CLIMATE AND HEALTH ALLIANCE

Climate and Health Alliance

Submission to the

2019 Climate Health WA Inquiry

August 2019

Recommendations

1. Western Australia should:
   a) Develop a state *Climate and Health Policy* drawing on the policy recommendations in the *Framework for a National Strategy on Climate, Health and Well-being for Australia*.
   b) Work with other States and the Commonwealth to promote and develop a *National Strategy on Climate, Health and Wellbeing* based on the Framework.
2. CAHA invites WA Health to partner with Global Green and Healthy Hospitals Pacific to set up a state network (*GGHH-WA*) to boost the capacity of WA hospitals and health services to reduce their ecological footprint, including their carbon emissions.
3. Recognising the potential for wide range of risks to health and the health system arising from climate change, the WA Department of Health should adopt the Queensland H-CAP principles and framework as a basis for a *State Health Adaptation Strategy*.
4. The H-CAP framework should be used to inform an assessment of the health impacts of climate change in Western Australia that:
   - Identifies vulnerable groups, regions and sectors;
   - Assesses current coping capacity and adaptation needs;
   - Identifies and develops opportunities for mitigation and adaptation;
   - Identifies gaps in current knowledge needed for assessment of coping capacity and/or development of mitigation and adaptation responses; and
   - Identifies the appropriate strategies and sectors involved.
5. The WA Government should work closely with Indigenous people in WA to identify health and climate risks specific to Indigenous communities and co-design a research and policy program to: address knowledge and data gaps in relation to the impacts of climate change on the health of Indigenous people in WA; and utilize Indigenous cultural knowledge and practice to inform mitigation and adaptation initiatives in WA.
6. The Future Health Research and Innovation Fund should contribute to the establishment of a long-term *Climate and Health Research Programme*. The Programme should investigate the health impacts of climate change and associated economic costs, community resilience and adaptation responses, emissions reduction in healthcare, climate-smart healthcare, and the health benefits of low-carbon development (e.g. urban planning, transport, energy, etc.), including the economic value of avoided ill-health and productivity gains.
7. The WA Government should establish a new *Sustainable Healthcare Unit*, the core task of which would be to steward climate action and sustainability across WA's health system. The Unit should:
   - Be sufficiently independent to ensure it is able to provide the Minister for Health, the Director General and health services with clear advice. To give it appropriate influence within the Department, the Unit should be headed by a Director or Executive Director at Tier 3;
   - Hold a position on the Health Executive Committee to ensure sustainability matters are actively considered across WA Health decision-making;
   - Be adequately resourced to enable it to carry out initial research and strategy development, and to execute implementation plans for at least three years, with a view to ongoing funding.

8. The work programme of the new Sustainable Healthcare Unit should include:
    a) Benchmark studies of:
        i) The carbon footprint of the State's health sector, identifying 'carbon hotspots' for priority action;
        ii) The sustainability performance of major metropolitan and regional hospitals and health services;
        iii) The opportunities for abatement and carbon neutrality, together with the likely return on investment and co-benefits;
    b) The development of a *Climate-Smart Healthcare Strategy* for WA Health, including key performance indicators, standards, and ambitious, but achievable targets for:
        - Sustainable design of the health system
        - Low-carbon procurement
        - Sustainable building design
        - Renewable energy and energy efficiency
        - Waste minimisation and sustainable management
        - Sustainable transport
        - Sustainable models of care
    c) An action plan to leverage additional investment in sustainable infrastructure (e.g. Clean Energy Finance Corporation).
    d) An action plan to promote sustainability leadership, motivate participation, encourage knowledge-sharing, raise climate and carbon literacy, and develop a culture of sustainability value amongst managers and staff.
    e) An action plan to engage communities, communicate progress, and promote public understanding of the links between climate change and health, the health benefits of climate action, and risk-reduction strategies.
9. Hospital and health service Chief Executive Officers should be required to report regularly on climate-related risks to as well the environmental sustainability performance of their hospitals and health services.
10. The Department of Health should report performance against indicators and targets in the *Climate-Smart Healthcare Strategy* as part of its Annual Reporting process.
11. The Department of Health and/or a new Sustainable Healthcare Unit should work with the Department of Finance and GGHH to develop a Low-Carbon Procurement Plan that:
    - Includes clear minimum performance criteria and guidance for hospitals and health services;
    - Reduces the carbon footprint of the health system as a whole, prioritising 'carbon hotspots', i.e. the most emissions-intensive points in a supply chain, such as pharmaceuticals and energy;
    - Creates opportunities for greater reuse, recycling and recovery of materials that might otherwise be disposed of in landfill;
    - Reduces the exposure of patients, workers, and healthcare communities, as well as the natural environment, to the health risks and harms of medical waste;
    - Engages key suppliers to decarbonise and catalyse industry innovation;

- Creates a demand push for local jobs and investment in low-carbon goods and services.

12. The Department of Health and/or the proposed new Sustainable Health Unit should:
    - Benchmark the environmental footprint of pharmaceutical use in the WA health system, including medical gases with a global warming potential, explore opportunities and strategies for improvement, and set targets.
    - Develop a sustainable pharmaceutical procurement strategy that provides clear guidance and incentives to hospitals and healthcare services.
    - Work with Choosing Wisely, RACP Evolve and the global 'right care' movement to promote the health and environmental benefits of reducing unnecessary tests, treatments and procedures and pharmaceutical prescribing to professionals, patients, and consumers.
13. The Department of Health and/or the proposed new Sustainable Health Unit should:
    - Work with GGHH, the Waste Authority, local government, and other stakeholders to benchmark waste management, identify opportunities for improvement, and develop a Waste Avoidance and Resource Recovery Plan for the sector, including ambitious but achievable targets for reduction, recycling and re-use.
    - Work with the Waste Authority in its proposed review of the State's Procurement and Disposal of Goods Policies to reduce waste, increase recycling and increase the use of recycled products through procurement.
    - Develop guidance, tools, and incentives for hospitals and healthcare services.
14. The Department of Health and/or the proposed new Sustainable Health Unit should:
    - Benchmark clean energy and energy efficiency in the WA health system
    - Explore the full range of options and opportunities to scale-up on-site renewable energy generation (e.g. solar PV) and use clean energy from the grid (e.g. via a bulk power purchase agreement), and set ambitious but achievable targets for uptake
    - Explore how healthcare facilities can take advantage of developments in battery storage, micro-grids, etc.
15. The Department of Health should work proactively with the Western Australian Electric Vehicles Working Group to explore opportunities for hospitals and health services to benefit from and contribute to EV development.
16. Metropolitan and large regional hospitals should develop sustainable travel plans, including:
    - Increased active travel (cycling and walking) and use of public transport by staff, service users and the public.
    - Reduce unnecessary travel via different approaches to delivering care and connecting people, including exploring ways to expand the use of telehealth.
    - Minimise pollution from necessary travel with low- and zero-carbon vehicles, as well as the supporting infrastructure (e.g. charging stations at hospitals).
17. The Department of Health and/or the proposed new Sustainable Health Unit should adopt and roll out an appropriate sustainability accounting framework to identify new sources of value, including carbon savings, and exploring imaginative models of sustainable care.
18. The Department of Health and/or the proposed new Sustainable Health Unit should work with the Department of Environment and Water Regulation, researchers, and civil society

to explore the potential of carbon offsets to complement emissions reduction efforts and benefit the health and wellbeing of rural, regional and remote communities.

19. The Department of Health should commission research to assess the economic value of health and social benefits associated with a range of strategies to mitigate and adapt to climate change.

20. The Inquiry should explore the powers of public health authorities under the Public Health Act 2016, especially the Chief Health Officer, to protect people from the harms posed by fossil fuels, including long-term, intergenerational health risks posed by carbon emissions and climate change.

21. The WA Government should forward the preparation and implementation of Part 15 of the Public Health Act 2016 to expedite a robust Health Impact Assessment (HIA) capability in WA. The Department should be directed to accelerate the development and implementation of the regulations as a stand-alone, priority public health initiative to ensure comprehensive, independent health-impact assessments for all fossil fuel and energy project proposals.

22. The Department of Health and/or the proposed new Sustainable Health Unit should work with the Department of Communities, the research community, and civil society to investigate and promote the health and wellbeing impacts of clean energy, including the:

    - Benefits to rural, regional and remote communities, and their needs;
    - Potential role of community-ownership and co-ownership business models;
    - Potential of clean energy to contribute to resilience and adaptation.

23. Recognising that mounting carbon emissions pose a serious threat to the health and wellbeing of Western Australians, and that the best adaptation strategy is mitigation, CAHA urges the WA Government to reconsider its current position and legislate a renewable energy target and an emissions reduction target of net zero by 2050, consistent with the goals of the Paris Agreement.

Introduction

The Climate and Health Alliance (CAHA) welcomes this opportunity to contribute to the 2019 WA Climate Health Inquiry.

WA Health today serves more than 2.7 million people across the world's second-largest subnational area. Western Australia's population is expected to reach 3 million before 2030 and will approach 5 million by the 2060s.[1] These Western Australians will be older, on average, and one-in-five will live outside of Perth.

The world in which they live, and in which WA healthcare will have to operate, will be hotter—possibly *much* hotter—and more capricious. Already, the average temperature has risen by about 1°C since Federation, making an already highly variable climate more prone to extremes.[2] The air today contains more than 40% more carbon dioxide than that inhaled by European sailors charting the Southwest coast at the turn of the 19th Century—higher than at any time in human history.[3]

Within the Australian and international healthcare communities there is a large and growing groundswell of support for resolute action on climate change.[4] Yet, so far, most governments—including the Australian Government—do not plan for or monitor the health risks of climate change, nor embed health considerations in climate policy.[5] Among larger, wealthier OECD countries, Australia lags behind in responding to the health impacts of climate change and public health adaptation.[6] With some notable exceptions, governments seldom involve health experts and professionals in climate action planning.[7] Most do not connect the dots: giving little or no thought to opportunities to improve public health through low-carbon development.

The Inquiry is therefore a very welcome development and one with the potential to put WA at the fore of climate and health policy. CAHA applauds the direction set by the Department of Health's 2019 *Sustainable Health Review*: that the WA health system 'will strive to be a leader in reducing its environmental footprint and actively mitigate the effects of climate change' and address the impacts of climate change on the community.[8]

In 2015, the Lancet Commission on Health and Climate Change concluded that climate change is both a global health emergency *and* an opportunity to improve public health.[9] Efforts to cut carbon pollution frequently yield a double dividend: minimising long-term climate risks and reducing the impacts of fossil fuels on human health today. At the same time, Australia's health sector itself is responsible for about 7% of Australia's carbon footprint.[10] Here, too, is an opportunity: to lead by example, drive carbon savings through the sector's influence on supply chains, and promote healthier, more engaged communities.

We welcome especially the Inquiry's integrated approach to both adaptation and mitigation. The costs of the former are linked closely to the speed of the latter. With 1.5 °C of global

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[1] Australian Bureau of Statistics, 3222.0 – Population Projections, Australia, 2017 (base) – 2066 (Canberra: ABS, 2018).
[2] CSIRO & Bureau of Meteorology (BoM), *State of the Climate 2018* (Canberra: Commonwealth of Australia, 2018).
[3] Global Carbon Project, *Global Carbon Budget 2018* (GCP, 2018) https://www.globalcarbonproject.org/carbonbudget/
[4] *An Open Letter to Political Parties and Candidates, Australian Election 2019* (CAHA, 2019) https://d3n8a8pro7vhmx.cloudfront.net/caha/pages/1712/attachments/original/1555791468/CAHA_2019_Open_Letter_v05.pdf?1555791468; *The Global Climate and Health Alliance* (GCHA, 2018) http://climateandhealthalliance.org/; *Doctors for Climate Action* (Royal Australasian College of Physicians, 2015) https://www.racp.edu.au/docs/default-source/advocacy-library/pa-dfca-global-consensus-statement.pdf?sfvrsn=1a6d311a_12
[5] A M Chand et al., *Climate Change and Health Policy Assessment Project Report: A Global Survey 2015* (Environmental Health Working Group of the World Federation of Public Health Associations, 2015).
[6] *Ibid.;* S E Austin et al. 'Public Health Adaptation to Climate Change in OECD Countries.' *Int J Environ Res* ***Public Health*** 13(9): 889. 2016.
[7] Y Zhang et al., 'The MJA–eLancet Countdown on health and climate change: Australian policy inaction threatens lives' ***Med J Aust*** **209: 474.e1–474.e21, 2018.**
[8] Department of Health, Sustainable Health Review: Final Report to the Western Australian Government (Perth: WA Govt, 2019).
[9] N Watts et al., 'Health and climate change: policy responses to protect public health' *Lancet* 386: 1861–1914, 2015
[10] A Malik et al., 'The carbon footprint of Australian health care', *Lancet Planet Health* 2(1): e27–35, 2018

warming by as early as 2030 now locked in, the urgent task is to manage the unavoidable impacts already in the pipeline while avoiding the unmanageable human suffering and welfare costs of continuing on our current path to truly dangerous climate change.

This is now the approach promoted by the World Bank and others: a *Climate-Smart Healthcare* that lightens its carbon footprint, prepares for climate risks, and works to reduce those risks in the wider community.[11]

As per the Inquiry's Terms of Reference, this submission sketches a work programme for climate action in the WA health system, drawing on existing frameworks and programmes. We outline how Western Australians and WA healthcare would stand to benefit—directly and indirectly—from dealing with climate change, thoughtfully but as a matter of urgency. (Indeed, it is clear that the longer action is delayed the more the opportunities recede.) We also commend references to a large body of literature to the Inquiry and hope it makes its job easier.

It is also clear that climate change demands that healthcare leaders explore new, creative, and transformational approaches—something akin to Australia's response to the threat of HIV that emerged in the 1980s and similarly imaginative strategies.[12]

Whereas a decade of federal intransigence on climate policy has squandered precious time to minimise and manage climate risks, and WA's economy is enjoying a rebound,[13] the State Government has an opportunity to take a lead role in the development and implementation of integrated climate, energy *and* health policy.

