Sydney Environment Institute

THE UNIVERSITY OF SYDNEY
Sydney Environment Institute

2024 Annual Report

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We recognise and pay respect to the Elders and communities – past, present, and emerging – of the lands that the University of Sydney's campuses stand on. For thousands of years they have shared and exchanged knowledges across innumerable generations for the benefit of all.

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Foreword

The University of Sydney champions the role of multidisciplinary research as a key driver in addressing complex global challenges. The Sydney Environment Institute (SEI) embodies this ethos, bringing together diverse expertise from across the humanities, social sciences, and environmental science to confront the intertwined crises of climate change, biodiversity loss, and environmental justice.

SEI's alignment with the University's Multidisciplinary Initiative (MDI) strategy is not only evident but exemplary. By uniting a broad range of disciplines and partnering with industry, community, and government, SEI leads the way in translating innovative research into real-world solutions. Recent work has been cited and used by the Intergovernmental Panel on Climate Change (IPCC), the Organisation for Economic Co-operation and Development (OECD), the UN, and, closer to home, state and local government. The Institute's unique approach addresses some of the most pressing issues of our time, while also contributing to the University's strategic priorities of research excellence, impact, and leadership for good.

In 2024, SEI has delivered projects that bridge academia and practical policy outcomes, contributing to global dialogues on environmental justice and multispecies stewardship. It was fantastic to see SEI working with the Research Portfolio and 20 other University structures to coordinate climate research on campus via the Climate Research Forum. The Climate Research Forum brought together more than 150 researchers and was the first event of its kind at the University. The forum fostered new multidisciplinary research collaborations, creating a foundation for impactful climate solutions that extend beyond academia to benefit communities and influence policy.

I am also excited by a deepening partnership between SEI and the University of Edinburgh in the Initiative on Ecological Transformations, which combines SEI's interdisciplinary expertise with that of the University of Edinburgh to tackle climate challenges across the UK and Australia. This partnership aims to ground sustainability transformations in comprehensive knowledge from science, policy, society, and the humanities.

Underlying all SEI's work is a commitment to centring the voices of community and prioritising justice. SEI's work directly translates the experiences and voices of communities into research outputs, as seen in the recent podcast series *Stories are the Toolkit*, part of the 'Self-Organising Systems to Reduce Future Disaster Risk' project. This series captures informal disaster response efforts and serves as a peer-learning resource for communities, translating lived experiences into practical climate resilience tools.

By connecting researchers with policymakers, community leaders, and international partners, SEI continues to amplify its impact both locally and globally, driving research that not only seeks to understand environmental problems but also works toward fair and sustainable solutions.

As the impacts of environmental crises continue to be felt, I am confident SEI will continue to play a critical role in supporting the University's vision for multidisciplinary research excellence and real-world impact, as we strive for a more just and sustainable future.

Professor Emma Johnston AO
Deputy Vice-Chancellor (Research) 2022–2024, The University of Sydney

Image by Jerry via Adobe Stock.

SEI has delivered projects that bridge academia and practical policy outcomes, contributing to global dialogues on environmental justice and multispecies stewardship.

Director's note

2024 has been a remarkable year of growth and reflection for SEI as it continues to lead the way in impactful, multidisciplinary environmental research. With a growing international reputation, we stand as a global model for integrating research excellence with policy relevance and public engagement.

For the first six months of the year, I completed a Visiting Professorship in Helsinki. My time at the Helsinki Collegium for Advanced Studies was inspiring and deeply reflective. I had the opportunity to engage with scholars and activists who are tackling the same complex, global challenges we face at SEI. The exchange of ideas around environmental justice, multispecies care, climate turbulence, and democratic experimentation reaffirmed the critical need for collaboration across borders. I also heard again and again that the model we have developed at SEI for enabling multidisciplinary research is not just respected but also being replicated at other institutions globally.

Our university work spans four focused and multidisciplinary research themes, and while it's impossible to summarise all SEI's contributions in a single page, I want to focus on some deeply impactful moments from 2024.

In 2024, SEI's work on environmental justice was cited extensively by the OECD as it developed its first intervention into environmental justice in environmental policymaking; this follows the UN Intergovernmental Panel on Climate Change (IPCC) citing our work for its just adaptation framework in 2023. This recognition highlights our contributions to advancing environmental policy and climate adaptation planning that is grounded in equity and justice.

Our expertise has also informed many other initiatives and projects in 2024.

We hosted our second global and multidisciplinary Critical Minerals Symposium, bringing together experts to explore Australia's responsibilities in mining the essential minerals that power renewable energy transitions. The annual Iain McCalman Lecture featured Dr Sophie Chao as the keynote speaker. Sophie shared her insights into the Indigenous Marind People's practice of "multispecies mourning" in West Papua, addressing the deep connections between environmental loss and cultural identity.

At the NSW Science & Research Breakfast Seminar Series, Professor Carolyn Hogg delivered a presentation titled 'Biodiversity, Bilbies and Battling Extinction'. Hosted by the Office of the NSW Chief Scientist & Engineer, her talk emphasised the critical role of science in protecting Australia's unique species.

In 2024, we hosted a public panel series on the intersection of the climate and biodiversity crises. SEI researchers, alongside community, government and industry partners explored whether putting a price on nature would help protect it. The panel responded to the question of whether prioritising nature-based solutions can address housing shortages and protect communities from climate-driven disasters, and considered the provocation that we can't save the climate by destroying nature in the process.

SEI's commitment to multispecies justice contributed to a landmark report on a United Nations loss and damage fund, offering vital recommendations for addressing the intersecting impacts of climate change and biodiversity loss. The report was launched globally in New York and Sydney, further establishing SEI as a leader in shaping international policy.

