

Melbourne Medical
School



THE UNIVERSITY OF
MELBOURNE

Sustainable Healthcare: Impact Report 2024/25

Melbourne Medical School

Message from the Lead

The inaugural 2024/25 Melbourne Medical School Sustainable Healthcare Impact Report stands as a testament to the dedication, innovation, and leadership from our team and collaborators in advancing environmentally sustainable healthcare and climate health principles across education, research, and practice.

The climate crisis is one of the most pressing health challenges of our time. Health professionals and services are increasingly grappling with the ethical paradox of climate change influences on human health, whilst the healthcare sector itself is a significant source of greenhouse emissions. Fortunately, there is increasing awareness of the imperative for the sector to progress towards service deliveries and practices that are both environmentally and financially sustainable.

As a leading medical school, we are acutely aware of our responsibility to respond with urgency, evidence, and equity. Through a series of pioneering collaborations, including development of the University's Climate CATCH Lab and working with the Healthcare Carbon Lab, health services, Safer Care Victoria, the Australian Government, and international leaders, our staff and students are driving impactful change across healthcare systems. Importantly, the Melbourne Medical School's recently released Sustainability, Climate and Health Strategy 2025-28 will guide future alignment of goals and prioritisation of actions to enable our work to grow in reach, effectiveness and impact.

This report reflects more than achievements; it reflects momentum. From the development of a national guide, research that challenges the status quo of healthcare delivery, to growing demand for our education programs and health service and student leadership, the work highlighted in this report showcases what is possible when vision, dedication and collaboration intersect.

Thank you to the Melbourne Medical School for supporting development of our sustainable healthcare team, our Climate CATCH Lab collaborators and other partners across the University and externally who continue to support and strengthen our commitment to sustainable healthcare and climate health leadership. We look forward to what we will achieve together in the year ahead.

Enterprise Professor Eugenie Kayak

Sustainable Healthcare Lead, Melbourne Medical School, Department of Critical Care

Deputy Director, Climate CATCH Lab

The University of Melbourne

Executive Summary

The Melbourne Medical School (MMS) Sustainable Healthcare team operates within the Department of Critical Care, Melbourne Medical School and as part of the Sustainable Healthcare Stream of the Climate CATCH (Collaborative Action for Transformative Change in Health and Healthcare) Lab.

In 2025, MMS launched the [Sustainability, Climate & Health Strategy 2025–2030](#), a flagship initiative that outlines a bold framework to embed environmental sustainability across healthcare education, research, community engagement, and operations. This Strategy positions MMS at the forefront of sustainable healthcare transformation and aligns with the University's broader climate and health agenda.

Significant collaborations and outcomes over the last year include:

- Developing the **MMS Sustainability, Climate & Health Strategy 2025–2028**
- Developing and delivering the **Sustainability in Quality Improvement (SusQI)** education program
- Leading the **Health Service Environmental Sustainability Competition**, now engaging 8 Victorian health services
- Delivering a bespoke 2-day SusQI education and training workshop as part of Safer Care Victoria's statewide **Sustainable and Quality Use of Diagnostics in Emergency Departments Project**
- Co-hosting the **Sustainable Healthcare Research and Implementation Priority Setting Workshop**, resulting in a proposed collaborative research agenda
- Co-developing and publishing *A Practical Guide – Detecting and Reducing Nitrous Oxide Leaks in Healthcare Facilities* with the **Australian Department of Health and Aged Care** and the **Interim Centre for Disease Control**

The [Climate CATCH Lab's 2024-2025 Impact Report](#) outlines further activities over the last 2 years. The Climate CATCH Lab formed by Director Prof Kathryn Bowen and Deputy Co-Directors Prof Eugenie Kayak and Dr Anabelle Workman is a partnership between MMS, MSPGH, MDHS and Melbourne Climate Futures (MCF). Prof Eugenie Kayak also leads its [Sustainable Healthcare](#) stream alongside A/Prof Forbes McGain, Dr Sonia Chanchlani and Dr Jess Davies. This virtual Lab is a collaborative interdisciplinary network of researchers, educators, practitioners and strategic thinkers advancing knowledge and action at the nexus of climate change and health across nine streams. As outlined in the [2023-2024 Impact Report](#), it has taken major strides towards accelerating the University's research, education and engagement agenda on climate change and health.

