



Achieving Net Zero within the NHS:
System-wide transition to greener, sustainable care

UNIVERSITY OF CAMBRIDGE THINKLAB
JUNE 2021

BACKGROUND

“We have gathered some ideas and thoughts, but the agenda is vast, and we are not sure where to start. We would welcome an outside perspective to help us think this through logically, and consider what needs to change to ensure the health care system can respond effectively to the ambitions set out for us in the Net Zero report...we need some help to work out HOW we are going to do this”

- East of England NHS Sustainability Network -

The University of Cambridge ThinkLab were approached by Stella Cockerill and Richard Hales on behalf of the East of England (EoE) NHS Sustainability Network to help shape their thinking about what should be included in their Green Plan. The brief was to work closely with Richard, Stella and other members of the EoE Regional Sustainability Network to help NHS colleagues establish **HOW** Net Zero can be achieved; we were asked to consider the barriers to sustainability as well as opportunities for a green transition at a system level. This report is intended to be a useful resource for EoE NHS network colleagues (Trusts, ICS's etc.) in developing their understanding of the barriers to, and opportunities for, sustainable change. We hope that it provokes thought and discussion, and helps to inform the development of regional NHS Green Plans by **‘providing a collection of the possible for achieving the impossible’**.

“

“The East of England NHS Sustainability Network is not short of enthusiasm or commitment to creating a truly sustainable healthcare system. We have lots of ideas and experience of what works and what doesn't, but we have benefited hugely by working with the Thinklab. Thank you for listening, inspiring, leading and supporting us to reach a clearer understanding of how we can create change.”

“The energy, professionalism and power of collective thought has been mind blowing! I can't recommend the Thinklab enough.”

“We felt like we were tasked with achieving the impossible (creating a Net Zero NHS) but ThinkLab has helped us to create order to our thoughts and we now have a menu of possible actions that are both inspiring and achievable.”

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UNIVERSITY OF CAMBRIDGE THINKLAB

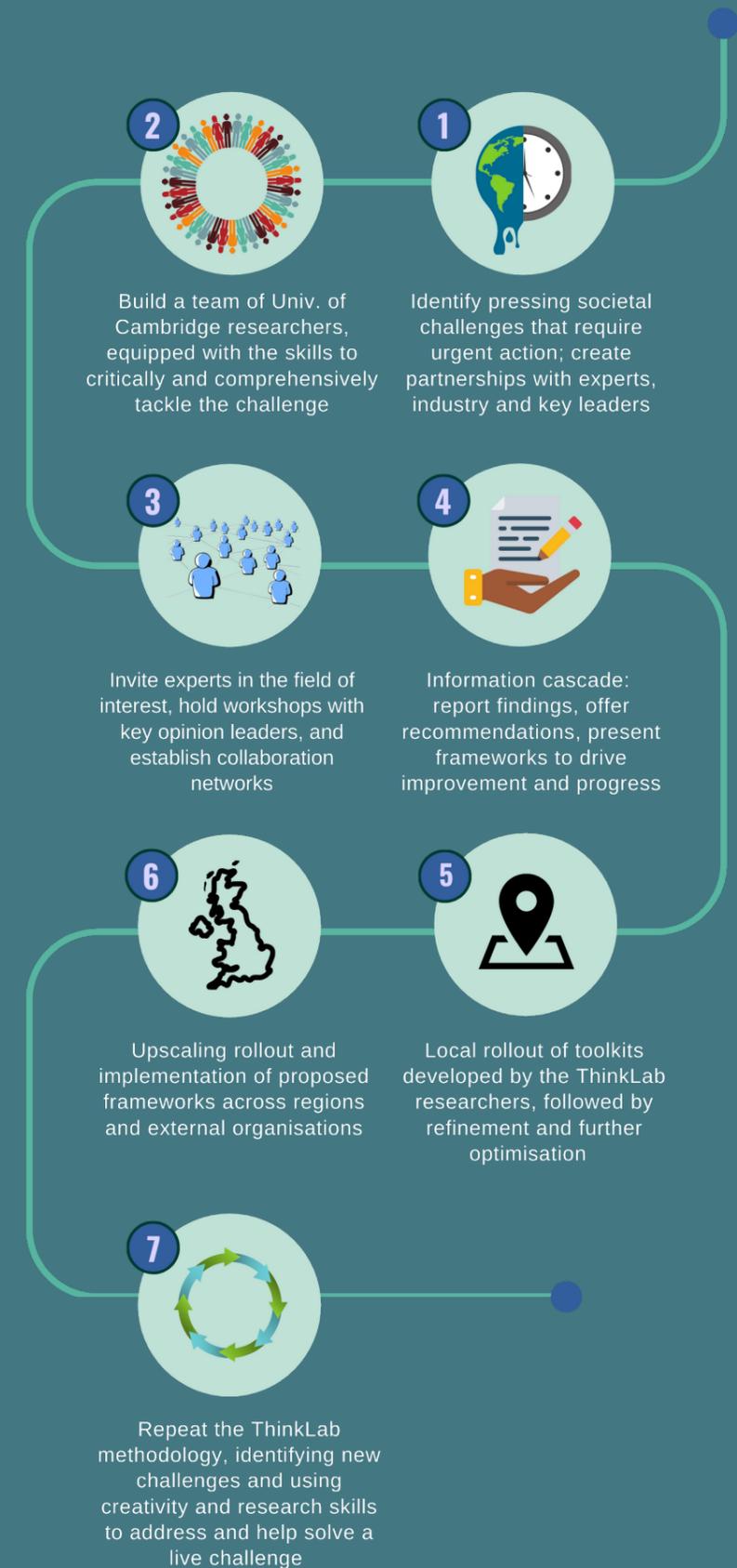
The **ThinkLab** began as a Cambridge Arts and Humanities Research Council Doctoral Training Programme initiative, designed to connect University of Cambridge research students with social, private and public organisations to work on a shared challenge. Devised with input from senior leaders of the BBC, Arts Council England, and the Department for Digital, Culture, Media and Sport, the ThinkLab methodology has been applied with a range of partners in different industries including Aviva, The Reading Agency, the Royal Society of Arts, and the Fitzwilliam Museum. As part of the **University Strategic Partnership Office**, the aim of the ThinkLab is to work on big picture problems and create real world impact at scale.

The ThinkLab programme brings a uniquely interdisciplinary approach with its central position within the University of Cambridge; drawing upon the expertise of individuals from a wide range of backgrounds, and striving to foster new collaborations and knowledge sharing connections for its partner organisations.

The ThinkLab methodology stresses the close working relationship that develops between Cambridge researchers and various stakeholders in project partner organisations. The ThinkLab process is based upon:

- Identifying the stakeholders and decision makers that the Cambridge ThinkLab team will work closely with during the course of the project.
- Determining the scope and specific deliverables that can be accomplished during the lifetime of the ThinkLab project.
- Learning about blind spots and other challenges which the ThinkLab team can help to identify and create new ways of thinking.
- Creating a framework of research, including data collection and analysis, that is based upon the partner organisation as well as the diverse strengths and backgrounds of the current ThinkLab team.

THINKLAB METHODOLOGY



THINKLAB NHS PROJECT OUTLINE

The science is unequivocal: failing to halve carbon emissions across the world by 2030 means that catastrophic climate change on a global scale becomes a dire reality. If this target is missed, the NHS Net Zero target of 2045 is likely irrelevant. This report urges for system-wide transformational and behavioural change, in a number of areas that the ThinkLab believes are key points of focus for the NHS if it is to achieve its Net Zero goals. Whilst physical infrastructure and innovation are also essential variables for a successful pathway towards Net Zero, the ThinkLab did not focus on making suggestions in these areas as we believe that the NHS is already making brilliant headway in this regard. Instead, this report focusses fundamentally on people; raising awareness, educating staff and building accountability structures amongst individuals within the NHS, so that Net Zero becomes a reflex response, enabling large-scale change at an organisational level.

Acknowledging the urgency at hand, the ThinkLab recommendations and frameworks presented in this report create a blueprint from which the right questions can be asked, and the right decisions can be made, if we act together and quickly.

The ThinkLab have investigated the **Barriers to Sustainability** and have created a number of scalable tools which can be used to better understand the barriers that individuals within the NHS face in implementing sustainability.

The ThinkLab team have also developed guidance on how to use system-wide transformational change to achieve Net Zero in the NHS. The framework, which includes a knowledge bank of resources, focuses on four key areas including; **Education and Awareness, Procurement, Progress and Improvement**, and **Communication and Knowledge Sharing**, from both bottom-up and top-down perspectives. **Finance for Circularity in the NHS** is also discussed. Some of the recommended initiatives include carbon literacy training for NHS staff, policy changes around procurement, developing a Green Champions Network, and improving communication and resource sharing via the use of digital tools and messaging. This interactive ThinkLab report brings together the various resources, reflections, tools and recommendations that have been gathered using the ThinkLab methodology, taking into account the invaluable input from various NHS stakeholders who have worked with the team over a number of months.

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NET ZERO UNPACKED

Key terminology

Bottom-up	<i>Bottom-up approaches revolve around the inclusion of all NHS employees, their ideas, and their perceptions of the NHS in order to make the most informed decisions on sustainability.</i>
Carbon	<i>In the context of climate change, carbon is commonly used as a shorthand for carbon dioxide, the most abundant greenhouse gas released by human activity.</i>
Circular economy	<i>A circular economy is based on the principles of designing-out waste and pollution, keeping products and materials in use (by reusing, recycling, refurbishing), and regenerating natural systems.</i>
Embedded carbon	<i>All the carbon dioxide emitted during the production of materials and products.</i>
Green thread	<i>Actively considering environmental factors and sustainability in all decision making, at all levels of the NHS; and integrating sustainability into clinical practice and conversations with patients wherever possible.</i>
Net Zero	<i>A target of completely negating the amount of greenhouse gases produced by human activity. From the NHS perspective, this includes human health, care quality and outcomes.</i>
Scope 1 emissions	<i>Direct emissions from owned or controlled sources, on site.</i>
Scope 2 emissions	<i>Indirect emissions from the generation of purchased electricity, steam, heating and cooling etc.</i>
Scope 3 emissions	<i>All other indirect emissions that occur in the NHS's value chain, including purchased goods and service, business travel, employee commuting, waste disposal etc.</i>
Sustainability	<i>The intersection of the triple bottom line framework, which includes people, the planet, and profit. Sustainable change is not about reducing patient care or investments, but rather about creating a balance and ensuring that environmental factors play a large role in decision-making, thereby reducing demand for NHS services, which will reduce costs and ultimately improve population health.</i>
System-wide	<i>Extending throughout a system; affecting or reaching the whole of a system.</i>
Top-down	<i>Management process driven by the NHS's upper level executives. Senior management creates organisation-wide decisions that trickle down to lower departments. Organisations utilise the top-down approach in order to assess, determine, and implement business decisions made by upper executives.</i>
Triple bottom line	<i>A framework with three main components for measuring sustainability: profit, people and the planet</i>

ACKNOWLEDGEMENTS

Thank you to Richard Hales (Energy and Sustainability lead, Cambridge University Hospitals, CUH) and Stella Cockerill (Workforce Development Manager at Public Health England, PHE) for their guidance and help with conceptualisation of this project. We hope that this report will act as a useful tool in creating more widespread sustainable discussion, and establishing successful regional and national NHS Green Plans.

