

A systems-based approach to understanding the role of co-benefits in encouraging urban air quality interventions

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1. Introduction

There is untapped potential in urban planning policies that can simultaneously improve air quality (AQ), support net-zero targets, and benefit communities and public and planetary health more broadly.

- Current research often overlooks the complexity of the real-world, systems-approach research instead offer ways to overcome siloes which restrict action.^[1]
- Exploring the co-benefits and synergies between climate, health and AQ actions could incite further action and reduce health inequalities [2]. [3]. [5].
- Structured decision making enables multistakeholder insight into the opportunities, barriers and enablers of AQ action^[4], building an evidence base of what needs to be done to incite action within cities.
- To identify existing interventions and the co-benefits featured, we initiated a scoping review of air quality actions from grey/peer-reviewed literature (n=66, 31 peer reviewed, 35 grey literature). Co-benefits related to health were particularly prominent.

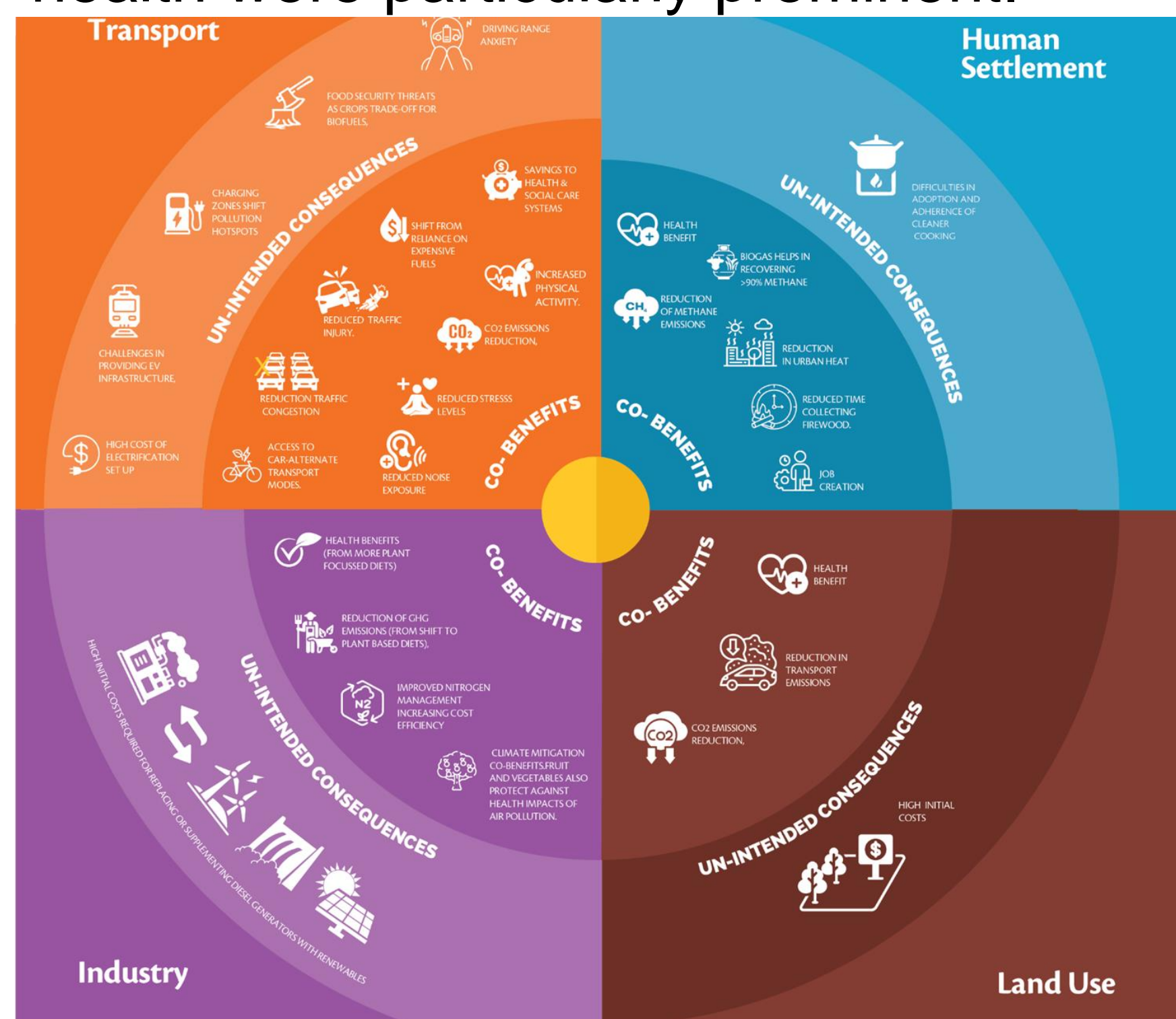


Figure 1- results from the scoping survey demonstrating the co-benefits from air quality interventions from peer-reviewed and grey literature within 4 sectors of action.

2. Co-benefits & health

There have been various methods of conceptualising pathways to health from urban planning- particularly in the form of mobility and transport assessments.^{[6][7]} Building on this work, we have evaluated the literature to develop a framework for the pathways to health from air quality action (figure 2). These pathways are indirect benefits which improve health beyond the direct reduction of exposure to pollutants. Some of these pathways focus on city features that are beneficial to health, whilst others on city features which limit the negative impacts on health. All identified pathways also relate to equity, which highlights (or underpins) that air pollution affects global population unequally.

