Royal Australasian College of Surgeons POSITION PAPER | 2026 Climate Change, Health, and Sustainable Surgical Practice

SECTION 1

RACS Position

The Royal Australasian College of Surgeons (RACS) holds the following positions on climate change, fossil fuels, and the environmental sustainability of surgical care. These positions are grounded in the scientific consensus, the lived experience of the communities we serve, and our professional obligation to do no harm to patients, and to the planet on which their health depends.

1	**Climate change is the greatest threat to human health of the 21st century.[1]** RACS accepts the unambiguous scientific consensus that the Earth's climate is warming due to human activity.[2] Climate change is not a future risk, it is already causing avoidable deaths, illness, and suffering across Australia, Aotearoa New Zealand, and the Pacific region. Every fraction of a degree of further warming increases that harm. Surgeons see the consequences of climate change in their operating theatres every day: trauma from extreme weather events, cardiovascular and respiratory disease driven by air pollution, and the compounding health burdens of communities already facing disadvantage.
2	**Fossil fuels are the primary driver of climate change and must be rapidly phased out.** Fossil fuel combustion is responsible for the overwhelming majority of the greenhouse gas emissions driving climate change.[2] RACS calls upon Australian and Aotearoa New Zealand governments to limit new fossil fuel extraction projects, rapidly reduce existing extraction and use, end fossil fuel subsidies, invest in renewable energy as a health imperative, and require fossil fuel companies to be accountable for the health and environmental harms they cause. This is the single most impactful policy action available to protect the health of current and future generations.
3	**Surgical care must decarbonise, without compromising patient safety or quality of care.** The health sector contributes approximately 5–7% of national greenhouse gas emissions in Australia and Aotearoa New Zealand,[3-5] with operating theatres among the most resource-intensive environments in any hospital. RACS commits to leading the decarbonisation of surgical practice through sustainable models of care: advocating for the elimination of low-value and unwarranted surgery, optimising care pathways to reduce unnecessary resource use, expanding ambulatory and day-case models, and embedding responsible stewardship of products, energy, and supplies into everyday surgical practice. Sustainability and quality of care are complementary, not competing.
4	**The health impacts of climate change are not borne equally, and equity must be central to the transition.** The energy transition must be designed to close health gaps, not widen them. Aboriginal and Torres Strait Islander peoples, Māori, Pacific peoples, rural and remote communities, those experiencing socioeconomic disadvantage, the elderly, and people with disability face disproportionate health burdens from climate change. RACS is committed to health equity and to the leadership of Indigenous peoples in all of its climate and sustainability work.

INTRODUCTION

2.1 Purpose

This paper sets out the positions, actions, and commitments of the Royal Australasian College of Surgeons (RACS) on environmental sustainability and responding to climate change impacts on health.

It recommends actions by governments in Australia and Aotearoa New Zealand, by hospitals and health services; and by surgeons and surgical teams.

Together these constitute a call for coordinated action across the policy, system, and practice levels at which the decarbonisation of surgical care must occur.

2.2 About the Royal Australasian College of Surgeons

RACS is the leading advocate for surgical standards, education, and training in Australia and Aotearoa New Zealand. RACS trains and supports surgeons across nine surgical specialties, general surgery, orthopaedic surgery, cardiothoracic surgery, neurosurgery, paediatric surgery, plastic and reconstructive surgery, urology, vascular surgery, and otolaryngology head and neck surgery, and represents a community of over 7,000 Fellows and more than 1,500 surgical trainees across both countries.

RACS is committed to providing high-quality, accessible, equitable, and culturally safe surgical care that delivers fair health outcomes to our diverse communities. This commitment extends to the health of the environments and communities in which our members live, train, and practise. Health advocacy is a core surgical competency and a defining value of this College. This position paper is bi-national in scope and addresses the obligations and opportunities of RACS, its members, and the governments of Australia and Aotearoa New Zealand.

The College acknowledges and pays deep respect to the Traditional Custodians and Elders, past, present, and emerging, of all the lands and waters on which RACS members and staff live, learn, and work. RACS acknowledges Māori as tangata whenua and recognises the enduring obligations established under Te Tiriti o Waitangi.

2.3 Acknowledgements

RACS gratefully acknowledges the following organisations whose work has informed this position paper:

- The Royal Australasian College of Physicians (RACP), whose 2026 position paper A Healthy Future Beyond Fossil Fuels provided foundational evidence on the health impacts of fossil fuels and the energy transition in Australia and Aotearoa New Zealand.[6]
- The UK Health Alliance on Climate Change, Brighton and Sussex Medical School, and the Centre for Sustainable Healthcare, whose Green Surgery Report (2023) provides the international evidence base for decarbonising surgical care. RACS was a contributing organisation to this report.[7]
- The Health College Working Group on Climate Change, whose Framework for Collaborative Action on Climate and Health (2025) sets out the shared commitments of Australian health colleges, including RACS.[8]
- The Australian Government Department of Health and Aged Care, whose National Health and Climate Strategy (2023) provides the national framework for health sector climate action in Australia.[4] The Department of Climate Change, Energy, the Environment and Water (DCCEEW) and Australian Climate Service, whose National Climate Risk Assessment informs the evidence base for climate impacts on communities and health systems.[9]

SECTION 3

Foundations: Indigenous Partnership and Health Equity

3.1 Aboriginal and Torres Strait Islander Peoples

RACS acknowledges and respects Aboriginal and Torres Strait Islander peoples as the First Peoples of Australia. The Uluru Statement from the Heart (2017) restates this sovereignty and calls for truth-telling, Makarrata, and Aboriginal and Torres Strait Islander-led governance.[10] Australia has endorsed the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), which affirms the rights of Indigenous peoples to self-determination, to their lands, waters, and territories, and to the conservation and protection of the environment and the productive capacity of their lands.[11]

For Aboriginal and Torres Strait Islander peoples, health and identity are inseparable from connection to Country. The physical, spiritual, and cultural relationship with land, water, and natural ecosystems is foundational to social and emotional wellbeing. Climate change compounds the health harms of colonisation. It threatens Country, disrupts cultural practices, contaminates waterways, and deepens pre-existing inequities in health, housing, and economic security. Aboriginal and Torres Strait Islander communities, particularly those in coastal, tropical, and remote areas, face disproportionate exposure to extreme heat, flooding, and sea level rise. Australia's National Climate Risk Assessment recognises Aboriginal and Torres Strait Islander peoples as one of the key systems most at risk from climate change.[9]

RACS recognises that Aboriginal and Torres Strait Islander peoples must be leaders, not passive recipients, in climate and health policy. Indigenous ecological knowledge offers profound insight into land management, adaptation, and resilience. Governance mechanisms, research, and quality improvement work in this space must be developed in genuine partnership with Aboriginal and Torres Strait Islander communities, with Indigenous data sovereignty upheld at every stage. RACS commits to this principle across all of its climate and sustainability work.

