6th CAREC Working Group on Health

Session 5: Decarbonizing health systems in the CAREC region

8 April 2025 | Bishkek, Kyrgyz Republic

Session objectives

The main objective of this session is to advance the development of a CAREC regional decarbonization strategy for the health sector. In particular:

- Outline the key steps involved in preparing a health sector decarbonization strategy
- Present the draft CAREC regional decarbonization strategy for review and feedback
- Share a country case study of a standardized approach to national health care climate footprinting

Lightning talks on decarbonizing the health sector

Professor Nick Watts
Director, Centre for Sustainable Medicine, National University of Singapore

Dr. Mehreen Mujtaba
Director, Climate Change, Nutrition and Health, Ministry of National Health Services Regulation and Coordination

Climate change is the greatest global health threat of the 21st century

2024 saw global average surface temperature exceed 1.55°C above the pre-industrial baseline

This is driven by the combustion of fossil fuels, with 245,031 kg of coal, 7,205,389 litres of oil, and 119,879,249 litres of natural gas burned every second.
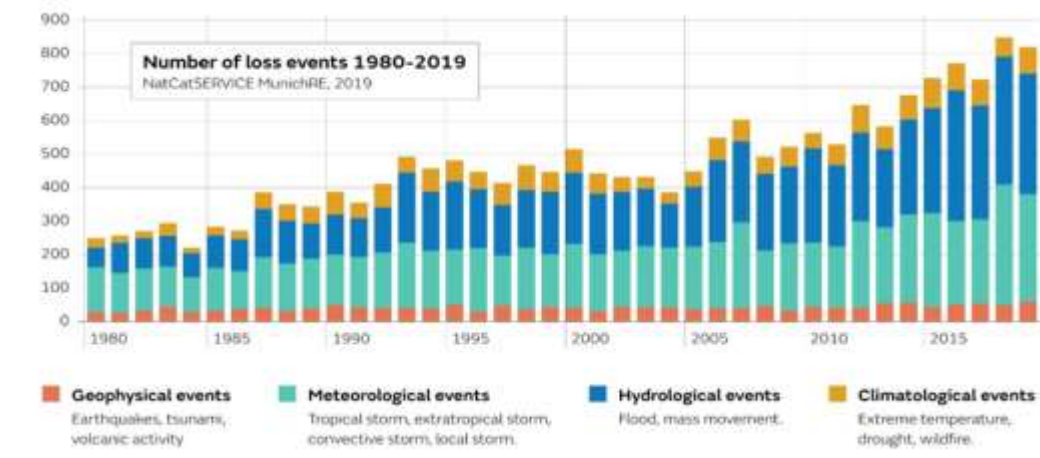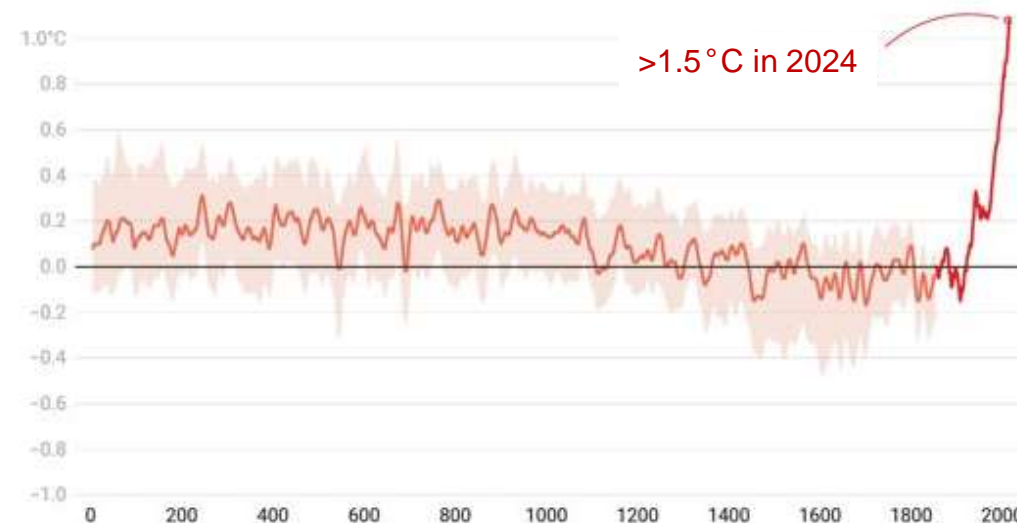
This has had two central effects:
1. A **global temperature rise** of 1.5°C.
2. 8 million **deaths every year** from air pollution.

With 1.5°C widely understood to be the threshold for society's "safe operating space" **current trajectories see us continuing to a 4.8-6.1°C rise.**

A 4°C world will result in:
- **Sea level rise** of 1.5-2.1 metres, inundating major population centres
- 1.4 billion people exposed to **extreme drought** and 16 million children under the age of five **malnourished.**
- A 6-8 times increase in the frequency and intensity of **floods and extreme storms**.

Change in global surface temperature relative to 1850-1900 average

>1.5°C in 2024

Number of loss events 1980-2019
NatCatSERVICE MunichRE, 2019

Geophysical events — Earthquakes, tsunami, volcanic activity
Meteorological events — Tropical storm, extratropical storm, convective storm, local storm
Hydrological events — Flood, mass movement.
Climatological events — Extreme temperature, drought, wildfire.

