
Guidance, methods & tools for quantifying & valuing health co-benefits of mitigation actions in NDCs

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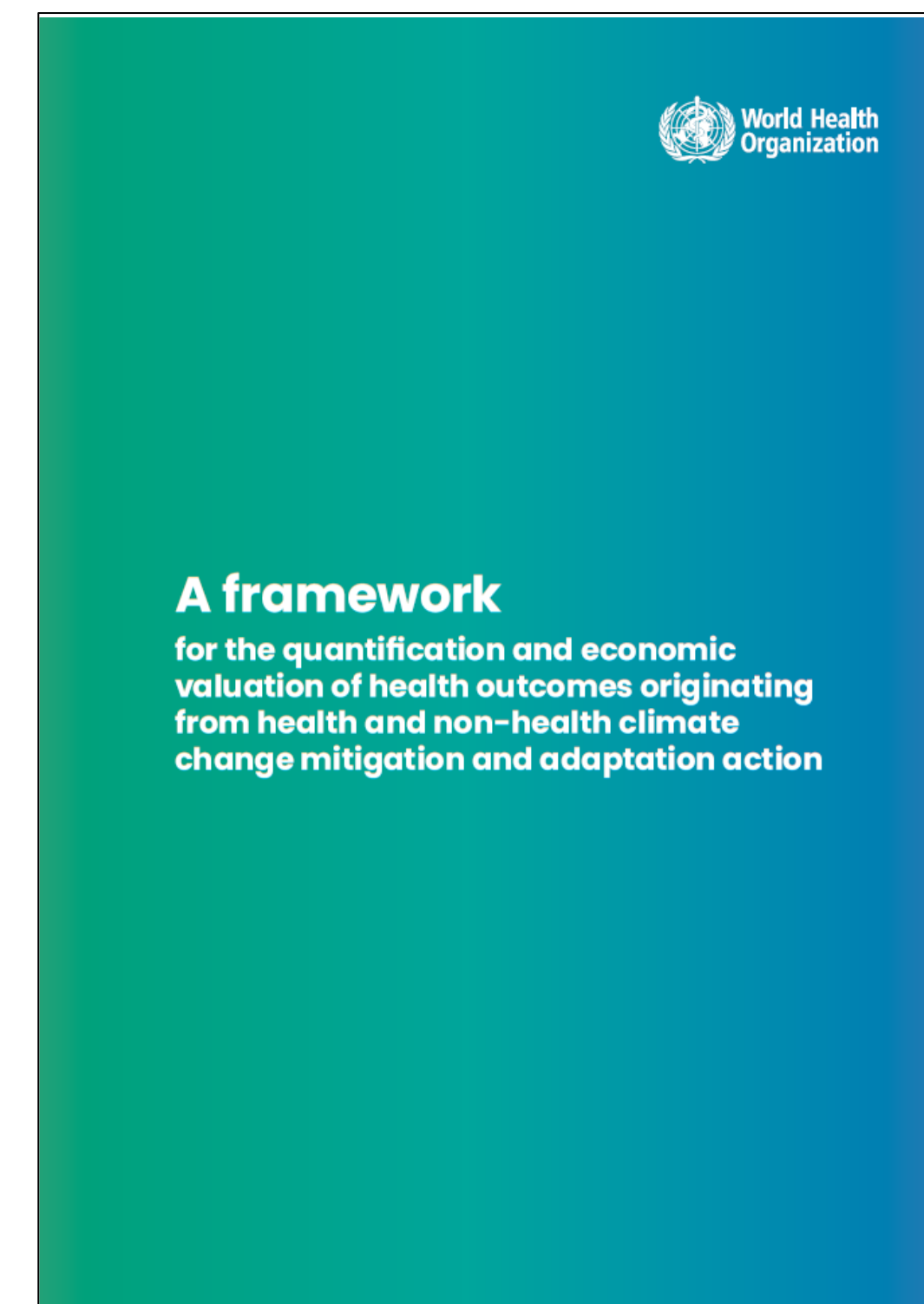
