

Centre for
Sustainable
Delivery



CPOC

The Green Agenda

Dr Philip Korsah

24th April 2023

Collaborate. Redesign. Innovate. Transform.





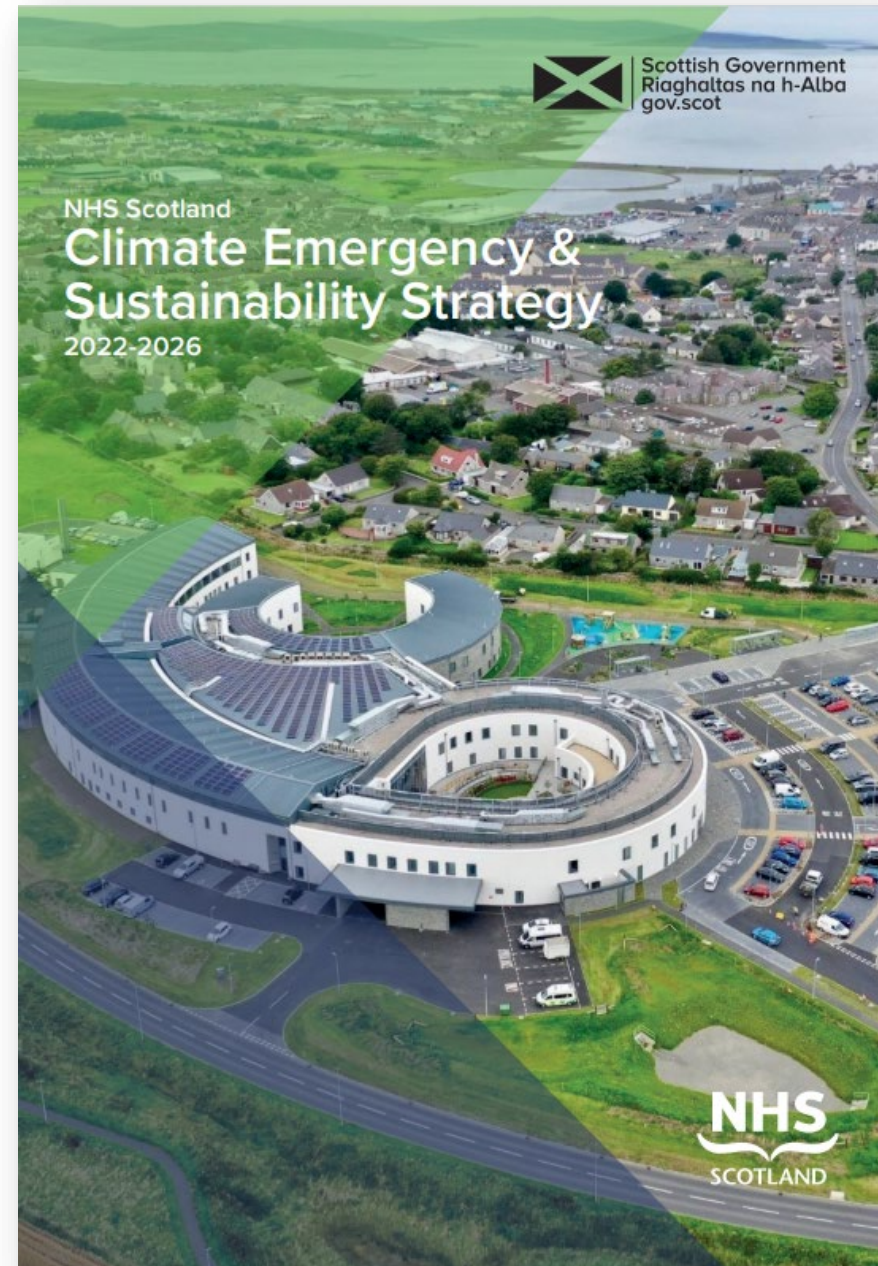
The Sphinx - so-called because of the rock climb directly above it - is the UK's oldest patch of 'permanent' snow. and since the 1700s has melted in 1933, 1959, 1996, 2003, 2006, 2017 and 2018. With the risk of a melting this year in 2021.



- 5.4 million people
- £13 billion +
- 3 Regions
- 14 Health Boards
- 8 Support Boards
- Health and social care integration since April 2016

Scotland

Part of a
52-country coalition
committed to
developing
low-carbon
health systems.



Core Themes

NHS Scotland Climate Emergency & Sustainability Strategy

Sustainable
Care

Sustainable
Goods and
Services

Sustainable
Communities

Sustainable
Buildings &
Land

Sustainable
Travel





1.