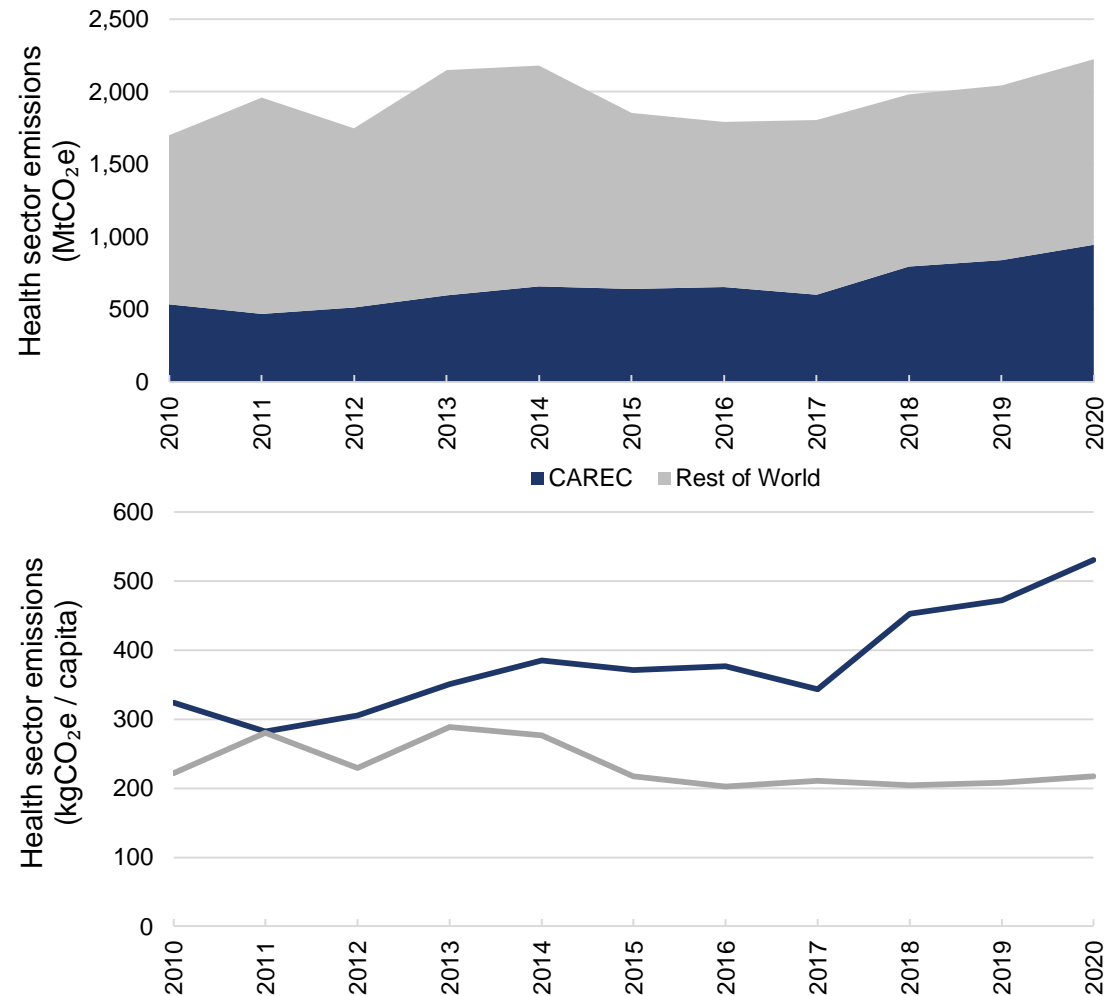# The health system response is rapidly accelerating

CAREC – a growing contributor to global health emissions

2 billion people

18% of global GDP

Opportunity to reduce
over **40%** of
global **health sector emissions**

$95b – 125b
Potential value of **economic opportunity from healthcare sustainability** in 2030 in CAREC

An urgent response to climate change means acting in three key areas

1. Take 'no-regret' actions today

Actions that are **beneficial even in the absence of climate change** with immediate benefits
Proven effectiveness in multiple real-world contexts
Benefits to **patient outcomes** and improved **operational efficiency**
Cost-neutral at worst, often with rapid payback on investment (e.g. LED lighting upgrades)

2. Evidence base for investment

Identify the **highest priority areas** to address in each individual health system
Demonstrate how an **emissions reduction trajectory** can be achieved
Understand the long-run **investment needs, benefits and health impacts** of system change
Build enable **implementation, monitoring and validation** of progress over time

3. Skills, capabilities and leadership

Building **understanding of climate resilience and mitigation** at all levels of the health system
Developing **climate leadership** in governments and healthcare organisations
Empowering frontline staff to identify and implement actions
Training the **next generation** of healthcare workers

1. No-regret actions: Healthcare accounts for 5-8% of global carbon emissions
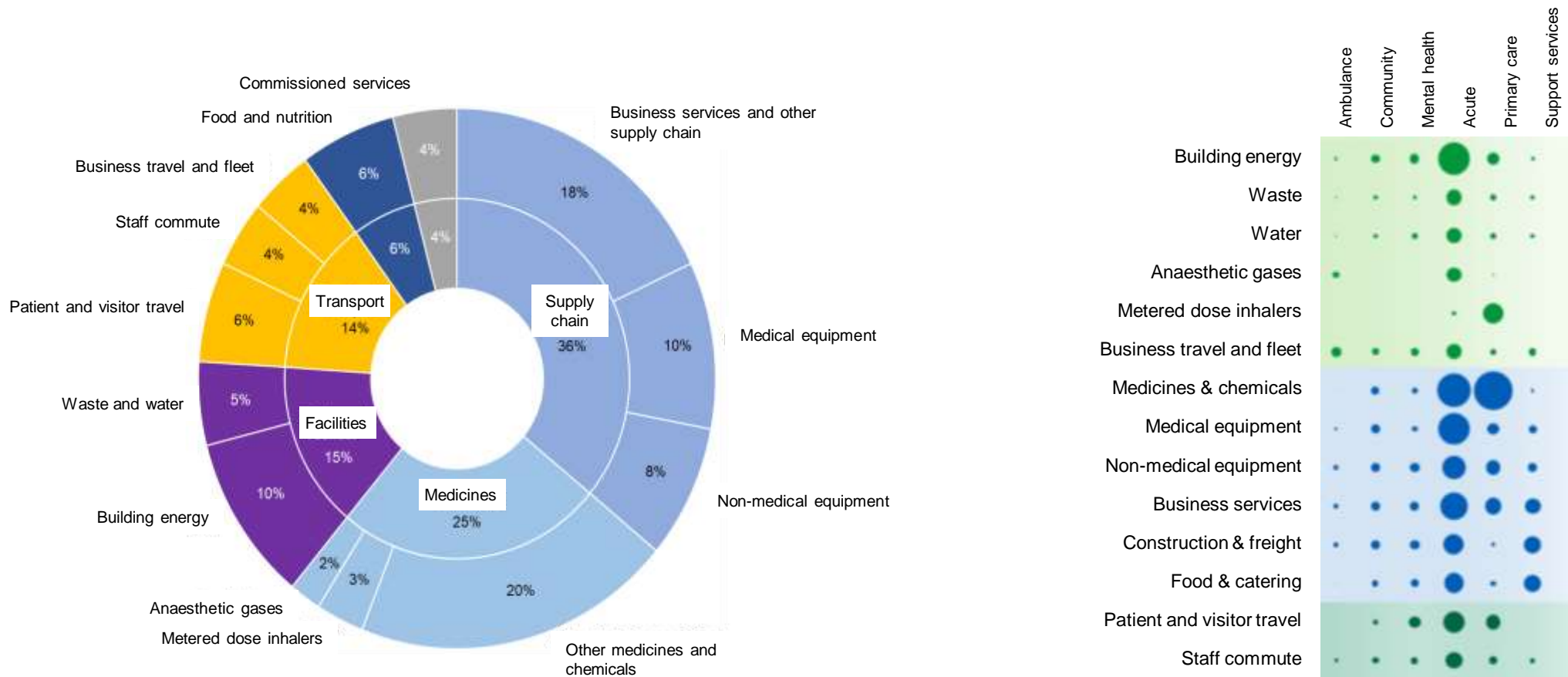
1. No-regret actions: Hospitals & clinics

