



# Submission by the HEAL Network to Climate adaptation in Australia - National Adaptation Plan Issues Paper

## Authors

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## About the HEAL Network

The vision of the Healthy Environments and Lives (HEAL) Network is to catalyse research, knowledge exchange and translation into policy and practice that will bring measurable improvements to our health, the Australian health system, and the environment.

The HEAL Network is a broad coalition of 100 investigators and more than 30 organisations from across Australia that aims to bridge the gap between knowledge and action by bringing together Aboriginal and Torres Strait Islander wisdom, sustainable development, epidemiology, and data science and communication to address environmental and climate change, and its impacts on health across all Australian states and territories.

HEAL focuses on participatory solutions-driven research that provides robust scientific evidence to underpin structural policy and practice changes. To meet this need, our collaboration includes Government health and environmental authorities; health sector organisations; Indigenous organisations; and data providers to integrate a complex social, environmental, economic and institutional ecosystem into a cohesive, multidisciplinary research network.

The Healthy Environments and Lives (HEAL) National Research Network has a strong capacity to provide strategic advice on policy for the health impacts of environmental and climate change, and we welcome the opportunity to provide this submission to the National Adaptation Plan (NAP) Issues Paper. The issues identified and recommendations below come from a number of HEAL Network investigators.

We appreciate the reference in section 4.5.2 of the NAP Issues Paper to the HEAL Network's significant research initiatives on climate change and health in Australia. As acknowledged in the reference list of the NAP Issues Paper, the HEAL Network has contributed to major policy relevant outputs through our collaboration with the Centre for Research Excellence in Strengthening Systems for Indigenous Health Care Equity (CRE-STRIDE) and the Lowitja Institute on climate change and Aboriginal and Torres Strait Islander health [1], as well as the internationally leading work of our broader network of advisors and collaborators exemplified by the Climate Health WA Inquiry [2].

## Key recommendations

**Recommendation 1:** Explicitly reference equity in the vision statement, that is, “Australia’s economy, society, and natural and built environments are being equitably managed and invested in, to reduce climate impacts and harness any opportunities now and into the future – by all levels of government, business and community”.

**Recommendation 2:** Explicitly reference inclusivity in the objectives statement, that is, “to ‘mainstream’ adaptation action through inclusive planning and consultation, drive a substantial uplift in private sector investment and establish support for people and communities in disproportionately vulnerable situations”.

**Recommendation 3:** Clearly articulate the need for inclusivity and equity, and substantially increase the urgency and ambition in the vision and objectives of the NAP. This should flow through to adaptation actions articulated in the final NAP document. Adaptation actions should be developed in such a way that they catalyse and enable activities to be undertaken on each of the 11 priority risks.

**Recommendation 4:** Provide a clear signal to the health research sector that implementation science focused on the effectiveness, acceptability and scalability of adaptation action is the main output desired to support the NAP’s objectives.

**Recommendation 5:** Commit to assessing health impacts and risks in each of the 11 priority risks in the NAP and the NCRA second pass assessment. This should be done in addition to the health and social support system being assessed as a standalone, discrete priority system.

**Recommendation 6:** Take an integrated approach that combines a National Heat-Health Action Plan with a National Clean Air Action Plan that will minimise the combined health impacts of heat and air pollution, maximise co-benefits of adaption actions, and minimise maladaptation.

**Recommendation 7:** Support the development of climate-based early warning systems to support surveillance and control of vector and zoonotic infectious diseases in collaboration with the Australian Centre for Disease Control. It should also strengthen recognition of climate risks to human health associated with non-communicable as well as communicable diseases across the systems targeted within the NAP.

**Recommendation 8:** Clearly articulate the roles and responsibilities under the NAP for the national, state and territory health jurisdictions. While governance arrangements continue to be established under the National Health and Climate Strategy, the NAP will need to be clear on where it engages with existing health system governance arrangements.

**Recommendation 9:** Utilise existing public health governance structures in Australia to provide briefings on climate adaptation and the importance of the NAP to the Chief Medical Officer, Australian Health Protection Principal Committee (AHPPC), the Environmental Health Standing Committee (enHealth), and involve close engagement with state and territory Chief Health Officers.

**Recommendation 10:** Include the establishment of an Aboriginal and Torres Strait Islander Coalition on Climate Change that will enhance the principle of inclusivity and enable the NAP process to incorporate First Nations perspectives.

**Recommendation 11:** Develop a range of robust, sensitive and meaningful indicators for tracking the progress of the NAP as a priority action. These indicators should be spatially



disaggregated and able to identify impacts and track progress in health outcomes, exposure, vulnerability, equity, and adaptation action in the health and social support system annually.

**Recommendation 12:** Include an appropriate number and sufficient level of detail for actions related to the health and social support system in the NAP and Health NAP. Development of the Health NAP is a commitment by the Australian Government under the National Health and Climate Strategy. Ensure that “adaptation action owners” are allocated, based on consultation, during the NAP and Health NAP development process.

**Recommendation 13:** Frame the health and social support system, and the natural environment system (and their associated priority risks) as a cross-system risk, and ensure that an assessment of health impacts and consultation with health stakeholders is undertaken for all 11 priority risks, and throughout the development of the NAP.

**Recommendation 14:** Develop a national health and social services climate adaptation fund, specifically for the health and social support system, which enables not-for-profit and health sector organisations to break out of their resource constrained environment and contribute across sectors in achieving the objective of the NAP. This should include research funding to enhance the evidence base on the effectiveness, acceptability and scalability of proposed adaptation initiatives in the health and social support system.