The Climate and Health Alliance (CAHA) and our work

The Climate and Health Alliance (CAHA) is the leading national charity working at the intersection of climate change and health. CAHA is an alliance of organisations within the health sector; working together to raise awareness about the health risks of climate change and the health benefits of emissions reductions. CAHA also works to support the health setor to reduce its carbon and environmental footprint.

The membership of CAHA includes a broad cross-section of the health sector with more than 30 member organisations, representing healthcare professionals from a range of disciplines, as well as healthcare service providers, institutions, academics, researchers, and consumers. Information about CAHA's membership and governance can be found at www.caha.org.au.

CAHA would be pleased to discuss this submission further with the Inquiry, drawing upon our Expert Advisory Committee and our extensive national and international network of experts.[14]

A national climate and health strategy

In June 2017, CAHA released a *Framework for a National Strategy on Climate, Health and Well-being for Australia*.[15] The Framework has been developed with contributions from leading healthcare and social services practitioners and researchers, and is endorsed by over 50 organisations. While aimed primarily at the Commonwealth, the principles and policy actions in the Framework are applicable and relevant to the State level. The Framework does not only imply actions and strategies for the health portfolio and sector (Fig.1); in recognition of the

[11] The World Bank, *Climate-Smart Healthcare: Low-Carbon and Resilience Strategies for the Health Sector* (Washington DC: The World Bank Group, 2017).
[12] K Charlesworth *et al.*, 'Transformational change in healthcare: an examination of four case studies', *Aust Health Rev,* 40, 163–167, 2016.
[13] Govt of WA, *WA State Budget 2019–20: State of the Finances* (Perth: WA Govt, 2019).
[14] CAHA, *Governance* (CAHA, 2019) https://www.caha.org.au/governance
[15] N Horsburgh, F Armstrong & V Mulvenna, *Framework for a National Strategy on Climate, Health and Well-being* (CAHA, 2017) https://www.caha.org.au/national-strategy-climate-health-wellbeing

systemic and complex nature of climate change, and the fact that the determinants of health and well-being lie largely outside the health sector, it prescribes policy directions for a range of portfolios, including energy, climate, environment, transport, and infrastructure. It includes actions for federal, state, and local government, for research institutions, and for the health sector itself.

Figure 1. The Areas of Policy Action outlined in the Framework provide a structure for reform—at all levels of government—towards 'a fair and environmentally sustainable national policy framework that recognises, manages and addresses the health risks of climate change and promotes health through climate change action'.[16]

Recommendation 1.

Western Australia should:

a) *Develop a state Climate and Health Policy drawing on the policy recommendations in the Framework for a National Strategy on Climate, Health and Well-being for Australia.*

b) *Work with other States and the Commonwealth to promote and develop a* National Strategy on Climate, Health and Wellbeing *based on the Framework.*

Health adaptation planning

More recently, CAHA has worked with the Queensland Government and the National Climate Change Adaptation Research Facility (NCCARF) and to develop that state's *Human Health and Wellbeing Climate Change Adaptation Plan* (H-CAP).[17] H-CAP's aim is to support human health and wellbeing services to manage climate risks and to realise the opportunities.

H-CAP stands as a preliminary adaptation framework and tool for stakeholders across health care, aged care, and childcare services (see below for more detail).

Sustainable healthcare network

Global Green and Healthy Hospitals (GGHH) is an international network of hospitals, health systems, and health organisations working to reduce their ecological and carbon footprint while promoting public and environmental health.[18] The network links and supports hospitals

[16] Horsburgh, *Op. cit.*, p 6.
[17] F Armstrong et al., *Human Health and Wellbeing Climate Change Adaptation Plan (H-CAP) for Qld* (Brisbane: State of Qld, 2018), https://www.caha.org.au/projects_h-cap
[18] Health Care Without Harm, *Global Green and Healthy Hospitals* (HCWH, 2015), https://www.greenhospitals.net/

and health services to share best practices and solutions to help accelerate global best practice in environmentally sustainable, climate-resilient, low carbon healthcare. Participation in the Network by all WA healthcare service providers would open the door for WA hospitals and healthcare services to learn directly from others across the globe. GGHH Members include Kaiser Permanente—the largest non-profit health system in the US—which will be carbon neutral by 2020.[19]

To date, there are 66 GGHH members in the Pacific region, representing well over 1,000 hospitals and health services. The network now includes five members in WA:

- Sir Charles Gairdner Osborne Park Health Care Group
- South Metropolitan Health Service
- WA Country Health Service, South West Coast Region
- Rural Clinical School of Western Australia
- Broome Regional Health Campus

The GGHH network is an initiative of CAHA's international partner, Health Care Without Harm, and CAHA founded and coordinates the network in Australasia.[20]

> *Recommendation 2.*
>
> *CAHA invites WA Health to partner with Global Green and Healthy Hospitals Pacific to set up a state network (GGHH-WA) to boost the capacity of WA hospitals and health services to reduce their ecological footprint, including their carbon emissions.*

Climate Change Risks to Human Health

Western Australia's climate is already changing and it is generally accepted that Western Australians are already contending with the health effects. Since 1958, the number of days in Perth over 35 °C has more than doubled. Across the southwest, rainfall has declined by around 26% since 1970.[21] Streamflow in key Southwest catchments has dropped 36–68% since the 1970s,[22] and winter rainfall could drop by as much as 50% before 2100.[23] The bushfire season and the risk of fire weather have grown. At Fremantle, the mean sea level has risen 20 cm since 1897. Since 1991, sea level on the west coast has risen almost three times as fast as the global average, raising the risk of coastal flooding three-fold.

As soon as the 2030s—in little more than a decade—the global average temperature will rise to at least 1.5 °C above the preindustrial average.[24] To stand a fifty-fifty chance of keeping it there, global emissions need to fall by at least 45% by 2030 and reaching net zero by 2050. Even a 1.5 °C scenarios raises a plethora of health risks. It must be recognised that an increase of 1.5 °C cannot be considered safe, given the world is experiencing dramatic effects

[19] Kaiser Permanente, *We will be carbon neutral by 2020* (Oakland, USA: Kaiser Permanente, 2018), https://about.kaiserpermanente.org/community-health/news/kaiser-permanente-finalizes-agreement-to-enable-carbon-neutralit

[20] CAHA, *Global Green and Healthy Hospitals* (Pacific region) (CAHA, 2019), https://www.caha.org.au/globalgreen_healthyhospitals

[21] BoM & CSIRO, Op. cit.

[22] N Liu, et al. 'Responses of streamflow to vegetation and climate change in southwestern Australia', *J Hydrol* 572: 761–770, 2019

[23] Earth Systems & Climate Change Hub, *Our changing climate Southern Australia rainfall: long-term trends and future projections* (Aust. Govt/National Environmental Science Programme, 2018) http://nespclimate.com.au/long-term-trends-and-future-projections-of-rainfall-in-southern-australia/

[24] IPCC, 'Summary for Policymakers' In: *Global warming of 1.5°C* [V Masson-Delmotte et al. (eds.)] (Geneva: Intergovernmental Panel on Climate Change, 2015), https://www.ipcc.ch/sr15/

from current warming of 1 °C, with increases in extreme weather events already causing injuries, illnesses and premature deaths.[25]

Direct risks include:

- More frequent and more intense heatwaves, resulting in more heart attacks, strokes, accidents, heat exhaustion, and deaths;
- More frequent or more intense extreme weather events, e.g. storms and floods, resulting in more injuries, deaths and post-traumatic stress;
- Longer fire seasons and more fire-weather conditions increasing the number of cases of smoke-induced asthma attacks, burns and death.

Indirect risks are more complex and often more difficult to predict. They include:

- Heightened exposure to some air pollutants and air-borne allergens, such as pollens and moulds, exacerbating respiratory illnesses, and heart and lung diseases;
- Changed rainfall patterns combined with hotter temperatures, raising the risk of insect-, water- and food-borne infections;
- Prolonged drought, as well as long-term environmental and economic deterioration, contributing to mental health problems and lower morale in rural communities;
- Changed rainfall patterns and hotter temperatures leading to crop failures, reduced supply and higher prices of some foods, resulting in reduced nutrition;
- Changes, such as rising sea levels, hotter conditions and changed rainfall patterns, causing displacement of people from within and outside of Australia and community-wide negative effects on social and economic wellbeing;
- Increased pressure on health systems and emergency responses, delaying effective delivery of healthcare and putting staff under additional strain;
- Impacts of extreme events on critical, tightly connected infrastructure—such as power, transport, and telecommunications—with multiple impacts that cascade quickly through to healthcare. Traditional risk management often fails to recognise and plan for these interdependencies and cascading risks;[26]
- Wider impacts on economic growth and the finance sector, undermining the fiscal foundations of quality care. The Australian Prudential Regulation Authority, the Australian Securities and Investment Commission, and the Reserve Bank of Australia have all warned of growing financial instability with climate change;[27]
- Compounding of other long-term challenges facing the WA health system, such as a growing and ageing population, rising demand for emergency care and hospital beds, increasing healthcare costs, and inequities in health status and access to health services;

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[25] For a selection of key reports, see https://www.caha.org.au/external_reports; K Ebi, D Campbell-Lendrum & A Wyns, *The 1.5 Health Report: Synthesis on Health & Climate Science in the IPCC SR1.5* (Geneva: World Health Organization, 2018), https://www.who.int/globalchange/181008_the_1_5_healthreport.pdf

[26] J Zscheischler et al., 'Future climate risk from compound events' *Nature Climate Change* 8: 469–477, 2018; A Sudhalkar et al., *C40 Infrastructure Interdependencies + Climate Risks Report* (AECOM & C40 Cities, 2017), https://unfccc.int/sites/default/files/report_c40_interdependencies_.pdf

[27] MinterEllison, Time to act? APRA has called on companies to move from 'awareness to action' on climate risk, (2019), https://www.minterellison.com/articles/summary-of-apra-information-paper-climate-change-awareness-to-action-march-2019; J Fernyhough, 'ASIC names climate change 'systemic risk' in rulebook', *Financial Review* (Aug 12, 2019), https://www.afr.com/companies/financial-services/asic-names-climate-change-systemic-risk-in-rulebook-20190812-p52gbg; G Debelle, *Climate Change and the Economy* (Sydney: Reserve Bank of Australia, 2018), https://www.rba.gov.au/speeches/2019/sp-dg-2019-03-12.html

- Aggravation of existing inequities and vulnerabilities, affecting the social determinants of health;[28]
- Aggravation of social conflict over increasingly scarce resources, and complex effects on crime and violence.[29]

Transition risks

The world is now clearly in transition to a clean economy, and there is a strong and growing expectation that governments address climate change, with most Australians demanding urgent action.[30] Australia's big banks are reviewing their risks and liabilities, for instance,[31] and divestment out of fossil fuels are now worth nearly US$8 trillion.[32] More and more institutional investors (e.g. superannuation funds) acknowledge that climate change and fossil fuels pose material risks, and are reorienting accordingly.[33]

Beyond the risks of climate change itself, hospitals and health services must deal with how other sectors and the wider world are responding. Healthcare organisations, public and private, that fail to respond appropriately may find themselves exposed to financial, reputational, policy and other risks.

Liability risk

Recent years have seen a rise in climate-related litigation claims, including in Australia.[34] Failure to properly anticipate and manage foreseeable climate risks has the potential to create new legal liabilities for corporate entities, including public and private hospitals and health services.

MinterEllison and other leading law firms warn that, notwithstanding inherent uncertainties, there is no excuse for inaction on climate risk.[35] Under the *Corporations Act (Cth)*, directors of private corporations have a legal responsibility to take account of and respond to climate-change risks: those who fail to consider climate change risks now could later be found liable for breaching their duties of care and diligence.

Legal advice from Noel Hutley SC and Sebastian Hartford Davison, on instruction from Sarah Barker at MinterEllison Lawyers and updated this year, suggests public sector directors have a similar duty of care and diligence to consider climate risk in their activities as private sector

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[28] M Sweet, 'Inequality and climate change: the perfect storm threatening the health of Australia's poorest', *The Guardian* (May 14, 2019) https://www.theguardian.com/australia-news/2019/may/14/inequality-and-climate-change-the-perfect-storm-threatening-the-health-of-australias-poorest; ACOSS, *Climate Change Resilience* (Australian Council of Social Services, 2015–2019), https://www.acoss.org.au/climate-and-energy/climate-change-resilience/; J Paavola, 'Health impacts of climate change and health and social inequalities in the UK', *Environ Health* 16(Suppl 1): 113, 2017; S Friel, 'Climate change will widen the social and health gap', *The Conversation* (Aug 15, 2014), https://theconversation.com/climate-change-will-widen-the-social-and-health-gap-30105; A J McMichael, 'Global environmental change and health: impacts, inequalities, and the health sector', *BMJ* 336(7637): 191–194, 2008

[29] C Plante, J J Allen & C A Anderson, 'Effects of Rapid Climate Change on Violence and Conflict', *Oxford Research Encyclopedia of Climate Science* (2017), https://oxfordre.com/climatescience/view/10.1093/acrefore/9780190228620.001.0001/acrefore-9780190228620-e-344; A Miles-Novelo & C A Anderson, 'Climate Change and Psychology: Effects of Rapid Global Warming on Violence and Aggression', *Current Climate Change Reports* 5(1): 36–46, 2019.

