ACCELERATING THE DELIVERY OF NET ZERO HEALTH SYSTEMS

AN OVERVIEW OF PRACTICAL RECOMMENDATIONS AND ACTIONS IN SUPPORT OF HEALTHY PEOPLE, PLANET, AND SOCIETY

A REPORT BY THE SUSTAINABLE MARKETS INITIATIVE HEALTH SYSTEMS TASK FORCE, IN COLLABORATION WITH BOSTON CONSULTING GROUP
**PREFACE: THE SUSTAINABLE MARKETS INITIATIVE HEALTH SYSTEMS TASK FORCE**

**Sustainable Markets Initiative.**
In his former role as His Royal Highness The Prince of Wales, His Majesty King Charles III launched the Sustainable Markets Initiative (SMI) at Davos in January 2020. The SMI is a network of global CEOs across industries working together to build prosperous and sustainable economies that generate long-term value through the balanced integration of natural, social, human, and financial capital. These global CEOs see themselves as the ‘Coalition of the Willing’ helping to lead their industries onto a more ambitious, accelerated, and sustainable trajectory. Read more here.

**Terra Carta.**
In his former role as His Royal Highness The Prince of Wales, His Majesty King Charles III launched the Terra Carta at the One Planet Summit in January 2021. The Terra Carta serves as the mandate for the SMI and provides a practical roadmap for acceleration towards an ambitious and sustainable future; one that will harness the power of Nature combined with the transformative power, innovation, and resources of the private sector. Currently there are over 500 CEO-level supporters, including the first C40 city of Athens, Greece. The Terra Carta has served as the inspiration for the Terra Carta Design Lab. The Terra Carta is a roadmap for public, private, and philanthropic collaboration and open to all countries, cities, companies, organizations, and schools who wish to support it. Read more here.

**SMI Health Systems Task Force.**
The SMI Health Systems Task Force was launched at the 26th United Nations Climate Change Conference (COP26) with the central aim of accelerating the delivery of net zero, patient-centric health systems that improve individual, societal, and planetary health. The public-private partnership brings together CEOs and leaders from AstraZeneca, GSK, Merck, Novo Nordisk, Roche, Samsung Biologics, Sanofi, the Karolinska Institutet, National Health Service (NHS) England, the Sustainable Healthcare Coalition, UNICEF, the University of Pavia, and the World Health Organization (WHO).

The SMI Health Systems Task Force is also a partner of the WHO’s Alliance on Transformative Action on Climate and Health (ATACH), a platform that over 60 countries have committed to at the Minister of Health level to strengthen climate resilience and lower the emissions of health systems.

Additional information on the SMI Health Systems Task Force can be found here.
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ABOUT THIS PAPER

The climate crisis is one of the most pressing risks to global health;\(^1\) rising temperatures are resulting in an increase in hospital admissions and heat-related deaths; extreme weather events such as flooding and droughts are disrupting food systems, displacing people, and undermining access to healthcare; and changing patterns of water-borne and vector-borne diseases are threatening decades of progress in infectious disease control.\(^2\) Climate change is also exacerbating the incidence of many non-communicable diseases (NCDs), including cardiovascular and respiratory illnesses, through increased air pollution, extreme heat, and other factors.\(^1\)\(^3\)

Climate change affects us all, but populations living in low- and middle-income countries are the most severely impacted.\(^4\) The health risks associated with climate change also disproportionately affect the most vulnerable and disadvantaged in our societies, such as children, displaced populations, and people with underlying health conditions.\(^1\)\(^2\)\(^4\)

Climate change causes millions of deaths every year - findings from 2019 indicate that over 9 million global deaths are attributable to air pollution and over 5 million deaths are associated with non-optimal temperatures.\(^5\)\(^6\) Limiting global warming to well below 2 degrees Celsius can avoid further impact on global health.\(^7\) Healthcare stakeholders must play their part by accelerating the delivery of patient-centric, equitable, net zero health systems.

The SMI Health Systems Task Force is committed to collaborating across and beyond the healthcare sector to drive concrete action to reduce emissions and propose targeted recommendations to health leaders worldwide. Its work is driven by the conviction that a whole system approach is needed to decarbonise healthcare, with targeted actions focused on product manufacturing and distribution, innovative clinical research and development, all the way to delivery of patient care.

This paper provides an overview of the recommendations and actions that healthcare stakeholders can take to reduce emissions across the value chain. Additional detail is contained in associated whitepapers:

- “Decarbonising Healthcare Supply Chains” provides guidance on how to reduce emissions across the supply chain, responsible for >50% of healthcare emissions

- “Decarbonising Patient Care Pathways” highlights how choices in patient care, responsible for ~45% of healthcare emissions, can drive emissions reductions

- “The Digital Solution for Sustainability in Clinical Research” showcases how digital solutions can help abate clinical trials emissions
SOURCES OF HEALTHCARE EMISSIONS

The healthcare sector is responsible for about 4% to 5% of total global emissions,[8] the equivalent of the 5th highest-emitting country in the world after China, US, India, and Russia.[9] Three main areas drive health system emissions: products and supply chains (50%); patient care (45%), including care facilities and direct patient emissions; and R&D (5%) (see Exhibit 1).