We also work and collaborate closely with the MDHS [Healthcare Carbon Lab](#) team led by A/Prof Forbes McGain.

An overview of our activities can be found on the [Sustainable Healthcare page](#), and the [Sustainable Healthcare stream page](#) of the Climate CATCH Lab website.

Our People

The Sustainable Healthcare Team:



Prof. Eugenie Kayak

Enterprise Professor - Sustainable Healthcare



Dr Sonia Chanchlani

Senior Fellow - Sustainability, Climate and Health



Dr Ben Dunne

Senior Fellow – Sustainable Healthcare



Lindsay Scudder

Fellow – Sustainable Healthcare



Fiona Sherwin

Project Fellow – Sustainable Healthcare (interim)

In collaboration with the Climate CATCH Lab:



A/Prof. Rebecca Patrick

Sustainable Healthcare Researcher



Sunny Nguyen

Research Assistant



Urvi Thanekar

Research Assistant

In addition are the University's Healthcare Carbon Lab team lead by A/Prof Forbes McGain, the many wonderful health professionals with MMS honorary appointments, students and academics that are involved in, assist and lead sustainable healthcare research, education and engagement.

MMS Sustainability, Climate and Health Strategy

The *Melbourne Medical School Sustainability, Climate and Health Strategy 2025–20230* was developed over 2024/25. Through this strategy, we set out a bold framework for transforming healthcare education, research, practice, and leadership in response to the climate crisis and to realise our vision for a healthcare system that provides high quality care today, without compromising the health or healthcare, of present and future generations – a sustainable healthcare system.

Developed in alignment with the [MMS Advancing Medicine Strategic Plan 2025-2030](#) and following an extensive consultation process with input from students, staff, and partners, the Strategy will position the Melbourne Medical School as a leader in building climate-resilient, low-carbon health systems and communities.

We recognise that globally the healthcare sector contributes to over 5% of greenhouse gas emissions and that climate change is a significant and growing health threat. This Strategy will drive action across four pillars:

Education - Leading education in sustainable healthcare and climate health.

Discovery and Research - Building sustainable healthcare and climate health research capacity.

Community and Global (Engagement) - Building internal and external collaborations and communities of practice to lead and influence.

Place and Operations – Working to mitigate the environmental footprint of our own events, activities, research and facilities.

Education

Environmental Sustainability in Quality Improvement (SusQI) program

The University of Melbourne has been designated [Victoria's only Sustainability in Quality Improvement \(SusQI\) Beacon Site](#) by the UK Centre for Sustainable Healthcare in recognition of its leadership in integrating environmental sustainability into health professional education and quality improvement. Establishment of our SusQI program has been led by Dr Sonia Chanchlani who undertook SusQI Academy training in 2024.

Our team delivers targeted interprofessional workshops for medical doctors, nurses, allied health, non-clinical staff, managers and sustainability officers. These workshops equip participants with the skills to design, implement and measure averted carbon emissions for quality improvement projects in their health settings with an environmental sustainability lens.

An interprofessional [Environmental Sustainability in Quality Improvement for Healthcare workshop](#) was held in October 2024, the sold-out half day event was attended by 50 healthcare professionals.

Building on this success, in April 2025, [MMS Sustainable Healthcare partnered with Safer Care Victoria](#) to co-design and deliver a bespoke 2-day SusQI education and training workshop. Over 65 healthcare professionals from 11 Victorian emergency departments attended as part of the statewide [Sustainable and Quality Use of Diagnostics in Emergency Departments Project](#). The workshop and follow up sessions were delivered in collaboration with expert facilitators in quality improvement, healthcare transformation, Choosing Wisely, behaviour change, and carbon footprinting.