This project would not have been possible without all the valuable input received from collaborators, experts and professionals from a wide-range of fields across the globe. For a snapshot of the collaborations formed as a result of this project, see image below.



United Kingdom: NHS England; NHS Improvement; NHS Bristol; NHS Glasgow; NHS London; NHS Plymouth; Imperial College; Carbon Literacy Program; Horatio's Garden; Microsoft

France: Healthcare Without Harm

Denmark: Capital Region of Denmark

The Netherlands: UMC Utrecht

Sweden: Karolinska University Hospital; Nordic Centre for Sustainable Healthcare; Stockholm County Healthcare

Australia: Brisbane Healthcare

New Zealand: Hawkes Bay Hospital; Forte Health



BARRIERS TO SUSTAINABILITY

Identifying challenges to Net Zero

THE MISSION

- To identify specific barriers pertinent to improving social, environmental, and economic (triple bottom line) sustainability within the NHS.
- Barriers to implementing sustainable change can be broadly classified into organisational and individual factors. Within this document, we focus on identifying individual barriers as we believe that these factors are least currently understood within the NHS, based on the initial research conducted by the ThinkLab team.
- Through better understanding the barriers that individuals within the organisation are facing in implementing sustainability measures, we believe that the NHS will be in a better position to employ targeted measures to mitigate these barriers and ultimately empower staff in achieving positive sustainable change through their own agency, assisted via institutional support.

THE THINKLAB SOLUTION

Based on our initial findings, we have developed two tools to identify and understand specific behavioural barriers to sustainable change within the NHS:

1. A 'day-in-the-life' tool aimed at front-line clinicians
2. A Sustainability Questionnaire targeting non-clinical staff

"[With regard to achieving Net Zero] we know 'why' we need to respond, 'when' we need to respond by, and to a large degree, 'what' we need to do. The all-important 'how', though, is struggling to develop and find purchase against pre-existing priorities."

*- Richard Hales,
'Developing the HOW of
Net Zero' 2021 -*

"Reaching this ambitious but essential goal will require change not only at an organisational level, but action from every single one of the more than 1.3 million people working for the NHS, starting now."

- ThinkLab 2021-

1 DAY-IN-THE-LIFE

The 'day-in-the-life' methodology is a useful tool for gathering granular information about individuals' daily activities, and has previously been used to identify areas for change in many settings. Carbon is not visible, and therefore to encourage the Net Zero perspective, daily activities and behaviours need to be linked to carbon outputs. As a result, the ThinkLab have developed a bespoke 'day-in-the-life' tool for use by NHS clinicians, which aims to target the following barriers to a sustainable transition:

- **RESOURCES:** Identify inefficiency, waste and barriers to change in the consumption of building services (energy, water etc), consumables, medical devices and pharmaceuticals.
- **KNOWLEDGE:** Enable clinicians to identify overlap between 'green care' and 'great care'.
- **OPERATIONALISED APPROACH:** Encourage clinicians to introduce a 'green thread' of five reproducible, sustainability-focused implementation steps into their practice.
- **EMPOWER:** Empower clinicians to be change-makers within the NHS.

The results of the 'day-in-the-life' tool will be made available to management to increase transparency regarding change areas identified by clinicians, as well as to encourage supportive empowerment of clinicians by management through minimising identified barriers and supporting needed resource access. Ultimately, the 'day-in-the-life' tool is about trying to work out what it will look and feel like to work in a Net Zero NHS.

PREVIEW OF DAY-IN-THE-LIFE TOOL

We'd like you to think about the building(s) in which you work.
 Can you give details on the following building services you use in a normal day?
 Can you think of any waste or inefficiency that could be avoided?
 What do you think the barriers are to making this change?

	What did I use?	What could be changed?	What are the barriers to change?
Heat (e.g. radiators) Are these manually controllable? Is the building heated in the same manner during the summer and winter?			
Electricity Is equipment plugged in and switched on 24hrs a day?			
Ventilation			

[Click here](#) to access full 'day-in-the-life' tool

THE 'DAY-IN-THE-LIFE' TOOL IS BASED ON:

- Research into the psychology of sustainable behaviour (Manning, 2009; Weber, 2017; Newell et al., 2021) and the recruitment of health professionals as sustainability advocates (Boone et al., 2012; Hubbert et al., 2020).
- An environmental sustainability study conducted in the phlebotomy department of The Rosie Hospital, CUH.
- A seminar with Dr Gareth Thompson, emergency medicine doctor at Imperial College Healthcare and developer of Imperial College Healthcare's Green Plan.

2 SUSTAINABILITY QUESTIONNAIRE

The Questionnaire aims to develop an evidence base of individual-level experience around sustainable development concepts and practices, in a large scale organisation such as the NHS.

The purpose of the Sustainability Questionnaire is to support the NHS in better understanding, at a broad scale, their staff's relationship with the concept of sustainability across four dimensions; **knowledge, motivation, barriers, and enablers**. This is an important first step in determining how to identify, operationalise, and embed a 'green thread' into practices throughout NHS.

The ThinkLab team developed the Sustainability Questionnaire based on two existing sustainability questionnaires:

- Sustainability Skills Survey (Bunting et al., 2012).
- Sustainability Consciousness Questionnaire (Gericke et al., 2019).

The **Sustainability Questionnaire:**

- contains 30 open and closed questions
- provides quantitative and qualitative data
- should be commissioned on an annual basis

PREVIEW OF SUSTAINABILITY QUESTIONNAIRE



Motivation

This section is designed to show the importance of sustainability for the staff and the staff's willingness to engage with sustainability and sustainable actions.

Personal life

1. How important is sustainability in your personal life?

Options

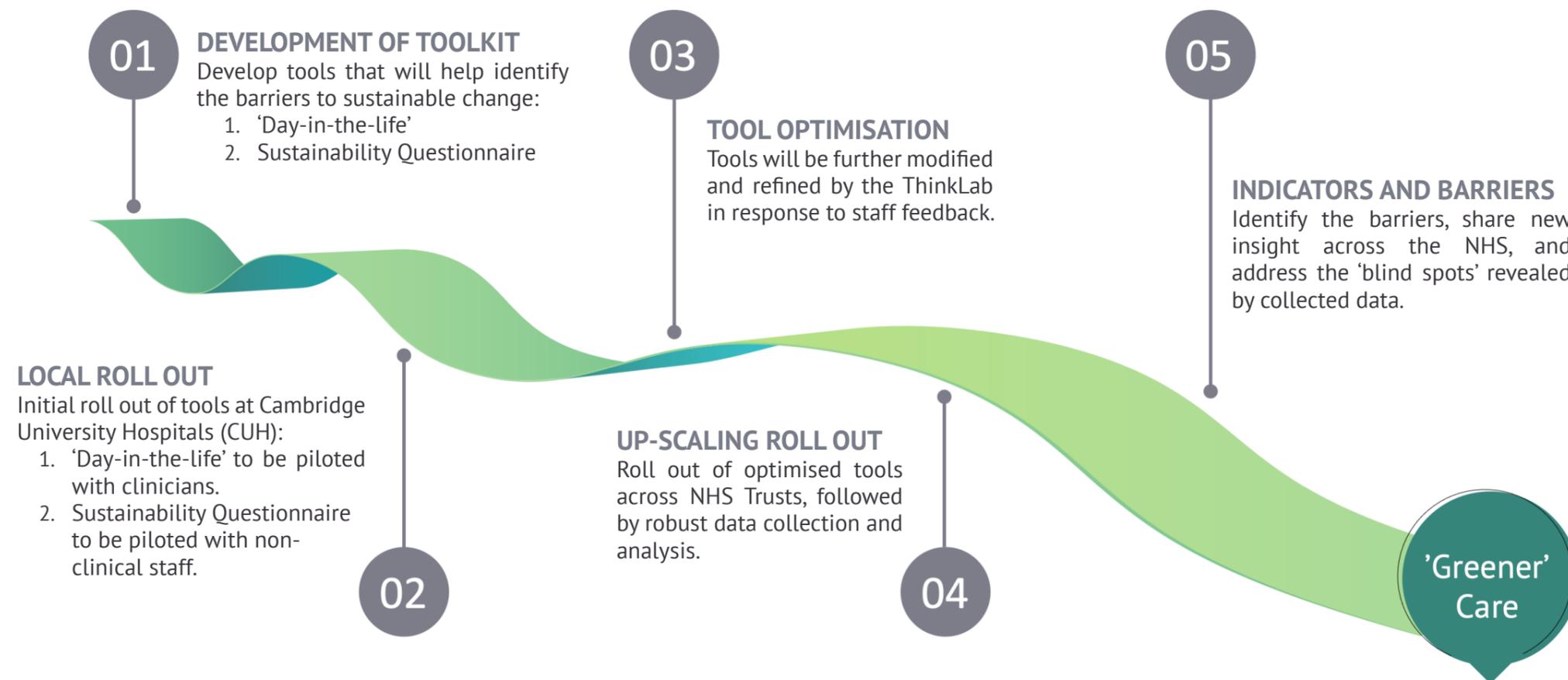
1 - Not at all	2	3	4 - Perfect
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[Click here](#) to access full Sustainability Questionnaire

The Questionnaire provides a trackable means to inform planning for embedding sustainability as a core value and strategic priority, as well as evaluate existing sustainability policies, practices and levels of stakeholder engagement.

BENEFITS OF THE SUSTAINABILITY QUESTIONNAIRE:

- Understand staff relationship with sustainability, serves as a baseline.
- Measure the impact of sustainability initiatives over time (i.e. staff knowledge).
- Communicate a positive trajectory towards Net Zero.
- Benchmark results between NHS Trusts.
- Help identify the Trusts performing best-in-class, as well as those which require more support.