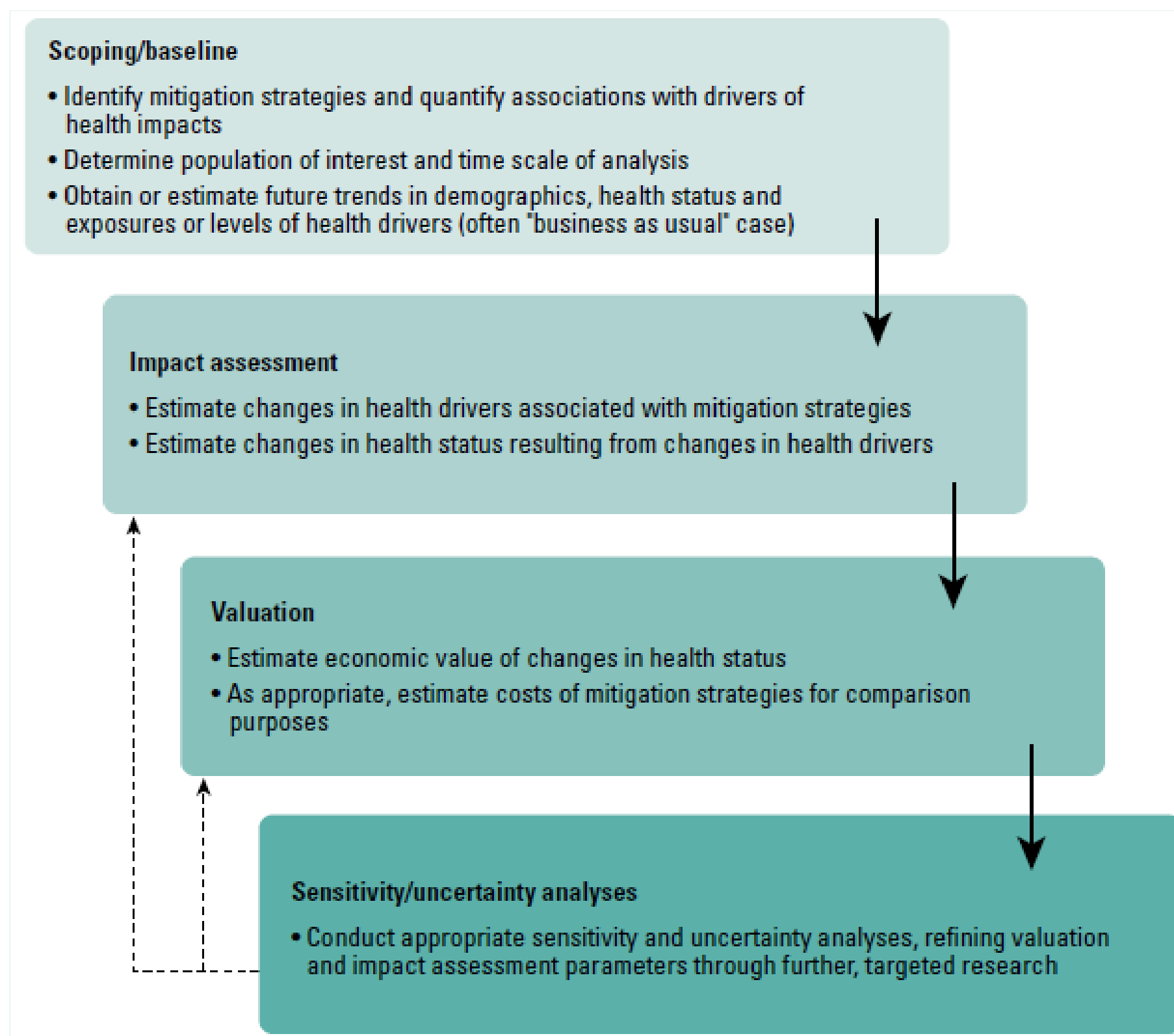
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Mitigation actions deliver health co-benefits; NDCs should quantify & value these impacts

