



***National Health and Climate Strategy
Consultation Paper***

**Response to the Australian Government Department
of Health and Aged Care**

University of Melbourne

24 July 2023

Background

The Australian Government is consulting on the development of a National Health and Climate Strategy, acknowledging the critical need to address health-related emissions as well as to build health resilience to climate-related impacts. The Strategy covers mitigation and adaptation efforts across all levels of the health system, including relevant manufacturers, and efforts required beyond the health sector through a Health in All Policies (HiAP) approach. The Strategy recognises the formative role of Indigenous knowledges and practices in addressing climate-related health impacts.

This submission from climate and health/sustainable healthcare experts at the University of Melbourne offers recommendations that seek to maximise the health outcomes of Australians in a rapidly changing climate.

While the authors of this submission work for the University of Melbourne, any mistakes are our own.

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General Comments

Overall focus

The consultation paper provides the foundation for an inaugural National Health and Climate Strategy (the Strategy), and we commend the Department of Health and Aged Care (DHAC) for undertaking a stakeholder engagement process as part of the Strategy's development.

The inclusion of cross-cutting commitments to First Nations leadership, tackling health inequities, and population health and prevention are important, however several essential elements have been omitted. In particular:

- The consultation paper did not provide definitions for key concepts, such as 'health care' and 'health system', that will impact the scope and parameters of the Strategy. *We recommend the Strategy clearly define key concepts and scope.*
- While the consultation paper presents five enablers to support the realisation of the Strategy's objectives (pp.35-36), there are also potential **barriers and constraints**, such as (a lack of) cross-governmental buy-in and economic limitations, that may impact the effective delivery of the Strategy. *We recommend the Strategy explicitly consider potential barriers to the successful implementation of the Strategy, and how these will be actively addressed.*
- **Systems thinking and transdisciplinarity** are not evident in the consultation paper. Adopting these approaches will be essential for the successful implementation of the Strategy. *We recommend these approaches underpin the delivery of the Strategy, particularly in its consideration of governance mechanisms.*
- The impacts of climate change on the **mental health** of Australians and associated services are under-represented in the consultation paper. We believe mental health is a critical priority for health-related climate action. *We recommend the Strategy prioritise a stepped care approach that pursues both preventive, whole-of-population care, as well as specialised clinical interventions.*
- The consultation paper emphasises mitigation efforts through the reduction of health systems emissions, a necessary and important approach. However, equal emphasis must be placed on **health system and community adaptation and disaster preparedness** in response to predicted significant increases in demand from both slow- and rapid-onset climate-related events and disasters. *We recommend a stronger focus on adaptation and disaster preparedness.*
- The consultation paper does not adequately prioritise or promote the achievement of healthy and resilient communities through a **population-based approach** or the inclusion of **health in all climate and energy policy decisions**. *We recommend a preventive approach that seeks to*

quantify and capitalise on the substantial health co-benefits that ambitious cross-sectoral climate action affords.

- Supporting action beyond the health system is critical yet there appears to be limited detail in the consultation paper on how a **Health in All Policies (HiAP)** approach will be supported in the short- and long-term as it is not currently identified as a key action area. *We recommend the Strategy clearly articulate how a HiAP approach will be implemented, particularly as it pertains to governance mechanisms for the Strategy.*
- The consultation paper focuses solely on strategic priorities and actions within Australia's geographical domain. *We recommend that the Strategy also emphasise Australia's international commitments and recognise the opportunities for collaboration and leadership, given the **transnational, cascading and compounding** impacts of climate change on health globally and in our Indo-Pacific region.*

Governance and Accountability

The consultation paper provides minimal detail on the planned governance and accountability mechanisms that will be used to ensure the Strategy is effective. Governance should be included as an enabler within the Strategy (see p.25) and accountability should be included as a principle within the Strategy (see pp.7-8). Cross-governmental collaboration, especially with the Department of Climate Change, Energy, the Environment and Water (DCCEEW) is critical. We recognise the joint launch of the consultation by The Honourable Ged Kearney MP, Assistant Minister for Health and Aged Care, and Senator Jenny McAllister, Assistant Minister for Climate Change and Energy. Given this, it is assumed that the National Health, Sustainability and Climate Unit (NHSCU) in DHAC will play a leading role in developing and implementing the Strategy, with DCCEEW input.

We recommend that the Strategy clearly articulate the linkages, roles and responsibilities of the NHSCU/DHAC and DCCEEW in the Strategy development and implementation process. This includes the Strategy outlining how health system mitigation efforts will be integrated into Australia's broader mitigation efforts and how the actions of health-determining sectors, such as energy and water, will be identified and harmonized with health sector efforts.

The consultation paper suggests that the Strategy will take account of work underway, presumably at other levels of government and across non-governmental sectors. We reaffirm that a commitment to collaboration between jurisdictions and other key stakeholders is vital.

Specifically, we recommend that the Strategy commit to mapping the interrelationships and current efforts occurring in other agencies and sectors to harmonise efforts and reduce duplication as a fundamental first step. There is also a need to align the Strategy with efforts relating to disaster risk reduction and emergency management.

Response to consultation paper questions

Below we respond directly to the questions posed throughout the consultation paper.

1. How could these objectives be improved to better support the vision of the Strategy?

The overarching vision of the Strategy is unclear from the consultation paper. We believe a high-level vision statement is critical to articulate the Government's commitment, ambition, and priorities for ensuring a healthy, climate-resilient, and sustainable health system. The Intergovernmental Panel on Climate Change (IPCC) *Sixth Assessment Report on Climate Change Impacts, Adaptation and Vulnerability* emphasised the adverse effects of climate change on physical and mental health across all countries, and that observed climate-related illness, disease transmission and mortality is increasing worldwide.¹ In Australia, recent climate change exacerbated disasters, including the 2019-2020 heatwaves and bushfires and the 2021-2022 floods, affected the health and wellbeing of tens of thousands of people, with vulnerable populations including Indigenous communities disproportionately impacted.² Despite the immediacy and lived reality of climate-related health impacts, the consultation lacks a sense of urgency or prioritisation of climate change in national health policy and planning. **Explicit recognition of the urgent need for action is critical for inclusion in the Strategy.**

Further, the current objectives outlined on p.8 are important, but could be strengthened:

On Measurement

The consultation paper notes that health care greenhouse gas (GHG) emissions should be measured and reported for ongoing monitoring. The scope of activity should be expanded to include learning and evaluation, not just measuring and reporting. For example, the United Kingdom (UK) National Health Service (NHS), a widely-recognised leader in healthcare sustainability and decarbonisation, used baseline healthcare emissions data to model future scenarios under a variety of conditions (e.g. business as usual, committed decarbonisation) to identify

¹ IPCC. (2022). Summary for Policymakers. In D. C. R. H.-O. Pörtner, E.S. Poloczanska, K. Mintenbeck, M. Tignor, A. Alegría, M. Craig, S. Langsdorf, S. Lössche, V. Möller, A. Okem (Ed.), *Climate Change 2022: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (pp. 3-33). Cambridge University Press.

