Global Road Map for Health Care Decarbonization

A navigational tool for achieving zero emissions with climate resilience and health equity

Health Care Without Harm
Climate-Smart Health Care Series

Executive Summary

Green Paper Number Two

Health Care Without Harm

Executive summary

Context and background

THE HEALTH SECTOR HAS A RESPONSIBILITY TO TAKE CLIMATE ACTION.

The climate crisis is a health crisis. Climate change is the biggest health threat the world faces this century.[1]

Health care contributes to the problem. Health care makes up more than 4.4% of net global climate emissions. If it were a country, it would be the fifth largest climate polluter on the planet.[2]

Prevention, preparedness, and equity are paramount. Health care must become climate-smart, charting a course toward zero emissions that is inextricably linked with building resilience and meeting global health goals.

- **Decarbonization:** As one of the largest and fastest growing segments of the world economy, with a mission to heal, the sector must move quickly to decarbonize, transforming and aligning its growth and development with the ambition of the Paris Agreement to limit global warming to 1.5 degrees Celsius and achieve zero emissions.

- **Resilience:** A zero emissions health care agenda must also evolve in tandem with the health sector establishing infrastructure, systems, and community resilience to withstand the impacts of the climate crisis. There are many areas of synergy with decarbonization and health equity.

- **Health equity:** A climate-smart health care agenda must consider differing levels of health development and access between and within countries, so that it also contributes to achieving greater health equity and meeting global goals, like Universal Health Coverage (UHC)[i]. There are many areas of synergy with resilience and decarbonization.

The health sector can be a societal leader in protecting public and planetary health from climate change. By charting a course to zero emissions, health care can lead by example, while mobilizing its ethical, economic, and political clout to influence and accelerate change in other sectors of society.

The COVID-19 pandemic demands an acceleration of this transformation. The outbreak of COVID-19 has underscored the centrality of health and health care in disaster preparedness, while starkly highlighting how low-income communities and communities of color are most impacted by global crisis. Investment in COVID-19 response and recovery requires a level of resilience in the health care sector unappreciated before. COVID-19 response and recovery also provides an opportunity to build back better and invest in climate-smart (resilient and zero emissions) health care as a disaster preparedness and prevention strategy.[3]

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i   UHC is defined by the Sustainable Development Goals as "including financial risk protection, access to quality essential health care services, and access to safe, effective, quality, and affordable essential medication and vaccines for all."

Key findings

HEALTH CARE CAN SIGNIFICANTLY REDUCE ITS GREENHOUSE GAS EMISSIONS.

Health care's emissions are growing. Under a business as usual scenario—without climate action inside and outside the sector—health care's absolute global emissions would grow enormously from a 2014 baseline and more than triple by 2050, reaching six gigatons a year.

Fossil fuel combustion is the dominant source of health care climate emissions. The use of coal, oil, and gas to power hospitals, health care-related travel, and the manufacture and transport of health care products comprises 84% of all of health care's climate emissions across facility operations, supply chain, and the broader economy.

Countries' Paris Agreement commitments could cut projected health care emissions growth by 70%. If countries can meet the targets and commitments, they set to decarbonize their economies based on their pre-2017 Nationally Determined Contributions (NDCs) to the Paris Agreement, health care development will begin to decouple from climate emissions growth.

But health care's contribution to the climate crisis is still projected to grow and remain substantial. Even if the world's governments were to meet their Paris Agreement commitments up to 2017, health care's annual global climate footprint would still increase, reaching more than three gigatons a year by 2050.

Solutions exist. This Road Map highlights how health care can close the gap and significantly reduce its emissions beyond those that the Paris Agreement commitments would help achieve.

- It proposes actions with cumulative emissions reduction from 2014 to 2050 that add up to 44.8 gigatons of CO_2e.

- This cumulative reduction is equivalent to the entire world economy's global greenhouse gas emissions in 2017.