[30] M MacDonald, '**Are Australians more worried about climate change or climate policy?**' *The Interpreter* (Lowy Institute, Jun 26, 2019), https://www.lowyinstitute.org/the-interpreter/are-australians-more-worried-about-climate-change-or-climate-policy

[31] Finity, *A glimpse into banking climate disclosures* (Finity, 2019) https://www.finity.com.au/2019/02/07/climate-risk-update-february-2019

[32] S Harley, 'Fossil Fuel Divestment Movement Exceeds $8 Trillion', *CleanTechnica* (December 2018), https://cleantechnica.com/2018/12/18/fossil-fuel-divestment-movement-exceeds-8-trillion/

[33] E Herd, 'It's all about money as global investors drive low-carbon transition', RenewEconomy (Dec 14, 2017), https://reneweconomy.com.au/money-global-investors-drive-low-carbon-transition-53306/

[34] P Seley & R Dudley, 'Emerging Trends in Climate Change Litigation', *Law 360* (Mar 7, 2016), https://www.law360.com/articles/766214/emerging-trends-in-climate-change-litigation

[35] S Barker, *Australian Directors Warned Over 'Climate Change Risks'* (MinterEllison, 2016), https://www.minterellison.com/articles/australian-directors-warned-over-climate-change-risks

directors.[36] They are, moreover, increasingly likely to be scrutinised closely and held to account for climate risk management.

As climate-related impacts on health and healthcare grow, so too will the litigation risk and the pressure to demonstrate good climate governance. This will include: investing in mitigation and adaptation, evidence-based decision-making, transparency and risk disclosure, effective community engagement, communicating uncertainty, transparency and accountability, building capacity for climate resilience, and collaboration.

Preparedness and Resilience of Healthcare and Communities

CAHA would be pleased to work with the Department to tailor H-CAP to the WA's needs.

Queensland's H-CAP is underpinned by seven principles:

1. Human health and wellbeing depend on a healthy natural environment;
2. Effective adaptation requires both avoiding and managing climate risk;
3. Adaptation must be supported by mitigation to be effective;
4. Collaboration and engagement will all affected stakeholders is key;
5. Adaptation must build resilience to be effective;
6. Responses must be equitable, evidence-based, inclusive and responsive to change;
7. Responses must recognise social vulnerability and build on existing strengths.

Recommendation 3.

Recognising the potential for wide range of risks to health and the health system arising from climate change, the Department of Health should adopt the Queensland H-CAP principles and framework as a basis for a State Health Adaptation Strategy*.*

Priority Adaptation Measures in H-CAP are:

- *Leadership and governance*—empowering leadership at all levels to plan and implement responsible, evidence-based, locally relevant climate change adaptation.
- *Building the preparedness and* ability of the health and wellbeing services sector and the community to respond to climate threats to health.
- *Specific public health measures*—evaluating specific vulnerabilities in the population and implementing appropriate measures to reduce avoidable morbidity and mortality.
- *Risk management and legal liability*—ensuring the operational and strategic plans of all facilities and services acknowledge and reflect the short-, medium- and long-term risks of climate change to health and wellbeing services.
- *Research, data and evaluation*—guiding policy and decision-making through well-planned research and climate-health risk surveillance to build greater understanding of risks, vulnerabilities and effective strategies.

[36] N Hutley & S Hartford Davison, *Climate Change and Directors' Duties*, Supplementary Memorandum of Opinion, https://cpd.org.au/wp-content/uploads/2019/02/CPD-Discussion-Paper-Public-authority-directors-duties-and-climate-change.pdf

- *Economics and financing*—ensuring that financing decisions to support climate change related programmes and initiatives include assessment of all the relevant health costs and benefits associated with climate change and adaptation.
- *Collaboration across agencies, sectors and stakeholder groups*—ensuring that government agencies, peak bodies, and industry and professional associations and service providers work together to achieve climate change adaptation and sustainability goals.
- *Education and communication*—developing communication, education and training initiatives that inform and build capacity across the health and wellbeing workforce, policymakers and the wider community to respond to the health impacts of climate change.
- *Policy, regulation and legislation*—providing policy certainty for services, sectors and industries to guide decisions and investment for effective climate change adaptation.
- *Infrastructure, technology and service delivery*—investing in climate-resilient infrastructure, technology and service design to avoid delayed costs and ensure service integrity.

Recommendation 4.

The H-CAP framework should be used to inform an assessment of the health impacts of climate change in Western Australia that:

- *Identifies vulnerable groups, regions and sectors;*
- *Assesses current coping capacity and adaptation needs;*
- *Identifies and develops opportunities for mitigation and adaptation;*
- *Identifies gaps in current knowledge needed for assessment of coping capacity and/or development of mitigation and adaptation responses; and*
- *Identifies the appropriate strategies and sectors involved.*[37]

Climate change and First Nations people in WA

CAHA would also like to make reference to the particular importance of strong action on climate change for protecting the health and well-being of Indigenous Australians. While Indigenous Australians (and Indigenous people globally) have little historical responsibility for contribution to climate change, they are acutely sensitive to the transformative effect it is having on traditional landscapes, as well as their health and well-being.[38,39] Climate change is likely to have immense cultural impacts in Indigenous communities. The capacity of Indigenous Australians to respond to changes in the climate is likely to be undermined by complex challenges associated with existing inequities and intergenerational disadvantage.[40]

[37] J Spickett, H Brown & D Katscherian, *Health impacts of climate change: Adaptation strategies for Western Australia* (Perth: WA Dept of Health, 2011), https://ww2.health.wa.gov.au/~/media/Files/Corporate/general%20documents/Environmental%20health/Climate%20change/Health-impacts-of-climate-change.pdf

[38] Green D. Culture and climate change: impacts for Indigenous Australia [In: The Climate Change and Socal Policy Edition.]. *Just Policy* 2007:18-19.

[39] Ford JD. Indigenous Health and Climate Change. *American Journal of Public Health* 2012,102:1260-1266.

[40] Petheram L, Zander KK, Campbell BM, High C, Stacey N. 'Strange changes': Indigenous perspectives of climate change and adaptation in NE Arnhem Land (Australia). *Global Environmental Change* 2010,20:681-692.

Recommendation 5.

The WA Government work closely with Indigenous people in WA to identify health and climate risks specific to Indigenous communities and co-design a research and policy program to:

- *address knowledge and data gaps in relation to the impacts of climate change on the health of Indigenous people in WA; and*
- *utilize Indigenous cultural knowledge and practice to inform mitigation and adaptation initiatives in WA.*

Climate and health research

There is an urgent need to identify and fill key knowledge gaps, and ready the WA health system for a world of at least 1.5–2 °C as early as the 2030s. At present, there is no ongoing financing mechanism for social and health research into climate change anywhere in Australia. Researchers must apply for very competitive and limited funding from the Australian Research Council (ARC), the National Health and Medical Research Council (NHMRC), and limited other sources.[41]

> A major Australian government report published 25 years ago called for urgent investment in research on the impacts of climate change on human health. Since that report's release, less than 0.1% of Australian health funding has been allocated to this area.[42]

CAHA sees a significant opportunity to position WA at the forefront of climate change and health research, given the State's unique geography and climate, and its particular vulnerability to climate change impacts. The State Government has committed to a Future Health Research and Innovation Fund (FHRI) Fund, which will focus on cancer research and establishing a strategic approach an Innovation Hub at Royal Perth Hospital.[43] These are clearly important areas, though in light of present and likely future risks to human health, it is surprising that discussion of the FHRI Fund makes no mention of climate change.

Recommendation 6.

The Future Health Research and Innovation Fund should contribute to the establishment of a long-term Climate and Health Research Programme. The Programme should investigate the health impacts of climate change and associated economic costs, community resilience and adaptation responses, emissions reduction in healthcare, climate-smart healthcare, and the health benefits of low-carbon development (e.g. urban planning, transport, energy, etc.), including the economic value of avoided ill-health and productivity gains.

Limits to adaptation

Fully enabling the WA health system to do its best to help communities and services build resilience and adapt requires a strong commitment, at all levels, to the goals of the Paris Agreement (Fig. 2). As the WHO *Operational Framework for Building Climate Resilient Health Systems* makes clear, 'Mitigation is fundamental to protecting human health.'[44]

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[41] Zhang, *Op. cit.*

[42] D Green et al, 'Advancing Australia's role in climate change and health research', *Nature Climate Change*, 7: 103–106, 2017 (Abstract)

[43] Department of Health, *Health and Medical Research and Innovation Strategy,* Discussion Paper (Perth: WA Govt, 2019), https://consultation.health.wa.gov.au/clinical-leadership-and-reform/health-and-medical-research-innovation-strategy/

[44] WHO, *COP24 special report: health and climate change* (Geneva: World Health Organization, 2018), https://www.who.int/globalchange/publications/COP24-report-health-climate-change/en/

The WA health system has a key role to play in adaptation—its own and that of the communities it serves. However, even with the best efforts the health sector might muster, its impact will be insufficient. This is partly because climate change impacts on key determinants of human health and wellbeing—environmental, social and economic—in ways beyond the healthcare community's direct influence. The capacity to reduce risk through adaptation is constrained in a world of 2 °C or more (Fig. 3).

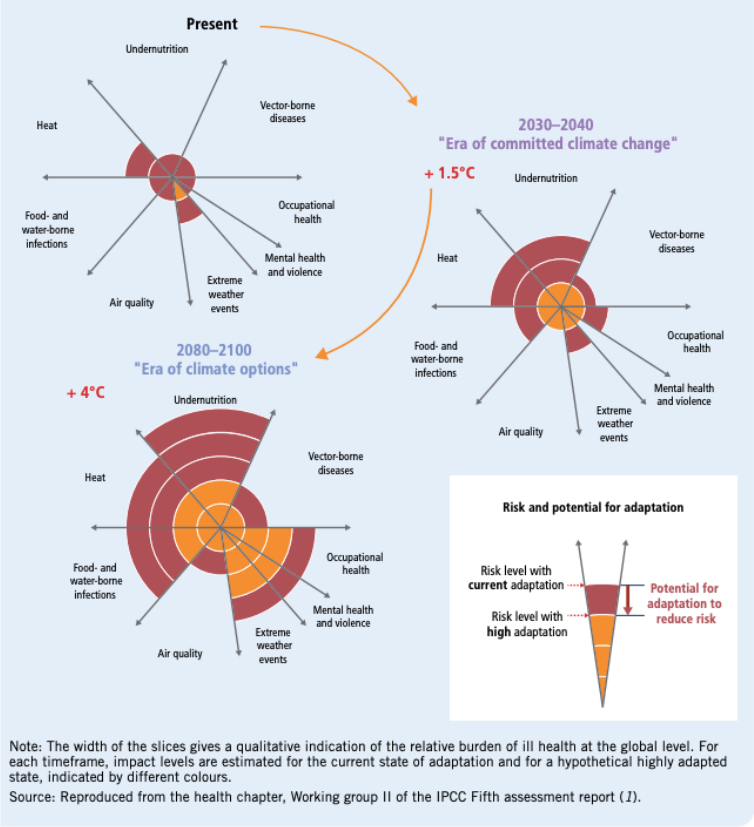

Figure 2. The global health risks of climate change identified by the IPCC and the potential for risk reduction through adaptation.[45]

On our current emissions trajectory, however, the world is soaring towards 3–4 °C warming later this century, prompting *The Lancet* has called climate change this century's greatest threat to human health.[46]

Unmitigated warming threatens to fundamentally reshape the face of Western Australia and pose dangerous and potentially intolerable conditions for human populations as well as other species. It may render healthcare for all very difficult, if not impossible. At 3–4 °C, with economic growth stalling,[47] and much of the world 'pretty much uninsurable',[48] the health system will struggle to maintain quality care. This degree of warming would deepen inequities, compound existing challenges, and quite possibly throw decades of progress in public health into reverse.

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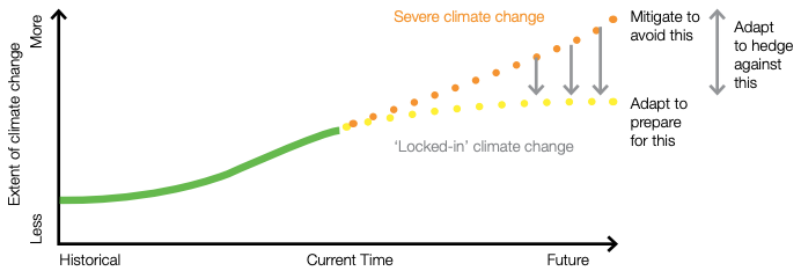
[45] WHO, *Operational framework for building climate resilient health systems* (Geneva: World Health Organization, 2015), https://www.afro.who.int/sites/default/files/2017-06/9789241565073_eng.pdf

[46] Watts, *Op. cit.*

47 W Steffen et al., *Compound Costs: How Climate Change is Damaging Australia's Economy* (Potts Point, NSW: Climate Council, 2019) https://www.climatecouncil.org.au/resources/compound-costs-how-climate-change-damages-australias-economy/

48 J Fernyhough, 'Climate change on track to make world "uninsurable": IAG', *Aust. Fin. Rev.* (Nov 15, 2018), https://www.afr.com/companies/financial-services/climate-change-on-track-to-make-world-uninsurable-iag-20181115-h17xu5

Figure 3. The relationship between mitigation and adaptation.[49]



Reducing Emissions from Healthcare: Opportunities and Benefits

For the health care sector, this clean energy imperative is powerfully connected to the deeply rooted mission of the people and organisations that comprise the sector. As a driving economic engine of many national economies, the health care sector is presented with a unique opportunity to illuminate the path forward.

This is more than an intangible, philosophical argument. A comprehensive clean energy strategy for a health system will be built upon robust, practical benefits that are consistent with the financial and operational challenges faced by management teams. The direct financial benefits of clean energy projects are further enhanced by a set of tangible and intangible benefits.