² Beggs, P. J., Zhang, Y., McGushin, A., Trueck, S., Linnenluecke, M. K., Bambrick, H., Capon, A. G., Vardoulakis, S., Green, D., Malik, A., Jay, O., Heenan, M., Hanigan, I. C., Friel, S., Stevenson, M., Johnston, F. H., McMichael, C., Charlson, F., Woodward, A. J., & Romanello, M. B. (2022). The 2022 report of the MJA–Lancet Countdown on health and climate change: Australia unprepared and paying the price, *Medical Journal of Australia*, 217(9), 439-458. <https://doi.org/10.5694/mja2.51742>

ambitious net-zero healthcare targets and priority intervention areas.³ The Australian Government should adopt a similarly robust and adaptive approach to reduce the carbon footprint of health systems.

Clarifying the methods of measuring GHG emissions, including scope of emissions sources, will be important. The chosen methodological approach must align with internationally validated and recognised standards, such as the GHG protocol⁴, for replicability and comparison.

The scope of emissions should also be expanded to consider non-GHG emissions (e.g. criteria air pollutants) to support efforts by DCCEEW under the National Environment Protection Measures (NEPMs), recognising the inextricable link between climate change, air quality and health. Other relevant environmental impacts such as water use, waste outputs, land use and patient and visitor travel should be considered. Methodologies and emission criteria from other health services, including the NHS, can inform the approach taken in Australia.⁵

Finally, the Strategy and future plans should consider measurement estimates and models of the beneficial effects of different types of interventions to reduce healthcare emissions, for example expansion of telemedicine programs which have been shown to reduce transport-associated emissions.⁶ Any GHG measurements must also take into account associated carbon footprint of telehealth, including energy consumption such as cloud servers and housing of telehealth operations in call centres.⁷

On Mitigation

Australia's health care GHG emissions account for an estimated 7% of national totals.⁸ Health care is thus a significant if under-recognised contributor to carbon emissions. In light of this, the Strategy must include healthcare carbon emission reduction targets and support identification of appropriate mitigation measures and improvements. Such targets must be science-based and in line with existing national and international commitments to limit temperature rise to well below 2 degrees Celsius. We support health care mitigation targets of 80% reduction by

³ NHS England. (2022). *Delivering a 'Net Zero' National Health Service*. Available from: <https://www.england.nhs.uk/greenernhs/wp-content/uploads/sites/51/2022/07/B1728-delivering-a-net-zero-nhs-july-2022.pdf>

⁴ World Resources Institute. (2023). *Greenhouse Gas Protocol*. Available from: <https://ghgprotocol.org/>

⁵ Tennison, I., Roschnik, S., Ashby, B., Boyd, R., Hamilton, I., Oreszczyn, T., Owen, A., Romanello, M., Ruysevelt, P., Sherman, J. D., Smith, A. Z. P., Steele, K., Watts, N., & Eckelman, M. J. (2021). Health care's response to climate change: a carbon footprint assessment of the NHS in England. *The Lancet Planetary Health*, 5(2), e84-e92. [https://doi.org/10.1016/S2542-5196\(20\)30271-0](https://doi.org/10.1016/S2542-5196(20)30271-0)

⁶ Purohit, A., Smith, J., & Hibble, A. (2021). Does telemedicine reduce the carbon footprint of healthcare? A systematic review. *Future Healthc J*, 8(1), e85-e91. <https://doi.org/10.7861/fhj.2020-0080>

⁷ Smith CL, Zurynski Y, Braithwaite J. (2022). We can't mitigate what we don't monitor: using informatics to measure and improve healthcare systems' climate impact and environmental footprint. *J Am Med Inform Assoc*; 29: 2168-2173.

⁸ Malik, A., Lenzen, M., McAlister, S., & McGain, F. (2018). The carbon footprint of Australian health care. *The Lancet Planetary Health*, 2(1), e27-e35. [https://doi.org/10.1016/S2542-5196\(17\)30180-8](https://doi.org/10.1016/S2542-5196(17)30180-8)

2030, as recommended by the Climate and Health Alliance (CAHA), the Australian Medical Association, and Doctors for the Environment Australia (DEA).^{9,10}

Mitigation targets must extend beyond the health care sector and requires government and private sector action towards net-zero ambitions. We endorse the national targets outlined in CAHA's [Framework for a national strategy on climate, health and well-being for Australia](#), namely a 75% reduction in greenhouse gas emissions below 2005 levels by 2030 and net zero emissions by 2035 for all sectors, including emissions from exports.

The Strategy should also seek to accelerate the reduction of GHG emissions from other health-determining sectors, including transport, energy, and the built environment, in line with a Health in All Policies approach. Multiple health benefits can accrue from mitigation measures such as efforts to reduce air pollution and improve air quality by encouraging low or no-emissions transport and increasing access to green space across urban and rural areas.

On Health in All Policies (HiAP)

We strongly support the inclusion of HiAP as an overarching policy principle of the National Strategy. The Strategy should recognise and seek to address additional determinants of health, including economic, commercial, and environmental drivers that impact health and wellbeing. This requires multisectoral interventions and actions across health-determining sectors, including energy, water, transport, agriculture, buildings, and infrastructure.¹¹

2. How could these principles be improved to better inform the objectives of the Strategy?

We support the principles outlined in p.6 of the consultation paper, in particular the emphasis placed on First Nations expertise and leadership on climate-related health issues, and a cross-cutting commitment to tackling health inequities. On improving the principles:

- Regarding evidence-informed policymaking, any cost-effective analysis undertaken must include a comprehensive assessment of the likely benefits of action, which has historically been missing from economic analyses, as these are considered more difficult to quantify and monetize compared with the costs.