- For many mitigation actions, economic value of health co-benefits outweighs their costs:
“The economic benefits on human health from air quality improvement arising from mitigation action can be of the same order of magnitude as mitigation costs, & potentially even larger” (p26, IPCC 2023)
- NDCs often neither quantify, nor monetize these health impacts: 10% of NDCs quantify and/or monitor health co-benefits of climate actions (WHO 2023a)
- Adding assessments with quantified & monetized health co-benefits in NDCs strengthens the welfare, economic & financing cases for mitigation actions
- WHO guidance, methods & tools for assessing health co-benefits of mitigation actions & guidance for integrating them into NDCs



WHO guidance for quantifying & monetizing health co-benefits of climate actions

Step 1: Scoping/baseline

- Identify mitigation strategies & quantify associations with drivers of health impacts
- Determine population of interest & time scale of analysis
- Obtain or estimate future trends in demographics, health status & exposures or levels of health drivers (often "business as usual" case)

Co-benefits of climate mitigation action for health in the WHO European Region

POLICY BRIEF

Co-benefits of climate mitigation action for health

WHO European Region



Cleaner air

Lower fossil fuel use reduces air pollution, preventing respiratory and cardiovascular disease.



Active mobility

Walking, cycling and public transport increase physical activity and reduce traffic-related harms.



Healthier diets

More sustainable food systems can support healthier diets and lower chronic disease risks.



Warmer and cooler homes

Energy-efficient housing improves thermal comfort, reduces energy poverty and protects health.



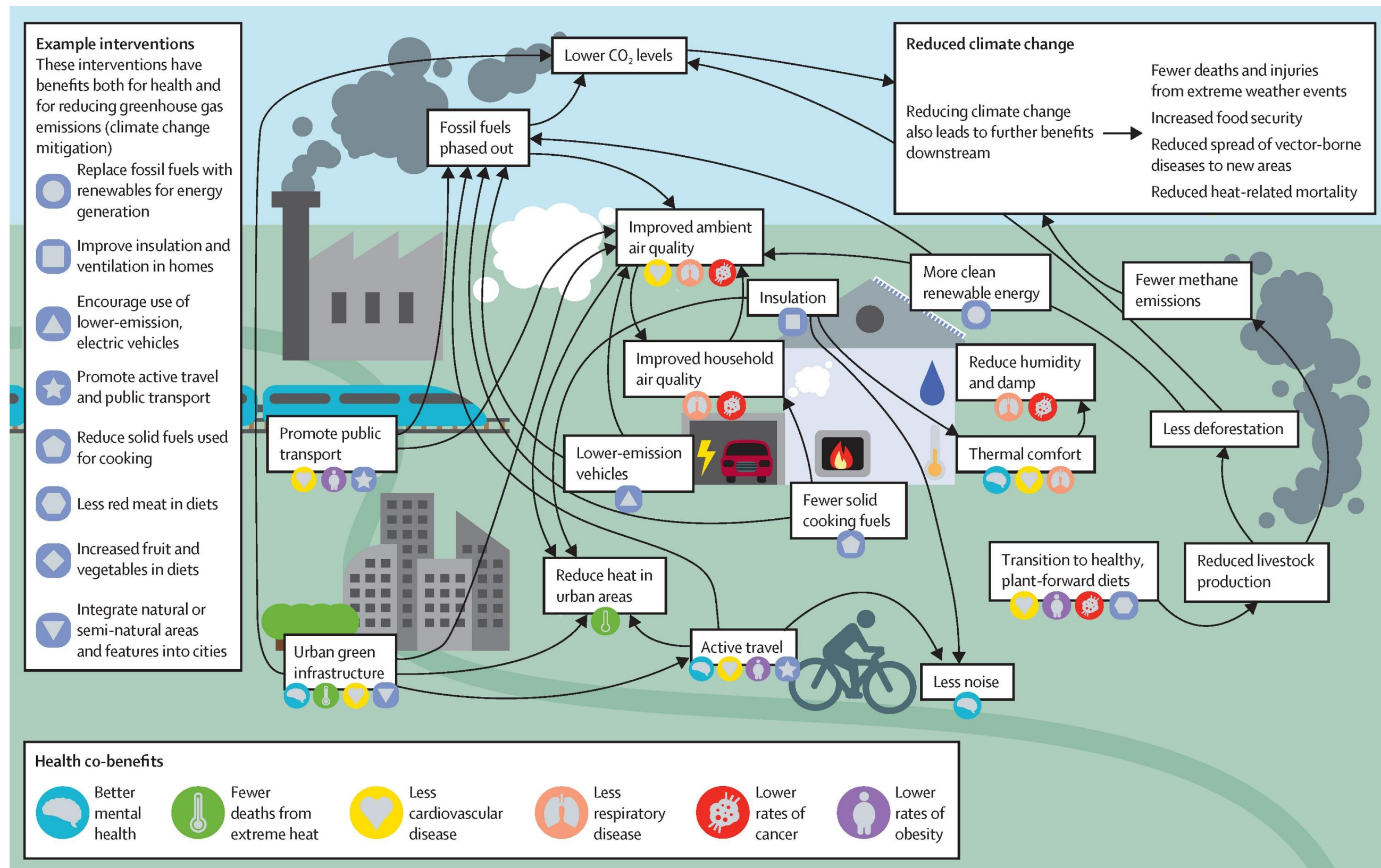
More equitable cities

Climate action can create quieter, greener and safer communities, with benefits for mental health and well-being.