Additionally, our research on social cohesion in disaster preparedness led to a collaboration with engineering consultancy AECOM and the NSW Reconstruction Authority to develop a practical tool for measuring and strengthening social infrastructure. This work has the potential to transform how communities prepare for and respond to disasters, ensuring greater resilience in the face of escalating climate risks.

SEI researchers contributed to, and participated at the launch of, the important Sydney Heat Smart City plan. We will continue to be involved in the implementation of the crucial research that will help protect those made most vulnerable to the increasing impact of heatwaves.

Closer to home, SEI led the development of an inventory of climate-focused research across the University of Sydney and the coordination of a Climate Leaders Network made up of the University of Sydney's leading climate researchers. Mid-year we hosted the first ever University of Sydney Climate Research Forum, providing a platform for climate researchers from across the university to connect and collaborate, fostering a multidisciplinary community to tackle the pressing challenges of climate change. We look forward to contributing to this ongoing coordination of climate research at the university, as well as its communication and impact.

Recently the University Senate asked all the multidisciplinary initiatives to reflect on their contributions to building public trust for the University sector. At SEI, we believe public trust is built through genuine listening, collaborative relationships, and amplifying local voices. For us, this commitment includes lifting local knowledge in our research, but also extends beyond the scholarship alone, with public events, podcasts, op-eds, and community-led storytelling initiatives designed to inspire action and inform policy. This is the heart of SEI's work, and we look forward to more public engagement and impact in the coming year.

While we have celebrated many achievements in 2024, we must also acknowledge the significant global setbacks that threaten the very foundation of our work. The increasing severity of climate disasters, the continued reticence of governments and industry to meaningfully tackle the climate challenge, and the ever-growing strain on the Earth's ecosystems, highlight the urgency of our mission. These challenges are a reminder that our work at SEI, thinking broadly and transformationally, is more critical than ever.

At SEI, we believe public trust is built through genuine listening, collaborative relationships, and amplifying local voices.

As we look to 2025 and beyond, SEI will continue to focus on building and amplifying the research of our members, expanding our networks, and supporting the next generation of environmental scholars. Our commitment to tackling the most pressing and intersecting environmental and social justice issues remains unwavering, and we are excited to continue working closely with our partners, researchers, and the wider community to build solutions for a just and sustainable future.

Professor David Schlosberg
Director, Sydney Environment Institute

2024 in review

Membership

SEI's membership grew to more than 600 members in 2024

600

Events & communications

54
events hosted by SEI

20
were partnered events

2,100
people attended SEI's events

5,000+
downloads of the SEI Podcast Series

122,000
post impressions

96,000
website views

8,700
fans and followers

Subscribe to *The SEI Podcast Series* on your favourite podcast streaming app

Acast

Image by Tim Pryce via Shutterstock.

Research supported

45
research projects

Including 15 active projects directly supported by the SEI's Collaborative Grant scheme.

15
HDRs supported

5
Honours fellows supported

$5m+
in funding support

Engagement across sectors

35 community and industry partners

17 op-eds

23 expert submissions to national and state government

Including the 2024 Issues paper: Targets, Pathways and Progress, the draft NSW Disaster Adaptation Plan Guidelines, and the Australian government's Nature Positive Plan and proposed reforms to the Environment Protection and Biodiversity Conservation Act 1999).

5 ABC Radio Interviews

Highlight achievements

Professor Liza Lim
Awarded an Australian Laureate Fellowship.

Dr Catherine Price (and the Sensory Conservation Team)
Won the 2024 Eureka Prize for Environmental Research.

Professor David Schlosberg
Appointed as a 2024 Visiting Professor at the Helsinki Collegium for Advanced Studies at the University of Helsinki.

Professor Glenda Wardle
Recognised in the 2024 Australia Day Honours list.

About the Sydney Environment Institute

SEI is a globally recognised, multidisciplinary environmental research institute committed to addressing the climate and biodiversity crises. Working in partnership with communities, governments, and industries, SEI tackles critical environmental challenges with the goal of creating a sustainable future.

With a diverse membership of more than 600 members spanning every faculty and school at the University of Sydney and beyond, SEI brings experts from the social sciences and the arts into conversation with science, engineering and business to tackle environmental challenges. Our work centres environmental justice and inclusive processes, policies, and outcomes.

SEI's approach emphasises collaboration and innovation. We facilitate impactful projects designed to address urgent environmental issues through creative, community-focused, and actionable research.

Our vision

SEI's vision is for a just and sustainable environmental transformation in which all life can flourish.

How we work

SEI addresses pressing environmental challenges through innovative and collaborative projects designed to create tangible impact, by:

Connecting researchers across disciplines to drive meaningful impact

Working in partnership with communities, industry, and government to foster change.

Developing practical and innovative solutions to today's environmental challenges.

Changing thought and action within academia and beyond.

SEI's research is organised across four research themes:

Biodiversity, conservation, and culture

Understanding ecosystems, interconnections and finding inclusive solutions to loss.

Environmental justices

Understanding and addressing environmental, multispecies and climate injustices.

Climate disaster and adaptation

Examining disaster response and designing climate adaptions.

Transformative governance

Transforming the governance of biodiversity, climate and society, and their interactions.

2024–2025 strategic goals

Academic reputation

Significant contributions to the academy, significant partnerships, a global reputation for academic excellence.

Research impact

The translation of multidisciplinary research for impact, grounded in community engagement.

Researcher support

An intellectual home for researchers working on environmental research that effectively supports ECRs.

Internal ecosystem

A leader in the USYD climate and biodiversity research ecosystem, facilitating collaboration and coordination.

Image by Amanda Klamrowski via Unsplash.

Our community & collaborators

The SEI team combines diverse academic and professional expertise to drive impactful and multidisciplinary research.

