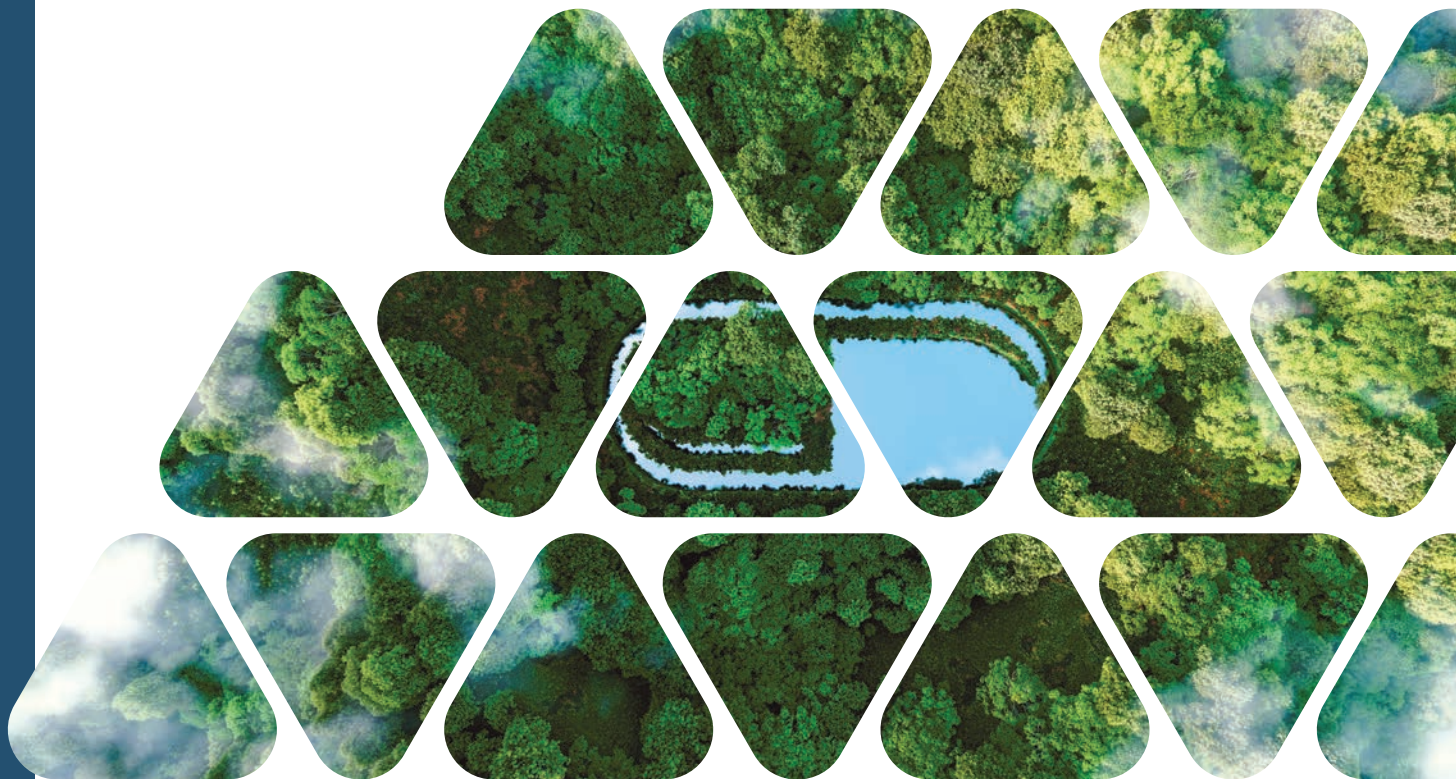
Innovators need to understand NHS requirements for sustainable practice and be able to convert that into meaningful actions.

This guide will highlight key activities to start on your journey to compliance. When you start this journey will depend on your innovation and organisations, but we all need to start somewhere.

"Focus on comparible impacts"

"we are interested in genuine green metrics, some sort of validation of our carbon impact. We appreciate the acceptability of assumptions in carbon quantification, but need a sort of kitemark to evidence validity"

SME Innovators – Interviewed July 2022

NHS Carbon Reduction Plan (CRP)

- A CRP identifies a supplier's current carbon footprint and their plan to achieve net zero emissions by 2050 or earlier.
- The NHS will require its suppliers to have a publicly available CRP on their website.
- Suppliers are expected to provide current emissions for their UK operations at a minimum, for the sources included in scope 1 and 2 of the GHG Protocol, and a defined subset of scope 3 emissions.
  The five relevant GHG Protocol scope 3 categories are:
    (i) upstream transportation and distribution
    (ii) waste generated in operations
    (iii) business travel
    (iv) employee commuting
    (v) downstream transportation and distribution.
- Updated annually (within six months of financial year end)
- Published on an organization's UK website

Access guidance on NHS carbon reduction plans and use the template to create your own.

