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Topography

Understanding the landscape of health care emissions

“Human health and climate change has been identified as a high priority issue for the National Academy of Medicine going forward... Decarbonization of the health sector [is] an ambitious and important goal.”

Dr. Victor Dzau, President, National Academy of Medicine, United States



Health care’s climate footprint: Green Paper One

In September 2019, Health Care Without Harm and Arup published Green Paper One, which found that, based on 2014 data, health care’s climate footprint is equivalent to 4.4% of global net emissions (2 gigatons of carbon dioxide equivalent). The Health Care Without Harm-Arup paper built on, contributed to, and was validated by a growing body of evidence from national and international studies of health care’s contribution to the climate crisis.³⁰

The paper found that the top three emitters, the United States, China, and collectively the countries of the European Union, comprise more than half the world’s health care climate footprint (56%). The top 10 health care emitters make up 75% of the global health care climate footprint (Figure 5). The United States health sector is the world’s number one emitter in both absolute and per capita terms. It produces 57 times more emissions per person than does India.

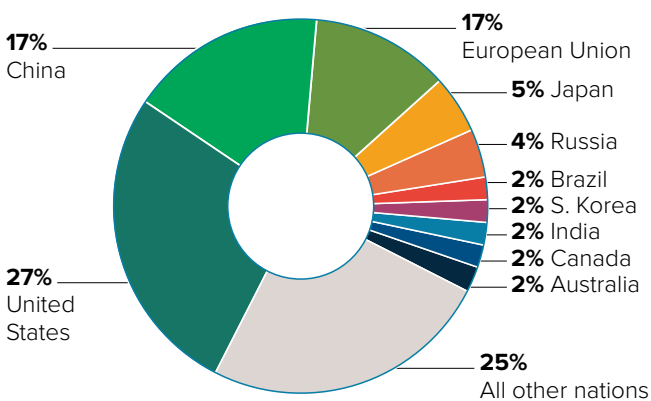


Figure 5. Top ten emitters plus all other nations and percentage of global health care footprint.

Source: Green Paper One.