SEI Directors and Deputies

SEI is driven by researchers committed to breaking disciplinary boundaries through impactful, multidisciplinary research that advances knowledge and benefits academia, communities, and industry.

Professor David Schlosberg
Director
Professor of Environmental Politics

Professor Thom van Dooren
Deputy Director – Member Engagement
Discipline of Gender and Cultural Studies

Professor Danielle Celermajer
Deputy Director – Academic
Discipline of Sociology and Social Policy

Professor Carolyn Hogg
Deputy Director – External Engagement
School of Life and Environmental Sciences

SEI Research Theme Leads

SEI research communities are collaborative and dynamic networks of multidisciplinary research, led by outstanding scholars.

Professor Danielle Celermajer
SEI Deputy Director
Department of Sociology and Social Policy
Research lead: Environmental Justices

Dr Catherine Price
ARC Discovery Early Career Fellow Lecture
School of Life and Environmental Sciences
Research lead: Biodiversity, Conservation, and Culture

Professor David Schlosberg
SEI Director
Professor of Environmental Politics
Research lead: Environmental Justices, Climate Disaster and Adaptation

Professor Thom van Dooren
SEI Deputy Director
Department of Gender and Cultural Studies
Research lead: Biodiversity, Conservation, and Culture

Dr Blanche Verlie
Sydney Horizon Fellow
Department of Gender and Cultural Studies
Research lead: Environmental Justices

Associate Professor Kate Owens
Director
Australian Centre for Climate and Environmental Law
Research lead: Transformative Governance

Professor Rosemary Lyster
Professor of Climate and Environmental Law
University of Sydney Law School
Research lead: Climate Disaster and Adaptation

Professor Susan Park
Department of International Relations
Research lead: Transformative Governance.

Dr Federico Tartarini
Sydney Horizon Fellow
Sydney School of Architecture, Design and Planning
Research lead: Climate Disaster and Adaptation

Dr Lee White
Sydney Horizon Fellow
School of Social and Political Sciences
Research lead: Transformative Governance

Dr Sophie Chao
DECRA Fellow and Lecturer in Anthropology
Research lead: Biodiversity, Conservation, and Culture

SEI Advisory Committee

The SEI Advisory Committee brings together leading thinkers from around the world to provide insight and advice on our strategic direction, research, and partnerships.

Ali Abbas
Director of the Laboratory for Multiscale Systems, University of Sydney

Melissa Haswell
Professor of Practice (Environmental Wellbeing), University of Sydney

Peter Lipman
Founder, Anthropocene Actions

Iain McCalman
Emeritus Professor of History, Australian Catholic University

Joel Negin
Professor and Acting Deputy Executive Dean - Academic, University of Sydney

Jenny Newell
Curator, Climate Change Projects, The Australian Museum

Dagmar Reinhardt
Associate Professor, School of Architecture Design and Planning, University of Sydney

Tim Stephens
Professor of International Law, University of Sydney

Glenda Wardle
Professor of Ecology and Evolution, University of Sydney

Zoe Whitton
Managing Director, Head of Strategy & Impact, Pollination

Bhiamie Williamson
Research Scholar, Centre for Aboriginal Economic Policy Research, Australian National University

Christine Winter
Senior Lecturer, Politics, The University of Otago

Georgina Woods
Head of Research and Investigations, Lock the Gate

Professional staff team

Bringing a wealth of expertise and professional knowledge to support multidisciplinary environmental research.

Catarina Agostino
Communication and Engagement Officer

Emma Bones
General Manager

Suhasini Gunatillaka
Events and Administration Officer

Kirsten Jackson
Program Manager

Nancy Lee
Program Manager

Hannah Regan
Project Officer

Ana Reilly
Biodiversity Hub Manager

Thanh Whittam
Finance Officer

Genevieve Wright
Senior Project Officer

Image by Philippe Wuyts via Unsplash.

SEI is driven by researchers committed to breaking disciplinary boundaries through impactful, multidisciplinary research.

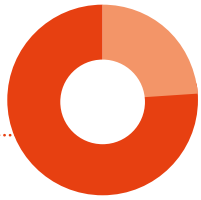
Image by Lauren Henderson via Shutterstock.