⁹ CAHA. (2021). *Healthy, Regenerative and Just: Framework for a national strategy on climate, health and well-being for Australia*. Available from: <https://shorturl.at/jqx15>

¹⁰ AMA and DEA, (2021). *Joint statement: Medical professionals call for emissions reduction in health care*. Available from: <https://www.ama.com.au/media/joint-statement-medical-professionals-call-emissions-reduction-health-care>

¹¹ Workman, A., & Bowen, K. J. (2023). Developing healthier climate policies through multisectoral interventions and collaborations to address knowledge and practice gaps. *The Journal of Climate Change and Health*, 9, 100202. <https://doi.org/https://doi.org/10.1016/j.joclim.2023.100202>

- Regarding partnership-based working, carers, patient-advocacy groups and first responders are key partners to include in the development and implementation of a response to climate change.
- On One Health: While this is a useful initial framing, the concept of One Health does not have a sufficient focus on inter- or transdisciplinary work, nor the structural determinants of health (including governance, partnerships etc.), so an opportunity to look beyond this framing would be strongly encouraged.

We also recommend additional principles around transparency and accountability be incorporated into the Strategy. To operationalise the Strategy's commitment to coordinated and coherent action across all levels of government, there must be clarity on the roles and responsibilities of the NHSCU/DHAC, other federal departments, as well as state-based agencies and sustainable healthcare units (including those in New South Wales and Western Australia currently). The Strategy is an important opportunity to support collaboration among these bodies to move Australia's health care system towards a low carbon, high value system. The importance of data sharing cannot be over-stated. Tracking health care environmental sustainability data is feasible nationally but requires careful collaboration and governance.

Fundamental to a sustainable healthcare system is the provision of high-quality care and as such we recommend inclusion of provision of high-quality healthcare as an underlining Strategy Principle.

Finally, we recommend the inclusion of a principle that recognises and respects Australians' right to health and to a clean, healthy and sustainable environment, as per resolutions adopted by the United Nations General Assembly.^{12,13}

3. Which of the various types of greenhouse gas emissions discussed above should be in scope of the Strategy's emission reduction efforts?

Emissions across scope 1, 2 and 3 must be considered as within the remit of the Strategy. Scope 1 (direct GHG emissions), including health care anaesthetic gases, and respiratory inhaler emissions, and Scope 2 (indirect GHG emissions), including energy consumption of health care infrastructure, should be relatively straightforward to calculate and capture from existing datasets across most Australian jurisdictions (as noted on p.11 of the consultation paper).

Additional Scope 3 (all other indirect emissions), such as health care-related transport and supply chain emissions, are particularly important for health care since repeated environmentally-extended input-output (EEIO) whole of health

¹² United Nations (1948). *Universal Declaration of Human Rights*. Available from: <https://documents-dds-ny.un.org/doc/RESOLUTION/GEN/NR0/043/88/PDF/NR004388.pdf?OpenElement>

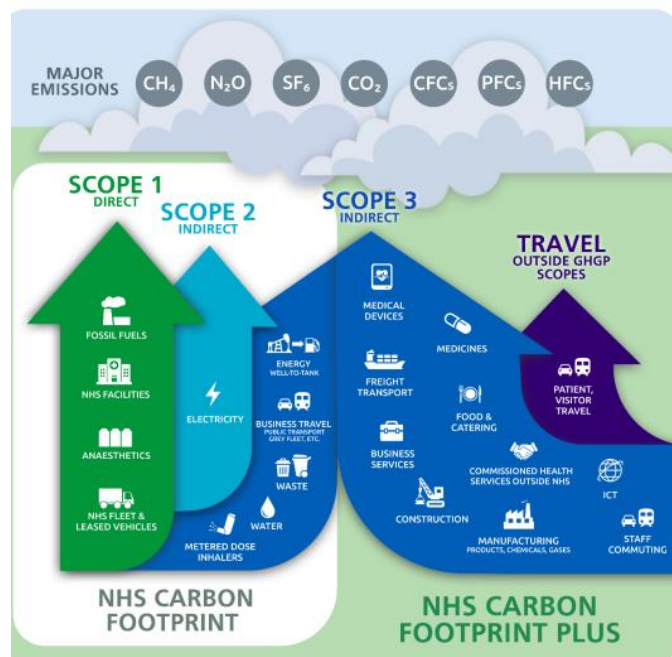
¹³ United Nations (2022). *The human right to a clean, healthy and sustainable environment*. A/RES/76/300. Available from: <https://documents-dds-ny.un.org/doc/UNDOC/GEN/N22/442/77/PDF/N2244277.pdf?OpenElement>

care studies have shown health procurement contributes to the majority of GHG emissions. In particular, offshore Scope 3 emissions associated with pharmaceuticals and medical devices must be included. It is only by including offshore Scope 3 emissions that health care’s purchasing power can be used to move procurement toward lower carbon products and impact pharmaceutical and manufacturing decisions made overseas.

Given a large proportion of health care services are delivered in home (e.g., aged care services, disability support, occupational therapy) – and that 20% of emissions are household based¹⁴ – the Strategy should also recognise housing, healthcare provided at home as part of the health care system and thus the downstream GHG mitigation efforts.

Further, health care often experiences complex interplays between different types of GHG emissions Scopes (see Figure 1). For example, comprehensive life cycle assessments (LCA) have repeatedly determined that adopting reusable over single-use health care products can substantially reduce GHG emissions, particularly when the hospital’s electricity source transitions to renewables.¹⁵ If Scope 3 sources were excluded, the carbon reductions and benefits of instituting policies such as increasing reusable consumables would not be captured.

Figure 1: GHG emission scopes in the context of the NHS¹⁶



¹⁴ Department of Climate Change, Energy, the Environment and Water. (2023). *Residential Buildings*. Available from :<https://www.energy.gov.au/government-priorities/buildings/residential-buildings>

¹⁵ Keil, M., Viere, T., Helms, K., & Rogowski, W. (2023). The impact of switching from single-use to reusable healthcare products: a transparency checklist and systematic review of life-cycle assessments. *Eur J Public Health*, 33(1), 56-63. <https://doi.org/10.1093/eurpub/ckac174>

¹⁶ NHS (2022). *Delivering a 'Net Zero' National Health Service*. Available from: <https://www.england.nhs.uk/greenernhs/wp-content/uploads/sites/51/2022/07/B1728-delivering-a-net-zero-nhs-july-2022.pdf>

- 4. What existing First Nations policies, initiatives, expertise, knowledge, and practices should the Strategy align with or draw upon to address climate change and protect First Nations country, culture, and wellbeing?**
- 5. What types of governance forums should be utilised to facilitate co-design of the Strategy with First Nations people to ensure First Nations voices, decision-making and leadership are embedded in the Strategy?**

We strongly agree that First Nations people are key partners who should be consulted as part of Strategy development, implementation and evaluation. This consultation should be genuine and meaningful and should respect First Nations cultural protocols for engagement and consultation, which may not align with government timeframes.