3.2 Māori

RACS honours te Tiriti o Waitangi (te Tiriti) as one of the founding documents of Aotearoa New Zealand. We recognise the tangata whenua status of Māori in caring for the wellbeing of people, culture, land, waterways, and the natural environment in Aotearoa New Zealand, and the value of mātauranga Māori. Māori communities, iwi, hapū, and whānau, must be comprehensively involved in decision-making, planning, development, and the delivery of climate actions and policy.

The health impacts of climate change will vary between different population groups based on socioeconomic factors, age, ethnicity, culture, geographic location, and health status. Māori already experience gross inequities in disease burden, access to health services, housing quality, and socioeconomic status. In general, the lower an individual's socioeconomic position, the worse their health. These disparities are expected to be exacerbated by climate change impacts. Māori are disproportionately affected by poorer quality housing, overcrowding, and crowding-related illness, and will consequently be more affected by increased housing pressure, sea level rise, flooding, and coastal erosion. Māori have inequitably higher burdens of climate-sensitive disease such as cardiovascular and respiratory illness, asthma, and allergic diseases. Inequitable rates of mental illness and suicidal behaviour among Māori are likely to increase.

Māori have the right to accessible, equitable, culturally competent, and culturally safe healthcare, and this is not universally available. Some features of te ao Māori and cultural practice increase vulnerability to climate impacts. The concentration of Māori in areas of the North Island, including Te Tai Tokerau, Tāirawhiti, and Hawke's Bay, where many communities, marae, and historical sites are situated near coastal areas at higher risk from sea-level rise, coastal erosion, and increasing incidence of waterborne disease, is a significant factor. Recent extreme weather events and flooding have had a disproportionate effect on the coastal and impoverished communities. There are also substantial implications for the Māori economy, which is predominantly invested in climate-sensitive primary industries.

With careful government policy and planning, including health and equity impact assessments, it is possible for current inequity to be reduced, future inequities to be avoided, and the health co-benefits of climate action to be realised. For this to occur, Māori must be partners in the development of health policy, and health must be at the centre of climate policy. Te Tiriti can provide a foundation for climate resilience in Aotearoa New Zealand. RACS supports iwi and hapū assertions of rangatiratanga (autonomy) under te Tiriti to manage climate change risks and promote the wellbeing of their people, ancestral land, water, sites, wāhi tapu, valued flora and fauna, and other taonga. RACS recognises the value of mātauranga Māori in addressing climate change and a wider range of impacts on the natural environment.

3.3 Health Equity as a Foundational Commitment

Climate change is, fundamentally, a health equity issue. Its causes are concentrated in high-income economies and industries; its worst consequences fall on those who contributed least to the problem and who are least resourced to adapt.

Within Australia and Aotearoa New Zealand, the communities most exposed to climate health harms are frequently the same communities who face the greatest barriers to accessing high-quality surgical care. Populations experiencing the greatest socioeconomic disadvantage in Australia and Aotearoa New Zealand have reduced life expectancy of 7.6[12] and 5.9 years respectively compared with more advantaged populations.

The International Court of Justice's 2025 Advisory Opinion on climate change confirmed that countries have binding obligations under international law to protect the climate system from greenhouse gas emissions, and that continued fossil fuel production, subsidies, and licensing may, depending on the circumstances, give rise to internationally wrongful conduct.[13] Fossil fuel-driven air pollution alone is estimated to cause over five million excess deaths globally each year.[14] The case for urgent action is beyond dispute.

RACS calls on governments in Australia and Aotearoa New Zealand to approach climate action and energy transition as a combined health and equity programme, with Indigenous leadership, community partnership, and equity impact assessment embedded from the outset.

Decarbonising surgery and advocating for climate action are not separate from the imperative to reduce surgical inequity, they are expressions of the same underlying commitment to health for all. RACS will ensure that equity considerations are actively embedded in all of its climate and sustainability actions and will resist any approach that reduces emissions at the cost of worsening health outcomes for vulnerable populations. The energy transition must be designed from the outset to deliver co-benefits for health equity.

> *"Tackling climate change could be the greatest global health opportunity of the 21st century." — The Lancet[15]*

SECTION 4

Climate Change as a Threat to Health

4.1 Fossil Fuels Are Driving Climate Change

The scientific consensus is unambiguous: climate change is caused by human activity, and fossil fuel combustion is its primary driver.

The Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report confirms that global temperatures have already increased by approximately 1.1°C above pre-industrial levels,[2] with Australia having warmed by approximately 1.5°C since 1910.[16] Temperatures in Aotearoa New Zealand have also risen measurably. Annual carbon dioxide emissions from fossil fuels continue to rise globally. Methane, the principal component of natural/fossil gas, traps 82 times the heat energy of carbon dioxide over a 20-year period,[2] making the ongoing extraction and use of gas a significant near-term climate risk. Continued fossil fuel use makes achieving the Paris Agreement goal of limiting warming to 1.5°C increasingly unlikely.