IMPLEMENTING A 'GREEN THREAD' INTO HOSPITAL PRACTICES:

Achieving Net Zero will require the identification and mitigation of the impediments to success. To identify sustainability 'blind spots', the ThinkLab has developed two effective tools. The first is a 'Day-in-the-life' tool which encourages staff members to create a reflection piece, outlining their daily consumption; the second is a Sustainability Questionnaire which intends to understand the current relationship between staff and sustainability. Rolling out these tools in a pilot programme at Cambridge University Hospitals (CUH) will enable us to refine and further optimise them, before up-scaling and applying the tools to other Trusts and regions across the UK.

“It is not enough for the NHS to treat the problems caused by air pollution and climate change – from asthma to heart attacks and strokes – we need to play our part in tackling them at [the] source.”

*- Sir Simon Stevens,
October 2020 -*

“Carbon literacy is about mobilising a workforce; it will require a consistent and concerted effort across all staff. We only see Net Zero being possible if we create the right conditions to make every member of staff a catalyst for change.”

- Stella Cockerill, 2021 -

EDUCATION AND AWARENESS

A bottom-up and top-down approach

THE PROBLEM

- Currently, sustainability is not integrated into the fabric of thinking and decision making of the NHS.
- For the NHS to reach its Net Zero commitments, the current model relying heavily on a ‘coalition of the willing’ will not be sufficient.
- Instead, a radical cultural shift in the NHS is required, taking all staff on board, and making sustainability a reality in individuals’ day-to-day lives.

THE SOLUTION

An environmental education programme available to all members of the NHS, regardless of department or Trust. This will increase the number of carbon literate staff and ensure that sustainability is factored intuitively into all decision making (i.e. becomes a reflex decision for all staff).

To tackle these issues at the source, all NHS employees should have an appreciation of the direct link between good healthcare and green healthcare. Only once individuals fully understand this link, can they feel empowered with the necessary skills and motivation to take meaningful action.

Environmental education in the NHS will need to be wide-spread and multifaceted, drawing on a range of techniques and programmes. We propose the implementation of the NHS-specific Carbon Literacy (CL) toolkit. This toolkit has been developed by a Manchester-based charity, **The Carbon Literacy Project** (Box 1), as well as Leeds Teaching Hospitals and Manchester University Hospitals. Hospital and medical school-focused toolkits are currently being piloted at Manchester NHS Trust and Leeds Teaching hospital, respectively. Following evaluation, these will be launched and publicly available by Autumn 2021.

The NHS CL Course is cost-effective, locally customisable and has flexible delivery options, due to its modular structure.

BOX 1: CARBON LITERACY PROJECT

The Carbon Literacy Project offers Carbon Literacy learning, covering topics such as climate change, carbon footprints, how you can do your bit, and why it’s relevant to you and your audience. It is globally unique, and was recognised as such by the UN in COP21 in Paris, where it was awarded as a TAP100, one of 100 worldwide Transformative Action Programmes.

**Carbon Literacy
Project**



A TWO-PART APPROACH

1. **Development and pilot of a CL toolkit for procurement departments**
2. **Larger scale roll out of the NHS CL toolkit**

One of the greatest areas for opportunity, in terms of reducing the carbon footprint of the NHS, is in the supply chain i.e. procurement.

- Delivering a Net Zero National Health Service, 2020 -

1) PROCUREMENT PILOT

- Develop material focusing on procurement to be included in the CL course for NHS procurement departments.
- Delivery of the pilot material to members of the procurement department at Cambridge University Hospitals (CUH), July 2021.
- Trainer guide provides blueprint for the running of sessions.
- Pre-and post-course surveys will allow quantification of session impact (for further details see Barriers to Sustainability section pg. 10).
- Feedback from the pilots will be passed onto the Carbon Literacy Project, integrated with feedback from other Trusts, and used to refine the overall package for release in September 2021.

2) TOOLKIT ROLL OUT

To achieve the cultural shift in the NHS required to achieve Net Zero, the CL programme will need to be up-scaled and made available to all NHS employees.

- Lecture-based sections of the course are pre-recorded by members of the pilot team.
- Initially, CL training needs to be delivered to at least one member of each department.
 - » Volunteers receive links to self-study online material as well as live webinars for interactive sections of the course.
- Condensation of course into 'key points'.
- Newly *carbon literate* individuals offered role of 'educational champion'
 - » Allocated e.g. one afternoon a month to deliver breakout room 'live' training for further CL courses.
 - » Given material to advertise the course amongst peers.
 - » Allocated responsibility for disseminating 'key points' from the training to departmental colleagues.
- Peer-to-peer delivery is critical as it allows those that best know the schedules and pressures of their colleagues to arrange times and places where training would be most impactful.
- 'Educational champions' are connected via a post-course online platform (such as Slack or Teams), for collaboration and knowledge sharing across Trust departments (for more information, see Communication and Knowledge Sharing pg. 35).

Why procurement?
See pg. 20-24

“The Carbon Trust estimates that in the UK there is a £300 million savings opportunity in encouraging employees to adopt greener behaviours, resulting in a saving of 6 million tonnes of carbon.”

- Carbon Literacy as an Investment, 2019 -

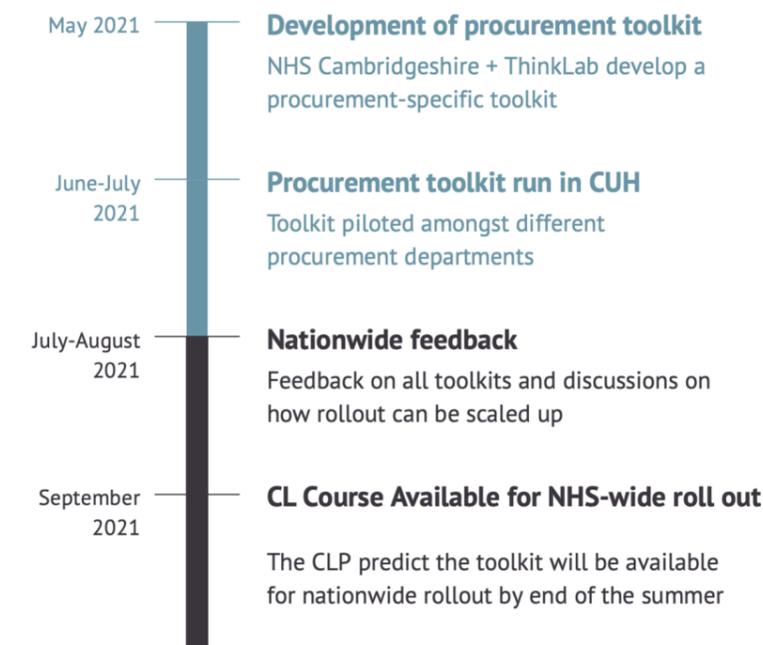
Notes on implementation:

The CL course cannot exist in isolation. A successful internal communications campaign can be a vital and effective means of promoting awareness and creating enthusiasm for all staff.

WHAT ARE THE BENEFITS OF A CL TOOLKIT?

- Increase the number of environmentally aware staff within the NHS.
- From a **bottom-up** perspective: increase grass-roots climate action, exponentially saving carbon.
- From a **top-down** perspective: educated middle and senior management will incentivise further policy to support and enhance bottom-up work.
- CL is an investment that will save both carbon and money in the long run.

Timeline for procurement pilot



BEYOND CARBON LITERACY

Carbon literacy alone cannot create the movement and enable the actions required to meet Net Zero. The problem needs framing, from a **top-down perspective**, and accountability needs to be integrated at every level of the NHS. To achieve this, all staff should:

- Understand the agenda: know what carbon is, where it is embedded in the system and how to prioritise carbon-reduction actions
- Believe and accept why the agenda is important
- Accept that they have a role to play and understand what/how they can create influence
- Know what behaviours and values are acceptable
- Be rewarded for making changes that reduce carbon and improve sustainability

Ultimately, sustainability needs to be approached using a **triple bottom line framework**, by considering **profit, people and the planet** in every decision.



“Front line staff understand best where the problem areas are in terms of procurement, and want to be involved.”

- Dr Gareth Thompson, How Green Is Your Hospital seminar, 2021 -

“The wastefulness of paper and plastics was a frequently raised concern from respondents both within and outside the NHS.”

- Delivering a Net Zero National Health Service, 2020 -

PROCUREMENT

A bottom-up approach

“We need to shift our culture and our mindset from a high carbon/high waste linear economy, to a net zero/zero waste circular economy. [In terms of achieving circularity] much of what needs to be done will not be done unless small teams at the point of consumption know how to do it. We need to create concious consumers.”

- Richard Hales, 2021 -

PROBLEM AND MOTIVATION

- 70% of all NHS emissions are embedded in the supply chain and thus a product of procurement (Delivering a Net Zero NHS, 2020).
- It is not clear what single-use clinical materials (i.e. plastics) can be replaced with reusable alternatives.
- The NHS must reduce unnecessary use of resources and significantly diminish reliance on single use items if they are to meet Net Zero goals.
- If NHS procurement is to be made sustainable, it cannot solely be left to the suppliers.

METHODOLOGY

- Create an official feedback mechanism within NHS Trusts for frontline staff to report directly to the local procurement team about problem areas (i.e. wasteful and/or high carbon items that should be replaced with more sustainable alternatives).
- The feedback mechanism could be implemented on the Trust intranet for the use of any member of staff and be continuously monitored by the procurement team.

BENEFITS

- Provides opportunities for all front line staff and the procurement team to identify where sustainable procurement decisions can be made.
- Readily identifies where reductions in single-use items can be made and begin transition towards circular healthcare practices.
- Allows staff to feel empowered and a part of the process of integrating sustainability into procurement.

GREEN ACTIONS

ThinkLab recommendations for the NHS

- 1 Educate staff involved in procurement about embedded carbon and the circular economy (see CL procurement pilot pg. 17).
 - Integrate sustainability and carbon reduction into procurement decision-making.
 - Introduce idea of shifting from single-use to reusable items.
- 2 Organise workshops within the Green Network (see pg. 27) to discuss embedded carbon and the circular economy.
- 3 Conduct an audit of all single-use items procured by the Trust during an average year, and where in the Trust they are used.
- 4 Set up a web interface on the Trust intranet for providing feedback directly to the procurement team. Fields to include:
 - Location within Trust
 - Problem item(s)
 - Explanation for why high carbon/wasteful
 - » Embedded emissions per item
 - » Quantity used on a daily basis
 - Potential replacements
 - » Alternative item(s)
 - » Reusable - yes/no
 - Ideas for new practices that incorporate alternative products
- 5 Widely communicate/advertise use of the web interface (for more information see Communication and Knowledge Sharing section pg. 32).
 - Ensure line managers make all staff aware.
 - Communicate to all staff during on boarding.
- 6 Procurement team to review feedback and work to find alternative suppliers/products (where feasible).
- 7 Allow staff who provided feedback on the web interface to be involved in alternative procurement decisions in order to ensure suitability.
 - Trial new product(s) and/or approach(es) within the department of the staff who provided feedback.
 - Expand to other departments if successful.
- 8 Evaluate and report carbon reductions as a result of procurement changes.