Green Theatres

2.

Anaesthetic Gases

3.

Medications/Inhalers

GREEN THEATRE PROJECT

RAIGMORE HOSPITAL INVERNESS



NHS
Highland

1. LOW-FLOW ANAESTHESIA DESFLURANE; OFF-STOCK



4.5%

reduction in total hospital CO₂e emissions

>50%

reduction in volatile agent spend

N₂O – abandon routine use in anaesthesia – potent and persistent greenhouse gas.

2. SURGICAL FLUID SUCTION AND DISPOSAL



Closed systems now available where fluid goes to dirty water system. Small filter is only consumable.

No requirement for storage, transport and high temperature incineration of filled Wiva bins.

3. WASTE SEGREGATION AT SOURCE



LEGAL REQUIREMENT

Compliant with Waste Scotland Regulations 2012.
Increased recycling and reduced disposal costs.
Increase in staff participation - Contributes to positive organisational culture change.

6. AGSS SWITCH

AGSS switch off out of hours



550w-
1200w

PER THEATRE

5. EFFICIENT FLUID WARMING



Electricity use varies from -

100w/
UNT

900w/
UNT

Consider plastic use and costs.

4. CONDUCTIVE VS CONVECTIVE PATIENT WARMING

10x



reduction in electricity with underblanket compared to current forced air warmer (50W cf 550-760W).

No plastic disposables and reduced cost.

7. THEATRE VENTILATION

Theatre Ventilation setback out of hours.