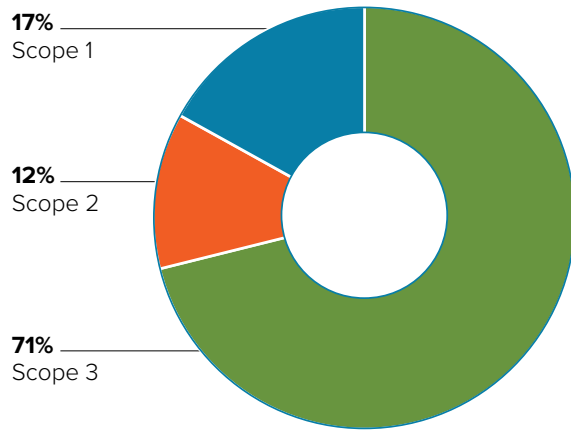


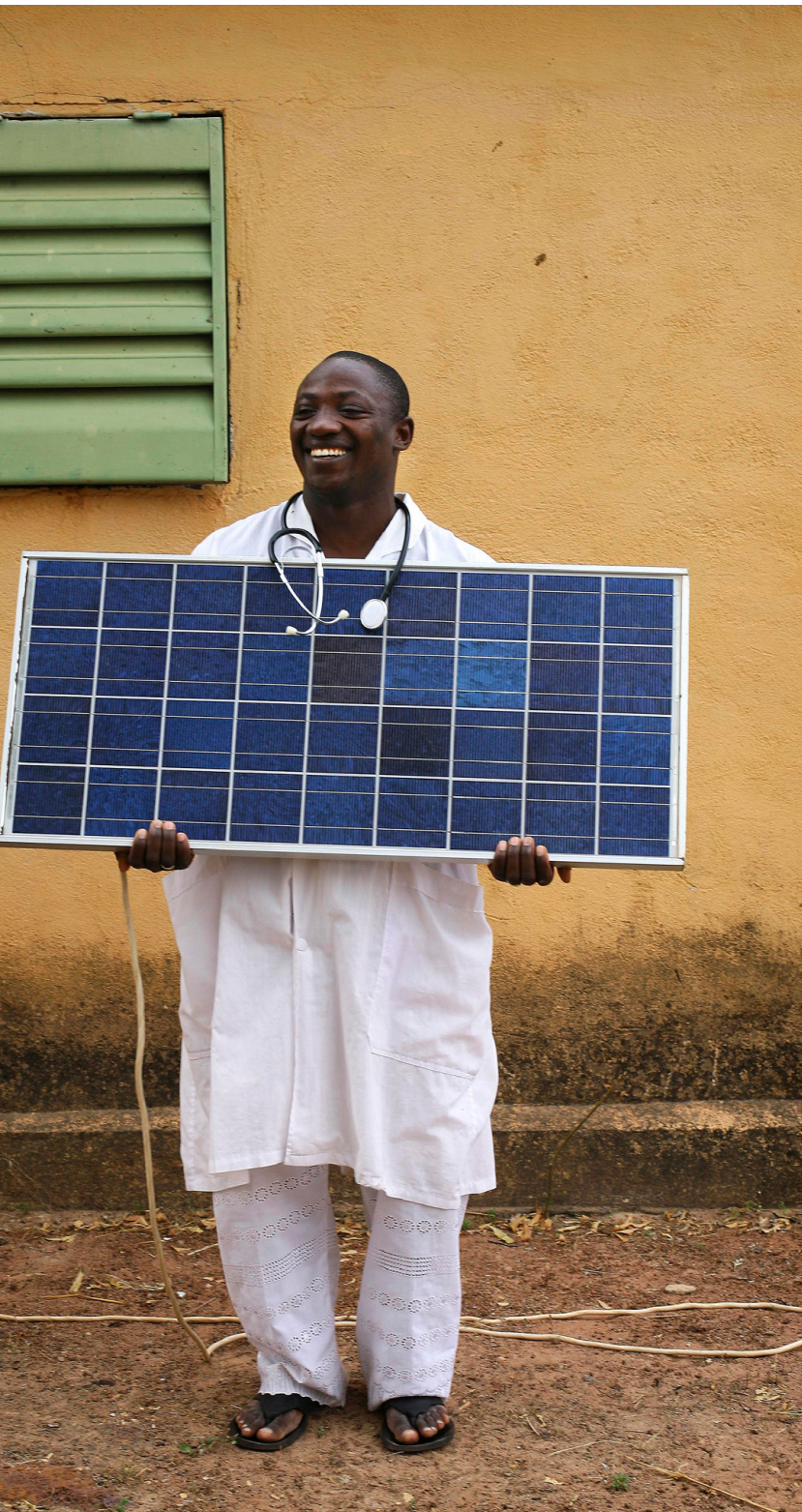
Figure 6. Global health care footprint split by GHGP Scopes.

Source: Green Paper One.

The paper also aligned its findings with GHGP categories, establishing that 17% of health care emissions were produced onsite (Scope 1), 12% were from purchased energy (Scope 2), and 71% came from indirect emissions (Scope 3) including the global supply chain (Figure 6.). Overall, and across all countries, the paper found that fossil fuel consumption is at the heart of health care’s emissions because it inherently fuels the energy, manufacture, and transport of health care operations and products.

A further perspective of this is summarized in Figure 7 where the product sectors of the Scope 3 component are set out.