**Recommendation 15:** Strengthen long-term adaption planning focusing on (a) the resilience of the built environment, services and communities in urban and rural areas disproportionately affected by climate change, (b) healthcare infrastructure, supply chains, and workforce resilience, (c) environmental public health surveillance and tracking including early warning systems, and (d) preventive health, primary care and mental health services.

**Recommendation 16:** The NAP could integrate the HEAL Network priority action to develop a Healthy Environments and Lives (HEAL) Observatory. The Observatory would be a digital knowledge-action hub to support the health sector, policy makers and communities by providing: (a) dashboard indicators on climate and health adaptation and mitigation; (b) links to existing databases, analytic tools and methods that will support local, state and national decision-making; (c) links to publications, training materials, factsheets, and other communication tools; and (d) an online, open, interactive forum for knowledge exchange between researchers, policymakers, practitioners and communities.

**Recommendation 17:** Ensure ongoing engagement with First Nations-led organisations such as National Aboriginal Community Controlled Health Organisation (NACCHO) and the Lowitja Institute, with specific funding to support an Aboriginal and Torres Strait Islander Coalition on Climate and Health.

**Recommendation 18:** Utilise the HEAL Network’s ability to facilitate respectful consultation and research engagement with First Nations groups for the NAP, recognising our focus on Aboriginal and Torres Strait Islander health and environmental research initiatives and knowledge translation.

**Recommendation 19:** Facilitate appropriate reparations through the NAP to enable climate adaptation and improvements in health such as: access to Country to undertake cultural management activities; equitable power sharing and co-governance arrangements over land and waters; and enabling supports to strengthen adaptive capacity, including appropriate housing and access to quality education and employment opportunities.

## Foundations for a National Adaptation Plan

*1. What do you think a well-adapted and resilient Australia looks like? Does the draft vision capture this? Why, why not? Do you agree with the key objectives of the plan? What other suggestions do you have?*

The vision of the NAP is well framed by proposing that “Australia’s economy, society, and natural and built environments are being managed and invested in, to reduce climate impacts and harness any opportunities now and into the future – by all levels of government, business and community”. We appreciate the tacit reference here to the principles of sustainable development and the triple bottom line (financial, social and environmental bottom lines); however, we feel that it needs to be explicitly stated that there will be equitable attention across environmental, social and economic sectors.

**Recommendation 1:** Explicitly reference equity in the vision statement, that is, “Australia’s economy, society, and natural and built environments are being equitably managed and invested in, to reduce climate impacts and harness any opportunities now and into the future – by all levels of government, business and community”.

The two key themes in the vision – management and investment – are very useful as they should help to guide action downstream of this vision, through the content and substance of the NAP, particularly through adaptation actions.

Similarly, the key objectives of the NAP are well framed: “to ‘mainstream’ adaptation action, drive a substantial uplift in private sector investment and establish support for people and communities in disproportionately vulnerable situations”. However, mainstreaming adaptation action will require consistent inclusion and consultation across many sectors and community, including First Nations, culturally and linguistically diverse groups, and young people, and this should be explicitly stated.

**Recommendation 2:** Explicitly reference inclusivity in the objectives statement, that is, “to ‘mainstream’ adaptation action through inclusive planning and consultation, drive a substantial uplift in private sector investment and establish support for people and communities in disproportionately vulnerable situations”.

There are three important elements that can be further strengthened in the vision and objectives: (a) sense of urgency, (b) sufficient level of ambition, and (c) commitment to equity that should underpin the conceptualisation of the NAP. Leveraging adaptation opportunities for Australian national prosperity requires due attention to equity of access and benefits from initiatives. A lack of private sector investment within our most marginalised communities has largely contributed to existing social and economic inequities, for example resource exploitation of First Nation lands. Climate adaptation presents an opportunity to shift the status quo and focus on inclusivity and strengthening adaptive capacity across all communities. While we appreciate that the NAP is being developed within the government process, and across multiple departments and organisations, there is nevertheless a need to move urgently in developing adaptation capacity and enhancing resilience across Australia. Urgency, ambition and equity should be a driving intent behind all aspects of the final NAP document, including adaptation actions.

**Recommendation 3:** Clearly articulate the need for inclusivity and equity, and substantially increase the urgency and ambition in the vision and objectives of the NAP. This should flow through to adaptation actions articulated in the final NAP document. Adaptation actions should be developed in such a way that they catalyse and enable activities to be undertaken on each of the 11 priority risks.

The HEAL Network strongly supports the first key objective of mainstreaming adaptation action. However, the NAP Issues Paper does not provide sufficient direction on how mainstreaming can be achieved for the different systems identified in the National Climate Risk Assessment (NCRA). The health and social support system is central to the climate adaptation response. Hospitals, healthcare staff and health managers are at the frontline of responding to the higher burden of disease we are seeing in Australia due to climate events such as the summer 2019-20 bushfires and flooding in 2022 across eastern Australia.

The impacts to the health of individuals, and the very health systems that are tasked with responding to these extreme weather events, are abundantly clear. Air pollution during the summer 2019-20 bushfires led to health costs of \$1.95 billion; with an estimated 429 smoke-related premature deaths; 3,230 hospital admissions for cardiovascular and respiratory disorders; and 1,523 emergency attendances for asthma [3]. Heatwaves are another recurring climate-related hazard which has claimed more lives than any other natural hazard in Australia [4]. Hospitals and health services see a significant increase in ambulance calls and all-cause mortality during heatwave events [5].