Across both events, participant feedback was exceptionally positive: 100% of the feedback from attendees reported that they would recommend the workshops to their colleagues, underscoring the growing appetite and need for sustainability-focused healthcare education.

To meet the growing state and national demand, the MMS Sustainable Healthcare team plans to deliver additional SusQI workshops this year, with participation across at least eight health services in Victoria.



Photo: The April 2025 Sustainability in Quality Improvement (SusQI) Workshop delivered in partnership with Safer Care Victoria

University of Melbourne Quarterly Sustainable Healthcare Grand Rounds

Held in partnership with St Vincent's Hospital and A/Prof Michael Hii. Presenters in 2024 included Dr Alice McGushin (Assistant Director National Health, Sustainability & Climate Unit), Heidi Matkovich (Director, Climate Health Victoria), Dr Monique Ryan and members of our MMS team (Prof Eugenie Kayak and Dr Ben Dunne) to mention a few. Recordings can be found [here](#).

Other Teaching & Learning Activities

In 2024 and 2025, our team continued to actively embed climate health, and sustainability into medical and public health education across the University of Melbourne and partner health services.

Dr Sonia Chanchlani, Dr Ben Dunne and Prof Eugenie Kayak have developed and delivered a new EXCITE (Excellence in Clinical Teaching) graduate diploma module focused on integrating environmentally sustainable healthcare and climate health into clinical education. Dr Sonia Chanchlani also supported Doctor of Medicine (MD) students in completing the 2024 and 2025 Planetary Health Report Card (PHRC) global curriculum assessments, helping identify opportunities to embed planetary health principles into the MD curriculum. Prof Eugenie Kayak assisted in the planning and delivery of the MD4 Discovery Interdisciplinary Advocacy Workshop led by A/Prof Chris Leung at Austin Hospital in May 2025, which focused on sustainable healthcare and climate health for final-year medical students.

The MD Curriculum Handbook was updated to include sustainability-aligned intended learning outcomes, emphasising social and environmental accountability, resource stewardship, and the health impacts of environmental change.

Within the Melbourne School of Population and Global Health, Prof. Eugenie Kayak presented in [POPH90303 Climate Change and Health](#) subject, and Dr Sonia Chanchlani coordinated [POPH90304 Sustainability in Healthcare](#), with presentations delivered by Dr Ben Dunne, Prof Eugenie Kayak and Lindsay Scudder. A Master of Public Health student was also supervised by Prof. Eugenie Kayak and A/Prof. Rebecca Patrick.

Externally, Drs Sonia Chanchlani and Ben Dunne facilitated the integration of planetary health content into intern education curricula at the Royal Melbourne Hospital and Austin Health, aligning with new Australian Medical Council (AMC) medical education standards. Prof Eugenie Kayak continues to contribute biannually to Monash University's MBBS Preventive Medicine Summit, and Drs Ben Dunne and Sonia Chanchlani provided supervision for Royal Melbourne Hospital's Discovery Clinical Scholar program.

Research

Sustainable Healthcare Research and Implementation Priority Setting Workshop

In October 2024, the Climate CATCH Lab hosted the *Sustainable Healthcare Research and Implementation Priority Setting Workshop*, led by Prof Eugenie Kayak, A/Prof Rebecca Patrick, Sunny Nguyen, and Urvi Thanekar. The workshop, subsequent report and seed research activities were made possible due to combined funds from the Melbourne Medical School, Melbourne School of Population and Global Health, School of Dentistry, School of Health Sciences, and Climate CATCH Lab. The workshop aimed to identify and prioritise key research directions to advance environmental sustainability in healthcare.

Acknowledging the healthcare sector's substantial contribution to climate change, and the corresponding benefits of climate action for both the health system and its workforce, the workshop applied systems science and a facilitation approach modelled from the World Health Organization. It focused on developing actionable research and implementation strategies across three key areas: Digital Innovation and Data Science, Materials Efficiency and Circularity, and Workforce and Quality Improvement.