Australia is among the world's largest per capita greenhouse gas emitters and one of the largest exporters of coal and gas. According to the Australian Government Department of Climate Change, Energy, the Environment and Water, 74% of natural gas production, 88% of black coal production, and 96% of crude oil production are exported.[17] Aotearoa New Zealand is pursuing increased extraction and exports of metallurgical coal. The ongoing extraction and export of fossil fuels by both countries carries global health responsibility, emissions do not stop at national borders, and the health harms of a warming climate fall hardest on populations in the Pacific and broader Asia-Pacific region who have contributed least to causing them.

4.2 Climate Change has both Direct and Indirect Health Impacts

The health impacts of climate change are already being experienced across Australia, Aotearoa New Zealand, and the Pacific, and will intensify with every additional increment of warming. These impacts are directly relevant to surgical practice, through the patients whom surgeons treat and through mounting pressure on the health systems within which surgery is delivered.

Direct impacts include: extreme heat events causing cardiovascular and renal illness and excess mortality; worsening air quality from bushfire smoke and fossil fuel combustion driving respiratory and cardiovascular disease; changing patterns of infectious and vector-borne disease; increased mental health burden from disaster events, community displacement, and ecological grief; adverse perinatal and neonatal outcomes associated with heat and air pollution exposure; and physical trauma, burns, crush injuries, near-drowning, from extreme weather events that require acute surgical care. Climate change is already increasing the frequency and severity of these events.

Indirect impacts operate through the social and economic determinants of health. Food and water security are threatened by drought, flooding, and disruption to agricultural systems, with particular impact on rural, remote, and First Nations communities. Sea level rise threatens housing in coastal areas where many Māori, Pacific, and Aboriginal and Torres Strait Islander communities live. Economic disruption compounds inequality.

Australia's National Health and Climate Strategy (2023) explicitly recognises the impact of climate change on healthcare workforce sustainability, noting that climate-related factors, including extreme heat, poor air quality, and community dislocation, are already influencing the recruitment and retention of health workers in regional and remote areas.[4]

Impacts on surgical care delivery represent a third and underappreciated dimension. Extreme weather events do not only generate surgical patients, they disrupt the capacity of surgeons to provide care. Hospitals in flood- or fire-affected areas have been forced to cancel elective procedures, divert emergency patients, and operate under degraded infrastructure. Power outages threaten theatre function, cold chains for implants and biologics, and the integrity of sterilisation processes. Mass casualty events from climate-related disasters create sudden surges in demand for surgical and trauma care that exceed the capacity of regional health systems.

As these events become more frequent and more severe, building climate resilience into surgical service planning is no longer optional, it is an essential component of safe care delivery.

4.3 Navigating the Complexities of the Fossil Fuel Transition

RACS recognises that calling for the rapid phase-out of fossil fuels and near-term action on fossil fuels will deliver real health benefits and cost savings, cleaner air, reduced disease burden, and avoid climate damages. However, it must be a just transition to avoid creating new harms to vulnerable communities and to the healthcare system.

Drawing on the Royal Australasian College of Physicians' 2026 position statement A Healthy Future Beyond Fossil Fuels,[6] RACS identifies the following key complexities to be addressed in any credible fossil fuel transition:

Key complexities in transitioning away from fossil fuels

- Phasing out fossil fuels rapidly without compromising Indigenous justice, health equity, or planetary health. Near-term action brings real health benefits and cost savings, but the transition must be designed to protect, not burden, the most vulnerable communities.
- Ensuring renewable energy projects are co-designed with Indigenous and local communities, alongside health and environmental experts, recognising matauranga Māori and other Indigenous knowledge, so the transition does not replicate the extractive and exclusionary patterns of the fossil fuel era.
- Maintaining energy security, accessibility, affordability, and reliability as coal, gas, and oil are phased out, recognising energy poverty is itself a determinant of poor health.
- Supporting the health, safety, and livelihoods of workers in fossil fuel industries as they transition into new roles, including in the renewables sector. A just transition requires genuine investment in people, not just systems.
- Partnering with communities to meet place-based needs while ensuring coordination and funding from governments and the sharing of best practice, community-led responses require central investment and enabling policy frameworks to succeed.

These complexities do not diminish the urgency of action, they shape how that action must be taken.

RACS calls on governments in Australia and Aotearoa New Zealand to approach the energy transition as a combined health and equity programme, with Indigenous leadership, community partnership, and equity impact assessment embedded from the outset.

SECTION 5

The Carbon Footprint of Surgical Care

5.1 Healthcare's Contribution to Emissions

The healthcare sector is a significant contributor to greenhouse gas emissions and the surgical profession bears responsibility within that. In Australia, the health system contributes an estimated 5.44% of the national carbon footprint, with hospitals accounting for approximately half that.[3,4,25] In Aotearoa New Zealand the health sector is estimated to generate between 3 and 8% of national greenhouse gas emissions[5]; the single largest emitter within the public service. Globally, healthcare contributes approximately 4.4% of total greenhouse gas emissions, equivalent to the combined annual emissions of more than 500 coal-fired power stations.[18]

Supply chain, or Scope 3, emissions represent the largest share of healthcare's carbon footprint: in Australia, approximately 68% of health system emissions arise from pharmaceuticals, medical devices, food and catering, and business services.[3] This means much of surgery's carbon footprint is embedded in the products used in every operating theatre, long before they arrive on the instrument tray. There is a clear moral tension in a profession that treats the health consequences of climate change while simultaneously contributing to the emissions which drive it.