Investing in low-carbon and patient-centred healthcare buildings

Option		£/tCO$_2$	CO$_2$ savings (tCO$_2$ in 2015)
1	Packaging	-42617	2
2	Teleconferencing	-2051	6,827
3	Introduce hibernation system for stations	-120	1,255
4	Improve the efficiency of chillers	-110	9,133
5	Voltage optimisation	-110	16,828
6	1 degree C	-110	32,763
7	CHP installation	-98	173,975
8	Improve lighting controls	-94	34,286
9	Variable speed drives	-90	3,083
10	Energy awareness campaign	-89	90,265
11	Building management system optimisation	-86	11,521
12	Improve insulation to pipe work, and/in boiler house	-79	10,264
13	Decentralisation of hot water boilers	-77	10,612
14	Improve heating controls	-72	17,219
15	Roof insulation	-71	22,869
16	Improve the efficiency of steam plant or hot water boiler plant	-71	6,367
17	Wall insulation	-70	24,624
18	Energy efficient lighting	-67	22,290
19	Upgrade garage and workshop heating	-60	214
20	Install high efficiency lighting and intelligent lighting controls	-45	3,745
21	Wind turbine	-42	10,722
22	Insulation - window glazing and draught proofing	-27	11,831
23	Improve building insulation levels (U-levels)	-19	951
24	Boiler replacement/optimisation for HQ/control centres	-15	171
25	Biomass boiler	-6	172,724
26	Travel planning	1	81,524
27	Office electrical equipment improvements	17	15,900
28	Solar hot water	49	0
29	Electric vehicles	49	36,969
Total annual CO$_2$ savings in 2015 – all measures			828,935

Marginal abatement cost per tonne of carbon (£)
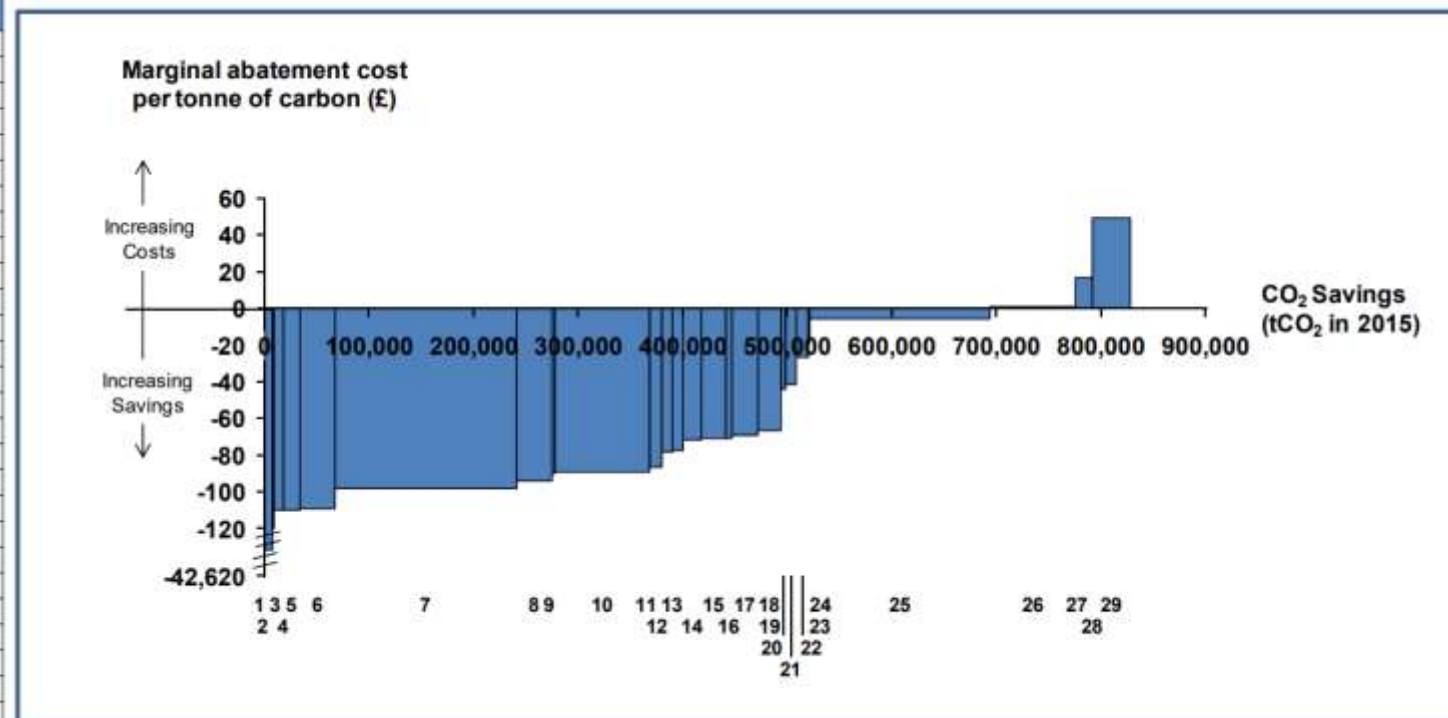
1. No-regret actions: Patient flow and site of care