Climate mitigation can deliver immediate health gains while reducing greenhouse gas emissions.

Identifying mitigation actions with health co-benefits



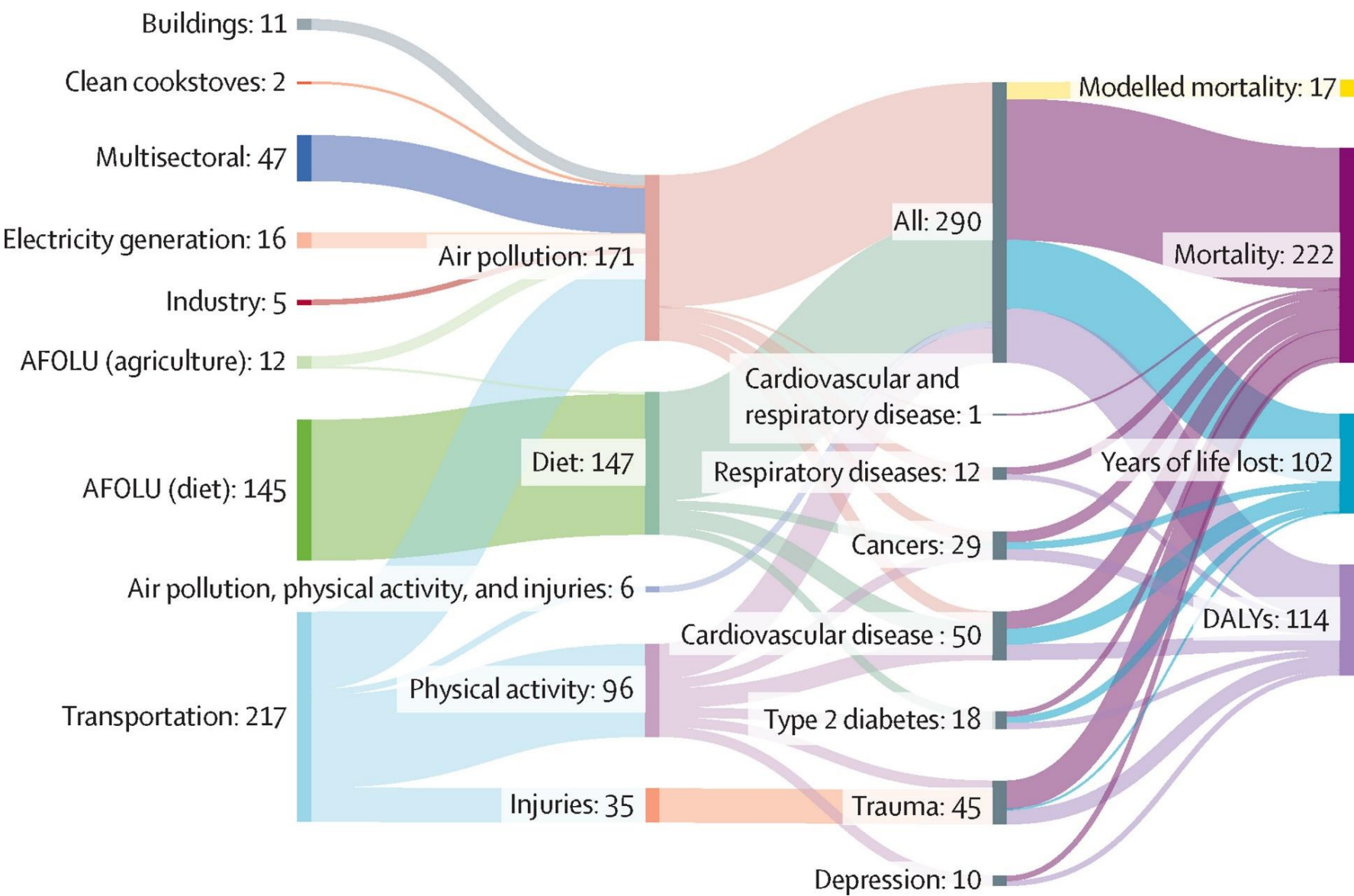
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Step 2: Impact assessment