Engagement with Indigenous knowledges must be undertaken primarily for the benefit of Indigenous communities, in a manner that is sensitive to the risks of harms associated with knowledge extraction and must be embedded within a justice agenda. Principles for ethical and respectful engagement with First Nations people have been articulated by the First Nations Clean Energy Network, and could be adapted for implementation of the planned Strategy.

Further, First Nations people who engage with the development and implementation of the Strategy must be appropriately remunerated for their time and contributions.

There are well-established institutes and networks which should be consulted during the Strategy development, including:

- The National Indigenous Disaster Resilience Project, led by Bhiemie Williamson (Fire to Flourish, Monash University). This project is, among other things, developing a National Indigenous Disaster Resilience Strategy, conducting research, and establishing a network within the disasters sector in Australia (with the inaugural [National Indigenous Disaster Resilience Summit](#) in August 2023).

Relevant work relating to disaster resilience and recovery, including Indigenous knowledges in these contexts (e.g. healing knowledges and practices):

- Previous work from Bhiemie Williamson and colleagues
 - [Submission to the Royal Commission into National Natural Disaster Arrangements](#).
 - Williamson, B., Markham, F., & Weir, J. (2020). Aboriginal peoples and the response to the 2019– 2020 bushfires (Working Paper No. 134). Centre for Aboriginal Economic Policy Research, ANU. doi:10.25911/5e7882623186c <https://caepr.cass.anu.edu.au/research/publications/aboriginalpeoples-and-response-2019-2020-bushfires>
 - [Video – AIDR: Indigenous perspectives on disaster recovery](#)

- Aboriginal community governance in the Black Summer fires: [video](#) and [discussion paper](#).
 - [The Conversation: Strength from perpetual grief: how Aboriginal people experience the bushfire crisis](#)
 - [Indigenous Peoples and Recovery Capitals](#)
 - [Indigenous healing and disaster recovery: A summary of dialogue](#)
- Australian Red Cross National First Nations Recovery Group, chaired by Sam Savage
- Emergency Recovery Victoria [Strategy for Aboriginal Community-led Recovery](#)
- Northern Rivers Community Healing Hub
 - <https://www.nrchh.org/copy-of-who-we-are>
 - <https://pacfa.org.au/portal/Portal/News-and-Advocacy/News/2022/northern-rivers-healing-hub-NAIDOC-2022.aspx>
 - Outlined by A/Prof Carlie Atkinson in this webinar: <https://mbspgh.unimelb.edu.au/centres-institutes/centre-for-health-equity/research-group/indigenous-health-equity-unit/research/apprise-grant/activities/northern-rivers-community-healing-hub>
- Public Health Emergency Framework
 - Graham, S., Kamitsis, I., Kennedy, M., Heris, C., Bright, T., Bennetts, S. K., ... & Chamberlain, C. (2022). A Culturally Responsive Trauma-Informed Public Health Emergency Framework for Aboriginal and Torres Strait Islander Communities in Australia, Developed during COVID-19. *International Journal of Environmental Research and Public Health*, 19(23), 15626.

Objective 1: Measuring health system greenhouse gas emissions

6. Beyond the schemes already noted above, is your organisation involved in any existing or planned initiatives to measure and report on health system emissions and/or energy use in Australia?

The consultation paper notes current national GHG reporting frameworks, including the National Greenhouse and Energy Reporting Scheme (NGER, p.11) and the voluntary Climate Active program. The Strategy should encourage and, where relevant, recommend health care specific emissions criteria for comparison across different settings.

Further, avoidance of an over reliance upon EEIO studies to guide local decision making (including by individual and groups of clinicians) is important. EEIO studies are useful for setting the scene and providing a broad overview of the healthcare sector's GHG emissions. However, EEIO studies are not nuanced enough to guide individual clinician and health administrator choices towards processes and procedures that result in fewer GHG emissions.

Case study: Western Health

At Western Health, Melbourne, and in association with the Universities of Melbourne and Sydney, several process-based LCAs of common tests and procedures were conducted. This includes measuring the carbon footprint of common pathology tests. Examples include common pathology tests,¹⁷ C.T., and M.R.I. scans.¹⁸ These studies are important for setting the foundation for healthcare to provide a more nuanced and informed healthcare GHG emissions profile. But such studies are only the beginning of the journey towards an informed, research and policy agenda towards low carbon health care.

7. What additional data and information is required to support targeted emissions reduction efforts within health and aged care?

The estimated Scope 1 and 2 health system emissions provided on p.11 were difficult to interpret without more detailed methodological information or data sources. It will be important to harmonise or clarify differences in baseline emissions calculations with prior studies. DCCEE's internal analysis of health care emissions identified aggregate 90.5 Mt CO₂-e of emissions in 2021 (p.11), which is significantly higher than the 35 Mt CO₂-e estimated in previous scientific studies.¹⁹

¹⁷ McAlister, S., Barratt, A. L., & McGain, F. (2020). The carbon footprint of pathology testing. *Med J Aust*, 213(10), 477-477.e471. <https://doi.org/10.5694/mja2.50839>

¹⁸ McAlister, S., McGain, F., Petersen, M., Story, D., Charlesworth, K., Ison, G., & Barratt, A. (2022). The carbon footprint of hospital diagnostic imaging in Australia. *Lancet Reg Health West Pac*, 24, 100459. <https://doi.org/10.1016/j.lanwpc.2022.100459>

¹⁹ Malik, A., Lenzen, M., McAlister, S., & McGain, F. (2018). The carbon footprint of Australian health care. *The Lancet Planetary Health*, 2(1), e27-e35. [https://doi.org/10.1016/S2542-5196\(17\)30180-8](https://doi.org/10.1016/S2542-5196(17)30180-8)

As noted in response to question 1, the Strategy must outline and justify the methods for measuring of GHG emissions. The NGER and Australia's greenhouse accounts will assist data gathering of health care's direct GHG emissions. Measurement of health care anaesthetic gases (including nitrous oxide) should also be straightforward based on existing hospital procurement and consumption data. Measurement, however, of the carbon footprint of pharmaceuticals and medical equipment is uncertain and rudimentary currently.