Membership

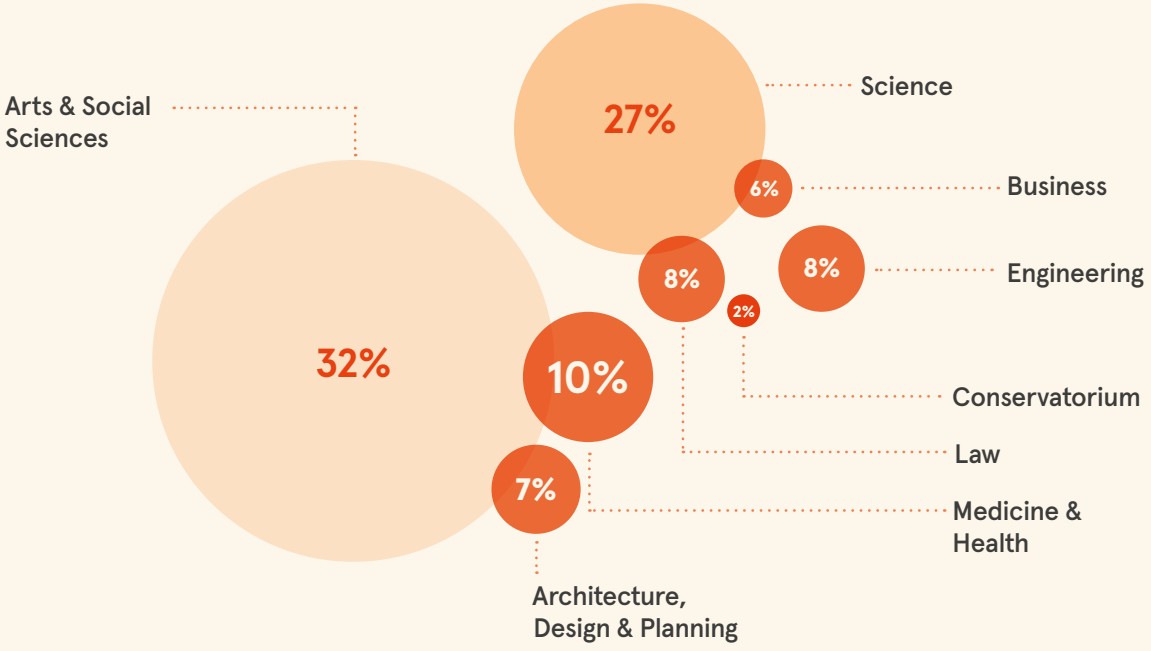
In 2024 SEI's membership consisted of

600+
researchers, policymakers and practitioners

70%
are internal University members



Internal members by faculty



Internal members career stages

20%
Higher degree researchers

31%
Early-career researchers

26%
Mid-career researchers

23%
Senior academics

2024 Member achievements

SEI proudly celebrates the outstanding achievements of our members in 2024. Their exceptional research, collaborations, and unwavering dedication to environmental issues have been recognised and honoured through prestigious awards, promotions, and funding successes. Below is just a glimpse of the awards received in 2024.

Highlight achievements

Professor Thomas Astell-Burt: Recognised in Clarivate's 2024 Highly Cited Researchers list.

Associate Professor Michele Barnes: Won the 2023 Freeman Award at Sunbelt 2024.

Associate Professor Tina Bell, Dr Gareth Bryant, Dr Rebecca Cross, Professor Deanna D'Alessandro, Professor Michele Ford, Professor Kurt Iveson, Dr Ali Khoddami, Professor Julia Kindt, Associate Professor Petr Matous, Associate Professor Clare McArthur, Dr Claire Parfitt, Dr Malcolm Possell, Dr Catherine Price, Professor David Schlosberg, Associate Professor Amanda Tattersall, Dr Madeline Taylor, Associate Professor Floris van Ogtrop, and Dr Sophie Webber: Awarded Discovery Project funding

Professor Danielle Celermajer: Multispecies Justice (developed by Professor Celermajer and SEI team) was adopted by the United Nations Special Rapporteur on the Right to Development as the first principle for Climate Justice.

Professor Danielle Celermajer: Appointed Distinguished Visiting Professor with the More than Human Life project at New York University.

Professor Danielle Celermajer: Recognised in the Council of Editors of Learned Journals 2023 Awards.

Dr Sophie Chao: Recognised in the Council of Editors of Learned Journals 2023 Awards.

Dr Sophie Chao: Winner of the 2024 Paul Bourke Award for Outstanding Early Career Scholars, and won two Nautilus Book Awards and the 2024 ASAA ECR Book Prize for her book *In the Shadow of the Palms: More-Than-Human Becomings in West Papua*.

Dr Diana Chester: Awarded the Frances Hazen Fellowship from Mount HolyOak College.

Dr Kenya Fernandes: Awarded Discovery Early Career Researcher Award (DECRA).

Professor Carolyn Hogg: Awarded the University of Sydney Vice-Chancellor's Award for Research Excellence (pictured above).

Professor Carolyn Hogg and the Threatened Species Initiative: Nominated for the 2024 Eureka Prize for Environmental Research.

Professor Liza Lim: Awarded an Australian Laureate Fellowship.

Professor Alex McBratney: Recognised in Clarivate's 2024 Highly Cited Researchers list

Emily Nabong: Winner of Faculty of Engineering's 2024 Humanitarian Innovation Pitch.

Associate Professor Dalia Nassar: Awarded Australian Research Council Future Fellowship funding.

Libby Newton: Winner of the 2023 Kim Santow Law and Social Justice Essay Prize.

Dr Catherine Price (and the Sensory Conservation Team): Won the 2024 Eureka Prize for Environmental Research.

Professor David Schlosberg: Professor Schlosberg's work on environmental justice was used to frame the OECD's 2024 report on EJ, and he was invited to open the OECD's first conference on the topic.

Dr Federico Tartarini, Dr Blanche Verlie, and Dr Lee White: University of Sydney Horizon Fellowship.

Research theme & program highlights

In 2024, the Sydney Environment Institute tackled urgent climate and environmental challenges with bold, multidisciplinary research that led the way in driving meaningful change.

Grounded in collaboration and community partnership, SEI's projects delivered real-world impact and contributed to progress on the United Nations' Sustainable Development Goals.

The year's achievements highlight the Institute's depth of expertise and commitment to transformative environmental and social change.

Stories are the Toolkit

Image by Hitoshi Suzuki via Unsplash.

The catastrophic floods and bushfires of recent years highlighted the vital role of community networks in disaster response and recovery, highlighting gaps in formal systems. SEI researchers collaborated with organisations across the Northern Rivers, Blue Mountains, and Hawkesbury regions to document how community groups self-organised during these crises. The project explored the coordination of critical resources (information, supplies and equipment, labour, care, and funding) in response to, and prolonged recovery from, catastrophic floods and bushfires.

This project addressed two significant risks to future disaster responses: the potential loss of community knowledge essential for immediate action and long-term preparedness, and the erosion of trust in state and local institutions. The research examined how institutional support for grassroots organising can bolster community resilience while restoring public trust.