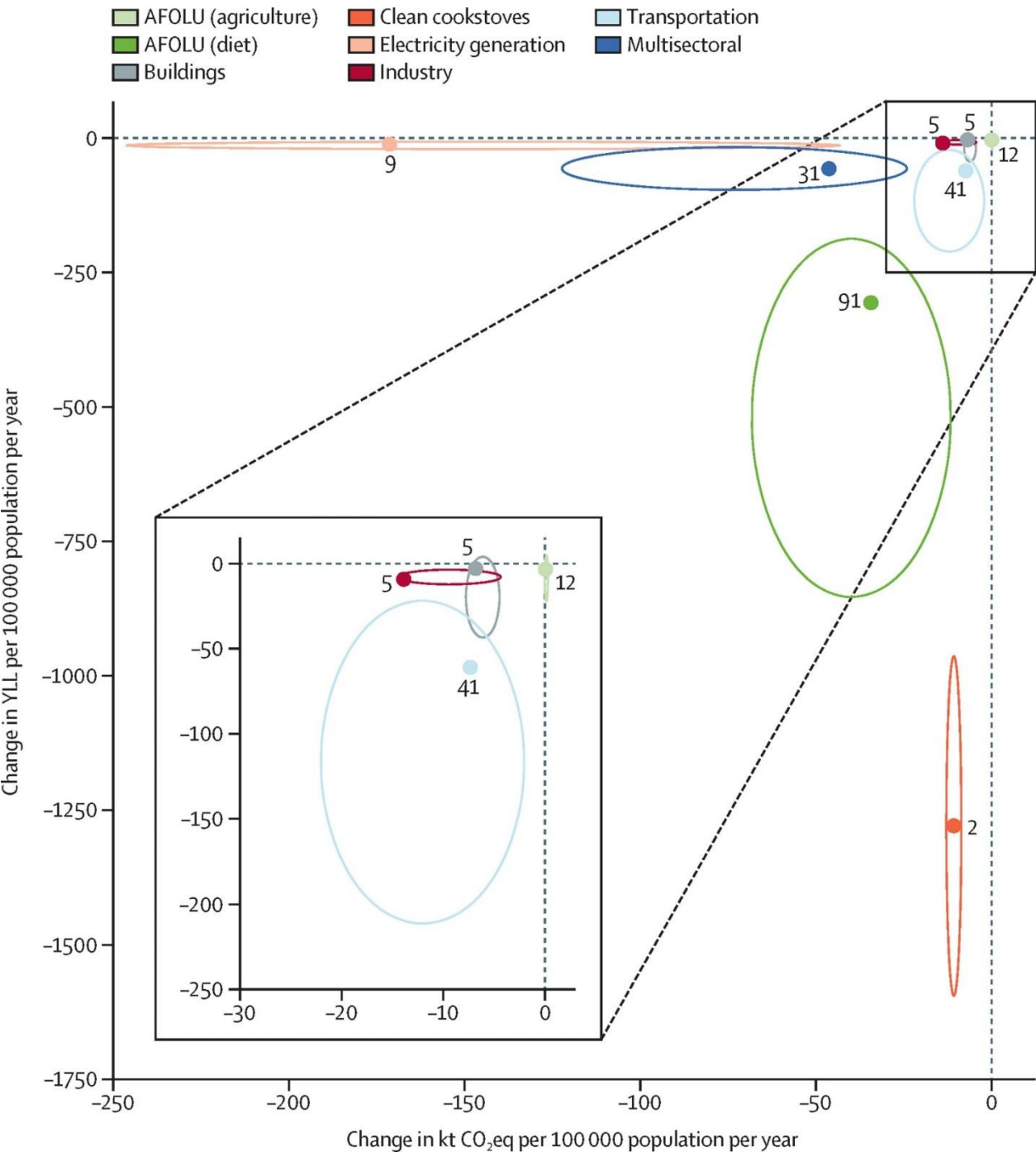
- Estimate changes in health drivers associated with mitigation strategies
- Estimate changes in health status resulting from changes in health drivers

Lancet Pathfinder evidence synthesis on health co-benefits of mitigation actions

Interventions, pathways & health outcomes



Pooled effect estimates



WHO guidance for quantifying & monetizing health co-benefits of climate actions

Step 3: Valuation

- Estimate economic value of changes in health status
- As appropriate, estimate costs of mitigation strategies for comparison purposes