LCA has been demonstrated as a valid and replicable methodology for calculating downstream Scope 3 healthcare emissions in Australia and overseas and could be endorsed within the Strategy to encourage uptake across jurisdictions.²⁰ There are two main groups of LCAs relevant to healthcare; EEIO studies, and process based LCAs.

EEIO studies link a financial value with GHG emissions (kg CO₂-e per dollar). They are useful for large, healthcare sector wide estimates of GHG emissions. Process based LCAs require careful analyses of the components, their masses, place of manufacture, and energy sources used to deliver the final product.

While EEIO studies are generally more cost-effective and efficient to implement, they must be complemented by more comprehensive process-based LCAs to provide reliable and granular data required for comparisons between different clinical pathways; information which is becoming increasingly vital for evidence-based clinical decision-making.

²⁰ Seifert, C., Koep, L., Wolf, P., & Guenther, E. (2021). Life cycle assessment as decision support tool for environmental management in hospitals: A literature review. *Health Care Management Review, 46*(1). DOI: 10.1097/HMR.0000000000000248

Objective 2: Mitigation

8. What do you think of these proposed focus areas for emissions reduction? Should anything else be included?

We support the identified focus areas on p.14 as appropriate and reasonable. However, the current arrangement implies low prioritisation of 'prevention and optimising models of care', which are both central to reducing health care emissions and improving environmental sustainability. Tertiary, hospital-based services are among the most carbon-intensive modes of care.²¹ The Strategy is an important opportunity to emphasise co-benefits of health promotion, primary care, and disease prevention strategies in reducing demand across different levels of the health care system and associated emissions. This requires significant effort to target clinician behaviour and existing treatment protocols to reduce unnecessary and low-value care which provides little or no benefit to patients, overdiagnosis and prescription, and health care waste. Initiatives such as Choosing Wisely Australia provide information and resources to improve health care efficiency, which in turn reduce costs and support sustainable clinical practice.²²

9. Which specific action areas should be considered relating to the built environment and facilities (including energy and water), over and above any existing policies or initiatives in this area?

Energy should be a core and potentially separate focus of the built environment and facilities pillar, given its significant contribution to Scope 1 and 2 healthcare emissions. Efforts of some jurisdictions to ensure 100% renewable electricity in public hospitals (e.g. Tasmania, the Australian Capital Territory, South Australia, and public hospitals in Victoria by 2025) should be documented and promoted for replication in other settings. Additional emphasis should be placed on reducing energy consumption through efficiency measures such as operating theatre HVAC (heating, ventilation and air conditioning), setbacks and installation of energy saving devices.

For broader build environment and facilities management actions, energy efficient technologies and systems should be mandated for all new builds and subsidised for existing health care infrastructure, e.g. sensor lights; water saving taps; improved insulation; and heat pumps. The Strategy is also an important opportunity to transition Australia's health care facilities away from gas, and any new builds should be fully electrified²³.

Waste and water management interventions such as low-flow or water saving devices and diversion of waste or grey water for appropriate reuse, such as on-

²¹ Tomson, C. (2015). Reducing the carbon footprint of hospital-based care. *Future Hosp J*, 2(1), 57-62. <https://doi.org/10.7861/futurehosp.2-1-57>

²² Choosing Wisely. (2023). Available from: <https://www.choosingwisely.org.au/>

²³ DEA. (2022). *All electrical hospitals guide*. Available from: <https://dea.org.au/all-electric-hospital-builds/> and <https://dea.org.au/wp-content/uploads/2023/04/DEA-all-electric-hospital-guide-v7.pdf>

site garden irrigation, should be emphasised.

The built and natural environments and health are inextricably linked. Nature-based solutions include actions to protect, manage and restore ecosystems and can deliver co-benefits for mental and social health, and additional environmental benefits including cooling, improved air quality, erosion reduction, flood mitigation and biodiversity support.²⁴ Green infrastructure, such as interconnected networks of publicly accessible green space, should be a focus for both improvement of existing health infrastructure and health promotion engagements with other sectors.

*10. Which specific action areas should be considered relating to **travel and transport**, over and above any existing policies or initiatives in this area?*

Staff, patient, and visitor travel must be explicitly included in the Strategy and health care emissions measurement frameworks. As noted in the consultation paper, travel comprises up to 10-18% of total health care carbon emissions in some settings.²⁵ While patient and visitor travel may fall under Scope 3 emissions criteria, estimates from other comparable settings, namely the UK NHS, show it is possible to collect required data. At a minimum, a feasibility study for measuring health-related travel emissions should be conducted.

Health agencies also have direct purchasing power over vehicle fleets, even if some vehicles such as ambulances are leased rather than purchased outright. In these instances, electrical vehicles or high-fuel efficiency options should be preferred.

Policies and programs that help reduce unnecessary patient and staff travel should be promoted. For example, virtual telehealth consultations where appropriate should be incentivised. We support the extension of Medicare Benefits Scheme (MBS) items for several core consultations and counselling services and believe these items should be made available permanently as they deliver co-benefits of increased access for rural or marginalised populations while reducing unnecessary transport emissions.

We support the inclusion of broader transport policy levers in the Strategy and including a health perspective in efforts to improve access to affordable public transport, the promotion of active transport, and encouraging uptake of and infrastructure for electric vehicles. There is also an opportunity to consider and include the quantified health co-benefits associated with stronger fuel efficiency standards.

²⁴ Bowen, K. J., & Lynch, Y. (2017). The public health benefits of green infrastructure: the potential of economic framing for enhanced decision-making. *Current Opinion in Environmental Sustainability*, 25, 90-95. <https://doi.org/https://doi.org/10.1016/j.cosust.2017.08.003>

²⁵ Tennison, I., Roschnik, S., Ashby, B., Boyd, R., Hamilton, I., Oreszczyn, T., Owen, A., Romanello, M., Ruysevelt, P., Sherman, J. D., Smith, A. Z. P., Steele, K., Watts, N., & Eckelman, M. J. (2021). Health care's response to climate change: a carbon footprint assessment of the NHS in England. *The Lancet Planetary Health*, 5(2), e84-e92. [https://doi.org/10.1016/S2542-5196\(20\)30271-0](https://doi.org/10.1016/S2542-5196(20)30271-0)

11. Which specific action areas should be considered relating to **supply chain**, over and above any existing policies or initiatives in this area?