> Health systems have the opportunity to become beacons of hope and action—providing urgent and catalyzing leadership. Each step forward will support healthy communities and contribute to vibrant local green economies.[50]

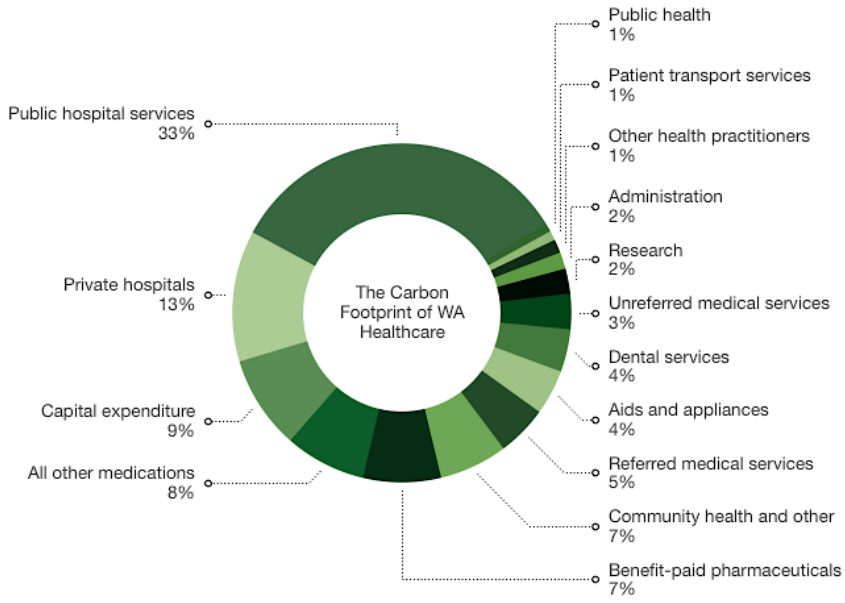
Towards a Sustainable WA Health

Australia's health system accounts for about 7% of the nation's carbon footprint, with hospitals and pharmaceuticals together contributing almost two-thirds (Fig. 4).[51] This is roughly equivalent to emissions from all of the activities of two out of every three Western Australians. Given it accounts for almost a third of public expenditure, the WA health system likely accounts for a large share of the Government's footprint.[52]

Extrapolation from national data suggests the WA healthcare sector is responsible for 4.1Mt of CO^2e, or around 5% of the state's total emissions.[53]

Figure 4. An estimate of the carbon footprint of Western Australia's health system, showing how scope 3 (supply chain) emissions dominate.[54]

49 Australian Government, *Climate Adaptation Outlook: A Proposed National Adaptation Assessment Framework* (Canberra: Commonwealth of Australia, 2013).
50 D Quinlan, *Health Care & Climate Change: An Opportunity for Transformative Leadership* (Health Care Without Harm, 2014), p.4.
51 Malik et al., *Op. cit.*
52 Govt of WA, *Op. cit.*
53 Malik *et al., Op. cit..;* Department of Environment and Energy, *State and Territory Greenhouse Gas Inventories 2016* (Canberra: Commonwealth of Australia, 2018).
54 Arunima Malik, *pers. comm.,* derived from a model of CO_2e for 13 expenditure categories in Australian healthcare (Malik *et al.* Op. cit.)



As one of the State's largest public sector contributor to climate risks to human health and wellbeing, it is vital that WA Health commit to a programme of action to cut its carbon emissions and help to build resilience, while improving quality of care.

This rationale is both moral and pragmatic, as the NHS *Carbon Reduction Strategy for* England says:

> This is not about an altruistic approach to a better future. This is about the future shape of the NHS and how to provide care for a changing population in a changing world. Reducing carbon emissions will not only save money that can be reinvested directly into patient care but will also protect and promote the health of the NHS and the health and sustainability of society.[55]

Moreover, the Australian and international literature is replete with success stories and lessons learnt that can guide emissions reduction strategies in the WA health system.[56]

Recognising that climate change is a major public health issue, the *2019 Sustainable Health Review* (SHR) recommends:

> Reduction in environmental footprint including energy use, water use, emissions and consumables; driven by local staff, supported by system executives, and coordinated by dedicated resources on a systemwide basis guided by the successful National Health Service (NHS UK) model.[57]

Formed in 2008, by 2017 the Sustainable Development Unit (SDU) had saved NHS England £90 million annually in more efficient energy, waste and water use—reducing emissions by 11% while service activity rose by 18%.[58] It has compiled an impressive body of work, including identification of mitigation opportunities and their return on investment (Fig. 5).

[55] D Pencheon *et al., Saving Carbon, Improving Health*, NHS Carbon Reduction Strategy for England (Cambridge, UK: NHS Sustainable Development Unit, 2009), p.19.

[56] NHS Sustainable Development Unit, ***Carbon hotspots*** **(Cambridge, UK: SDU, 2019),** https://www.sduhealth.org.uk/areas-of-focus/carbon-hotspots.aspx; The World Bank, *Op. cit.*; C Tomson, '**Reducing the carbon footprint of hospital-based care**', Future Hosp J 2(1): **57–62, 2015;** **Quinlan, *Op. cit.*;** J Karliner and R Guenther, *A Comprehensive Environmental Health Agenda for Hospitals and Health Systems Around the World* (Health Care Without Harm, 2011).

[57] Sustainable Health Review, *Sustainable Health Review: Final Report to the Western Australian Government* (Perth: WA Dept of Health, 2019), p.12.

[58] D Pencheon 'Developing a sustainable health care system: the United Kingdom experience', *MJA* 208(7): 284–285.e1, 2018.

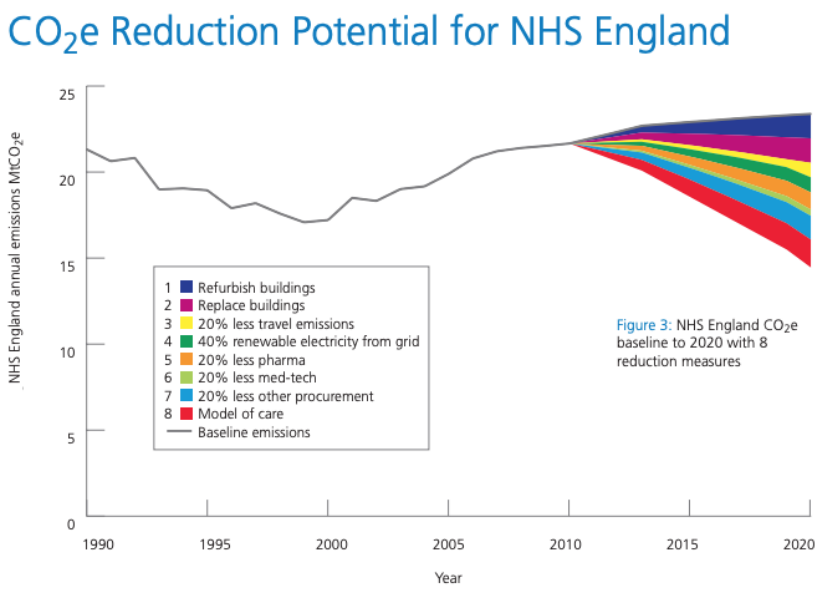


Figure 5. The effects of various emissions reduction measures could have on NHS England emissions up to 2020.[59]

The SDU model and its decade of experience offer a platform on which WA Health can build.

Recommendation 7.

The WA Government should establish a new Sustainable Healthcare Unit*, the core task of which would be to steward climate action and sustainability across WA's health system. The Unit should:*

- *Be sufficiently independent to ensure it is able to provide the Minister for Health, the Director General and health services with clear advice. To give it appropriate influence within the Department, the Unit should be headed by a Director or Executive Director at Tier 3;*
- *Hold a position on the Health Executive Committee to ensure sustainability matters are actively considered across WA Health decision-making;*
- *Be adequately resourced to enable it to carry out initial research and strategy development, and to execute implementation plans for at least three years, with a view to ongoing funding.*

Recommendation 8.

The work programme of the new Sustainable Healthcare Unit should include:

a) Benchmark studies of:

- *The carbon footprint of the State's health sector, identifying 'carbon hotspots' for priority action;*
- *The sustainability performance of major metropolitan and regional hospitals and health services;*
- *The opportunities for abatement and carbon neutrality, together with the likely return on investment and co-benefits;*

[59] Pencheon *et al., Saving Carbon, Improving Health, Op. cit.*

- *The development of a Climate-Smart Healthcare Strategy for WA Health, including key performance indicators, standards, and ambitious, but achievable targets for:*[60]
  - *Sustainable design of the health system*
  - *Low-carbon procurement*
  - *Sustainable building design*
  - *Renewable energy and energy efficiency*
  - *Waste minimisation and sustainable management*
  - *Sustainable transport*
  - *Sustainable models of care*

b) *An action plan to leverage additional investment in sustainable infrastructure (e.g. Clean Energy Finance Corporation)*

c) *An action plan to promote sustainability leadership, motivate participation, encourage knowledge-sharing, raise climate and carbon literacy*[61]*, and develop a culture of sustainability value*[62] *amongst managers and staff*

d) *An action plan to engage communities, communicate progress, and promote public understanding of the links between climate change and health, the health benefits of climate action, and risk-reduction strategies*

It is crucial that it not end up a 'green ghetto', with sustainability treated as an add-on and not normalised across hospitals and health services.

Recommendation 9.

Hospital and health service Chief Executive Officers should be required to report regularly on the sustainability performance of their hospitals and health services.

Recommendation 10.

The Department of Health should report performance against indicators and targets in the Climate-Smart Healthcare Strategy *as part of its Annual Reporting process.*

Saving money, reducing emissions

Around Australia and the world, hospitals and health services are coming to realise that 'leading the fight against climate change is inherently aligned with both mission and fiduciary responsibilities'.[63]

One US study looked at the energy and waste management programmes of selected hospitals and showed that, were they to be scaled up nationwide, they could save more than US$5.4 billion over 5 years and US$15 billion over 10 years.[64]

Among GGHH case studies are numerous Australian examples of decarbonisation initiatives that save money over the short, medium and long term: [65]

[60] The World Bank, *Op. cit.*
[61] *The Carbon Literacy Project* (Manchester: The Carbon Literacy Trust, 2019) https://carbonliteracy.com/
[62] F Mortimer et al., 'Sustainability in quality improvement: redefining value', *Future Hosp J* 5(2): 88-93, 2018.
[63] Quinlan, *Op. cit.,* p.7
[64] The World Bank, *Op. cit.*
[65] South Eastern Sydney Local Health District, *Environmental Sustainability* (Randwick, NSW: SESLHD, 2019), https://www.seslhd.health.nsw.gov.au/services-clinics/directory/environmental-sustainability
HCWH, Case Studies from GGHH Members (Health Care Without Harm, 2015), https://www.greenhospitals.net/case-studies/

- Through proactive procurement, Mater Health Services Australia reduced A4 paper purchases by 32% from 2010 to 2015, switching to recycled and then carbon-neutral products—saving $60,000 through procurement decreases.
- From 2010 to 2014, Mater Health Services cut its fleet by 41 vehicles, with nearly 8 in 10 vehicles now low-emissions, saving over $500,000 in fuel, lease, insurance, and repairs and maintenance.
- By safely substituting desflurane and N_2O—anaesthetics that are also especially potent greenhouse gases—Western Health, Melbourne, saved around $32,500 and 140 tonnes of CO_2e per year. This is equivalent to 36 return long-haul flights from Melbourne to London. Waste anaesthetic gases can be harmful to staff if not properly exhausted, so health risk was also reduced.
- By cutting 187 tonnes of clinical waste from its operating theatres, Royal Melbourne Hospital has saved at least $230,000 between 2012 and 2017.
- Western Health also made financial savings of nearly 50% (around $32,000 per annum) by switching from single-use to reusable anaesthetic equipment in six of its 18 operating theatres. Unfortunately, because Australia's power grid is still dominated by coal, emissions rose 9%.
- It is estimated that the Royal Children's Hospital Melbourne is throwing away food worth more than $127,000 annually ($1.74 per person, per day).[66] Half of the packaged foods thrown out do not require refrigeration.

Proactive low-carbon procurement

In 2017–18, the Government's expenditure on health was nearly $9 billion, with public hospitals the State's single largest spending commitment.[67] By 2021–22, total State Government expenditure is forecast to be $31.6 billion.[68]

Likely typical of other health systems and services,[69] most of Australian healthcare's footprint lies in its supply chains, implying sustainable procurement will be an essential tool to reduce emissions. The largest areas of expenditure in WA hospitals are likely to be medical and surgical supplies, administrative services, and pharmaceuticals (Fig. 6).

Public procurement is widely seen as a powerful way to push demand for sustainable manufacturing and waste management in the global health sector.[70] The State's *Sustainable Procurement Practice Guidelines*[71] provide a starting point for hospitals and healthcare services, but should be developed further and use proactively. Currently, the Department appears to have no plan for sustainable procurement,[72] and developing one should be a priority for WA Health. Fortunately, the Department can take advantage of the wealth of existing information and programmes to guide it.[73]

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[66] K Faulkner, 'Coming to grips with food waste', *Hospital & Healthcare* (Feb 6, 2019), https://www.hospitalhealth.com.au/content/aged-allied-health/article/coming-to-grips-with-food-waste-406313953#axzz5vKGR5N5q

[67] Department of Health, *WA Health Funding and Purchasing Guidelines, 2017–2018* (Perth: State of Western Australia, 2017)

[68] Govt of WA, *Op. cit.*; S Bond-Smith *et al., To Health and Happiness: WA's Health Industry Future*, Focus on Industry Series, Issue #3 (Perth: Bankwest Curtin Economics Centre, 2018).

[69] The World Bank, *Op. cit.*

[70] R Baron, *The Role of Public Procurement in Low-carbon Innovation* (Paris: OECD, 2016)

[71] Dept of Finance, *Procurement Practice Guide A Guide to Products and Services Contracting, for Public Authorities (*Perth: Govt of WA, 2019).

