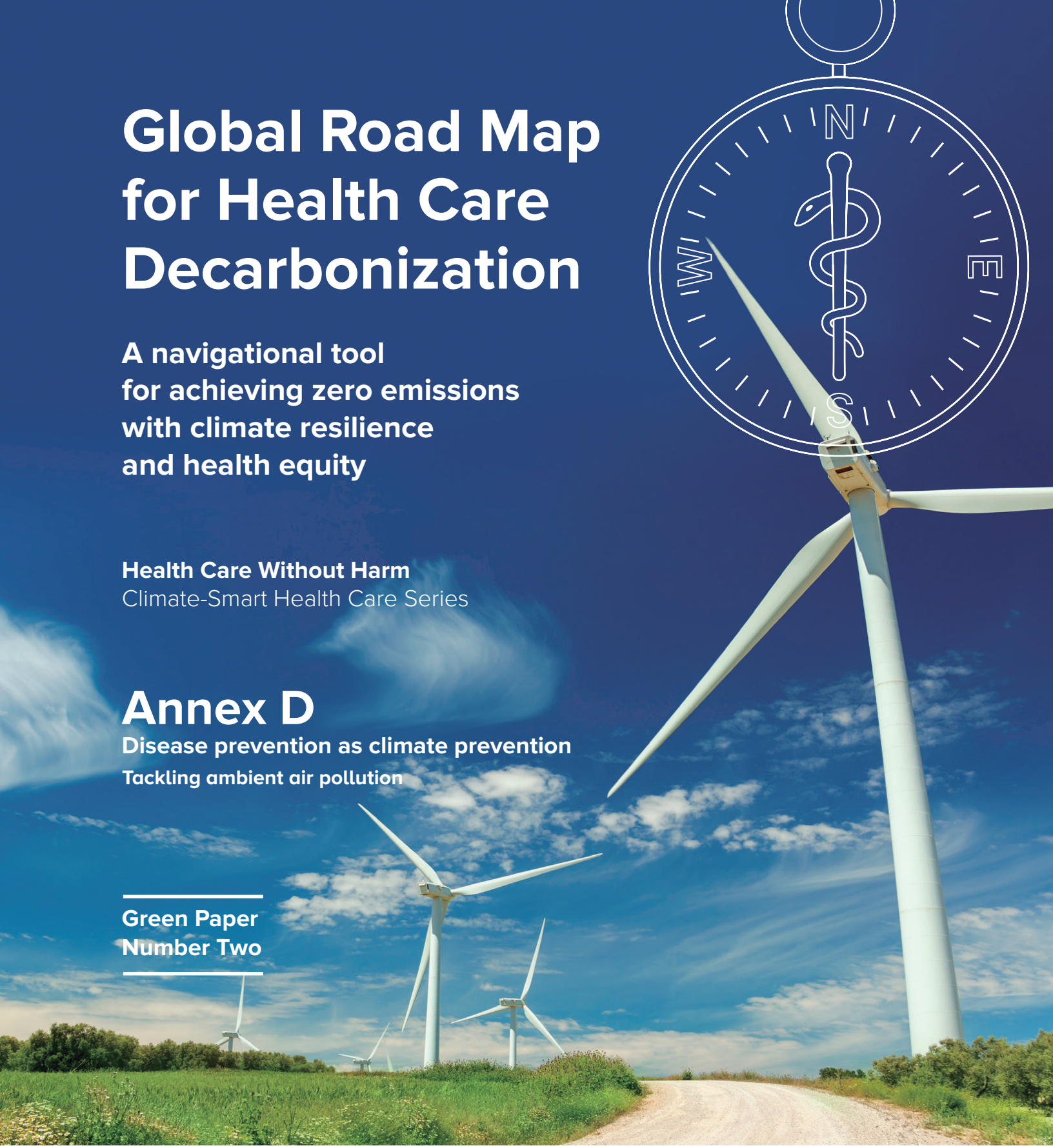
Global Road Map for Health Care Decarbonization

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



Health Care Without Harm
Climate-Smart Health Care Series

Annex D

Disease prevention as climate prevention

Tackling ambient air pollution

Green Paper Number Two

Health Care Without Harm

Produced in collaboration with ARUP

Annex D: Disease prevention as climate prevention - Tackling ambient air pollution

Tackling ambient air pollution is good not only for people's health, it is also beneficial for the planet's health, as doing so will reduce greenhouse gas (GHG) emissions from the energy, industry, and transport as well as GHGs coming from the utilization of health care due to air pollution-related diseases.