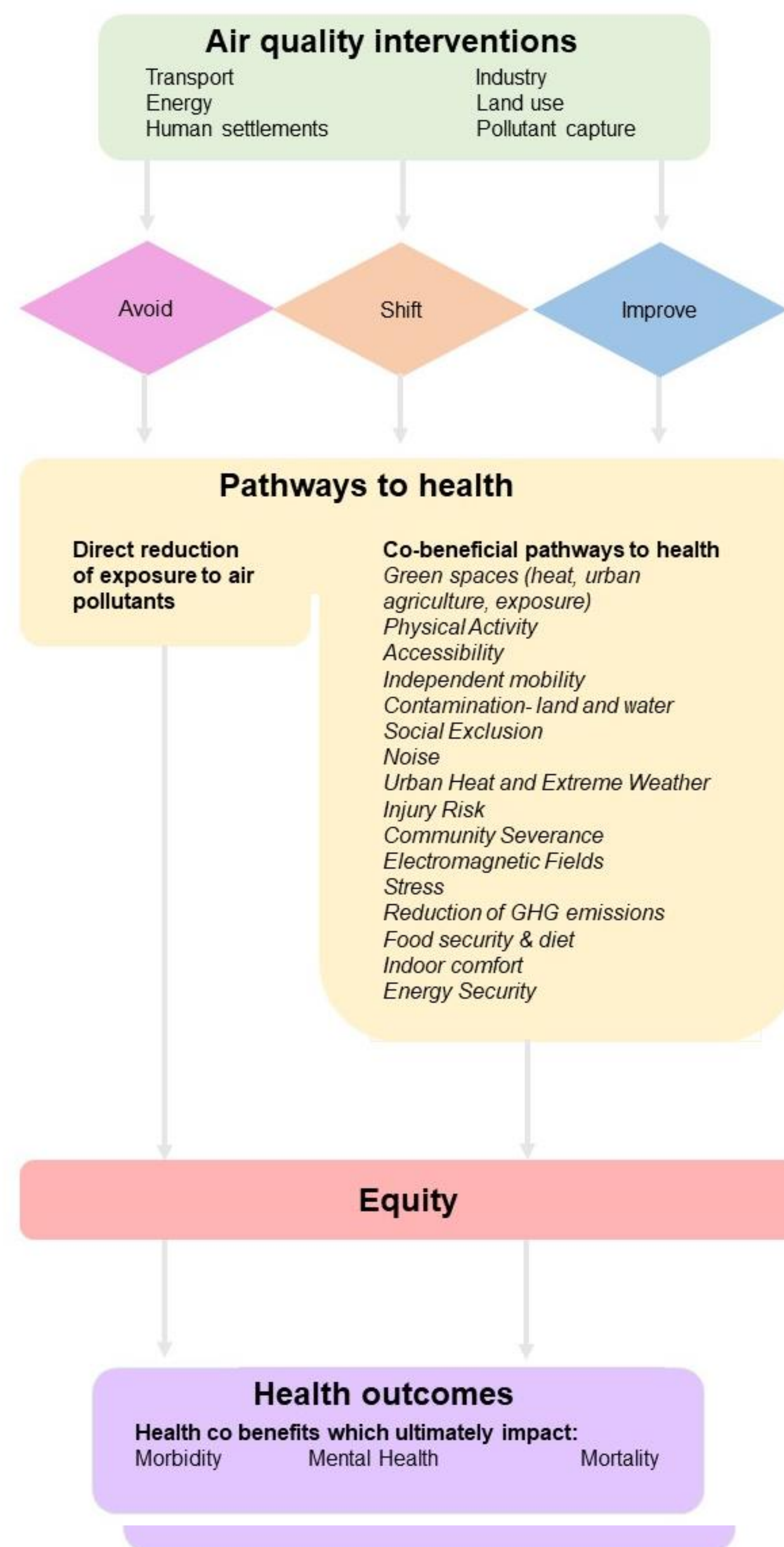


Figure 3- The avoid-shift-improve (ASI) framework as applied to air quality interventions

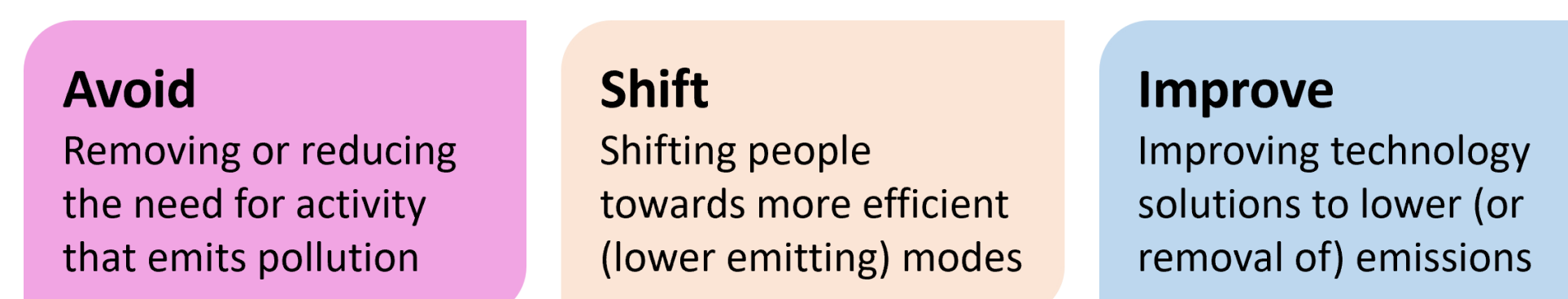


Figure 3- The avoid-shift-improve (ASI) framework as applied to air quality interventions

Co-benefits and health next steps: Evaluating pathways to health feature which within literature

- Using a novel adaptation of avoid-shift-improve framework (figure 3) and the pathways to health framework, we will generate a state-of-play of air quality actions, evaluating the extent to which pathways are featured and under-studied and which types of intervention feature most prominently.
- We will apply this framework to peer-reviewed reviews of ambient pollution interventions from the last decade.
- We will do text analysis to identify which pathways feature within the literature, analysing their popularity.

Literature scope

- 2014-2024
- Ambient air pollution focus

Title must include:

- “review”
- “air pollution” “air quality” “clean air”
- “policy”, “strategy”- “action” “interventions” “solution” “management”

References

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 5. Shanahan, D.F., et al., *Toward Improved Public Health Outcomes From Urban Nature*. American Journal of Public Health, 2015. 105(3): p. 470-477.
 6. Whitmee, S., et al., *Pathways to a healthy net-zero future: report of the Lancet Pathfinder Commission*. The Lancet, 2024. 403(10421): p. 67-110.
 7. Glazener, A., et al., *Fourteen pathways between urban transportation and health: A conceptual model and literature review*. Journal of Transport & Health, 2021. 21: p. 101070.
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3. Stakeholder perceptions

