# Inspiring, enabling and empowering staff for net zero, cost-saving improvements and innovations

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Catherine Richards, Centre for Sustainable Healthcare

Emma Rowan, South Warwickshire University NHS Foundation Trust

# Declarations of conflict of interest

Darshan Patel – None

Gareth Thompson – None

Catherine Richards – None

Emma Rowan – None

# Introductions and welcome

**Darshan Patel** – Sustainability and Improvement Programme Lead, ICHT

**Dr Gareth Thompson** – Sustainability Clinical and Innovation Lead, ICHT

**Catherine Richards** – Sustainability in QI Programme Lead, Centre for Sustainable Healthcare

**Emma Rowan** – Head of Service Improvement, SWFT

Join at Menti.com I Use Code 5208 1017

# Welcome to the workshop

Inspiring, enabling and empowering staff for net zero, cost-saving improvements and innovations

# Session plan



WHY SHOULD CLIMATE CHANGE MATTER TO HEALTHCARE STAFF? (09:45 TO 10:15)

HOW CAN IMPROVEMENT BE USED TO MOTIVATE AND EQUIP HEALTHCARE STAFF TO ACT? (10:15 TO 10:45)

BREAK (10:45 TO 11:15)

HOW TO MAKE CLIMATE CHANGE RELATED INFORMATION MORE IMPACTFUL TO YOUR AUDIENCE? (11:15 TO 11:40)

HOW DO WE EMPOWER OUR STAFF TO ENACT GREEN IMPROVEMENTS? (10:40 TO 12:05)

HOW TO ACCESS FURTHER TOOLS AND SUPPORT? (12:05 TO 12:15)

QUESTIONS (12:15 TO 12:30)

## Project On A Page

Creating a one page summary of your project can be a useful tool to structure your project and ideas and check you have covered the key points from the Model for Improvement. You can then share and agree your project plan with your team and stakeholders. *Use this template to structure your project and ideas and create a project plan. You can use the other QI templates to populate the sections.*

### 1. What are we trying to achieve?

**Problem statement**

**SMART objective** — Remember: **Specific, Measurable, Achievable, Realistic and Timely**

### 3. What changes could we make?

**What ideas are we going to test?**

**Who is engaged?**

| Who needs to be involved? | Who might resist? | Who haven't we spoken to? |
|---|---|---|
|  |  |  |

### 2. How will we know a change is an improvement?

**What are our outcome, process and balancing measures?**

**How will we collect our data? Where? Where from?**

💡 **HELPFUL HINT! Remember**: Think about how we can present our data creatively!

### 4. What are our next steps?

| Action | Lead | Due date | Action completed (Y/N) |
|---|---|---|---|
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

# By the end of the workshop, you will...

- Understand the connection between climate change, health and health inequalities, and the important role that healthcare staff have in making high quality healthcare delivery more sustainable

- Learn from examples of how improvement frameworks can be used to motivate and equip healthcare staff to act to improve services and at the same time reduce the environmental impact

- Understand where to find the data to measure the carbon footprint of healthcare services and how to make the data more relatable to others to better secure buy-in

- Learn about what has been done to build a culture of continuous learning that inspires healthcare staff to act in bringing about lasting change

- Learn where to find further resources, tools and support

# Why should climate change matter to healthcare staff?

Catherine Richards
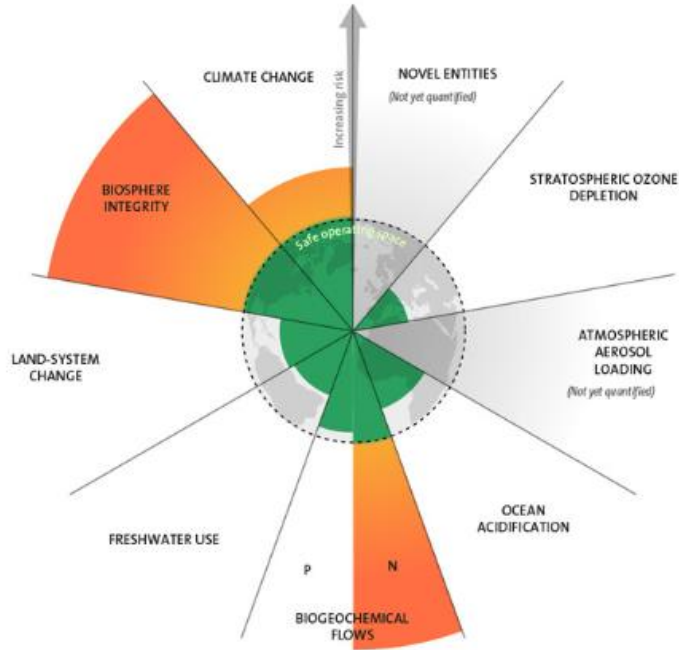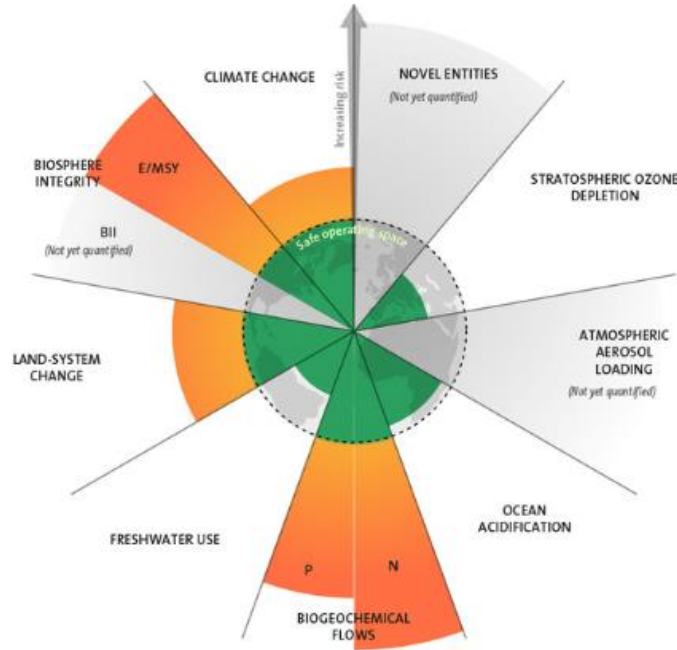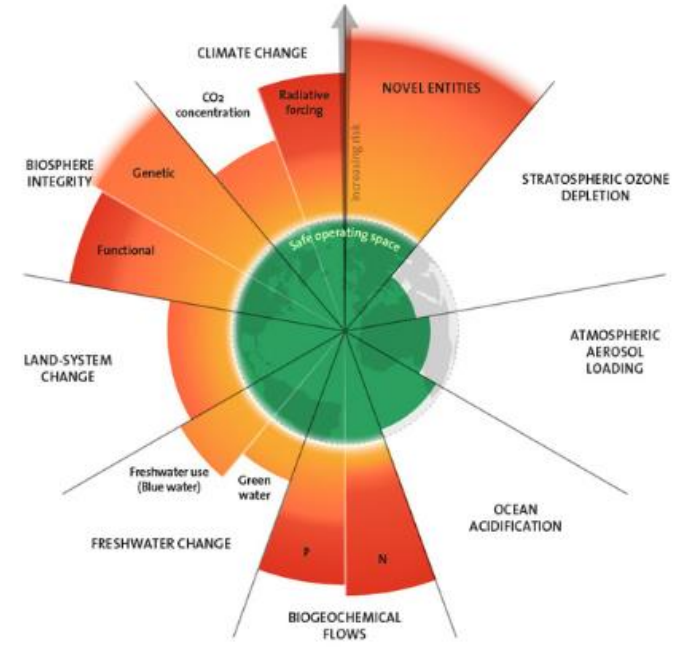
# Planetary boundaries



The evolution of the planetary boundaries framework. Licenced under CC BY-NC-ND 3.0 (Credit: Azote for Stockholm Resilience Centre, Stockholm University. Based on Richardson et al. 2023, Steffen et al. 2015, and Rockström et al. 2009) Click on the image to download.

# Effectiveness of Current Approaches



Trends in Atmospheric CO$_2$ vs Global Temperature Change

2021 Glasgow Climate Pact
2015 Paris Agreement adopted
2009 Copenhagen Accord
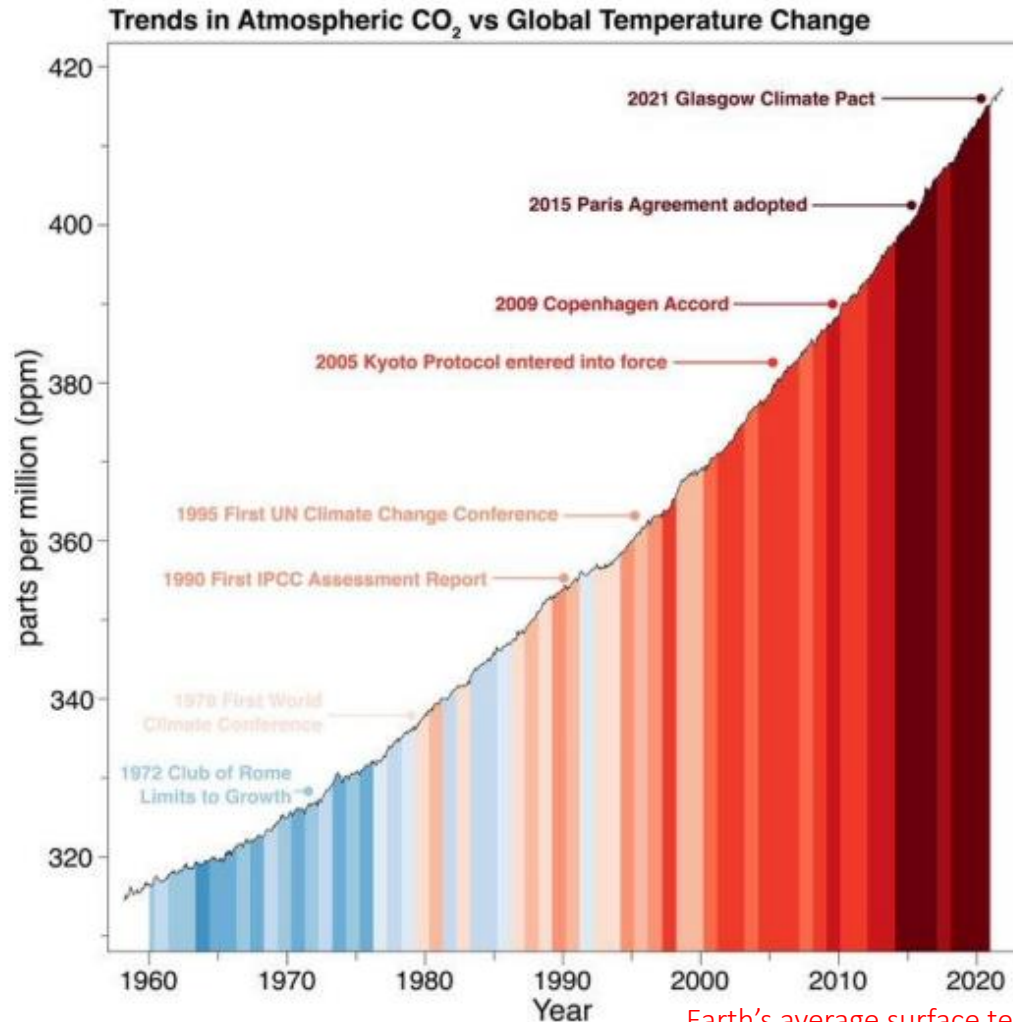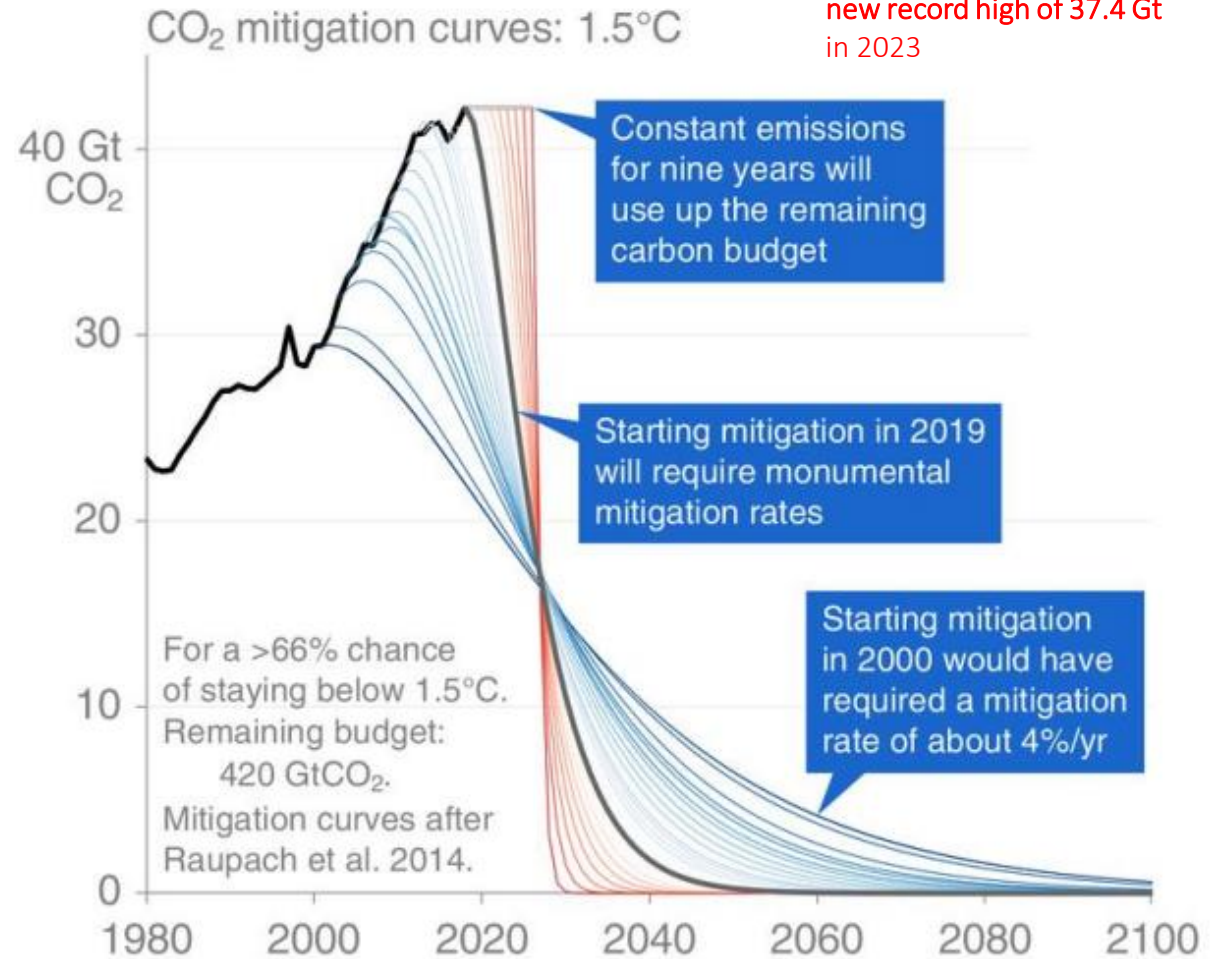2005 Kyoto Protocol entered into force
1995 First UN Climate Change Conference
1990 First IPCC Assessment Report
1979 First World Climate Conference
1972 Club of Rome Limits to Growth

parts per million (ppm)

Year

CO$_2$ mitigation curves: 1.5°C

40 Gt CO$_2$

Constant emissions for nine years will use up the remaining carbon budget

Starting mitigation in 2019 will require monumental mitigation rates

Starting mitigation in 2000 would have required a mitigation rate of about 4%/yr

For a >66% chance of staying below 1.5°C. Remaining budget: 420 GtCO$_2$. Mitigation curves after Raupach et al. 2014.

@robbie_andrew • Data: GCP • Emissions budget from IPCC SR1.5

CO2 emissions reached a **new record high of 37.4 Gt** in 2023

Earth's average surface temperature in **2023 was the warmest on record** since record keeping began in 1880

The 2020s are the most important decade humanity has ever faced.

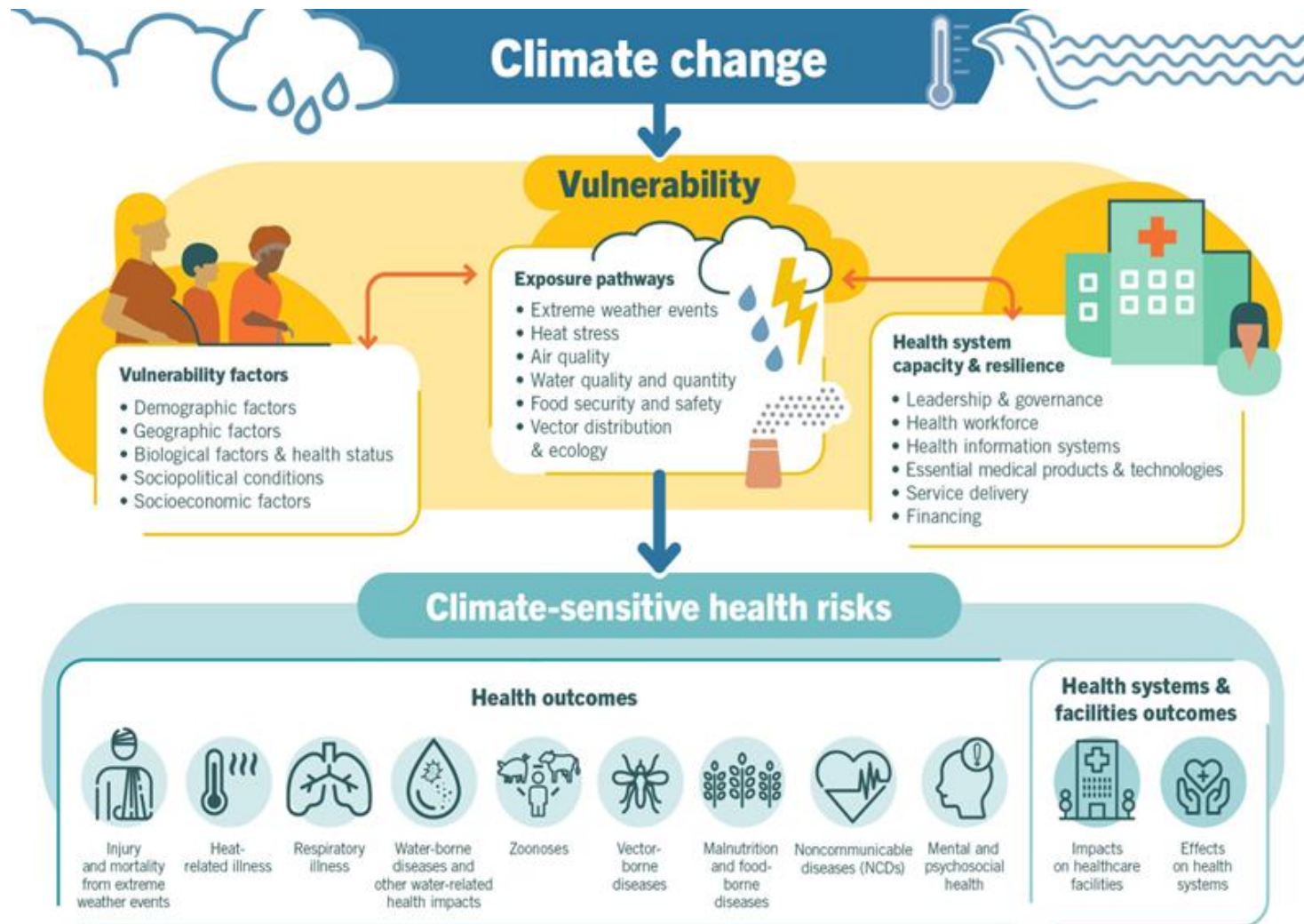In the next 6 years we will choose our future

Every fraction of a degree matters

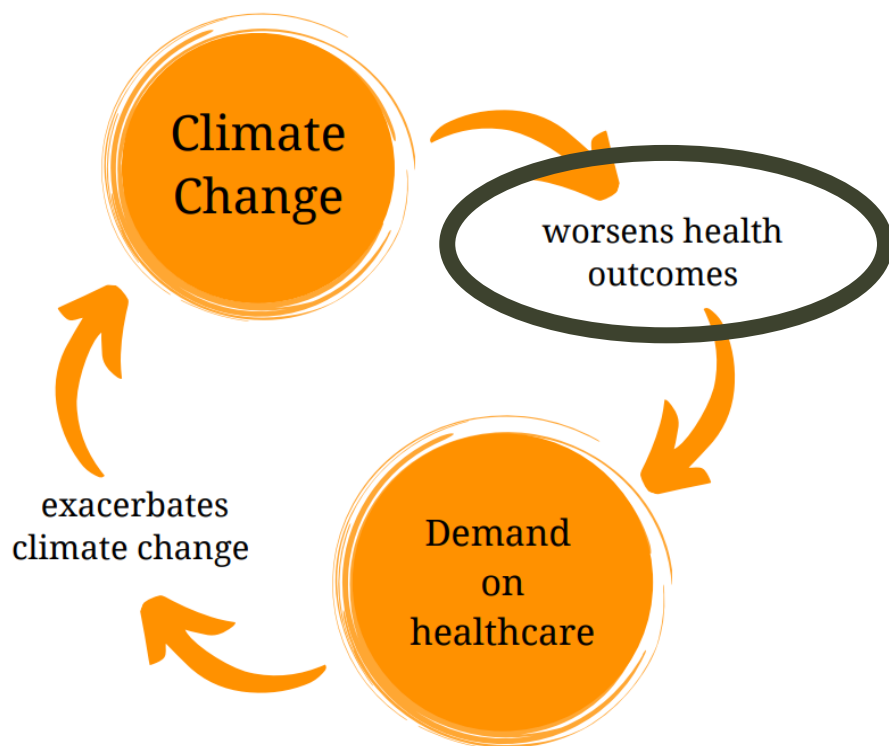Every Month Matters

Every Choice Matters



AR6 Synthesis Report
**Climate Change 2023**

ipcc
INTERGOVERNMENTAL PANEL ON
climate change

# Climate change and Healthcare



https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health

CLIMATE CHANGE IS CLAIMING LIVES AND LIVELIHOODS. WORLDWIDE. TODAY.

