



▶ Sustainable
Health and
Environment
Network (SHEN)

2024-2025 Annual Report



DEAKIN
UNIVERSITY

Reflections from the Chair

It's my pleasure to welcome you to this year's Sustainable Health and Environment Network (SHEN) Annual Report. Over the past year, we've made significant strides in empowering communities and restoring health for people and our planet.

As we drive interdisciplinary innovation to reduce the environmental footprint of healthcare delivery, develop sustainable food systems and investigate the interconnectedness of health and environmental change, we focus on restoration for both this generation and the next.

I want to extend my gratitude to our members, partners, and stakeholders for their dedication and contributions. Together, we are shaping a more sustainable and resilient health system and healthier planet.

I invite you to explore this report and celebrate the progress we've made – while looking ahead to the opportunities and challenges that lie before us.

Thank you for your continued support.

Distinguished Professor Rachel Huxley
Chair of SHEN



About SHEN

The Sustainable Health and Environment Network (SHEN) aims to empower communities and restore health – both for people and the planet.

We bring together interdisciplinary research, education and community engagement to develop innovative, evidence-based solutions that deliver lasting benefits. Our work aims to advance sustainability and restoration for the benefit of present and future generations.

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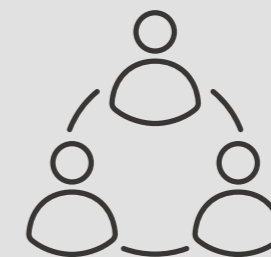
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Deakin would like to Acknowledge the Traditional Custodians of the lands on which our University campuses are based. The Wadawurrung people of the Kulin Nation on whose Country our Geelong campuses are located, the Wurundjeri people of the Kulin Nation on whose Country our Burwood campus is located and the Peek Whurrong people of the Maar Nation on whose Country our Warrnambool campus is located.



Elevate and educate

Lead evidence-based collaborative research translation and drive sustainable impact through practical knowledge translation tools and events.



Engage and enact

Strengthen internal and external partnerships to advocate for innovative, sustainable, restorative healthcare solutions and drive impactful change.



Empower

Cultivate emerging climate leaders through awareness-building, knowledge-sharing, and networks that promote sustainability and restorative health for both people and the planet.

Our research streams

Our three research streams – sustainable healthcare systems, health impacts of environmental change, and sustainable food systems – support Deakin’s commitments to carbon neutrality and sustainability.

Learn more about our research streams and the progress we’ve made in each.

Health impacts of environmental change



Stream leads

Dr Shannon Sahlqvist,
Associate Professor Claire Henderson-Wilson

Our health is fundamentally dependent on the health of the planet. Climate change, environmental degradation and unsustainable practices are causing physical and mental health impacts that require evidence-based, systems-driven solutions.

This research stream explores physical and mental health impacts across individuals, organisations, communities and populations. Our initiatives aim to protect and promote human health (especially among priority populations) and the health of the natural environment.



Research story

How reduced public transport fares affect public transport use and travel-related walking

In August 2024, the Queensland government introduced 50-cent public transport trips throughout South East Queensland – a policy designed to ease cost-of-living pressure and reduce traffic congestion. The change represented a substantial fare reduction and significant saving of up to 92% for some commuters.

SHEN researchers from the Institute for Physical Activity and Nutrition (IPAN), led by Dr Anthony Walsh, in partnership with colleagues at Queensland University of Technology (QUT), Brisbane North Primary Health Network and the National Heart Foundation, capitalised on the ‘natural experiment’ presented to examine the health benefits of such a large fare reduction.

As well as reducing cars on the road, a large-scale switch from driving to public transport could be a viable population strategy to increase physical activity (PA). Because walking and/or cycling to and from public transport stops is usually done at a moderate level of exertion, people who use public transport more often could accumulate substantial PA and be more likely to meet the national PA guidelines. Previous cross-sectional research has shown an association between public transport use and PA, but longitudinal evidence has been lacking.

For this longitudinal study, the research team collected data from 397 adults in Greater Brisbane before the introduction of the reduced fares and followed up with these adults 10-14 weeks later. At follow-up, 29% of respondents reported using public transport more, while 42% reported more travel-related walking.

Importantly, the team was able to demonstrate a link between increased public transport use and increased walking for travel. Those who increased their public transport use increased their travel-related walking by an average of 34 minutes/week, those whose public transport use remained stable had no significant change in travel-related walking, and those whose public transport use decreased reported 10 minutes/week less travel-related walking. Increasing public transport use was the best predictor of increased travel-related walking (odds ratio = 2.85, 95% CI 1.74 – 4.70, $p < 0.001$).