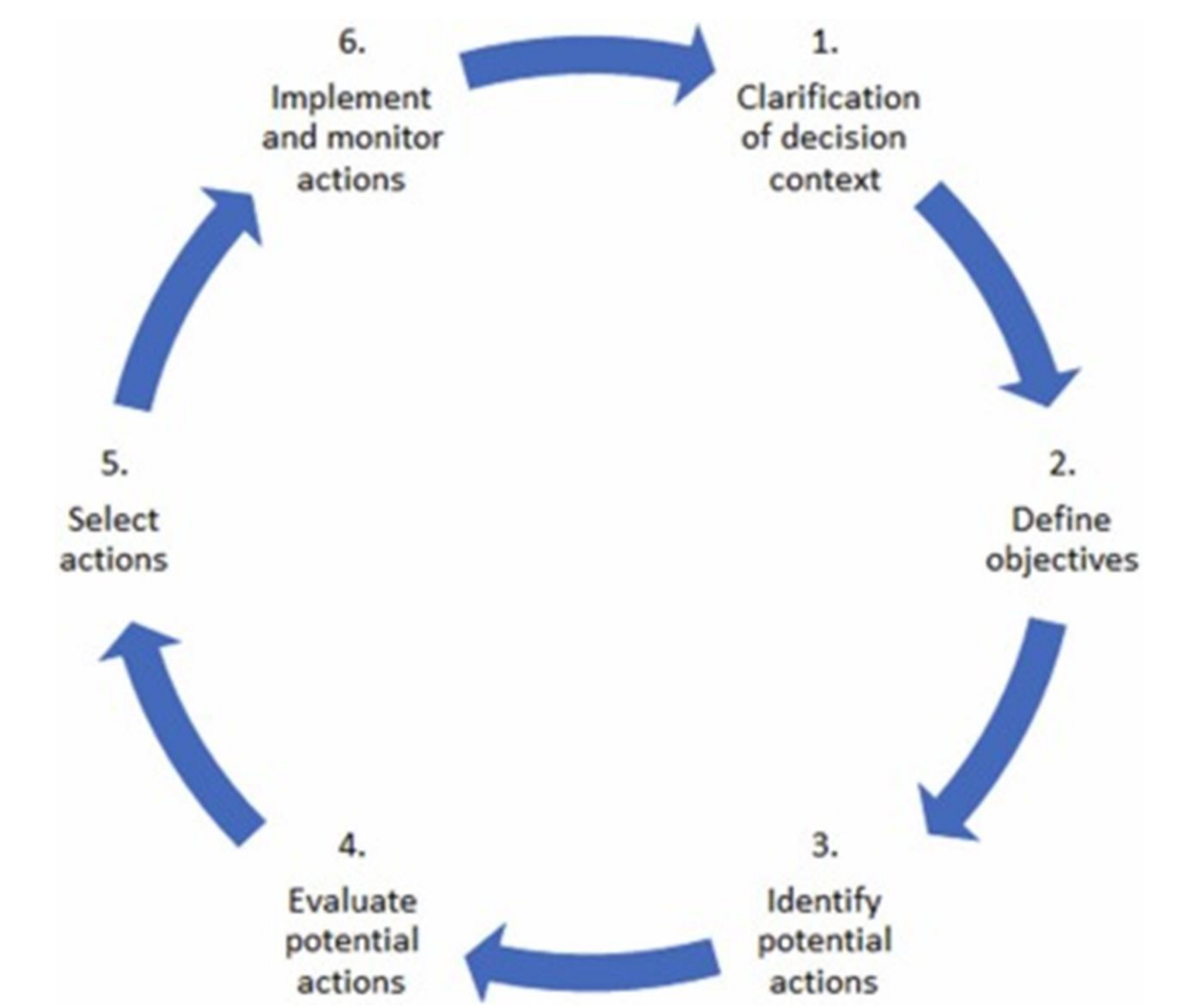


Figure 4- the structured decision-making process. Source Tiernan et al, 2022^[8]

Structured decision-making

Structured decision-making is an iterative process. A range of stakeholders come together around a decision context, identify their objectives and create a hierarchy of objectives from their shared values. This is used to identify and evaluate potential actions that could address the shared objectives.

Next steps: Multi-stakeholder workshops

- Multistakeholder structured-decision making workshops with a decision context of “What air quality actions could your city take that also support climate, health and social wellbeing benefits?” scheduled for May/June 2024.
- Invites have been sent to participants from 47 countries, with a mix of NGOs, Policy, Industry, Academics
- Participants invited from AQ or AQ adjacent sectors (i.e. transport, health, planning).
- As transdisciplinary teams, participants will explore their synergies and conflicts of interest for AQ within their roles and create a hierarchy of objectives and actions related to air quality at a city scale.