Therefore, the health and social support system should be considered a cross-system risk, and should be included in the assessment of all 11 priority risks (a detailed recommendation is provided under question 2 and 8). However, in relation to the key objectives of the plan, further direction on how mainstreaming can be achieved for the different systems is required from the NAP. This has implications for the health research sector, which should clearly understand the type of evidence generation that will support the implementation of the NAP.

**Recommendation 4:** Provide a clear signal to the health research sector that implementation science focused on the effectiveness, acceptability and scalability of adaptation action is the main output desired to support the NAP's objectives.

There are two additional important suggestions for framing the NAP: taking a health promoting settings-based approach, and a participatory and community-engaged approach. While section 3.2.2 of the NAP Issues Paper refers to place-based and community-led approaches, and this approach is referenced throughout the paper, the broad thrust of the paper nevertheless remains top-down in its approach. The settings-based approach and the Healthy Settings movement auspiced by the World Health Organization provides a solution here [6]. The HEAL Network has significant expertise in developing healthy settings together with government authorities at various levels. A participatory and community-engaged approach remains necessary – the NAP attempts to do this, but needs to place further emphasis on the co-design and co-production of solutions. This approach can be incorporated into the draft principles in section 2.4; the final principle in particular takes a top-down interventionist approach to “assist groups” rather than empower groups. We emphasise the need to build supporting systems and processes whereby local people and communities can develop and implement their own locally appropriate solutions. We commend to DCCEEW the equity lens described elsewhere in our submission, and embedding a rights-based approach – both of which are articulated very effectively in the National Strategy for Just Adaptation [7].

## *2. The plan will respond to the priority nationally significant risks identified in the National Climate Risk Assessment. Within those, what areas should be the Commonwealth's priority for this National Adaptation Plan and why?*

While health and wellbeing is not described as one of the four cross-system risks, it is nevertheless a cross-cutting issue. The National Climate Risk Assessment (NCRA) first pass assessment report acknowledges that health and wellbeing is at the centre of national climate adaptation planning, noting on page 3 that climate change “has real consequences to social cohesion, human health and wellbeing, environment, infrastructure and economy” [8]. Health, wellbeing, healthcare, and medical assets also appear as repeated elements across all four domains (social, natural, built and economic) in Table D1 in the National Adaptation Plan Issues Paper. Therefore, an assessment of the health impacts and risks due to climate change must be included across all four domains and all 11 priority risks.

**Recommendation 5:** Commit to assessing health impacts and risks in each of the 11 priority risks in the NAP and the NCRA second pass assessment. This should be done in addition to the health and social support system being assessed as a standalone, discrete priority system.

Figure 1 of the NAP Issues Paper focuses on hydrometeorological hazards and does not highlight health risks (although this was formulated as part of the NCRA first pass assessment). Injuries and deaths due to heat stress, floods, bushfires and air pollution are anticipated to be significant, but there are also wider impacts on health through other systems such as food, water and biodiversity, and these are not well addressed within health and social support system (section 4.5).

We welcome the proposed development of a National Heat-Health Action Plan, an Australian Government commitment under the National Health and Climate Strategy [9] that will promote a nationally consistent approach to minimise the health impacts of heat. A similar National Clean Air Action Plan is required to provide a nationally consistent approach for reducing the health impacts of climate-sensitive air pollutants from landscape fires (bushfires, hazard reduction burning, agricultural burning) and sandstorms, as well as from human-made sources of air pollution (wood heaters, road traffic, industry, power generation) [10]. There is evidence that heat and air pollution can act synergistically on human health [11]. The combined health impacts of heat and air pollution should be addressed in adaptation planning that does not focus on individual risk factors in isolation. An integrated approach involving National Heat-Health and Clean Air Action Plans will more effectively reduce health risks, maximise opportunities for co-benefits (e.g. improved green spaces in cities, effective ventilation, cooling, and air filtration systems), and minimise the risk of maladaptation (e.g. overheating of airtight houses).

**Recommendation 6:** Take an integrated approach that combines a National Heat-Health Action Plan with a National Clean Air Action Plan that will minimise the combined health impacts of heat and air pollution, maximise co-benefits of adaptation actions, and minimise maladaptation.

Climate change is causing unpredictable weather with severe droughts and rainfall occurring globally and in Australia. In the aftermath of flooding, higher water temperatures accelerate

the growth of disease vectors such as mosquitoes, which encourages the outbreak and proliferation of vector-borne diseases. These include dengue, Ross River Virus, and Barmah Forest Virus. In addition, climate change has an impact on the distribution and numbers of hosts of zoonotic diseases. For example, flying fox hosts of Australian Bat Lyssavirus and Hendra virus, waterbird hosts of Murray Valley Encephalitis virus and Japanese Encephalitis.

There is a need to invest resources in adaptation to climate sensitivity vector-borne and zoonotic diseases. Disease prevention through effective surveillance and vector control should be included in section 4.5. Quantifying the effects of climate change on vector-borne and zoonotic diseases in Australia and developing climate-based early warning systems to support surveillance and control should be part of the National Adaptation Plan [12].

Surveillance and communication between human and animal health is critical and can build on existing partnerships to strengthen a One Health approach [13]. It should be noted that human disease is not a focus of the National Biosecurity Strategy 2022-2032 currently referenced in NAP Issues Paper.