Age, gender, socio-economic status, geographical location (inner, middle or outer suburban), neighbourhood walkability and distance to the nearest public transport stop were all unrelated to the odds of increasing public transport use or the odds of increasing travel-related walking.

This study demonstrated that a large-scale switch from driving to public transport, driven by reduced fees, could be an effective strategy to increase physical activity. The findings provide valuable insights for future public transport policy development in Australia. Next steps will determine whether the fare reductions lowered private car use and what else could prompt adults to choose public transport over car travel.

Project supported by seed funding from IPAN.

Sustainable healthcare systems

Stream lead

Dr Mike Forrester

Australia's health system is responsible for approximately 5%–7% of national greenhouse gas emissions. Research is required to support the transition to high-value, low-carbon health systems as outlined in the National Health and Climate Strategy.

Our sustainable healthcare research, led by Dr Mike Forrester, explores the co-benefits of delivering excellent and equitable healthcare, while ensuring minimal energy use, reduced greenhouse gas generation, and a circular-economy approach to reducing resource consumption and wastage in the health sector supply chain.



Research story

National Sustainable Asthma Care Roadmap-Roundtable Report

One in nine Australians has asthma, and around half have poor control over their condition. Australians use 20 million pressurised metered dose inhalers (pMDIs) every year, including around 15 million 'relievers', mostly salbutamol. The carbon footprint of these pMDIs' hydrofluorocarbon propellant is over 600,000 tonnes CO₂e – equivalent to the annual emissions of 350,000 vehicles or the sequestration potential of 60 million trees per year.

[The National Sustainable Asthma Care Roadmap-Roundtable Report](#) was developed in response to these problems and aligns with the National Health and Climate Strategy Action 4.14 – improving asthma outcomes and reducing emissions from respiratory inhalers.

Asthma Australia hosted two in-person and two online system-oriented roundtables, which were facilitated by Deakin researchers and harnessed group-model-building capabilities from Deakin's [STICKE2](#) application. The roundtables engaged representatives from 50 key organisations, including consumers, researchers, health professionals, peak bodies, government and the pharmaceutical industry, and were followed by ongoing engagement for collaborative report development.

Stakeholders agreed there was a co-benefit opportunity to implement high-value, evidence-informed [anti-inflammatory treatment regimens](#) from diagnosis, (as per the [Global Initiative for Asthma \(GINA\) 2024 report](#)), and reduce greenhouse emissions associated with pMDI asthma reliever overuse. Supporting people

with asthma to consider switching to low-carbon devices such as dry powder inhalers, where appropriate, would also have a significant decarbonisation impact.

The resulting [Roadmap-Roundtable Report](#) outlines eight collaboratively developed goals and provides high-level recommendations that will inform the progression toward delivering a comprehensive national implementation plan. It presents a compelling vision for the future of asthma care in Australia.

Following the release of the Roadmap-Roundtable Report, we established the National Implementation Committee of the Quality and Sustainable Asthma-care Roadmap (NICQSAR). We are seeking partnership funding to progress the next phase of work, including more detailed implementation planning and performing a health economic evaluation with an estimated return on investment for priority actions to present to government. The NICQSAR Committee is led by Asthma Australia and Deakin University with support from the Australian Government National Health, Sustainability and Climate Unit and key asthma-care sector stakeholder organisations and experts.

This sector-led work to develop a national, collaborative, sector-driven, co-benefit-oriented implementation plan is a global first and could provide a template for other countries transitioning to high-value, low-carbon healthcare.

Research story

Reusable gowns in emergency departments

Single-use gowns are commonly used in hospital departments in both Australia and around the world, at significant environmental and financial cost.

This project follows on from our system-oriented, stakeholder-driven [PPE waste reduction](#) study.

This reusable non-sterile gown trial is nearing completion at our partner site, the University Hospital Geelong Emergency Department within Barwon Health (BH). It's providing much-needed insight into the attitudes of healthcare staff towards reusable gowns, identifying system barriers and enablers for reusable gown use and articulating the potential environmental and financial impacts they could have.

Excitingly, BH Emergency Department staff would like to continue using reusable gowns post-trial and there's interest in expanding this more widely across BH.

The project is led by the University of Melbourne's Sustainable Healthcare and Climate CATCH Lab in collaboration with SHEN and Barwon Health.

Wider implementation of reusable gowns and PPE could lead to significant environmental impacts, including reduced greenhouse gas emissions, solid waste and water usage.