The workshop outcomes have guided allocation of seed research resources to support the development of collaborative proposals, with the aim to initiate flagship research and implementation projects across MDHS. Priority outcomes include; integrating environmental, financial, and patient outcome data into digital health platforms to create effective decision support systems; defining clear indicators for product circularity and local production to inform sustainable procurement choices; and supporting widespread adoption of sustainable practices through targeted education on the co-benefits of environmentally responsible healthcare. By addressing these priorities, the University of Melbourne and its partners aim to lead the shift toward a high-quality, low-carbon healthcare system that delivers long-term benefits for both people and the planet.

The report can be found online [here](#).

The University of Melbourne Hospital Sustainability Toolkit

In a period of changing safety and quality standards and unprecedented attention towards healthcare's contribution to the climate crisis, the University of Melbourne Hospital Sustainability Toolkit was developed by Drs Sonia Chanchlani and Ben Dunne to support health services in their transition towards environmental sustainability. The Toolkit's resources are wrapped within an advisory service delivered by our Sustainable Healthcare team to enable the implementation of the Doctors for the Environment Australia (DEA) Project Tracker, integration of DEA climate, health and environment resources into clinical education, participation in a Health Service Environmental Sustainability Competition, and training from the Sustainability in Quality Improvement Workshops.

The Toolkit is currently being implemented in 2 hospitals operated by Mercy Health. To investigate the successes of this implementation project, our research, evaluation and monitoring is supported by [funding from the Climate CATCH Lab](#) and a National Health and Medical Research Council 2024 Collaborations in Health Services Research Grant led by A/Prof Forbes McGain.

Students in Sustainable Healthcare Research Symposium

The 2nd annual Students in Sustainable Healthcare Research Symposium (Oct 2024) was led by Dr Ben Dunne and MD student Armand Gumera (Johns Hopkins Planetary Health Campus Ambassador) with the support of MMS Department of Surgery and the Climate CATCH Lab (A/Prof Rebecca Patrick) and Prof Eugenie Kayak delivering the keynote address. Twelve student groups showcased innovative sustainable healthcare research projects on topics including waste audits, decarbonising operating theatres, and climate-health policy recommendations, helping to build a pipeline of new sustainability leaders

Grants

[NHMRC 2024 Collaborations in Health Services Research](#). CIA A/Prof Forbes McGain: Project 5 Developing workforce capacity and engagement to deliver low carbon, high value healthcare. CI R Patrick, AI E Kayak, B Dunne. B Dunne is AI for 4 of the 5 projects. (2024) Total \$995,920

The Sustainability Research Toolkit: Strategies for a Greener Tomorrow. *S Parry, E Kayak, S Chanchlani, R Patrick et al.* (2024). MDHS Graduate Research Development Grant. \$14,328.

Planetary Health Education – Co-designing an e-learning package for health professionals. S Parry, S Chanchlani et al. (2024) MDHS Learning and Teaching Initiative Seed Grant. \$10,000.

Transforming Environmental Sustainability in Hospitals: A Toolkit to Facilitate Change (Mercy Health). B Dunne, S Chanchlani, E Kayak, R Patrick. (2024). [Climate CATCH Lab Sapling Fund for implementation research. \\$23,000.](#)

Improving Environmental Sustainability across the NT Health System. S Chanchlani, B Dunne, E Kayak. Climate CATCH Lab Seed Fund for implementation research. (2024). \$31,695.

Reusable gowns project at Peter MacCallum Cancer Centre. B Dunne, S Chanchlani, E Kayak. [Climate CATCH Lab Seed Fund](#) implementation research. (2023). \$21,304.18.

Engagement

The Melbourne Medical School (MMS) continues to demonstrate leadership in sustainable healthcare through meaningful and sustained engagement with its communities, collaborators, and health system stakeholders. A central vehicle for this engagement is our continuing partnership with the Climate CATCH Lab. The Lab brings together researchers, clinicians, and policymakers to accelerate climate and health research, education, and practice.