Targets

As outlined in the above guidance, suppliers are encouraged to set a net zero target of 2045, although a target of 2050 will still meet the minimum requirements of CRPs.

A trusted mechanism for setting targets for SMEs is available via the Science Based Targets initiative (SBTi) with additional resources to help developing targets available from - https://smeclimatehub.org and https://businessclimatehub.org/uk.

To best prepare for future NHS roadmap milestones, suppliers are encouraged to set a net zero target of 2045, although a target of 2050 will still meet the minimum requirements of CRPs.

SCIENCE BASED TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

Carbon Reduction Plan Resources

Greener NHS

NHS Supply Chain

NHS England » Carbon reduction plan requirements for the procurement of NHS goods, services and works

The Green Book

UK published carbon conversion factors

Greenhouse Gas Accounting Sector Guidance for Pharmaceutical Products and Medical Devices

Greenhouse Gas Protocol: Product Life Cycle Accounting and Reporting Standard

PSSRU 2019: Unit costs of health and social care

HealthcareLCA database

Use the following calculators to help you:
1. https://ghgprotocol.org/ghg-emissions-calculation-tool
2. https://quantis-suite.com/Scope-3-Evaluator/
3. https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023

Carbon Quantification

What to consider?

The first step in embedding sustainable practice is understanding your current carbon footprint as a company, and the products and services this covers.

To do this we would advise mapping out your impact as a company – your corporate services, and then considering the impact of individual products and services.

Ensuring this separation should minimise confusion and ensure robust plans are considered for all aspects.

Support available

- Academic Health Science Network
- University and/or Knowledge hub
- NHS England Sustainable Procurement Team
- Webinars - email england.ccf-sustainability@nhs.net
- CRP checking service - england.crp-check@nhs.net
- Consultant Companies – Third Party

Company

https://ghgprotocol.org/corporate-standard
https://ghgprotocol.org/standards/scope-3-standard

Operational Footprint ⟹ Sustainable Commitments

Determine activities that contribute to your organisational footprint – for example:

- Estate (buildings and storage)
- Resources (electric / heat / water)
- Waste (food / Consumables)
- Staff (travel)
- Supply Chain and Logistics

Identify improvements and set targets and responsibilities to achieve – for example:

- Reduction in energy consumption
- Emissions associated with data (platform)
- Switch to renewable alternatives
- Improved waste management
- Sustainable transport / Staff commute
- Sustainable knowledge & awareness
- Sustainable suppliers

Product / Service

It is important to evaluate individual products and services to explore their environmental impact as each product and its implementation and adaptation in a care pathway is unique.

The following key elements can have a significant impact on sustainability:
- Physical vs virtual product
The considerations for a physical product compared to a virtual technology are completely different, and inherent with greater complexity – often requiring wider evaluation of impact.

   Physical: Manufacture and supply chain / distribution / disposal and end of life (circular economy)
   Virtual: Data / server / staff / training (energy consumption and cloud provider commitment if applicable) / resilience to climate change
- Adaptations to system
How your product will be implemented into an existing system will greatly affect the environmental impact.

What to consider?

To fully understand a product's impact you will need an awareness of the system your product will be operating in - if you are uncertain you should work with an organisation with an awareness of the healthcare sector.

Once you have an awareness of the system and your products impact on the pathway – you can estimate the adaptations made.

Remember, all systems will work the same, and individual activities may have a greater or lesser impact. You are trying to work out a current estimate (with awareness of assumptions, limitations, and proxies) to provide a comparison. Ensure that assumptions and source materials are documented so that they can be replicated for future assessments.

System pathways can be complicated and often poorly defined. Add to this the multiple mechanisms of impact and you can easily get lost!

If in doubt keep it simple – and remember to record data and assumptions made to ensure transparency.

Travel

Supply Chain

Energy

Buildings

Consumables

Packaging

Digital

Waste

Water

Food

Carbon quantification
– Product / Service

Mapping

Determine activities conducted in the delivery of services

Data

Gather data required linked to activities mapped

Calculation

Calculate your carbon impact using appropriate calculator

Carbon impact baseline

Established your baseline (BL)

Data

Remember to ensure you review a tools source data to ensure it is trusted and relevant to your innovation.

If you keep it simple and link your impact to your system map you will be heading in the right direction.

As and when appropriate you may choose to link with a knowledge hub, who will be experienced in quantifying carbon to progress your sustainability assessments and validate your findings.

Examples of resources available are provided at the end of this document.

An example of trusted source data is shown below – indicating kg CO2e by clinical activity.

