



Patricia Cubi-Molla<sup>1</sup>, Caitlin MacClancy<sup>2</sup>, Paul Oyalo<sup>1</sup>, Hannah Hussain<sup>1</sup>, Mireia Jofre-Bonet<sup>1</sup>, Andrew Briggs<sup>2</sup>, Francis Ruiz<sup>2</sup>, Sarah Whitmee<sup>3</sup>, Shouro Dasgupta<sup>4</sup>, Jane Falconer<sup>5</sup>, John Cairns<sup>2</sup>, Marcus Keogh-Brown<sup>2</sup>

<sup>1</sup> Office of Health Economics, London, UK, <sup>2</sup> Global Health Economic Centre, London School of Hygiene and Tropical Medicine, London, UK, <sup>3</sup> Centre on Climate Change and Planetary Health, London School of Hygiene and Tropical Medicine, London, UK, <sup>4</sup> RFF-CMCC European Institute of Environmental Economics (CMCC), Venice, Italy, <sup>5</sup> Library, Archive and Open Research Services, London School of Hygiene and Tropical Medicine, London, UK

## Background and Objectives

This scoping review, conducted as part of the ECO-CHICA project (1), aimed to examine the methods used for the economic evaluation of the health impacts of climate actions: adaptation (reducing harm or improving resilience) and mitigation (reducing the causes of climate change).

As policies increasingly recognise health co-benefits alongside environmental and economic outcomes (2), this review identifies and analyses existing studies to compare how health is defined, measured, and valued, and to assess approaches to discount rates, time horizons, and equity considerations.

This review also summarises methodological strengths and limitations to improve consistency across environmental and health economics.

## Methods

We searched for studies on economic evaluations of climate mitigation and adaptation strategies that include health impact valuation.

10 peer-reviewed databases across environmental and health literature, selected grey literature sources, and Wellcome Trust-funded projects were searched. Abstracts were screened in *EPPI-Reviewer 6* (3), leveraging machine learning prioritisation techniques.

We narrowed the scope to most recent publications (2021-2025)

Key data, such as valuation approach, analytical method used, discounting, and time horizon, were extracted.

## Results

Database searches retrieved 32,616 records. Using *EPPI-Reviewer 6* for title and abstract prioritisation, 26,015 were excluded. Researchers screened 6,601 records at title and abstract, with 606 proceeding to full-text review. Limiting to publications from January 2021 onwards, 311 were excluded, leaving 295 for full-text screening, of which 107 were extracted. A streamlined grey literature search identified 1209 reports, with 15 included. In total, 122 studies were extracted (see Figure 1). Over half of the studies used cost-benefit analysis (CBA), while others applied macroeconomic modelling (e.g., CGE models), cost-utility (CUA), cost-effectiveness (CEA), cost-consequence analysis, and Social Return on Investment (Social ROI) approaches. An additional 'Other' category included analytical and computational tools supporting cross-sector health impact evaluation but not constituting formal economic evaluations.

The Value of a Statistical Life (VSL) was the most frequently reported method used to value the health impacts, followed by other social costs and Cost of Illness (COI) approaches, with limited use of DALYs, social cost of carbon, and productivity metrics, see Figure 2. Most studies adjusted secondary estimates using GDP scaling or inflation.