The MMS sustainable healthcare team is also actively engaged with state and federal health departments and agencies, including the Victorian Department of Health, Safer Care Victoria, the Commonwealth Department of Health, Disability and Ageing and the National Health, Sustainability and Climate Unit, contributing to policy development, strategic frameworks, and implementation planning for sustainable and climate-resilient healthcare. Prof Eugenie Kayak also serves on the Australian Government's Climate and Health Expert Advisory Group ([CHEAG](#)) and co-chaired the Council of Australian Therapeutic Advisory Groups (CATAG) [Desflurane Position Statement](#) Advisory Group.

The team leads multiple internal Communities of Practice. The MMS Sustainability & Planetary Health Action Network (SPHAN) of over 50 honorary MMS clinicians is convened by Prof Eugenie Kayak. Similarly, the Environmentally Sustainable Surgery Network (ESSN), led by Dr Ben Dunne, connects consultant surgeons across MMS-affiliated health services to coordinate clinical sustainability projects and supervise student research.

Additional activities include participation in the 2024 Innovation by Design Program (Prof Eugenie Kayak, A/Prof Rebecca Patrick, Dr Sonia Chanchlani) and the highly successful Sustainable Healthcare Alumni Event in May 2024.

Recognition for this work is reflected in several recent awards. Dr Sonia Chanchlani received the University of Melbourne Sustainability Staff Changemaker Award (2024), and the Climate CATCH Lab was honoured with the Melbourne School of Population and Global Health Engagement Impact Award (2024). The University of Melbourne Health Service Environmental Sustainability Competition was shortlisted as a finalist the 2024 Victorian Sustainable Hospital Award. Prof. Eugenie Kayak was invited to be the Australasian visitor at the Australian and New Zealand College of Anaesthetists (ANZCA) 2025 Annual Scientific Meeting (ASM).

Together, our partnerships, networks, and advisory roles exemplify MMS's strategic commitment to leading sustainable healthcare transformation through genuine engagement and cross-sector collaboration.

The Health Service Environmental Sustainability Competition

Engagement with healthcare providers is ongoing and system wide. MMS supports continuous collaboration with affiliated health services through initiatives such as the [University of Melbourne Health Service Environmental Sustainability Competition](#), a flagship initiative of the MMS Sustainable Healthcare team that catalyses the development and implementation of sustainability projects to enhance patient care while reducing environmental impact within health service institutions. Initiated by Dr Ben Dunne at Royal Melbourne Hospital and now in its fourth successful year, the program was [shortlisted for a Victorian Public Healthcare Award in 2024](#).

The competition supports the full project lifecycle, including project planning, SusQI education, mentorship and implementation. Projects span key focus areas including clinical care, energy efficiency, waste

reduction, and sustainable facilities management. Outcomes are evaluated based on environmental impact, cost-effectiveness, and improvements to healthcare delivery.

The 2024 participating institutions included the Royal Melbourne Hospital, Peter MacCallum Cancer Centre, and the Royal Women's Hospital. Collectively, 44 projects led by frontline clinical and non-clinical staff have delivered impressive results over the past three years, enhancing patient care with cumulative financial and environmental savings amounting to: \$2.1 million; 2.7 million kg of CO₂e emissions; 4.7 tonnes of waste and 1 million single use items diverted from landfill.

The 2025 competition launch was hosted by Peter MacCallum Cancer Centre in June. It was a highly successful event with over 60 attendees and past competition entrants showcasing their projects. We expect 9 health services to participate this year, reflecting the growing momentum and sector-wide commitment to environmentally sustainable healthcare. With increasing engagement, we anticipate further enhancements to patient care with measurable reductions in carbon emissions, costs, and waste - cementing the competition as a key stimulus to sustainable healthcare transformation in Victoria.



Photo (L-R): Dr Sonia Chanchlani (Sustainability, Climate and Health Senior Fellow, University of Melbourne), Professor Jason Payne (CEO, Peter MacCallum Cancer Centre), Dr Ben Dunne (Sustainable Healthcare Senior Fellow, University of Melbourne), Professor Eugenie Kayak (Enterprise Professor in Sustainable Healthcare, University of Melbourne), Professor Rosemary McKenzie (Peter MacCallum Cancer Centre Board Chair), Paul Urquhart (Chief Corporate Officer, Royal Melbourne Hospital).