Methods for monetizing health co-benefits

- Benefit-cost analysis reference case guidelines (Robinson 2019)
- Monetizing expected deaths averted
 - Value per Statistical Life (WHO estimates; Pega 2026)
 - Value per quality- or disability-adjusted life year (forthcoming ECO-CHICA guidelines)
- Monetizing expected non-fatal disease cases averted
 - Value per disease case (OECD estimates)
 - Averted costs estimates (or “cost of illness”)
 - Value per quality- or disability-adjusted life year (forthcoming ECO-CHICA guidelines)

Policy & practice

Valuing reductions in the risk of death in benefit–cost analyses of environment- and climate-health actions

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Abstract Economic evaluation is key for efficient allocation of resources in health and related sectors. Actions addressing environmental risk factors and climate change can avert millions of deaths annually, yet valuing reductions in the risk of dying is challenging in benefit–cost analyses. We developed an interim statistical protocol to estimate the value per statistical life for World Health Organization (WHO) Member States, building on the 2019 benefit–cost analysis reference case and latest evidence. Using gross national income per capita based on purchasing power parity, we calculated national estimates for 2024 and projected values to 2100. We aggregated these estimates to produce global, regional and country income group averages, and additional sets for sensitivity and scenario analyses, including for alternative climate change scenarios. Our estimates cover 93.8% (182/194) of Member States, representing 98.4% (7.99 billion/8.12 billion) of the global population. The global average value per statistical life in 2024 was 3.76 million international dollars. By 2100, the global average is projected to increase by 159.8% to 9.77 million international dollars. These estimates provide a basis for valuing expected deaths averted by environment- and climate-health interventions, promoting comparability across analyses. Limitations include reliance on extrapolated values and uncertainty in income projections. More research, especially in low- and middle-income countries, is needed. Because value per statistical life estimates depend on income, analysts must supplement benefit–cost analysis with distributional analyses of benefits and costs across populations. Until WHO updates its recommended methods, these interim estimates offer a pragmatic tool for policy analysis.

Abstracts in [عربي](#), [中文](#), [Français](#), [Русский](#) and [Español](#) at the end of each article.

Introduction

Economic evaluation, such as comparing an intervention's benefits to its costs through benefit–cost analysis (also called cost–benefit analysis), is key for ensuring efficient allocation of scarce resources.¹ Governments and international organizations, including the World Health Organization (WHO), commonly use benefit–cost analysis to assess non-health sector interventions that affect public health,^{2–5} such as environment- and climate-health actions. For health sector interventions, WHO recommends cost–effectiveness analysis as a minimum standard.⁶

One in every four deaths worldwide is attributable to environmental risk factors and climate change.⁷ Implementing actions that avert deaths and illnesses caused by these factors will improve social welfare, including protecting human health and well-being. Such actions include environment-health actions that address environmental risk factors, such as air quality, chemicals, occupational hazards, radiation, water,

waste, sanitation and hygiene;⁸ and climate-health actions that contribute to climate change adaptation and mitigation, such as building climate-resilient health systems and promoting lower-carbon health systems and societies.⁹ WHO recently estimated that scaling up just five environment- and climate-health actions would avert almost 2 million expected deaths annually.² Methods¹⁰ and evidence¹¹ are improving for quantifying such actions' health effects, including deaths averted.

Health policy analysts commonly use benefit–cost analysis and values of reduction in risk of death to economically evaluate actions that avert deaths and illness caused by environmental risk factors and climate change.¹² Examples include WHO's benefit–cost analyses of cleaner household energy sources⁴ and Nationally Determined Contributions under the Paris Agreement.⁵ However, a major challenge when conducting benefit–cost analyses is valuing outcomes with insufficient or unavailable market prices, such as reductions in the risk of death. Because reductions in risk of death account for most of the benefits of many policies, applying a

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Step 4: Sensitivity/uncertainty analyses

Conduct appropriate sensitivity & uncertainty analyses, refining valuation & impact assessment parameters through further, targeted research

WHO estimates

Intervention	Number of countries	Estimation period (years)	Expected deaths averted (millions)	Monetized estimates
Cleaner household energy sources	132	31 years 2024–54	0.1	Forthcoming
Fiscal policies for efficiently pricing fossil fuels	168	20 years 2024–43	1.2	Forthcoming
Electrification of primary healthcare facilities	63	27 years 2024–50	0.3	-

Global estimates available from

- WHO 2024. All for health, health for all: investment case 2025-2028. Geneva: WHO.
- WHO forthcoming. Global benefits and costs of prioritized actions on climate change and health: technical report. Geneva: WHO.