The findings revealed the crucial role that local knowledges (anchored in close familiarity with place and community) and social infrastructure (encompassing relationships and networks rather than just physical spaces) fulfil in enabling effective community-led action in disaster scenarios. The failure to adequately recognise and harness local knowledges in cross-sectorial disaster management and adaptation planning is illuminated as a key barrier by disaster-affected communities across New South Wales.

In 2024 the project produced these impactful resources:

- **Podcast series**: *Stories are the Toolkit*, a six-part series amplifying the voices of community responders.
- **Magazine publication:** *Stories are the Toolkit: Community-led Disaster Response, Recovery and Adaptation*
- **Findings report**: *Empowering Communities, Harnessing Local Knowledges: Self-Organising Systems for Disaster Risk Reduction*.

This project was funded under the joint Australian Government-NSW Government National Partnership on Disaster Risk Reduction. This research was conducted in partnership with Resilient Blue Mountains, StreetConnect, and Plan C.

Developing systems and capacities to protect animals in catastrophic fires

Image by Jo-Anne McArthur via We Animals Media.

The Black Summer bushfires highlighted the critical role of communities in protecting animals during disasters, revealing gaps in formal emergency planning. SEI researchers conducted work in the Shoalhaven region, partnering with Shoalhaven City Council to document community-led efforts to care for wildlife, farmed, and companion animals. Through 56 trauma-informed interviews and community workshops, the project captured the extraordinary actions of individuals who stepped up during catastrophic conditions, often at great personal and emotional cost.

A Community Conversation Guide was developed as a practical tool designed to support communities in planning collaboratively for animal care during emergencies. The guide empowers communities to work together proactively, reducing stress and enhancing preparedness for the increasing frequency and intensity of climate-driven disasters.

This research has generated a wide range of impactful outputs to address gaps in animal protection during disasters. These include five academic papers on interspecies care, community resilience, and anti-capitalist solidarity during climate crises; community narratives in written and audio formats capturing firsthand experiences; and a submission to the Select Committee on Australia's Disaster Resilience advocating for systemic improvements. Practical initiatives included workshops on horse handling, capacity-building programs like wildlife signage and infrastructure development, and the prototype Animal Emergency Network app to support community-led organising.

The research team has compiled findings in the final report, Developing systems and capacities to protect animals in catastrophic fires.

Multispecies mourning: grief and resistance in an age of ecological undoing

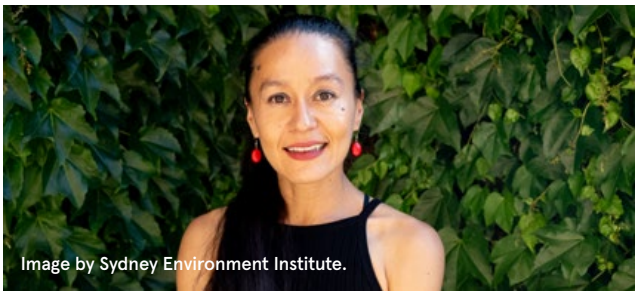


Image by Sydney Environment Institute.

As climate change intensifies and resource extraction erodes complex ecosystems, many are experiencing profound grief over the loss of species, landscapes and their cultural connections. Environmental anthropologist, Dr Sophie Chao, explored these ideas in the 2024 Iain McCalman Lecture, examining the Indigenous Marind People's practice of 'multispecies mourning' in West Papua. This practice, which commemorates lives lost and fosters multispecies solidarities, can serve as an act of resistance to ongoing ecological upheaval.

The Iain McCalman Lecture celebrates SEI co-founder and former co-director Iain McCalman's commitment to pioneering multidisciplinary environmental research. The lectures aim to highlight the work of early to mid-career researchers working across disciplinary boundaries to impact both scholarship and public discourse.

Dr Chao discussed the Marind People's 'multispecies mourning' practices in Indonesian-occupied West Papua, where deforestation and monocrop oil palm expansion are undermining communities' ancestral relationships with forest landscapes and lifeforms. She explored three emergent practices: weaving sago bags for collective healing, creating songs inspired by roadkill, and transplanting bamboo as part of land reclamation efforts. These practices forge multispecies solidarities amidst capitalist extraction and violence.

Listen to the lecture here.

Measuring the social preparedness of communities

Image via Shutterstock.

SEI researchers have been working closely with disaster-affected communities to explore how social relationships shape community responses to climate disasters. Their findings highlight that communities with strong social infrastructure are better equipped to respond, often leveraging established networks and local knowledge to guide their actions. While social infrastructure is commonly associated with physical assets like libraries and churches, SEI's research emphasises the critical role of social processes – such as participating in a bush regeneration group or volunteering at a school canteen – that build and strengthen these networks.

Building on this research, SEI researchers Associate Professor Michele Barnes, Associate Professor Petr Matous, Associate Professor Nader Naderpajouh, and Professor David Schlosberg were invited to consult with engineering consultancy AECOM on a major project for the NSW Government. They've been contributing to the development of an innovative tool to help local councils measure and improve their social infrastructure, aligning with the NSW State Disaster Mitigation Plan.

This tool aims to improve social preparedness within local and regional Disaster Adaptation Plans by providing a robust evidence base to guide investment in community resilience, relationships, and network-building initiatives.

Experts explore how climate and biodiversity challenges are interconnected

Image via Shutterstock.

In 2024, SEI hosted the Climate and Biodiversity Crises Series, bringing together leaders in climate solutions and nature repair to explore how these interconnected crises can be addressed together. The panel series featured experts from academia, government, business, and community sectors, focusing on how policies, business strategies, and adaptation measures can simultaneously address climate change and biodiversity loss.

The series launched at Sydney's Climate Action Week in partnership with the Australian Conservation Foundation (ACF). The opening panel featured leading voices from the NSW Government, Pollination Group, ACF and University of Sydney, who discussed how protecting biodiversity serves both as a defence against climate change and a system increasingly at risk from it. They highlighted the importance of a holistic approach to ensure a resilient and thriving future.