[72] Department of Health, *WA Health Funding and Purchasing Guidelines, Op. cit.*

[73] United Nations Informal Interagency Task Team on Sustainable Procurement in the Health Sector (SPHS), *Saving Lives Sustainably* (New York City: UN Development Programme, 2019) https://savinglivesustainably.org/; SDU, *Research, tools and guidance* (Cambridge: Sustainable Development Unit, 2019) https://www.sduhealth.org.uk/areas-of-focus/commissioning-and-procurement/procurement/research-tools-and-guidance.aspx

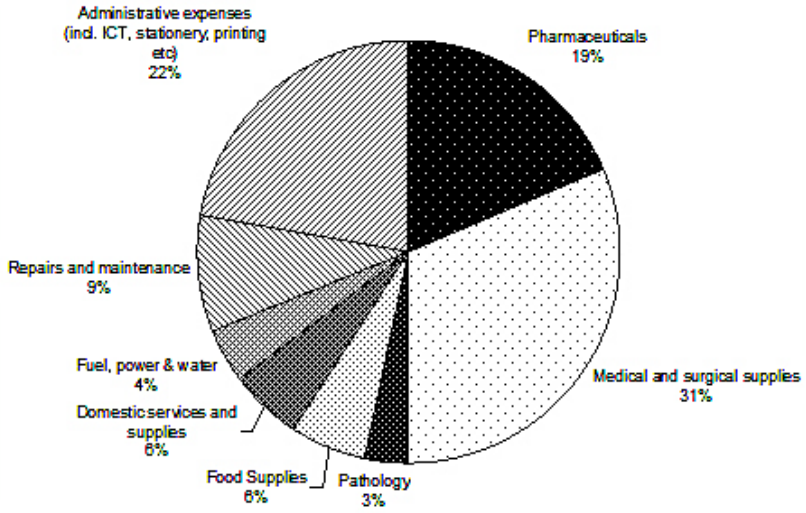

Figure 6. Reported public healthcare expenditure on goods and services in Victoria (2004–05) from a total of $1.6 billion.[74]

Recommendation 11.

The Department of Health and/or a new Sustainable Healthcare Unit should work with the Department of Finance and GGHH to develop a Low-Carbon Procurement Plan *that:*

- *Includes clear minimum performance criteria and guidance for hospitals and health services;*
- *Reduces the carbon footprint of the health system as a whole, prioritising 'carbon hotspots', i.e. the most emissions-intensive points in a supply chain, such as pharmaceuticals and energy;*
- *Creates opportunities for greater reuse, recycling and recovery of materials that might otherwise be disposed of in landfill;*
- *Reduces the exposure of patients, workers, and healthcare communities, as well as the natural environment, to the health risks and harms of medical waste;*
- *Engages key suppliers to decarbonise and catalyse industry innovation;*
- *Creates a demand push for local jobs and investment in low-carbon goods and services.*

Pharmaceuticals and procedures

Pharmaceuticals—including manufacture, packaging, distribution, use and disposal—account for 19% of the carbon footprint of Australia's health sector.[75] A recent US study shows that emissions intensity of the Top-15 global pharmaceutical companies is about 55% higher than that of the automotive industry. Tellingly, the authors found a five-fold disparity between the carbon efficiency of the best and worst performers—much higher than among the Top-10 automotive companies. This strongly suggests a) there is a lot of room for improvement and b) hospitals and health services can deploy their purchasing power to influence change within pharmaceutical supply chains.[76]

[74] Victorian Auditor-General's Office, *Procurement Practices in the Health Sector* (Melbourne: VAGO, 2011).
[75] Malik et al., *Op. cit.*
[76] Malik et al., *Op. cit.*

Reducing environmental risk

Avoiding unnecessary pharmaceutical use would also reduce the risks of environmental contamination. According to the Safer Pharma Campaign, in excess of 600 pharmaceuticals and their metabolites make their way into the global environment.[77] Between 30 and 90% of an oral dose may be excreted in urine and remain active.[78] The ecotoxicology is still poorly understood, but concern is growing that even low concentrations of some pharmaceutical residues may present significant risks to human and wildlife health.[79] One recent Victorian study detected 60 pharmaceutical compounds in invertebrates, with evidence of bioaccumulation up the food chain—from prey to predator.[80] The authors conclude that platypus and fish in waterways could be consuming antidepressants at as much as one-half of the recommended therapeutic dose for humans.

Reducing the risk and cost of low-value care

Every consultation, treatment and procedures consumes energy, produces waste, and generates emissions, yet an estimated 20–30% of patients receive care that is unnecessary, ineffective or potentially harmful.[81] According to Boston Consulting Group (BCG), the Commonwealth, states, and private insurers spend around $30 billion each year on low-value care,[82] and Australian healthcare demonstrates substantial variation in practice, often with no discernible difference in patient benefit.[83] In the United States, at least, almost 90% of antibiotic prescriptions for upper respiratory tract infections are unnecessary, contributing to the growing problem of antimicrobial resistance.[84]

On the other hand, the growing movement for 'right care' in healthcare is showing that behavioural strategies to reduce 'low-value care' reduces patient risk, cuts costs and waste, can empower patients, and fosters better clinical decision-making.[85]

Reducing emissions from surgery

Some anaesthetics, such as nitrous oxide and Desflurane, are not only potent greenhouse gases, they also risk the health of staff if inhaled, but effective alternatives are available.[86]

Recommendation 12.

The Department of Health and/or the proposed new Sustainable Health Unit should:

a) Benchmark the environmental footprint of pharmaceutical use in the WA health system, including medical gases with a global warming potential, explore opportunities and strategies for improvement, and set targets.

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[77] Safer Pharma Campaign (HCWH–Europe, 2016–2019), http://saferpharma.org/

[78] BIO Intelligence Service, *Study on the environmental risks of medicinal products*, Final Report prepared for Executive Agency for Health and Consumers (2013), https://ec.europa.eu/health//sites/health/files/files/environment/study_environment.pdf

[79] K Murdoch, *Pharmaceutical Pollution in the Environment: Issues for Australia, New Zealand and Pacific Island countries* (Bangalow, NSW: National Toxics Network, 2015), https://ntn.org.au/wpcontent/uploads/2015/05/NTN-Pharmaceutical-Pollution-in-the-Environment-2015-05-1.pdf; R Kookana et al., 'Potential ecological footprints of active pharmaceutical ingredients: an examination of risk factors in low-, middle- and high-income countries', *Phil Trans R Soc B* 369, https://doi.org/10.1098/rstb.2013.0586

[80] E K Richmond et al., 'A diverse suite of pharmaceuticals contaminates stream and riparian food webs', *Nature Communications* 9: 4491, 2018

[81] D A O'Connor & R Buchbinder, 'More signals that overuse of healthcare is a pervasive problem contributing to health system waste', *Intern Med J* 49(7): 815–817, 2019.

[82] N Soderlund, S Stewart & J W Kuenen, 'Why overtreatment is costing Aussies $30 billion per year and how to fix it', *Aust. Fin. Rev.* (Oct 6, 2015) https://www.afr.com/opinion/why-overtreatment-is-costing-aussies-30-billion-per-year-and-how-to-fix-it-20151005-gk1ktn

[83] Australian Commission on Safety and Quality in Health Care, Australian Atlas of Healthcare Variation Series (Sydney: ACSQHC, 2019), https://www.safetyandquality.gov.au/publications-and-resources/australian-atlas-healthcare-variation-series; I A Scott, 'Audit-based measures of overuse of medical care in Australian hospital practice', *Intern Med J* 49(7): 893–904, 2019.

[84] L J Shallcross & S C Davies, 'Antibiotic overuse: a key driver of antimicrobial resistance', *Br J Gen Pract* 64(629): 604–660.

[85] Right Care series, *The Lancet* 390(10090), 2017, https://www.thelancet.com/series/right-care; I A Scott et al., 'Countering cognitive biases in minimising low value care', *Med J Aust* 206(9), 2017; *RACP Evolve* (Royal Australasia College of Physicians) https://evolve.edu.au/about; *Choosing Wisely Australia*, http://www.choosingwisely.org.au/home

[86] A J MacNeil, R Lillywhite & C J Brown, 'The impact of surgery on global climate: a carbon footprinting study of operating theatres in three health systems', *Lancet Planet Health* 1(9): e381–e388, 2017; F McGain, 'Five ways hospitals can reduce their environmental footprint', *The Conversation* (May 28, 2018), https://theconversation.com/five-ways-hospitals-can-reduce-their-environmental-footprint-90390

b) *Develop a sustainable pharmaceutical procurement strategy that provides clear guidance and incentives to hospitals and healthcare services.*

c) *WA Health work with Choosing Wisely, RACP Evolve and the global 'right care' movement to promote the environmental benefits of reducing pharmaceutical overuse to professionals, patients, and consumers.*

Reducing and managing waste

Healthcare waste includes all the waste generated by health services and facilities, and is a major and growing problem for the sector.[87] Around Australia and the world, subnational and local governments are committing to zero waste by 2050 and/or exploring opportunities to develop a circular economy,[88] driven in part by the economics of waste. One recent study at the Royal Melbourne Hospital found that disposal of surgical waste was more than five times as expensive as the equipment itself.[89] Nationally, the financial savings of converting from single-use to reusable anaesthetic equipment has been estimated at $2.3 million annually, with carbon savings equal to 25 new cars Australian roads each year.[90]

Waste solutions in the health sector are not always straightforward (e.g. equipment used in operating theatres is disposable for reasons of sterility) but are nevertheless possible. They include procurement to avoid unnecessary disposable products and packaging, segregating waste at source and recycling non-hazardous wastes, and comprehensive waste reporting, reduction, recycling and re-use programmes. For instance, avoiding injectable medicines where oral treatments are as effective.

Recommendation 13.

The Department of Health and/or the proposed new Sustainable Health Unit should:

a) *Work with GGHH, the Waste Authority, local government, and other stakeholders to benchmark waste management, identify opportunities for improvement, and develop a Waste Avoidance and Resource Recovery Plan for the sector, including ambitious but achievable targets for reduction, recycling and re-use.*

b) *Work with the Waste Authority in its proposed review of the State's Procurement and Disposal of Goods Policies to reduce waste, increase recycling and increase the use of recycled products through procurement.*[91]

c) *Develop guidance, tools, and incentives for hospitals and healthcare services.*

In so doing, the health system could substantially contribute to the goals of the *Waste Avoidance and Resource Recovery Strategy 2030* and the vision of a 'sustainable, low-waste, circular economy in which human health and the environment are protected from the impacts of waste'.[92]

[87] A Bryan *et al.*, 'Clinical waste — a major environmental burden', *Hospital & Healthcare* (Jan 7, 2019), https://www.hospitalhealth.com.au/content/design-in-health/article/clinical-waste-a-major-environmental-burden-53426063#axzz5vKGR5N5q

[88] C40 Cities, *Advancing Towards Zero Waste Declaration* (C40 Cities, 2019), https://www.c40.org/other/zero-waste-declaration

[89] GGHH, *Reducing Waste from Operating Theatres: Royal Melbourne Hospital* (GGHH, 2017), https://www.hospitalesporlasaludambiental.net/wp-content/uploads/2018/02/Reducing-Waste-from-Operating-Theatres-Australia.pdf

[90] F McGain, D Story & S McAlister, 'Financial and environmental costs of reusable and single-use anaesthetic equipment', *Br J Anaesth* 118(6): 862–869, 2017

[91] Waste Authority, *Waste Avoidance and Resource Recovery Strategy Action Plan 2030,* Western Australia's Waste Strategy (Perth: WA Govt, 2019)

[92] Waste Authority, *Ibid.*

Clean energy and energy efficiency

Australia's highly centralised, old power grid is steadily being replaced by a new, distributed mix of generation, storage, and demand management (Fig. 7).[93] Over 20% of Australians' and 16% of Western Australians' energy is now generated by renewables and one in five households has rooftop solar panels.[94] According to the Energy Efficiency Council,

> We are now passing through an inflection point where the electricity supply mix is beginning a rapid transition towards a low-carbon, renewable energy-powered grid.[95]

New trading models and technologies are blurring the line between energy consumer and producer, as more communities and businesses generate, store, and exchange energy. 'Consumers' are selling power back to the main grid or even setting up small, local, 'behind-the-meter' energy markets. The near future is one in which hospitals and clinics will take more control of their energy needs: cutting their dependence on costly mains electricity, avoiding network costs and expensive peak demand periods, improving resilience, and selling energy into the main and local microgrids.[96]

By the nature of their services, WA's 80 public and 23 private hospitals are inherently energy-intensive facilities.[97] A 2013 Australian Government, Department of Industry report indicated that a number of WA public hospitals were investigating energy efficiency measures, though none had been implemented.[98]

It is not clear what progress has since been made by WA Health. VicHealth's website, however, suggests that a range of clean energy opportunities is available to Australian healthcare facilities.[99] Victorian public hospitals derive over 42 MW from co-generation and clean energy sources, of which around 2.6 MW is solar power. As of mid-2018, 45 Victorian health-related facilities had installed behind-the-meter solar power, with a further 4.9 MW in the pipeline.