Care Pathway Module Environmental Impacts

Module	Units	GHG emissions (kg CO_2e)	Fresh water use (m^3)	Waste generated (kg)
1. GP consultation	Per visit	1.1	2.3	0.19
2. Patient travel Self – to GP Self – to elective care Provided non-emergency Provided emergency	Per single trip Per single trip Per single trip Per single trip	0.56 2.9 7.9 36	0.10 0.53 26 91	x x 0.13 0.53
3. Emergency department	Per visit	14	21	0.29
4. Inpatient admission Low intensity High intensity	Per day Per day	38 90	61 137	3.3 13
5. Surgical procedure	Per average surgery	35	62	0.41
6. Self-management Patient education session	Per session	1.6	x	0.02

Note: "x" indicates that no data were available to calculate the environmental impact

https://shcpathways.org

Life Cycle Analysis

A Life Cycle Analysis (LCA) is a regulated framework for estimating and assessing the environmental impact of a product through its entire life cycle – from production to disposal.

Product Footprint

- Recycling
- Raw Materials
- Manufacturing
- Distribution
- Usage

What to consider?

A LCA is a robust assessment of a product's environmental impact with validated results. They require rigorous interrogation of a product from the very start of the product's life all the way to its end of life (cradle to grave approach) and are the gold standard for carbon quantification.

If you are considering an LCA for a product you should consider what your minimum requirements are to identify carbon hotspots. Suppliers may find a lite version of an LCA sufficient to drive meaningful carbon reduction activities, and highlight areas of carbon hotspots.

Articulating Sustainable Impact

To help innovators in articulating their sustainable credentials, this guide has hints and tips to consider when applying for funding.

We will also explore NHS England programme applications – and how best to promote your innovations sustainable impact.

Application Overview

Plain English Summary

Provide a concise overview of your project (aim, background, design, PPIE, and dissemination)

Project Plan

- Description of proposed technology
- Project Delivery
- Milestones
- Key competitors / Unique Selling Point (USP)
- Intellectual Property (IP)
- Commercialisation and NHS/Social Care Implementation
- PPIE
- Equality, diversity and inclusion
- Net zero policy

Budget

Finances
Justification

Top tips

Plain English Summary

Outline the problem your innovation addresses and articulate how big a problem it is. Articulate how well your innovation will fix the problem – addressing the cause or managing the symptoms.

Remember NHS priorities for clinical and cost-effective solutions.

Description of proposed technology

Consider the setting/service your innovation would support – and what impact it would have if implemented (i.e. reduce number of appointments / reduce equipment / reduce travel & transport).

Remember intentions to articulate mechanism of impact and adaptations to service.

USP

Promote sustainable credentials and commitment to support net zero agenda.

Remember acceptability of assumptions in carbon impacts – emphasise the potential!

NHS Implementation Strategy

Demonstrate awareness of NHS requirements and commitment to net zero agenda – including supplier roadmap. Articulate activity to quantify carbon footprint and intentions for carbon reduction plans.

Remember importance of intentions and ability to adapt to net zero ambitions.

Budget

Acknowledge financial implications of sustainable practice and resource anticipated to support quantification and LCA.

Remember importance of intentions and ability to adapt to net zero ambitions.

General Guidance

Consider the sustainable impact of your innovation on various environmental factors

Example: A digital technology claims emissions reduction through travel.

Also consider;
- impact on local community
- data and servers resources and emissions
- training needs
- further impact on the pathway/ services it will operate in.

Language

Avoid using jargon and attempt to translate sustainable impact in a meaningful way (i.e. plane travel / bus trips).

NHS Priorities

Ensure you articulate clinical need and value for money in your proposal – understand the balance of NHS priorities.

Knowledge / Resource

Link with knowledge hub, academic partners, third party experts or charitable organisation to help navigate your organisation assessment and net zero journey.

You can't know everything, and help is always available.

Funding Application

Funding application, tips on what 'good looks like' regarding sustainability.