This was followed by panel discussions on the importance of centring nature in urban spaces in partnership with the Henry Halloran Research Trust, and how nature-based solutions are protecting communities across Australia and the Asia-Pacific from climate-driven disasters, in partnership with the Marines Studies Institute. The series concluded with a timely conversation about whether putting a price on nature will protect it. A multidisciplinary panel explored whether economic valuation could foster responsible environmental stewardship or if it risks undermining nature's intrinsic value.

Advancing local flood decision-making for disaster risk reduction

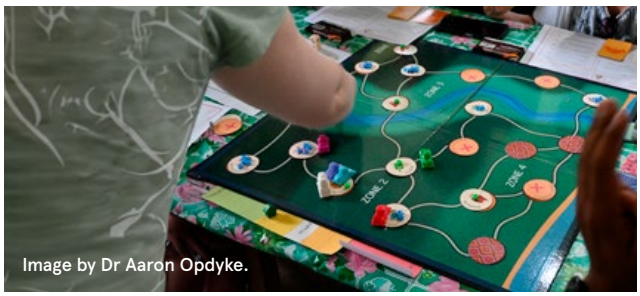


Image by Dr Aaron Opdyke.

Floods affect more people globally than any other disaster, with climate change increasing their frequency and severity. To address this growing challenge, a research project led by Dr Aaron Opdyke and funded by the Asia-Pacific Network for Global Change Research is supporting local governments in the Philippines and Indonesia to integrate climate change into flood risk assessments and planning.

By collaborating with local governments, the project is developing methods to incorporate climate change into flood modelling, improving decision-making for resilient and sustainable development. Action research is being used to explore how local knowledge and risk information can be legitimised to increase adoption in planning processes. This ensures that flood risk assessments not only reduce existing risks but also prevent the creation of new ones – a pressing concern for rapidly urbanising areas.

The project directly contributes to the Sendai Framework's goal of improving access to disaster risk information by 2030. The potential impacts are significant: better-informed policies to save lives, reduce economic losses, and establish best practices for integrating climate change into flood risk modelling.

Critical Minerals for a Sustainable Transition Symposium

Image by Sydney Environment Institute.

At the Sydney Environment Institute's second Critical Minerals Symposium, held in partnership with the Australian Social Sciences Academy and the Centre for International Security Studies, and hosted by Professor Susan Park, experts explored the challenges and opportunities in Australia's efforts to mine critical minerals essential for the renewable energy transition.

Australia is well-positioned in this global shift, with abundant resources needed for solar panels, wind turbines, and lithium-ion batteries. Already a leader in exporting lithium, cobalt, and rare earth elements (REE), the country faces the volatility of immature markets and the significant environmental and social challenges of mining, particularly on Indigenous lands. These include pollution, biodiversity loss, and impacts on freshwater, all of which threaten ecosystems and miners' social license to operate.

The symposium brought together stakeholders from government, industry, unions, and environmental groups to discuss how to advance fairer and more sustainable mining practices. Discussions also highlighted the importance of diversifying mineral processing and strengthening Australia's capacity to meet the growing demand from global markets, including the US and EU, more sustainable and resilient supply chains.

Australia's *Future Made in Australia Act* offers a pathway to support domestic processing, fostering economic development and enhancing both economic and energy security as the nation transitions to renewable energy.

Measuring Energy Insecurity workshop

Image by Elaine Alex via Unsplash.

SEI's workshop on energy accessibility and insecurity brought together academics, policymakers, and community representatives to explore innovative ways to measure whether energy systems meet household needs, particularly for underserved populations. Through presentations and collaborative discussions, participants examined the critical role of energy in supporting daily life, identified gaps in current measurement frameworks, and considered approaches to better illuminate inequities in energy access. The workshop emphasised the importance of accurate, needs-based metrics to inform policies that address social and environmental goals in the energy transition.

Highlights included Dr Lee White's introduction to energy justice and disconnection, Associate ProfessorProfessorA/ Prof Kate Owens' thought-provoking exploration of how governance frameworks matter for accomplishing policy objectives, Anna Cain's exploration of care frameworks, and Dr Tom Longden's insights on the health impacts of energy systems. Robust discussions delved into governance frameworks, the practical uses of energy insecurity measures, and the essential functions of electricity in everyday life.

By encouraging candid dialogue across sectors, the workshop advanced a shared understanding of how improved measurement can drive equitable and sustainable energy reforms.

Biodiversity Challenge

Image by Carolyn Hogg

The Biodiversity Challenge Pilot Project was launched to advance biodiversity monitoring across Australia by 2030 using innovative, non-invasive technologies such as remote sensor networks (cameras, eDNA) and acoustic arrays.

Initiated by Professor Carolyn Hogg, the Biodiversity Challenge is a collaboration between SOLES (School of Life and Environmental Sciences) and Engineering, and the eDNA team from the University of Canberra, with funding from SEI and SOLES. The project aims to develop effective, reproducible, and cost-efficient approaches to biodiversity assessment by:

- Developing and testing scalable, non-invasive remote sensor networks and acoustic arrays.
- Collecting biodiversity data from pastures, crops, and remnant patches of natural vegetation to assess ecosystem variation across farming landscapes.
- Focusing on natural capital, specifically mammals, birds, and invertebrates that persist in agricultural environments.

In May 2024, this pilot project characterised the biodiversity at L'Lara (The University of Sydney's farm at Narrabri). Using a combination of airborne eDNA, drone surveys, camera traps, and acoustic monitoring, the team ended up with 197,489 findings representing 744 species across a 20km^2 area.