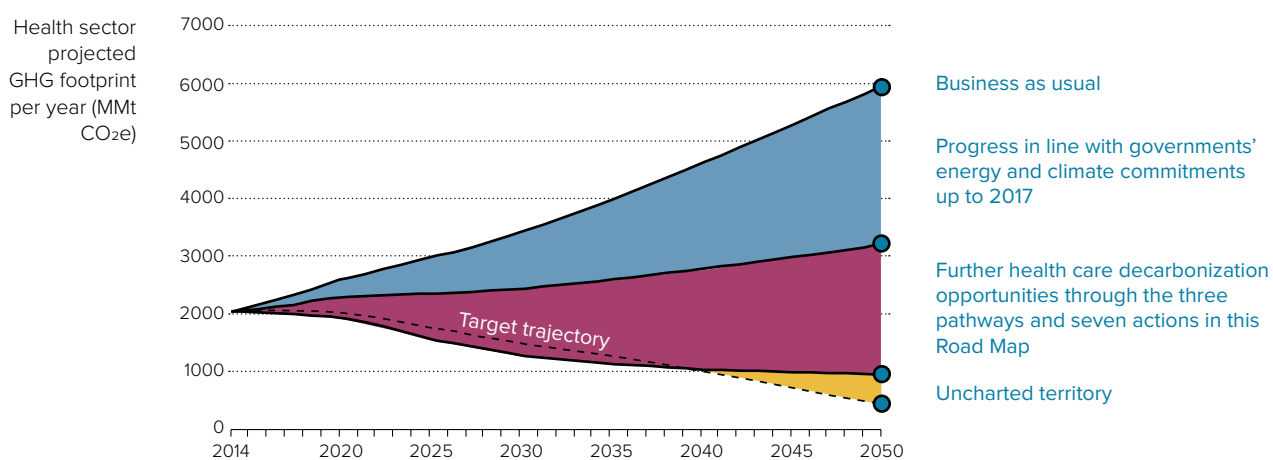- It is analogous to leaving more than 2.7 billion barrels of oil in the ground each year for 36 years.

Health sector projected GHG footprint per year (MMt CO_2e)

- Business as usual
- Progress in line with governments' energy and climate commitments up to 2017
- Further health care decarbonization opportunities through the three pathways and seven actions in this Road Map
- Uncharted territory

Target trajectory

Figure i. Health Care Without Harm and Arup Global Road Map for health care decarbonization.

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Charting a course toward zero emissions

All health systems must act. The nations of the world have agreed that all countries must help stabilize the global climate. It follows that all health systems, in every country, must be part of this effort to decarbonize.

Every health care institution together with the sector's suppliers and manufacturers in every country need to close in on zero emissions by the middle of the century. Such a fundamental transformation will require massive collaboration and innovation across this huge sector of society.

Health care decarbonization should be based on the principle of common but with differentiated responsibilities and respective capabilities.

- High-income countries, whose health systems are most responsible for global health care emissions (per capita and historically), need to act most quickly and take the greatest responsibility for addressing the climate crisis.

- Middle-income countries must invest in health system development that takes them on a pathway to zero emissions and avoids replicating the carbon-intensive health delivery model of wealthier countries.

- Low-income countries need to deploy low-carbon and zero emissions technology that enhances their ability to develop their health systems and provide health access and services to all.

- Ultimately, all health systems will need to be closing in on zero emissions by 2050. While those in developing countries might have a later emissions peak, all must begin navigating the transition now in order to avoid locking into a carbon-intensive development trajectory. This transition may require increased support from developed economies to strengthen the capacity of health systems in the developing world and improve their access to the necessary technology.

To decarbonize, health care must achieve a thorough transition to clean, renewable, healthy energy. Health care delivery, facilities, and operations, the sector's supply chain, and the broader economy must all transition from fossil fuels.

Health care climate solutions can be more cost-effective than business as usual. Climate-smart solutions can save health care systems operating costs and reduce countries' health care costs by reducing the burden of disease caused by pollution.

THREE PATHWAYS

By advancing decarbonization of the economic sectors that health care relies on, countries' full compliance with their Paris Agreement commitments will only take the health sector one stretch of the way to zero emissions (top wedge in Figure i). Assuming all NDCs submitted up to 2017 are met (and this will already require health sector involvement in advocacy efforts), there will still be a significant amount of emissions that can only be mitigated through interventions in and from health care.

The Road Map identifies three interrelated, overlapping decarbonization pathways that the sector needs to navigate in order to address these emissions. Spanning and connecting these paths are seven high-impact actions. To chart a course to zero emissions, health care must follow these interwoven pathways and implement related high-impact actions simultaneously (middle wedge in Figure i).