Prioritizing active travel, community care, and efficient transport for staff and patient journeys
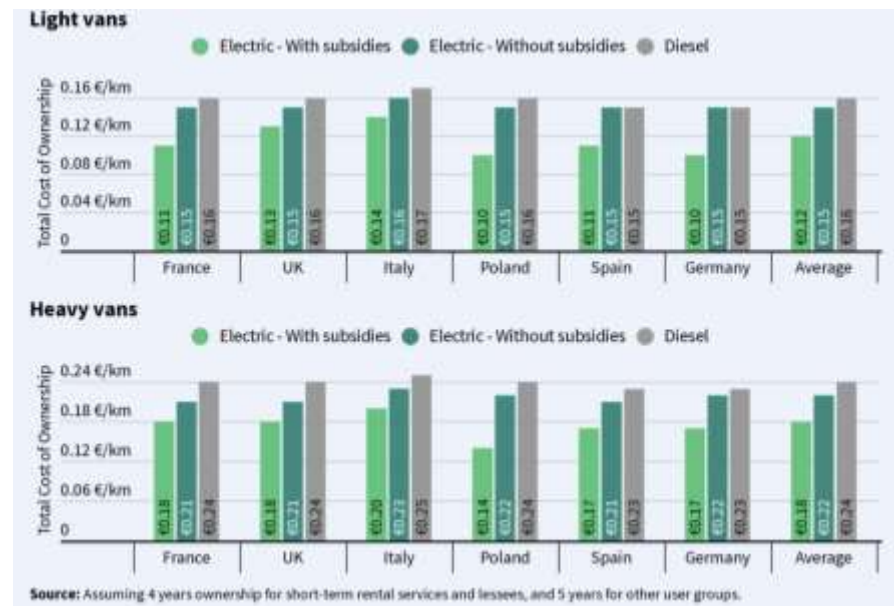
Emissions savings comparison of electric and diesel/petrol vehicles
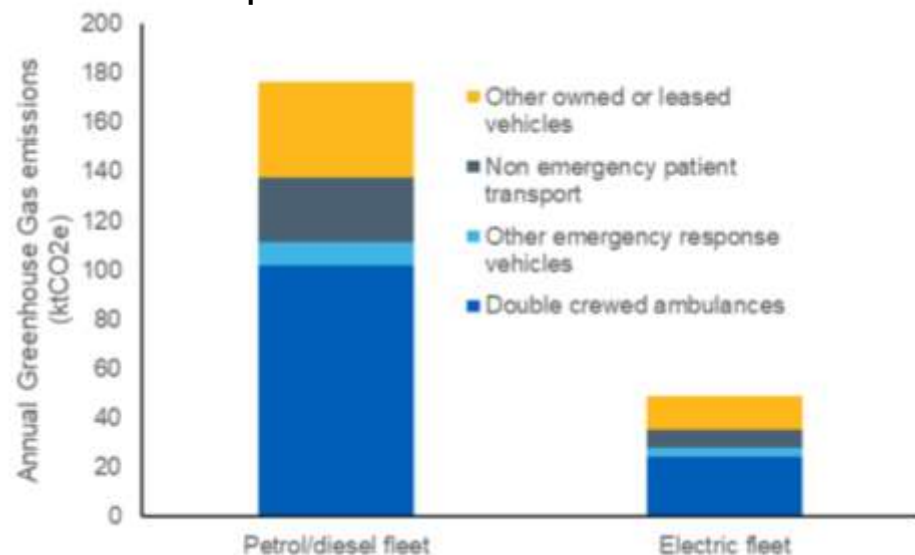
385,000 deaths associated with transport-related emissions globally

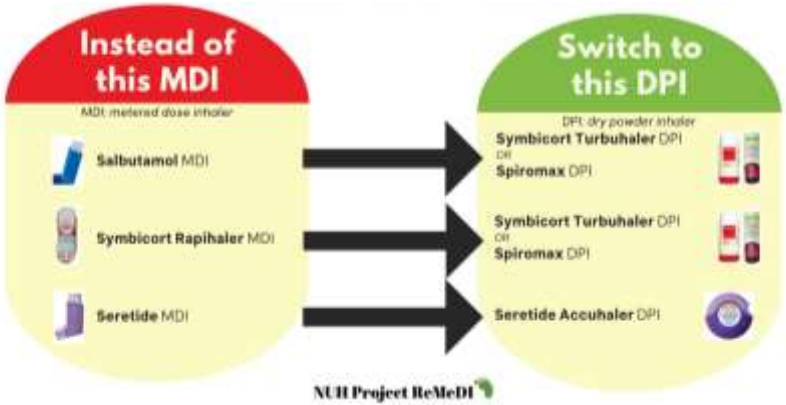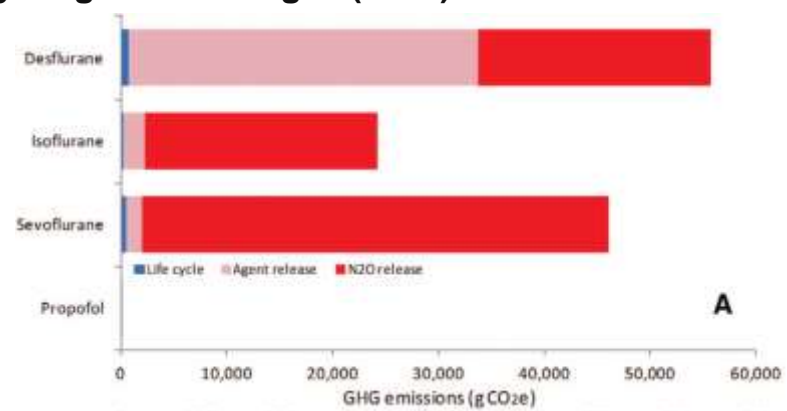**Electric drivetrains are already more cost effective than diesel over the lifetime of vans**

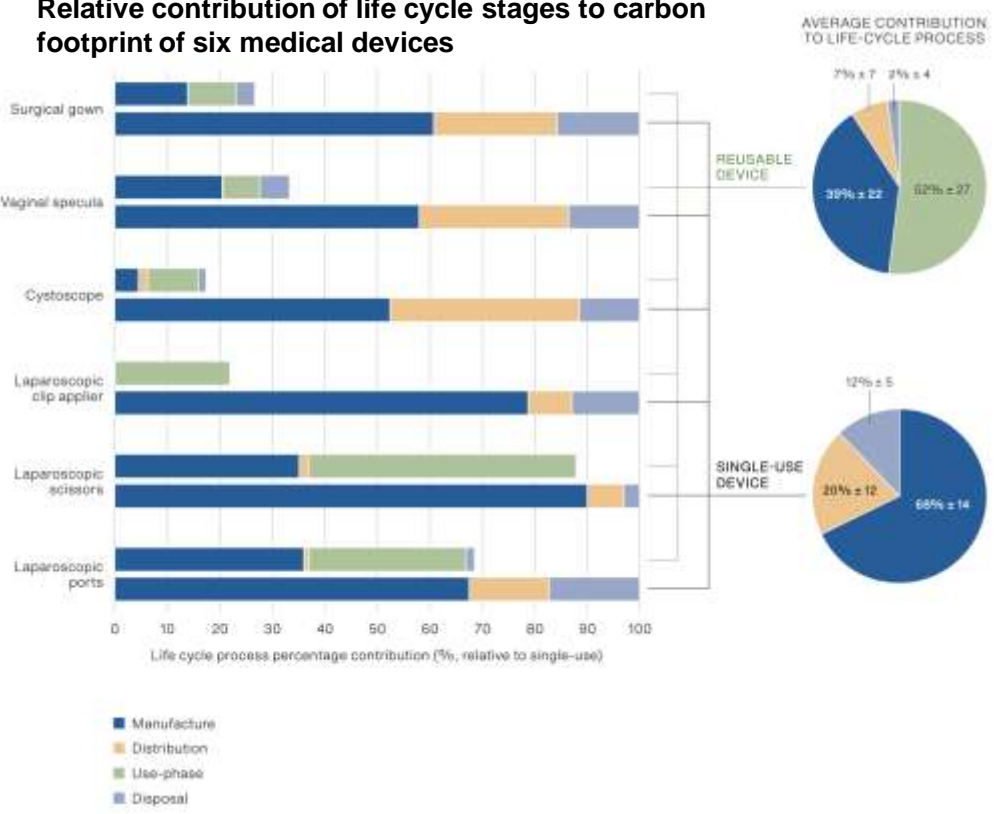# 1. No-regret actions: medicines and surgical devices