LANCET COUNTDOWN:
TRACKING PROGRESS
ON HEALTH AND
CLIMATE CHANGE

# Heat-related Mortality

Percent change in annual heat-related deaths of adults over 65 years old in 2018-2022 compared to 2000-2004

Compares with counterfactual scenario in which temperatures are unchanged from baseline values

| Estimated % change in heat-related mortality | % change expected with no temperature change |

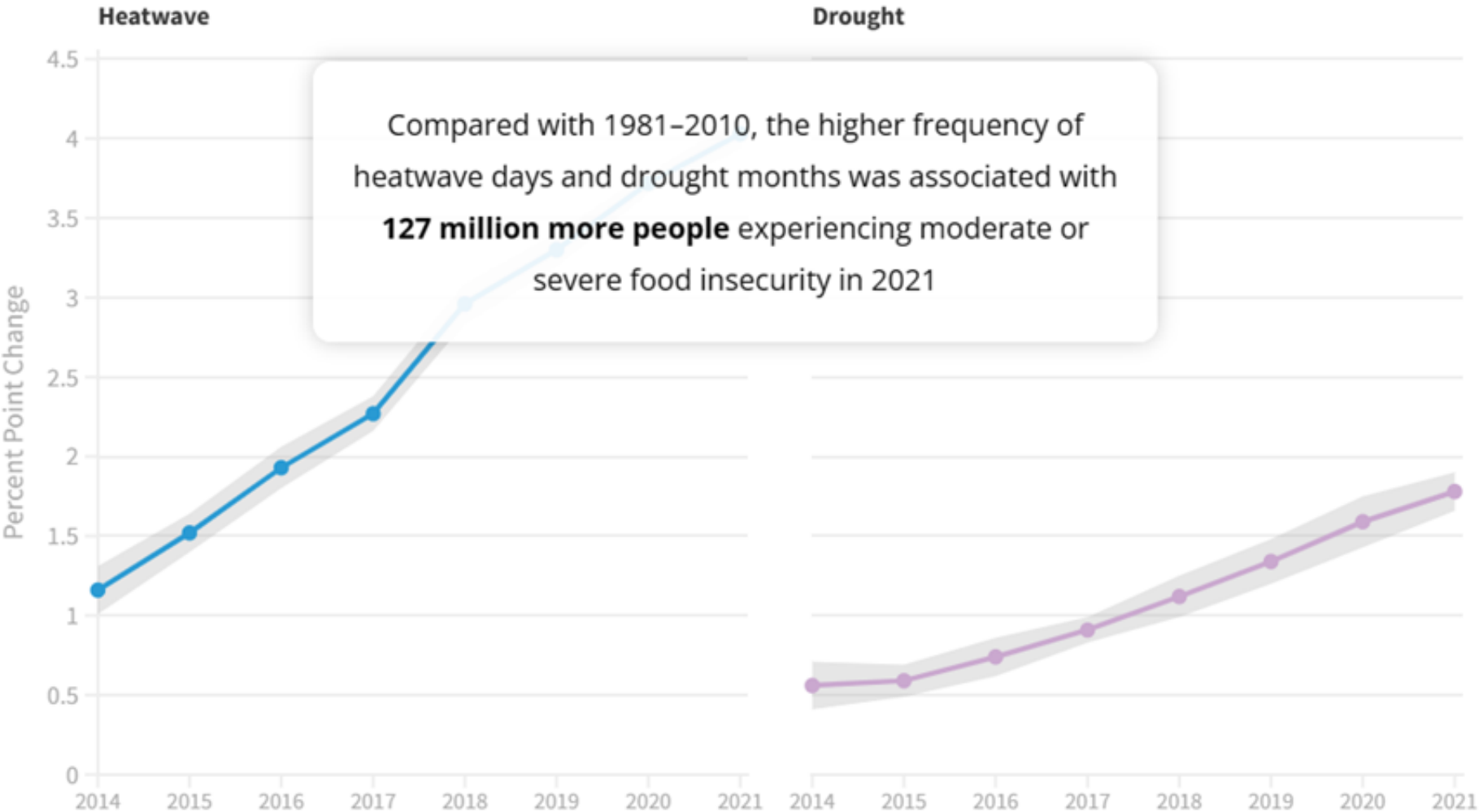**Percent change in annual deaths:**

-50%  25%  100%  200%
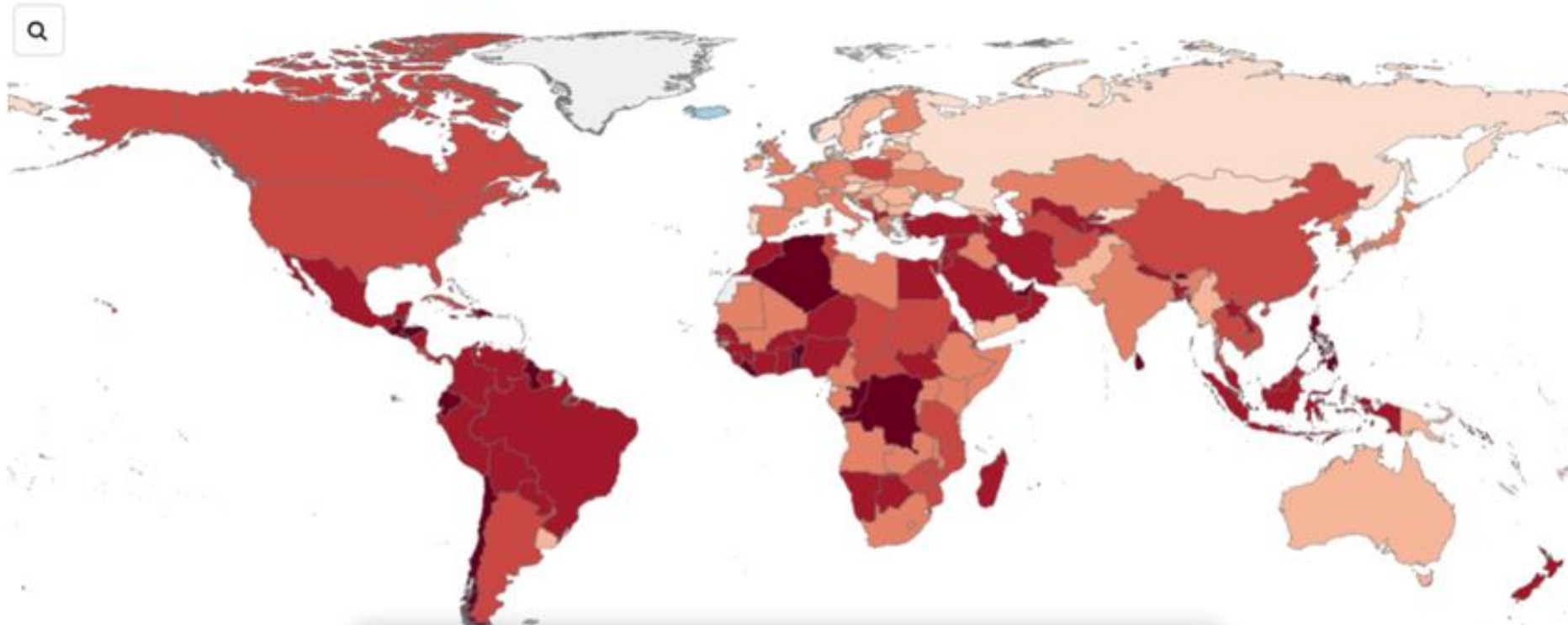


Heat-related deaths of people over age 65 increased by

**85%** from 2000-2004...

# Impact of Extreme Weather on Food Insecurity

Change in the percentage of people reporting moderate to severe food insecurity due to heatwave and drought days (percentage point change) occurring during the growing seasons of four major crops (maize, rice, sorghum, and wheat)

**Extreme Weather Event:** ■ Heatwave ■ Drought



**Heatwave**

**Drought**

Compared with 1981–2010, the higher frequency of heatwave days and drought months was associated with **127 million more people** experiencing moderate or severe food insecurity in 2021
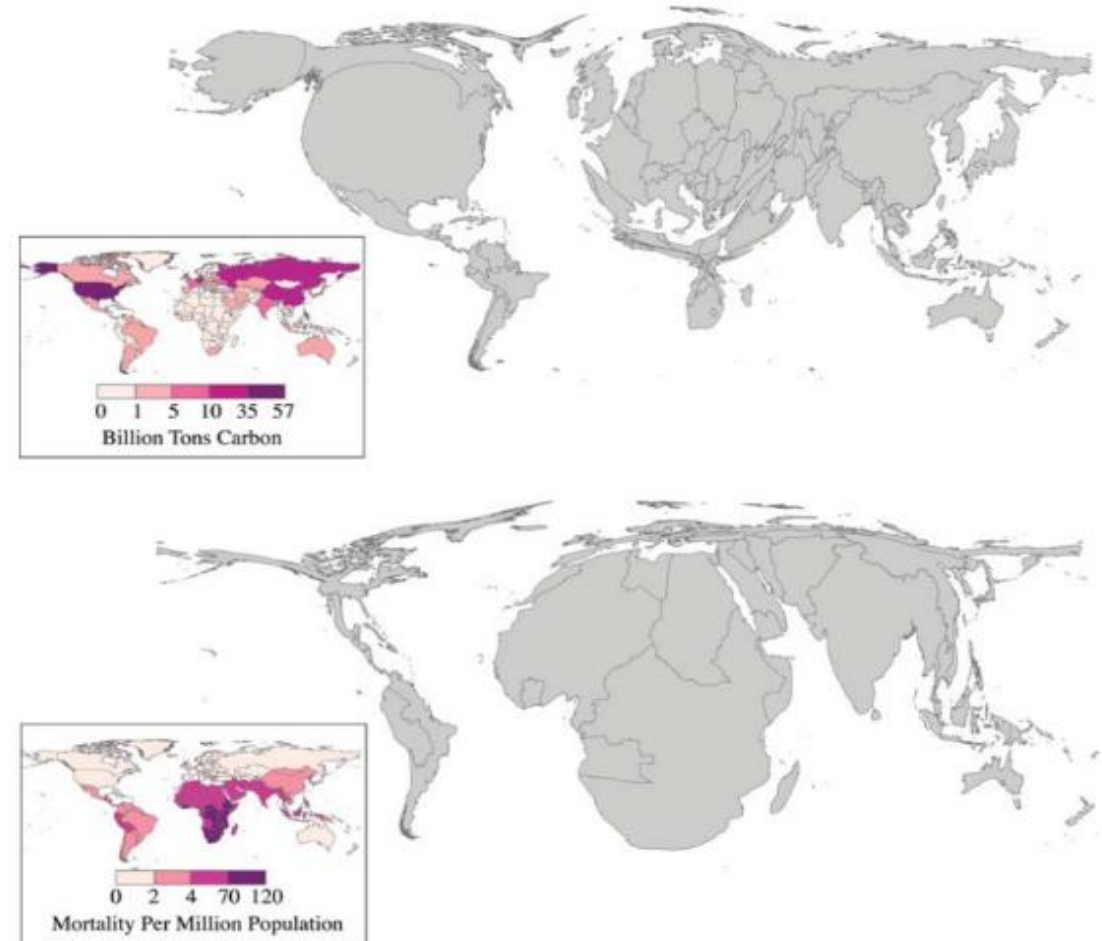
THE HEALTH RISKS OF CLIMATE CHANGE
ARE INCREASING ACROSS ALL DIMENSIONS
MONITORED.

# Inverse Climate Law



Figure 1: Global income deciles and associated lifestyle consumption emissions

Percentage of CO₂ emissions by world population

World population arranged by income (deciles)

Richest 10% — 49% — Richest 10% responsible for almost half of total lifestyle consumption emissions
19%
11%
7%
4%
3%
2.5%
Poorest 50% — 2% — 1.5% — 1% — Poorest 50% responsible for only around 10% of total lifestyle consumption emissions

Source: Oxfam



0 1 5 10 35 57
Billion Tons Carbon

0 2 4 70 120
Mortality Per Million Population
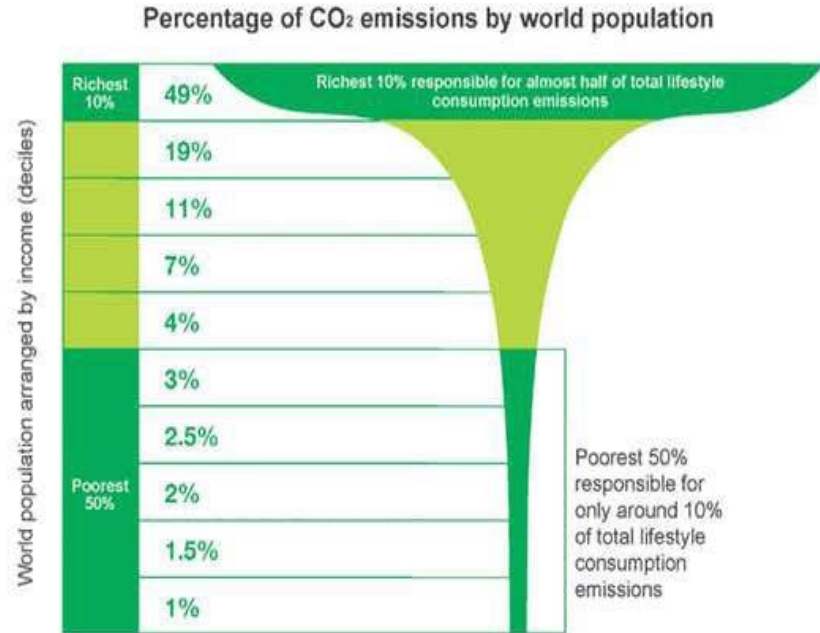
**Figure 1.** Comparison of undepleted cumulative carbon dioxide (CO₂) emissions (by country) for 1950 to 2000* versus the regional distribution of four climate-sensitive health effects (malaria, malnutrition, diarrhea, and inland flood-related fatalities). (**a**) CO₂ emissions data source: Marland G, Boden TA, Andres RJ (2007) Global, regional, and national fossil fuel CO₂ emissions. In: *Trends: A Compendium of Data on Global Change*, Oak Ridge, TN: Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy. [*To

# The Health Sector is Vulnerable

**London NHS trust cancels operations as IT system fails in heatwave**

Guy's and St Thomas' trust having to postpone and divert appointments, with doctors unable to see patients' notes

PUBLIC HEALTH

**Climate crisis likely to increase demand for nurses, says ICN**

18 NOVEMBER, 2019 | BY REBECCA GILROY

Immediate action is needed to tackle climate change, an international nursing body has warned, after a report found that it will have lifelong effects on children's health.

INSIDE DEVELOPMENT | DEVEX NEWSWIRE

**Devex Newswire: Climate change comes for medical supply chains**
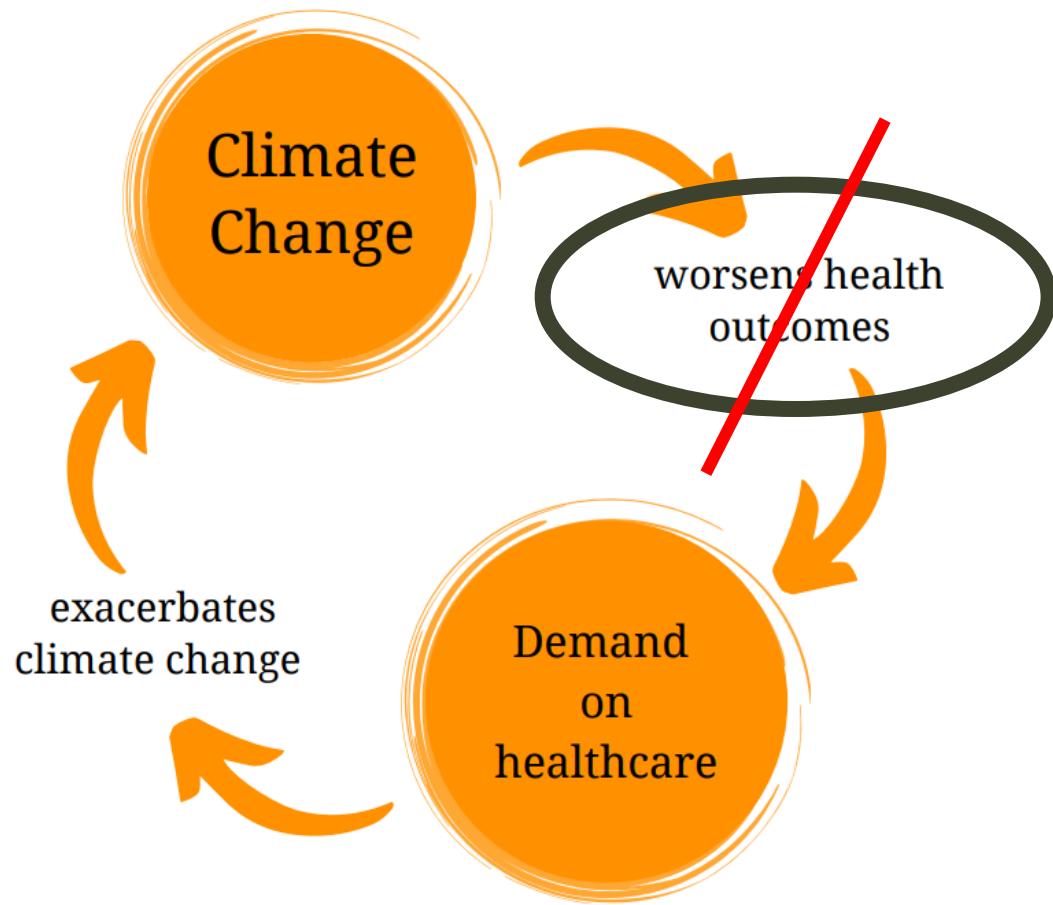
By *Helen Murphy* // 17 March 2023