National estimates are available to countries from WHO on request



WHO tools

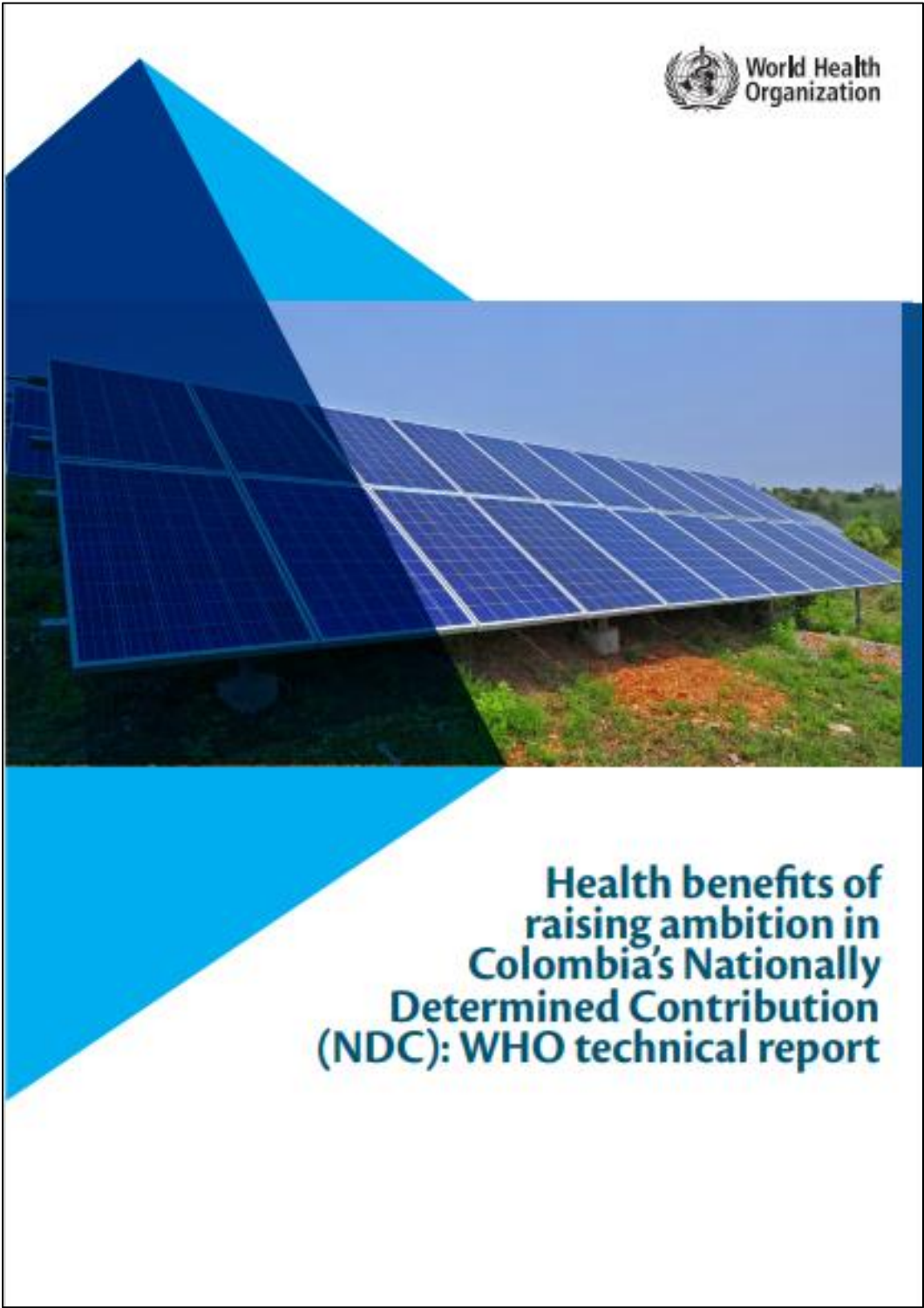
Tool	Mitigation actions covered	Quantification & monetization	Countries covered
HEAT – Health economic assessment tool	Transport interventions (walking & cycling)	Both	All WHO regions: >194 countries & areas
CLIMAQ-H – Climate change mitigation, air quality and health tool	Ambient air quality actions	Both	WHO EURO: 54 countries (can be applied outside EURO, but default data are unavailable)
AirQ+	Ambient air quality actions	Quantification only	All WHO regions: applied at any scale i.e., city, country or region
BAR-HAP – Benefits of action to reduce household air pollution tool	Household energy & air quality actions (six cleaner cooking transitions from more polluting stoves & fuels to cleaner options)	Both	All WHO regions: 132 low and middle-income countries