5.2 Where Surgical Emissions Come From

Although they occupy a relatively small physical area of any hospital, operating theatres are estimated to be three to six times more energy-intensive than the rest of the building,[19] and generate between 20 and 30% of total hospital waste.[26] The carbon footprint of surgical care in the United Kingdom alone was estimated at 5.7 million tonnes of CO_2 equivalent in 2019.[7] The Green Surgery Report (2023), to which RACS was a contributing organisation, identifies four principal emission hotspots in the operating environment:

Emission source	Key facts and implications for surgical practice
Single-use products	**Manufacture is the dominant source of carbon emissions from surgical products,** not sterilisation, transport, or disposal. Research from Rizan et al[20] has demonstrated across five common surgical operations that manufacturing processes account for the large majority of product-related carbon emissions. This has important implications: reducing the manufacture of unnecessary disposable items, not merely improving end-of-life management, is the primary lever. Rationalising instrument sets, eliminating unused items from procedure packs, and transitioning to reusable alternatives where clinically safe are therefore high-priority actions.
Energy consumption	**Transitioning operating theatres away from fossil fuels and improving energy efficiency** are essential steps in decarbonising surgical care. Theatres require continuous high-volume ventilation, precision lighting, and constant equipment readiness, making them three to six times more energy-intensive than the rest of the hospital. Most Australian and New Zealand health facilities remain partially or fully reliant on gas for heating and hot water. Electrification of healthcare infrastructure, combined with investment in renewable energy sourcing and energy efficiency measures, is central to achieving meaningful emissions reductions.
Supply chains (Scope 3)	**Approximately 68% of Australian health system emissions arise from supply chains,** pharmaceuticals, medical devices, implants, and business services.[3] Surgical specialties are among the highest consumers of these products. Alongside reforming internal procurement frameworks, RACS and its members have a critical role in direct advocacy and engagement with industry: using the collective influence of the surgical profession to drive manufacturer transparency, demand credible emissions reduction commitments, and accelerate the availability of lower-carbon products and devices.
Anaesthetic gases	While primarily the domain of anaesthesia, volatile anaesthetic agents are a recognised emission source in the operating theatre environment. Desflurane has a global warming potential approximately 2,540 times that of CO_2 over 100 years.[21] Surgeons have a shared interest in supporting low-carbon anaesthetic practices, including preference for regional and local anaesthetic techniques and total intra-venous anaesthesia where clinically appropriate.

5.3 Quality Surgical Care and Sustainability Share the Same Goal

The evidence is clear that reducing the carbon footprint of surgical care and improving its quality are not competing objectives, they are, in most cases, expressions of the same clinical priorities. Eliminating procedures that do not benefit patients removes both patient harm and unnecessary emissions. Optimising a patient's health before an operation reduces complications, length of stay, and resource consumption. Expanding the range of surgery performed safely in ambulatory settings reduces the carbon cost of each care episode while improving patient experience. Choosing reusable equipment where the evidence supports it reduces cost and waste simultaneously.

This unifying principle, that sustainable surgery is better surgery, underpins everything in Section 6. The practical actions available to surgeons, departments, and health systems to decarbonise surgical care are not add-ons to good practice. They are good practice.

Sustainable surgery is better surgery. The actions that reduce the carbon footprint of surgical care are, in the great majority of cases, the same actions that improve patient outcomes, reduce waste, and deliver higher-value care.

Decarbonising Surgical Care Delivery

The actions available to surgeons, departments, and health systems to reduce the carbon footprint of surgical care span the entire care pathway, from the decision to operate, through the conduct of the procedure, to the management of products, energy, and supply chains that support it. This section sets out the principal domains of action, drawing on the Green Surgery Report (2023)[7] and the emerging Australasian evidence base.

6.1 Sustainable Models of Care

Decarbonising surgical care is fundamentally a models-of-care challenge. The greatest determinants of environmental impact arise from how surgical care is indicated, planned, and delivered across the patient pathway, rather than from intraoperative efficiencies alone. Approaches that reduce unnecessary resource use across this pathway are closely aligned with established principles of high-quality, high-value, patient-centred care.

High-value care and reduction of low-value investigations and interventions. Eliminating low-value or unwarranted investigations and interventions represents the highest-leverage opportunity to reduce the environmental impact of surgical care. Diagnostic imaging, pathology testing, and surgical procedures that provide limited or no clinical benefit generate avoidable emissions across the entire care pathway, including energy use, consumables, and downstream activity. Embedding appropriateness into clinical decision-making through evidence-based indications, shared decision-making, and multidisciplinary review is both a quality and a sustainability imperative. RACS supports the systematic reduction of low-value care within clinical governance frameworks, consistent with value-based healthcare approaches such as those advanced by the RACS Evolve program.

Optimised patients and perioperative pathways. Complications, prolonged hospitalisation, and unplanned critical care utilisation are major drivers of both cost and emissions in surgical care. Prehabilitation and perioperative optimisation, including nutritional support, smoking cessation, physical conditioning, and management of comorbidities, improve surgical outcomes while reducing resource use. Structured perioperative pathways, including enhanced recovery approaches, should be considered core components of sustainable surgical systems.

Right setting of care. Redesigning surgical care to deliver procedures in the most appropriate setting is a key strategy for reducing environmental impact. Ambulatory and day-case surgery avoids the substantial resource requirements associated with inpatient care, including energy use, catering, linen, and staffing. As evidence continues to support the safety and effectiveness of same-day pathways for a growing range of procedures, health systems should prioritise models that maximise appropriate ambulatory care, supported by careful patient selection and robust post-discharge support.

Distributed and virtual care. Delivering care closer to home reduces both system emissions and patient burden. Telehealth and virtual models reduce travel-related emissions for patients and clinicians and improve access, particularly for rural and remote populations. Virtual consultations for pre-operative assessment and post-operative follow-up should be embedded where clinically appropriate, alongside broader efforts to strengthen community-based surgical care pathways.

These models of care share a common principle: they reduce emissions by reducing unnecessary or inefficient use of healthcare resources, while simultaneously improving patient outcomes, experience, and system efficiency. Sustainable surgical care is therefore best understood not as an additional objective, but as an integral component of high-quality surgical practice.