It is clear that the new energy economy has arrived and a wide array of options are now available to healthcare facilities, including: on-site clean energy, a variety of conservation measures, financing options (e.g. the Clean Energy Finance Corporation),[100] and battery storage.[101] There seems to be no reason why every new healthcare facility in WA is not built to international best energy practice, and existing facilities retrofitted to reduce their emissions.[102] Even relatively simply measures to optimise daylight in a hospital can make a big difference.[103]

Importantly, advances in energy conservation and clean power can be made without sacrificing quality of care. Hospitals in northern Europe, for instance, consume roughly 35% of the energy of an average North American hospital, while delivering comparable service.[104]

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[93] Energy Efficiency Council, *Navigating a dynamic energy landscape*, A briefing for Australian business (EEC, 2019).
[94] Clean Energy Council, *Clean Energy Australia Report 2019* (Melbourne: CEC, 2019).
[95] EEC, *Op. cit.*, p. 14
[96] Department of Treasury, *Energy Transformation Strategy: A brighter energy future* (Perth, WA Govt, 2019).
[97] Department of Health, *Our hospitals* (WA Govt), https://ww2.health.wa.gov.au/About-us/Hospital-Information
[98] Department of Industry, *Revised Public Report*, Energy Efficiency Opportunities (Canberra: Aust. Govt, 2012–13), https://ww2.health.wa.gov.au/~/media/Files/Corporate/Reports%20and%20publications/PDF/EEO_Public_Report_12_13.pdf
[99] Department of Health, *Renewable energy in hospitals* (Melbourne: Vic. Govt, 2018), https://www2.health.vic.gov.au/hospitals-and-health-services/planning-infrastructure/sustainability/energy/renewable-energy
[100] Clean Energy Finance Corporation, *Financing Solutions* (Sydney, etc.: CEFC, 2019), https://www.cefc.com.au/where-we-invest/financing-solutions/; CEFC, *CEFC and Dexus to deliver Australian-first clean energy makeover for healthcare sector* (Dec 21, 2017), https://www.cefc.com.au/media/files/cefc-and-dexus-to-deliver-australian-first-clean-energy-makeover-for-healthcare-sector/
[101] EEC, *Op. cit.*
[102] Green Building Council of Australia, https://new.gbca.org.au/; GGHH, Op. cit.; G Bourne, L Brailsford & P Stock, *Renewables & Business: Cutting Prices &* Pollution (Sydney & Melbourne: Climate Council, 2018).
[103] P Rajagopalan & H Elkadi, 'Energy Performance of Medium-sized Healthcare Buildings in Victoria, Australia—A Case Study', *J Healthc Eng* 5(2): 247–260, 2013.
[104] Karliner & Guenther, *Op. cit.*

Recommendation 14.

The Department of Health and/or the proposed new Sustainable Health Unit should:

a) *Benchmark clean energy and energy efficiency in the WA health system*

b) *Explore the full range of options and opportunities to scale-up on-site renewable energy generation (e.g. solar PV) and use clean energy from the grid (e.g. via a bulk power purchase agreement), and set ambitious but achievable targets for uptake*

c) *Explore how healthcare facilities can take advantage of developments in battery storage, micro-grids, etc.*

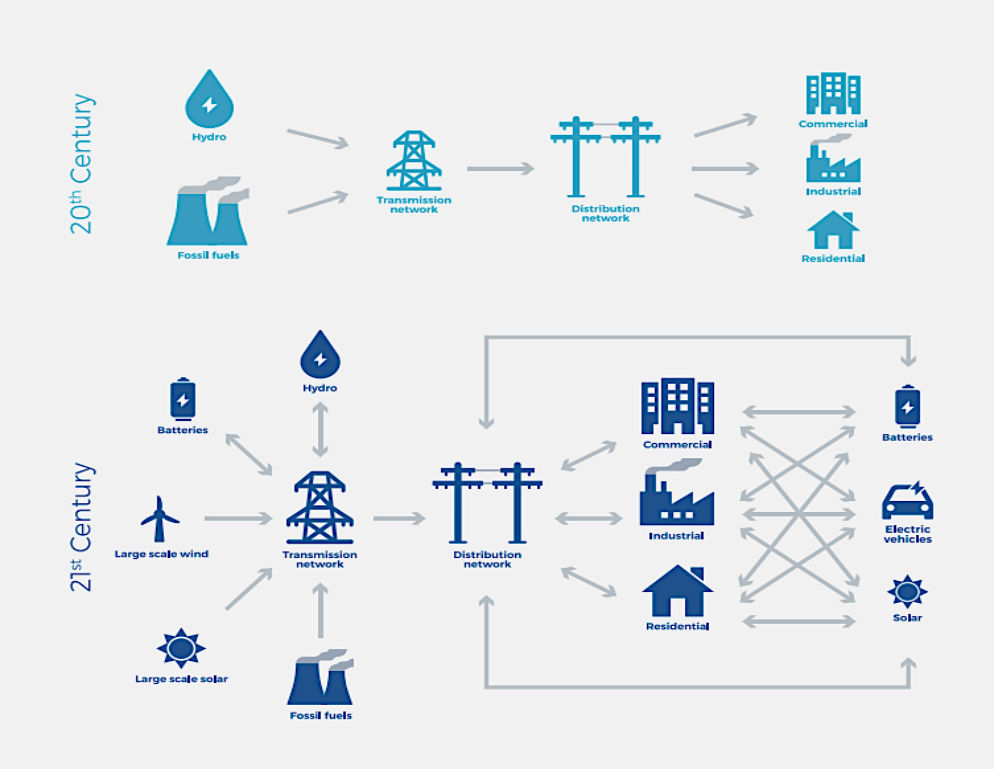

Figure 7. The modernisation of Australia's energy system offers healthcare a wide array of options to cut emissions.[105]

Sustainable design of healthcare facilities

Altogether, buildings are responsible for around 23% of Australia's emissions.[106] Nearly 700 public and over 620 private hospitals account for 44% of healthcare's carbon footprint.[107] To keep global warming to 1.5 °C, the IPCC says emissions from the building sector will need to fall by 80–90% by 2050.[108]

According to the Green Building Council of Australia (GBCA), there is considerable scope to grow sustainable building design in healthcare, with sector currently accounting for less than 1% of its more than 2,000 Green Star-rated buildings, most of which are offices.[109]

[105] https://www.energybriefing.org.au/
[106] Green Building Council of Australia & New Zealand Green Building Council, *The case for sustainable healthcare* (Sydney & Auckland: GBCA & NZGBA, 2019).
[107] Malik et al., *Op. cit.*
[108] J Rogelj et al., 'Mitigation Pathways Compatible with 1.5°C in the Context of Sustainable Development'. In: Masson-Delmotte, *Op. cit*.
[109] GBCA & NZGBA, *Op. cit*.

On average, buildings with the GBCA's Green Star rating consume 66% less electricity and produce 62% less emissions than the national average.[110] Sustainable design is also apt to make hospitals better places to heal. A report by the World Green Building Council showed that sustainably designed hospitals can reduce hospital stays by 8.5%, achieve 15% faster recovery rates, reduce reduction in the need for pain medication by 22%, and cut secondary infections by 11% reduction.

All new healthcare facilities and capital upgrades should meet internationally recognised sustainability best practice, such as the Green Building Council of Australia Green Star rating system.[111]

Sustainable Transport

Nationally, transport is a small but significant proportion of the sector's carbon footprint. Given WA's vast size, however, we might expect a heavier impact. Moreover, hospitals and health services can play an active role in the shift to low- and zero-emissions vehicles. And strategies to encourage active travel (i.e. cycling and walking) can improve the health of staff, and reduce local air and noise pollution.

WA Health's Telehealth programme is already saving carbon and money, reducing vehicle emissions by an estimated 5,000 Mt in 2017.[112] Work in rural Sweden suggests telemedicine can reduce the emissions of an appointment by 40–70 times.[113]

While starting from a low base, sales of electric vehicles (EVs) are rising rapidly. It is expected that, by 2040, more than 60% of all passenger vehicles sold in Australia will be electric.[114] Switching to low- (e.g. hybrid) or zero-emissions (electric) vehicles will cut healthcare costs from cardiopulmonary illness and lost productivity, and improve the quality and length of life.

Moreover, the savings to government, industry and the community can justify public investment in charging infrastructure. In the UK, the NHS is already beginning to establish charging stations at community hospitals,[115] and hybrid ambulances are now standard in metropolitan and rural Victoria.[116]

Recently, Western Australia signed a Memorandum of Understanding on electric vehicles with South Australia, the Australian Capital Territory, City of Adelaide, City of Hobart and Electric Vehicle Council of Australia.[117]

> *Recommendation 15.*
>
> *The Department of Health and/or a new Sustainable Healthcare Unit should work proactively with the Western Australian Electric Vehicles Working Group to explore opportunities for hospitals and health services to benefit from and contribute to EV development.*

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[110] GBCA & NZGBA, *Op. cit.*

[111] GBCA, Green Star: The what and why of certification (GBCA, 2015), https://new.gbca.org.au/green-star/

[112] Department of Health, *To the moon and back with telehealth* (Perth: WA Govt, 2018).

[113] A Holmner et al., 'Carbon Footprint of Telemedicine Solutions—Unexplored Opportunity for Reducing Carbon Emissions in the Health Sector', *PLoS One* 9(9): e105040, 2014.

[114] BloombergNEF, *Electric Vehicle Outlook 2019* (Bloomberg Finance, 2019).

[115] Derbyshire Community Health Services NHS Foundation Trust, *Hospitals launch electric charging points in award-winning low carbon travel initiative* (Dec 16, 2015), http://www.dchs.nhs.uk/home/news/news-archive/hospitals_launch_electric_charging_points_in_awardwinning_low_carbon_travel_initiative/

[116] Mader International, *100th 'Hybrid' Ambulance for Ambulance Victoria* (2013), https://mader.com.au/100th-hybrid-ambulance-for-ambulance-victoria

[117] Department of Water & Environmental Regulation, *Memorandum of Understanding—Sub-National Collaboration on Electric Vehicles* (Dec 1, 2017), https://www.der.wa.gov.au/your-environment/climate-change/527-low-emissions-transport

Recommendation 16.

Metropolitan and large regional hospitals should develop sustainable travel plans, including:

- *Increased active travel (cycling and walking) and use of public transport by staff, service users and the public.*
- *Reduce unnecessary travel via different approaches to delivering care and connecting people, including exploring ways to expand the use of telehealth.*
- *Minimise pollution from necessary travel with low- and zero-carbon vehicles, as well as the supporting infrastructure (e.g. charging stations at hospitals).*

Healthy, sustainable food

By sourcing low-emissions foods, hospitals and health services can promote public health and help to reduce pressures on the health system.

In Australia and globally, the food system is both highly vulnerable and a major contributor to climate change.[118] Australian agriculture contributes around 13% of Australia's emissions, most of which is from livestock production (especially ruminants), with fertiliser use also significant.[119] At the same time, there are clear opportunities to substantially reduce emissions from food through both supply[120] and demand strategies.[121] One estimate suggests that, in high-income countries like Australia, around 80% of dietary emissions could be reduced by shifting to a more plant-based diet.[122]

It is not clear what proportion of the WA health sector's emissions are linked (directly or indirectly) to the food system, but there is general agreement the average Australian's diet is both carbon-intensive[123] and unhealthy[124]. Indeed, leading health authorities now advocate for the shift to a more plant-based diet as both a public health and environmental priority.[125]

While it is difficult to define a sustainable, healthy diet precisely,[126] it is clear that the Mediterranean diet[127] and consistency with the Australian Dietary Guidelines could substantially lighten the carbon footprints of hospital food.[128] Red meat and dairy products bear the greatest part of our dietary carbon burden, while overconsumption and waste are

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[118] L Hughes *et al*., *On the Frontline: Climate Change & Rural Communities* (Sydney & Melbourne: Climate Council, 2016); L Hughes *et al., Feeding a Hungry Nation: Climate change, Food and Farming in Australia* (Sydney & Melbourne: Climate Council, 2015); FAO, *Greenhouse Gas Emissions from Agriculture, Forestry and Other Land Use* (Rome: UN Food & Agriculture Organization, 2014), http://www.fao.org/resources/infographics/infographics-details/en/c/218650/

[119] G Bourne *et al.,* Working paper: Australia's rising greenhouse gas emissions (Sydney & Melbourne: Climate Council, 2018).

[120] Meat & Livestock Australia, *Red meat industry can be carbon neutral by 2030* (Nov 22, 2017), https://www.mla.com.au/news-and-events/industry-news/red-meat-industry-can-be-carbon-neutral-by-2030/; Department of Agriculture and Water Resources, Boosting farm productivity—improved soils and reduced greenhouse gas emissions (Canberra: Aust. Govt, 2016); *Dairy Climate Toolkit*, Dairy Australia, http://www.dairyclimatetoolkit.com.au/

[121] 'Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems', *The Lancet* (Jan 16, 2019), https://www.thelancet.com/commissions/EAT; T Searchinger *et al*., *Creating a Sustainable Food Future: A Menu of Solutions to Feed Nearly 10 Billion People by 2050*, Synthesis Report (Washington, DC: World Resources Institute, 2018); 'Evidence-based resources on sustainable food systems', *FCRN Foodsource* (Oxford, UK: Food & Climate Research Network, 2016), https://www.foodsource.org.uk/

[122] M Springmann, K Wiebe & P Scarborough, 'Health and nutritional aspects of sustainable diet strategies and their association with environmental impacts: a global modelling analysis with country-level detail', *Lancet Planet Health* 2(10): e451-e461, 2018.

[123] S Friel, L J Barosh & M Lawrence, 'Towards healthy and sustainable food consumption: An Australian case study', *Public Health Nutr* 17(5): 1156–1166, 2013.

[124] Australian Institute of Health & Welfare, *Australian Burden of Disease Study 2015* (Canberra: Aust. Govt, 2019).

[125] Royal Australasian College of Physicians, *The Health Benefits of Mitigating Climate Change*, Position Statement (Sydney: RACP, 2016).

[126] T Garnett, T & J Finch, 'How can we reduce food-related greenhouse gas emissions?' In: *Foodsource*, chapters (Oxford, UK: Food Climate Research Network, 2016); C L R Payne, P Scarborough & L Cobiac, 'Do low-carbon-emission diets lead to higher nutritional quality and positive health outcomes? A systematic review of the literature', *Public Health Nutr* 19(14): 2654–2661, 2016; T Garnett, *What is a sustainable healthy diet?* A Discussion Paper (Oxford, UK: Food Climate Research Network, 2014).

[127] R Vidal *et al*., 'Comparison of the carbon footprint of different patient diets in a Spanish hospital', *J Health Serv Res Pol* 20(1): 39–44, 2015.

[128] G A Hendrie *et al*.. 'Greenhouse Gas Emissions and the Australian Diet—Comparing Dietary Recommendations with Average Intakes', *Nutrients* 6, 289–303, 2014.

also significant emissions sources.[129] Energy-dense, nutrient-poor 'non-core' foods, for instance, account for 27% of emissions in the average Australian's diet.