Procurement and supply chain emissions constitute most of the estimated health system emissions. Actions outlined in the consultation paper are comprehensive and we support emulation of the NHS supply chain decarbonisation efforts in the Strategy.

A national coordinated approach to procurement policy is a critical aspect and opportunity of the Strategy, to harmonise and improve efficiency in procurement practices across jurisdictions. Policy mechanisms such as the Modern Slavery Act provide precedents for ensuring procurement processes across health sector domains and institutions employ minimum standards and responsibilities. Decarbonising Australia's health care supply chains could be supported by high-level commitments in the Strategy, including (but not limited to):

- Preferencing high-quality reusable medical devices and consumables where appropriate and in line with clinical safety guidelines;
- Mandating end of life disposal plans for all medical devices;
- Preferencing suppliers which publicly report on their carbon emissions and the carbon footprint of their products; and
- Preferencing First Nations businesses and products manufactured in Australia.

The Shift project: Lean Information, Communications Technology (ICT)^{26, 27} highlights additional strategies to reduce technology related emissions I healthcare contacts, including:

- Changing equipment less often;
- Reducing unnecessary energy-intensive uses;
- applying sustainable design principles to digital devices – particularly Avoiding waste with single use devices;
- Choosing and sourcing sustainable, recycled and biodegradable materials and environmentally sustainable manufacturing processes; and
- Developing facilities and/or consider operations to manage recycling or repurposing of digital devices to prolong their use.

Further Australia has existing national bodies that can regulate certain standard requirements, such as the Therapeutic Goods Administration (TGA),

²⁶ Lokmic-Tomkins, Z., Borda, A., & Humphrey, K. (2023). Designing digital health applications for climate change mitigation and adaptation. *The Medical journal of Australia*, 10.5694/mja2.51826. Advance online publication. <https://doi.org/10.5694/mja2.51826>

²⁷ Shift Project. (2019). *Lean ICT: towards digital sobriety — report of the working group directed by Hugues Ferreboeuf for the think tank The Shift Project*. Available from: <https://theshiftproject.org/en/article/lean-ict-our-new-report>

Pharmaceutical Benefits Scheme (PBS) and the Australian Commission on Safety and Quality in Health Care (ACSQHC) standards.

Finally, the NHSCU should embrace opportunities for international engagement and leadership. As a critical first step, Australia must join the [WHO-led Alliance for Transformative Action on Climate and Health \(ATACH\)](#), which is leading the development of international health procurement standards in partnership with civil society organisations and 64 existing member states.

*12. Which specific action areas should be considered relating to **medicines and gases**, over and above any existing policies or initiatives in this area?*

Importantly, the section on Medicines and gases (p.20) includes anaesthetic drugs and inhalers. We support the listed actions but recommend additional emphases on:

- Phasing out and ultimately prohibiting the use of desflurane due to its significantly higher global warming potential.²⁸
- New hospitals (apart from obstetric and paediatric services) to avoid the installation of piped nitrous oxide as is being promulgated from 2023 by the Australian Health Facility Guidelines.
- For Hospitals and facilities with existing piped nitrous oxide supply, mandate a nitrous oxide infrastructure management plan to ensure adequate monitoring, detection and mitigation of leaks, and reduction of overall procurement.
- Mandate reporting of emissions associated with anaesthetic gases (including nitrous oxide) as in the new Victorian FRD 24 requirements.
- Encourage midwives, obstetricians, anaesthetists and patients to consider ways to reduce nitrous oxide use in birthing, given it has limited clinical effectiveness as a labour analgesic.²⁹

*13. Which specific action areas should be considered relating to **waste**, over and above any existing policies or initiatives in this area?*

Waste reduction targets are necessary to ensure a reduction and eventually net-zero emissions from health care. While waste segregation and management is a key component of a Strategy to reduce environmental impact, the focus must be on reducing waste in the first instance, as the waste itself does not have as significant carbon footprint as the production of the product.

²⁸ Centre for Sustainable Healthcare. (2023). *Desflurane Reduction Project*. Available from: <https://sustainablehealthcare.org.uk/what-we-do/sustainable-specialties/anaesthetics/desflurane-reduction-project>

²⁹ Australia and New Zealand College of Anaesthetists .(2022). Available from: <https://www.anzca.edu.au/resources/media-releases/2022-media-releases/nitrous-oxide-australian-anaesthesia-2022.pdf>

Appropriate segregation of waste that is generated is important. This requires a multi-faceted approach, including staff education, facility infrastructure, waste contracts as well as the capacity to re-use, reprocess and recycle products.

14. Which specific action areas should be considered relating to *prevention and optimising models of care*, over and above any existing policies or initiatives in this area?

As the consultation paper highlights, overall population growth and ageing will increase pressure on Australia's health care system over coming decades. We strongly support an emphasis on prevention, promotion, and optimising both models and integration of care across all levels of the health system, to ensure all Australians can access high-quality, affordable, and equitable care where and when they need it, and that the environmental impact of that care is reduced. Specific actions and strategies to support the environmental co-benefits of health prevention and promotion in the Strategy should include:

- Education, workforce support, research, and investment in primary and preventive care (including mental health), elimination of low value care and development of low carbon models of care.
- A review of existing health services and models of care, including telehealth and digital health programs to understand their potential contributions to emission reductions.
- Enhancing sustainable models of care, including decentralizing healthcare away from tertiary centres, by upskilling and adequately resourcing local health facilities and providers to deliver appropriate care closer to home. This should also include enhancing, not replacing, local, ongoing community-based mental health care which is integrated with primary health care.
- Promoting integration of climate change mitigation and adaptation strategies into health promotion plans and projects.
- Supporting multisectoral partnerships with health-determining sectors and environmental groups to promote a HiAP approach and collaboration on interventions that deliver health co-benefits via prevention and promotion, such as promoting increased physical activity and environmentally sustainable dietary changes.

15. What can be done to involve private providers within the health system in the Strategy's emissions reduction efforts?

Private providers of healthcare sit under the institutional domain of DHAC given a significant proportion (up to 75%) of funding for general and private practitioners stems from publicly funded Medicare rebates. As such, the Strategy is an important opportunity to incentivise and encourage decarbonisation efforts in private settings, including renewable energy within healthcare facilities; reducing low-value and carbon-intensive care; and mandating GHG emissions reporting and targets for private health care providers as part of overall health care emissions reduction efforts.