Resource: *Can Medical Care Exist Without Plastic? National Geographic, 2019.*

Resource: *Life Cycle Assessment and Costing Methods for Device Procurement: Comparing Reusable and Single-Use Disposable Laryngoscopes. Anesth Analg, 2018.*

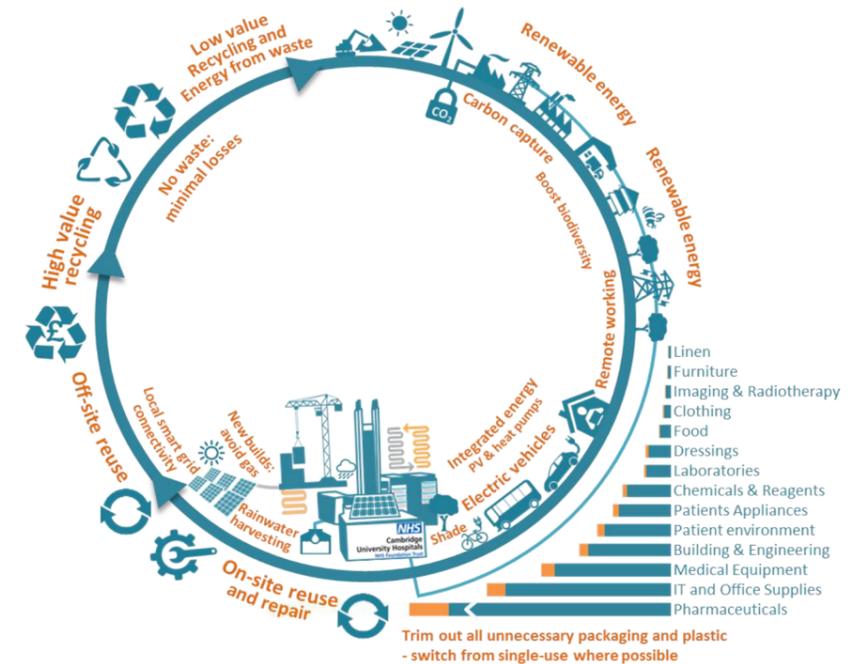
The Net Zero call for evidence received multiple proposals submitted by front-line staff to re-evaluate alternative options for many single-use items, disposable or expired equipment and unused pharmaceuticals, as well as calls for the NHS to consider reusable or refurbishable alternatives.

- Delivering a Net Zero National Health Service, 2020 -

“Move away from a ‘purchase - use - dispose’ approach to waste and towards a circular economy approach (e.g. buying a service rather than a product, use of leasing arrangements).”

- Manchester University NHS Foundation Trust, The Masterplan, 2018-2023 -

- 9 Celebrate staff who highlighted problem areas that led to carbon reductions (see Progress and Improvement pg. 28).
- 10 Develop case studies of successful interventions and share these with regional networks and NHS supply chain.
 - Can be added to existing case studies on **NHS Supply Chain website**.



An example of a hospital's carbon emissions redesigned in the transition to the circular economy.

'Developing the HOW of Net Zero' - Richard Hales, 2021.

NOTES ON IMPLEMENTATION OF GREEN ACTIONS

- Can be implemented immediately, but likely to be most impactful once the procurement staff (and the wider NHS staff pool) are carbon literate (see pg. 17).
 - » This will ensure that the procurement team can positively act on the feedback that they receive.
 - » Once the rest of the Trust (minimum one person from each team/department) is carbon literate, the procurement team should expect to receive more feedback.
- Procurement teams should consider the 'whole life cost' of products as opposed to just the purchasing cost.
 - » Reusable items are likely to be more costly in the short term but save money in the long term.
 - » Life cycle costing of products needs to happen at the point of purchase (see pg. 24).

PROCUREMENT

A top-down approach

The 3C's: Consolidate, Collect and Circular
A procurement policy focusing on top-down strategic sustainability and financial savings.

MOTIVATION

- Sustainable procurement practice is a relatively recent concept that can have a large impact if embedded into an organisation such as the NHS.
- Sustainable procurement is a complex issue without easy answers; even NHS Trusts with established sustainability efforts (i.e. Manchester University NHS Foundation Trust) are only just starting to formulate strategies.
- Procurement must, therefore, be addressed in a strategic, top-down manner. This will provide Trusts with action guidance, and executives with the appropriate knowledge, to ensure that targets are met.

PROBLEM

- 70% of all NHS emissions are embedded in the supply chain and thus dependent on procurement (Delivering a Net Zero NHS, 2020).
- The NHS supply chain is complex, involving many different suppliers and materials/products from many industries.
- The supply chain is opaque, with room for 'green-washing' and hidden emissions.

BENEFITS

- Financial savings and sustainability targets can be met by implementing the ThinkLab **3C's procurement policy**. The financial savings can be reinvested into the NHS, ideally to support further sustainability initiatives with greater up-front costs.
- Supply chain emissions affect every Trust in the NHS. As there are so many emissions tied up in procurement, even small changes can make a significant difference.
- Making small changes across all Trusts, such as consolidating orders and buyback schemes, will have a major impact on emissions. Taking into account the 'whole-life cost' of materials is the first step to measure emissions, from which the most impactful actions can be decided.

THE THINKLAB APPROACH TO TOP-DOWN PROCUREMENT

This report provides a brief outline to possible top-down approaches to sustainable procurement within the NHS. This is based on extensive research and discussions with various NHS stakeholders and global healthcare professionals; however, it should be noted that implementation of these recommendations (including buyback schemes and whole-life costing, see pg. 24) will require considerable research as these areas are so far weakly developed and operationalised within the context of healthcare.

“Procurement constitutes the largest proportion of our carbon footprint and we must reduce unnecessary use of resources across all of our organisational activities. By applying the waste hierarchy, rethinking traditional waste models and working closely with our staff and supply chain, we can move towards a circular economy approach and away from a throwaway culture.”

- Delivering a Net Zero National Health Service, 2020 -

“Write into contract with a textile service company that textiles may be purchased back at the end of the contract period.”

- Greener Textiles in Hospitals, Nordic Council of Ministers 2017 -

‘Green-washing’ is the false claim that a particular product or service is more environmentally friendly or sustainable than it really is.

Whole-life costing takes into account the cost of a product or service over its life, from determining the need for it, its delivery (typically the most carbon intensive part of the product cycle), through to its eventual disposal and replacement.

GREEN ACTIONS

ThinkLab recommendations for the NHS

1 CONSOLIDATE

- Group departments' orders to cut down on delivery emissions.
- Supply chain and senior leadership team to support consolidation.
- Management to encourage cross-departmental communication in order to determine which orders can be consolidated, based on which departments require similar supplies.
- Introduce a digital system to collect orders. Here, each department will order their required supplies, and these will be automatically consolidated by the system before forwarding to the supplier. *We recommend this as a PhD student project, to reduce costs in comparison to outsourcing.*

2 COLLECT

- Implement buyback schemes with suppliers in order to reduce waste. In these schemes, suppliers are encouraged to buy back unused supplies and equipment to avoid waste and increase financial savings.
- Suppliers using buyback schemes should be seen more favourably on tenders; becoming more competitive if they show sustainable behaviours.
- Base procurement contracts around functional requirements rather than specifying a given product. I.e. a contract to deliver x number of clean nurse uniforms sufficient to cover a given number of full-time nursing staff and which meet minimum standards (hygiene, strength, comfort etc.). This can be done without requesting a particular textile fibre, which can be selected by the provider to meet these standards but also reduce costs and environmental impacts. Inspired by **Greener Textiles in Hospitals, Nordic Council of Ministers 2017**.

3 CIRCULAR

- Include sustainability as a variable in tenders, by considering 'whole-life costs' in addition to the purchase price. This can be guided by the **EU Green Public Procurement criteria**.
- 'Life cycle thinking' is a recommended thought-process. It requires organisations to carefully consider the environmental impacts of a product at all stages of its lifetime. For this to occur, appropriate training must be provided to all procurement staff (see CL procurement pilot pg. 17).
- To avoid 'green-washed' products and services, look for third-party verifications such as Eco labels, evaluate whether products meet relevant standards, be critical of marketing techniques (e.g., 'natural' does not necessarily mean sustainable).
- A simple computer system could be developed to calculate the 'whole-life cost' of an item. *We recommend this as a PhD student project, to reduce costs in comparison to outsourcing.*



PROGRESS AND IMPROVEMENT

A bottom-up approach

Primary NHS staff should be motivated and engaged to adopt sustainable practices, and to take ownership over making positive changes to reduce their carbon footprint, both at work and at home.

All NHS staff should feel empowered to shape local decarbonisation plans and policy, and be shown that they can play active roles in delivering a Net Zero NHS. A key to success in this regard will be in supporting staff to foster an active sense of ownership and leadership, instilling further creativity and commitment to making Net Zero a reality.

“Efforts to increase the public’s concern over and response to climate change have focused in recent years on the importance of framing the issue in a way that is engaging and accessible for individuals.”

*- Markowitz and Shariff, 2012.
Nature Climate Change -*

BARRIERS TO CHANGE

- Misconceptions about how decarbonisation may prevent staff from providing the best quality healthcare.
- **Psychological obstacles:** Climate change poses numerous psychological obstacles that hinder our engagement with, and appreciation of, the issue:
 - » It often fails to inspire urgent action because it is a complex, large scale, and unintentional problem that challenges our moral judgment system (Markowitz & Shariff, 2012). This is to say, people do not typically see it as morally imperative to address because it is abstract, involves blameless behaviours, and is temporally and spatially distant for most in the Global North.
 - » Bias towards the status quo or psychological inertia may cause individuals to resist change to long established medical health practices.