4000w

PER THEATRE



8. DISPOSABLE CUP AND PLASTIC CUTLERY BAN

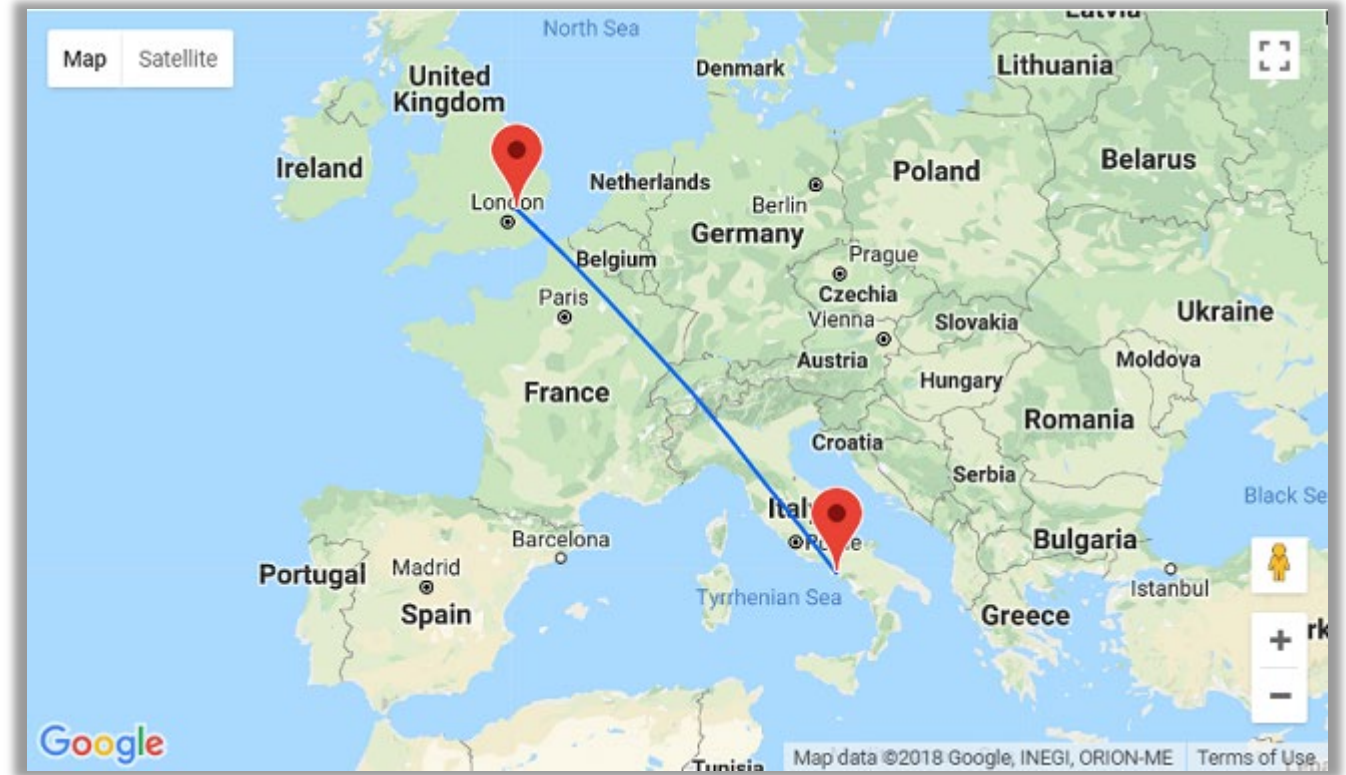


9. NON-STERILE GLOVE REVIEW

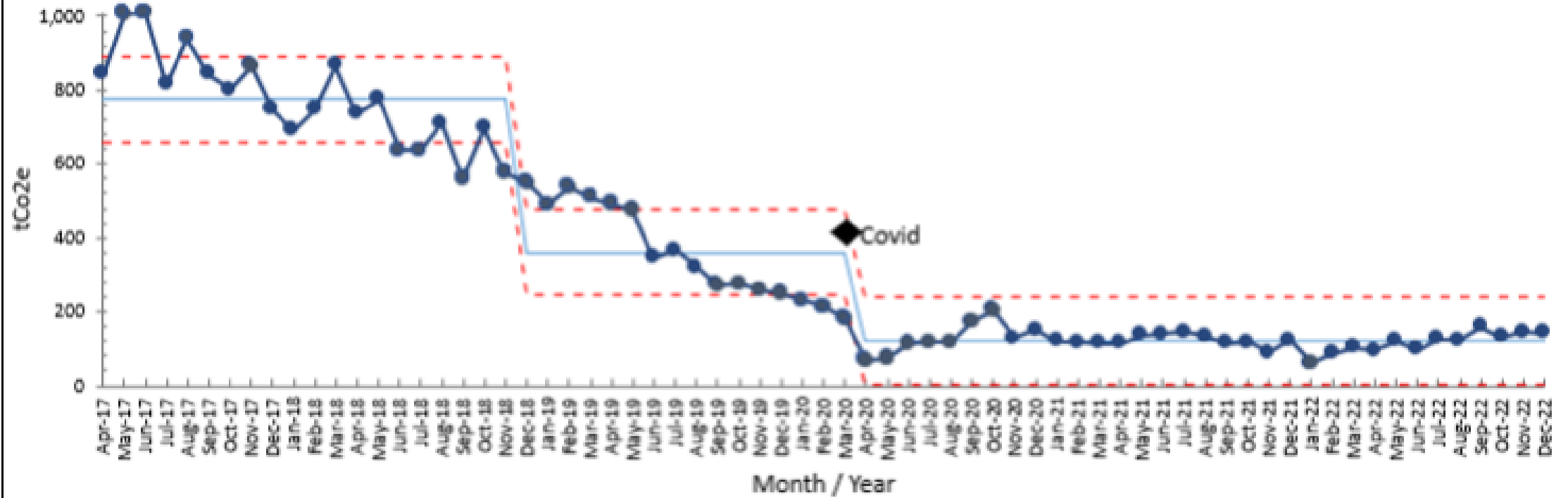
1.4 billion gloves are used across the NHS each year.
www.gosh.nhs.uk/news/gloves-are-off



One bottle of vaporised Desflurane is the same as driving 3072 miles.....and back again...in a petrol car!



NHS Scotland tCo2e Desflurane, Isoflurane and Sevoflurane



Data source(s): Hospital Medicines Utilisation Database, Public Health Scotland
Method designed by Alifia Chakera