6.2 Products, Waste, and the Circular Economy

The products used in surgical care, and how they are managed before, during, and after use, represent one of the largest and most tractable areas of surgical carbon emissions. As Rizan et al. [20] demonstrate, the primary opportunity lies in reducing the manufacture of unnecessary disposable products, not improving their

disposal. RACS endorses the five Rs framework from the Green Surgery Report as the organising principle for product stewardship in surgical care:

R	Principle	Changes we must make in surgical care
R	**Reduce**	Use only what is clinically necessary. Rationalise instrument sets and surgical drape packs to remove items routinely opened but unused. Apply a 'minimum necessary' approach to consumable use. Avoid over-investigation in the perioperative period.
R	**Reuse**	Lifecycle analysis consistently demonstrates that reusable gowns, drapes, instrument trays, and many devices have a lower whole-of-life environmental footprint than single-use equivalents when properly managed. RACS supports evidence-based adoption of reusable equipment where safety standards are met.
R	**Recycle**	Improve waste segregation to divert recyclable materials, plastics, cardboard, metals, from landfill and from regulated medical waste streams. Up to 90% of waste classified as regulated medical waste in operating theatres may be non-hazardous.[22] Correct classification dramatically reduces high-energy waste processing.
R	**Rethink**	Challenge the cultural norms and historical practices that have normalised excessive single-use product consumption in surgery. Engage surgical teams, nurses, and administrators in sustainability governance. Adopt the Intercollegiate Green Theatre Checklist as a standard tool for theatre teams.[23]
R	**Research**	Support and conduct research into the environmental impact of specific surgical products, procedures, and care models in the Australasian context. Publish and share findings. Contribute to the growing international evidence base for sustainable surgery, including safely de-implementing low-value investigations and interventions.

6.3 Theatre Operations, Energy, and Product Stewardship

Operating theatres are among the most energy-intensive environments in any hospital, with continuous demand from lighting, ventilation, anaesthetic equipment, and supporting infrastructure. RACS endorses the Intercollegiate Green Theatre Checklist as a practical framework to embed sustainability into routine theatre practice.[23] Key actions include:

- **Equipment shutdown and standby protocols between cases:** Turning off unused anaesthetic machines, monitors, suction, and lighting during non-operative periods can substantially reduce energy consumption, with studies reporting reductions of up to 30–50% during idle periods.
- **Lighting and HVAC optimisation:** Transitioning to energy-efficient LED surgical lighting, implementing motion sensors in non-clinical areas, and optimising HVAC systems, including reducing air change rates during non-operative periods where infection prevention standards permit, can deliver significant energy savings.
- **Transition to all-electric infrastructure:** New hospital builds and major theatre refurbishments should be designed as all-electric systems, eliminating on-site fossil fuel combustion. Electrification enables alignment with decarbonising electricity grids and is a critical long-term strategy for reducing healthcare emissions. RACS calls on Australian and Aotearoa New Zealand governments to mandate all-electric standards for new health facility construction and to fund retrofit programs for existing infrastructure.
- **Renewable energy and system resilience:** Health services should pursue on-site renewable energy generation and renewable electricity procurement, including power purchase agreements. Energy storage investment also strengthens surgical services' ability to operate during grid disruptions caused by extreme weather events.
- **Instrument set and consumable rationalisation:** Audit instrument sets and procedure-specific packs to identify and remove routinely unused items, particularly single-use disposables. Adopt reusable gowns, drapes, and instrument trays where lifecycle evidence supports them and safety standards are met. Implement waste segregation protocols to ensure non-hazardous theatre waste is not misclassified as regulated medical waste, as misclassification can increase processing energy costs up to eightfold.

Reducing energy use and rationalising product consumption in operating theatres requires coordinated action across clinical teams, facilities management, and health service leadership. Embedding these measures within capital planning, infrastructure standards, and routine operating procedures will be essential to achieving sustained emissions reductions.

6.4 Supply Chains and Procurement

Supply chain emissions account for approximately 68% of the Australian health system's carbon footprint.[3] Procurement decisions made by surgical departments and health services therefore have substantial environmental impact.

RACS calls on hospitals and health services to embed sustainability into procurement frameworks. This includes requiring manufacturers and suppliers to disclose the lifecycle carbon footprint of their products; preferentially selecting suppliers with validated emissions reduction targets; incorporating environmental criteria alongside cost and clinical performance in tender evaluation; and actively engaging industry partners in circular economy approaches, including reducing packaging, reprocessing where appropriate, and implementing take-back schemes for devices and materials.

RACS calls on Australian and Aotearoa New Zealand governments to establish national procurement standards for medical devices and surgical consumables that include mandatory lifecycle carbon disclosure and progressively tightening carbon performance requirements. The collective purchasing power of public health systems is a critical lever for driving industry-wide decarbonisation.

Sustainable procurement must also address ethical risks within global medical supply chains. The production of surgical instruments, textiles, gloves, and consumables has been associated with exploitative labour practices in some settings, including forced and child labour. These risks are often embedded deep within complex supply chains and are not visible through conventional procurement processes. Addressing them requires systematic due diligence, supplier transparency, independent auditing, and alignment with national modern slavery legislation in Australia and Aotearoa New Zealand. Integrating social and environmental criteria within procurement frameworks strengthens both ethical governance and supply chain resilience.

6.5 Building Climate Resilience into Surgical Services

National climate risk assessments in Australia and Aotearoa New Zealand highlight increasing risks to critical infrastructure and health services from extreme heat, bushfires, flooding, and severe storms.[9] Surgical services, with their reliance on energy-intensive infrastructure, specialised equipment, and complex supply chains, are particularly exposed. Hospitals and health services must plan not only to reduce their contribution to climate change, but to remain operational and safe as climate impacts intensify. For surgical services, this requires:

- **Business continuity and emergency preparedness:** Developing and regularly rehearsing plans for theatre operations during extreme weather events, including mass casualty surges, power disruptions, flooding, and bushfire smoke events affecting staff availability and air quality.
- **Energy security for critical infrastructure:** Ensuring reliable power for operating theatres through on-site generation and battery storage, reducing vulnerability to grid outages during extreme weather.
- **Cold chain integrity and supply continuity:** Maintaining safe storage conditions for implants, biologics, and surgical consumables during heatwaves and supply disruptions, supported by contingency stock management and robust temperature monitoring systems.
- **Surge capacity and workforce planning:** Preparing for increased demand for trauma and emergency surgery following climate-related disasters, including pre-agreed protocols for scaling back elective surgery and redeploying surgical teams.
- **Climate-resilient infrastructure design:** Designing new surgical facilities and theatre suites to maintain safe operating conditions during extreme heat and other climate stressors, while minimising reliance on energy-intensive cooling systems.