**A tiny symbol of resilience dies in hospital destroyed by Philippines typhoon after clinging to life for three days**
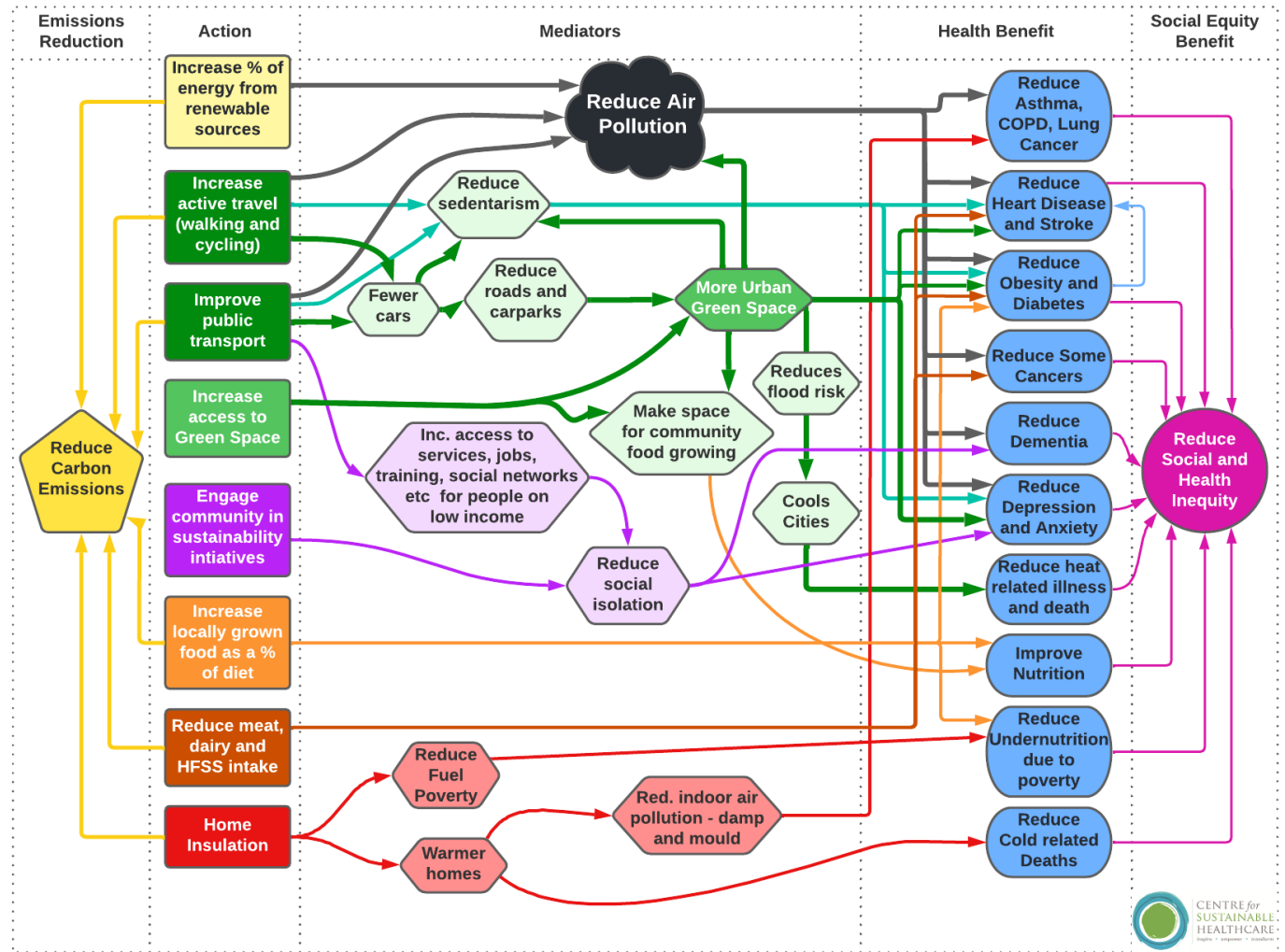
*Her parents had used a hand pump to squeeze oxygen into her newborn lungs, but Althea eventually died in a hospital lacking the electricity that might have saved her*
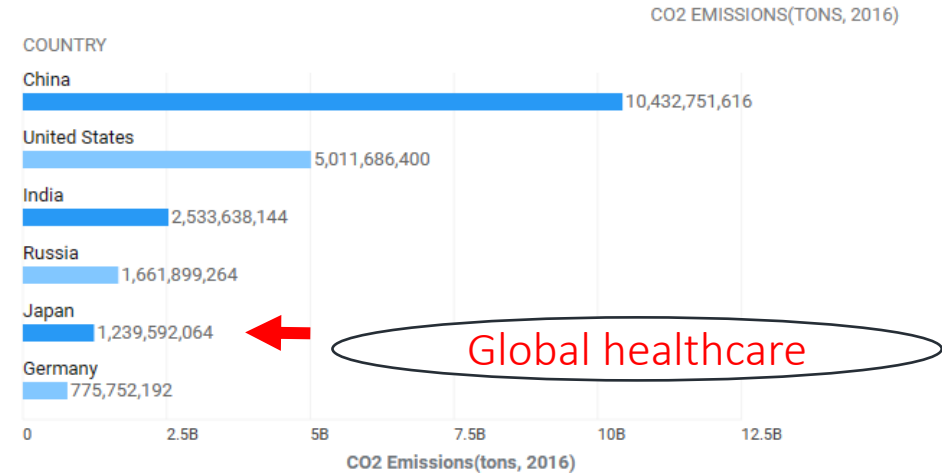
The Telegraph
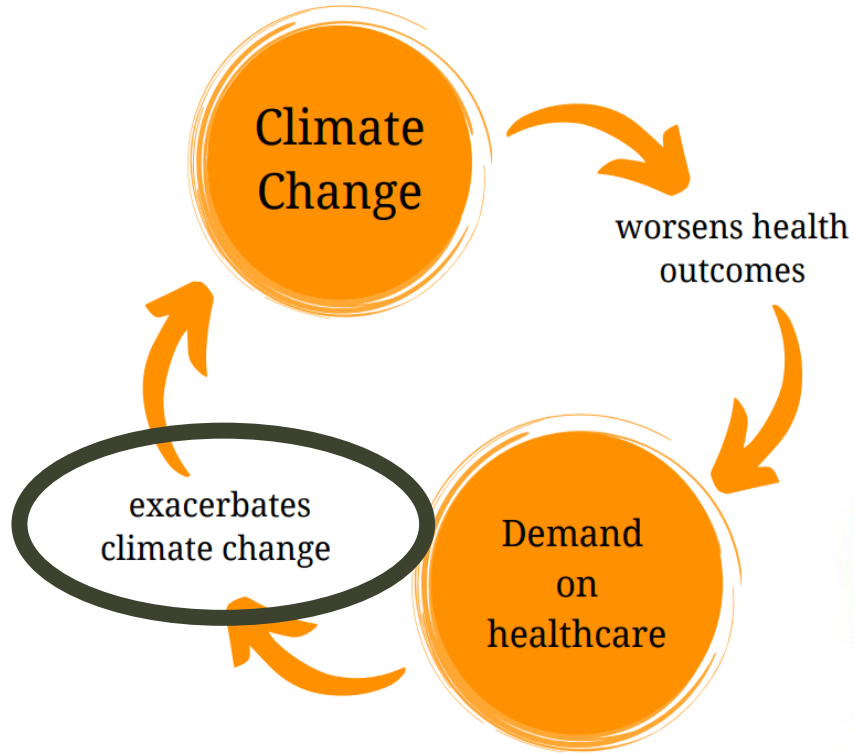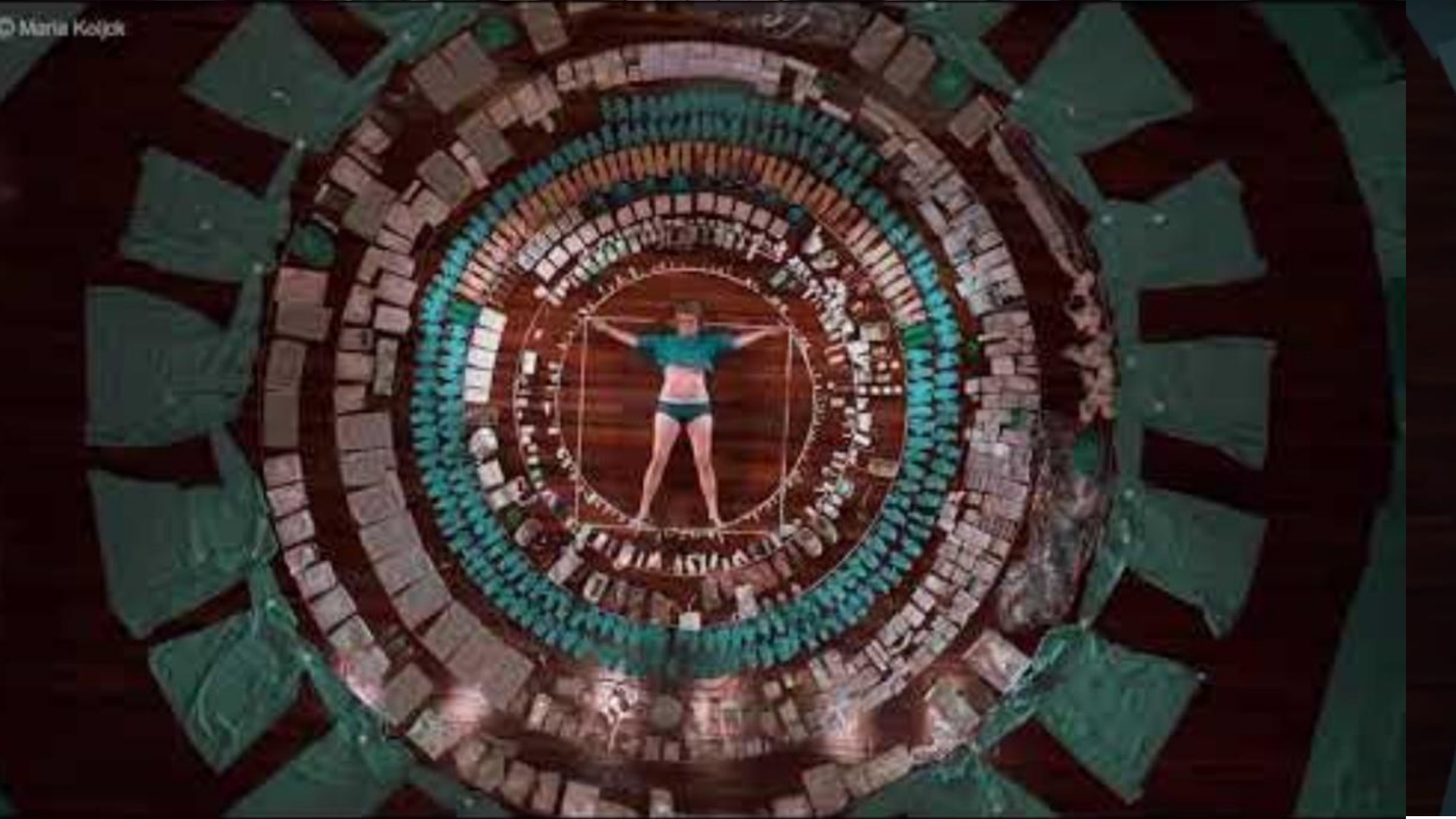Nov 17, 2013 • January 25, 2013 • 2 minute read • Join the conversation
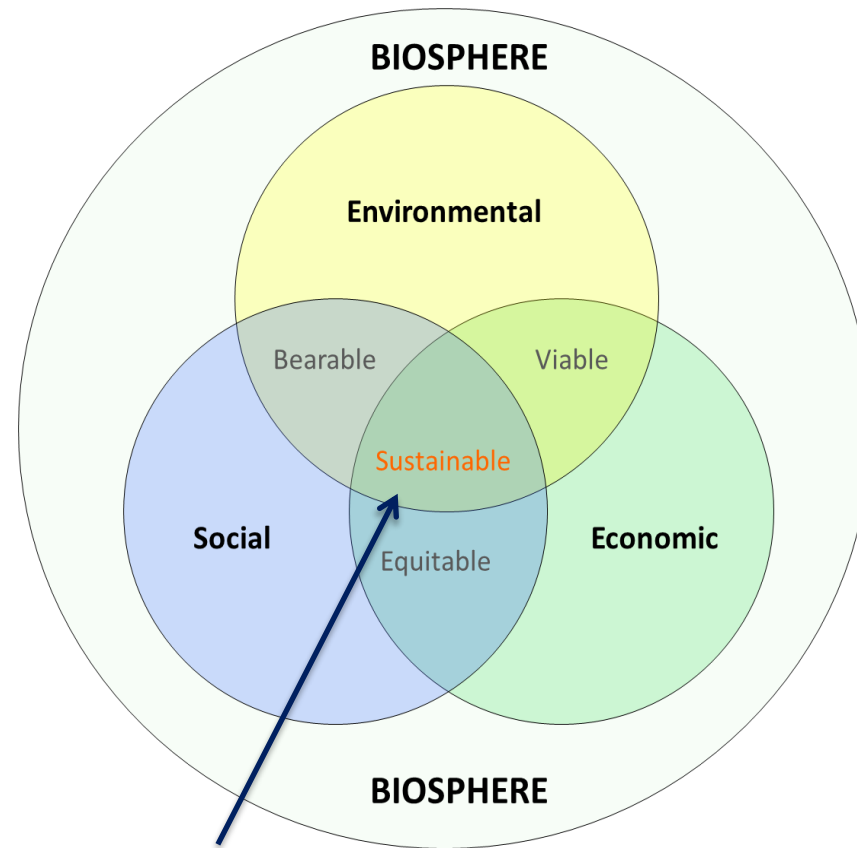
# Health co-benefits of climate action

# Healthcare is part of the problem



CO2 EMISSIONS(TONS, 2016)

COUNTRY

| China | 10,432,751,616 |
| United States | 5,011,686,400 |
| India | 2,533,638,144 |
| Russia | 1,661,899,264 |
| Japan | 1,239,592,064 |
| Germany | 775,752,192 |

Global healthcare

CO2 Emissions(tons, 2016)

Climate Change → worsens health outcomes → Demand on healthcare → exacerbates climate change

HEALTH CARE'S CLIMATE FOOTPRINT
Carbon footprint of global healthcare sector is 2 Gt CO2e

Outdoor air pollution kills 4.2 million people worldwide.

2% global plastic production is medical plastic; increases by 6.3% per year

Deforestation: rubber plantations for surgical gloves

Scarcity of resources: conflict minerals in medical equipment

Antibiotics found at 65% of 711 river sites worldwide
The most prevalent antibiotic found in the rivers was trimethoprim.

CENTRE for SUSTAINABLE HEALTHCARE

Climate Change

worsens health outcomes

Demand on healthcare

exacerbates climate change

Sustainable healthcare

BIOSPHERE

Environmental

Bearable

Viable

Sustainable

Social

Equitable

Economic

BIOSPHERE

Using resources to deliver healthcare today without compromising the health of current or future generations.

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inspire • empower • transform

# 1. PREVENTION

Promoting health and preventing disease by tackling the causes of illnesses and inequalities

# 2. PATIENT SELF-CARE

Empowering patients to take a greater role in managing their own health and healthcare

## PRINCIPLES OF
## SUSTAINABLE
## CLINICAL PRACTICE

# 3. LEAN SERVICE DELIVERY

Streamlining care systems to minimise wasteful activities

# 4. LOW CARBON ALTERNATIVES

Prioritising treatments and technologies with a lower environmental impact

Mortimer, F. The Sustainable Physician. Clin Med 10(2). April 1, 2010. D110-111.

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SUSTAINABLE
HEALTHCARE
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# Delivering a Net Zero NHS

NHS is responsible for around 4% of the nation's carbon emissions

Two clear and feasible targets are outlined in the Delivering a 'Net Zero' National Health Service report:

- The NHS Carbon Footprint: for the emissions we control directly, net zero by 2040
- The NHS Carbon Footprint Plus: for the emissions we can influence, net zero by 2045.



Greener NHS » Delivering a 'Net Zero' National Health Service (england.nhs.uk)
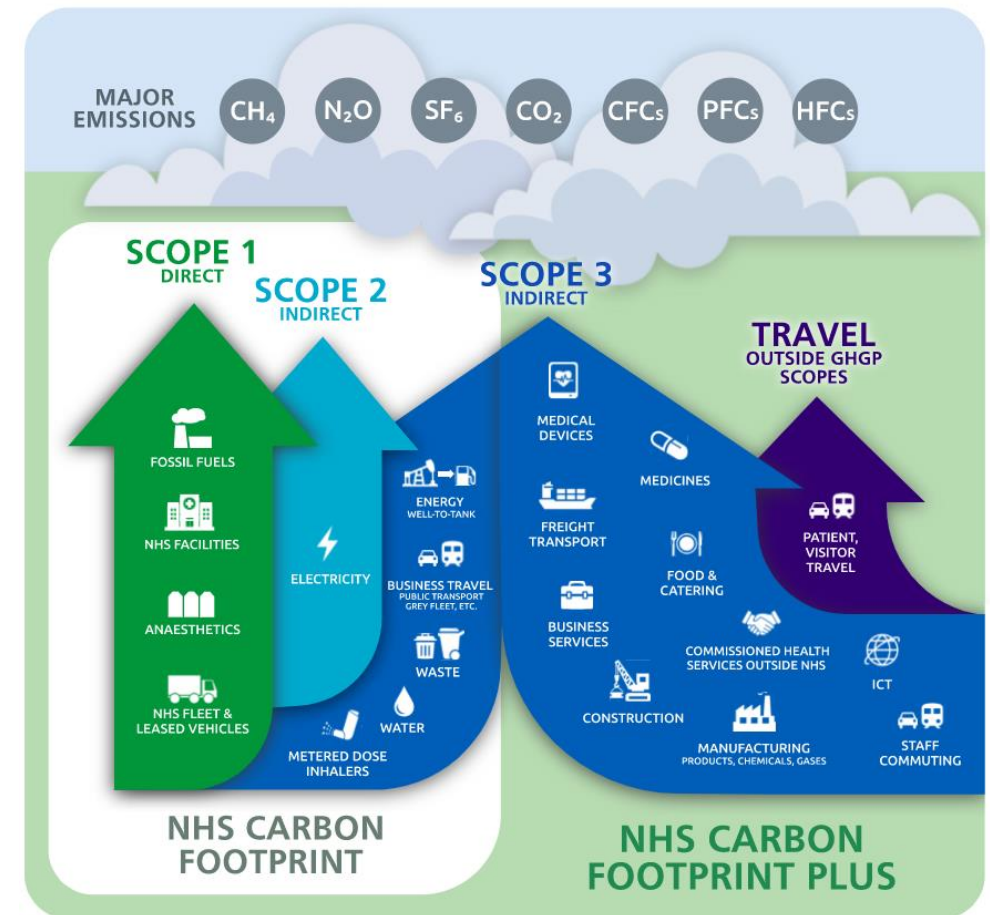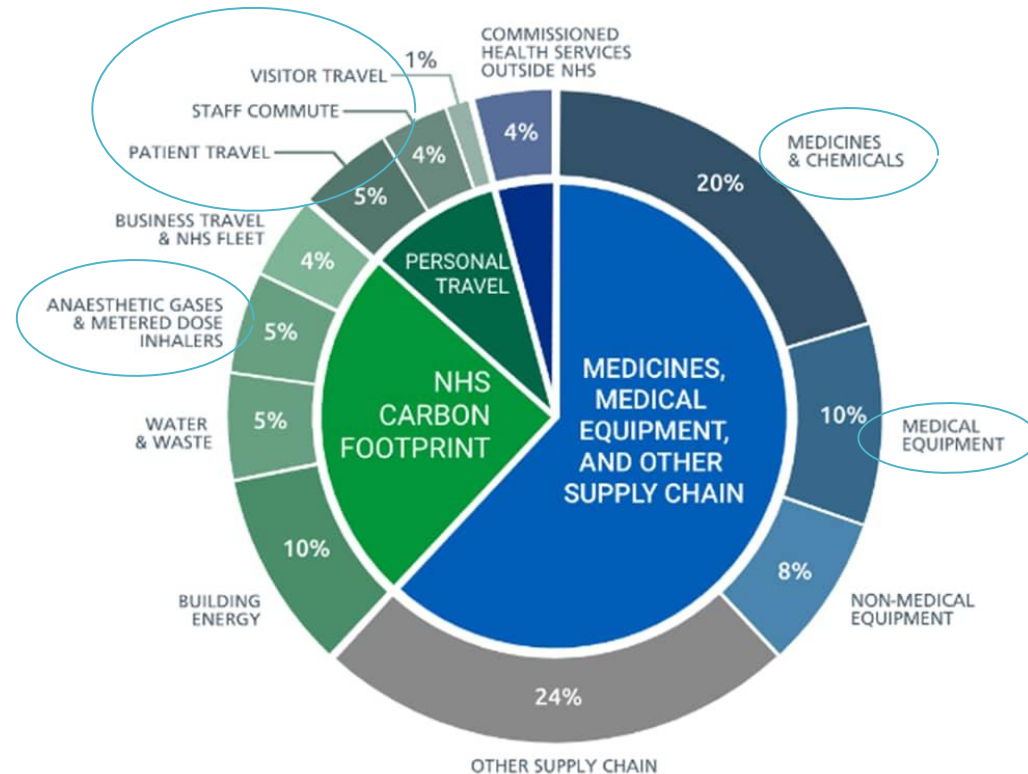
# Healthcare carbon footprint