Pathway 1: Decarbonize health care delivery, facilities, and operations. Health care delivery and operations are at the core of the sector's climate footprint. Hospitals and health systems everywhere must take on their greenhouse gas emissions and implement interventions that will ultimately fully decarbonize every aspect of health care delivery and its supporting functions while maintaining and improving patient care.

Pathway 2: Decarbonize health care's supply chain. More than 70% of health care's climate footprint comes from "Scope 3" emissions, much of which originate in the global supply chain. This supply chain spans both Pathway 2 and Pathway 3. Pathway 2 includes reducing the direct emissions of grid electricity purchased by health care facilities. It also includes production, packaging, and the transport of products used in the health sector. Health systems can use procurement decisions to demand the decarbonization of their own supply chain and leverage the sector's collective clout by pooling purchasing power across countries and beyond borders. At the same time, health care manufacturers and suppliers must take immediate action to move toward zero emissions.

Pathway 3: Accelerate decarbonization in the wider economy and society. Every aspect of the health care supply chain and delivery is reliant on other industries that provide energy, chemicals, building materials, packaging, infrastructure, transport, food, and more. Wider societal decarbonization is crucial to the health sector achieving zero emissions, while also more broadly protecting the health of people and the planet from the impacts of climate change. Health care institutions and professionals can play a leadership role as advocates for society-wide decarbonization that reduces the burden of disease.

SEVEN HIGH-IMPACT ACTIONS

Getting to zero emissions will require a series of high-impact, cross-cutting actions that span the three pathways. The implementation of these actions will result in a major reduction of health care greenhouse gas emissions. The emissions reduction potential that each action delivers can be seen in Figure ii which is a detailed illustration of the middle wedge shown in Figure i.
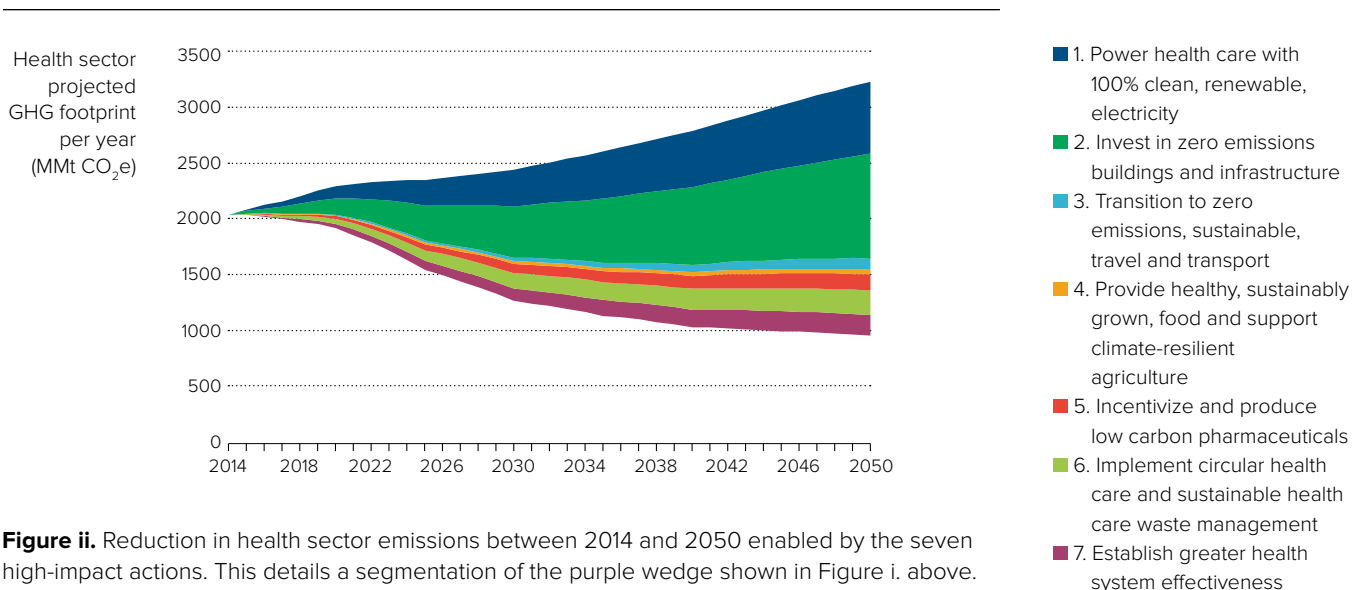
Health sector projected GHG footprint per year (MMt CO_2e)