GHGP Scope categories

WIOD categories

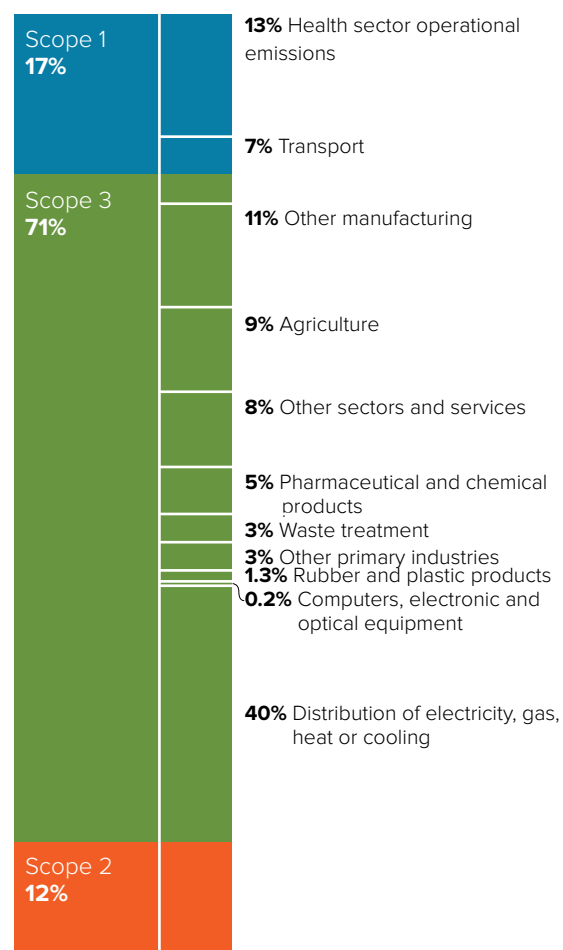


Figure 7. Global health care emissions as presented in the Green Paper One are split by production sector and by scope category.

Structural path analysis findings

Green Paper One presented Scope 3 data with limited granularity and descriptions of the sectorial categories shown in Figure 7 which did not match well with the categorizations more familiar to health care decision makers.

This Road Map addresses this issue by using a technique called Structural Path Analysis (SPA) to present the data in a more impactful and usable form. SPA is an advanced input-output modelling approachⁱⁱ and a full description of the method and findings can be found in Annex A.

Green Paper One findings were modelled through an SPA. This generated outputs more familiar to, and actionable for, those engaged in health care policy, procurement, and supply chain management. Figure 8 shows a perspective of the SPA output, the significance of supply chain Scope 3 emissions, and the variation of distribution across many different categories. Business services, the food sector, construction, and pharmaceuticals stand out, with each making up between 5% and 12% of health care’s climate footprint. Figure 9 shows the same emissions through the lens of Greenhouse Gas Protocol categories.

Implementing the SPA has enabled these results to be applied to the Road Map to inform future pathways and high-level actions essential for health care sector decarbonization. The findings of Green Paper One, together with the SPA, form the foundational analysis, or the topography upon which the Road Map is based.