Climate resilience and decarbonisation are not separate agendas. Investments in on-site renewable energy, efficient building design, and resilient supply chains simultaneously reduce emissions and strengthen the capacity of surgical services to withstand climate-related shocks. RACS calls on health systems and governments to treat climate resilience planning for surgical services as a core patient safety priority.

SECTION 7

RACS Actions and Commitments

RACS does not approach the challenge of climate change and sustainable surgical practice as an external policy matter to be observed from a distance. Since 2018, when the College published its foundational position paper on the environmental impact of surgical practice, RACS has been building a programme of action across education, research, advocacy, partnerships, and its own operations. This section sets out what RACS has already done, what is currently underway, and what the College commits to doing next.

7.1 The Environmental Sustainability in Surgical Practice Working Party

The Environmental Sustainability in Surgical Practice Working Party (ESSPWP) was established in 2019 as the primary governance and action body for RACS's climate and sustainability work. It operates across four domains: education, research and policy, industry engagement, and advocacy. The ESSPWP has driven the majority of the initiatives described in this section and continues to provide direction for RACS's commitments under this position paper paper. RACS is committed to sustaining and resourcing the ESSPWP as a permanent feature of its governance structure, reflecting the long-term nature of the challenges addressed in this position paper.

7.2 Education and Training

Embedding environmental sustainability in surgical education is a long-term commitment, not a one-off initiative. RACS has developed and continues to expand its sustainability education offering:

CPD modules. Three CPD e-learning modules are now live on the RACS platform, together constituting one CPD hour and open to all Fellows, trainees, and junior doctors. The modules cover: how climate change will impact surgical diseases and care delivery; principles of sustainable surgical practice and practical changes surgeons can make; and the relationship between high-value care and low-carbon care.

Webinars. RACS has produced a number of webinars available through the College website on climate change, health, and surgery.

Surgical curriculum. RACS is preparing for upcoming AMC accreditation changes for specialist colleges that will likely require environmental sustainability to be embedded across training programs. RACS commits to supporting the integration of climate change and environmental sustainability as a cross-cutting theme across all surgical specialties' curricula, consistent with the nine domains of the RACS Professional Skills Curriculum.

Annual Scientific Congress. RACS has established a dedicated environmental sustainability session, as well as the David Fletcher Prize for Environmental Sustainability in Surgery, at the Annual Scientific Congress.

7.3 Research, Policy, and Quality Improvement

RACS recognises that the evidence base for sustainable surgical practice in Australasia remains underdeveloped relative to the UK and North America. Generating that evidence base is a core commitment.

Position papers. RACS has published position papers on reusable surgical gowns, and work is underway on similar pieces in collaboration with ACORN, ACIPC, and ANZCA. RACS commits to continuing this programme of evidence-based position papers on specific products and practices, with lifecycle analysis and safety evidence at their core.

Research support. RACS has made environmental sustainability an eligible area for the RACS Surgical Ethics Scholarship, creating pathways for trainees and Fellows to undertake research into the environmental impact of surgical practice in Australia and Aotearoa New Zealand. RACS has also built connections with the ANZ Journal of Surgery to establish environmental sustainability as a standing priority for Australasian research publication.

7.4 Advocacy

RACS's advocacy on climate change and fossil fuels has progressively strengthened. Current commitments include:

- Signatory to the Joint Statement on Climate and Health[24]
- Active participation in the development of the Framework for Collaborative Action on Climate and Health, endorsed by RACS Council in early 2026[8]
- Member of the Multi-College Advisory Committee on Climate and Health
- Endorsement of the DEA/AMA Green College Guidelines
- Endorsement of a ban on all new fossil fuel projects
- Submissions to government on climate and health policy

RACS's Global Health programme, which provides surgical education, training, and capacity development across 15 countries in the Asia-Pacific region, represents both a responsibility and an opportunity: the communities served by this programme are among those most acutely exposed to climate-related health impacts. RACS commits to integrating environmental sustainability principles into its Global Health programme activities.

RACS commits to sustaining and deepening this advocacy. This position paper represents the most substantive public paper of RACS's climate and sustainability commitments to date. RACS will use it as the basis for ongoing engagement with government, industry, hospitals, and partner organisations in both countries advocating in accordance with the key recommendations set out in Section 8.

7.5 Industry Engagement

The surgical profession has significant leverage over the medical device and consumables industry through its purchasing decisions, clinical endorsements, and professional voice. RACS commits to using this leverage deliberately:

- Engaging manufacturers and suppliers on lifecycle carbon disclosure, emissions reduction targets, and circular economy practices, including packaging reduction and take-back schemes
- Working with ACORN, ACIPC, ANZCA, and other college partners to develop shared positions on specific products and theatre practices, maximising collective industry influence

7.6 Organisational Commitments

RACS recognises that institutional credibility on environmental sustainability requires applying to its own operations the same standards it advocates for in the health system. Current operational commitments include:

- Sustainable transport policy for staff and College operations
- Offering hybrid online attendance at all meetings and events offered by RACS
- Energy efficiency audits and upgrades across College buildings
- Recycling and waste reduction programs at College premises
- Water efficiency improvements at College premises

RACS commits to progressing its investment policy to actively minimise exposure to fossil fuel holdings, consistent with the direction articulated by the ESSPWP and RACS Council, and to report publicly on progress against this commitment. RACS will aim for carbon minimisation of the Annual Scientific Congresses, including through travel offset programs, hybrid participation options, and venue selection criteria that prioritise environmental performance.

Recommendations

The recommendations of this position paper are directed to three audiences: governments in Australia and Aotearoa New Zealand; hospitals and health services; and surgeons and surgical teams. Together they constitute a call for coordinated action across the policy, system, and practice levels at which the decarbonisation of surgical care must occur.

Recommendations for Governments — Australia and Aotearoa New Zealand

Climate change is a health emergency, and the primary cause is ongoing fossil fuel extraction and combustion. The most consequential actions available to governments are not within the health system, they are in energy policy, industry regulation, and public investment.