1. Power health care with 100% clean, renewable, electricity
2. Invest in zero emissions buildings and infrastructure
3. Transition to zero emissions, sustainable, travel and transport
4. Provide healthy, sustainably grown, food and support climate-resilient agriculture
5. Incentivize and produce low carbon pharmaceuticals
6. Implement circular health care and sustainable health care waste management
7. Establish greater health system effectiveness

Figure ii. Reduction in health sector emissions between 2014 and 2050 enabled by the seven high-impact actions. This details a segmentation of the purple wedge shown in Figure i. above.

THE SEVEN HIGH-IMPACT ACTIONS ARE:

1. **Power health care with 100% clean, renewable electricity.** Ensure that health care is powered by zero emissions electricity across the three pathways.

2. **Invest in zero emissions buildings and infrastructure.** Ensure every health care building and health product manufacturing facility and their infrastructure promote energy efficiency, zero emissions, and climate resilience.

3. **Transition to zero emissions, sustainable travel and transport.** Transition to 100% low or zero emission fleet vehicles and infrastructure, while encouraging active travel and public transport for patients and staff wherever feasible.

4. **Provide healthy, sustainably grown food.** Provide healthy, locally, and sustainably produced fresh and seasonal food with zero food waste.

5. **Incentivize and produce low-carbon pharmaceuticals.** Reduce unnecessary pharmaceutical use, substitute high emissions products with more climate-friendly alternatives, and incentivize the production of affordable green, climate-smart medicine.

6. **Implement circular health care and sustainable health care waste management.** Implement circular economy principles to procure supplies, deploy clean technologies, reduce the volume and toxicity of health care waste, and manage waste sustainably.

7. **Establish greater health system effectiveness:** Reduce emissions by improving system effectiveness, including eliminating inefficient and unnecessary practices, linking carbon reduction and quality of care, and bolstering resilience.

UNCHARTED TERRITORY: BRIDGING THE HEALTH CARE EMISSIONS GAP

Beyond the seven high-impact actions, we project that without additional transformation, annual health care emissions will still stand at 1.1 gigatons in 2050. This health care emissions gap needs to be minimized over the course of the next three decades.

Bridging the gap will require scaling-up measurable health care climate action, while implementing new initiatives that will require research, innovation, and the exploration of health-based residual emissions management initiatives. It also presents an opportunity to rethink and redefine how health care is understood and delivered. Key areas for exploring opportunities to close the gap over time include:

- Investing in further research and seeding climate and health innovation centers to deepen emission reduction across the sector.

- Establishing Green UHC by integrating sustainability with Universal Health Coverage.

- Maximizing telehealth.

- Integrating climate-smart health care services and infrastructure into emergency response and pandemic preparedness.

- Addressing the social and environmental determinants of health by establishing disease prevention as climate change prevention and vice versa.

- Reinventing financing systems to support healthy people on a healthy planet

- Developing health sector-based residual emissions management solutions.

Driving change: High-level recommendations

THE ENTIRE SECTOR MUST MOBILIZE AND TRANSFORM ITSELF TO HELP PROTECT PUBLIC AND PLANETARY HEALTH FROM CLIMATE CHANGE.

Health care has an opportunity to be a climate leader, and by doing so, achieve not only a healthier planet and a healthier society, but also better health outcomes.

This Road Map contains a series of high-level recommendations, summarized here by key stakeholder groups.

GOVERNMENT ACTION

Declare climate change a health emergency: All governments can start by issuing a declaration that the climate crisis is a health emergency and requires concerted national and global action.

Develop national and subnational road maps: All governments should develop national and/or subnational road maps and action plans for health care decarbonization. As part of this effort, they should establish the systems and capacity to measure and track health care's climate footprint at the national, subnational, and facilities level.

Make zero emissions commitments: National health systems can make similar public commitments to the one made by England's NHS, which signaled its intent to reach net zero by 2045. Public hospitals, health systems, and government health services ready to commit to net zero can also join the UNFCCC's Race to Zero Campaign, by making a commitment to 50% emissions reduction by 2030 and net zero emissions before 2050.