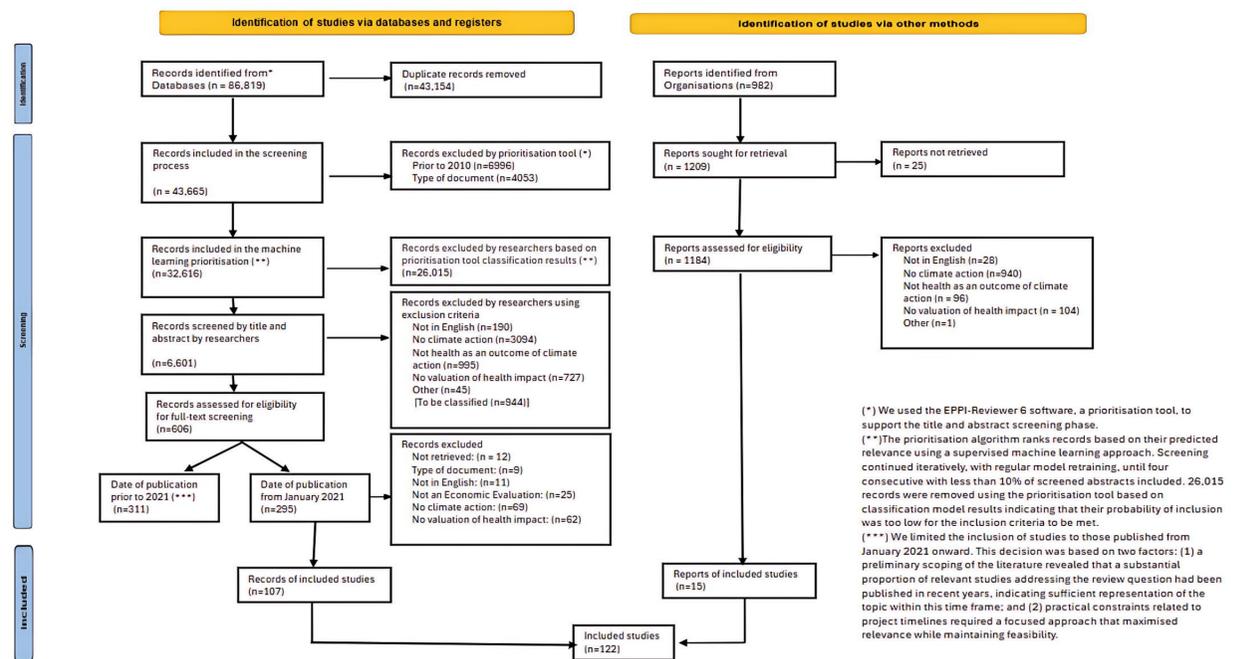


Figure 1: PRISMA ScR Diagram

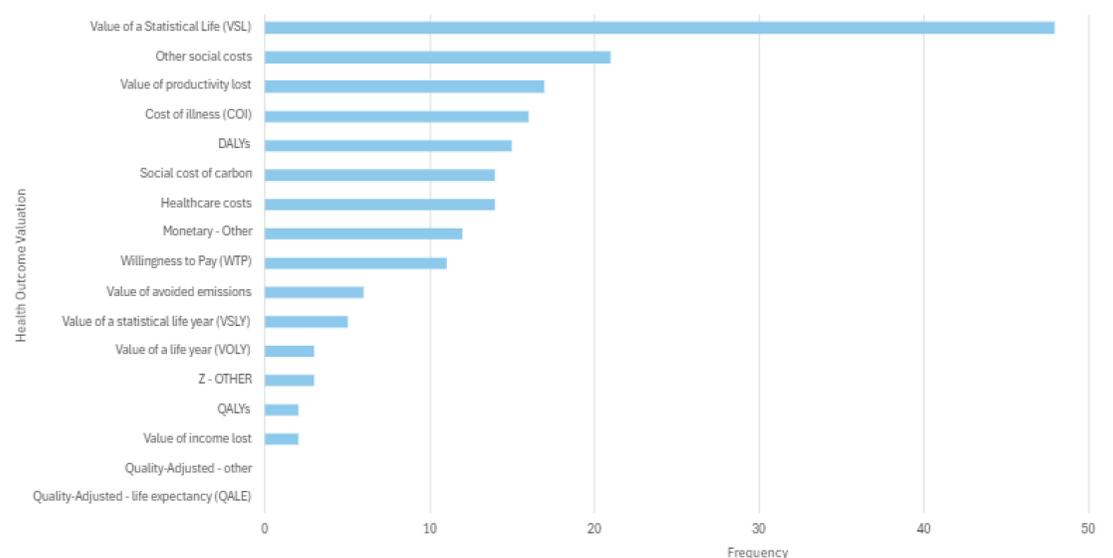


Figure 2: Frequency of valuation of health impact method reported

Short-term time horizons (0–1 year) dominated (45%), mainly for energy-focused climate actions, while life-time horizons (2–25 years; 37%) reflected intervention lifespans, longer time horizons (>25 years) were found in the remaining literature. Discounting practices varied: a 3% rate was typical, with others adopting a social discount rate, but multi-year studies (43%) did not report a rate. Reported limitations highlighted data uncertainty, methodological inconsistency, and the need for longer-term, standardised, and equity-focused evaluations.

## Discussion

• Across studies, CBA approaches dominated, reflecting efforts to capture wide-ranging impacts in monetary terms, often using VSL for valuing mortality and COI for valuing morbidity. Alternative approaches such as macroeconomic models, CEA, and CUA were less common but highlight methodological diversity.

- Methodological gaps included limited transparency, over-reliance on pre-configured toolkits using standardised values (e.g., VSL), and insufficient treatment of uncertainty or contextual adaptation.
- Discounting practices varied: a 3% constant rate was typical, aligning with public sector guidance, yet few studies justified rate selection or addressed intergenerational equity. Some used social or intergenerational discounting to better capture long-term welfare impacts.
- Most analyses adopted a societal perspective, though its scope was inconsistently defined, limiting clarity on which costs and benefits were included.
- Findings emphasise the need for methodological standardisation, improved integration of health and environmental frameworks, and greater attention to equity, uncertainty, and temporal scope.

## References

1. London School of Hygiene and Tropical Medicine. ECO-CHICA 2025 [Available from: <https://www.lshtm.ac.uk/research/centres-projects-groups/eco-chica>.]
2. Dinh NTT, Tran J, Hensher M. Measuring and valuing the health co-benefits of climate change mitigation: a scoping review. *The Lancet Planetary Health*. 2024;8(6):e402-e9.
3. Thomas J, Graziosi S., Brunton, J., Ghouze, Z., O'Driscoll, P., Bond, M., Koryakina, A. EPPI-Reviewer 6: Advanced software for systematic reviews, maps, and evidence synthesis EPPI Centre, UCL Social Research Institute, University College London 2023.

This work is part of the 'Economic Evaluation of Health Impacts of Climate Action' (ECO-CHICA) project, under a contract by the Wellcome Trust [UK - 641753963.1] C-011237.