16. Where should the Strategy prioritise its emissions reduction efforts?

- a) How should the Strategy strike a balance between prioritising emissions reduction areas over which the health system has the most direct control and prioritising the areas where emissions are highest, even if it is harder to reduce emissions in these areas?**

Reducing both direct and indirect health system emissions should be a core focus of the Strategy and action areas. However, it is equally important that the Strategy prioritise HiAP and multisectoral coordination and broader decarbonisation and emission reduction efforts in health-determining sectors.

However, there are likely to be a range of short-, medium-, and long-term actions and priorities as the Strategy evolves over coming years and decades. In the short-term (3-5 years), one area of focus could be on reducing Scope 1-3 emissions within the health care sector. Immediate 'low hanging fruit' for health care decarbonisation and mitigation include:

- Establishing a robust baseline for measuring health care GHG emissions (as per Q.7) and setting ambitious emission reduction targets in line with our Paris Agreement commitments to limit global warming to 1.5 degrees Celsius.
- Phasing out and ultimately prohibiting the use of desflurane in all health care facilities and reducing reliance on nitrous oxide.
- Facilitating transition of all current and planned health care facilities to renewable energy systems and supporting electrification of vehicle fleets and heating systems.
- Develop a national health care procurement and emissions reduction framework.
- Engage with relevant international climate and health leadership forums, including the WHO ATACH.

- b) Which of the six sources of emissions discussed above (on pages 13 to 18) are the highest priorities for action?**

Highest priorities include:

- Prioritising prevention and integration of optimal models of care.
- Built environment and facilities, including building energy and water use.
- Health care procurement, including medical devices and instruments and supply chain waste.
- Travel and transport.
- Though not an action area, multi-sectoral HiAP partnerships towards emissions reduction and mitigation efforts in health-determining sectors should be included.

17. What 'quick wins' in relation to emissions reduction should be prioritised for delivery in the twelve months following publication of the Strategy?

See response to 16a.

Objective 3: Adaptation

18. What health impacts, risks and vulnerabilities should be prioritised for adaptation action through the Strategy? What process or methodology should be adopted to prioritise impacts, risks and vulnerabilities for adaptation action?

In the absence of a working definition for 'health system', it is important to highlight first and foremost that the Strategy must focus on building resilience holistically, among Australian communities as well as within the health care workforce and infrastructure. As the consultation paper notes, we reaffirm that certain populations are more at-risk to experiencing negative health impacts associated with climate change, and strongly support a targeted approach to building adaptive capacity and resilience in these populations.

The [WHO Guidance on conducting a Vulnerability, Capacity and Adaptation Assessment](#) is the core reference material and method to prioritise impacts, risks and vulnerabilities for adaptation action. This assessment has been used globally, and there is associated training to support capacity and capability development to conduct the assessment.

Further, it is critical to consider and address disaster prevention, response, and recovery in relation to community adaptation efforts. There is a need to shift beyond the centrality of 'time' in conceptualisations of disaster, for example the Prevention, Preparedness, Response, Recovery Model to instead determine current levels of 'social disruption'. Use of time as an indicator is heavily based on the assumption of a single major disaster event. Communities facing multiple disasters may be simultaneously engaging in preparedness, response and recovery phases relating to different disaster events. Identifying community strengths and support needs then becomes a useful consideration in terms of their capacity to cope with current levels of disruption and with future disaster events. This highlights an important opportunity to link emerging models in the disaster sector with community climate adaptation models developed for similar purposes.

It is critical to establish capability models to accelerate targeted solutions with communities and stakeholders that build resilience. The University of Melbourne is currently leading in the co-development and implementation of such tools to support community-led decision making in the context of disasters and climate adaptation. These will also have relevance to community action relating to climate mitigation actions.

19. Should the Australian government develop a National Health Vulnerability and Adaptation Assessment and National Health Adaptation Plan? If yes:

- a) What are the key considerations in developing a methodology?**
- b) How should their development draw on work already undertaken, for example at the state and territory level, or internationally?**
- c) What are the key areas where a national approach will support local/jurisdictional vulnerability assessment and adaptation planning?**

The development of a National Health Vulnerability and Capacity Assessment and National Health Adaptation Plan should be conducted as part of the National Climate and Risk Assessment (NCRA) processes and not as a duplication of efforts. This should be executed as a whole-of-government assessment, and not siloed within one Department. DHAC should remain the lead agency for this Assessment.

As previously indicated, a clear and well-tested WHO-developed toolkit exists to conduct this work. However, there will be a need to rapidly skill-up health specialists to be able to support DHAC to conduct the Assessment and work towards developing priorities and plans.

Collaboration between local/jurisdictional scales and DHAC will be necessary to ensure (e.g.) data availability, review of relevant policies/programs, and prioritisation of adaptation options (considering feasibility, cost, timeliness etc.). It is critical that local/jurisdictional policymakers, researchers and practitioners are genuinely involved in the conduct of the VCA, particularly as adaptation solutions will largely be implemented at a local level.

The Strategy should account for the lived experience of communities, with a focus on priority populations, as part of vulnerability and adaptation planning.

The methodology used must also identify policy gaps and opportunities for improving population resilience across government portfolios.

20. Would there be value in the Australian government promoting a nationally consistent approach to vulnerability assessment and adaptation planning for the health system specifically, for instance by issuing guidance and associated implementation support tools for states, territories and local health systems? If yes, what topics should be covered to promote a nationally consistent approach? What examples of existing guidance (either from states/territories or internationally) should be drawn from?

Yes, the Australian government should develop and promote a nationally consistent approach to vulnerability and adaptation planning within the health system, and there are several existing tools and methodologies to support this (as detailed earlier). Specifically, the [WHO Health National Adaptation Planning](#)

[\(HNAP\)](#) process will be a critical foundation and includes clear guidelines and steps to assess climate-health risks, and identify, prioritise and implement adaptation responses. Importantly, these adaptation interventions must be supported through robust monitoring, evaluation, and learning mechanisms.