While per-capita consumption of red meat in Australia is declining, it remains very high by world standards—comparable to that of the United States.[130] At the same time, only 6% of adults eat enough fruit and vegetables, but 35% of their energy needs are met with energy-dense, nutrient-poor foods.[131]

Nearly 70% of Western Australians aged 16+ years and more than 25% of children are overweight or obese. More than 7% of Australia's total disease burden could be prevented by reducing exposure to dietary risk factors (Table 1).[132]

Through their food purchasing power and by demonstrating leadership, hospitals and health services can boost the signals that promote healthy eating and reduce dietary emissions.[133] In Europe and North America, hospitals and health services are beginning to adopt an environmental nutrition model of food,[134] and some are finding ways to promote good nutrition, reduce environmental impacts, produce social value, reduce waste, and save money.[135]

Table 1. Proportion (%) of the total health burden (DALY) attributable to the leading risk factors for selected disease groups, 2015.[136]

Disease group	Tobacco use	Overweight & obesity	Dietary risks	High blood pressure	High blood plasma glucose
Proportion of total burden					
All diseases	9.3	8.4	7.3	5.8	4.7
Proportion of disease group burden					
Cancer	22.1	7.8	4.2	..	2.9
Cardiovascular	11.5	19.3	40.2	38.0	4.9
Neurological	1.5	9.0	0.2	1.8	2.9
Respiratory	41.0	8.0	0.3	..	..
Endocrine	3.7	44.6	34.2	..	98.0
Kidney/urinary	..	35.6	7.7	34.1	53.7

Notes

1. Estimates for diet are based on an analysis of the joint effects of all dietary risk factors included in the study following methods used in recent global burden of disease studies.
2. Blank cells '. .' indicate that the risk factor has no associated diseases or injuries in the disease group.

Promoting more sustainable, healthy diets would also help to relieve pressure on health budgets, with chronic conditions consuming $715 million of hospital budgets in WA in 2013.[137] More importantly, it would improve Western Australians' quality of life and life expectancy.

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[129] Hendrie et al., *Op. cit.*

[130] T Whitnall and N Pitts, *Meat consumption* (Department of Agriculture ABARES, 2019), http://www.agriculture.gov.au/abares/research-topics/agricultural-commodities/mar-2019/meat-consumption; E Taylor & A Butt, 'Three charts on: Australia's declining taste for beef and growing appetite for chicken', *The Conversation* (Jun 9, 2017), https://theconversation.com/three-charts-on-australias-declining-taste-for-beef-and-growing-appetite-for-chicken-78100; FAO, *Current Worldwide Annual Meat Consumption per capita* Equivalent (Rome: Un Food & Agriculture Organization, 2013), http://faostat.fao.org/site/610/DesktopDefault.aspx?PageID=610#ancor

[131] Public Health Association of Australia, *Policy-at-a-glance—Ecologically Sustainable* Diets (Deakin, ACT: PHAA, 2015).

[132] AIHW, *Op. cit.*

[133] G Hendrie *et al.,* 'Overconsumption of energy and excessive discretionary food intake inflates dietary greenhouse gas emissions in Australia', *Nutrients* 8(11):article no.690, 2016.

[134] J Sabaté, H Harwatt & S Soret, 'Environmental Nutrition: A New Frontier for Public Health, *Am J Public Health* 106(5):815-821, 2016.

[135] K Klein, J Newbrey & E Sirois, 'Sustainable Food Purchasing in the Health Care Sector: From Ideals to Institutionalization', Ch. 11 in *Institutions as Conscious Food Consumers: Leveraging Purchasing Power to Drive Systems Change*, 239–260, 2019; Health Care Without Harm, *Nourishing Patients and the Planet: The Role of Hospital Food Service in Climate Leadership* (HCWH, 2016), https://medium.com/@HCWH/nourishing-patients-and-the-planet-the-role-of-hospital-food-service-in-climate-leadership-94c7ea779ee4

[136] AIHW, *Op. cit.*

[137] Sustainable Health Review, *Op. cit.*

Preferentially purchasing local products can not only reduce emissions from food freight, but is apt to benefit local producers.[138] The buying power of the health sector can also help to incentivise local farmers to adopt low-emissions or carbon-neutral practices. Recently, Meat & Livestock Australia announced its ambition to have the red meat industry become carbon neutral by 2030, citing signals from consumers as a key driver.[139]

Procurement of sustainable, healthy foods is also consistent with the Sustainable Health Review's call for 'a cultural shift from a predominantly reactive, acute, hospital-based system […] to one with a strong focus on prevention, equity, early child health…'[140]

Sustainable models of healthcare

The examples of 'green' initiatives and strategies outlined above are important, but insufficient by themselves. A piecemeal approach is simply not up to the scale and urgency of the task of decarbonising the health system nor readying it for emerging climate risks. Rather, the full potential of the sector to deliver carbon and resource savings, improved quality of care, and climate preparedness will come from thinking more broadly about models of care that derive value from people (professionals and the public) and their relationships.[141]

Certainly, an emphasis on primary and preventive care will serve to lighten the load on hospitals, and hence reduce more emissions-intensive care.[142] The Sustainable Health Review's emphasis on prevention is certainly welcome in this regard.

Notwithstanding short-term political intransigence, we are now entering a time when carbon will be priced in one way or another. By late 2018, there were 57 carbon pricing initiatives either in operation or in the pipeline; 28 of them in subnational jurisdictions.[143] Additionally, the corporate sector is increasingly adopting internal carbon pricing to drive innovation and get ahead of the curve.[144]

By making full ecological and carbon accounting routine in every aspect of care (e.g. common pathology tests, ED presentations, hospital admissions, clinical pathways, etc.), the Department, hospitals and health services will be able to identify 'hotspots' and hence new sources of value. As the NHS and numerous other examples demonstrate: a triple-bottom-line approach (health, money, and environment) yields a 'win-win-win'.

Again, WA Health can draw on existing international tools and knowledge, such as the NHS Sustainable Development Assessment Tool (SDAT)[145] and the GGHH network, as well as Australian initiatives, including the new South-Eastern Sydney Local Health District (SESLHD) Environmental Sustainability Plan.[146]

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[138] C Bloomfield, 'Putting sustainable development into practice: hospital food procurement in Wales', *Regional Studies, Regional Science* 2(1): 552–558, 2015.

[139] MLA*, Op. cit.*

[140] Sustainable Health Review, *Op. cit.*

[141] K Charlesworth & M Jamieson, 'New sources of value for health and care in a carbon-constrained world', *J Public Health* 39(4): 691–697, 2017.

[142] S Pencheon, 'Developing a sustainable health care system: the United Kingdom experience', Med J Aust 208(7), 2018, doi: 10.5694/mja17.01134

[143] C Dinakaran, 'Mapping Carbon Pricing Around the World', *Carbon Pricing Leadership Coalition* (Nov 5, 2018), https://www.carbonpricingleadership.org/blogs/2018/11/5/mapping-out-carbon-pricing-around-the-world

[144] B Potter & J Fernyhough, 'The shadow carbon price companies are already paying', *Aust Fin Rev* (Apr 29, 2019), https://www.afr.com/policy/energy-and-climate/the-shadow-carbon-price-companies-are-already-paying-20190424-p51gyc; *The Business of Pricing Carbon: How Companies are Pricing Carbon to Mitigate Risks and Prepare for a Low-Carbon Future* (Arlington, USA: Center for Climate and Energy Solutions, 2017), https://www.c2es.org/content/internal-carbon-pricing/

[145] Sustainable Health Unit, ***Sustainable Development Assessment Tool*** (Cambridge, UK: SDU, 2019), https://www.sduhealth.org.uk/sdat/

[146] South-Eastern Sydney Local Health District, *Environmental Sustainability Plan 2019–2021* (Randwick, NSW: SESLHD, 2019), https://www.seslhd.health.nsw.gov.au/sites/default/files/groups/Environmental%20Sustainability/FINAL%20SESLHDSustainabilityPlan2019to2021.pdf

Recommendation 17.

The Department of Health and/or a new Sustainable Healthcare Unit should adopt and roll out an appropriate sustainability accounting framework to identify new sources of value, including carbon savings, and explore and adopt innovative models of sustainable and low carbon health care.

Carbon-neutral healthcare and credible offsets

Done well, carbon offsets represent an opportunity to drive real social, cultural, environmental, and economic benefits.

A recent report by Reputex suggests that requiring LNG companies to offset emissions could create 4,000 jobs in rural communities, with significant cultural, social and environmental co-benefits, including for Aboriginal communities.[147]

A growing number of Australian companies, universities, banks, local councils and other organisations aim to become carbon neutral. In the United States, the nation's largest not-for-profit health care provider, Kaiser Permanente, will be carbon neutral by next year (2020).[148] Inherent in carbon neutrality targets is the use of carbon offsets to provide institutions with flexibility in how they meet the goal of net-zero emissions (e.g. giving time to investigate and adopt new practices). Offsets sit at the bottom of the generally accepted mitigation hierarchy: first avoid where possible, next reduce over time, and then offset remaining emissions.[149]

Offsets can either sequester carbon or avoid emissions:

- *Sequestration* can include reforestation and better soil management, which can in turn improve farm resilience, enhance biodiversity, and produce social benefits (Sequestration is at risk of reversal, however, potentially more so in a more hostile climate.)
- *Avoidance* includes the prevention, reduction or destruction of emissions released into the atmosphere. Projects can include the destruction of industrial pollutants or agricultural by-products (e.g manure management with anaerobic digesters, destruction of landfill methane, etc.). Avoidance can also come through renewable energy projects, energy efficiency, changes in farm management, and avoided deforestation.

Offsets can incentivise sustainable, culturally appropriate development, e.g. in Indigenous communities or rural communities in developing countries. Offset projects must demonstrate high environmental integrity. That is, they should be real, additional, permanent, measurable, independently audited and verified, unambiguously owned, and transparent.

Recommendation 18.

The Department of Health and/or a new Sustainable Healthcare Unit should work with the Department of Environment and Water Regulation, researchers, and civil society to explore the potential of carbon offsets to complement emissions reduction efforts and benefit the health and wellbeing of rural, regional and remote communities.

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[147] RepuTex Energy, *Offsetting Emissions from Liquified Natural Gas Projects in Western Australia* (Melbourne: RepuTex Energy, 2018).

[148] Kaiser Permanente, *We will be carbon neutral by 2020* (Sept 10, 2018) https://about.kaiserpermanente.org/community-health/news/kaiser-permanente-finalizes-agreement-to-enable-carbon-neutralit

[149] Environmental Protection Authority, *Background paper on greenhouse gas assessment guidance* (Perth: EPA, 2019).

Clean energy, health and wellbeing benefits, and the role of public health authorities

The direct financial benefits of clean energy investments today are compounded by the aggregate financial benefits of avoiding a deteriorating climate—including a vast set of human health impacts whose true value is incalculable.[150]

Within the Australian and international healthcare communities there is strong agreement that keeping global warming below 1.5 °C will avoid an escalating toll on human health.[151] It is also well accepted that cleaner electricity, smarter urban design, more sustainable and active transport, reduced waste, and plant-based diets all yield better health and wellbeing outcomes.[152]

Yet there is a paucity of research exploring the inclusion of health benefits into climate and energy policy decisions, and the case for health co-benefits plays a meagre role in such policy-making at all levels.[153]

It is the case that not every mitigation action will always and everywhere benefit public health. Any risks from renewable energy systems or supply chains should be carefully and soberly assessed and managed, and governments must be proactive in attending to the wellbeing of coal-dependent communities in the clean-energy transition. Care should be taken to ensure the benefits of low-carbon economic development are as inclusive as possible. All of which underscores the importance of integrating health and climate/energy policy; ensuring health and welfare professionals are engaged early in planning and policy-making.

The international evidence, however, is very clear that the health and welfare risks of renewables pale in comparison to the immediate and growing risks associated with fossil fuels.

In 2014, CAHA, together with the Public Health Association of Australia and other partners, reviewed the risks and benefits of various energy choices.[154]

One recent Australian review estimates that premature deaths from PM2.5 particulates produced by coal power, motor vehicles, and other anthropogenic prematurely killed around 2,900 people in 2015.[155]

Mortality in Perth and WA was exceeded only by that of Sydney and Melbourne (Fig. 8). This is likely an underestimate of the total health burden associated with fossil fuels, which includes increased hospitalisation, GP visits, and medication usage, not to mention productivity losses. Note that increased demand for health services adds to the carbon footprint of the sector.

There is strong evidence in relation to health co-benefits (improvements in health outcomes, or reductions in health risks) associated with cross sectoral climate adaptation or mitigation measures designed to reduce greenhouse emissions or to limit other risks associated with climate change. These offer a win-win scenario – both reducing emissions and delivering health benefits. Carefully designed strategies can deliver a triple win as they can also deliver (often substantial) economic savings.[156]

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[150] Quinlan, *Op. cit*, p. 3

[151] Ebi, Campbell-Lendrum & Wyn, *Op. cit*.

[152] Haines, A. 'The health benefits of climate action', Lancet Planetary Health, Vol 1 April 2017, https://www.thelancet.com/action/showPdf?pii=S2542-5196%2817%2930003-7

[153] A Workman 'The Role of Health Co-Benefits in the Development of Australian Climate Change Mitigation Policies', *Int J Environ Res Public Health* 13(9): 927, 2016.