Working with collaborators at Amazon Web Services, the team are developing an interactive interface that permits landholders to visualise this massive volume of data.

The next phase will involve strengthening industry relationships, particularly in agriculture and mining, to support large-scale pilot assessments and determining how to quantify airborne eDNA.

The goal of the project is to develop scalable solutions for biodiversity assessment. Only in its infancy the Biodiversity Challenge Pilot Project lays the foundation for future conservation initiatives, sustainable land management strategies, and industry collaborations, contributing to a more resilient and Nature Positive future.

Living on the Edge

Image by Matt Palmer via Unsplash.

Sydney Environment Institute, in partnership with the Living on the Edge public engagement program, is exploring the emotional and cultural dimensions of environmental change, highlighting the deep connections between people, place, and biodiversity.

Living on the Edge: Caring for Australia's Threatened Places examines eight ecological communities across the continent, considering their unique landscapes, cultural significance, and the urgent threats they face. The project asks how we can move beyond narratives of loss to imagine pathways for protection, regeneration, and care.

SEI has collaborated on a series of panels that engage with the complexities of environmental grief, resilience, and cultural renewal. *The Radical Work of Mourning*[*] examined how grief in the extinction crisis can inspire action, connection, and ethical engagement. Facilitated by Natasha Mitchell from ABC Radio National's *Big Ideas*, a panel including Professor Thom van Dooren, Associate Professor Zoë Sadokierski, and Dr Blanche Verlie shared stories of public funerals for lost species, mass "die-ins," and other acts of remembrance, showcasing grief as a catalyst for personal and collective transformation.

Similarly, the screening of the documentary *More than a Fish Kill*[^], highlighted the aftermath of the 2019 and 2023 mass fish deaths along the Barka/Baaka (Darling River). The film documented how artists, fishery managers, and First Nations custodians turned these ecological disasters into opportunities for cultural connection and revival. A post-screening panel discussion with Dr Claire Hooker, Dr. Vic McEwan, Dr Kirsten Wehner, and Barkindji artist Dave Doyle explored the intersection of art, science, and ancient knowledge in fostering community resilience.

*Presented in partnership with the National Museum of Australia through the James O Fairfax Senior Fellow in Culture and Environment Program.

^Presented in partnership with the National Museum of Australia, the Sydney Health Ethics Network, and The Cad Factory.

Researcher support & development

The Sydney Environment Institute drives innovative and collaborative initiatives, empowering students, scholars, and practitioners to tackle complex environmental challenges. We prepare our members, spanning students to senior researchers, to become adaptive scholars and multidisciplinary problem-solvers.

Image by Metrignome via Shutterstock.

Supporting researchers

SEI supports researchers at all career stages through:

Offering professional development and capacity-building workshops.

Delivering training in multidisciplinary research methodologie.

Providing personalised mentoring for funding applications and project proposals

Guiding career pathways and writing for diverse platforms.

Facilitating logistical support for research dissemination and community engagement.

"Being an SEI Honours Fellow increased my confidence in researching, presenting, and writing. It was a great opportunity to meet other Honours students outside of my discipline who were all conducting research on environmental issues from different angles."

– Sanaa Shah

"The funding that was provided through the Honours Research Fellowship program enabled me to travel to the Philippines for six weeks over the university break, in order to collect data for my thesis in the form of interviews and field observations. In addition to data collection, this experience allowed me to personally connect with the Filipino culture and way of life, enriching my research with a greater sense of authenticity."

– Lauren Hocking

SEI Honours Students 2024

Image by Sydney Environment Institute.

The SEI Honours Research Fellowship Program fosters a supportive community for emerging researchers, equipping them with multidisciplinary tools and methodologies to tackle critical environmental challenges.

Fellows benefit from dedicated mentoring by SEI members, opportunities to present their research and join roundtable discussions, access to a desk within the SEI office, and a financial bursary to support their work. This program is designed to nurture the next generation of environmental scholars, empowering them to contribute meaningfully to pressing global issues.

In 2024, the Sydney Environment Institute welcomed five honours students from the University of Sydney, whose research aligns with SEI's core themes:

- **Alana Barbaro, Faculty of Law** – *Climate change and the limits of judicial action regarding 'matters of policy'*
- **Sanaa Shah, Faculty of Science** – *Exclusionary or Participatory? Uncovering the social outcomes of the engagement of ENGOs in Private Protected Areas*
- **Arielle Saunders, School of Life and Environmental Sciences** – *Investigating the ecological influence of coral patch reefs on infauna communities*
- **Lauren Hocking, Faculty of Engineering and Faculty of Science** – *Social infrastructure and disaster risk in the Philippines*
- **Antonio Izzo, School of Geosciences** (Recipient of the Iain McCalman Honours Research Award, in partnership with Chau Chak Wing Museum) – *Barangaroo: a new model for public space development and governance.*

SEI Postgraduate Students

In 2024, the Sydney Environment Institute supported 11 Doctor of Philosophy (PhD) students. SEI Executives and Research Theme Leads also provided supervision for students working on projects that closely align to SEI's research themes.