**Healthcare Sector Greenhouse Gas Emissions**

Per capita carbon footprint, in total kilograms of greenhouse gas (GHG) emissions, of different health systems around the world

8.9    751.11                          3379.2
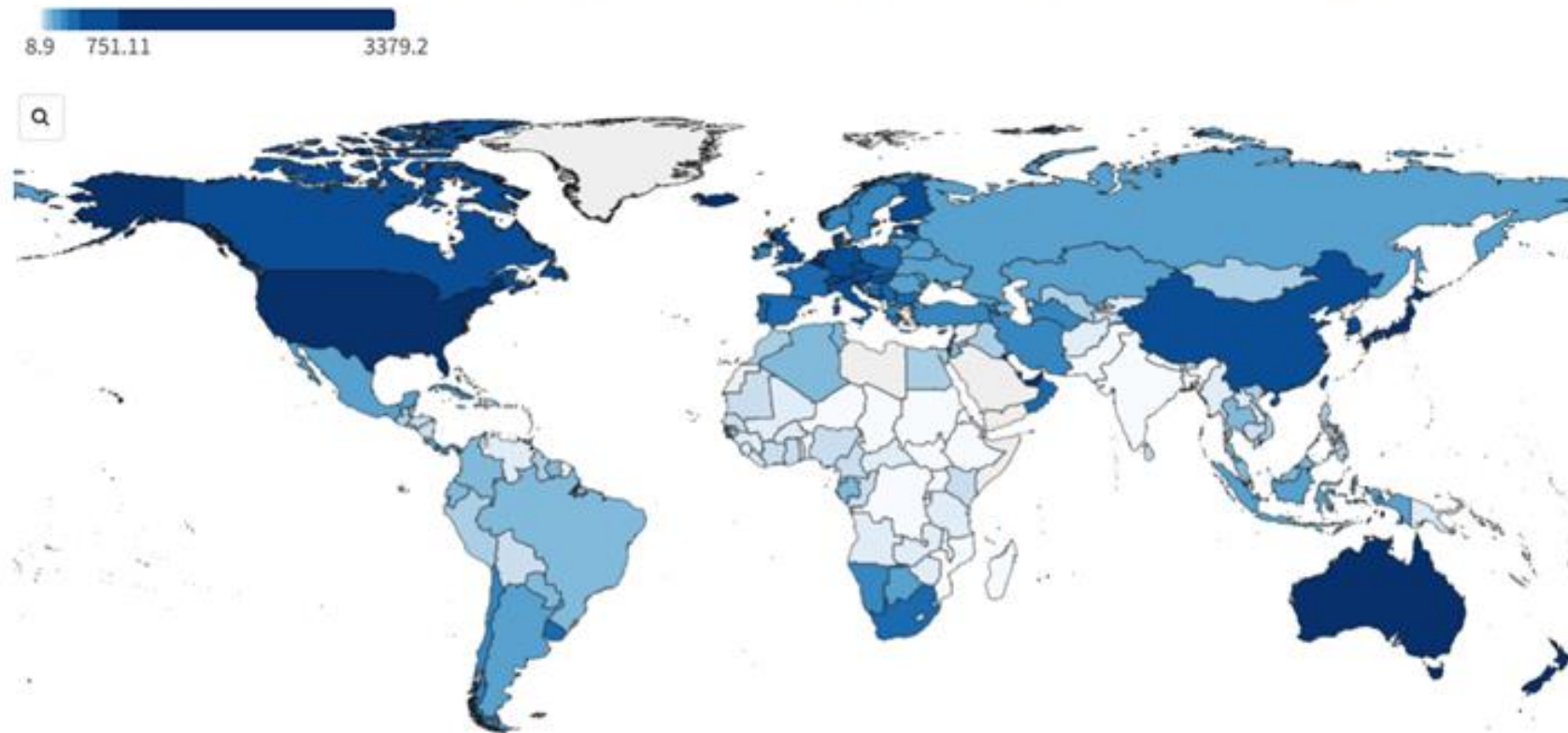
HealthcareLCA database - search at system level

LANCET COUNTDOWN:
TRACKING PROGRESS
ON HEALTH AND
CLIMATE CHANGE

But it will take immediate action to transition away from fossil fuels and tackle our emissions...
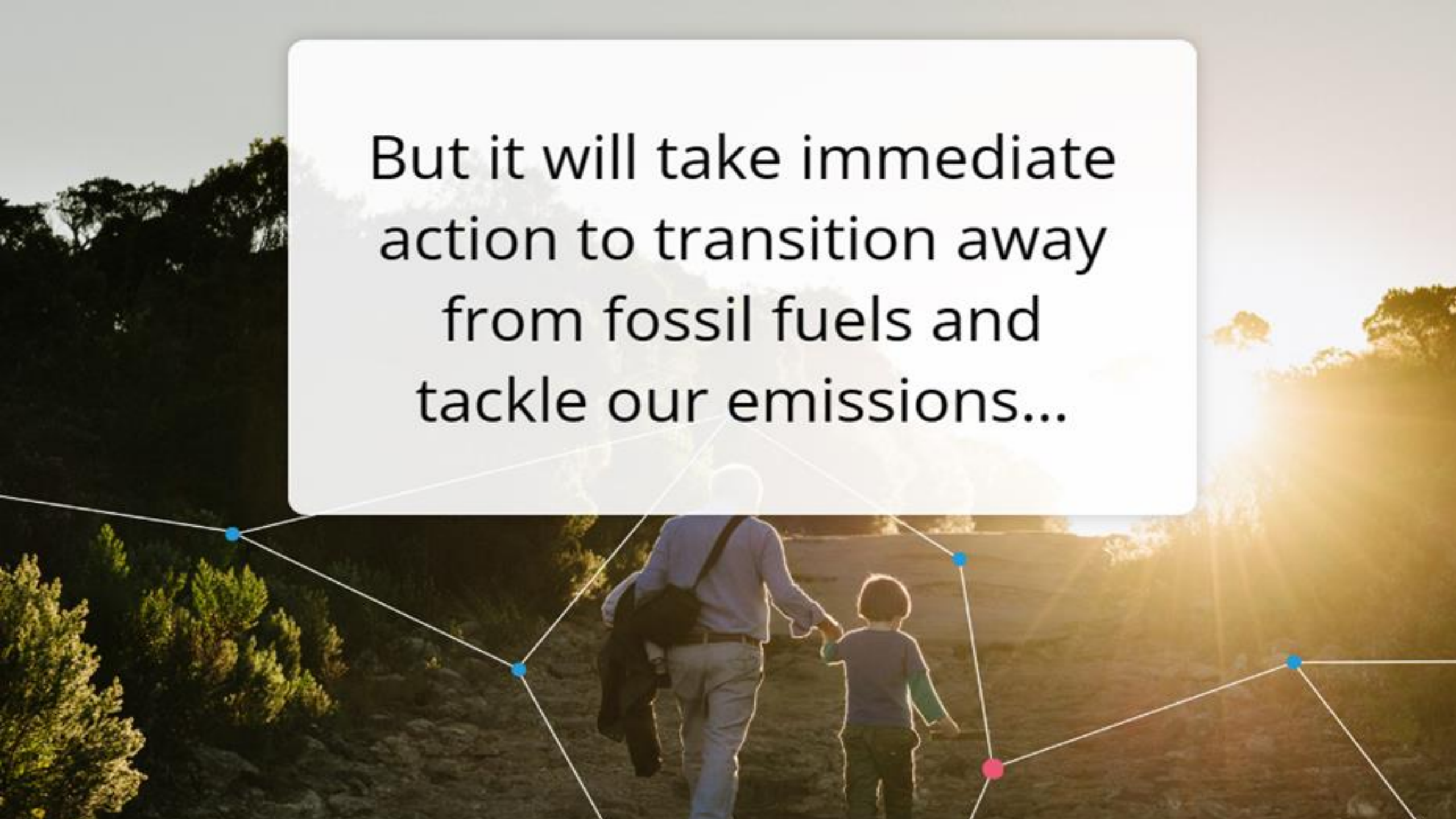
# What can we do as health professionals?

# Question

Does anything here surprise you? And, why?

# How can improvement be used to motivate and equip healthcare staff to act?

Catherine Richards

Emma Rowan

Clinical innovation

*Senior leadership*
Patient outcomes
Patient experience

Core mission

Sustainability

*Estates and facilities*
Energy / carbon / cost
waste, travel

Secondary
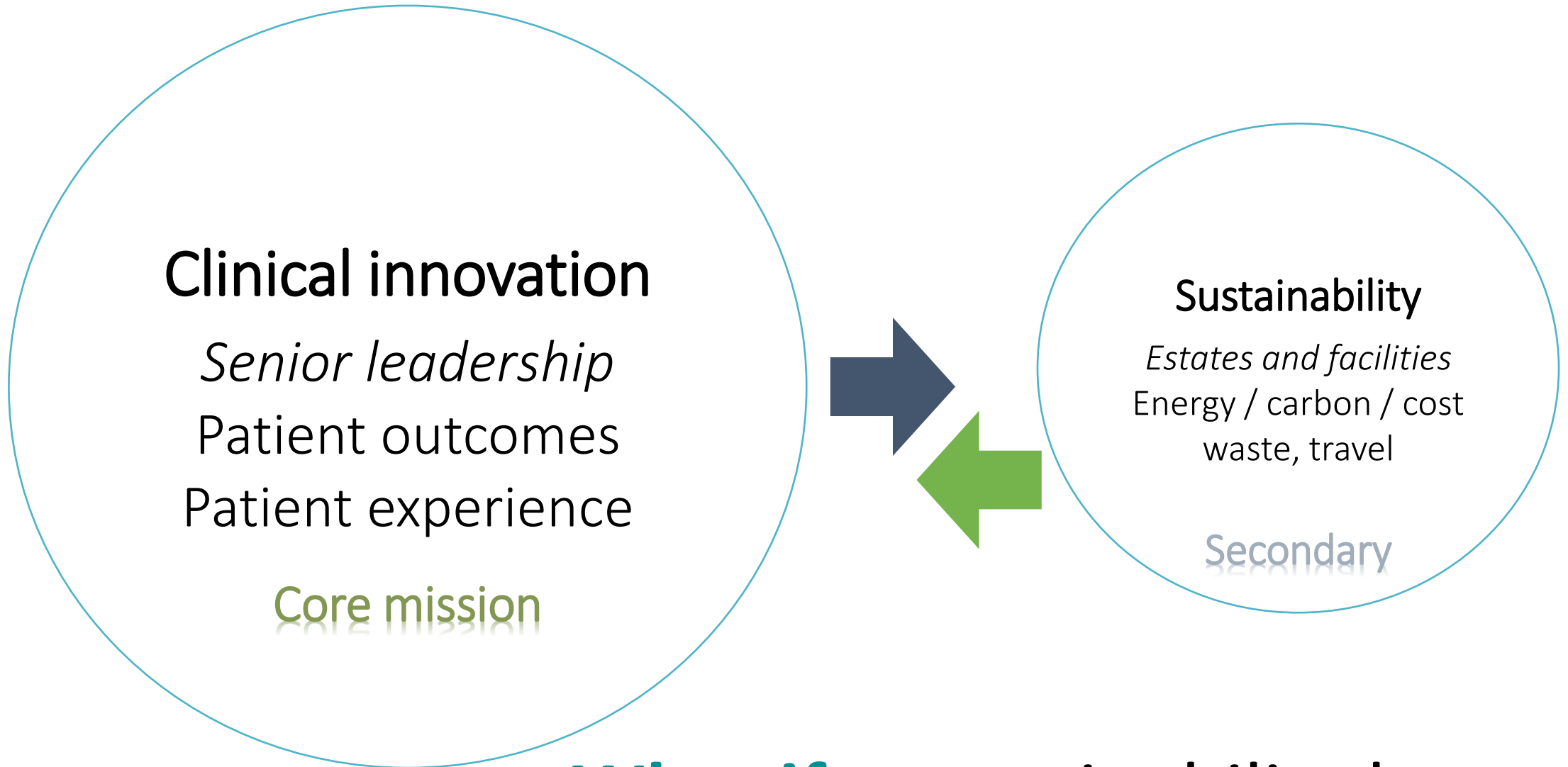
**What if...** sustainability became part of quality improvement?

# Sustainability as a Domain of Quality
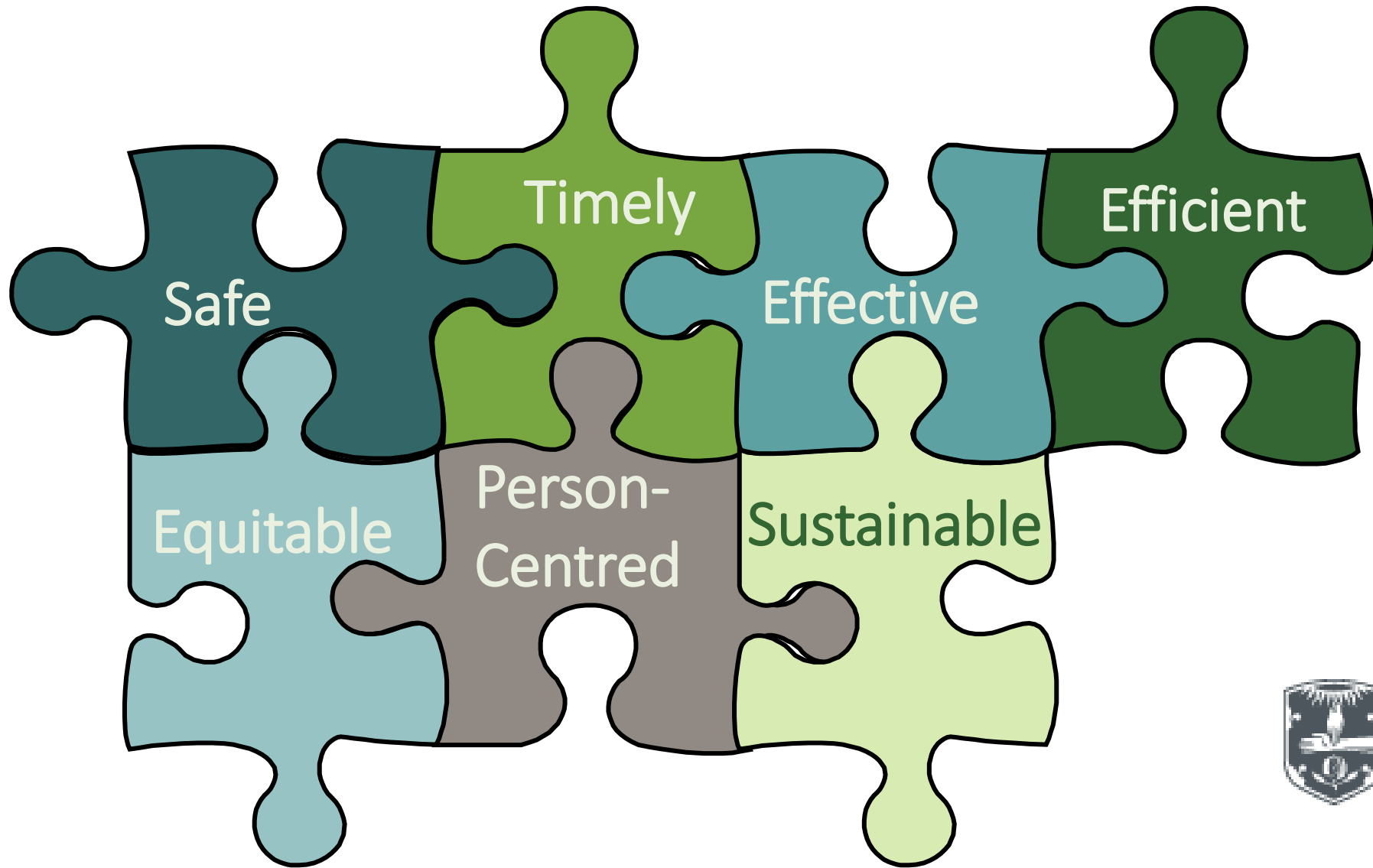
# The Sustainability in QI (SusQI) Framework



1. Setting Goals
2. Study the System
3. Design the Improvement
4. Measure Impact

# The principles of sustainable clinical practice as drivers for change
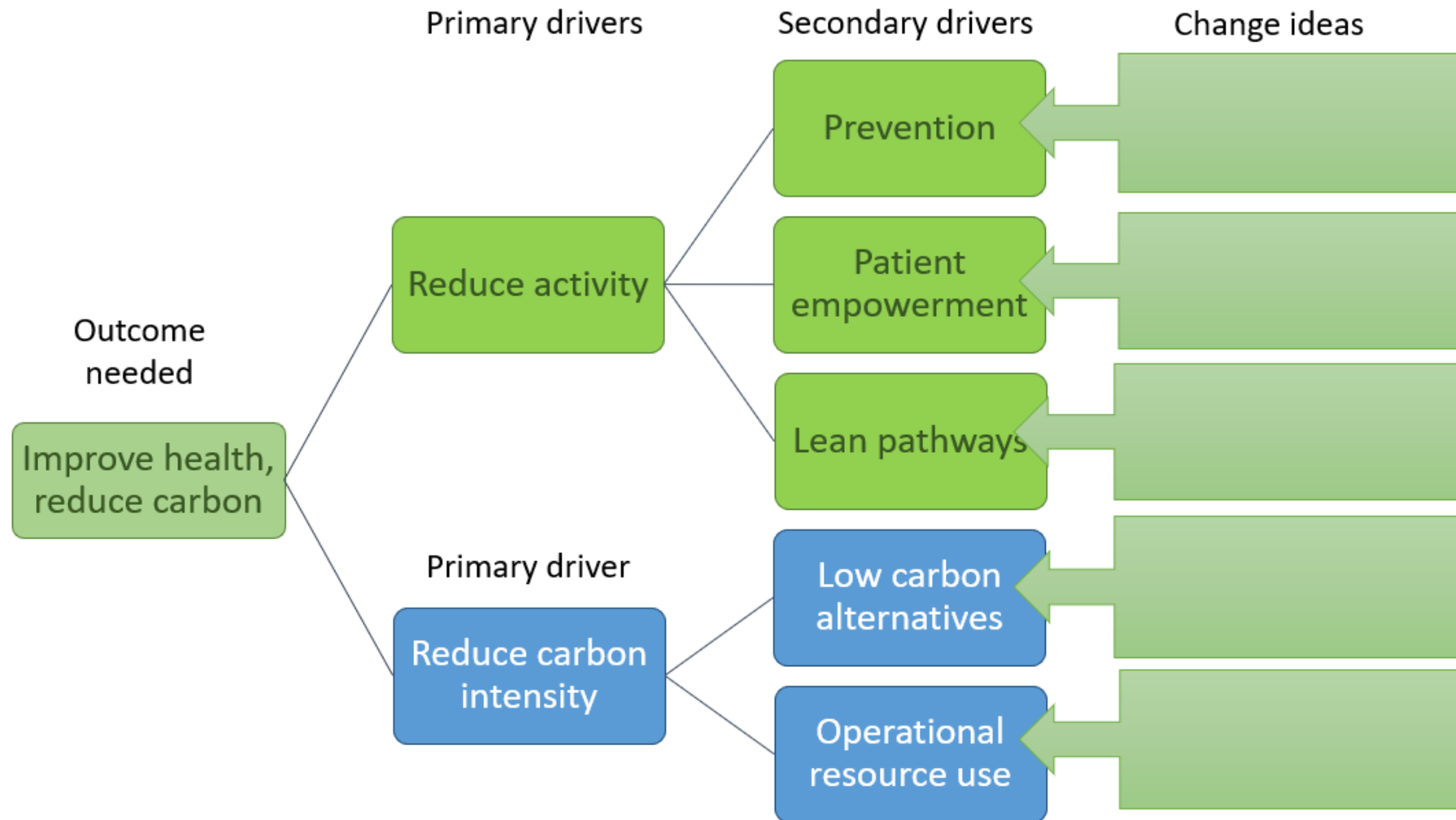
# Measuring impact