[154] F Armstrong & P Tait, *Health and Energy Choices: Background Briefing Paper* (CAHA et al., 2015), https://www.caha.org.au/healthy_energy

[155] Zhang et al., *Op. cit*

[156] See: https://d3n8a8pro7vhmx.cloudfront.net/caha/pages/34/attachments/original/1555476195/Final_Report_-_Review_of_Health_and_Climate_Change_Literature.pdf?1555476195

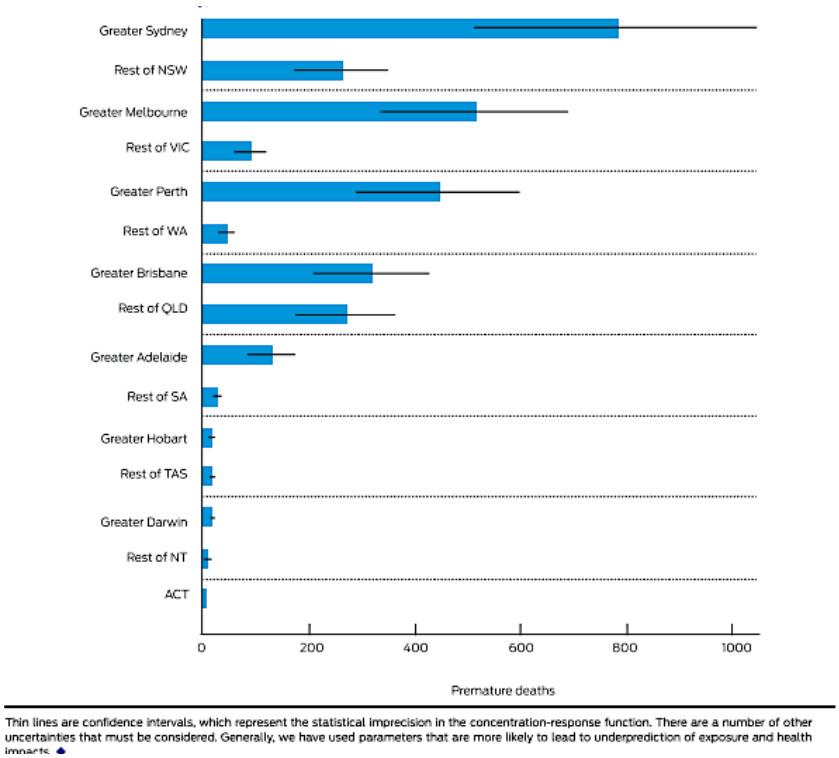

Figure 8. Premature deaths from anthropogenic PM2.5 in Australian state and territory capital cities, and in the rest of each state and territory, 2015.[157]

A recent study (2018) published in *Lancet Planetary Health* analysed the extent to which health co-benefits would compensate the mitigation cost of achieving the targets of the Paris climate agreement (2°C and 1·5°C).[158] It found the health co-benefits "substantially outweighed the policy cost of achieving the target for all of the scenarios analysed". In some of the mitigation strategies, the median co-benefits were double the median costs at a global level.

A study by the Massachusetts Institute of Technology (MIT) published in *Nature Climate Change* in 2014 found the savings from avoided ill health arising from the implementation of strategies that drive the transition to clean renewable energy could return up to 10.5 times the cost of implementing the scheme.[159]

Health co-benefits arising from climate mitigation and adaptation strategies can often help address existing health challenges, such as preventable lifestyle diseases (cardiovascular disease, obesity, Type 2 diabetes), as well as respiratory diseases linked to air pollution (asthma, lung cancer), and mental health (stress, anxiety and depression).

These health co-benefits, which either reduce current health threats or lead to improvements in current health status, can be realised at a local scale, and often in a very short time frame (days, weeks and months) whilst the climate benefits accrue in the longer term (years, decades and centuries).

[157] Zhang et al., *Op. cit.*
[158] Markandya, A. et al. 'Health co-benefits from air pollution and mitigation costs of the Paris Agreement: a modelling study', *Lancet Planetary Health* 2018; 2: e 126–33, https://www.thelancet.com/action/showPdf?pii=S2542-5196%2818%2930029-9
[159] Resutek, A. "Cutting Emissions Pays for Itself", News Release, MIT Joint Program on the Science and Policy of Global Change, 25 August 2014, http://news.mit.edu/2014/cutting-carbon-health-care-savings-0824

Recommendation 19.

The Department of Health should commission research to assess the economic value of health and social benefits associated with a range of strategies to mitigate and adapt to climate change in WA.

There is a good case for stronger, proactive leadership by public health authorities in fossil-fuel developments: a recent review published by the Public Health Association of Australia (PHAA) asserts that WA's *Public Health Act 2016* grants the Chief Health Officer (CHO) and other public health officials wide powers to intervene to protect Western Australians, now and into the future, from the health threats posed by fossil fuels.[160] This includes the power to 'intervene where air and water quality are compromised, [and, potentially,] greenhouse gas emissions and particulate matter produced as a result of fossil fuel use'. They also include the power, with or without instructions from the Minister, to conduct an inquiry into any matter relating to public health. To date, with respect to climate risks, these powers remain underexplored, but growing community expectations of climate action should give WA authorities cause to at least think about their role in protecting Western Australians.[161]

Recommendation 20.

The Inquiry should explore the powers of public health authorities under the Public Health Act 2016*, especially the Chief Health Officer, to protect people from the harms posed by fossil fuels, including long-term, intergenerational health risks posed by carbon emissions and climate change.*

CAHA applauds the Sustainable Health Review's call to use Health Impact Assessments (HIAs) 'proactively… in community and Government planning decisions to promote health and prevent disease and injury'.[162] We understand that, under the provisions of the *Public Health Act 2016*, HIA regulations have been included in the stage 5 work package scheduled for 2020. The proposed regulations could be used to assess proposals for projects or developments which may increase the impacts of climate change on human health and recommend changes to those proposals that would mitigate the effects or assist with adaptation.

Recommendation 21.

The WA Government should forward the preparation and implementation of Part 15 of the Public Health Act 2016 *to expedite a robust Health Impact Assessment (HIA) capability in WA. The Department should be directed to accelerate the development and implementation of the regulations as a stand-alone, priority public health initiative to ensure comprehensive, independent health-impact assessments for all fossil fuel and energy and transport infrastrcuture project proposals.*

Renewable energy systems can also offer significant local health and social benefits. They can, for instance, bring much-needed investment to rural and regional areas struggling with climate change, population decline, geographic isolation, and other issues and vulnerabilities.[163] Already, rural communities benefit from 30–40% of the investment in renewables, worth $1–2 billion per year. Today, construction of large-scale renewable energy developments currently employs nearly 11,000 Australians, most of whom are in rural and

[160] M Batten *et al., Public Health Officer scope to reduce greenhouse gas emissions and air pollution from fossil fuel energy.* A Review of Australian Public Health Legislation (Deakin, ACT: Public Health Association of Australia, 2018).
[161] Batten *et al.,Ibid.*
[162] Sustainable Health Review, *Op. cit.,* p. 46.
[163] Hughes at al., On the Frontline*, Op. cit.*

regional areas.[164] Modelling for the Climate Council shows that reaching 50% renewable electricity would create over 28,000 new jobs in ten years.

Business models based on community co-/ownership and co-investment (e.g. Denmark Community Wind Farm[165]), are already empowering health and social organisations in rural communities around Australia.[166] Community-owned energy can strengthen local resilience, empowerment and pride. Between $19 and $21.5 million is invested directly into regional communities through payments from wind power firms to host landholders and Community Enhancement Funds (CEFs).[167] A more decentralised, clean energy grid could also improve the resilience and wellbeing of rural and remote communities.[168]

Recommendation 22.

The Department of Health and/or a new Sustainable Healthcare Unit should work with the Department of Communities, the research community, and civil society to investigate and promote the health and wellbeing impacts of clean energy, including the:

- *Benefits to rural, regional and remote communities, and their needs*
- *Potential role of community-ownership and co-ownership business models*
- *Potential of clean energy to contribute to resilience and adaptation*

CAHA applauds the efforts of the McGowan Government to promote renewable energy in the state, including new solar and wind development, battery systems, and rooftop solar.[169] Even so, WA is clearly far from meeting its vast, untapped potential for modern, strong, and clean energy industry. The overwhelming bulk of its emissions stem from fossil fuels (Fig. 8). While all other states' emissions are falling, WA's have risen by 27% between 2000 and 2016.[170] In 2017, WA generated just 7.5% of its electricity from renewables, lagging behind the other states. Overall, WA contributed 16.6% of Australia's emissions in 2017, with export LNG pushing Australia's emissions up.

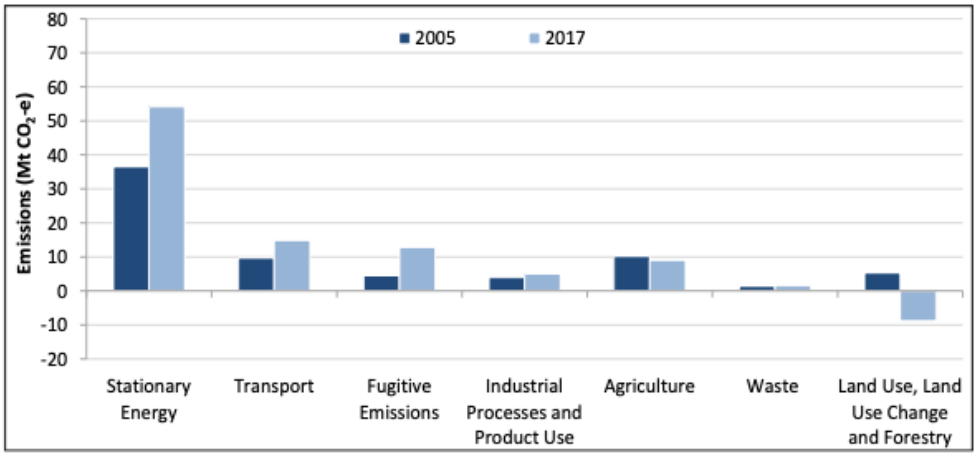

Figure 9. Western Australia's direct carbon emissions by sector.[171]

[164] CEC, *Op. cit.*
[165] *Demark Community Windfarm Ltd.* (2018) http://www.dcw.net.au/
[166] Australian Wind Alliance, *Wind Energy, Building Stronger Communities Report* (Bungendore NSW: AWA, 2018); Institute for Sustainable Futures *et al., National Community Energy Strategy* (Sydney: C4CE, 2014), http://c4ce.net.au/nces/
[167] AWA, *Ibid.*
[168] Government of Western Australia, *Lower electricity bills for Aboriginal communities installing solar (*Nov 9, 2018), https://www.mediastatements.wa.gov.au/Pages/McGowan/2018/11/Lower-electricity-bills-for-Aboriginal-communities-installing-solar.aspx
[169] CEC, *Op. cit.*
[170] E Kennedy, D Weber & R Shine, 'WA Premier Mark McGowan attacks EPA guidelines aimed at cutting carbon emissions', *ABC News* (Mar 8, 2019), https://www.abc.net.au/news/2019-03-08/mark-mcgowan-attacks-epa-carbon-emissions-policy/10882946
[171] Dept of Environment & Energy, *Op. cit.*

To keep global warming to 1.5 °C, the world needs to reduce emissions from energy by 70–85% by 2050.[172] Western Australia is the last state without a renewable energy or emissions reduction target of net zero by 2050—a position that almost certainly weakens the ability of hospitals and healthcare services to invest strongly in climate action.

Recommendation 23.

Recognising that mounting carbon emissions pose a serious threat to the health and wellbeing of Western Australians, and that the best adaptation strategy is mitigation, CAHA urges the WA Government to reconsider its current position and legislate a renewable energy target and an emissions reduction target of net zero by 2050, consistent with the goals of the Paris Agreement.

The Benefits of Climate-Smart Leadership

Environmental sustainability and climate resilience leadership ought to be a core duty of healthcare professionals.[173] The South-Eastern Sydney Local Health District's new *Environmental Sustainability Plan* is a good, recent Australian example of such initiative.[174]

Climate-smart hospital design, purchasing policy, and care pathways clearly signal the urgency of climate action to staff, patients, visitors, suppliers, investors, allied industries, and policymakers—local, state and federal.

Leadership can help to reinforce behaviour change in the community, much in the way doctors led campaigns—often by example—for tobacco and gun controls, road safety laws, mass immunisation, and to curb the proliferation of nuclear arms.[175] It demonstrates that sustainability can and should be core business. It can help to facilitate informed participation of healthcare professionals in climate-related decision-making. By making clear commitments to mitigation (and adaptation), hospitals and health services can engage with and learn from their peers in the sector.

Successful sustainability planning works with healthcare staff to identify problems and turn them into long-lived solutions with benefits for them, staff, and the facility as a whole.[176] Thorough and transparent planning and project management could also help to reduce reputation and liability risk, improve relations with key stakeholders, and become more attractive to donors and investors.

The *Health Care Climate Challenge* encourages participating hospitals and services to use 'their innovation, ingenuity, investments and voice' to reduce their carbon footprint, promote low-carbon models of care, and advocate for policy action.[177] To date, participants have cut emissions by 16 Mt, saved around US$1.7 billion in health costs of air pollution, and saved US$381 million in energy efficiency and clean energy.

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[172] Rogelj et al., *Op. cit.*

[173] R Stancliffe & M Bhutta, 'Should doctors lead on sustainability?' *Br Med J* (Jul 1, 2013), https://blogs.bmj.com/bmj/2013/07/01/rachel-stancliffe-and-mahmood-bhutta-should-doctors-lead-on-sustainability/

[174] SESLHD, Environmental Sustainability Plan 2019–2021, *Op. cit.*

[175] SESLHD, Environmental Sustainability Plan 2019–2021, *Op. cit.;*Tomson *Op. cit.*

[176] Quinlan, *Op. cit.*

[177] GGHH, *Health Care Climate Challenge* (GGHH, 2018), https://www.greenhospitals.net/about-challenge/

The contribution of Climate and Health Alliance to the WA Climate-Health Inquiry

The Climate and Health Alliance congratulates the Minister for Health and the WA Government in conducting the WA Climate-Health Inquiry.

We are pleased to have the opportunity to make this submission to the Inquiry and would be pleased to contribute further by presenting at the public hearings, and working with the WA Government to develop a health and climate change framework for WA to reflect the needs of the WA community and health sector, informed by the latest public health and climate science and policy.