To help innovators working on a funding application, we have the following hints and tips on what level of information may be required, what may be considered a good response and what key elements should be considered regarding net zero.
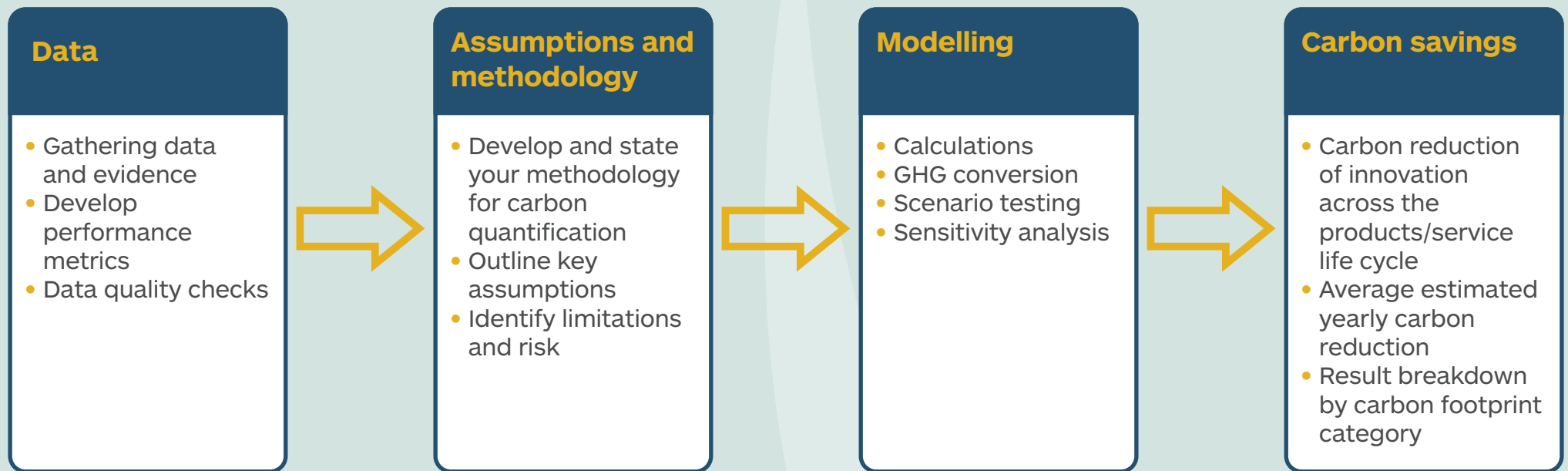
Please note that this covers only the net zero element and is only an indication of what good looks like and is not an established assessment framework. Other assessment criteria are also considered for each application (for example around the commercial viability, innovativeness, project plan, PPIE.

Excellent	Very Good	Average	Poor	Very Poor
Innovation designed with net zero in mind	Relevant assessment of the carbon impact from implementation of the innovation in the care pathway it operates in	Assumption of carbon impact, not fully established or assessed	Unproven assumption around carbon impact	Failure to demonstrate commitment to net zero NHS and supplier requirements
Consideration about emissions along the product/service lifecycle	Understanding and awareness of the NHS net zero agenda and requirement from suppliers demonstrated	Little commitment to demonstrate environmental impact	Little commitment to measure environmental impact – no quantification	Failure to articulate consideration of carbon impact and carbon quantification
Full understanding and awareness of the NHS net zero agenda and delivery demonstrated	Early considerations around quantification and lifecycle assessment	Quantification are not established, broad assumptions are made	Very little awareness of expectations from suppliers	Absence of awareness of NHS setting and testing/ development
Evidence gathering for environmental impact				
Environmental impact assessment and consideration of work required as part of the triple-bottom line approach				
Demonstrate learning from current activity (test site / RWE)				

Funding Application – carbon impact

Innovators will also be expected to state estimated current and projected carbon savings from their innovation. Remember to ensure these are realistic and supported with evidence. Innovators should also consider negative and positive impacts – with the ability to demonstrate a positive net carbon impact.

When responding to carbon impact assessments remember to highlight the following;

Data

- Gathering data and evidence
- Develop performance metrics
- Data quality checks

Assumptions and methodology

- Develop and state your methodology for carbon quantification
- Outline key assumptions
- Identify limitations and risk

Modelling

- Calculations
- GHG conversion
- Scenario testing
- Sensitivity analysis

Carbon savings

- Carbon reduction of innovation across the products/service life cycle
- Average estimated yearly carbon reduction
- Result breakdown by carbon footprint category

Resources

This guide aims to help SME innovators navigate the landscape of sustainable practice in healthcare.

With the wealth of information available it can often feel too difficult to get started, so we have sign-posted key resources to support an innovator's journey. Where you go will depend on your innovation – however there is great commercial potential in exploring sustainable practice. The NHS is a leader in this field – so getting it right now will support future growth!

> "Requires thirst for knowledge -need to go out and find information."
>
> SME Innovator – Interviewed July 2022

NHS

Greener NHS (england.nhs.uk)

Sustainable Healthcare Coalition

The Sustainable Healthcare Coalition. Care Pathways Caculator. (shcoalition.org)

ELLEN MACARTHUR FOUNDATION

How to Build a Circular Economy | Ellen MacArthur Foundation

CENTRE for SUSTAINABLE HEALTHCARE
inspire • empower • transform

Centre for Sustainable Healthcare

CARBON TRUST

Carbon Trust
Climate Action Plans & Business Sustainability | The Carbon Trust

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

Centres for Disease Control and Prevention
Figure 8.1, Impacts of Climate Change on Human Health - Injury Prevention and Environmental Health - NCBI Bookshelf (nih.gov)

HealthcareLCA database