**Recommendation 7:** Support the development of climate-based early warning systems to support surveillance and control of vector and zoonotic infectious diseases in collaboration with the Australian Centre for Disease Control. It should also strengthen recognition of climate risks to human health associated with non-communicable as well as communicable diseases across the systems targeted within the NAP.

### *3. What is working well in adaptation policy governance at the national level? Are there more opportunities for collaboration, or institutional changes that will help build a more adapted Australia?*

Effective governance arrangements will be critical to the successful implementation of the NAP. These governance arrangements should be articulated in more detail for each system as work on the development of the NAP proceeds. For the health and social support system, it will be important to articulate areas where government departments will develop programs at a national level, either directly by the Department of Climate Change, Energy, the Environment and Water (DCCEEW) or the Department of Health and Aged Care (DOHAC), and in conjunction with State and Territory administrations.

For the health and social system, it is important to remain mindful that State and Territory departments of health administer their respective Public Health Act and Regulations. The objectives of these pieces of legislation are to protect, promote and improve health – including addressing the health impacts of climate change. Through Chief Health Officers, state and territory health jurisdictions already undertake “business as usual” functions and have an existing regulatory mandate for environmental health issues, including climate change adaptation. We note that the recently published National Health and Climate Strategy goes part of the way to address this issue, but the governance arrangements for implementation of the approximately 50 actions in this strategy are still unclear. The NAP will need to be clear on where it engages on existing health system governance arrangements at national or state and territory level.

We note that some jurisdictions already have governance arrangements and programs in place that will facilitate the implementation of the National Adaptation Plan for the health and

social support system. Within their respective Departments and Ministries of Health, New South Wales (NSW) has a “Climate Risk and Net Zero Unit”; Western Australia (WA) has “Sustainable Development Unit”; and Victoria has a “Climate Change and Environment team”. On the contrary, several other health jurisdictions have much lower levels of organisational maturity in responding to climate change and environmental sustainability in the health sector. The role of state and territory governments in the implementation of the NAP, in conjunction with the DCCEE, DOHAC and other federal government departments in this context needs to be clarified.

There is also a need to clarify the governance and responsibilities related to the development of the National Health Adaptation Plan (an action of the National Health and Climate Strategy released in December 2023) in relation with the NAP.

While we have outlined adaptation policy governance mechanisms at the national level and State and Territory jurisdictional level above, a critical gap remains in adaptation planning at the community level. This relates to all communities, particularly regional and remote communities and First Nations communities. We commend to DCCEE the Lowitja Institute call for the establishment of an Aboriginal and Torres Strait Islander Coalition on Climate Change [14]. This is an example of institutional changes that will help build a more adapted Australia; enhance the principle of inclusivity and enable the NAP process to incorporate First Nations perspectives; and deliver on the commitment in section 2.3 to First Nations knowledges and experiences alongside Western science.

**Recommendation 8:** Clearly articulate the roles and responsibilities under the NAP for the national, state and territory health jurisdictions. While governance arrangements continue to be established under the National Health and Climate Strategy, the NAP will need to be clear on where it engages with existing health system governance arrangements.

**Recommendation 9:** Utilise existing public health governance structures in Australia to provide briefings on climate adaptation and the importance of the NAP to the Chief Medical Officer, Australian Health Protection Principal Committee (AHPPC), the Environmental Health Standing Committee (enHealth), and involve close engagement with state and territory Chief Health Officers.

**Recommendation 10:** Include the establishment of an Aboriginal and Torres Strait Islander Coalition on Climate Change that will enhance the principle of inclusivity and enable the NAP process to incorporate First Nations perspectives.

#### ***4. How should adaptation success be measured?***

A range of indicators should be used to measure adaptation success, including indicators that focus on health outcomes (e.g. deaths and injuries associated with bushfires or floods), trends in exposure (e.g. ambient temperature and air pollution levels) and vulnerability (e.g. number of properties or people at significant risk of flooding), process (e.g. human and financial resources available to support adaptation plans), and action (e.g. number of local adaptation action plans, heat-health action plans, and flood resilience measures implemented in different jurisdictions). These indicators should track progress at population level as well as at health and social services level [15].



Specifically, adaptation progress can be measured following trends in health metrics such as the number of deaths and hospitalisations attributable to heat or air pollution from bushfires. In these cases, it is important to use up-to-date epidemiological evidence, and geographically disaggregated health and environmental data to estimate these indicators annually. The costs associated with these health impacts can be also monetised using standard methods (e.g. Value of Statistical Life). This monetisation can be an important tool for strengthening the case for investment in adaptation planning.

Exposure and vulnerability indicators also need to be developed, for example specific indicators following trends in urban heat island intensity in Australian cities, and the number of people vulnerable to heat in urban areas (e.g. elderly people or people with certain chronic illnesses or disability).

Progress in climate adaptation in health services needs to be formally assessed using quantitative and qualitative indicators, e.g. having a designated climate change adaptation focal point in Departments of Health, as well as having specific action plans aiming to strengthen the resilience of health infrastructure, workforce, and supply chains.

Emphasis should be placed on the distribution of the impacts of climate change and particularly on disproportionately affected population groups and communities (i.e. young children, pregnant women, people with existing illness or disability, Aboriginal and Torres Strait Islander peoples, remote communities). Therefore, the specificity, and spatial and temporal resolution of indicators is important for assessing progress in climate resilience as well as in health equity within and across communities.