Switching to low-carbon pharmaceuticals

Life cycle greenhouse gas (GHG) emissions of anesthetics

Shifting from single-use to reusable, low-carbon medical devices

Relative contribution of life cycle stages to carbon footprint of six medical devices

An urgent response to climate change means acting in three key areas

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- **Proven effectiveness** in multiple real-world contexts
- Benefits to **patient outcomes** and improved **operational efficiency**
- **Cost-neutral at worst**, often with rapid payback on investment (e.g. LED lighting upgrades)

2. Evidence base for investment

Identify the **highest priority areas** to address in each individual health system
Demonstrate how an **emissions reduction trajectory** can be achieved
Understand the long-run **investment needs, benefits and health impacts** of system change
Build enable **implementation, monitoring and validation** of progress over time

3. Skills, capabilities and leadership

- Building **understanding of climate resilience and mitigation** at all levels of the health system
- Developing **climate leadership** in governments and healthcare organisations
- **Empowering frontline staff** to identify and implement actions
- Training the **next generation** of healthcare workers

2. Evidence base for investment: A growing portfolio of support from ADB

TA9950 – Operationalization of Climate and Health Action

Under the Asian Development Bank's Climate and Health Initiative (CHI) a program on health system decarbonization is working with four countries to support health system decarbonization.

Aims:
- Develop a standardised approach for health care decarbonization planning in DMC countries
- Trial approach with demonstrator DMCs
- Produce key deliverables providing a foundation for health decarbonization programmes in demonstrator nations
- Collate findings into toolkit that enables wider adoption of approach across DMC network

Deliverables:

| Baseline | Trajectory | Action Plan | Decarbonization Toolkit |

ADB country-level projects

Thailand: Climate-smart Health Services System Enhancement Project

- Green construction and climate smart and resilient infrastructure
- Climate assessments for adopting climate mitigation measures
- Climate change adaptation and mitigation training for health workers

Indonesia: Primary Healthcare and Public Health Laboratories Upgrading and Strengthening Project (RBL)
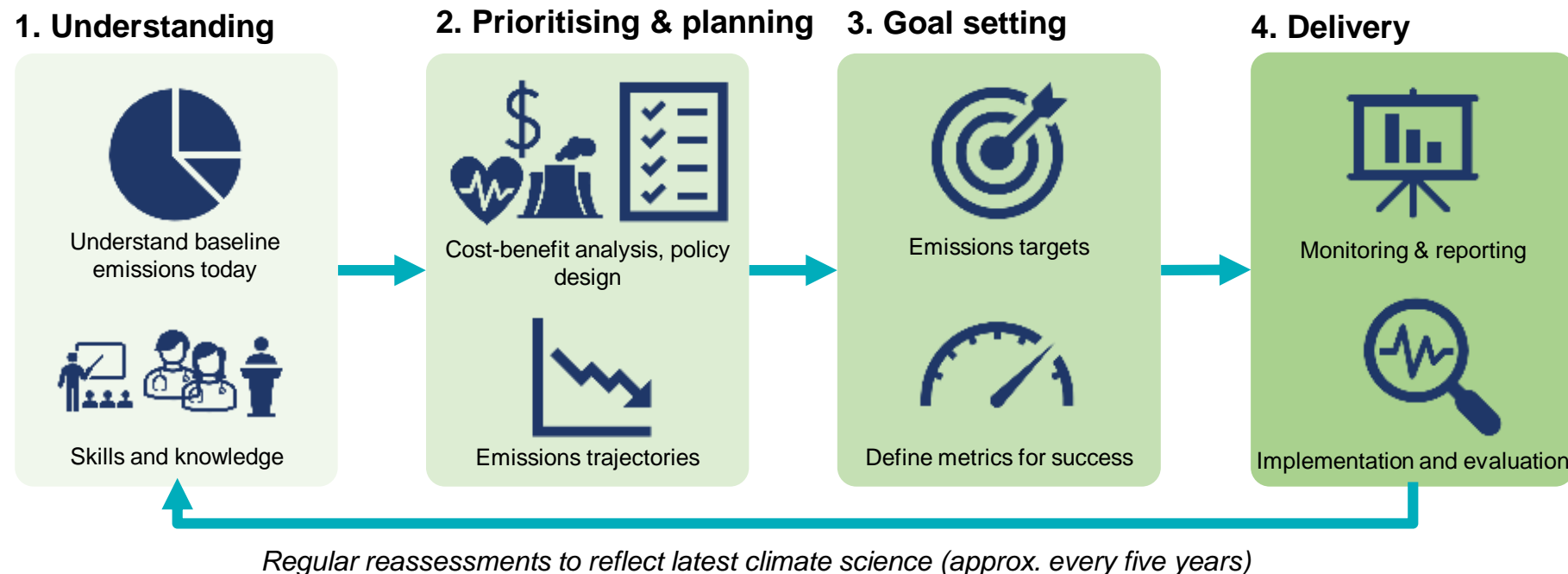
- Increased access to primary facilities to reduce carbon footprint
- Disease surveillance including climate-sensitive diseases
- Sustainable procurement of medical equipment

2. Evidence base: Developing long-term capacity

Effective greenhouse gas measurement is about more than just reporting on emissions.

An effective strategy for emissions measurement will:

- define the current scale of the problem;

- enable evidence-based target-setting and policy planning;

- provide a basis to monitor and report progress over time;

- develop the skills and understanding to implement and embed emissions measurement in health systems.

