Global Road Map for Health Care Decarbonization

National fact sheet user guide

Purpose of the factsheets

The national Global Health Decarbonization Road Map factsheets have been developed to provide countries with customized information derived from the global roadmap modelling. They are a useful indicator of the footprint's size while identifying areas of focus for decarbonization and the level of work needed to reduce emissions towards zero. They are intended as a starting point for further in-depth in-country work to establish a national health sector carbon footprint baseline and action plan.

Data sources

The factsheets are particularly useful in the absence of more detailed national data. They are based on international input-output databases and categorization assumptions needed to produce a global model and may raise more questions than answers.

There are two different sets of country fact sheets based on other Input-Output databases. For the first set, national footprint data is based on modelling performed by Health Care Without Harm and Arup, using the WIOD input-output database and national health expenditure data for 2014 taken from datasets provided by the OECD[i] and World Health Organization (WHO)[ii]. The 43 nations covered in detail in the WIOD input-output model have a skew toward higher-income nations. Other studies, using differing data sources and methodologies, have less detail on the health sector but cover a greater number of nations. One such study, from Lenzen et al.[iii] 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, we have produced fact sheets for 25 additional countries, thus expanding the number of low- and middle-income nations profiled, albeit with less granular data.

Countries covered

WIOD-based country fact sheets: Australia, Austria, Belgium, Brazil, Bulgaria, Canada, China, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, India, Indonesia, Ireland, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Malta, Mexico, Netherlands, Norway, Poland, Portugal, Romania, Russia, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Taiwan, Turkey, United Kingdom, USA

Eora-based country fact sheets: Argentina, Chile, Colombia, Ecuador, Georgia, Iran, Kazakhstan, Kenya, Kuwait, Kyrgyzstan, Israel, New Zealand, North Macedonia, Malaysia, Mauritius, Paraguay, Peru, Philippines, Singapore, South Africa, Thailand, Ukraine, Uruguay Uzbekistan, Vietnam.

Technical description of Road Map national factsheets content and assumptions:

WIOD-based country fact sheets: The notes below summarize key technical points and assumptions made in the development of the model from which the factsheets were derived.

Fact sheet component	Description
Figure 1	Emissions in 2014 are presented in terms of Scope 1 (onsite), Scope 2 (purchased energy), and Scope 3 emissions using the categorization detailed in Table A.6 in Annex A of the main report. The calculations used to produce this footprint were built using the WIOD IO model, which produces a representation of the global economy using national statistics agencies' reporting of economic activity and greenhouse gas emissions across model nations and a Rest-of-World region. The distribution of emissions presented in this figure reflects this model's contents and its underlying data sources. We have not sought to explain the trends shown. For more information on how these outputs were produced and benchmarked against existing national studies, please see Annex A. For more information on the construction of WIOD please see Timmer et al.[iv]
Figure 2	The average per capita emissions trajectories are shown for each of the four trajectory types used for the Global Road Map. The national target trajectory curve for the nation covered by the fact sheet can be seen in Figure 3. For more information on the methodology used to create the trajectories, please see section A1.2 in Annex A to the main report.
Figure 3	The estimated future emissions for health care in this nation are shown for three scenarios. The emissions reduction trajectory derived from Figure 2 is also shown. The projections in this graph make use of several data sources. Assumptions are given in the Road Map report and Annex A. Some key considerations for the figure include:

	• The business-as-usual (BAU) line forecasts the growth in national emissions using the baseline footprint value and health expenditure through to 2050, forecasted by the Institute for Health Metrics and Evaluation (IHME). • The emissions reduction wedge titled, *Progress in line with governments' energy and climate commitments up to 2017,* predicts the decarbonization for the health system where current nationally determined contributions (NDC) commitments are met across the national and global economy. They use data from the International Energy Agency (IEA). For some sectors, the IEA provides profiles for some individual nations such as the United States and China, while for others, it provides profiles for groupings of nations, such as the European Union or OECD. This wedge estimates the decarbonization opportunity if current NDC commitments are met but should not be used to draw conclusions related to the level of ambition included in the NDC commitments for individual nations. • The emissions reduction wedge titled, *Further health care decarbonization opportunities through the three pathways and seven actions in the Road Map,* covers the decarbonization potential of additional mitigation actions considered in this model and described in the Road Map.
Figure 4	This figure disaggregates the wedge, *Further health care decarbonization opportunities through the three pathways and seven actions in the Road Map,* shown in Figure 3, to show estimates of the emissions reduction potential of the seven high-impact action areas modelled by this study. The Road Map report details further action in these areas. The emissions reduction shown is a conservative estimate and does not consider all recommendations detailed in this report. Implementation of all the recommendations could lead to more significant emissions reductions than shown in this figure.

Eora-based country fact sheets: The notes below summarize key technical points and assumptions made in developing the model using health sector footprints published by Lenzen et al.[v] from which the factsheets were derived.

Fact sheet component	Description
Figure 1	Emissions in 2015 are presented in terms of Scope 1 (onsite) emissions and a combination of Scope 2 (purchased electricity) and Scope 3 emissions, as reported in the supplement to Lenzen et al.'s paper.
Figure 2	The average per capita emissions trajectories are shown for each of the four trajectory types used for the Global Road Map. The national target trajectory curve for the nation covered in

	the fact sheet can be seen in Figure 3. For more information on the methodology used to create the trajectories, please see section A1.2 in Annex A to the main report.
Figure 3	The estimated future emissions for health care in this nation are shown for three scenarios. The emissions reduction trajectory derived from Figure 2 is also shown. The projections in this graph make use of several data sources. Assumptions are given in the Road Map report and Annex A. Some key considerations for the figure include: The business-as-usual (BAU) line forecasts national emissions growth using the baseline footprint value and health expenditure through to 2050, forecasted by the Institute for Health Metrics and Evaluation (IHME). The emissions reduction wedge titled, Progress in line with governments' energy and climate commitments up to 2017, is a prediction based on the global average rate of decarbonization estimated for the health system within the Road Map model where current NDC commitments are met across the global economy. The emissions reduction wedge titled, Further health care decarbonization opportunities through the three pathways and seven actions in the Road Map, is a prediction based on the global average rate of decarbonization estimated for the Road Map's health system model for emissions reduction measures.
Figure 4	This figure disaggregates the wedge, Further health care decarbonization opportunities through the three pathways and seven actions in the Road Map, at a global level; highlighting the global emissions reduction potential of the seven high-impact action areas modelled by this study. The Road Map report details further action in these areas. This action is shown at the global level, as national-level data of the form required for this assessment was not available. The emissions reduction shown is a conservative estimate and does not consider all recommendations detailed in this report. Implementation of all the recommendations could lead to greater emissions reductions than shown in this figure.

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[i] OECD, "OECD Health Statistics 2019," 2019. [Online]. Available:
https://stats.oecd.org/index.aspx?DataSetCode=HEALTH_STAT [Accessed 6 May 2019].
[ii] World Health Organization, "Global Health Expenditure Database," 2014. [Online]. Available:
https://apps.who.int/nha/database [Accessed 6 May 2019].
[iii] Lenzen, M., Malik, A., Li, M., et al. (2020).
[iv] Timmer, M. P., Los, B., Stehrer, R. and de Vries, G. J. (2016). An Anatomy of the Global Trade Slowdown based on the WIOD 2016 Release. University of Groningen.
[v] Lenzen, M., Malik, A., Li, M., Fry, J., Weisz, H., Pichler, P.-P., Chaves, L. S. M., Capon, A., & Pencheon, D. (2020). The environmental footprint of health care: a global assessment. The Lancet Planetary Health, 4(7), e271–e279.
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