The National Green Theatre Programme for NHS Scotland



David Taggart
Head of Climate
Change Delivery



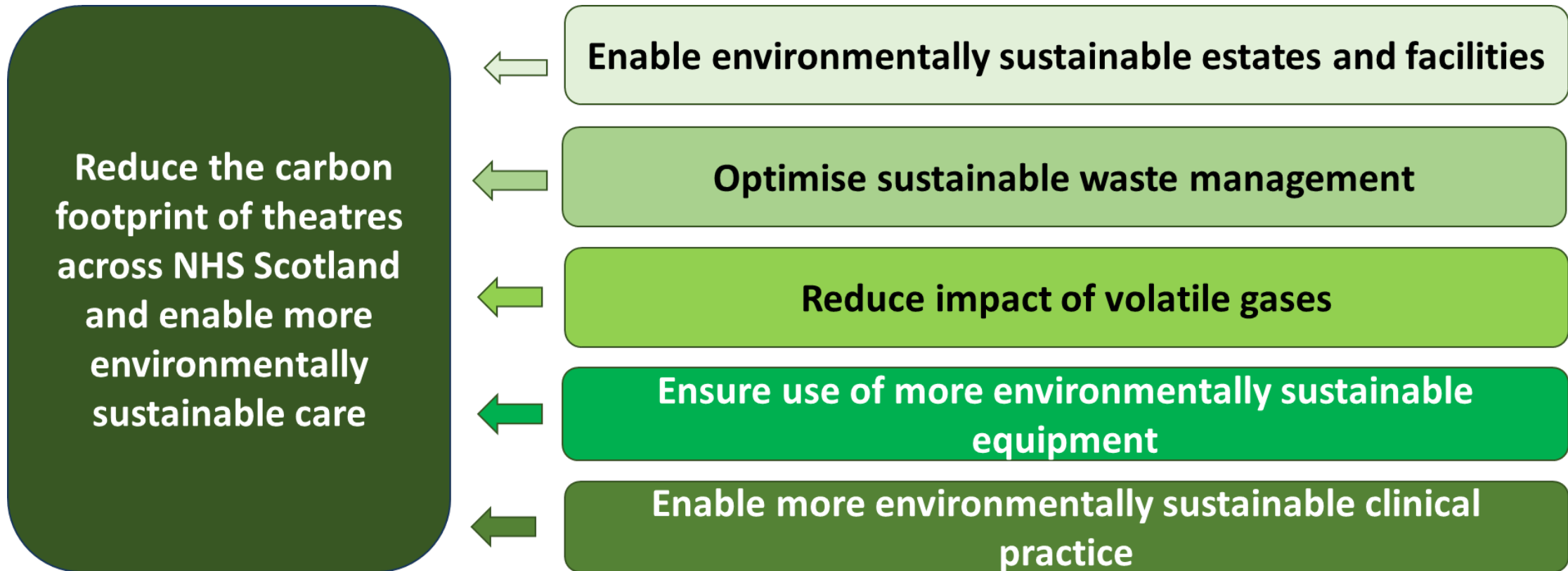
Dr Ken Barker
Clinical Lead
National Green Theatre
Programme.
Consultant Anaesthetist in
NHS Grampian



Alifia Chakera
Head of
Pharmaceutical
Sustainability,
Health Infrastructure
& PPE Division

Introducing National Green Theatre Programme

Green Theatre Programme aims to reduce the carbon footprint of theatres across NHS Scotland and enable more environmentally sustainable care.





Rollout nationally following NHS Highland's Raigmore Hospital and its successful outcomes



Share Best Practice



Contribute to financial efficiencies, health outcomes, reductions in contribution of NHS carbon footprint



Priority is theatres, its buildings, infection control process, gases and emissions, clinical green pathways

Green Theatres

50+ point action plan focused on:

- Structures and equipment e.g. no pipeline nitrous oxide
- Processes and innovation e.g. catalytic cracking
- National Treatment Centres
- Refurbishing existing estate,
- Building new hospital space

Opportunity appraisal

- Reduced carbon footprint
- Cash releasing/ cost neutral initiatives
- Green dividend
- Better patient care