EXHIBIT 1 | Healthcare drives ~2.4Gt CO₂e p.a. (4% to 5% of global emissions)
Most emissions are created in supply chains and patient care settings

The ageing of the population, the rise of chronic non-communicable diseases, and rapid urbanisation all contribute to an increased demand for healthcare, challenging health systems to deliver care more effectively and sustainably.[10][11][12] To achieve net zero, it is vital that all players – including manufacturers, governments, policymakers, regulatory bodies, health authorities, and payers – play their part in reducing emissions while improving health outcomes.
ALL HEALTHCARE STAKEHOLDERS NEED TO ACT TO DRIVE EMISSIONS REDUCTIONS

All healthcare stakeholders need to play their part and work together for system-wide change:

- **Pharma, biopharma, and med-tech companies** can reduce the emissions of their products and activity by decarbonising their facilities and engaging suppliers to address upstream emissions. Companies can continue to invest in prevention, early detection, and diagnostic technologies to improve patient outcomes, reduce healthcare demand, and increase efficiency of care.

- **Healthcare professionals and providers** can intervene early to prevent disease onset and progression, including optimising investigation and prescribing practices. Providers can further develop green plans to reduce emissions related to care facilities and care pathways, while ensuring population and patient health outcomes are maintained or improved. Healthcare professionals and providers can also support educational programs focused on healthcare sustainability.

- **Health authorities and payers** can align system incentives to support the implementation of care guidelines focused on improving outcomes and lowering treatment emissions.

- **Regulators** can provide clear guidance and support to accelerate approvals of emissions-reducing improvements for existing products, and can consider emissions as a key metric in new treatment assessments.

- **Governments and policymakers** can incentivise decarbonisation by introducing balanced standards on emissions and accelerating legislation that protects both people’s health and the planet. This includes investing in public health by promoting healthier environments, incentivising the energy transition, and encouraging the use of digital solutions.

- **The general public and patients** can actively engage with preventative healthcare measures to improve health outcomes and reduce emissions, and manage their day-to-day lives as citizens of the future low-carbon society.
Exhibit 2 below outlines specific actions for key stakeholders

**EXHIBIT 2 | All stakeholders in the healthcare system need to act**

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Actions</th>
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| **Pharma, biopharma, and med-tech companies:** | • Decarbonise own operations (energy, heat, logistics, etc.)
• Engage suppliers to reduce emissions (e.g. set supplier standards)
• Invest in technologies to improve prevention & early detection
• Standardise emissions measurement across both R&D and supply chain |
| **Clinicians & providers:** | • Implement guidelines focused on prevention & early intervention
• Optimise investigation, prescribing, and treatment
• Use lower-emission treatments when available and safe
• Decarbonise facilities (e.g. use green power, electrify fleet, etc.)
• Support increased sustainability education for healthcare professionals |
| **Health authorities & payers:** | • Align systems incentives to support care guidelines that improve health outcomes and reduce emissions |
| **Regulators & regulatory bodies:** | • Adopt green criteria during the approval processes of new medicines and include CO₂e as key metric |
| **Governments & policymakers:** | • Invest in public health measures (e.g. health promotion, urban design, vaccine programmes, etc.)
• Set balanced incentives to support the energy transition (e.g. funding, subsidies, carbon tax, etc.)
• Enable the use of digital solutions to improve health and reduce emissions
• Support research initiatives to further build the evidence base and assessment methods of decarbonisation approaches in healthcare |
| **General public and patients:** | • Actively engage with preventative healthcare measures
• Support transition to future low-carbon society |

Source: Interviews with SMI Health Systems Task Force members and health systems stakeholders, BCG analysis based on literature review and case experience
THREE MAIN CHALLENGES TO DECARBONISING HEALTHCARE

While decarbonisation of healthcare is critical, several challenges need to be addressed:

1. Data Gaps and Emissions Baselining
Although it is relatively easy to establish sources of healthcare emissions at a high-level, understanding how emissions break down at a product level, or across different stages of the biopharma value chain is extremely difficult. This is largely due to the lack of product-level datasets and emission factors to base analyses on. There is also no common framework to link pathway choices, patient outcomes, and care-related emissions. This impairs the ability to include emissions in healthcare decision making for regulators, health authorities, and healthcare providers.

2. Regulatory Hurdles
To protect human health and ensure treatment safety and efficacy, strict regulatory standards need to be followed by health systems. As new low-carbon treatments or care delivery models are being developed, regulatory authorities can engage in early dialogue to ensure their adoption is accelerated where they contribute to similar or better patient outcomes.