THE THINKLAB APPROACH TO PROGRESS AND IMPROVEMENT

The ThinkLab are proposing a set of Green Actions which are intended to address the barriers to change, and help provide all NHS staff members with the knowledge, confidence, and voice to enable the development of a greener healthcare system. These green actions are:

- 1) Empowering staff
- 2) Equipping staff
- 3) Recognising staff

GREEN ACTIONS

ThinkLab recommendations for the NHS

1 EMPOWERING STAFF to act as leaders, collaborators and co-producers in developing a Green Network¹

- Increase awareness of the Trust's Green Plan by:
 - » Distributing the document to all staff via communication channels (see Communication and Knowledge Sharing section pg. 32).
 - » Holding forums to discuss and answer questions about the goals and actions outlined in the plan.
 - » Storing it in an easily accessible staff database or **Knowledge Bank** (see more on this on pg. 28).
- Identify **Green Champions** within all levels of the NHS (from ward to board) by looking for individuals with a personal interest in sustainability and the capacity to observe and identify areas of opportunity.
 - » Encourage staff to take initiative and ownership over action areas included in the Green Plan.
- Work collaboratively to unite champions into a **Green Network** by developing communication pathways that enable champions to connect within and across hospitals, regions, etc., to share ideas, best practices and innovative solutions to decarbonisation (see Communication and Knowledge Sharing section pg. 32).
- Build momentum for sustainability actions by identifying 'quick wins' or 'low hanging fruit' that offer easily identifiable benefits².
 - » Utilise the local or system-wide Green Network to increase engagement by organising fun internal/across-unit challenges and competitions i.e. **Green Surgery Challenge**.
- Establish accountability within all levels of the Green Network (further details on pg. 30).
 - » Encourage local teams to devise their own objectives (that tie back to the Trust's Green Plan) in order to create accountability and a clear path to accomplishing goals at a more localised level.
 - » Modify staff job descriptions and the employee handbook/onboarding materials to incorporate sustainability so that it is core to employees' identities and responsibilities.
 - » Provide dedicated time for staff to engage in sustainability training and associated activities.
 - » Document and make publicly-available sustainability performance and progress to encourage transparency/accountability and further staff momentum to help achieve set goals.

Case study: Hospital staff empowerment and cost savings, Victoria Hospital, Cape Town, South Africa.

Case study: Environmental Champions Network, The Association of Anaesthetists.

Case study: Creating a Culture of Sustainability, Health Care Research Collaborative.

Resource: Clean Air Hospital Framework, Great Ormond Street Hospital for Children, NHS Foundation Trust.

Case study: Sustainability Champions Share Their Success Stories, The University of Edinburgh.

Resource: Using Rewards to Achieve an Organisation's Sustainability Objectives, Erb Institute, University of Michigan.

2 EQUIPPING STAFF with the tools, knowledge and resources to make sustainable decisions a reflex.

- Create a *Sustainability Champion Handbook* that:
 - » Contains regularly updated information, ideas and clear points of contact for staff to enquire about decarbonisation/sustainability actions.
 - » Allows staff to establish meaningful connections/contacts within the Green Network.
- Produce frameworks that set out the vision for all sustainability targets within the Trust and outline key points for how to make them happen.
- Create and curate a **Knowledge Bank**, an online repository for resources, case studies and best practices that support sustainable actions in healthcare (see pg. 42 for ThinkLab Knowledge Bank).
- Ensure that all staff have the same foundational knowledge base and tools to launch their efforts.
 - » Provide all staff with the NHS documents, carbon literacy training, and promotional materials for raising awareness (see Education and Awareness section pg. 16).

3 RECOGNISING STAFF for their green contributions.

- Create a culture in which staff are a part of a team with a shared purpose, by recognising and sharing their green achievements.
 - » Compile case studies of success stories and promote them by including in the Knowledge Bank as 'best practices'.
- Honour and acknowledge staff for accomplishing their sustainability-related goals.
 - » Rewards:
 - An annual event to celebrate sustainable actions.
 - Team lunches, planned outings etc.
 - » Recognition/remuneration:
 - Public recognition of staff at team meetings.
 - Public recognition/display of achievements (e.g., sustainability awards).
 - Vacation days.
- Signpost staff to external recognition, reward and funding opportunities, including:
 - » Platforms that allow for submission of stories of success and improvement
 - » Opportunities for promoting/funding of green ideas and innovation, if available

[1] While the ThinkLab recognises that achieving Net Zero will require the engagement not only of staff but also of patients and the broader community, staff empowerment is our primary focus in this report. However, we do offer some preliminary resources in the Knowledge Bank focused on clinician and patient-led 'redesign' of healthcare services and community engagement in linking healthcare to sustainability.

[2] 'Quick wins' can be achieved via individual actions to reduce one's carbon footprint (see Knowledge Bank for resources on this topic), but we believe it is important to emphasise the momentum that comes from group-based efforts and system-wide changes.

PROGRESS AND IMPROVEMENT

A top-down approach

Develop a **management control system** to track and improve progress towards the Net Zero objective. The management control system aims to incentivise and empower staff at all levels, while aiming to hold individuals **accountable** towards carbon emission targets.

Such a system can only truly succeed, however, when carbon reduction is well embedded in informal systems, such as leadership and organisational culture.

MOTIVATION

Management control systems can serve as an effective system to improve carbon reduction progress from a top-down perspective. The existing research literature suggests that performance measurement, target setting, financial incentives and information disclosure are useful in achieving non-financial objectives such as carbon reduction.

IMPLEMENTATION

The implementation of this system should be driven by senior management, especially directors and executives responsible for human resources, finance and communication. Simultaneously, management decision makers should actively seek out staff who have the best data and contextual knowledge on how best to implement these systems. This policy will involve all staff members and can benefit all stakeholders, subsequently positioning the NHS as a world leader in sustainable healthcare.

Board/executive-level engagement with the Net Zero agenda is critical for implementing organisational change. This must be accompanied by transparency and accountability in setting and delivering specific social, environmental and economic sustainability targets for the overall organisation. Tying the achievement of these targets to executive-level compensation ensures that they are given strategic priority and resource allocation on par with other main objectives (i.e. in the case of the NHS, ensuring the highest standard of patient care at the lowest manageable cost).

- ThinkLab team, 2021 -

“The regional and sub-regional NHS organisational layers have vital roles to play in facilitating a co-ordinated and collaborative response to [the NHS’s Net Zero ambitions]. [We need to] help identify and support those who need to take on responsibility and those who need to take on accountability through regional leadership and networks of shared knowledge and experience.”

- Green Planning towards Net Zero in the EoE NHS, 2021 -

Case study: Patagonia have incorporated sustainability into their core values and mission statement, which reads “we’re in business to save our home planet.”

Case study: Unilever Corporate Responsibility Committee to oversee and monitor corporate sustainability progress.

Case study: Valero has aligned executive compensation with climate targets in accordance with the Executive Remuneration Indicator of the new Net-Zero Company Benchmark from the Climate Action 100+ initiative.

MANAGEMENT CONTROL SYSTEM

Four interdependent dimensions linked by accountability

1 MEASUREMENT

It is essential to understand the current carbon footprint of the NHS (especially scope 3 emissions), and to regularly track progress and compare across departments.

2 MANAGEMENT

Set ambitious targets, embed carbon reduction targets in *Balanced Scorecards* and provide financial incentives to teams and individuals to motivate behaviour changes. Incorporate sustainability in the NHS core values.

» For example: The Cambridge University Hospitals (CUH) values are ‘**Together - Safe | Kind | Excellent**’. We propose adding | **Sustainable** to the end, in order to embed sustainability within the core values and therefore everyday work practices and priorities of CUH.

Together - Safe | Kind | Excellent | Sustainable

3 OVERSIGHT

Align Net Zero objectives with top-level oversight by establishing specific governance mechanisms, such as appointing a **sustainability executive**, setting up a **Net Zero board committee**, and linking climate reduction targets to executive performance appraisals and compensation. Implement social, environmental, and economic sustainability targets within job requirements and evaluations across all levels of the NHS. This should include tying executive-level compensation to the achievement of these targets.

4 DISCLOSURE

Regularly report publicly on targets and performance in managing carbon emissions, preferably together with annual financial statements, to discipline the whole organisation in carbon reduction activities and inform stakeholders, especially ground-level employees, patients, regulators and communities. In addition, it is important to have either internal or external auditors to verify the reports to ensure information reliability and credibility.



Example: Microsoft 2020 Environmental Sustainability Report



Lateral communication is the flow of information between individuals or departments at the same organisational level.

“Communication is a very key part of motivation [for finding the triple bottom line].”
- Stella Cockerill, 2021 -

COMMUNICATION AND KNOWLEDGE SHARING

A bottom-up approach

MOTIVATION

- The NHS must balance communication at the leadership and organisational levels with the need to facilitate organic communication channels from below.
- Front-line staff may be unreceptive to top-down messaging that appears remote and distant, thus highlighting the need for a bottom-up approach to communication.
- Front-line staff are ideally placed to generate new ideas for sustainability initiatives based on an understanding of their specific work needs, therefore communication channels need to be in place to allow transfer of ideas to management for funding and approval.
- Implementation of new initiatives (such as those mentioned on pg. 27) requires lateral communication flow to ensure staff are encouraged and motivated to participate.

PROBLEM

- Most NHS internal communication is focused on messaging at the national and regional levels, with little emphasis on transfer of ideas between the regional, Integrated Care System (ICS) and hospital levels.
- It is unclear how the NHS can drive communication from below to ensure staff feel included and motivated, and to ensure staff can communicate their ideas upwards to management.

BENEFITS

- Ensures messaging is more likely to reach front-line staff, resulting in greater awareness and knowledge of sustainability initiatives.
- Creates bottom-up communication channels allowing for staff to share their ideas for new initiatives with management.
- Provides better support for new initiatives, as Green Champions are responsible for communicating information about day-to-day events to front-line staff.

GREEN ACTIONS

ThinkLab recommendations for the NHS

- 1** Define the communication process within the Green Network (see pg. 27) to facilitate bottom-up communication channels.
 - Green Champions share ideas for new initiatives with an elected committee within the Green Network.
 - If Green Network committee feel that the initiative is valuable, they will share with entire Green Champions Network for consideration.
 - If considered valuable by the entire Network, initiative is passed on to management for approval and funding.
 - Some initiatives may be parked for later, but when approved, Green Champions will be central to implementation, ensuring that information about initiatives is communicated to colleagues.
- 2** Provide Green Champions and Green Network with sufficient knowledge required to carry out communication roles, including:
 - How to communicate ideas to colleagues and management effectively.
 - How to evaluate the viability and benefit of new initiatives to the NHS's Net Zero goals.
 - How to communicate to colleagues and create bottom-up support for sustainability.
- 3** Set up (or improve upon existing) digital collaboration tools that will assist the Green Network communication process, providing quicker and more accurate sharing of information, including:
 - Staff intranet
 - Green NHS newsletter
 - Green Champions Network website and blog
- 4** Establish guidelines and budget for new staff-led initiatives to encourage communication of ideas within the Green Network.
 - Staff-led initiatives are an important tool in any organisation to garner support and drive positive cultural change from below.
 - For some ThinkLab suggestions for staff-led initiatives in the NHS, see pg. 34.

“[Green Champions] can also become bottom-up communicators, providing a point of contact for colleagues to ask questions and raise issues to be investigated.”

- Fostering Green Champions At Work Toolkit, CitySwitch -

Case study: Horatio's Garden is a UK charity that creates and nurtures beautiful gardens in NHS spinal injury centres.