Publication - snapshot

[Six ways good climate policies can improve our health and our economy.](#) B Workman, H Morrice, E Kayak, K Bowen. (2025) Pursuit.

[Evaluation of a protocol to reduce the environmental impact of anaesthetic gases: Comment on.](#) F McGain, E Balmaks, E Kayak, C Woinarski, A Hull, S Williams, J Muret. (2025) BJA 133 (6): 1489-1491

[Environmental impact of pressurised metered dose inhalers versus dry powder and soft mist inhalers at a tertiary Melbourne hospital](#) A Cushnahan, B Leaver, B Dunne, J Allman, M Rees. (2024) *Intern Med J.* 2024;54(11):1898-1902. doi:10.1111/imj.16530

[Reusable surgical headwear has a reduced carbon footprint and matches disposables regarding surgical site infection: a systematic review and meta-analysis.](#) A Gumeru, M Mil, L Hains, SR Fanshaw, B Dunne. (2024) *J Hosp Infect.* 2024;152:164-172. doi:10.1016/j.jhin.2024.07.017

[Variations of nitrous oxide procurement per public hospital bed between Australian states and territories. A cross-section analysis.](#) E Hu, H Burch, E Kayak, F McGain. *Anaesth Intensive Care* 2024 Sep;52(5):321-327. doi: 10.1177/0310057X241262796. Epub 2024 Aug 30.

[Detecting and reducing nitrous oxide leaks in healthcare facilities: a practical guide.](#) E Kayak, F McGain, H Burch, B Dunne, Y Gu, J Davies, R McIntyre, D Story, C Mitchell, S Gaff, E Balmaks, J Skowno, C Woinarski, J Correy, S Chanchlani, G Cooper, A Wyns, M Skellern. (2024) Interim Australian Centre for Disease Control, Department of Health and Aged Care.

[How we can reduce the environmental impact of our operating theatres: a narrative review.](#) R Roscioli, T Wyllie, K Neophytou, B Dunne et al. (2024) *ANZ J Surg.* 2024;94(6):1000-1010. doi:10.1111/ans.18770

[Healthcare has a waste problem but we can achieve net zero.](#) ZC Calulo, S Parry, S Chanchlani, F McGain, E Kayak, R Patrick. (2024) Pursuit.

[Environmental sustainability in simulation education in healthcare.](#) S Chanchlani, K Martin, & B Dunne. (2024). *Int J Healthc Simul*, 10. Doi: 10.54531/mqqv2910

[Planetary health: a new standard for medical education.](#) CG Pendrey, S Chanchlani, LJ Beaton, DL Madden. (2023) *Med J Aust.* 219(11):512-515. doi:10.5694/mja2.52158

Key Presentations & Plenaries

The MMS Sustainable Healthcare team has presented and contributed to numerous scientific meetings, conferences and seminars over 2024/25 including at the:

Australian and New Zealand College of Anaesthetists, Annual Scientific Meeting 2024 & 2025

The Hatchery Conference – Sustainable Healthcare Conference 2025

28th Prevocational Medical Education Forum 2024

Australasian Forum on Patient-Centred Value-Based Healthcare 2024

Australian Medical Association National Conference 2024

Greening the Healthcare Sector Forum 2024 – Global Green and Healthy Hospitals

International Forum on Safety and Quality in Healthcare 2024

Royal Australasian College of Medical Administrators Annual Scientific Meeting Conference 2024

Royal Australian College of Surgeons Annual Scientific Congress 2024

Shaping the Future of Environmental Sustainability & Healthcare access (UTS Ultimo)

The University of Melbourne Medical Students Conference 2024

The University of Melbourne

Grattan Street, Parkville, Victoria 3010 Australia

t 13 MELB (13 6352)

+61 3 9035 5511 (International)

unimelb.edu.au



THE UNIVERSITY OF
MELBOURNE