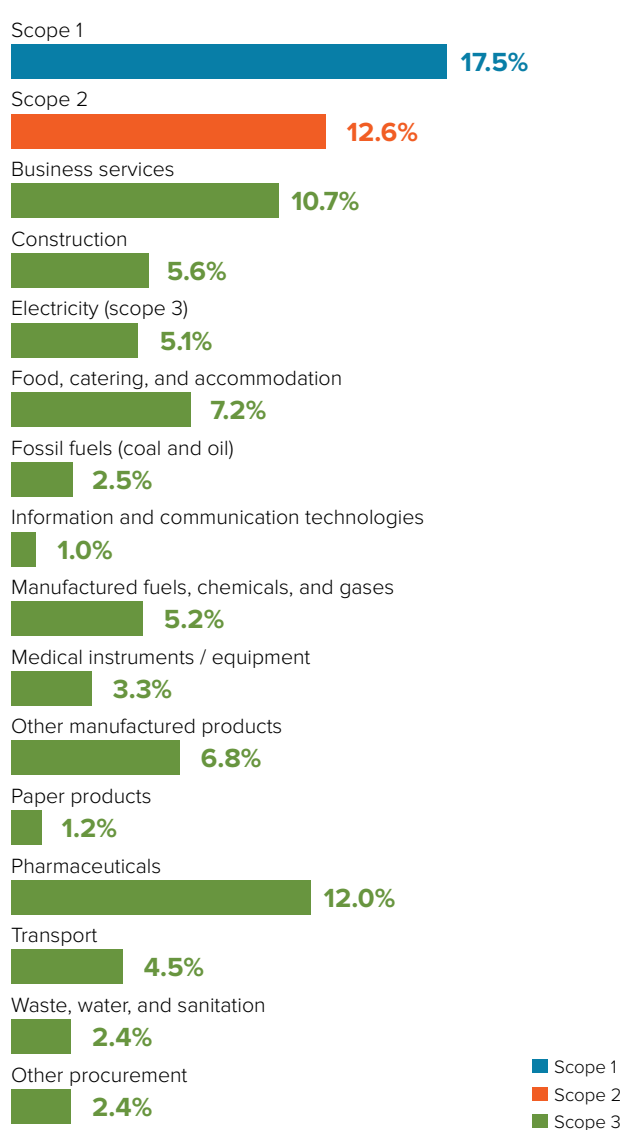


Figure 8. Health care’s global emissions footprint by supply chain categories

ii Input-output analysis predicts emissions through coupling expenditure data with the emissions intensity per unit spend for sectors in the economy. To predict future growth in emissions, predicted changes in health expenditure have been used as this data is directly compatible with the IO methodology, which is introduced in the following paper: Kitzes J. An Introduction to Environmentally-Extended Input-Output Analysis. Resources. 2013; 2(4):489-503. <https://doi.org/10.3390/resources2040489>

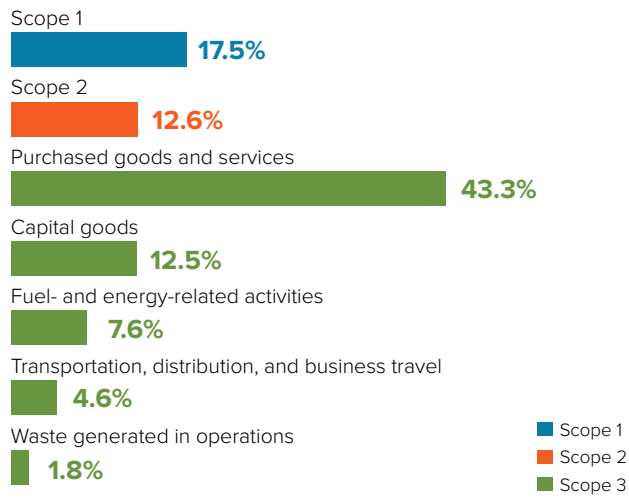


Figure 9. Health care's global emissions footprint by GHGP supply chain categories and sub-categories



Broadening individual country coverage

The 43 nations covered in detail in the WIOD input-output model have a skew toward higher income nations. Other studies, making use of differing data sources and methodologies, have provided estimates for other nations. One such study, from Lenzen et al.³¹, has produced a global health sector footprint based on Eora, a different input-output model, and provides the health sector footprint with a complementary set of nations to those in WIOD.

From Lenzen et al.'s work, 25 additional national footprints have been included in this study, thus expanding the number of low- and middle-income nations profiled. The additional nations are shown in Table 3, and all profiles are included in the country factsheets in Annex C. Integrating these published footprints for an additional 25 nations has allowed the Road Map to be more expansive than Green Paper One.

Because these footprints have been derived through a different methodology (Eora), using a different source of health sector expenditure, the sector definitions and activities covered differ from those in the WIOD based model. Target projections and anticipated growth in expenditure helped establish the reference case scenario (BAU) and target trajectories for the additional national footprints. However, the structure of the health care sector footprint for these nations was not available. The potential scale of emissions reduction for these nations is instead estimated using the global mean reductions derived from the WIOD model. These estimates are shown to highlight the potential savings if these health systems decarbonize in line with the global average, and therefore do not capture the expected variability associated with the national context. It is recommended that these nations further investigate their national health system footprint and potential to decarbonize to capture the national context in greater detail.

To hold climate change to 1.5 degrees and achieve the ambition of the Paris Agreement, the nations of the world have agreed that all countries must take action.