“The fabric of a building, what people see and experience on a daily basis, is very important in creating awareness and encouraging communication.”

- ThinkLab team, 2021 -

Case study: University College London (UCL) Green Champions receive training in communication skills through the Green Impact education scheme.

IDEAS FOR IMPLEMENTATION OF STAFF-LED INITIATIVES

- 1. Gardens for patients and staff**
 - There is substantial evidence that integrating gardens into hospitals enhances and supports the well-being of staff and rehabilitation of patients, whilst also increasing biodiversity in the local area and raising awareness of the importance of green spaces.
 - Many NHS staff complain of the closure of staff rooms and not having communal spaces to recover between shifts, especially during the COVID-19 pandemic.
 - Creating a garden is a way of combating this problem while also engaging staff volunteers in maintenance of the garden and planting (with numerous benefits for their health and well-being); in some cases also providing edible plants in small allotments; and more broadly, emphasising to staff and patients the importance of preventing illness with lifestyle interventions.
 - *Funding:* Initiatives for small-scale green spaces and gardens with low upkeep have been shown to be funded at very low cost through charitable donations; plant donations from local garden centres or community gardens; and through the pro bono input of garden designers (see Horatio's Garden).
- 2. Community art projects to make Net Zero goals more visible**
 - Facilitating community-based projects such as public art and murals in and around hospitals to make sustainability issues more visible to both staff and patients, and encourage communication.
 - Artists' and community involvement in celebrating NHS staff during the COVID-19 pandemic has provided examples of how visual communications in the form of murals or large-scale artwork in public spaces, such as entrances and waiting rooms, might highlight and strengthen messages around sustainability.

Below: Artists turn pandemic struggles into street murals



COMMUNICATION AND KNOWLEDGE SHARING

A top-down approach

Investing in supporting Green Network development via the development of collaboration tools and platforms to facilitate interactions and knowledge sharing will increase the effective use of information, avoid duplication of efforts and allow for adoption of best practices to scale.

1 FACILITATING GREEN NETWORK DEVELOPMENT AND VISIBILITY VIA DIGITAL TOOLS AND PLATFORMS

- Seek out expertise from ThinkLab partners, such as Microsoft, on how best to effectively utilise communication and digital resource sharing via Teams, Slack, or other platforms.
- Compare digital collaboration tools, involving end users in the choice and set-up of appropriate tools. The ThinkLab can provide additional guidance on this if desired.
- Explore online tool options that can best facilitate quick and easy access for all staff involved, that can also be easily updated. Options can range from: simple online documents via Microsoft, Google, or Dropbox; project management tools such as **Microsoft Project** or **Asana**; and collaborative databases (wikis) such as **Notion** or **Confluence**.
- Create an online space to highlight Green Champions and subject matter experts. This may take the form of a website or webpage on existing Greener NHS sites, or as part of the above mentioned online platforms.
- Communication to new and existing NHS staff can take the form of updates included in newsletters, and the existence of current sustainability efforts and sustainability subject-matter experts can also be highlighted in orientation materials for all incoming new staff.
- Promote awareness and sharing of eco-conscious tools such as the **ecosia search engine**. Connect with **NHS Digital** for up to date information on services as they develop new tools strategies, and ask them for advice on IT-related sustainability concerns. Raise sustainability concerns in procurement of digital services.
- The ThinkLab and University of Cambridge social media team will help the NHS optimise internal online communications. New social media campaigns and plans to adopt best practices from successful sustainability communication strategies from organisations such as The Economist, National Geographic, and The World Wide Fund for Nature, are currently under development.
- Use social media platforms to ask for case studies that evidence triple bottom line, and advertise these widely in order to mobilise the region.

Centralised information access eases on-boarding of new sustainability network participants (e.g. Green Champions) and facilitates scaling of initiatives.

Case study: Use of Microsoft digital collaboration tools by Unilever for Sustainable Living Plan.

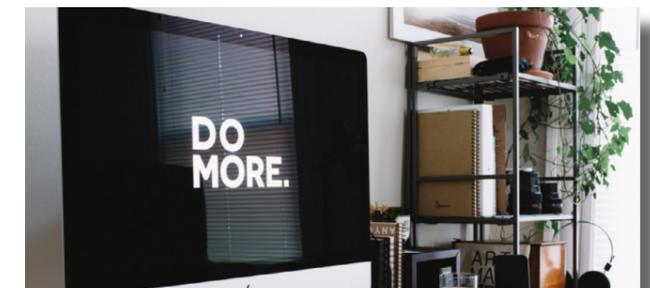
Social proof is a psychological and social phenomenon wherein people copy the actions of others in an attempt to undertake behaviour in a given situation.

Resource: Nudging pro-environmental behaviour: evidence and opportunities. Byerly et al., 2018.

Ensure the effective use of language and messaging around sustainability, as well as the appropriate targeting of messages to different audiences.

2 INTEGRATE MESSAGING INTO ALL SUSTAINABILITY INITIATIVES

- Promote diversity and accessibility, and encourage equal participation within the Green Champions network.
- Consider behavioural biases when designing interventions and initiatives for different audiences (see Barriers to Sustainability section pg. 10). Context matters; for example, people in a rush or under time constraints are less likely to spot or actively engage with anything outside their immediate focus area. Consider, instead, targeting staff with concise informational displays when they are more relaxed, i.e. in a break room, green spaces/gardens, or while waiting for lifts or in queues.
- Behavioural change often requires multiple touch points for the receiver of a message. Consider use of video displays or digital notification nudges to promote increased sustainability behaviours.
- Keep messaging positive to foster creative thinking and encourage staff to come up with possible solutions on their own initiative. Positive social proof can be a powerful motivator that can lead to greater participation and collaboration amongst groups of people.
- Conversely, be aware of negative social proof. Sharing that people are not adopting a desired behaviour can in turn have a negative effect on adoption by others. Tailor messaging to reinforce the positive and desirable behaviour (e.g. 90% are doing the right thing, as opposed to 10% are doing the wrong thing).



Blog: 'Nudging for better management'.



The UK government has historically financed other sectors over the NHS. This needs to change.

- ThinkLab team, 2021 -

The annual budget of the NHS (over £134 billion) is funded through three sources: patient fees, national insurance and tax.

FINANCE FOR CIRCULARITY IN THE NHS

A brief introduction

- The world of finance is similar to the world of materials; there is linear flow of funds, in which 'money makes more money'.
- Finance has generally favoured profit over sustainability, and revenue over the environment, seeing the latter as a negative compromise. Circular finance creates a way in which both are possible.
- Fortunately, there has been a significant increase in finance for circularity. There is a growing pool of evidence to support this:
 - » In 2021, the tech giant **Tesla dropped bitcoin** as a means of monetary tender for their products, in response to unsustainable mining of the currency.
 - » In 2019, 130 leading banks from 49 countries signed the UN treaty to adopt a circular economy (**Aranda-Usón et al, 2019**).
 - » Since 2018 public equity firms and their asset management with a circular economy-focus have grown by 1000% (**EMF, 2020**).
- There has been a notable shift towards circularity for certain industries within the NHS value chain; for instance, the number of plastic production companies financing a shift to a circular economy has grown by 1100% since 2018 (**EMF, 2020**).
 - » These developments increase the feasibility of a circular finance framework for the NHS.
- Creating circular finance strategies is necessary to accelerate the NHS to a Net Zero position. The NHS is already on this path but there is more that needs to be done, especially in support of the ThinkLab proposed strategies.
- Transforming the NHS towards circularity should begin with procurement, which has been described as a pivoting point for circular finance in healthcare (**Ritchie, 2021**).



The Circular Economy. Ellen MacArthur Foundation.

SUMMARY OF THINKLAB STRATEGIES

The ThinkLab Finance for Circularity Framework for the NHS can be divided into two parts:

- **FUNDING:** requires injection of monetary capital into the system and proposed strategies for reaching Net Zero.
- **COST SAVING:** creates means of retaining monetary capital within the system and proposed strategies for reaching Net Zero.

FINANCE IN THE KEY AREAS REQUIRED TO ADDRESS THE 'HOW' OF NET ZERO

EDUCATION AND AWARENESS

- Allocation of special funding for the education of all NHS staff. Note that the Carbon Literacy Toolkit (see pg. 16) has minimal costs and will save money in the long run.

PROCUREMENT

- Partnering with various manufacturers across the value chain. Almost all of the circularity potential of a product is determined at the design stage. Therefore, the NHS must embed themselves as partners/stakeholders of product manufacturers.
- In doing the above, the NHS should influence the design of products tailored to their needs as end-consumers. This should principally include waste elimination and cost savings.

PROGRESS AND IMPROVEMENT

- Finance activity should be continuously interrogated across all purchase value chains and budget compartments. The efficiency of all strategies should be tracked in order to optimise finance allocations. Projections across time should be made as well.
- The circular economy of the NHS should be monitored in connection with both used and available funding. A proposed tool is **Circulytics**, by the Ellen MacArthur Foundation.

COMMUNICATION AND KNOWLEDGE SHARING

- The NHS should be part of a circularity finance platform to increase networking, knowledge sharing and finance opportunities (as much as government policies will allow). The **Ellen MacArthur Foundation** is proposed as the first place to start this process.

"[We need to] connect today's capital and revenue budgets with the costs of a future dominated by climate instability. The 'opportunity cost' of not investing today, with a fraction of the money from the financial impact of climate chaos, is incalculably large."

- Developing the HOW of Net Zero, Richard Hales, 2021 -

"Circulytics supports [the] transition towards the circular economy, regardless of industry, complexity, and size...[this] measuring tool reveals the extent to which a company has achieved circularity across its entire operations."

- Ellen MacArthur Foundation -

CIRCULAR ECONOMY FINANCE AND POLICY

The current policy framework for **integration and innovation in health and social care** builds on the **recommendation by NHS England and NHS Improvement**, which promises to create a more cohesive and integrated NHS that will accelerate the impact of the recommended strategies. The NHS should further interrogate the proposals for the new healthcare bill, making sure it is optimised to accelerate a Net Zero state, especially in terms of funding. Funding in the right direction increases the efficiency of all the proposed strategies across board.

CIRCULAR ECONOMY FINANCE: RISKS

The major risk of these finance opportunities is the possibility for the NHS to evolve into a profit-making parastatal rather than one primarily concerned with improving the health of the UK. The current policy recommendations create healthy barriers against this; however, it must be noted so that it can be avoided. Hard checks and boundaries of private collaboration need to be set up as a safety-net to guide a positive financial trajectory for the NHS.