The HEAL Network is currently developing a range of dashboard indicators on climate and health adaptation that will complement the existing MJA-Lancet Countdown indicators [16].

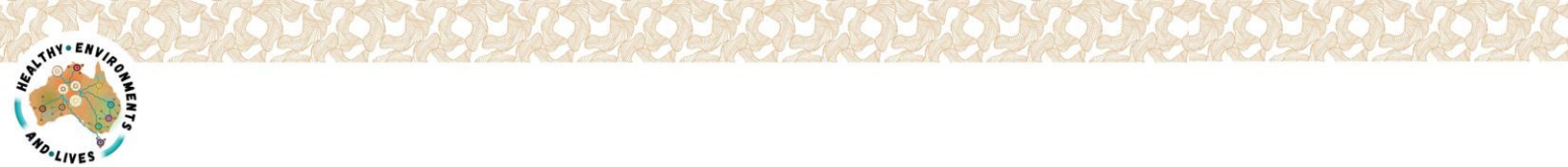
**Recommendation 11:** Develop a range of robust, sensitive and meaningful indicators for tracking the progress of the NAP as a priority action. These indicators should be spatially disaggregated and able to identify impacts and track progress in health outcomes, exposure, vulnerability, equity, and adaptation action in the health and social support system annually.

## ***5. What time horizon should the National Adaptation Plan cover?***

The first National Adaptation Plan should be a five-year plan targeting 2029. This will provide alignment with the critical decade for the delivery of the Sustainable development Goals (2015-2030) and emphasise synergies with climate change mitigation efforts in Australia and internationally.

This approach can be further strengthened by developing detailed adaptation plans for one, two, and five-year horizons, supplemented by long-term, less detailed, adaptation plans stretching at least 50 years. This would also help the NAP align with the time scale of climate projections. A long-term vision is necessary as the effects of climate change will be evident for a long time, even if net zero efforts are successful.

## ***6. Do you support the draft principles for prioritising and sequencing adaptation actions over time? Why or why not? Are there any gaps?***



The HEAL Network agrees with the overarching approach of employing a highly consultative approach for the development and prioritisation of adaptation actions within the NAP. We also agree with the proposed draft principles for prioritisation.

## Systems sections

### *7. What other existing policies are supporting adaptation for this system?*

The NAP Issues Paper appropriately refers in section 4.5.2 to the recently released National Health and Climate Strategy. The Strategy includes an action that “The Australian Government will develop a National Health Adaptation Plan as part of the National Adaptation Plan” [9]. Health NAPs are recommended by normative guidance produced by the World Health Organization [17], and several members of the HEAL Network have expertise in delivering Health NAPs in the Indo-Pacific region, including for Fiji [18] and the Marshall Islands [19] in 2023.

However, we caution that the development of Australia’s Health NAP should pay particular attention to the downstream impacts on health organisations that will ultimately be responsible for operationalising the actions within the NAP. Our experience suggests that an effective way to address this concern is to ensure that “adaptation action owners” are allocated during the NAP development process itself. This approach ensures that each action is implementable, and adequate time is dedicated to discussing local priorities and needs with potential “adaptation action owners”.

The HEAL Network is well positioned to support DCCEEW with this task, given our expertise in Health NAP development, and the extensive reach of our network, with communities of practice in every State and Territory in Australia.

Another important consideration will be whether the NAP will include actions for the health and social support system which are appropriate in number and are implementable. High level actions for health in the NAP will not be particularly effective in achieving the NAP’s objective to mainstream adaptation action. This will need to be counterbalanced by the need for the Health NAP to provide a roadmap of actions for the five year period covered by the plan.

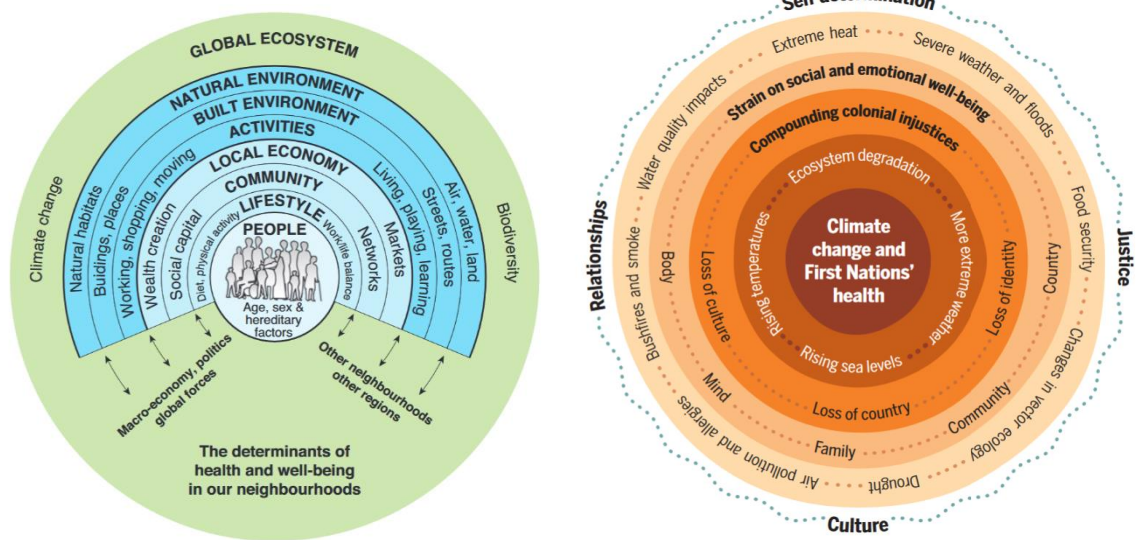
**Recommendation 12:** Include an appropriate number and sufficient level of detail for actions related to the health and social support system in the NAP and Health NAP. Development of the Health NAP is a commitment by the Australian Government under the National Health and Climate Strategy. Ensure that “adaptation action owners” are allocated, based on consultation, during the NAP and Health NAP development process.