$$\text{Sustainable value} = \frac{\text{Outcomes for patients and populations}}{\text{Environmental + social + financial impacts}}$$
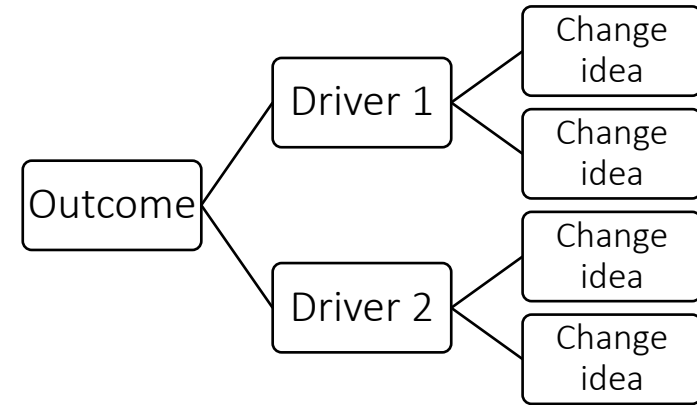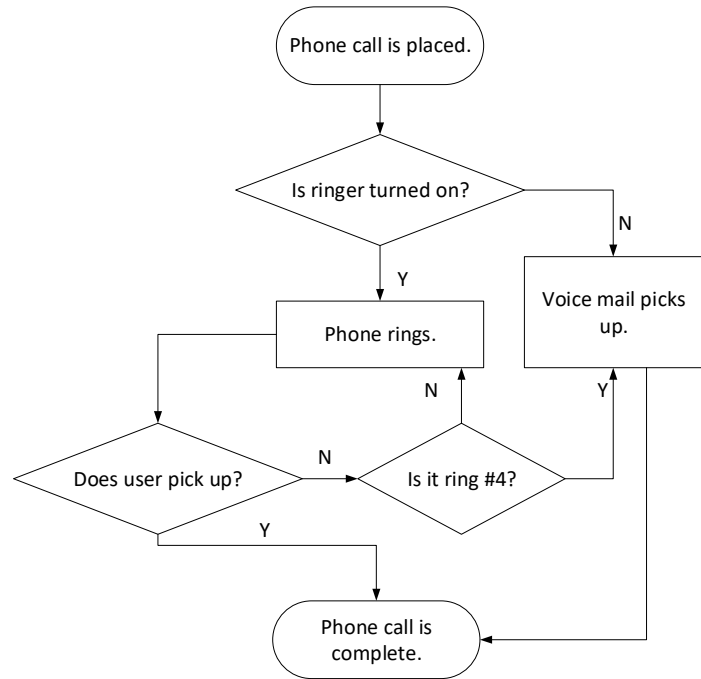
# Make use of QI Tools
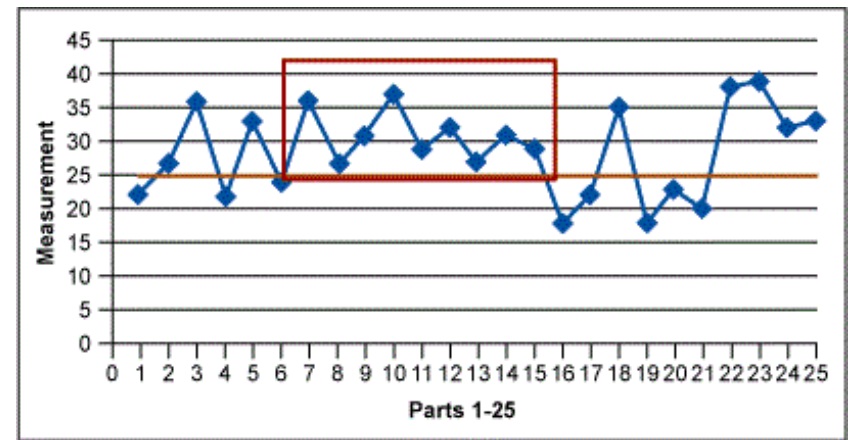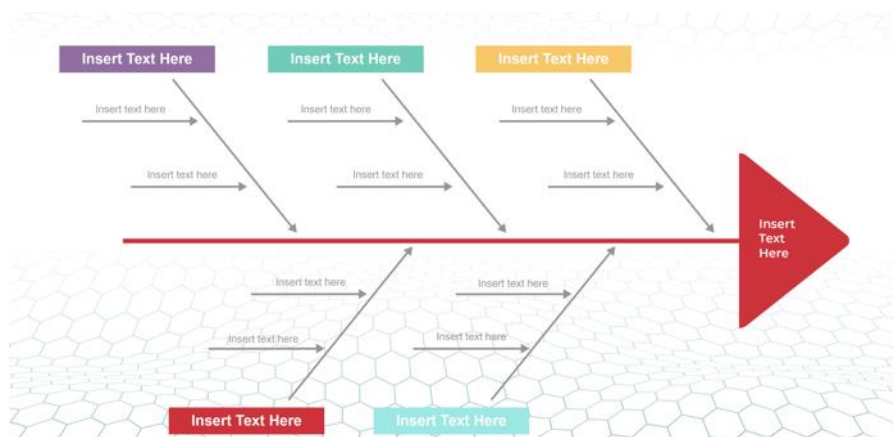
# Sustainable healthcare & Quality Improvement



**knowledge**
about the need for
sustainable healthcare
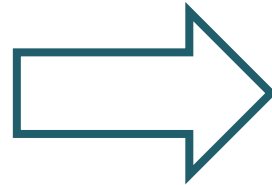
**action**

# Embedding Sustainability into Improvement

# Bridging the gap between sustainability and improvement
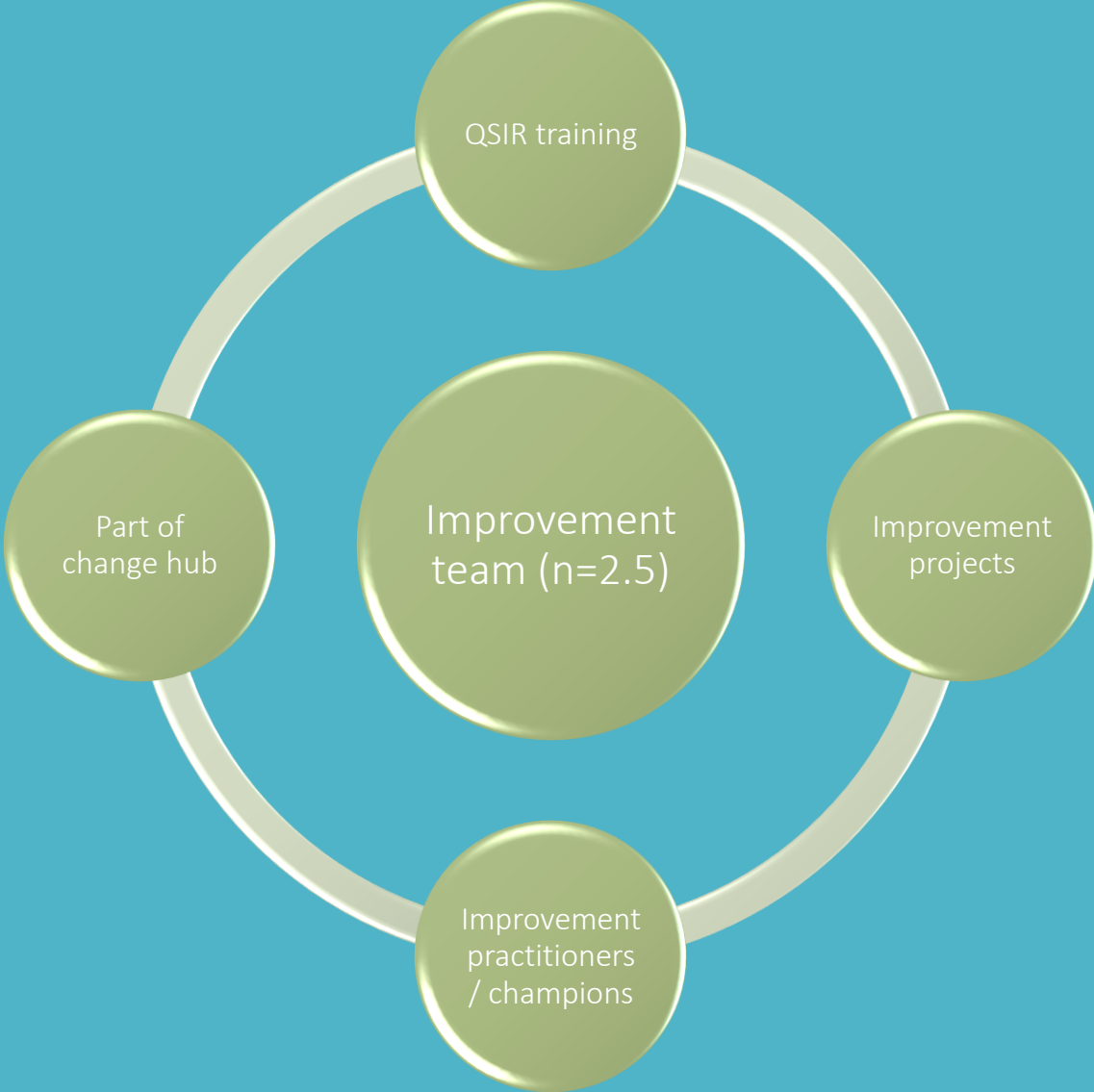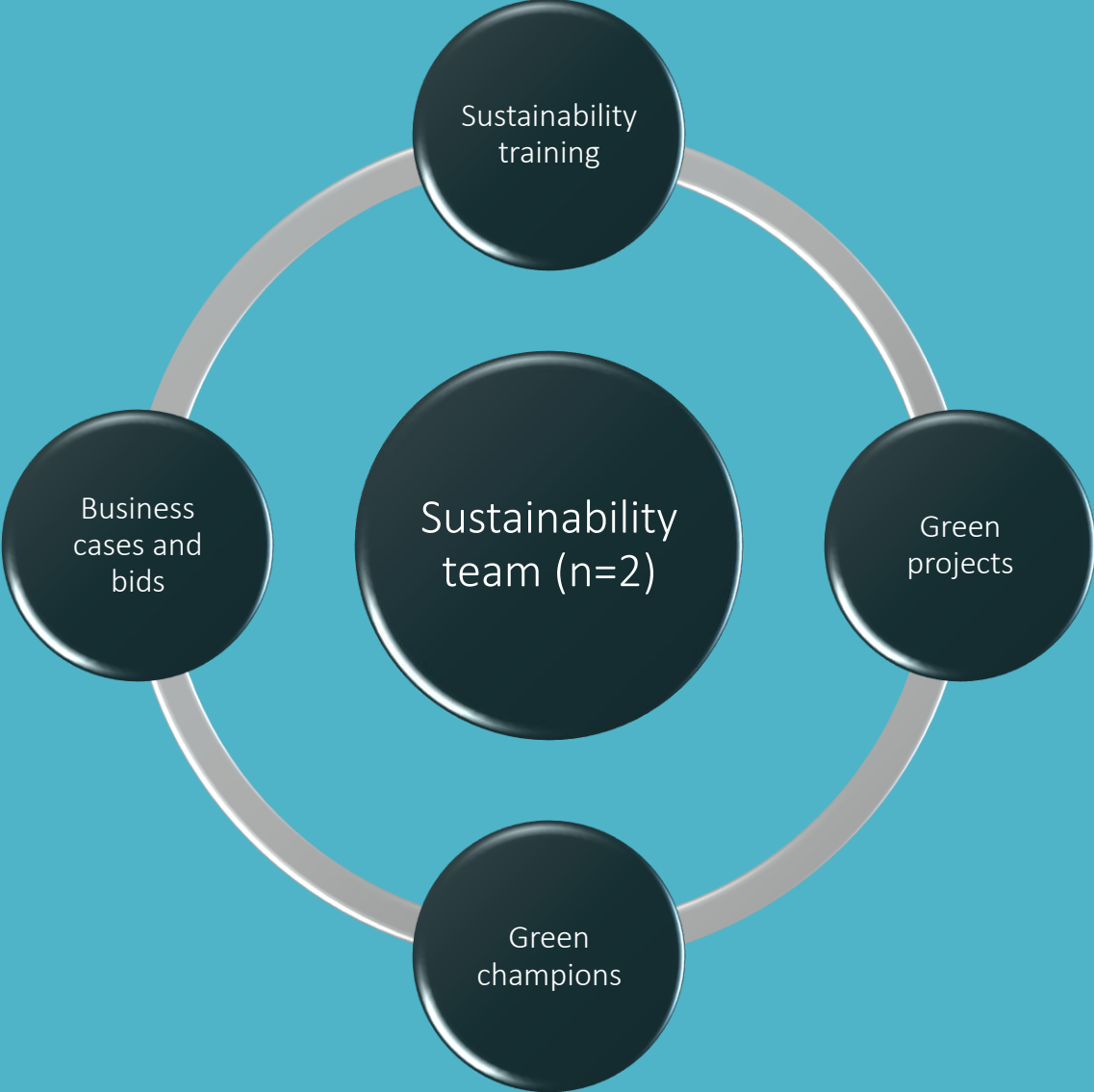
# Ways to embed SusQI tools

**EMBED SUSTAINABILITY INTO PROJECT PROCESSES**

**EMBED SUSTAINABILITY INTO QI TRAINING**

**ENSURE SUSTAINABILITY PROJECTS GO THROUGH QI PROCESSES**

**CREATE OPPORTUNITIES TO DELIVER SUSQI PROJECTS**
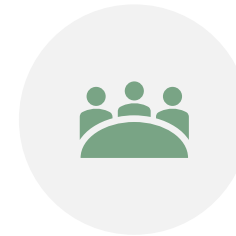
**SHARE THESE WIDELY**

# Green Team Competition

Examples embed
SUSQI

9 weeks
Support and coaching

6 teams – open to all

£

Prize

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6 teams – open to all

£

Prize

# Reducing routine blood testing, Frailty and Care of the Elderly Wards Team



**Aim:** To reduce low value and unnecessary blood testing on Care of the Elderly inpatients.

**The problem:** Many elderly inpatients are subject to regular (up to daily) blood tests during their inpatient stay. Overuse of testing is commonplace in this population of patients.

**Clinical**
- Poorer skin integrity – risk bruising and skin damage
- Additional distress during procedures for patients who are vulnerable and/or have cognitive impairment
- Delays discharge

**Environmental**

Adverse environmental impacts due to consumable use, test processing and waste disposal involved in the process.

**Financial**

Financial waste if tests are unnecessary

**Social**
- Wastes staff time testing – from ward to labs
- Patient satisfaction

# Reducing routine blood testing, Frailty and Care of the Elderly Wards Team

**Aim:** To reduce low value and unnecessary blood testing on Care of the Elderly inpatients.

**Outcome**: The team successfully reduced testing across 3 wards by 9.8% (from 234 to 211 requests per week).

**Clinical**
- Reduced risks and distress of excessive blood testing
- Potential to reduce discharge delays and improve patient flow

**Environmental**

**937 kgCO2e** per year from reduced consumables and blood processing. Saving equivalent to driving **2,767 miles** (average car).

**Financial**

**£18,444** per year

**Social**
- Staff gained time to focus on other clinical tasks/patient assessments
- Potential for lab staff to save 4,784 hours a year in processing time

# Improving the environmental impact of patients with diabetes and on insulin, diabetes team

**Aim:** To switch appropriate patients from single use insulin pens to reusable 'smart pens' and increase recycling

**The problem:** Shortage of single use pen device and insulin cartridge - opportunity to explore more sustainable alternative

**Clinical**
- Some patients struggle to remember how much / when insulin is administered
- Require frequent district nursing checks

**Environmental**
- Environmental impact of single use pens going to landfill
- Carbon impact of production of single use pens
- Carbon impact of frequent district nursing checks

**Financial**
- Financial impact of frequent district nursing checks
- Insulin for reusable pens are cheaper

**Social**
- Anxiety from remembering insulin

| Intended outcome | Primary driver | Secondary driver | action |
|---|---|---|---|
| Improve or maintain outcomes while minimizing the environmental, social and financial costs of Type 11 Diabetes care | Prevent avoidable disease | -Reduce weight<br>-Reduce sugar intake | -Every contact counts<br>-Exercise referrals/green space/social presciption<br>-Dietician referrals<br>-input to policy eg sugar tax<br>-Increase awareness of diet and diabetes |
| | Empower patients to improve disease management | -improve self-monitoring- in patients who require it<br>-Shared decision making<br>-Peer support<br>-improve networks<br>-Improve life skills eg cooking | -Apps<br>-Diary<br>-Individual care plans<br>-Annual reviews + discussion<br>-Monthly expert patient meetings<br>social prescription – food/cookery/food growing |
| | Ensure lean systems | -Reduce continued use of drugs without benefit<br>-Joined up care for multiple chronic conditions<br>-Reduce unnecessary hospital referrals<br>-Lean communications | -Regular team meetings with a diabetic focus<br>-Audit<br>-Joint clinics for chronic conditions in hospital<br>-Regular local training events with diabetic focus |
| | Switch to lower carbon alternatives | -?increase the use of telemedicine | -?introduce digital support for videoconferencing between GP/nurse and consultant and patient eg for diabetic foot ulcers? |
| | Improve operational resource use | -promote medicines optimization<br>-Improve recycling of equipment<br>-reduce unnecessary use of patient blood glucose monitoring | -Pharmacy/GP medication reviews<br>-work with manufacturers to recycle glucometers?<br>- improve education around who benefits from regular glucose monitoring. |

# Improving the environmental impact of patients with diabetes and on insulin, Diabetes team

**GREEN TEAM COMPETITION**
CENTRE FOR SUSTAINABLE HEALTHCARE

**Aims:** to switch appropriate patients from single use insulin pens to reusable 'Smart Pens' and promote uptake of the 'Pen Cycle' recycling scheme for single use insulin pens.

**Outcomes**: 80% of prescriptions were eligible to change (274 patients) and 143 pens were recycled in 8 weeks.

**Clinical**
Smart Pens improve patient's independence and may reduce the number of district nursing checks required

**CO₂ Environmental**
**1,863 kgCO2e** per year for **reusable insulin pens**, equivalent to driving **5,502 miles** (average car)
**Pencycle** is **CO2e neutral** to the Trust. NovoNordisk are completing a full analysis of their PenCycle programme to be released later this year

**£ Financial**
**Reusable insulin pens: £468** annually with additional saving of **£15,120** by eliminating daily district nurse visits for one patient; **PenCycle:** small postage costs to Trust

**Social**
- Initial time investment to staff to request GPs prescription changes to reusable pens. Long term improved efficiency
- Reusable pens provide reassurance (memory setting) providing reassurance to patients, and potential to reduced district nursing appointments
- Recycling brings wider environmental benefits and engages staff and patients in positive actions

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inspire • empower • transform

**NHS**
South Warwickshire University
NHS Foundation Trust

The combined Green Team Competition projects

have projected annual savings of

# 7,032 kg CO2e

which is the equivalent of

20,768 miles in an

average car

~32 return trips between South Warwickshire
and Glasgow

OR

The carbon absorbed by

281 mature trees

GREEN TEAM
COMPETITION
CENTRE FOR SUSTAINABLE HEALTHCARE

NHS
South Warwickshire
University
NHS Foundation Trust

CENTRE for
SUSTAINABLE
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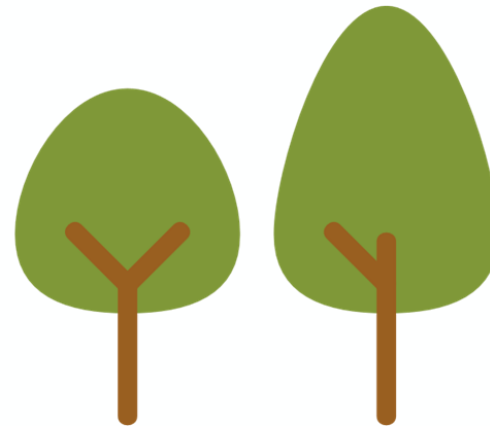
The combined Green Team Competition projects
have projected annual savings of

£116,194

# What can we do as health professionals?

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Who is engaged?

| Who needs to be involved? | Who might resist? | Who haven't we spoken to? |

**2. How will we know... improvement?**

What are our outco... ncing measures?

How will we collect our data? Where? Where from?

HELPFUL HINT! Remember: Think about how we can present our data creatively!

**4. What are our next steps?**

| Action | Lead | Action complete (Y/N) |

**1**

What area of climate change could you address?