Sustainable food systems



Stream lead

Professor Mark Lawrence

Ecological disruption threatens future food supplies, as well as food and nutrition security. Dietary behaviours pose a threat to the sustainability of food systems at global, national and local levels, spurring the need for transformation.

Our researchers and educators are generating evidence and capabilities to promote healthy, equitable and sustainable diets and food systems. Our work forms part of international and national efforts to synthesise and translate evidence into policy activities for healthy and sustainable diets and food systems.

Research story

Understanding the environmental impacts of ultra-processed foods and implications for sustainable food systems

Ultra-processed foods (UPFs) are increasingly present in modern diets, but how do they impact sustainable food systems? This paper aims to summarise how each stage of the UPF supply chain affects the environment and develop a conceptual framework to display these impacts.

Taking a narrative review approach to 52 studies, the paper found that UPFs are responsible for significant diet-related environmental impacts. Studies reported that UPFs account for 17%–39% of diet-related energy use, 36%–45% of biodiversity loss and up to one-third of diet-related greenhouse gas emissions. They also contribute to issues such as land degradation, herbicide use, water pollution and packaging waste.

A conceptual framework was developed to map and systematically assess UPFs' impacts across the food supply chain. It highlights the intensive resource use and waste generation associated with the four stages of UPF lifecycle: agricultural production, processing, distribution and consumption.

The results provide significant innovations for policy makers. Firstly, the conceptual framework can be used by policy makers to better understand intervention points in the food system.

The review also demonstrated the lack of consistent terminology to define and group foods across disciplines. Lastly, the results highlight that UPFs are responsible for significant environmental and health impacts, suggesting that reducing UPF production and consumption could contribute to lower environmental pressures.

Future research should quantify the environmental impacts of UPFs across the whole food system, capturing all stages relevant to production as outlined in the framework. As sustainability literature is predominantly focused on greenhouse gases, a wider variety of environmental sustainability metrics should be used to provide a balanced view of the impacts of foods in the context of dietary consumption patterns.

Research story

Foundations of a healthy and sustainable diet

Historically, a healthy diet was defined by its ability to prevent nutrient deficiencies. However, rapid urbanisation, technological advances and changes to food systems have dramatically transformed modern dietary patterns. Ecosystems and human physiology cannot adapt sufficiently to these rapid changes, making diet a leading risk factor for disease and food systems a major driver of environmental degradation.

This paper aims to synthesise dietary guideline recommendations into more accessible food-level advice for citizens.

The paper identifies three core principles:

1. **Variety:** Eating a diverse range of foods both across and within the core food groups is the best way to achieve a healthy diet, and also supports biodiversity in food production.
2. **Balance:** Dietary imbalances arise when too much or too little of one food group is consumed relative to other food groups. In modern diets, these tensions tend to arise around the proportion of animal-sourced food vs plant-based food, and minimally processed foods vs ultra-processed foods (UPFs).
3. **Moderation:** Dietary moderation refers to consuming enough food to provide for but not exceed the body's energy needs. Consuming food in appropriate quantities prevents health conditions associated with obesity, and reduces food waste, conserving finite environmental resources.

The paper provides an example of how these principles can be simplified and communicated using a visual tool. In the future, policymakers will have to balance health and sustainability considerations, particularly in evaluating plant-based alternatives and UPFs. Ongoing research and updates to dietary guidelines are necessary to ensure optimal health and environmental outcomes.

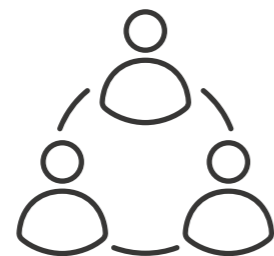
The year ahead

The work we've completed over 2024–2025 has put SHEN in good stead for the next year. We plan to keep pursuing our key objectives through a range of actions:



Elevate and educate

- Coordinate and support PhD scholarships aligned to SHEN's purpose
- Communicate and promote SHEN's research outcomes
- Produce a Climate Health in Action quarterly newsletter
- Provide project support for each of our research streams



Engage and enact

- Strengthen relationships with our key partners
- Support SHEN members by identifying and facilitating opportunities for connection and collaboration, both internal and external



Empower

- Support the embedding of climate literacy into curricula delivery
- Support and co-facilitate training program delivery from our partners and other institutions
- Develop the SHEN student leader program
- Coordinate the SHEN event calendar, develop our cross-faculty membership and increase value and awareness across Deakin University

We thank you for your continued support and look forward to sharing our achievements in next year's Annual Report.



Contact us

For further information,
please visit the Sustainable
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sustainable-health-network](https://deakin.edu.au/faculty-of-health/sustainable-health-network)

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