1. Understanding

Understand baseline emissions today

Skills and knowledge

2. Prioritising & planning

Cost-benefit analysis, policy design

Emissions trajectories

3. Goal setting

Emissions targets

Define metrics for success

4. Delivery

Monitoring & reporting

Implementation and evaluation

Regular reassessments to reflect latest climate science (approx. every five years)

2. Evidence base: proposed approach for CAREC

A two-year project could provide CAREC members with the analytical tools needed to develop sustainable health systems in the region:

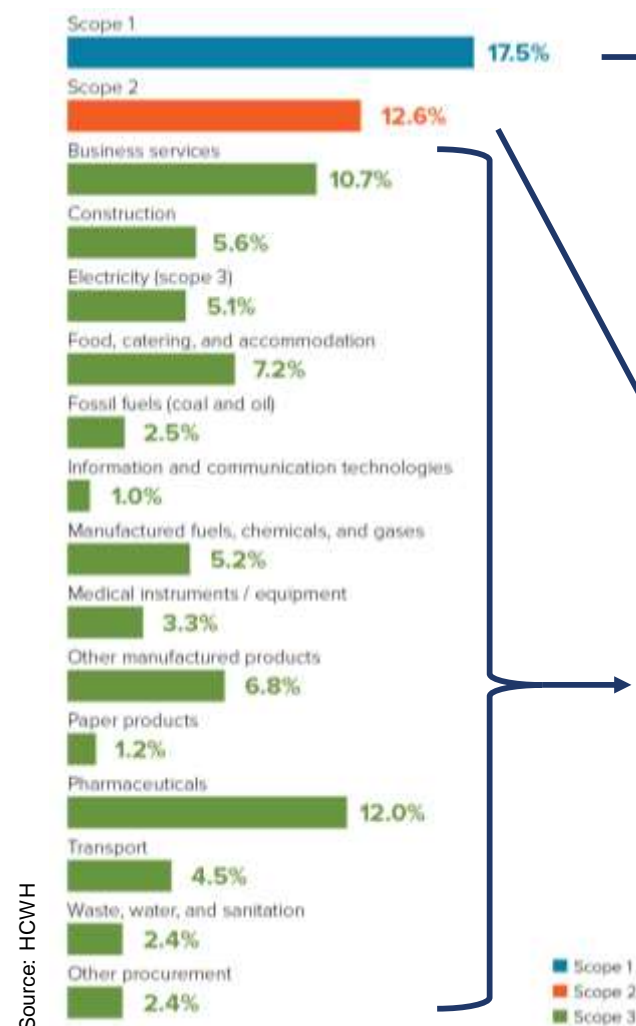| Deliverable:	1 – Emissions Baseline	2 – Decarbonisation Roadmap				3 – Decarbonisation Action Plan
Key step:	**1. Baseline emissions inventory**	**2. Derive target trajectory**	**3. Produce BAU projection**	**4. "No-regrets" mitigation options**	**5. Decarbonisation roadmap**	**6. Action plan**
Output:	Comprehensive assessment of scope 1, 2, and 3 emissions associated with health sector's activities and supply-chain.	Target trajectory for emissions reduction based on national targets and policies.	A business-as-usual projection of emissions, factoring in growth of the health sector and the decarbonisation of the wider economy.	Identification of key mitigation actions and estimation of emissions reductions associated with each.	Combined visualisation of BAU projection, target trajectory and projected emissions reductions from mitigation options identified in step 4.	High-level summary of suggested actions and next steps to implement decarbonisation actions.
Outcomes:	• Quantification of sector-wide emissions • Understanding of emissions hotspots	• Definition of emissions reduction goal • Exploration of future emissions trends for the sector without climate action being taken • List of potential decarbonisation actions and the scale of opportunity offered by each • Analysis of major opportunities and prioritisation of decarbonisation measures				• Strategies to deliver decarbonisation action

2. Evidence base: Baseline emissions footprint

Emissions baselines provide a detailed understanding of the scale of current health sector emissions in the national or regional context. This will enable the identification of current emissions hotspots and near-term decarbonisation priorities.

The Baseline Emissions Footprint will provide the basis for subsequent deliverables; providing an input to the modelling conducted when developing a Decarbonisation Roadmap and informing on current hotspots to be addressed as part of the Decarbonisation Action Plan.

An assessment of national-level sector emissions reflecting the nature and magnitude of key emissions sources.

Source: HCWH

Scope 1 — 17.5%
Scope 2 — 12.6%
Business services — 10.7%
Construction — 5.6%
Electricity (scope 3) — 5.1%
Food, catering, and accommodation — 7.2%
Fossil fuels (coal and oil) — 2.5%
Information and communication technologies — 1.0%
Manufactured fuels, chemicals, and gases — 5.2%
Medical instruments / equipment — 3.3%
Other manufactured products — 6.8%
Paper products — 1.2%
Pharmaceuticals — 12.0%
Transport — 4.5%
Waste, water, and sanitation — 2.4%
Other procurement — 2.4%

Scope 1, Scope 2, Scope 3

Scope 1 – Direct emissions from burning fuel and releasing greenhouse gases. Relevant interventions include energy efficiency, electrification of heat, vehicle upgrades, on-site renewables and low-carbon anaesthetics.

Scope 2 – Emissions from purchased electricity, heat and steam. Relevant interventions include energy efficiency, on-site renewables, green power purchasing, and HVAC improvements.