**2**

Can you start your aim?

# Break

Please be back by 11:15am

# How to make climate change related information more impactful to your audience?

Darshan Patel

# Calculating a carbon footprint: what it *really* takes to multiply two numbers

# Emission sources and emissions factors



**Emissions Factors (tCO2e/kWh)**

| | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 | 2021/22 | 2022/23 | Source |
|---|---|---|---|---|---|---|---|---|
| | 0.00041205 | 0.00035156 | 0.00028307 | 0.00025560 | 0.00023314 | 0.00021233 | 0.00019338 | BEIS |
| | 0.00003727 | 0.00003287 | 0.00002413 | 0.00002170 | 0.00002005 | 0.00001879 | 0.00001769 | BEIS |
| | 0.00006188 | 0.00005605 | 0.00004198 | 0.00003565 | 0.00003217 | 0.00005529 | 0.00004625 | BEIS |
| | 0.00000560 | 0.00000524 | 0.00000358 | 0.00000303 | 0.00000277 | 0.00000489 | 0.00000423 | BEIS |
| | 0.00051680 | 0.00044572 | 0.00035276 | 0.00031598 | 0.00028813 | 0.00029130 | 0.00026155 | Aggregated BEIS |

**Emissions Factors (tCO2e/kWh)**

| | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 | 2021/22 | 2022/23 | Source |
|---|---|---|---|---|---|---|---|---|
| | 0.00018400 | 0.00018416 | 0.00018396 | 0.00018385 | 0.00018455 | 0.00018438 | 0.00018000 | BEIS |
| | 0.00002499 | 0.00002785 | 0.00002557 | 0.00002391 | 0.00002391 | 0.00003135 | 0.00003110 | BEIS |
| | 0.00020899 | 0.00021201 | 0.00020953 | 0.00020776 | 0.00020846 | 0.00021573 | 0.00021110 | Aggregated BEIS |

**Emissions Factors (tCO2e/Litre)**

| | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 | 2021/22 | 2022/23 | Source |
|---|---|---|---|---|---|---|---|---|
| | 0.00296572 | 0.00295351 | 0.00297049 | 0.00275821 | 0.00275776 | 0.00275857 | 0.00276000 | BEIS |
| | 0.00055747 | 0.00063038 | 0.00063253 | 0.00063253 | 0.00063253 | 0.00063253 | 0.00063253 | BEIS |
| | 0.00352319 | 0.00358389 | 0.00360302 | 0.00339074 | 0.00339029 | 0.00339110 | 0.00339232 | Aggregated BEIS |

**Emissions Factors (tCO2e/m3)**

| | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 | 2021/22 | 2022/23 | Source |
|---|---|---|---|---|---|---|---|---|
| | 0.000344 | 0.000344 | 0.000344 | 0.000344 | 0.000344 | 0.000149 | 0.000149 | BEIS |
| | 0.000708 | 0.000708 | 0.000708 | 0.000708 | 0.000708 | 0.000272 | 0.000272 | BEIS |

**Emissions Factors (tCO2e/Litre)**

| | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 | 92 | 2022/23 | Source |
|---|---|---|---|---|---|---|---|---|
| | 0.000493 | 0.000493 | 0.000493 | 0.000493 | 0.000493 | 0.000493 | 0.000493 | https://mygascote.netlify.app/ |
| | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | https://mygascote.netlify.app/ |
| | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | https://mygascote.netlify.app/ |
| | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 | https://mygascote.netlify.app/ |

**Emissions Factors (tCO2e/Tonne)**

| | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 | 92 | 2022/23 | Source |
|---|---|---|---|---|---|---|---|---|
| | 0.901289978 | 0.901289978 | 0.901289978 | 0.901289978 | 0.901289978 | 0.901289978 | 0.901289978 | https://future.nhs.uk/Estates_and_Facilities_Hub/view?objectId=177700229 |
| al Waste | 0.35929 | 0.35929 | 0.35929 | 0.35929 | 0.35929 | 0.35929 | 0.35929 | https://future.nhs.uk/Estates_and_Facilities_Hub/view?objectId=177700229 |
| | 0.0213538 | 0.0213538 | 0.0213538 | 0.0213538 | 0.0213538 | 0.0213538 | 0.0213538 | https://future.nhs.uk/Estates_and_Facilities_Hub/view?objectId=177700229 |
| | 0.0213538 | 0.0213538 | 0.0213538 | 0.0213538 | 0.0213538 | 0.0213538 | 0.0213538 | https://future.nhs.uk/Estates_and_Facilities_Hub/view?objectId=177700229 |
| | 0.5865138 | 0.5865138 | 0.5865138 | 0.5865138 | 0.5865138 | 0.5865138 | 0.5865138 | https://future.nhs.uk/Estates_and_Facilities_Hub/view?objectId=177700229 |
| | 0.0213538 | 0.0213538 | 0.0213538 | 0.0213538 | 0.0213538 | 0.0213538 | 0.0213538 | https://future.nhs.uk/Estates_and_Facilities_Hub/view?objectId=177700229 |

**Emissions Factors (tCO2e/amount of propellent in one unit)**

| | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 | 92 | 2022/23 | Source |
|---|---|---|---|---|---|---|---|---|
| | 0.028 | 0.028 | 0.028 | 0.028 | 0.028 | 0.028 | 0.028 | https://doi.org/10.1111/bcp.15135 |
| | 0.036 | 0.036 | 0.036 | 0.036 | 0.036 | 0.036 | 0.036 | doi: 10.1136/bmjopen-2018-028763 |
| | 0.036 | 0.036 | 0.036 | 0.036 | 0.036 | 0.036 | 0.036 | doi: 10.1136/bmjopen-2018-028763 |
| | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | ICHT Pharmacy |
| | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | ICHT Pharmacy |

# Collect data by building relationships

Meter readings, billing information, Hard FM maintenance records, pharmacy purchasing data, supplier returns data, local logbooks, local vehicle data, fuel card data, transport supplier data, payroll data, staff benefits data, academic journals, medicines databases, waste collected data
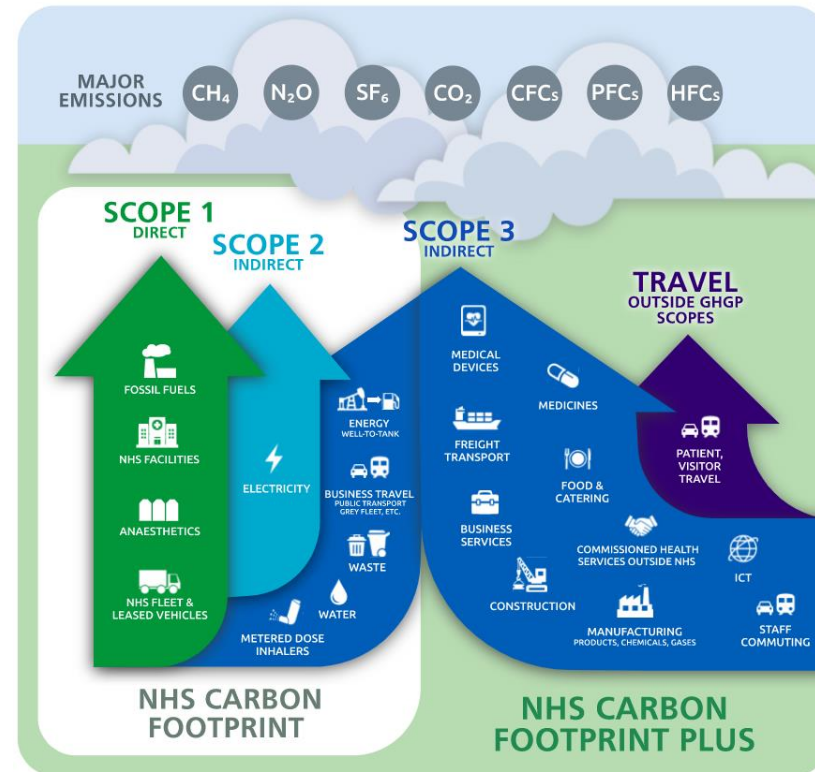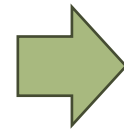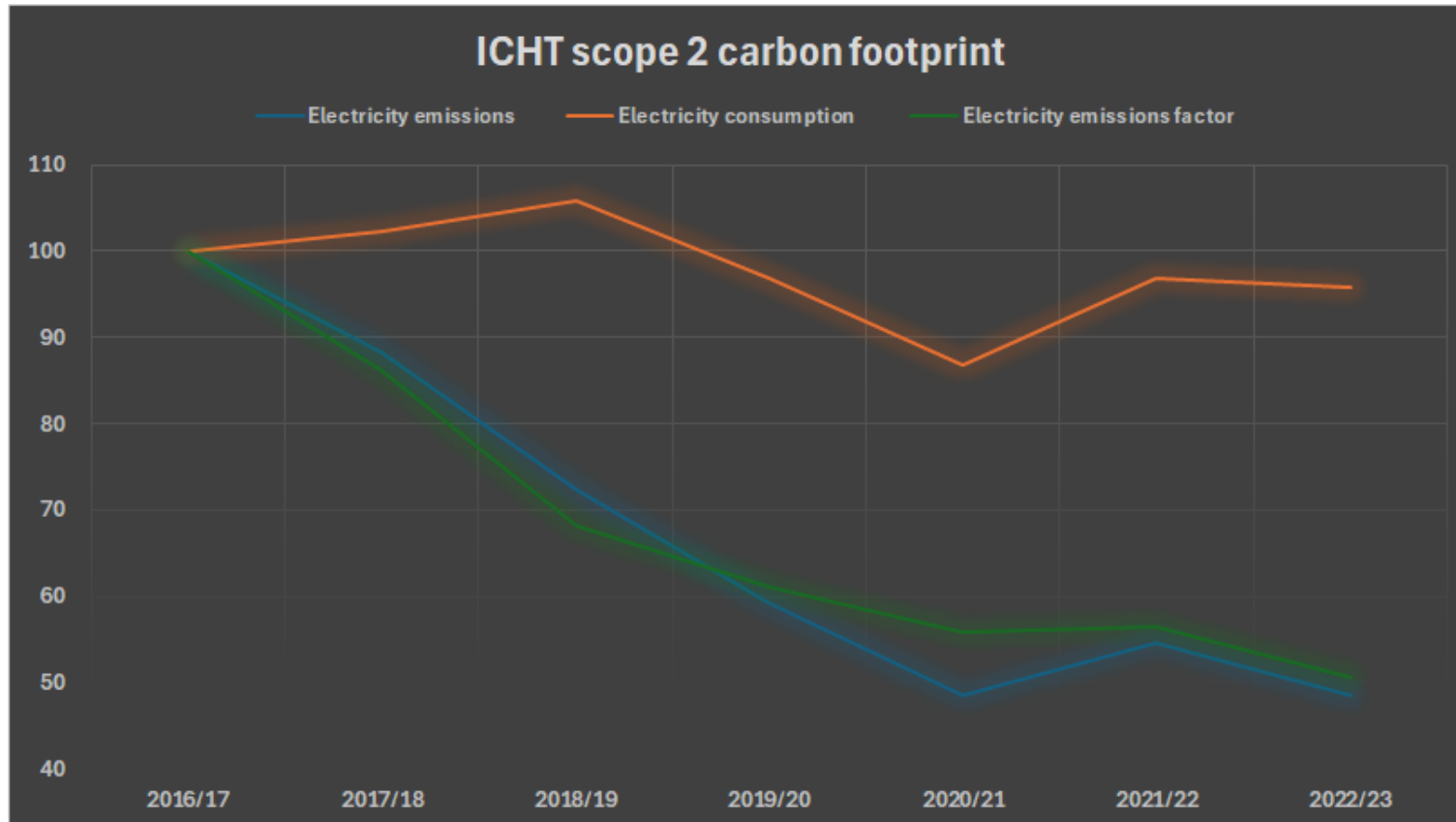


Supplier data, local surveys, national surveys

Procurement and finance data

# Calculate and interpret



ICHT scope 2 carbon footprint

Here the scope 2 carbon footprint has fallen by 51%

But the consumption of electricity has only fallen by 4%

Why? Because the emissions factor has fallen by 49% due to the UK grid decarbonising

And, from 2023/24 we expect our electricity consumption to go up due to new innovations

But the benefits will be seen in our scope 1 gas consumption and emissions

# An improvement mindset

# Communicating the impacts of climate change

Box 1. Summary of communication recommendations

1. Communications need to come from trusted sources
2. Leveraging social networks is key to shaping who is influenced and how they are influenced
3. Establish and maintain social norms
4. Focus on belonging and empowerment
5. Use subtle, but powerful, language choices
6. Use emotions
7. Use visual images
8. Use narrative communication to bridge the gap between health and climate change
9. Present statistics to drive understanding of risk and motivate climate-friendly and healthier behaviors
10. Identify and reduce barriers to enacting health behaviors
11. Explicitly test messages with your target group

Evidence-based recommendations for communicating the impacts of climate change on health

Ellen Peters,<sup>⊠1</sup> Patrick Boyd,<sup>2</sup> Linda D Cameron,<sup>3</sup> Noshir Contractor,<sup>4</sup> Michael A Diefenbach,<sup>5</sup> Sara Fleszar-Pavlovic,<sup>3</sup> Ezra Markowitz,<sup>6</sup> Renee N Salas,<sup>7</sup> and Keri K Stephens<sup>8</sup>

# MINDSPACE framework

**Messenger**
Who communicates information or ideas can significantly affect our attitude or decisions.

**Defaults**
We like to go with the flow of a pre-set of options, reducing our cognitive load.

**Affect**
Our emotions — more than rational thought — powerfully affect our actions.

**Incentives**
We like to think we are avoiding possible losses or gaining emotionally or materially.

**Salience**
Our attention is drawn to information that's new and seems relevant or is presented in a novel way.

**Commitments**
We try to be consistent with our beliefs and previous public promises and actions.

**Norms**
In general we are strongly influenced by what others in our tribe/social group do.

**Priming**
Subconscious cues to various senses can shape the way we respond to information or choices.

**Ego**
We act in ways that make us feel better about ourselves, and we like positive strokes.

# Powerful stories and emotions



*"Air pollution was a significant contributory factor to both the induction and exacerbations of her asthma. During the course of her illness between 2010 and 2013 she was exposed to levels of nitrogen dioxide (NO2) and particulate matter in excess of World Health Organisation Guidelines. The principal source of her exposure was traffic emissions. During this period there was a recognised failure to reduce the level of NO2 to within the limits set by EU and domestic law which possibly contributed to her death. Ella's mother was not given information about the health risks of air pollution and its potential to exacerbate asthma. If she had been given this information, she would have taken steps which might have prevented Ella's death."*

Coroner, Philip Barlow

# Use of health and wellbeing information



Climate change to cause more severe and frequent adverse weather: heat waves, cold spells and floods

Heat-related deaths are projected to more than triple to 7,000 a year by the 2050s

Air pollution is associated with 40,000 premature deaths each year

Poor air quality is particularly harmful to the lungs of young children

40% of reduced life expectancy of the most deprived in NW London attributed to circulatory and respiratory reasons

1 in 4 primary schools in London are in poor air areas, with four in five of these in the most deprived areas
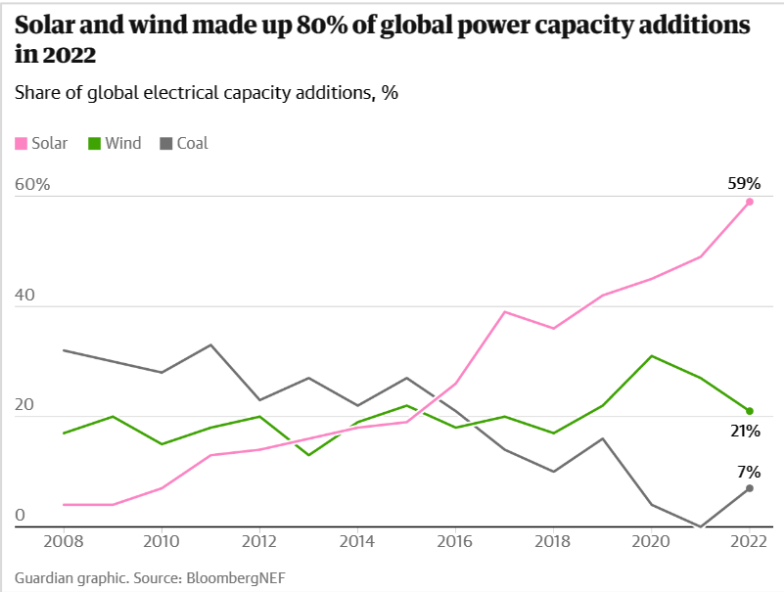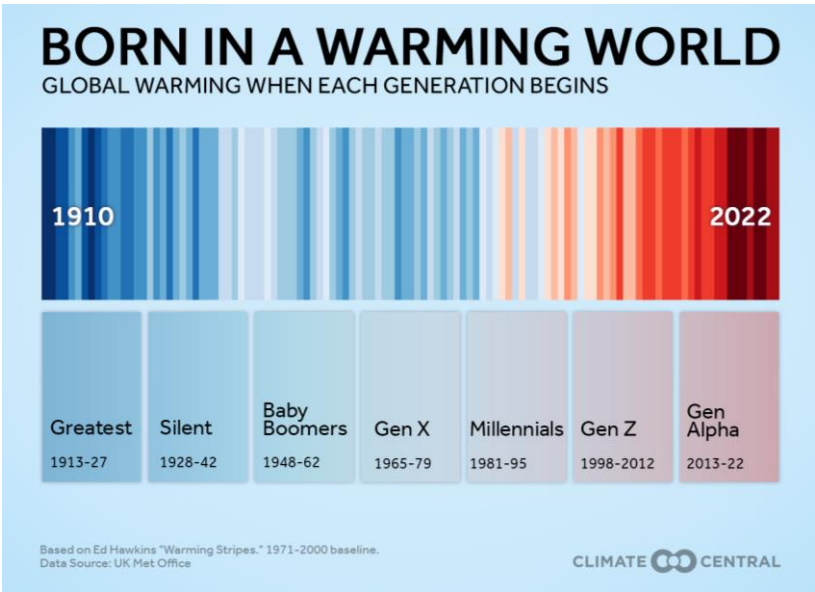
On average four Londoners, including one child, hospitalised every day due to asthma caused by air pollution

Toxic air pollution costs the NHS and social care £157M



An idling engine can produce this much pollution in one minute*

SUPPORTED BY
MAYOR OF LONDON

Engine off. Every stop.

Idling Action London

*According to research by TRL.



Contents: Asthma, lung and heart disease*

Idling damages the health of those around you. Engine off. Every stop.

# Use of visual images

# Make it tangible: does this resonate?

| Description of Work | Saving tCO$_2$e pa |
|---|---|
| High efficiency fans | 56 |
| BMS optimisation | 389 |
| Lighting retrofit | 180 |
| Pipework insulation | 492 |
| VSD pumping | 10 |
| Heat pumps | 6,199 |
| **Total** | **7,326** |





**CO2e (Carbon Dioxide Equivalent)** – a unit used to express total greenhouse gas emissions. There are many greenhouse gases, each with a different impact on climate change. CO2e equates all greenhouse gases to the impact of carbon dioxide. CO2e is used to report all GHG emissions and is measured in kilograms (kgCO2e) or tonnes (tCO2e) where 1 tonne = 1,000 kilograms.

# Three grand pianos and bigger than a London double decker bus

# Households



Average annual household carbon footprint for energy consumption:

❑ Electricity: 2,700kWh X 0.00026155 tCO2e/kWh = 0.706185 tCO2e

❑ Gas: 11,500kWh X 0.00021110 tCO2e/kWh = 2.42765 tCO2e

❑ Total: 2.5 tC02e

1tC02e of emissions is equivalent to powering and heating 0.4 average GB homes for a year; or for powering and heating the average GB home for 21 weeks, or just under 5 months.