Include health care in nationally determined contributions (NDCs): Health care decarbonization needs to be part of countries' NDCs under the Paris Agreement.

Take legislative, regulatory, and financial action: A thorough climate review of health care legislation, regulations, and financing mechanisms at the national and subnational levels, together with a set of specifically tailored policy recommendations and cost-benefit analyses, can help accelerate decarbonization and climate readiness in both public and private health care operations.

Develop health care climate leadership: Foster health care workforce capacity building and leadership development at all levels.

Put health into national and subnational climate policy: Following the approach of health in all policies, the health care sector should work closely with all relevant sectors to assure that governments develop strong cross-sectoral climate policies that protect public health from climate change while supporting health care decarbonization and resilience.

UNITED NATIONS AND OTHER INTERNATIONAL ORGANIZATIONS

A wide array of United Nations agencies, international financial institutions, bilateral agencies cooperation, and large foundations that provide health development assistance all need to play an important role in aligning and simultaneously achieving global health and global climate goals.

The United Nations Framework Convention on Climate Change (UNFCCC): The UNFCCC through the high-level champions can adopt this health care decarbonization Road Map, or a modified version of it, as one of its climate action pathways that outline the sectoral visions for a 1.5-degree climate-resilient world by 2050 and set out actions needed to achieve that future.

United Nations agencies: The World Health Organization (WHO), the UN Development Program (UNDP), the UN Environment Program, and other UN agencies have a crucial leadership role to play in advocating for and accelerating the decarbonization of the health care sector by providing essential policy and technical guidance to ministries of health around the world.

International financial institutions and bilateral cooperation: Institutions like the World Bank, regional development banks, bilateral aid agencies, and large foundations that provide significant support for health development in low- and middle-income countries must integrate climate-smart principles and strategies into their health aid, lending, and policy guidance. Those funding climate mitigation and adaptation—particularly the financial mechanisms of multilateral environmental agreements, like the Global Environment Facility and the Green Climate Fund—should integrate health into their programs and finance allocation criteria.

THE PRIVATE SECTOR

The private sector is omnipresent in health care—even in publicly-run health systems—and has a central role and responsibility to play in aligning health and climate imperatives. While government regulation can and must be an important function in establishing a framework for private sector transition to decarbonization, privately-owned health facilities and the "health care industry" more broadly must also exert leadership particularly in decarbonizing the global health care supply chain.

Private and nonprofit health care systems and facilities: Hospitals and health systems run by nonprofit corporations, religious organizations, and for-profit companies can all set ambitious targets for decarbonization, while integrating their efforts with resilience initiatives. Those hospitals and health systems ready to commit to net zero can also join the UNFCCC's Race to Zero Campaign, by making a commitment to 50% emissions reduction by 2030 and net zero emissions before 2050.

Manufacturers and suppliers: Manufacturers and suppliers can take a series of actions to decarbonize their manufacturing, packaging, and transport of products, create products that are themselves highly energy efficient and/or zero or low emissions, innovate and design their products for a circular economy that is sustainable, non-toxic, and minimizes waste and fosters reusability, and advocate for a decarbonization of the broader society and economy.

Health insurance and health finance: Insurers can set reimbursement schedules to favor cost-effective low emissions interventions over more carbon intensive actions. Institutions providing health care finance can set climate-smart criteria for health care construction, infrastructure, and the purchase of capital goods. All institutions with stock portfolios and retirement plans should divest from fossil fuels.

CIVIL SOCIETY

The tens of millions of doctors, nurses, public health professionals, and other health care workers, their professional associations, labor unions, the broad networks of health researchers, along with local, national, and global health advocacy organizations are critical to mobilizing health care itself to take action.

At the same time, civil society in the health sector must play a central role as advocates for accelerating decarbonization in the broader economy and society. Health professionals can influence the behavior of patients and policymakers alike. The health voice—the voices of doctors and nurses in particular—is the most trusted voice in most cultures. Health care providers are emerging from the COVID-19 pandemic as heroes who have served on the frontlines.

As we begin to move beyond COVID-19, these heroes can help lead their sector in warning about the next looming crisis, one that is already upon us and which will continue to accelerate in the coming years. They can help protect public health from the climate crisis, and, as part of that, help lead the health care sector itself to chart a course to zero emissions and drive change to achieve health equity and climate justice.