Scope 3 – Emissions generated to manufacture and deliver the goods and services used by health systems, and downstream waste treatment. Relevant interventions include low-carbon transport for staff and patients, reuse and recycling materials, green procurement, reducing harmless overprescription, and supplier commitments.
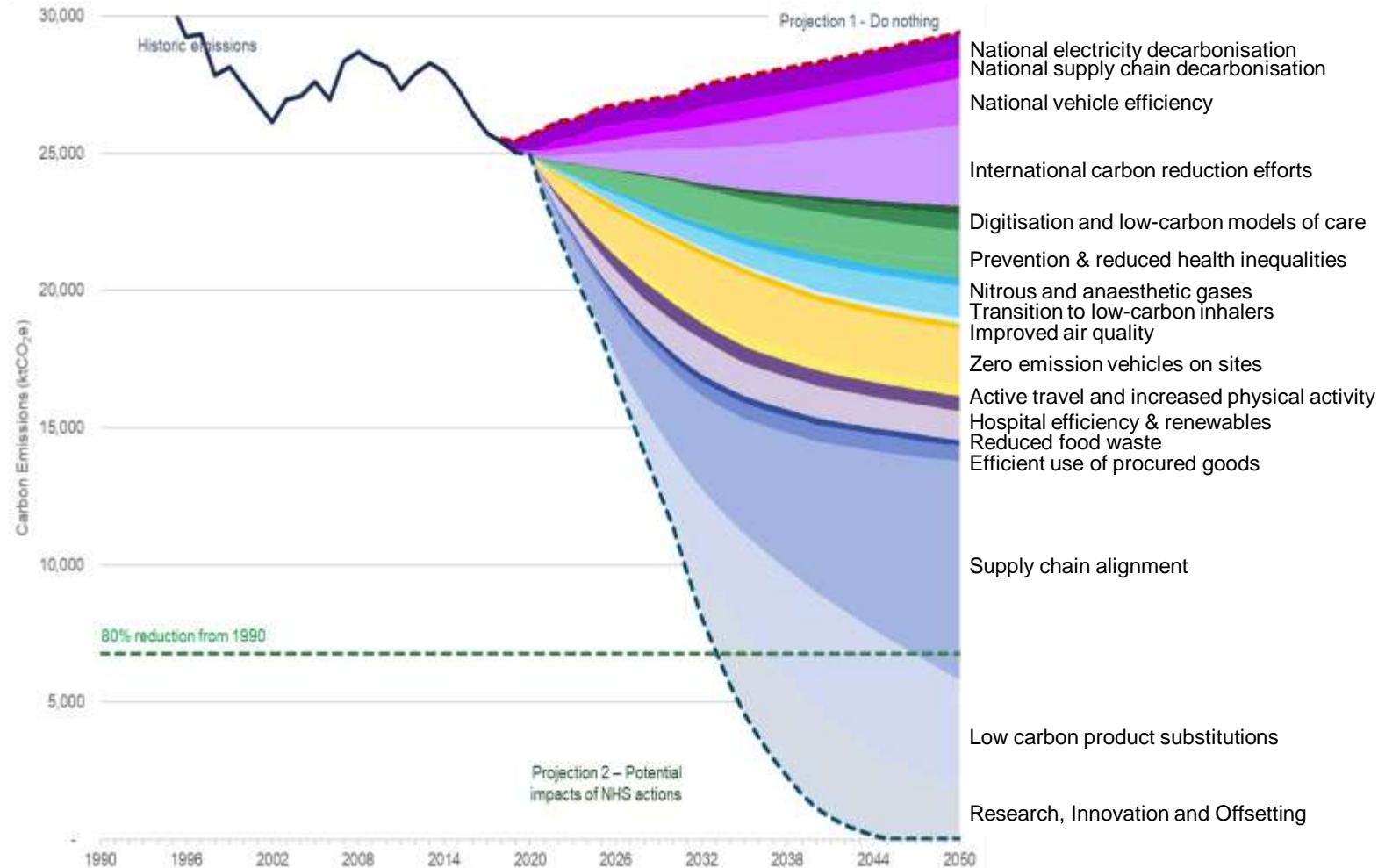
2. Evidence base: Decarbonisation Roadmap

"No regrets" actions are beneficial even in the absence of climate change with immediate benefits and proven effectiveness in multiple real-world contexts.

Key decarbonisation actions and estimation of emissions reductions associated with each of these actions are key to understanding how the health sector can progress towards its targets identified in the trajectory and projections.

Each of the mitigation actions identified will be modelled against the BAU scenario developed to illustrate how each action will affect the overall footprint and decarbonisation trajectory.

A list of potential decarbonisation actions and the scale of opportunity offered by each to reduce emissions


Projection 1 - Do nothing

National electricity decarbonisation
National supply chain decarbonisation

National vehicle efficiency

International carbon reduction efforts

Digitisation and low-carbon models of care

Prevention & reduced health inequalities

Nitrous and anaesthetic gases
Transition to low-carbon inhalers
Improved air quality

Zero emission vehicles on sites

Active travel and increased physical activity
Hospital efficiency & renewables
Reduced food waste
Efficient use of procured goods

Supply chain alignment

80% reduction from 1990

Projection 2 – Potential impacts of NHS actions

Low carbon product substitutions

Research, Innovation and Offsetting

2. Evidence base: Translating in to action

This deliverable will present recommended actions for the national or regional health system to begin implementing measures in line with the findings of the Decarbonisation Roadmap.

This work will supplement the Baseline Emissions Footprint and Decarbonisation Roadmap, identifying the short- and medium-term actions that can be taken to address emissions hotspots and pave the way for deep sectoral decarbonisation.

A high-level summary of suggested actions and next steps to implement decarbonisation measures.
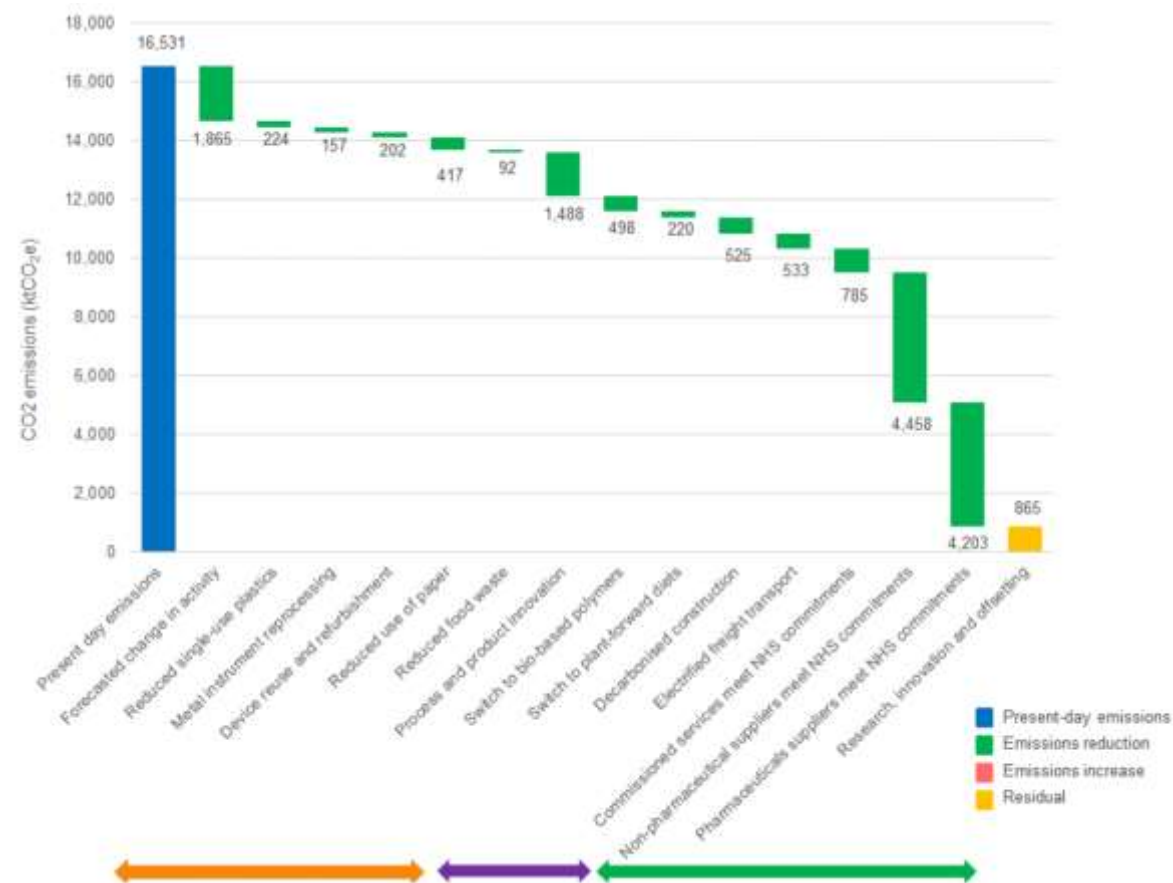
2. Evidence base: Regional- and Hospital-level analysis
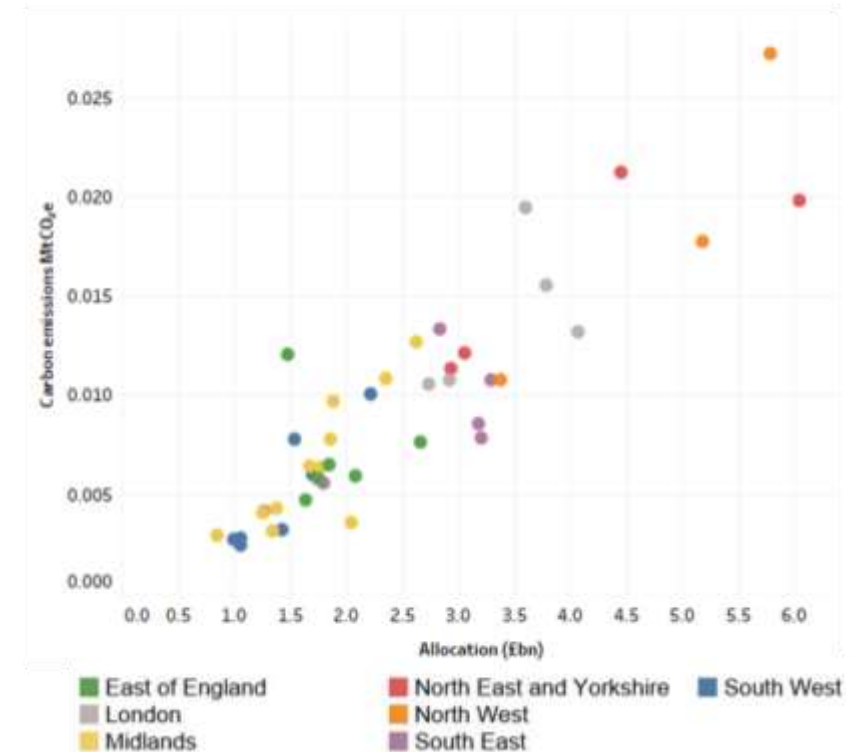
2. Evidence base: Tracking Policy Impact