7,326 tCO2e is equivalent to powering and heating 2,930 average GB homes for a year

**TOP TIP:** Can you convert this to a local conurbation or town? For example, Hammersmith and Fulham local authority has around 81,000 households and Westminster local authority has around 95,000 – e.g. almost 2 out of every 100 households in the two boroughs that our hospitals are located

# Trees

A tree absorbs around 25kgs of $CO_2$ per year

1t$CO_2$e of emissions is equivalent to around 40 trees growing for a year and absorbing carbon dioxide

7,326 t$CO_2$e is equivalent to 293,040 trees growing for a year and absorbing carbon dioxide

**TOP TIP:** Can you relate this figure to a local park? For example, Hyde Park has around 4,000 trees, so can you imagine around 70 Hyde Park's worth of trees!
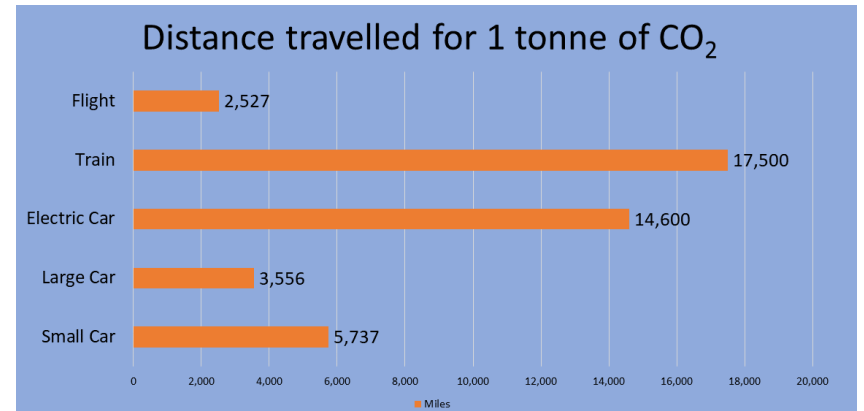
# Travel

1tC02e of emissions is equivalent to driving a small car 5,737 miles; this is the same as 97 trips from London to Oxford; and would take a person driving non-stop at the UK 70 miles per hour speed limit 82 hours to complete.

TOP TIP: Convert distances into trips? For example, the earth's circumference is around 40,000 kilometres (24,855 miles), and the average distance between the Earth and the Moon is 384,400 kilometres (238,855 miles).
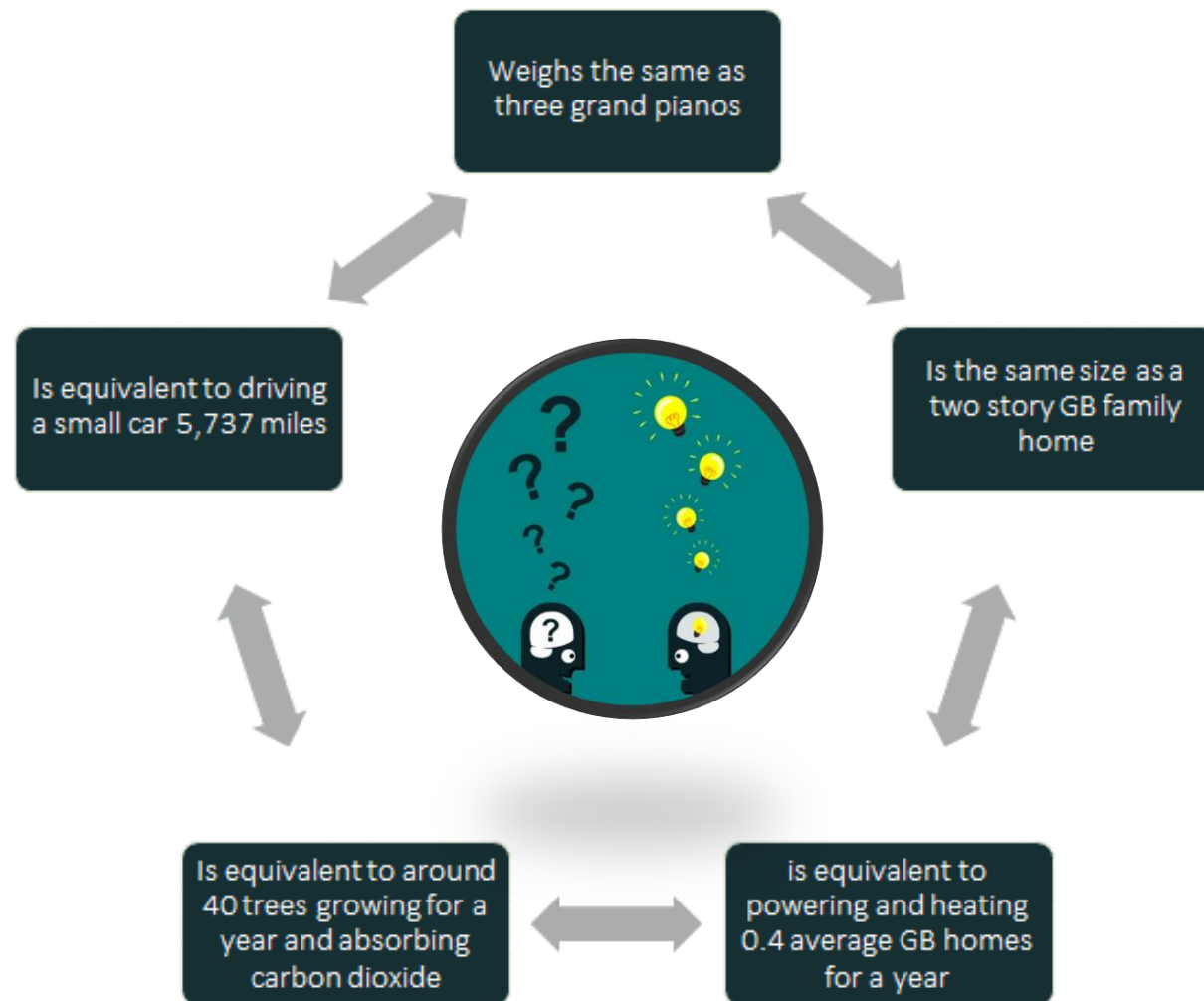
TOP TIP: Convert distances into time? An average UK urban journey involved an average speed of 17.4 miles per hour. The UK speed limit on the motorway is 70 miles per hour.

So, 7,326 tCO2e is equivalent to:
❑ Driving a small car 5,737 X 7,362 = 42,235,794 miles
❑ That is the same as driving around the earth 1,700 times
❑ And that would take 734,902,833 hours based on average urban road speeds



Distance travelled for 1 tonne of $CO_2$

| | Miles |
|---|---|
| Flight | 2,527 |
| Train | 17,500 |
| Electric Car | 14,600 |
| Large Car | 3,556 |
| Small Car | 5,737 |



40,030 KM

BUSINESS INSIDER

# In summary



Weighs the same as three grand pianos

Is the same size as a two story GB family home

Is equivalent to driving a small car 5,737 miles

Is equivalent to around 40 trees growing for a year and absorbing carbon dioxide

is equivalent to powering and heating 0.4 average GB homes for a year

# 1
## What measures could we have?

# 2
## How can I present this creatively?

# 3
## Where can I find this information?

| 2. How will we know a change is an improvement? | 4. What are our next steps? | | | |
| --- | --- | --- | --- | --- |
| What are our outcome, process and balancing measures? | Action | Lead | Due date | Action completed (Y/N) |
| | | | | |
| How will we collect our data? Where? Where from? | | | | |
| | | | | |
| HELPFUL HINT! Remember: Think about how we can present our data creatively! | | | | |

# How do we empower our staff to enact green improvements?

Dr Gareth Thompson

Darshan Patel

# Our staff were nominated for the HSJ 'Towards Net Zero' Award in 2023

**Over 50 Staff Green Projects!**

| 8,400 tonnes | 460 tonnes | 590 tonnes | 373 tonnes | 235 tonnes |
|:---:|:---:|:---:|:---:|:---:|
| £254k | £3.6k | £440k | £151k | £0 |

CO2

**10,000 tonnes**

£850,000
*Eight hundred thousand pounds*

Green Plan

These 5 projects alone will save 10,000 tonnes of CO2e, and £850,000 annually

# Reality check – How do we empower our people under very difficult circumstances?



FINANCIAL TIMES

National Health Service

**NHS capital investment cuts leave England's hospitals crumbling**

St Mary's in London is an example of how a longtime lack of spending is being felt across the system



COST



NHS

**Junior doctors in England to strike again after pay talks break down**

BMA votes for further five days of action after meeting with health secretary fails to resolve grievances



STAFF SHORTAGE

# A focus on *support* in order to leverage our small Green Team for impact is essential

## Our Green Team Mission

*"Our contribution to better health, for life (for generations to come) is to **support** action, provide **expertise** and **initiate change** that protects our planetary natural resources."*

Green Team Staff: 2.4FTE

MAKING EVERY CONTACT COUNT

We respond to all inbound enquiries

# We launched our Green Plan in May 2021 in the middle of the pandemic..

Our Green Plan is our commitment to reduce our impact on the environment and to deliver sustainable healthcare, helping to secure *better health, for life* for generations to come.



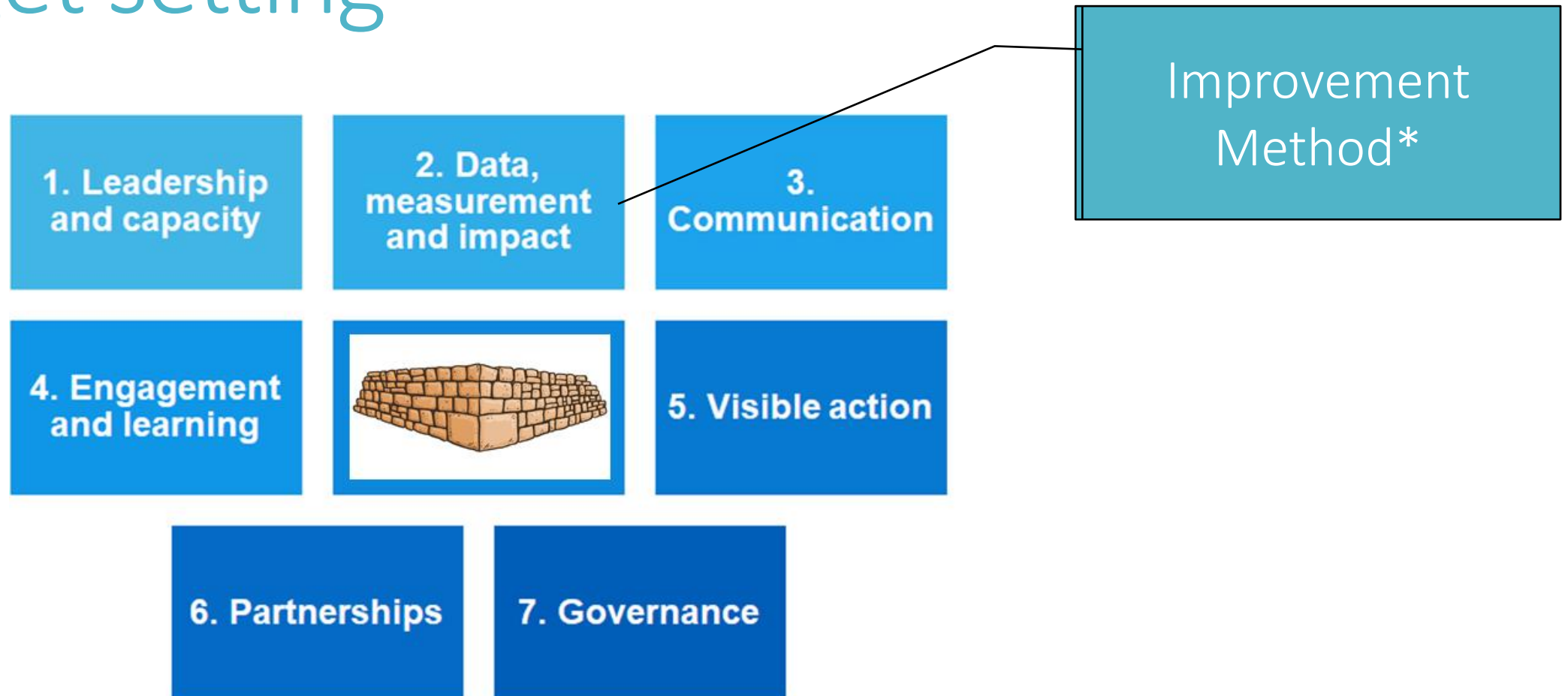Our approach: inspire, enable and **empower** our staff to act

Dr Bob Klaber, Net Zero Board Lead

# Our journey to empower our staff involved careful design at each stage

**Green Plan 2021**

- Co-designed
- Secured board buy-in green team
- Framed co-benefits
- Promised visible results
- Created 7 cornerstones foundation

**Green Community Network 2022**

- Engaged with existing green champions
- Created Lunch n Learn online events
- Positive messages
- Grew community to 500+ members
- Built awareness eg newsletters

**Next: Green Champions Programme 2024**

- Leveraged existing green champions approach
- Plan to embed champions in each ward/area
- Craft support and resources

# Our 2021 Green Plan 7 cornerstones created a foundation to move beyond target setting



Improvement Method*

1. Leadership and capacity

2. Data, measurement and impact

3. Communication

4. Engagement and learning

5. Visible action

6. Partnerships

7. Governance

# Our staff Green Community Network enables connection, sharing and action

Launched October 2022

- 250 signups in first year

    500+ members currently

- Online Lunch N Learn

    Live, energy, engagement

- Lobby Promotions

    Meeting staff face to face

- MS Teams as a digital hub

    Cross department collaboration
    Resource sharing
    Asynchronous communication
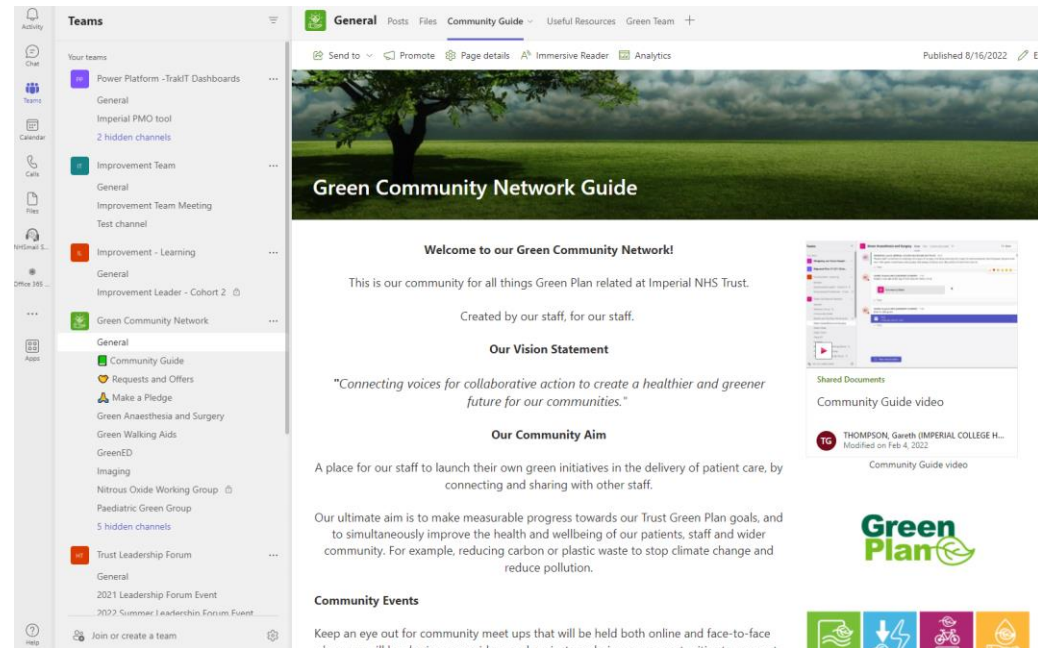


Community brings staff together towards a shared purpose

# Upcoming Green Champions Programme launch March 2024

- Some departments self appointed Green Champions prior to our Green Plan launch

- ED, Pharmacy, Surgery & Anaesthetics, Imaging

- Highly motivated individuals who formed the core of our Green Community Network

- Replicating this as a Trust-Wide initiative
  - Champions will represent their local ward/area
  - Communicate green messages
  - Support / Lead Green Projects

# Bottom up community building supported by top down system change resources

Greening Your Ward Crib Sheet – Ward Accreditation Programme

Education Module – Introduction to Greener Care

Green Newsletters

Better Waste Segregation Campaign

Join Maya, our **Green Community Network member**, and our new staff joiners Frank and Iris as you learn about:

Maya - Green Community Network member    Frank - new staff joiner    Iris - new staff joiner

**Greening Your Ward**

**Crib Sheet**

v1.5 Feb 2023

Green Plan

Imperial College Healthcare NHS Trust

Before    After

Our Green Newsletter: Issue 1
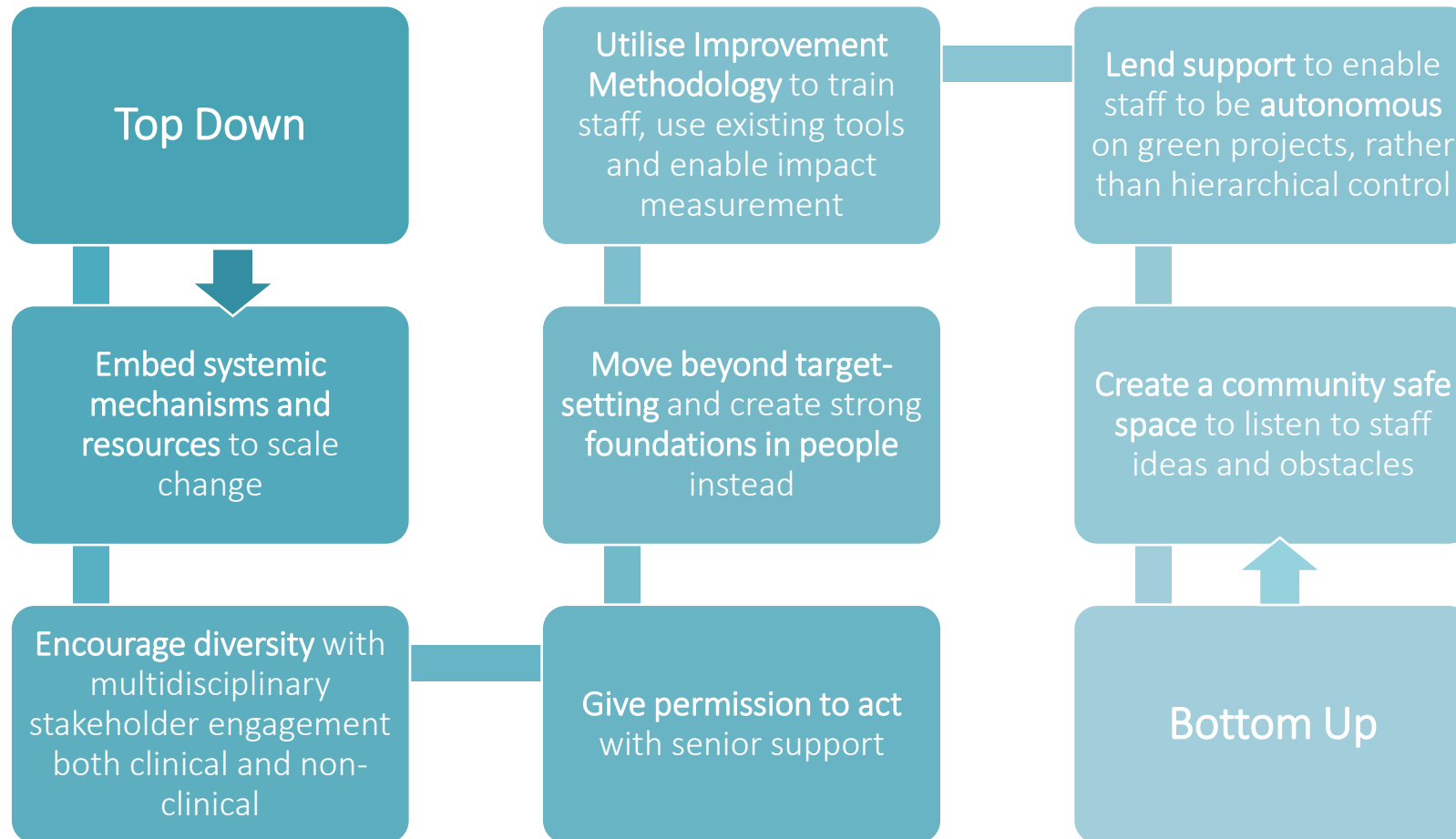
Green Plan

In this newsletter

- Welcome from Dr Bob Klaber
- Leading on green innovations: recognising our staff
- Baby steps to giant leaps: a personal journey from envir...
- What is COP26 and why does it matter?
- Our current favourite quick reads
- Share your stories and get involved