### *8. Who should be undertaking action to strengthen adaptation action in this system?*

The HEAL Network strongly supports the current framing of the health and social support system in the NAP Issues Paper in terms of both (a) population health and wellbeing, as well as (b) the provision, availability, and access to health, wellbeing and social services. We particularly appreciate the recognition in section 4.5.1 that “positive health and social outcomes are impacted by factors beyond the health and social support system”. Addressing the upstream, environmental and social determinants of health is critical to achieving good

health and wellbeing across the Australian population; we commend to DCCEEW the Barton and Grant model [20] of the social determinants of health which extends to the global ecosystem and climate change (Figure 1). A more recent interpretation of the determinants of Aboriginal and Torres Strait Islander health in relation to climate change are provided by Matthews and colleagues (Figure 2) [21]. This relates to both business as usual policies and programs in health-determining sectors, as well as actions to address climate change taken by other sectors of the economy (the health co-benefits) [22].

**Figure 1 (left): Ecological and social determinants of health and Figure 2 (right): determinants of Aboriginal and Torres Strait Islander health in relation to climate change**



To this end, we disagree with the system interdependencies stated on page 34 of the NAP Issues Paper. As described above, the health and social support system has interdependencies beyond the three systems stated here (regional and remote communities; infrastructure and the built environment; and First Nations values and knowledges). We suggest that health has strong interdependencies across all 11 systems and priority risks.

Similarly, we also argue that the natural environment system (that is, health of Country) is a cross-cutting theme – particularly in light of the emphasis placed on connection to Country and its importance to First Nations wellbeing in section 4.3 of the NAP Issues Paper.

**Recommendation 13:** Frame the health and social support system, and the natural environment system (and their associated priority risks) as a cross-system risk, and ensure that an assessment of health impacts and consultation with health stakeholders is undertaken for all 11 priority risks, and throughout the development of the NAP.

### 9. What are the barriers to strengthening adaptation? How could the National Adaptation Plan help with these?

There is a critical funding barrier to strengthening adaptation and achieving resilience in Australia’s health and social support system. Health systems around the country are facing significant pressure in terms of meeting existing demand for services, health workforce recruitment and retention, and a burden of disease that is increasing due to climate change

and population aging. However, health systems and organisations are already at the frontline of Australia's climate change response, and they carry out climate adaptation functions. The additional, unavoidable roles and responsibilities of climate adaptation will need to be met with funding for the health and social system that is additional to its existing funding envelope. Non-traditional funding mechanisms should be considered by DCCEE in the development of the NAP, particularly for systems such as the health and social support system that have funding which is ringfenced for specific activities (i.e. health care delivery) but often does not sufficiently extend to disease prevention, climate adaptation programs, and implementation research.

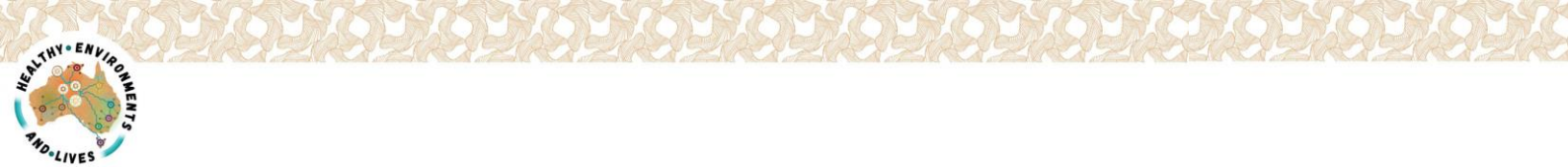
The environmental health research sector is well placed to support health organisations to enhance their local adaptation planning based on evidence-based analysis. The HEAL Network is particularly well positioned to support this task, given our expertise in climate, environment and health research, policy and practice. We hold existing contracts with multiple health organisations in Australia and support them with policy development (specifically on state-wide health sector climate adaptation) and implementation (in relation to discrete environmental hazards such as air pollution). The extensive reach of our network, with communities of practice in every State and Territory in Australia means that we have local, on ground knowledge and partnerships to address barriers to strengthening adaptation.

The NAP Issues Paper underemphasises the role of public sector funding. On page 2 the paper notes that "significant resources will be required to adapt and build resilience. This cannot be achieved solely through public funding – and nor should it." In section 2.1 the paper states that a key objective of the NAP is to "drive a substantial uplift in private sector investment." However, this reasoning does not apply particularly well to the Australian health sector or the not-for-profit non-government sector. These organisations predominantly support communities through publicly funded health and social services such as primary care (general practitioner visits funded through the Medicare Benefits Schedule), secondary and tertiary care (the hospital system, emergency and ambulance services managed by State and Territory departments of health budgets) and patient medications (funded through the Pharmaceutical Benefits Scheme).