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3. Skills, Capabilities, and Leadership: A community of health decarbonization experts

Investing in **local capacity** and bringing together a **community of experts** – health leaders, clinicians, researchers – will drive meaningful and long-term change, grounded in context, culture, and capacity.

A **regional community of practice** could foster knowledge exchange, enable continued intervention, project identification, and collaboration on healthcare decarbonization between CAREC countries.

Benefits of regional collaboration across CAREC

"A region of Sustainable Development, Shared Prosperity, and Climate Resilience"
- CAREC Climate Change Vision Statement

A co-ordinated approach to health system decarbonization	**Joint action to influence shared international supply chains**
CAREC as a powerful voice in international health sustainability communities	**Health professionals and policymakers learning from best-practice in the region**
Comparable and cross-compatible data, targets and policies	**Mobilize investments that benefit patients and improve efficiency**

6th CAREC Working Group on Health

Breakout group discussion

10 mins reading/reviewing the strategy + 30 mins discussion

Each group will discuss the following guiding questions, spending about 10 minutes per question:

What are some low-hanging fruits or "no-regrets" actions that should be prioritized as part of this strategy?	What support do countries need to successfully implement this strategy?	How can regional collaboration be enhanced to support national-level implementation of this strategy ?
• A set of sample actions will be provided. From this list, participants can select the actions they agree with and write them on a post-it to place on the first board. • Participants can also write additional actions that are not on the list and add them to the board.	• Participants will write their answers directly on post-its and place them on the second board. • Participants can arrange and organize by theme (e.g. technical, policy, financial)	• Participants will write their answers directly on post-its and place them on the third board.

By the end of the session, each board will reflect collective inputs, which will help shape the regional decarbonization strategy.

Sample "no-regrets" actions, low-hanging fruits

- **Switching to low-carbon inhalers and anaesthetic gases** – encouraging use of DPIs or MDIs with lower global warming potential propellants and using less harmful anaesthetic agents (e.g., sevoflurane vs. desflurane)

- **Shifting from single-use to reusable, low-carbon medical devices** – adopting reusable medical items, when safe and feasible

- **Promoting low-carbon procurement and sustainable pharmacy practices** – reducing unnecessary prescribing, encouraging responsible disposal of pharmaceuticals, and collaborating with suppliers to source greener products

- **Optimizing operating theaters** – turning off overhead lights when not in use, strict HVAC controls, switching to low-flow anesthesia, using energy-efficient sterilization equipment

- **Embedding sustainability in clinical pathways** – incorporating carbon-cost considerations into clinical guidelines (e.g., choosing lower-carbon imaging protocols or diagnostic tests without compromising patient outcomes)

- **Improving waste segregation, reduction, and recycling** – segregating infectious waste from non-hazardous waste, reprocessing single-use devices where safe/allowed, and recycling

Sample "no-regrets" actions, low-hanging fruits

- **Transitioning to renewable energy sources** – such as solar or wind and where possible, on-site renewables and microgrids add resilience

- **Investing in low-carbon and patient-centred healthcare buildings –** upgrading lighting (e.g., LED), improving insulation, optimizing HVAC systems, and using smart building controls

- **Shifting to electric ambulances and fleet vehicles** – adopting electric or low-emission vehicles for ambulance services and other hospital / system fleet needs

- **Promoting active travel and efficient transport for staff and patient journeys** – encouraging use of bicycles, carpooling, e-vehicles, public transport options where possible

- **Prioritizing community care, telehealth, and digital care pathways** – expanding telemedicine and shifting toward virtual consultations and remote patient monitoring

- **Adopting sustainable food services and plant-forward menus** – shifting cafeteria and patient meals toward more plant-based options and sourcing locally

Next steps

- Please share additional feedback, if any, by **Tuesday 29 April 2025** (3 weeks).
- We will consider your feedback and revise the strategy by **Friday 16 May 2025**.
- Present deliverable at Senior Officials Meeting (SOM) **17-19 June 2025** (circulate a month prior)
- Send the deliverable for review prior to National Focal Points Meeting by **August 2025**
- Table deliverables to Ministerial Conference in **November 2025.**

Thank you

Visit CAREC Health website: https://health.carecprogram.org/