Click here for access to the full report



Finance for Circularity in the NHS:

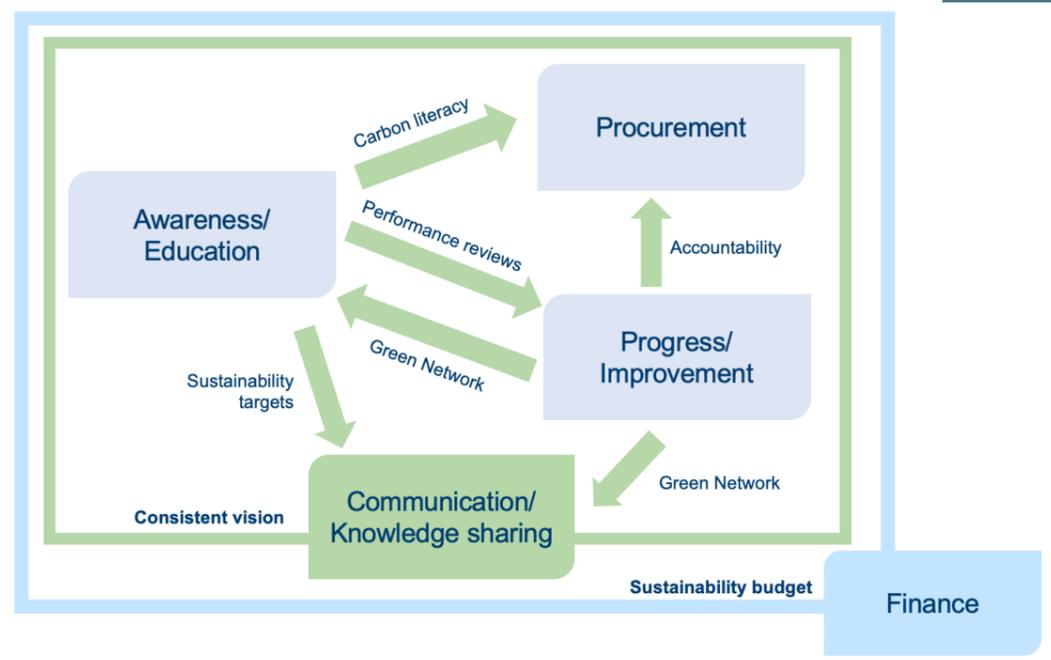
A Brief Introduction & Summary of Strategies



INTERDEPENDENCIES

System-wide transformational change in the NHS

There are key interdependencies between all the areas that have been highlighted in this report. The ThinkLab recommend that none of these steps are taken in isolation, as they all reinforce each other and work best as a collective suite of actions which can be implemented without delay and at minimal cost.



Interdependencies between key areas of change

- In order to have a successful Green Plan, awareness and education play a key role in the initial stages; setting higher-level sustainability targets and building carbon literacy amongst staff starts a self-reinforcing cultural shift that then feeds into other key areas, enabling decarbonisation progress to be made in, for the example, the critical area of procurement.
- However, without effective tools communicating the vision for Net Zero and strategies for knowledge sharing across local Trusts and the NHS, any positive efforts/progress in local teams will not translate to larger scale changes, thus communication encapsulates the other three areas in the above diagram.
- Effective financing for sustainability enables all of the above actions, making the transition towards a circular economy and decarbonisation of the physical infrastructure of the NHS feasible.
- As it was highlighted to the ThinkLab many times during our research, often it comes down to 'the money'. For the NHS Green Plan to be successful in the long term, sustainability needs to be fundamentally integrated within the budgeting of the NHS, and not be seen as an additional cost that is to be sought through external grants.

KNOWLEDGE BANK

The Knowledge Bank is a repository containing multiple types of resources (including case studies, examples of best practice, research articles, interviews and commentaries), collected by the ThinkLab team over the course of this project. The resources within the Knowledge Bank underpin the thought processes, reflections and recommendations presented within this report.

The Knowledge Bank is structured to complement the main themes of the report, and includes all resources found in the following sections:

- Barriers to Sustainability
- Education and Awareness
- Procurement
- Progress and Improvement
- Communication and Knowledge Sharing
- Finance for Circularity

For the full Knowledge Bank (containing all resources collected by the ThinkLab, not only those covered in this report and therefore highlighted below), please [click here](#).

BARRIERS TO SUSTAINABILITY

- 'Day-in-the-life' tool

The Psychology of Sustainable Behaviour, C Manning, 2009.

A list of seven evidence-based recommendations, in order of importance, to implement in sustainability campaigns. Aspects of these recommendations were incorporated into the day-in-the-life.

Breaking cognitive barriers to a sustainable future. E Weber, 2017.

Short comment article considering categories of cognitive barriers to general sustainable behaviour change, including present bias, status quo bias and learning from experience.

Changing our ways? Behaviour change and the climate crisis. P Newell, F Daley & M Twena, 2021.

A report from the Cambridge Sustainability Commission on Scaling Sustainable Behaviour Change which draws on research into the contribution of behaviour change towards reaching climate and sustainability goals. The report specifically focuses on 'nudge' theory, psychological approaches, sociology and social practice and political economy approaches, some of which were incorporated into the day-in-the-life.

Creating a Culture of Sustainability, T Boone, 2012.

A study examining the organisational approaches of eight healthcare systems in the USA with successful sustainability initiatives. The study identifies three key organisational elements that support the effectiveness of sustainability initiatives. First, there must be an executive-level champion who is essential in securing resources for sustainability, advocating for sustainability within the organisation and linking sustainability to high-level strategy. Second, the values of sustainability must be reflected in the organisation's high-level values. Finally, performance measurement systems must be used to monitor and guide sustainability activities.

Recruiting health professionals as sustainability advocates, B Hubbert et al., 2020.

A small survey of hospital staff from northern Virginia, USA, to assess their perceptions about connections between health and sustainability, their experiences with sustainability efforts in the workplace, and perceived barriers that might prevent the hospital system from becoming more sustainable. The study emphasised the importance of providing healthcare professionals with information which explicitly connects sustainability and health, and found that healthcare professionals are receptive to this information. The study also identified perceived barriers to increasing workplace sustainability which overlapped closely with barriers identified in our discussions with stakeholders during the ThinkLab process.

Environmental Sustainability Survey Rosie Phlebotomy.

An environmental sustainability survey conducted in the Rosie Hospital and completed by a phlebotomist, which was shared with us by Richard and Stella early in the ThinkLab process. The survey contains rich information about the energy, consumables, medical devices and pharmaceuticals used within Rosie Phlebotomy, with the respondent pro actively suggesting areas in which waste could be avoided or this could be made more efficient. This survey subsequently formed a basis from which the day-in-the-life was developed.

How green is your hospital?

A seminar (April 2021) as part of Imperial's 'Better hospitals' series discussing how the NGS is approaching its net zero targets, how to build (and refurbish) for sustainability, how to make every-day clinical practice more sustainable. The panel consisted of Dr Nick Watts (NHS Chief Sustainability Officer), Synand Prasad (environmentalist and architect) and Dr Gareth Thompson (emergency medicine doctor at Imperial College Healthcare, and co-developer of the Trust's new Green Plan). Dr Thompson's contribution to the seminar and subsequent discussions with him inspired the 'green thread' and 'green care-great care' portions of the day-in-the-life.

Our Green Plan – Imperial College Healthcare. D Patel, G Thompson, 2021.

Imperial College Healthcare's Green Plan, shared with ThinkLab by Dr Gareth Thompson. A number of the suggested steps and vision overlap with recommendations made by ThinkLab – such as the importance of up-skilling staff and celebrating achievement – and Dr Gareth Thompson would be a key contact and is very open to future collaborations and knowledge sharing between Trusts.

- Sustainability Questionnaire

Sustainability Skills Survey Staff Questionnaire. G Bunting, J Davidson, P Osbourne, 2012.

Survey from the University of Wales to gauge staff interest and expertise in sustainability. The opening statement and a number of the questions formed the basis for the questionnaire developed by ThinkLab.

The Sustainability Consciousness Questionnaire: The theoretical development and empirical validation of an evaluation instrument for stakeholders working with sustainable development. N Gericke et al., 2018.

A survey developed to measure an individual's environmental, social and economic knowledge, sustainability knowledge, sustainability attitudes, sustainability behaviour and sustainability consciousness. Questions from this survey were used to inform the questionnaire developed by ThinkLab.

EDUCATION AND AWARENESS

- A bottom-up and top-down approach

Greener NHS

Website for the Greener NHS programme, containing news updates, information on delivering a net zero NHS, case studies etc.

The Carbon Literacy Project

Website describes the Carbon Literacy Project, a collaborative effort with an aim "to advance the education of the public in the conservation, protection and improvement of the physical and natural environment".

The Carbon Trust

Website for the Carbon Trust, "an expert partner for businesses, governments and organisations around the world – supporting them in realising ambitious plans for a sustainable, low carbon future." They estimate that employer action following education could save between £400 and £1,000/year for every employee. This is increasingly true in areas such as procurement, which control a lot of the financial muscle of the NHS.

Employee engagement: a sustainability super-strategy?

Article published by The Guardian in 2013, describing how Investing in employee behaviour change delivers savings and increases productivity. Explains how Sony Electronics launched a 'green workplace certification'. The programme was estimated to cost \$20 per person and made a saving of \$85; a four-times return.

February 2021 Cambridge Carbon Literacy Impact Report

Impact report predicts that following Carbon Literacy training, 86t CO2e/yr was saved after training just 80 students. Surveys showed that 94% students trained were likely to recommend the course to others, and 90% participants either likely or very likely to engage in either personal or group climate action.

PROCUREMENT

- A bottom-up approach

How green is your hospital?

A seminar (April 2021) as part of Imperials 'Better hospitals' series discussing how the NGS is approaching its net zero targets, how to build (and refurbish) for sustainability, how to make every-day clinical practice more sustainable. The panel consisted of Dr Nick Watts (NHS Chief Sustainability Officer), Synand Prasad (environmentalist and architect) and Dr Gareth Thompson (emergency medicine doctor at Imperial College Healthcare, and co-developer of the Trust's new Green Plan). Dr Thompson's contribution to the seminar and subsequent discussions with him inspired the 'green thread' and 'green care-great care' portions of the day-in-the-life.

Delivering a Net Zero National Health Service (2020).

The report highlighted that there had been multiple proposals submitted from staff to re-evaluate alternative options for many single-use items used in the clinical settings. This shows that it is the front-line staff who are the in best position to identify where these changes are feasible and inform procurement about them: “clinical plastics: proposals from staff to re-evaluate alternative options for many single-use items, disposable or expired equipment and unused pharmaceuticals, as well as calls for the NHS to consider reusable or refurbishable alternatives.”