R1	**Rapidly phase out fossil fuels.** Limit new fossil fuel extraction projects and expansions of existing projects. Rapidly reduce existing extraction and use. End fossil fuel subsidies and redirect that expenditure to renewable energy. Require companies that extract fossil fuels and large emitters to be accountable for the health and environmental harms they cause, with strong enforcement mechanisms and payments directed to affected communities.
R2	**Invest in renewable energy as a health imperative.** Develop and fund renewable energy projects and supporting infrastructure, prioritising projects that are Indigenous-led or co-designed with local communities. Ensure renewable energy projects include Health Impact Assessments and prioritise health equity. Subsidise community and household access to renewable energy, particularly for low-income households, rural and remote communities, and Aboriginal and Torres Strait Islander and Māori communities. Support workers transitioning out of fossil fuel industries with funded training, career support, and mental health services.
R3	**Decarbonise public health infrastructure.** Mandate all-electric design standards for all new hospital and health facility construction, eliminating on-site fossil fuel combustion. Fund retrofit programs to electrify existing health infrastructure. Mandate on-site renewable energy generation and storage capabilities for public health facilities. Establish national procurement standards for medical devices and surgical consumables that include mandatory lifecycle carbon disclosure and progressively tightening carbon performance requirements.
R4	**Embed health and equity in the energy transition.** Ensure energy transition policy includes comprehensive health impact assessment. Centre Aboriginal and Torres Strait Islander sovereignty and leadership in Australia's transition, consistent with the Uluru Statement from the Heart and UNDRIP. Embed Te Tiriti o Waitangi as a foundational principle in Aotearoa New Zealand's transition, with hapū and iwi Māori as genuine partners in governance, policy design, and implementation. Recognise the value of matauranga Māori and other indigenous knowledge in managing environmental impacts. Monitor and evaluate the health and equity impacts of transition policies, with Indigenous-led data governance frameworks.
R5	**Invest in preventive health and high-value care to reduce surgical demand.** Fund preventive health infrastructure to reduce the climate-related disease burden that drives demand for surgical care. Incentivise health systems to identify and eliminate low-value care, reducing emissions and improving patient outcomes simultaneously. Support the expansion of ambulatory surgical care and telehealth infrastructure, particularly in rural, remote, and underserved communities.

Recommendations for Hospitals and Health Services

Health services occupy the critical middle ground between government policy and clinical practice. The decisions made at the institutional level, about procurement, infrastructure, energy, and models of care, determine whether government commitments and individual clinical intentions translate into real reductions in emissions.

R6

Adopt high-value, sustainable models of care as a governance priority.

Formally integrate the reduction of low-value and unwarranted care into clinical governance and quality improvement frameworks. Establish multidisciplinary review mechanisms for surgical appropriateness. Invest in prehabilitation and perioperative optimisation programs. Redesign care pathways to maximise safe ambulatory and day-case surgery. Embed telehealth in surgical outpatient services, with particular attention to rural and remote access.

R7

Implement sustainable theatre practices and responsible product stewardship.

Adopt the Intercollegiate Green Theatre Checklist as a standard operational tool across all operating theatres. Establish equipment shutdown and standby protocols for non-operative periods. Transition to LED lighting and optimise HVAC systems in line with infection control standards. Audit instrument sets and procedure-specific packs to remove routinely unused items, particularly single-use disposables. Adopt reusable gowns, drapes, and instrument trays where lifecycle evidence supports them and safety standards are met. Implement waste segregation protocols to ensure non-hazardous theatre waste is not misclassified as regulated medical waste. Appoint sustainability leads at theatre and department level.

R8

Reform procurement to address environmental and ethical risks.

Embed sustainability criteria in procurement frameworks, requiring lifecycle carbon disclosure from manufacturers and suppliers. Preference suppliers with validated emissions reduction targets. Incorporate circular economy principles including packaging reduction, reprocessing, and take-back schemes. Conduct modern slavery due diligence across surgical supply chains, consistent with national modern slavery legislation in Australia and Aotearoa New Zealand. Report publicly on procurement sustainability performance.

R9

Develop and implement climate resilience plans for surgical services.

Develop business continuity plans for theatre operations during extreme weather events, including mass casualty surges, power outages, and supply chain disruptions. Invest in on-site energy generation and storage to ensure theatre operability during grid disruptions. Maintain cold chain integrity for implants and biologics during heatwaves. Prepare surge capacity and workforce protocols for climate-related disaster events. Design new surgical facilities to be thermally resilient and all-electric.

Recommendations for Surgeons and Surgical Teams

Individual surgeons and surgical teams are not passive recipients of policy, they are the profession's most credible advocates, its most visible practitioners, and its most direct link to patients. The decisions surgeons make every day about whether to operate, how to operate, and what resources to use have real carbon consequences.

R10

Make high-value care the foundation of sustainable surgical practice.

Apply evidence-based indications rigorously. Use shared decision-making to ensure patients understand the realistic benefits and risks of surgical intervention. Support multidisciplinary

	review of surgical appropriateness for complex and high-risk cases. Actively identify and challenge low-value investigations and procedures within your own practice and department.
R11	**Optimise patients before and throughout surgery.** Champion prehabilitation as a standard component of surgical care for appropriate patients, including nutritional optimisation, smoking cessation, physical conditioning, and comorbidity management. Apply enhanced recovery principles across perioperative pathways. Advocate within your institution for the resources needed to support effective prehabilitation programs.
R12	**Adopt sustainable theatre practices in daily surgical work.** Use the Intercollegiate Green Theatre Checklist as a guide for daily theatre practice. Turn off equipment between cases. Support appropriate waste segregation. Question and reduce unnecessary consumable use. Advocate for reusable equipment where the evidence supports it. Engage theatre nursing and anaesthetic colleagues in sustainability governance. Support low-carbon anaesthetic practices, including regional and local techniques where clinically appropriate.
R13	**Engage with sustainability education and contribute to the evidence base.** Complete the RACS CPD modules on environmental sustainability in surgery. Participate in or support research into the environmental impact of surgical practice in Australia and Aotearoa New Zealand. Publish and present findings. Contribute to the ANZ Journal of Surgery's and Annual Scientific Congress's sustainability research agenda.
R14	**Use your professional voice.** Advocate to hospital administrators, health service executives, and governments for the policy and infrastructure changes needed to decarbonise surgical care. Engage with RACS, the ESSPWP, and partner colleges on industry engagement. Speak publicly about climate change as a health issue and about the surgical profession's responsibility to be part of the solution. Role-model sustainable practice for trainees and junior colleagues.