# Wards can score higher in the Ward Accreditation Programme by being green

- System change resource

- Wards score points by appointing a Green Champion

- Green Champions then assist ward to score even higher

- Creates a scalable mechanism with influence across all our hospitals

**White**
No Green Champion/s appointed.

↓

**Bronze**
Appoint green champion/s AND...

↓

**Silver**
50 % of ALL ward-based staff complete 'Intro' module.

↓

**Gold**
Green QI Project Started.
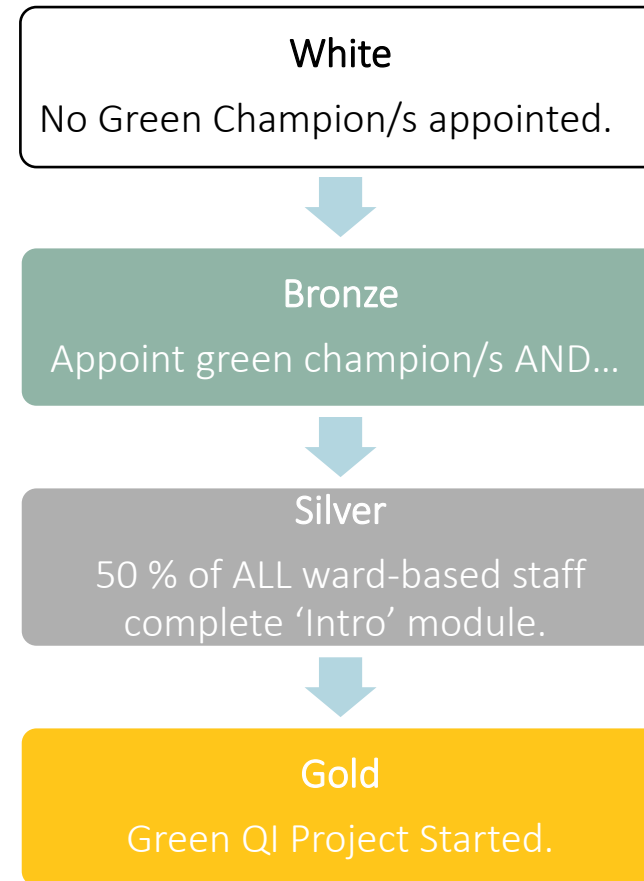
# Key Takeaways to build a supportive staff culture and move from policy to action

**Top Down**

Embed systemic mechanisms and **resources** to scale change

Encourage diversity with multidisciplinary stakeholder engagement both clinical and non-clinical

**Utilise Improvement Methodology** to train staff, use existing tools and enable impact measurement

Move beyond target-setting and create strong **foundations in people** instead

Give permission to act with senior support

**Lend support** to enable staff to be **autonomous** on green projects, rather than hierarchical control

Create a community safe space to listen to staff ideas and obstacles

**Bottom Up**

Project On A Page

Creating a one page summary of your project can be a useful tool to structure your project and ideas and check you have covered the key points from the Model for Improvement. You can then share and agree your project plan with your team and stakeholders. *Use this template to structure your project and ideas and create a project plan. You can use the other QI templates to populate the sections.*

## 1. What are we trying to achieve?

Problem statement

SMART aim/objectives – Remember: Specific, Measurable, Achievable, Realistic and Timely

**1** Who do I need to involve?

**2** How will I engage them?

## 3. What changes could we make?

What ideas are we going to test?

Who is engaged?

| Who needs to be involved? | Who might resist? | Who haven't we spoken to? |
| --- | --- | --- |
| | | |

## 2. How will we know a change is an improvement?

What are our outcome, process and balancing measures?

How will we collect our data? Where? Where from?

💡 HELPFUL HINT! Remember: Think about how we can present our data creatively!

## 4. What are our next steps?

| Action | Lead | Due date | Action completed (Y/N) |
| --- | --- | --- | --- |
| | | | |

# How to access further tools and support?

Catherine Richards

https://
susqi.org

## More About SusQI

- What is SusQI?
- The SusQI Education Project
- Meet the Team

## Helping you to Use SusQI

- Step by Step Guide
- Join the SusQI Academy
- Green Ward Competition

## Helping you Teach SusQI

- SusQI Course
- Teach SusQI Resources
- Teach SusQI Course

## Join the SusQI Network

- Become a Beacon Site
- CSH Networks
- SusQI Projects

# https://susqi.org



Home    About    Do a Project    Teach Others    Green Team Competition    SusQI Academy    SusQI Beacon Site
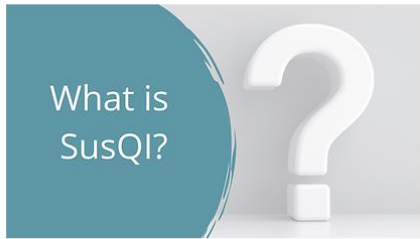
*Examples of Driver* **Step-by-step guide** *cal settings:*
- Driver Diagram
- Driver Diagram
- Driver Diagram
- Driver Diagram

**Resources**

**SusQI Projects**
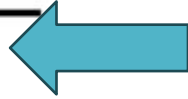
Prioritising Improvement Ideas Table:
Use this table supports you in considering the potential Health, Environmental and Social Impacts of your change ideas, as well as their feasibility

## Measure the Impact

Environmental outcomes: carbon footprinting for healthcare *This document will show you how to work out a carbon footprint of a service, system or pathway using updated greenhouse gas  emission factors*

**Note:** The Scanning for Social Impacts table *from the Study the System section above can be used after designing or implementing your intervention. This will help you to understand if you have have had an overall increase or decrease in negative social impacts and for which group.*

## Reporting Templates

Once you have completed your report, please share your project by uploading it to our Sustainable Healthcare Resource Library. Please note, you will need to register with the free Networks before you can upload.

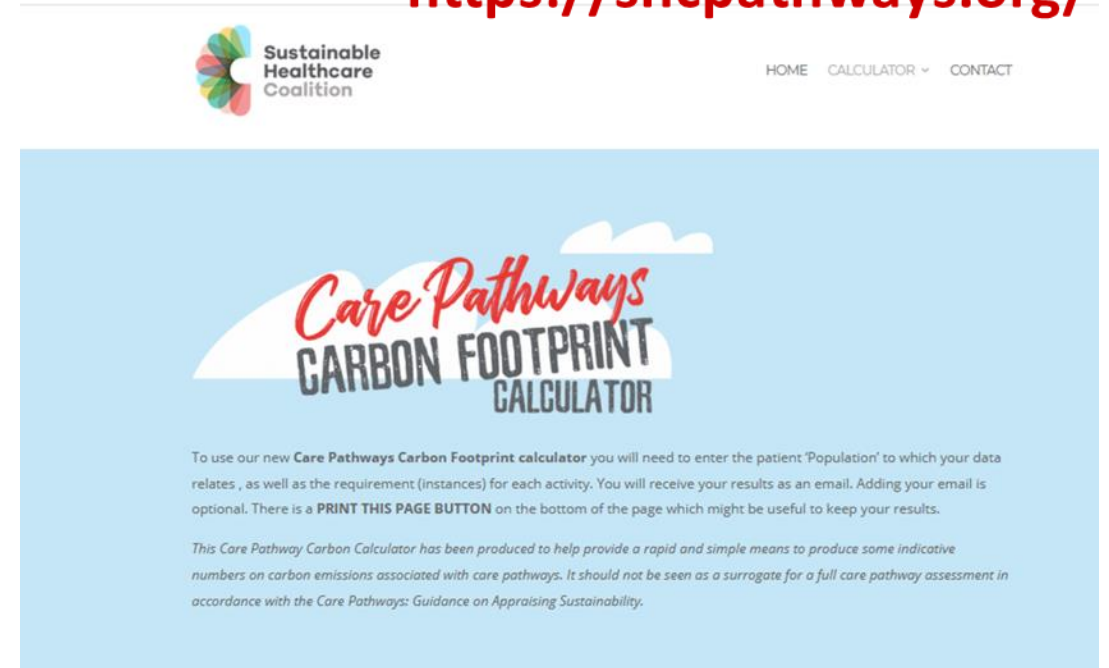SusQI case study report template: *Use this template if you have followed SusQI methodology for your project.*
- SusQI case study report guidance

# Carbon by units of healthcare activity



Care Pathways: Guidance on Appraising Sustainability

Inpatient Bed Day Module

October 2015

Care Pathways Guidance on Appraising Sustainability

https://shcpathways.org/



To use our new **Care Pathways Carbon Footprint calculator** you will need to enter the patient 'Population' to which your data relates , as well as the requirement (instances) for each activity. You will receive your results as an email. Adding your email is optional. There is a **PRINT THIS PAGE BUTTON** on the bottom of the page which might be useful to keep your results.

This Care Pathway Carbon Calculator has been produced to help provide a rapid and simple means to produce some indicative numbers on carbon emissions associated with care pathways. It should not be seen as a surrogate for a full care pathway assessment in accordance with the Care Pathways: Guidance on Appraising Sustainability.

GP visit x 1 + In patient x 1 + Surgery x 1 + Hospital bed day x 3 + Out patient x 1 = Care pathway

[Full Calculator | Sustainable Healthcare Coalition Pathways Calculator (shcpathways.org)](shcpathways.org)

https:// susqi.org

# Educator Pack

Are you an experienced QI educator and looking to introduce the concepts of sustainable healthcare into your QI work? Or maybe you hold a clinical role and are looking to embed sustainability into your department? Are you supervising a student QI project?

The **free** educator pack below has been made available for educators and QI supervisors to use to teach SusQI in all settings. CSH has carefully developed downloadable learning material which are ready for use by educators, and can be adapted or customised. See our Licensing information for how to credit our work.

**Talking to Stakeholders:** *We recognise the importance of working with stakeholders to engage them in the importance and potential of healthcare sustainability and SusQI. Please feel free to download and adapt this presentation to support these conversations, or listen to this 40 minute webinar to hear Dr Francis Mortimer discuss the topic.*

**Evaluation:** *Please complete this Evaluation form to give feedback on this education pack, and how it has/hasn't informed your teaching and practice.*

**Education Case Study template:** *Please share your experience of teaching SusQI in your facility using this template.*
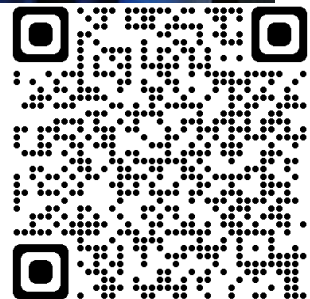
# GREEN TEAM COMPETITION
## CENTRE FOR SUSTAINABLE HEALTHCARE

Engaging people • Stimulating great ideas • Catalysing real changes

CENTRE for SUSTAINABLE HEALTHCARE
inspire • empower • transform
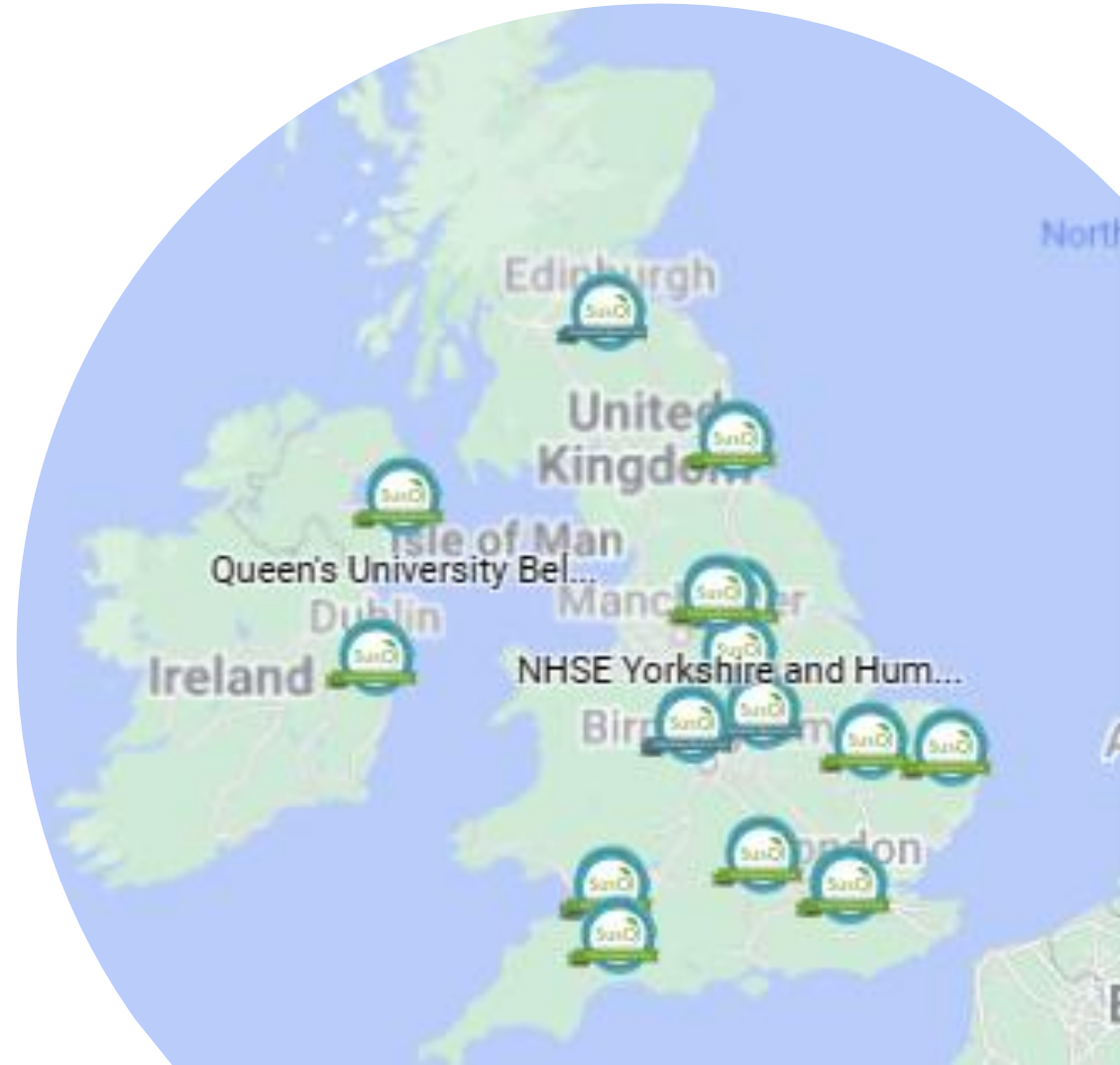
INSPIRE  EMPOWER  TRANSFORM

Scan to learn more

# Become a SusQI Beacon site

Gain recognition and join a network of leading organisations who are working towards/or have integrated sustainability into the way they educate and train their learners/staff in Quality Improvement.

www.susqi.org

# The SusQI Academy

- Integrate sustainable healthcare into curricula, teaching and QI approach
- Develop capability to design and measure the sustainability impact of QI and teach others
- Align and foster connections between sustainability, QI and clinical teams
- Deliver sustainability outcomes through your improvement programmes

Benefits...

Find out more

SCAN ME

## CSH Courses

Access to CSH technical workshops (SusQI, Teaching SusQI, Carbon footprinting)

## Quarterly Forums

Online forum led by CSH experts. Share current learning, challenges, network with peers

## Tailored Mentoring Hours*

A CSH lead helps assess your organisational needs, define your goals and provides tailored support

## SusQI Academy Network

An Academy members only online network space for resource and information sharing

## Exclusive Resources

Access to a members only area with exclusive SusQI resources

## Recognition as an Aspiring Beacon Site

- Appear on the CSH map
- Use the Beacon site logo for your materials
- Receive a quarterly newsletter
- Share work at a national level inc. CSH's annual SusQI showcase

CENTRE for SUSTAINABLE HEALTHCARE

# The SusQI Academy

**King's College London, Faculty of Nursing, Midwifery & Palliative Care**

• An original pilot Beacon site and SusQI Academy member since March 2023

• 12 SusQI leads across Adult/Child/Mental Health Nursing and Midwifery

• SusQI embedded across all programmes at pre-registration, BSc and MSc level

• Interest in SusQI has spread to the Nursing & Midwifery Council and disseminated to Kingston University Faculty of Nursing who have since joined the SusQI Academy.

*"We've been extremely well supported by the SusQI team at the Centre for Sustainable Healthcare, the approach has been very flexible and how we got there was up to us...having the Academy network to have conversations with other organisations on the same journey proved extremely useful."*

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SUSTAINABLE
HEALTHCARE
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**Midlands Partnership NHS Foundation Trust**

• SusQI Academy member since November 2022

• Sustainability now embedded into all levels of QI training

• QI tools and templates adapted to include sustainability

• Green awards within organisation

• Developed carbon calculation tools and support

• Won RC Psych award for sustainability QI project

• Presented work at national conferences

# The **Community**

An inclusive community of healthcare professionals, patients, researchers, students and more.

**SCAN ME**

## 29+ specialty and discipline specific networks

**Carbon Footprinting for Healthcare**

**Mental Health Sustainability Network**

**Allied Health Professions Sustainability Network**

**Green Space for Health**
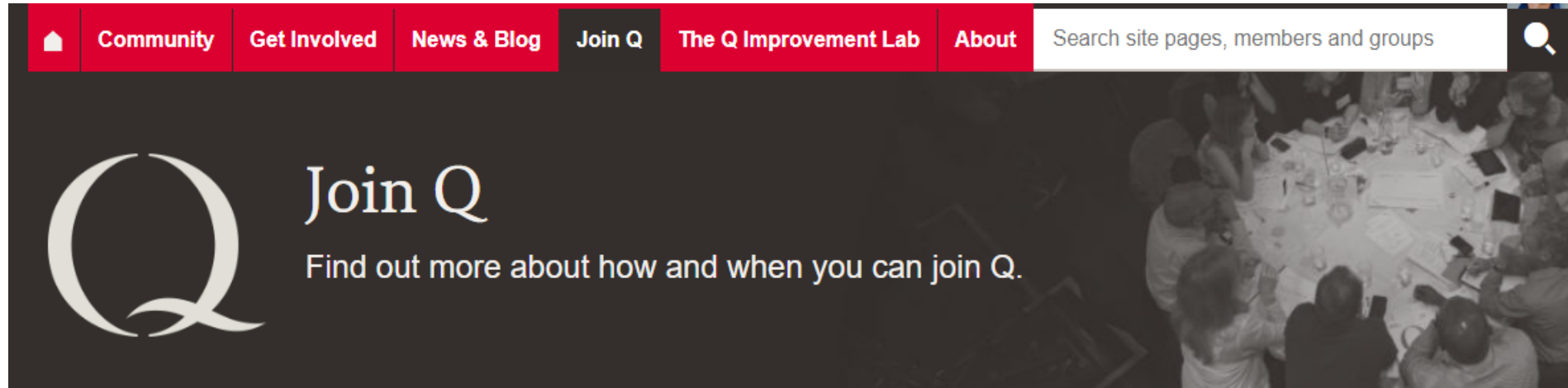
**Primary Care Sustainability Network**

**Nursing Sustainability Network**

networks.sustainablehealthcare.org.uk

@sushealthcare

# Get involved in the broader QI community!

Join the Q community

*...and the Sustainable Healthcare special interest group*

# Short courses in **sustainability, health, and healthcare**

Offer a mix of core concepts and case studies, followed by live online workshops with expert advice on applying theory to practice in your setting.

Introduction to Sustainable Healthcare

Sustainable Mental Healthcare

Sustainable Primary Care

Sustainable Kidney Care

Sustainable Respiratory Care

Sustainable Dentistry

Public Health Leadership for Sustainability

Green Space and Health

Sustainable Anaesthetics

Sustainable Procurement

Sustainable Child Health

Carbon Footprinting for Healthcare
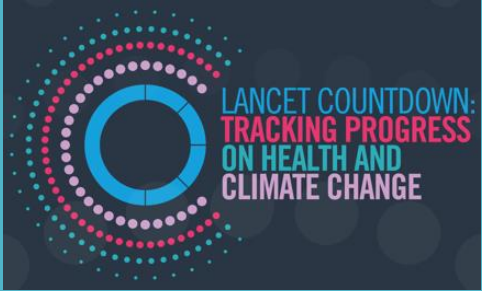
Sustainability in Quality Improvement

Teaching Sustainability Quality Improvement

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# Groups working on climate & health and sustainable healthcare

Join at Menti.com I Use Code 1456 5527

# Thank you for attending the workshop

Inspiring, enabling and empowering staff for net zero, cost-saving improvements and innovations

Any questions?