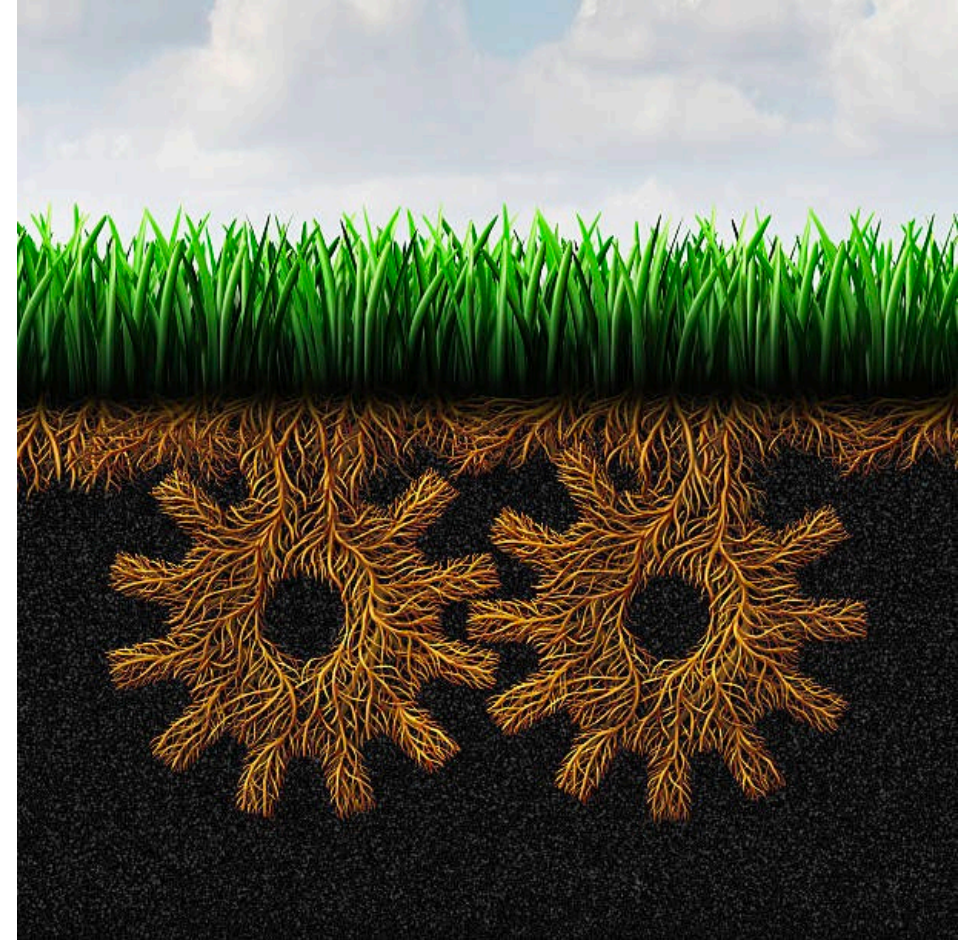
Delivery vehicles:

- Clinical leadership – Specialty Delivery Groups
- Harnessing Innovation
- Build the evidence



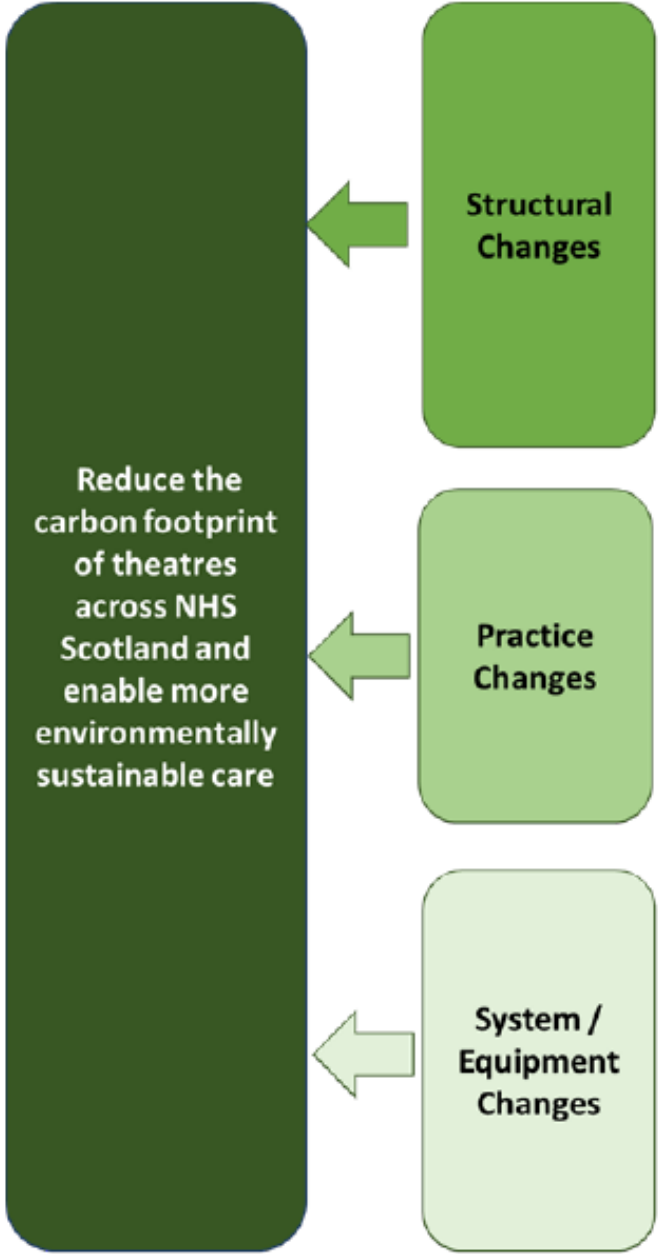
Cultivate an engaged Specialty Delivery Group (SDG)