The actions required are urgent, achievable, and in the great majority of cases aligned with the delivery of better surgical care. RACS commits to reviewing progress against these recommendations and reporting publicly on its own performance. We call on our members, on hospitals and health services, and on governments in Australia and Aotearoa New Zealand to do the same.

References

1. Costello A, Abbas M, Allen A, et al. Managing the health effects of climate change: Lancet and University College London Institute for Global Health Commission. Lancet. 2009;373(9676):1693-1733.
2. Intergovernmental Panel on Climate Change. Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Geneva: IPCC; 2023.
3. Malik A, Lenzen M, McAlister S, McGain F. The carbon footprint of Australian health care. Lancet Planet Health. 2018;2(1):e27-e35.
4. Department of Health and Aged Care. National Health and Climate Strategy. Canberra: Commonwealth of Australia; 2023. Available from: https://www.health.gov.au/our-work/national-health-and-climate-strategy
5. Health New Zealand | Te Whatu Ora. Sustainable and resilient. Wellington: Health New Zealand; 2024. Available from: https://www.tewhatuora.govt.nz/corporate-information/our-health-system/sustainable-and-resilient
6. Royal Australasian College of Physicians. A Healthy Future Beyond Fossil Fuels: RACP Position Statement. Sydney: RACP; 2026.

7. UK Health Alliance on Climate Change, Brighton and Sussex Medical School, Centre for Sustainable Healthcare. Green Surgery: Reducing the Environmental Impact of Surgical Care. London: UK Health Alliance on Climate Change; 2023.

8. Australian Commission on Safety and Quality in Health Care. Framework for Collaborative Action on Climate and Health. Sydney: ACSQHC; 2025. Available from: https://www.safetyandquality.gov.au/

9. Department of Climate Change, Energy, the Environment and Water. National Climate Risk Assessment. Canberra: Commonwealth of Australia; 2025. Available from: https://www.dcceew.gov.au/climate-change/policy/adaptation/national-climate-risk-assessment

10. Referendum Council. Uluru Statement from the Heart. 2017. Available from: https://ulurustatement.org/the-statement/

11. United Nations. United Nations Declaration on the Rights of Indigenous Peoples. New York: United Nations; 2007.

12. Monash University. First-of-its-kind study: socioeconomic status determines how many years Australians live in good health [media release]. Melbourne: Monash University; 2025. Available from: https://www.monash.edu/

13. International Court of Justice. Obligations of States in Respect of Climate Change: Advisory Opinion of 23 July 2025. The Hague: International Court of Justice; 2025. Available from: https://www.icj-cij.org/case/187

14. Lelieveld J, Haines A, Burnett R, et al. Air pollution deaths attributable to fossil fuels: observational and modelling study. BMJ. 2023;383:e077784.

15. Watts N, Adger WN, Agnolucci P, et al. Health and climate change: policy responses to protect public health. Lancet. 2015;386(10006):1861-1914.

16. Bureau of Meteorology, CSIRO. State of the Climate 2024. Melbourne: Bureau of Meteorology and CSIRO; 2024. Available from: http://www.bom.gov.au/state-of-the-climate/

17. Department of Climate Change, Energy, the Environment and Water. Australian Energy Statistics: Energy trade. Canberra: Commonwealth of Australia; 2024. Available from: https://www.energy.gov.au/

18. Health Care Without Harm, Arup. Health Care's Climate Footprint: How the Health Sector Contributes to the Global Climate Crisis and Opportunities for Action. Reston (VA): Health Care Without Harm; 2019.

19. MacNeill AJ, Lillywhite R, Brown CJ. The impact of surgery on global climate: a carbon footprinting study of operating theatres in three health systems. Lancet Planet Health. 2017;1(9):e381-e388.

20. Rizan C, Lillywhite R, Reed M, Bhutta MF. The carbon footprint of products used in five common surgical operations: identifying contributing products and processes. J R Soc Med. 2023;116(6):199-213.

21. Sulbaek Andersen MP, Nielsen OJ, Wallington TJ, Karpichev B, Sander SP. Assessing the impact on global climate from general anesthetic gases. Anesth Analg. 2012;114(5):1081-1085.

22. Lorenzon L, Magalini S, Antolino L, et al. Impact of operating room waste in a high-volume institution and strategies for reduction: results from the CARING NATURE project. Br J Surg. 2025;112(2):znaf027.

23. Royal College of Surgeons of Edinburgh. Intercollegiate Green Theatre Checklist. Edinburgh: Royal College of Surgeons of Edinburgh; 2022. Available from: https://www.rcsed.ac.uk/professional-support-development-resources/environmental-sustainability-and-surgery/green-theatre-checklist

24. Australian Commission on Safety and Quality in Health Care. Joint Statement on Climate Change and Health: working together to achieve sustainable high-quality health care in a changing climate. Sydney: ACSQHC; 2024. Available from: https://www.safetyandquality.gov.au/js-climate

25. De Sain R, Irwin A, McGushin A, Dryburgh L, Cooper G, Skellern M. Estimates of Australian Health System Greenhouse Gas Emissions, 2021–22. Canberra: Australian Centre for Disease Control; 2024. Available from: https://www.cdc.gov.au/resources/publications/estimates-australian-health-system-greenhouse-gas-emissions-2021-22

26. Kagoma Y, Stall N, Rubinstein E, Naudie D. People, planet and profits: the case for greening operating rooms. CMAJ. 2012;184(17):1905-1911.