21. What immediate high-priority health system adaptation actions are required in the next 12 to 24 months?

To maximise the successful delivery of the Strategy and to harmonise efforts across government in the next two years, it will be important to:

- Work closely and collaboratively with DCCEEW and other relevant federal and state departments and agencies, as well as the new [Australian Centre for Disease Control](#).
- Rapidly review health-determining sectors' (e.g. agriculture, water, urban planning, transport, energy) adaptation plans to maximise synergies with adaptation options in the health sector.
- Prioritise the rapid up-skilling of education, training and other capacity development efforts among policymakers, community members, the health workforce, and within emergency and disaster preparedness services and agencies.
- Incorporate climate-resilient infrastructure assessments in any new health-related build.
- Avoid building new health care facilities on land likely to be at risk of climate change related damage, such as flooding and fires.
- Develop preparedness plans for health care service delivery for climate related disasters.
- Support the adequate preparation and resourcing of emergency services.
- Appropriately resource rural and remote health services to improve resilience.
- Adequately prepare for disruption to healthcare system supply chains.

We also advise and support the calculation of full societal costs of climate inaction and the implications of health-relevant policies in all sectors, to prevent the transfer of costs to the health sector and to avoid entrenching unsustainable environmental practices.

Beyond development, continued engagement with all stakeholders (including the public) throughout the implementation of the Strategy is vital to increase both acceptance and engagement.

22. What are the key areas in which a Health in All Policies approach might assist in addressing the health and wellbeing impacts of climate change and reducing emissions?

We commend the consultation paper for a commitment to pursuing a HiAP approach in the development and implementation of the Strategy. Considering and maximising health outcomes in the following key areas will be critical to successfully reduce climate-related health and wellbeing impacts:

- **Energy:** particularly in relation to fossil fuel exploration, mining, extraction, combustion, and exportation. The Strategy makes no reference to Australian fossil fuel operations. A HiAP approach should incorporate this. We also recommend the consideration of health in existing and emerging renewable energy technologies. To date, LCAs that consider health, and health impact assessments are under-represented in the consideration of renewable energy-related health impacts. It is imperative that as we transition to a renewable energy system, we avoid the externalised health costs we have seen from the existing energy system.
- **Transport:** transitioning away from the sector's reliance on fossil fuels including policies to develop safe and accessible active transport and public transport options.
- **Food and agriculture:** agriculture production, transport, and storage as well as public health policies to promote health and wellbeing by improving dietary habits, such as a sugar tax and addressing inappropriate junk food advertising. Specifically, the [National Health and Medical Research Council's Dietary Guidelines](#) should include a dedicated section on the environmental impacts of dietary choices, as these create indirect and downstream health impacts.
- **Finance:** ceasing fossil fuel subsidies as well as removing current requirements to demonstrate savings in a specific area, rather than in relation to the overall Australian budget costings, including health and health care.

A significant barrier to effective inclusion of health concerns in decision-making is the operation of silos within government so that departments overseeing planning, infrastructure, energy, agriculture, and water make decisions independent of projected health impacts. An effective avenue that should be covered by a HiAP approach would be the requirement to include health metrics in the assessment phase of any significant national, state, or private sector proposal. Policy and program models which support HiAP include:

- Cross-sectoral action teams;
- Integrated budgets and accounting;
- Cross-cutting information, evaluation and assessment systems;
- Joined-up workforce development; and
- Community consultations and Citizens' Juries, partnership platforms.

Further, the Strategy should seek to maximise health co-benefits via a HiAP approach. Health co-benefits associated with climate adaptation and mitigation strategies can be maximised when they are identified and quantified during policy development. This requires building institutional capacity and skills in other portfolios to implement a Health in All Policies approach, and for the DHAC and stakeholders to provide evidence on the determinants of health and inequity, as well as effective responses and solutions.

23. What are the most effective ways to facilitate collaboration and partnerships between stakeholders to maximise the synergies between climate policy and public health policy? What are some successful examples of collaboration in this area?

Early, continued, and regular engagement supported by an effective governance architecture will provide the most successful outcomes for health in the development of climate and related policies.

To effectively facilitate collaboration and partnerships within government, the European Union provides an innovative approach. The European Commission physically locates and embeds staff from different Directorate-Generals (Departments); the climate department (DG CLIMA) has a team of staff from the health department (DG SANTE) who are co-located and based at DG CLIMA. This and arrangements facilitate and foster genuine collaboration on climate and health-related policy and decision-making³⁰.

Legislation will also be required to ensure all stakeholders engage authentically with a Health in All Policies approach. This includes the incorporation of health metrics into the assessment phase of any future policy and any significant national, state, or private sector proposal. In the US, the Obama Administration's use of the *Clean Air Act* to extend the definition of air pollutants to include GHGs enabled the pursuit of increasingly ambitious climate policies in 2015 and provides a useful case study for considering legislative options to simultaneously advance climate and air quality policies³¹.

24. How could these enablers be improved to better inform the objectives of the Strategy? Should any enablers be added or removed?

We commend the consultation paper on the identification of five enablers to support the development and implementation of the Strategy. Below we suggest

³⁰ Workman, A., Blashki, G., Bowen, K. J., Karoly, D. J., & Wiseman, J. (2019). Health co-benefits and the development of climate change mitigation policies in the European Union. *Climate Policy*, 19(5), 585-597.

³¹ Workman, A., Blashki, G., Bowen, K. J., Karoly, D. J., & Wiseman, J. (2020). Political leadership on climate change: the role of health in Obama-era US climate policies. *Environmental Research Letters*, 15(10), 105003.

improvements and additional enablers that should be considered. For the existing enablers:

- **Communication and engagement:** The communication and engagement enabler should recognise the important role that digital infrastructure will play in the successful delivery of the Strategy. Further, action E3.1 alludes to one-way communication. This action either needs to be amended, or a new action created, to recognise the critical role of bi-directional communication efforts, so there is a focus on opportunities for government to hear and learn from communities and respond accordingly.

We also support the addition of the following enablers:

- **Governance:** The use of democratic innovations for inclusive community decision making, such as citizens' juries and community recovery committees, are enabling governance mechanisms to empower and educate communities to participate in decision-making processes.
- **Nature-based solutions:** Nature-based solutions (NbS) provide interventions with multiple benefits for both human health and wellbeing and ecosystems. We recommend the inclusion of nature-based solution as an enabler, with an action focused on identifying key NbS for meeting the Strategy's objectives.
- **Funding:** Adequate, long-term funding is a key enabler for the successful delivery of the Strategy. Sufficient funding should be made available to ensure all enablers can be actioned, and potential barriers where identified, are addressed. The avoided health costs from investment in the delivery of the Strategy will likely outweigh the health impacts should the Strategy be ineffective.

25. For each of these enablers:

a) What is currently working well?

b) What actions should the Strategy consider to support delivery?

Refer to responses in Q24 above.