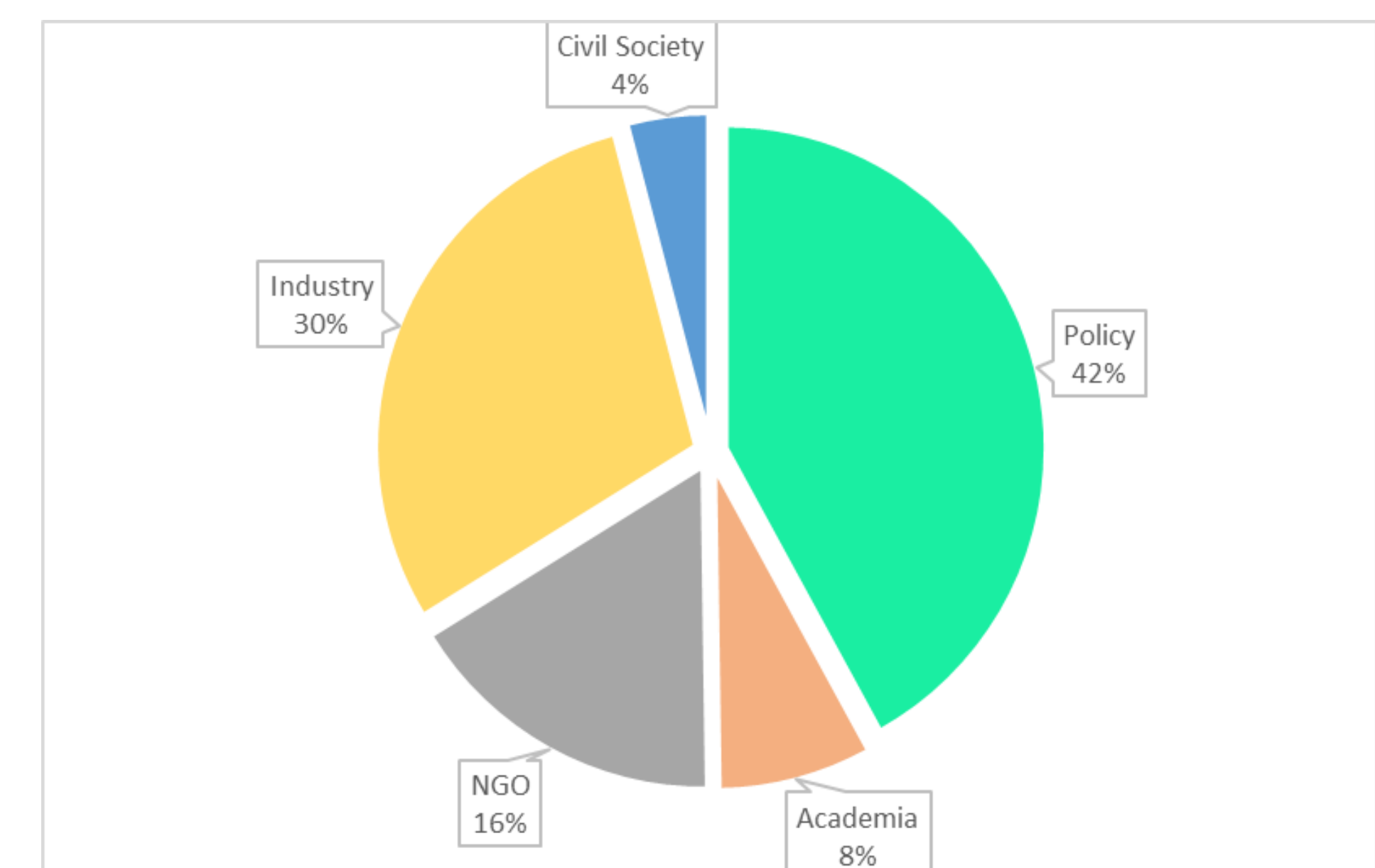


Figure 5- split of invites to the structured decision-making by sector type. Accurate as of 28th March 2024.