

Valuing Health Co-Benefits of Climate Actions: A Primer

Climate adaptation and mitigation strategies can generate substantial improvements in population health. These health co-benefits of climate actions—defined as positive health outcomes resulting from interventions primarily designed to address climate change—have a potentially important impact on economic evaluation of adaptation and mitigation strategies. Economic evaluations of climate actions are increasingly expected to include health impacts—not merely as ancillary effects but as central, policy-relevant outcomes.

Hess (2020) provides a widely cited framework for the economic evaluation of health impacts of climate mitigation, structured around: (i) modelling the change in exposure or behaviour; (ii) estimating the consequent health outcomes; and (iii) valuing those outcomes economically. Dinh, Tran and Hensher (2024) conducted a scoping review of how health co-benefits have been handled and found that health co-benefit studies are more typically published in the environmental science literature than in health journals and that a highly diverse set of health measures and valuation approaches are still in use.

The focus of this primer is on core approaches for valuing health co-benefits in economic evaluations of climate actions. It is intended for health economists familiar with cost-effectiveness and cost-benefit analysis, but less familiar with the integration of health impacts into environmental interventions.

Methods for Valuing Health Co-Benefits

Valuation methods fall into two broad categories: cost-based approaches, which estimate direct and indirect costs of illness, and preference-based approaches, which assign value based on individuals' or societies' willingness to pay for health improvements or risk reductions.

a) Cost-of-Illness (COI) and Avoided Health System Costs

These methods estimate the direct medical costs, productivity losses, and informal care costs averted through improved health. For example, reductions in respiratory hospitalisations due to cleaner air can be valued using national cost databases or insurance claims data (Hess, 2020).

b) Value of a Statistical Life (VSL)

VSL estimates—derived from labour market data or stated preference surveys—are

commonly used in cost-benefit analysis to monetise avoided premature deaths. However, cross-country variation in VSL raises important equity concerns, especially when applied in low- and middle-income settings (WHO, 2023).

c) DALY/QALY-Based Monetisation

Some analyses apply monetary values to Disability-Adjusted Life Years (DALYs) or Quality-Adjusted Life Years (QALYs) using thresholds or societal WTP estimates. While more familiar to health economists, this approach is still evolving in environmental valuation and lacks consensus on appropriate shadow prices.

d) Contingent Valuation and WTP Studies

These methods involve directly eliciting individuals' willingness to pay for risk reductions or health improvements. Though potentially more reflective of individual preferences, such studies can be expensive, context-dependent, and subject to strategic bias.

Real-World Applications

Several recent studies illustrate the practical application of these methods in climate and health contexts:

- The C40 Fossil Gas Report (2023) quantifies the health and economic burden of fossil gas in urban areas by modelling avoided mortality and morbidity from reduced air pollution. Using COI and VSL estimates, it provides city-level monetisation of health gains under transition scenarios.
- The Complex Urban Systems for Sustainability and Health (CUSSH) project has applied system-dynamics modelling to assess health outcomes of multi-sectoral climate interventions in cities. These models incorporate time-dependent exposure changes and enable integrated valuation of health, energy, and housing co-benefits.
- In a climate impact study, Xu et al. (2022) estimate the economic burden of dengue fever in China, highlighting how climate-sensitive disease burdens can be monetised. They discuss (though do not evaluate) potential adaptation/mitigation strategies that could alter this impact on dengue fever.
- The Rennes active travel study (Bauer et al., 2024) evaluates physical activity and air pollution-related health gains from modal shift policies. QALYs gained are valued using a cost-effectiveness threshold.

Methodological Considerations and Challenges

Several methodological issues remain unresolved, and we will aim to address these in the current research project (along with other emerging issues identified by participants).

- Attribution and double-counting. Disentangling direct health effects from broader environmental or social changes is challenging.
- Equity and heterogeneity. Valuation methods often embed implicit assumptions about whose preferences matter. Values can vary by jurisdiction.
- Discounting and time horizons. The long-term nature of many climate actions raises challenges around conventional discount rates (see Groom et al, 2022 for a recent review).
- Uncertainty and sensitivity: Scenario-based sensitivity analysis is the norm; probabilistic sensitivity analysis is challenging.

References

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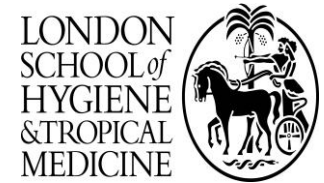
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