Can Medical Care Exist Without Plastic? (2019).

National Geographic article examining various ways that hospitals are looking to reduce their reliance on plastic: “In a survey of 332 hospitals that has not yet been published, Practice Greenhealth looked at common single-use plastic items in operating rooms that had been successfully replaced by reusable items. Tools like surgical basins and sterilization wraps could be reused and would reduce waste by several tons per year.”

“Some hospitals, she says, are experimenting with replacing the blue wrap with reusable sterilization containers that can be made clean just like the instruments they contain.”

“Another profuse item in medical facilities is the sterilization pouch—a small, sealable pouch used to keep sterilized equipment free of germs.” Solution = **EnviroPouch**

Comparing reusable and single-use disposable laryngoscopes (2018).

Research article looking at life cycle assessment and costing methods for device procurement. “For [Yale New Haven Hospital], the reusable options presented a considerable cost advantage, in addition to offering a better option environmentally. Avoiding over-cleaning reusable laryngoscope handles and blades is desirable from an environmental perspective.”

Manchester NHS Sustainability Masterplan: 2018-2023.

Report by Manchester University NHS Foundation Trust highlighting their plan for sustainable healthcare. Two key aims were highlighted as follows, which motivates the need for this feedback mechanism:

- Replace single use products with reusable alternatives where there is a viable and lower carbon option, and be transparent when this is not feasible.
- Move away from a ‘purchase – use – dispose’ approach to waste and towards a circular economy approach (e.g. buying a service rather than a product, use of leasing arrangements).

Developing the ‘how’ of Net Zero. Richard Hales, 2021.

A short thought-piece offered as a precursor to a set of structured discussions organised through a partnership between the NHS Regional Sustainability Network for the East of England, The University of Cambridge ThinkLab, and Cambridge University Hospitals NHS Foundation Trust (CUH).

- A top-down approach

Manchester University NHS Foundation Trust - The Masterplan.

Report by Manchester University NHS Foundation Trust highlighting their plan for sustainable healthcare. “Procurement constitutes the largest proportion of our carbon footprint and we must reduce unnecessary use of resources across all of our organisational activities. By applying the waste hierarchy, rethinking traditional waste models and working closely with our staff and supply chain, we can move towards a circular economy approach and away from a throwaway culture.”

Nordic Council of Ministers - Greener Textiles in Hospitals (Denmark).

A guide to green procurement in hospitals. “Write into the contract with a textile service company that textiles may be purchased back by the hospital at the end of the contract period... In order to allow for development of new products with lower environmental impacts, a procurement contract can be based around functional requirements rather than specifying a given product. This is most used in for example in procuring energy or lighting services but can also be used for healthcare textiles. For example, a contract could require delivery of clean nurse uniforms sufficient to cover a given number of full-time nursing staff and which meet minimum hygiene, strength, and comfort standards, but without demanding a particular fibre type. Fibres can then be selected by the service provider that meet these standards but with greatest durability to reduce their costs and reduce environmental impacts.”

EU Green Public Procurement Criteria.

EU Green Public Procurement criteria guidance: “Facilitate inclusion of green requirements in public tender documents. Balance between environmental performance, cost considerations, market availability and ease of verification. Evidence-based guidance for large range of different materials used within hospitals/healthcare settings e.g. Electrical and Electronic Equipment used in the Health Care Sector, Textiles, Electricity, Furniture, Food”.

PROGRESS AND IMPROVEMENT

- A bottom-up approach

Climate change and moral judgement. Markowitz and Shariff, 2012.

Research article looking into the reasons why climate change poses significant challenges to our moral judgement systems, and describes strategies that communicators might use to confront these challenges.

Hospital staff empowerment and cost savings, Victoria Hospital, Cape Town, South Africa.

In a project to reduce energy usage in the hospital, cleaners and housekeepers (who have no management authority within the hospital, but have access to all parts of the hospital) were relied upon to act as the ‘eyes and ears of the project on the ground’. These staff ensured that unused lights and hospital equipment were switched off when possible. The project boosted morale and recognition of cleaners and housekeepers within the hospital.

Environmental Champions Network, The Association of Anaesthetists.

The association aims to have one anaesthetist from every hospital in the UK and Ireland be a champion. Currently working to create a map of the hospitals where champions are located in order to unify the network, and thereby support collaboration and national data collection.

Creating a Culture of Sustainability, Health Care Research Collaborative.

Multiple case studies revealing how hospitals have cultivated a culture and commitment to sustainability through organizational elements such as performance measurement. Bon Secours Health is a good example of how a system-wide Green Team can provide organizational targets for local Green Teams to develop annual goals and monitor progress. Local teams conducted a baseline assessment using the Eco-Checklist from Practice Greenhealth and progress was tracked for both the local and system-wide Green Teams monthly.

Clean Air Hospital Framework, Great Ormond Street Hospital for Children, NHS Foundation Trust.

This tool, developed in collaboration with environmental charity Global Action Plan, enables hospitals to identify their current level of performance on tackling air pollution and to develop action plans in seven key areas, including communication and teaching, and hospital outreach and leadership.

Sustainability Champions Share Their Success Stories, The University of Edinburgh.

Sustainability champions are encouraged to submit case studies covering actions and projects that they have been working on, in order to help share best practices. These are shared on the University sustainability champions website and one entrant is chosen at random to win a prize voucher.

Green Surgery Challenge, UK.

An online event “for the UK’s surgical community to recognise the value of sustainable healthcare for surgical conditions: to share and promote ways of practising that are less harmful to the environment and our planet and build social sustainability: to continue to transform surgery for the future”. Selected teams get an opportunity to showcase their work and win an award.

Using Rewards to Achieve an Organization’s Sustainability Objectives, Erb Institute, University of Michigan.

This report highlights how rewards can be used as a key lever in helping organizations improve their sustainability performance.

- A top-down approach

Patagonia.

The apparel company, Patagonia, has incorporated sustainability into their core values and mission statement, which reads “we’re in business to save our home planet.”

Unilever.

The world's largest consumer goods company, Unilever, has established a Corporate Responsibility Committee to oversee and monitor corporate sustainability progress.

Climate Action 100+ Net Zero Company Benchmark.

A framework to assess focus companies based on their publicly disclosed information. Part of the Climate Action 100+ initiative - a group of more than 500 investors representing \$52 trillion in assets.

Microsoft 2020 Environmental Sustainability Report.

Report outlines Microsoft's sustainability efforts, progress, performance and funding, and outlines how they plan to be carbon negative by 2030.

COMMUNICATION AND KNOWLEDGE SHARING

- A bottom-up approach

City Switch: Fostering Green Champions at Work Toolkit.

Toolkit emphasizes the need for engagement across the whole organisation to effect sustainable change. It includes detailed guidance on creating effective communication channels through the use of Green Champions Networks. Defines Green Champions as “*bottom-up communicators, providing a point of contact for colleagues to ask questions or raise issues to be investigated*”.

University College London (UCL) Green Champions.

Website describes how UCL utilises volunteer Green Champions to drive organisational strategy, identifying communication flow as a key function of the Green Champion. UCL Green Champions receive training in communication skills through the Green Impact education scheme.

Horatio's Garden.

A charity that creates and cares for beautiful accessible gardens in NHS spinal injury centres. Published **Impact Report** from 2020, and NHS patient and **staff testimonials** show how effective and enjoyed the gardens are.

Artists turn pandemic into street murals.

Sky News article describes how street art can create a powerful and political picture, reflecting the hope, joy and sorrow of the COVID-19 crisis.

- A top-down approach

Ecosia eco-friendly search engine.

A transparent, privacy-friendly search engine for a better internet that benefits the environment by planting trees where they are needed most.

A summary of NHS Digital sustainability initiatives.

An overview of sustainability initiatives relating to the use of digital tools within the NHS.

Nudging pro-environmental behaviour: evidence and opportunities. Byerly et al., 2018.

An excellent article with concrete suggestions on how to design an environment with more behavioral nudges on sustainability.

FINANCE FOR CIRCULARITY IN THE NHS

Financial resources for the circular economy: A perspective from businesses. Aranda-Usón et al, (2019).

Academic article that defines the resources applied to circular activities by firms. Findings show that the availability of funds, quality of a firm's own financial resources and public subsidies have a positive effect in stimulating the implementation of circular economy initiatives in business.

Financing the Circular Economy: Capturing the opportunity. EMF (2020).

Ellen MacArthur Foundation technical report that highlights how the circular economy can help achieve climate and other ESG goals while creating opportunities for new forms of better economic growth.

Leadership for a Climate Resilient, Net-zero Health System: Transforming Supply Chains to the Circular Economy. Ritchie (2021).

Article describes that building climate resilience among healthcare institutions and their supply chains is urgently needed. By adopting a circular economy framework, the industry can move away from the current damaging take, make waste economic model and adopt a more sustainable model characterised by designing out waste and pollution, keeping products and materials in use, and regenerating natural systems.

Circulytics - measuring circularity.

Circulytics is the most comprehensive circularity measurement tool for companies, developed by the **Ellen MacArthur Foundation**.

Integration and innovation: working together to improve health and social care to all.

This paper sets out the Dept. of Health and Social Care's legislative proposals for a Health and Care Bill. It aims to build on the collaborations forged through COVID and shape a system that is better able to serve people in a fast-changing world.

Integrated care: NHS England and NHS Improvement.

This document builds on previous publications that set out proposals for legislative reform and is primarily focused on the operational direction of travel. It opens up a discussion with the NHS and its partners about how ICSs could be embedded in legislation or guidance. Decisions on legislation will of course then be for Government and Parliament to make.

CONCLUSION

The ThinkLab hope that this report is able to form the basis of a process of sustainable change within the NHS, by providing a collection/menu of 'the possible for achieving the impossible'. This project has been an opportunity to create dialogue both with stakeholders at various levels within the NHS, as well as medical professionals and sustainability experts from around the globe, allowing for many different priorities and perspectives to be taken into account. The outcome is a collection of recommendations, based on extensive research, that we hope will guide the implementation of a green thread into all aspects of the NHS.

The ThinkLab sustainability project with the NHS has been a shared process of discovery, and would not have been possible without the tremendous efforts of Richard Hales and Stella Cockerill.

The ThinkLab aims to stay engaged with members of the NHS in order to help support data collection, implementation of Green Actions, and a wide-spread communication strategy. With more data and time for implementation of this report's recommendations, we eagerly await what the near future may bring and are already planning ways of future collaboration. Through the ThinkLab's position with the University of Cambridge Strategic Partnerships Office, there will be numerous avenues to explore, including the potential of funding for future sustainability projects, and drawing upon the expertise of our global collaborators, such as Microsoft (and their notable carbon negative endeavour).

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