Why is it important for global health?

Air pollution was the 4th leading risk factor for premature death worldwide in 2019[1], contributing 6.67 million deaths or nearly 12% of the global total[2]. More than half of these deaths (4.14 million) were caused by ambient air pollution (Figure 1). The remaining air pollution-related deaths were due to household air pollution (2.31 million), generated mainly by the burning of various fuels, like charcoal and wood, for cooking and indoor heating and ambient ozone air pollution (365,000 deaths).

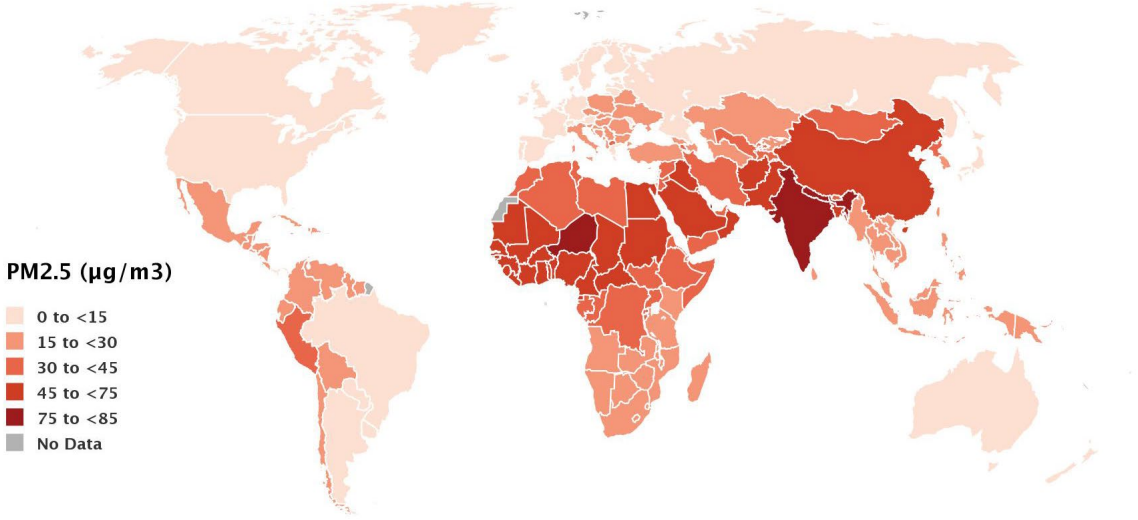


Figure 1. Number of deaths due to ambient air pollution across nations in 2019[3]

Exposure to high average concentrations of particulate matter, especially PM2.5, has been the most consistent and robust predictor of mortality from cardiovascular, respiratory, and other types of diseases. More than 80% of outdoor air pollution-caused deaths are due to noncommunicable diseases (NCDs), including ischemic heart disease, stroke, chronic obstructive pulmonary disease (COPD), and lung cancer. The rest are attributable to acute lower respiratory infections, especially in children[4].

The economic and health costs of air pollution are enormous. One estimate revealed that in 2013, premature deaths due to both ambient and household air pollution cost the global economy about $225 billion USD in lost labor income or about $5.11 trillion USD in welfare losses[5]. Meanwhile, another study projected the annual global welfare costs associated with the premature deaths from outdoor air pollution alone to rise from $3 trillion USD in 2015 to $18-25 trillion USD in 2060[6].

Why is it important for tackling the climate crisis?