- First meeting 8th November 2022
- Not starting from scratch – pre-existing grassroots group migrating across to the Centre for Sustainable Delivery
- Co-production of programme
- Multidisciplinary group:
 - Anaesthetists
 - Surgeons
 - Infection Prevention & Control
 - Circular Economy team - SG
 - NHS Education for Scotland
 - NHS Assure - Facilities and Estates
 - National Procurement
 - Theatre managers
 - Theatre nurses
 - Medical Physics
- Generate advocacy and agency across our Healthcare System
- Support development of SDG specific green action plans



Initial actions identified





Switch off of out of hours Heating Ventilation Air Conditioning (HVAC)

Switch off of out of hours Anaesthetic Gases Scavenging Systems (AGSS)

Embed waste segregation

Change to Surgical Fluid Suction System that discharges into grey water system

Remove Desflurane liquid

Change pre-operative paracetamol from intravenous to oral

Embed rubbing not scrubbing

Reduce unnecessary use of non-sterile gloves

Embed re-processed medical devices

Embed lean surgical trays

Introduce environmentally friendly patient warming devices

Introduce reusable laparoscopic ports, equipment and instrument quivers

Decommission nitrous oxide manifolds

Embed telephone and video clinics.

Enable active transport

Set electrical devices to auto switch off overnight

Install passive infrared lighting in all areas

Address the use of sulfur hexafluoride (SF6) and perfluoroethane (C2F6) in vitreoretinal surgery

Introduce meat-free Mondays

Introduce remanufacturing of appropriate surgical instruments

Introduce cold metal sticks to replace Ethyl Chloride

Utilise end tidal target control machines with low flow

Introduce non-contact thermometers

Introduce reusable plastic drugs and equipment trays

Perform Anaesthesia induction in theatres

Re-introduce metal recycling of single use instruments

Encourage quality plastic recycling

Fully assess volatile gas capture technology

Fully assess decommissioning of gas scavenging systems

Review unnecessary plastics waste - incopads and suction tubing

Introduce ban on disposable cups and plastic cutlery

Introduce an alternative to single use chlolaprep 2% for skin preparation.

Embed immediate bilateral cataract surgery

Embed reusable theatre hats, gowns and masks

Review single use plastics in surgical procedures.

Embed reusable slide sheet for patient transfer

Review environmental impact of cleaning products

Assess need for local provision of 7 bar surgical air systems

Re-introduce reusable sharp bins

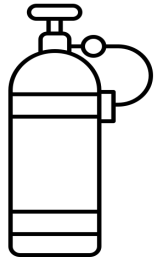
Fully assess need for hospital wide surgical vacuum

Improve rate of regional anaesthesia cases

Encourage can/plastic recycling in coffee room

Review alternatives to plastic containing cleaning wipes

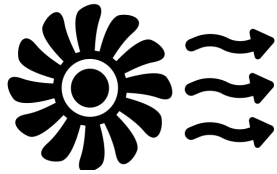
Initial Actions



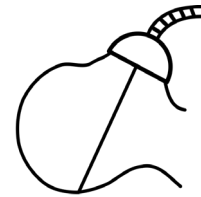
Remove desflurane



Decommission nitrous oxide manifolds



Switch off of out of hours Heating Ventilation Air Conditioning (HVAC)



Switch off of out of hours Anaesthetic Gases Scavenging Systems (AGSS)



Change to Surgical Fluid Suction System that discharges into grey water system



Change pre-operative paracetamol from intravenous to oral



Embed waste segregation

Innovation



EUROPE & SCOTLAND
European Regional Development Fund
Investing in a Smart, Sustainable and Inclusive Future



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Where might we go with Innovation?

- Catalytic Cracking
- Introducing metal and plastic equipment recycling and re-manufacturing
- Reusable theatre drapes and gowns - replacing plastic-based drapes and gowns.

- RFID labelling of theatre tools - redesigning theatre trays.
- Pre-cleaning process for surgical instruments using cold water, no detergent, with improved first success rates over current manual process
- Providing sterile water locally rather than importing bottled water from Norfolk or Europe
- Cleaning Laundry effluent of microplastics, pharmaceuticals and recovering heat energy.



National Green Theatre Programme

Prògram Nàiseanta Lannsaireachd Uaine