3. Economics of Decarbonisation
Some decarbonisation levers can be implemented today at low incremental costs across health systems (e.g. switch to renewable energy, use of digital health solutions), but other solutions are currently subscale and can be expensive to implement, especially to abate supply chain emissions (e.g. greening high-temperature heat, carbon capture and storage). Investing in early decarbonisation pilots will come at cost for many biopharma industry stakeholders. However, there is a significant risk to inaction. With increasingly stringent regulations and the rising costs of carbon offsets and fossil fuel energy, companies that continue using emissions-intensive technologies and delay investing in greenhouse gas (GHG) abatement technologies will be faced with higher costs in the years to come.
Meaningful change will require all stakeholders to work together. As a collaborative alliance of public and private sector leaders, the SMI Health Systems Task Force is uniquely positioned to accelerate decarbonisation efforts across the entire health ecosystem.

TO ADDRESS SUPPLY CHAINS EMISSIONS, PRIVATE SECTOR MEMBERS OF THE TASK FORCE ARE COMMITTING TO:

- **Set near-term emissions reduction targets** aligned with the 1.5ºC pathway and commit to achieve net zero emissions by 2045\(^a\)
- **Switch to 80% to 100% renewable power** for their own operations by 2030\(^b\), jointly **evaluate renewable corporate power purchase agreements** in China and India in 2023
- **Jointly explore green heat solutions by 2025** to accelerate the adoption of effective and scalable technologies
- **Transition car fleets to zero-emission vehicles by 2030** and explore **green transportation corridors by 2025**\(^b\)
- **Align on a set of common supplier standards** to support emissions reduction across entire supply chains

TO SUPPORT EMISSIONS REDUCTIONS IN PATIENT CARE PATHWAYS, THE TASK FORCE IS COMMITTING TO:

- **Engage and collaborate** with health policy makers, regulators, payers and providers, and hospitals from across the globe to raise awareness of the need and the opportunity to decarbonise care pathways
- **Build an end-to-end care pathway emissions calculation standard and tool** for specific diseases that allows stakeholders to **measure and track emissions** across the care pathway and assess decarbonisation strategies
- **Align on a common framework to perform lifecycle assessments (LCA)** - with private sector members also committed to publishing product-level LCA data across their product portfolio to increase transparency on treatment emissions

\(^a\) At present, Samsung Biologics is committing to achieve net zero and switch to 100% renewable power by 2050 at the latest given local market constraints, and is actively working to reach these targets as early as possible. \(^b\) Green transportation options that are being explored by the Task Force include SAF offtake agreements to reduce air freight emissions, opportunities to design short sea routes to replace long haul trucking, and co-shipping opportunities to shift air freight to sea freight. \(^c\) These supplier standards apply only to suppliers of the healthcare business of each private sector member.
TO ADDRESS CLINICAL RESEARCH EMISSIONS, INCLUDING THROUGH THE USE OF DIGITAL HEALTH SOLUTIONS, PRIVATE SECTOR MEMBERS OF THE TASK FORCE WILL:

- Commit to a common **framework by 2023** and subsequently start to **measure GHG emissions** in phase 2&3 clinical trials. Companies aim to report **phase 2&3 trial emissions** for trials starting in 2025.

- Align new trials to companies’ **decarbonisation pathway** and **set trial emissions reduction targets** for 2030 at the latest.

- Incentivise clinical research organisations and clinical trial-related suppliers to **commit to a framework** to measure and **reduce emissions**, including through the use of digital solutions.

- Target **90%+ of trials starting in 2025** to include a review of how **digital solutions can reduce emissions**.

With the set of commitments above, the SMI Health Systems Task Force is looking to inspire others to collaborate and act. The Task Force is hoping to increase the scale of the collective and take tangible actions towards delivering net zero health systems.
NOTE ON METHODOLOGY AND USE OF DATA

The recommendations presented in this paper are based on an extensive review of academic literature, stakeholder interviews, and input from the SMI Health Systems Task Force members.

Several public sources were triangulated to estimate the healthcare industry’s emissions, and how they break down across the value chain. The Lancet 2020 Countdown report estimate was used as a baseline for total healthcare emissions (2.4Gt CO$_2$e), given it is based on recent analysis of the emissions of over 180 countries.[8] This estimate is well supported by other publications.[9][13][14] Healthcare emissions were then split across supply chain, R&D, patient care settings, and direct patient emissions using Health Care Without Harm’s Health Care Climate Footprint paper,[9] in combination with BCG case experience.

The split of GHG emissions across the healthcare value chain provides a high-level, indicative view of the main sources of healthcare emissions. To increase confidence in these estimates, the top-down approach detailed above should be complemented with a bottom-up assessment of emissions sources using product-level emissions datasets. This detailed analysis was not performed as part of this paper given the scarcity of publicly available product-level LCAs.
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The SMI Health Systems Task Force thanks the members of the Task Force for their contribution to this paper, and for their role in coordinating contributions from their organisations:

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