Ambient air pollution and GHG emissions that drive climate change are both generated by shared sources. The Fifth Assessment Report of the UN Intergovernmental Panel on Climate Change[7] estimated that 78% of the total GHG emission increase from 1970 to 2010 originated from fossil fuel combustion and industrial processes, which also emit particulate matter and other air pollutants. The major contributors of direct GHG emissions are electricity and heat production (25% of total), agriculture, forestry, and other land use (24%), industry (21%), and transport (14%). If all these sectors move away from coal and other fossil fuels and shift to cleaner renewable forms of energy as well as cleaner transport, energy-efficient housing, and better municipal waste management, both the GHG emissions and particulate matter pollution are expected to be dramatically reduced. This will lead to clean air, direct climate benefits, and benefits to public health.

How will this help decarbonize health care?

Figure 2 illustrates the pathways that link reduction in air pollution to both direct GHG emissions reductions from sustainable energy and transport and indirect emissions reductions through the decarbonization of health care. When air quality is improved through sustainable energy and transport options, fewer people with air pollution-related NCDs, as well as children with acute respiratory illnesses, can be expected. This would mean a smaller number of patients coming to hospitals and other health facilities for chronic management of NCDs as well as for acute treatment of childhood respiratory illnesses and complications in adults (like surgery, hospitalization for acute episodes, and use of inhalers and nebulization). The potential for reduced health care utilization offers many opportunities for GHG emission reduction in health care coming from the use of resources like electricity, water, and food, as well as the entire manufacturing and supply chain of products needed for clinical care, like pharmaceuticals and syringes.

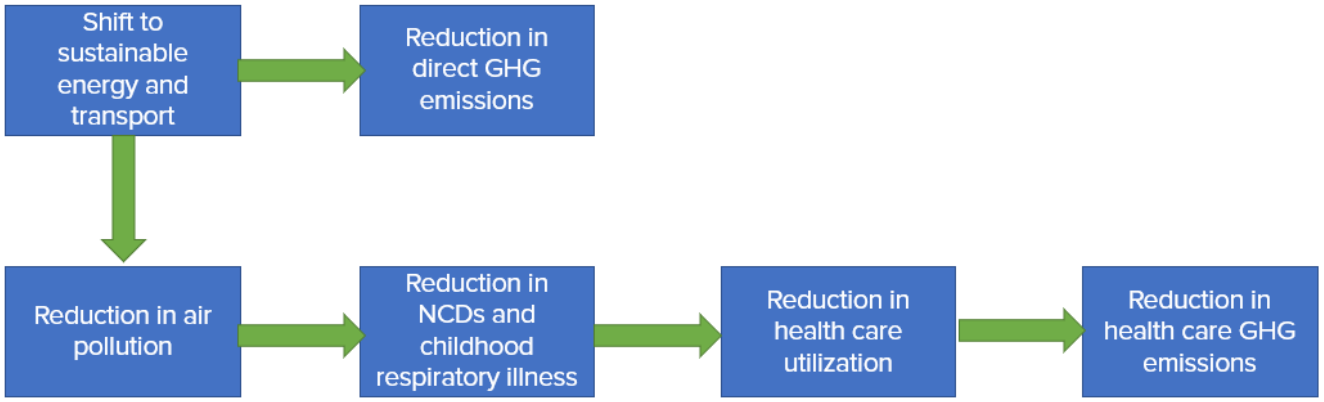


Figure 2. GHG emission reductions from interventions that reduce obese and overweight populations through direct and indirect pathways

Using available estimates of air pollution-related health care spending[8] and projecting a two-thirds reduction in air pollution-related diseases by 2030 (the target in WHO's Geneva Action Agenda to Combat Air Pollution[9]), followed by an additional two-thirds reduction by 2050[10], it is estimated that there would be an annual reduction in total health care spending of 1%, which translates to a cumulative reduction in health care's climate emissions of 238 million metric tons from 2014 to 2050 (Figure 3). This amount is equivalent to one year of GHG emissions from 61 coal fired power plants, or from burning more than 550 million barrels of oil[11]. Thus, implementing solutions to achieve air quality improvement targets and reduce air pollution-related health care utilization also generates significant climate co-benefits.