**Recommendation 14:** Develop a national health and social services climate adaptation fund, specifically for the health and social support system, which enables not-for-profit and health sector organisations to break out of their resource constrained environment and contribute across sectors in achieving the objective of the NAP. This should include research funding to enhance the evidence base on the effectiveness, acceptability and scalability of proposed adaptation initiatives in the health and social support system.

### *10. What policies could be strengthened or added as the highest priorities?*

Proactive adaptation through better planning in the built environment is essential. This should focus on long-term planning of more resilient urban and rural infrastructure, housing, digital communications, and health and social services, particularly in regions and communities disproportionately affected by climate change (e.g. rural and remote Australia, Indigenous and Torres Strait Islander communities, urban and peri-urban areas at high risk of overheating, bushfires, and air pollution).



In addition, effective prevention of climate-sensitive non-communicable and infectious diseases requires strengthened environmental public health surveillance and tracking [23], and integrated early warning systems (e.g. for extreme events and disease outbreaks).

Early detection and treatment of mental health conditions triggered or exacerbated by climate change, extreme events and environmental degradation is essential to prevent potentially prolonged impacts [24].

**Recommendation 15:** Strengthen long-term adaption planning focusing on (a) the resilience of the built environment, services and communities in urban and rural areas disproportionately affected by climate change, (b) healthcare infrastructure, supply chains, and workforce resilience, (c) environmental public health surveillance and tracking including early warning systems, and (d) preventive health, primary care and mental health services.

### *11. What measurement and evaluative tools and processes should be implemented to track adaptation progress for this system?*

Understanding community vulnerabilities and adaptation capacity is critical for adaptation planning and building the resilience of communities. The most recent assessment report from the Intergovernmental Panel on Climate Change (IPCC) noted that the inability to identify social vulnerability at a local and urban level is a critical barrier to climate adaptation planning [25]. Tools such as the Social Vulnerability Index can help communities, emergency response planners, and public health officials identify strategies that best support communities through climate change hazards [26]. This information can be used to create targeted adaptation plans and efforts to increase climate resilience. Please also refer to our response to Question 4 on the development of indicators aimed at tracking adaptation progress.

In support of the health and social sector's involvement in climate adaptation activities, DCCEEW and DOHAC can establish a "national clearinghouse" function which would enable all stakeholders (particularly state and territory health jurisdictions) to become familiar with latest developments under the NAP or Health NAP, emerging guidance at a national level, capacity building and training opportunities, and research findings that can be rapidly taken to real-world implementation. This could be facilitated by the HEAL Observatory, an online knowledge-action hub on climate change and health, which is currently under development [27].

**Recommendation 16:** The NAP could integrate the HEAL Network priority action to develop a Healthy Environments and Lives (HEAL) Observatory. The Observatory would be a digital knowledge-action hub to support the health sector, policy makers and communities by providing: (a) dashboard indicators on climate and health adaptation and mitigation; (b) links to existing databases, analytic tools and methods that will support local, state and national decision-making; (c) links to publications, training materials, factsheets, and other communication tools; and (d) an online, open, interactive forum for knowledge exchange between researchers, policymakers, practitioners and communities.

## Specific questions for the First Nations' values and knowledges system

The HEAL Network centres First Nations' knowledges in its solution-focused research program. The HEAL First Nation's Steering Committee guides our research with First Nations communities, ensuring it is conducted respectfully, protects communities intellectual and cultural property and data sovereignty rights and is aligned with relevant cultural protocols. In this context, we would welcome further and ongoing engagement to support DCCEEW and the NAP process through the HEAL Communities of Practice in all jurisdictions.

*12. What are some examples of First Nations-led adaptation action and partnerships? How can these actions and partnerships be better supported?*

Here we highlight three existing national initiatives that can inform the NAP.

1. The Healthy Environments and Lives (HEAL) Network's First Nations investigators have published an Australian Indigenous prescription for planetary health [21] and assessed all First Nations-led climate strategies reported in the literature against this prescription: restorative justice, strengthening culture and enduring relationships. This paper showcases various community-led interventions reported between 2007 and 2023 that link climate action to health outcomes. Indigenous ranger programs and caring for Country activities (such as traditional land and sea management, cultural fire practice and carbon abatement) consistently demonstrated each prescription element. Positive associations have been reported between ranger programs and good health and wellbeing.
2. Healing Country is one of the HEAL Network's current priority action projects [28]. We are working with three First Nation communities (Warumungu – Tennant Creek, NT; Whadjuk Noongar – Perth, WA; and Bundjalung – Northern Rivers, NSW) to develop story-data maps that will inform community co-design of local climate mitigation and adaptation plans. Indigenous community map makers will be trained and employed to gather traditional knowledges and experiences, documenting environmental changes and their impact on communities. These stories will be combined with environmental and health data into interactive digital maps that will comprehensively depict climate risk and can be used by communities to advocate to government and other stakeholder about their priority climate concerns. Local adaptation plans based on the story-data maps will be developed by community. Healing Country is being implemented within an Indigenous data sovereignty and Indigenous cultural and intellectual property rights framework.
3. The Wilya Janta (Standing Strong) Housing Collaboration on Warumungu Country [29] is addressing poor housing quality and the prolonged and more intense heatwaves, which are two key health issues for the local community. With the support of architects, engineers and philanthropic funding, community Elders are designing their own homes so families can live culturally (with extended families, honouring cultural protocols that govern family relationships) and in tune with the environment (design and materials for efficient thermal performance). The project is being evaluated to document evidence of health and wellbeing outcomes, and cost-benefit assessment of new co-designed builds, in comparison to current remote community housing delivery.