WHO country support



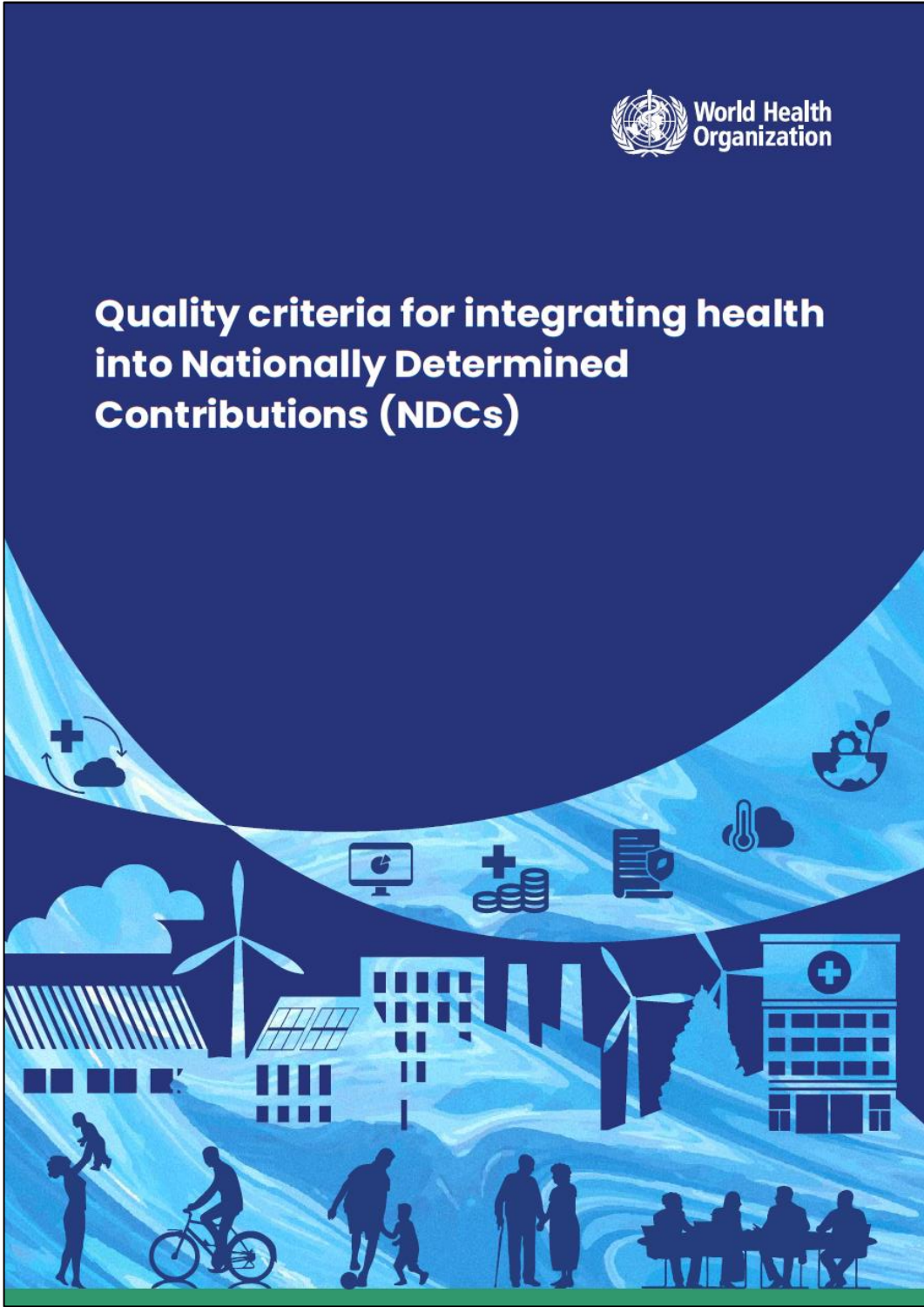
Health benefits of
raising ambition
in Pakistan's nationally
determined contribution:
WHO technical report

WHO 2021



Health benefits of
raising ambition in
Colombia's Nationally
Determined Contribution
(NDC): WHO technical report

WHO 2023c



Quality criteria for integrating health
into Nationally Determined
Contributions (NDCs)

WHO 2024b

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