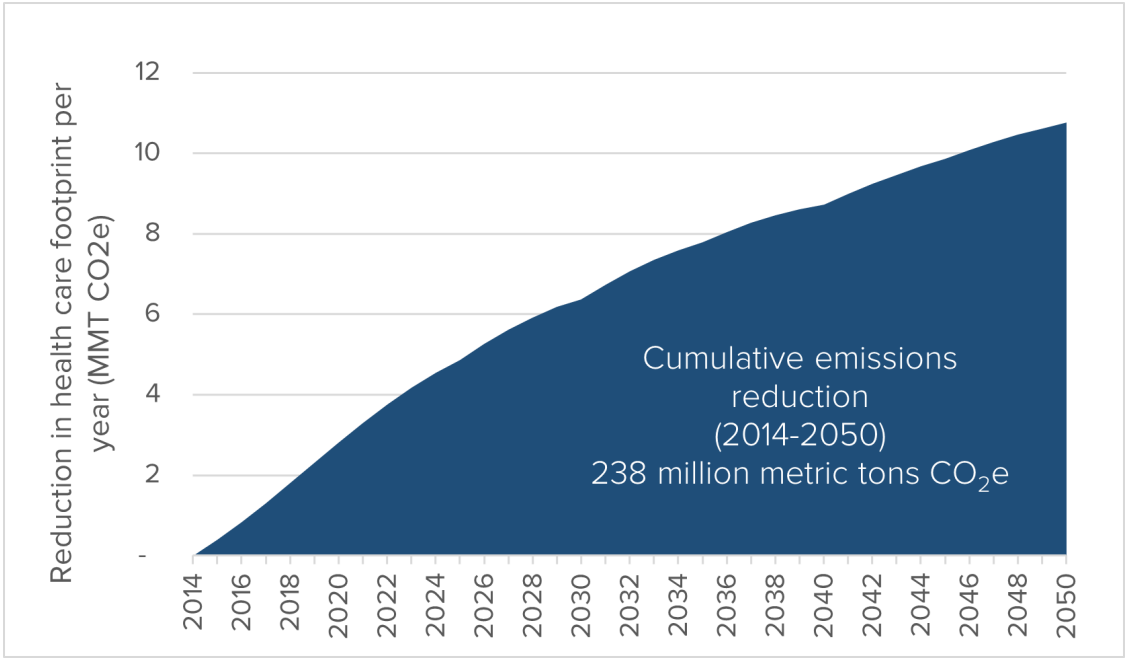


Figure 3. Annual health care emissions reduction from reduced air pollution from 2014 to 2050

We recognize that one major limitation of this approach is that spending, and in turn emissions averted by these interventions may simply be reallocated to a later point in a person's life or to another part of a health system budget. This is otherwise known as a rebound effect, which is difficult to model specifically and therefore often not considered in climate modeling exercises.

Despite this limitation, the results we have generated illustrate the potential climate benefits of top priority health interventions, like tackling air pollution. These findings underscore the need for further research and greater understanding of the role that individual and population health can play in contributing to reduced climate impact.

What must the global health community do?

To improve human health, there is a need to tackle the shared sources of air pollution and climate change. In addition to improving energy efficiency of buildings, vehicles, and appliances, a phase-out of coal and other fossil fuels and a shift to cleaner renewable energy sources for both electricity and transportation will lead to combined reductions in particulate matter and GHGs in the atmosphere.

A "Health in All Policies" approach can aid in combating the health impacts of air pollution. Setting up routine air quality monitoring and educating patients, staff, and the public while advocating for upgrading national air quality standards are some of the levers that the health sector can harness to drive changes in other relevant sectors, like energy and transport. Transforming transport systems especially in urban settings offers multiple health benefits, not just related to air quality improvement but also in preventing obesity and other noncommunicable diseases. Hospitals and health care systems can also decarbonize their operations to improve air quality and mitigate climate change.

The global health community must continue pushing for policy solutions that reduce ambient air pollution worldwide. This will ensure the achievement of the Sustainable Development Goals (SDG), particularly SDGs 3.4 (reducing NCD burden), 3.9 (reducing deaths and illnesses due to environmental pollution), 7.2 (improving access to clean energy in the home), 11.6 (improving air quality in cities), 11.2 (enhancing access to sustainable transport), and 13 (climate action). Tackling ambient air pollution worldwide will help save lives and, through reduced direct and indirect GHG emissions, save the planet as well.

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www.healthcareclimateaction.org/RoadMap

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