First Nations communities are best placed to know what type of adaptation strategies will work to address their climate and health and social concerns. Communities need to be adequately resourced to lead local adaptation. Hence, the consultation and involvement of First Nations voices and communities is critical to the NAP.

**Recommendation 17:** Ensure ongoing engagement with First Nations-led organisations such as National Aboriginal Community Controlled Health Organisation (NACCHO) and the Lowitja Institute, with specific funding to support an Aboriginal and Torres Strait Islander Coalition on Climate and Health.

*13. Along with First Nations peoples, who should be undertaking action to strengthen First Nations-led adaptation action and partnerships?*

First Nations engagement is a necessary for all health sector services and programs, and all the more so for climate adaptation, given its linkages to caring for Country. It is pleasing to see that this concept has been acknowledged in section 3.2.2 of the NAP Issues Paper with the emphasis on place-based and community-led approaches.

A substantial amount of work is already being undertaken in relation to caring for Country, climate change and Indigenous knowledges, each with their own governance forums which can inform the NAP. Much of this work is occurring sporadically and requires some overlying communication and coordination channels. Importantly, consultation mechanisms need to be networked into local community in recognition of the different climate and cultural contexts across locations. One such example of local consultation is land and sea management ranger groups funded through the Australian Government and their links to local Land Councils. Another example of existing local governance initiatives by traditional custodians is the process undertaken by the Martuwarru Fitzroy River Council.

Having culturally safe, responsive, flexible governance structures would be important for proper engagement with Aboriginal and Torres Strait Islander communities. Having governance led by community-controlled organisations and the ability to bring organisations into decision making and provide policy advice as priority topics and locations change would be essential.

**Recommendation 18:** Utilise the HEAL Network's ability to facilitate respectful consultation and research engagement with First Nations groups for the NAP, recognising our focus on Aboriginal and Torres Strait Islander health and environmental research initiatives and knowledge translation.

*14. What are the barriers to strengthening First Nations-led adaptation action and partnerships? How could the plan help with these?*

Colonisation and enduring institutional racism in public and political institutions have stripped Aboriginal and Torres Strait Islander people of their governance over traditional land and waters and have resulted in vastly inequitable distribution of power and resources to support local community decision-making [21]. From an Aboriginal and Torres Strait Islander perspective, there is a need for restorative justice – a reflective process of understanding and acceptance by the Australian population of the harm created by colonisation, and commitment to address that harm and its intergenerational consequences.

**Recommendation 19:** Facilitate appropriate reparations through the NAP to enable climate adaptation and improvements in health such as: access to Country to undertake cultural management activities; equitable power sharing and co-governance arrangements over land and waters; and enabling supports to strengthen adaptive capacity, including appropriate housing and access to quality education and employment opportunities.

***15. What First Nations-led adaptation actions and partnerships should be prioritised now to support medium-term (2050) and long-term (2100) adaptation?***

Development of respectful relationships and support for community to strengthen their adaptive capacity should be prioritised as an action in itself, for both medium- and long-term adaptation. Restorative justice requires respectful engagement with Aboriginal and Torres Strait Islander people that in turn creates trust required for enduring partnerships [21]. For both medium- and long-term adaptation success, equitable power and co-governance arrangements over land and waters are crucial ingredients, along with firm commitments to appropriately resource adaptation initiatives. Having initiatives led by Aboriginal and Torres Strait Islanders enhances the cultural integrity of processes and ensures that initiatives feature relationality (centering community and their relationship to Country) and reciprocity (co-benefits for community and Country). Sharing and bringing together Indigenous and Western knowledge systems will enhance understanding of ecological processes and improve effectiveness of climate adaptation and mitigation strategies in the long-term. Adaptation success necessitates two-way learning and multi-sectoral collaboration supported by Indigenous ways of holistic thinking as opposed to the siloed way that policy and service provision is currently delivered.

***16. What First Nations' knowledges frameworks can support measurement and evaluative tools and processes to track adaptation progress?***

The Earth Systems and Climate Change Hub within the National Environmental Science Program at CSIRO holds national dialogues with Aboriginal and Torres Strait Islander people on Climate Change to bring together Indigenous and Western scientific knowledge for climate adaptation (highlighted in section 4.3 of the NAP issues paper). A key document from CSIRO's collaboration with Indigenous communities is *Our Knowledge, Our Way* [30] that provides best practice guidelines to collaborate in caring for Country activities. Key principles are strong partnerships; sharing and weaving knowledge; and national and global Indigenous networks for peer-to-peer learning and support.

***17. What are the biggest opportunities for First Nations peoples in the context of the National Adaptation Plan?***

Climate adaptation provides an immediate opportunity for “two-way seeing” – the weaving together of Aboriginal, Torres Strait Islander, and Western science to inform mitigation and adaptation approaches. The transformational change required in the way we treat Country will require an embrace of diverse knowledge systems and being open to different perspectives which ultimately will benefit all communities.



We wish to place additional emphasis on what the NAP Issues Paper itself has highlighted in section 4.3.2 (page 30): “Stakeholders also noted that communities need support and dedicated resources to implement adaptation planning and protect Country in a manner that reduces existing inequities.” Resourcing for First Nations adaptation to climate change, in an ongoing manner, across all systems and certainly in the health and social support system, is a necessary precondition to successful climate adaptation in Australia.

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