2024 SEI Doctor of Philosophy Candidates:

- **Darren Chang** – *Decolonial Animal Sanctuaries: Prefiguring Multispecies Justice.*
- **Muhammad Sikandar Ali Chaudary** – *Climate Change Mitigation: The Politics of Extraction for a Just Energy Transition.*
- **Hannah Della Bosca** – *For Colony and Empire: The Lifeways and Lifeworlds of Ants as Paradox and Paradigm of Terrestrial Resilience.*
- **Freya MacDonald** *(Awarded SEI PhD Scholarship)– Environmental Fiction and Future Environmental Imaginaries: close reading contemporary Environmental Fiction and Creative non-fiction written during and in the wake of the2019/2020 Black Summer Bushfires in Australia.*
- **Caitlin McDonald** – *For the Beauty of the Earth: Ecological Encounters in Contemporary Climate Fiction.*
- **Philip McKibbin** – *The Politics of Love and Multispecies Justice.*
- **Myles Oakey** – *The Death of a Songbird: An arts of listening in a time of extinctions.*
- **Ana Maria Ulloa** – *The Roles of NGOs in Fostering Multi-level Accountability: Can Learning Improve Biodiversity Loss and Climate Change?*
- **Yohanes Usbobo** – *Banu: An Alternative Way for Atoni Meto to deal with climate change. A comparative study on Atoni Meto knowledge and practice in West Timor, Indonesia and Oecusse, Timor Leste.*
- **Sam Widin** – *Cockatoo Cultures and Edge Effects in Tropical Science.*

SEI Masters Students

- **Dorna Ghoreishi** – *Master of Sustainability: Reconciling carbon and financial accounting in EEIO analysis with the focus on capital expenditure.*
- **Ming Tu** – *Master of Sustainability: Estimating the Carbon Footprint of Coronary Artery Bypass Grafting (CABG) Patient Care Pathways: A Focus on Unit Process Life Cycle Assessment (LCA) and Its Comparison with Environmentally Extended Input-Output (EEIO) Results.*
- **Genevieve Wright** – *Master of Sustainability: Turning the tide: Understanding the challenges and opportunities of implementing nature-based solutions for flood risk reduction.*
- **Jah Ying** – *Master of Philosophy: Research engagement in transdisciplinary fields: theory, framework and Case study in Asian animal advocacy.*

Congratulations to...

Oliver Summerfield Ryan for submitting their PhD thesis: *What Explains Slow Energy System Transitioning? The Case of Australia's Electricity Sector.*

Dorna Ghoreishi for being awarded a PhD scholarship: *Health care hybrid life cycle assessment: existing barriers and new opportunities in utilizing activity-based costing data to calculate comprehensive and accurate footprints via hybrid lifecycle assessment.*

Postdoctoral Fellowships

The Postdoctoral Research Fellows at the Sydney Environment Institute have played a crucial role in advancing projects within the Research Themes, establishing networks and support systems for SEI members and collaborators, securing research funding for the Institute, and contributing to various research dissemination and translation activities.

2024 Postdoctoral Research Fellows:

- **Dr Justin See** - 2023-2024
- **Dr Anna Sturman** – 2022-2024
- **Dr Scott Webster** - 2022-2024

Climate Mapping Project

With support from the Research Portfolio, SEI led a major initiative to map climate and biodiversity research across the University of Sydney. This project aimed to create a more structured and effective research ecosystem, improving coordination, increasing research impact, and unlocking new funding and partnership opportunities.

Delivered in 2024, the project had three key components:

- **Database Development:** SEI worked with the Advanced Analytics and Planning team to create a comprehensive map of climate research at USYD, integrating data from Irma, SciVal, and Dimensions. This database provides a foundational resource for understanding research strengths and opportunities.
- **Climate Leaders Network**: The project facilitated the establishment of a network to connect researchers across faculties, fostering interdisciplinary collaboration and strengthening University of Sydney's climate research community.
- **Climate Research Forum:** SEI convened more than 150 key stakeholders working on climate change research at the University of Sydney to shape a strategic narrative around climate research at the University.

Spotlight: Dr Justin See

Postdoctoral Research Fellow Dr Justin See made significant contributions to SEI in 2024, advancing research that tackles urgent environmental and social challenges.

Justin's research focuses on the impacts of climate buffer infrastructure such as seawalls and nature-based solutions like mangroves in the Philippines, highlighting their implications for community resilience and climate adaptation.

This year, Justin has been instrumental in SEI's research initiatives on climate resilience and nature-based solutions. Justin is part of two international teams working on various projects in the Philippines, including shaping climate-resilient narratives and exploring climate buffer infrastructure.

In addition to his research, Justin chaired SEI's panel event *Natural solutions: seawalls are not the only climate buffer*, which explored the potential of nature-based solutions in protecting vulnerable communities from climate-driven disasters.

Justin moved to a continuing position at the University of Melbourne at the end of 2024, but we look forward to his ongoing collaborations with SEI colleagues.

Support for Early and Mid-Career Researchers

The Sydney Environment Institute actively supports Early and Mid-Career Researchers (EMCRs) by fostering collaboration and providing valuable capacity building experience.

Through its Research Strategy series, SEI delivered three targeted workshops in 2024, focusing on impact and engagement, publishing, and navigating funding applications. These sessions, led by SEI Deputy Director for Member Engagement, Professor Thom van Dooren, complement the one-on-one support and training opportunities available through University faculties and central services.

SEI's commitment to EMCRs reflects its ambition to empower emerging scholars with the skills and knowledge needed to excel in multidisciplinary environmental research.

Collaborative Grant Program

SEI's Collaborative Grant Program supports the development of new, collaborative, multidisciplinary projects at the University of Sydney which align with SEI's research foci and tackle the greatest challenges of the climate and biodiversity crises.

The program provides funding for project teams working across faculties, on topics aligned to SEI research themes in two forms;

- **Collaborative fellowships** – funds for teaching relief of the successful applicants, to provide them with the time needed to establish a new research project.
- **Collaborative seed funding** – funding for a multidisciplinary project to develop new ideas and methods, or link existing individual projects with collaborators across campus.

In mid-2023, a call for applications for the 2024 program was announced, with 14 applications for Collaborative Seed Funding, and four applications for Collaborative Fellowships.

Image by David Maunsell via Unsplash.

SEI supported seven new collaborative projects in 2024:

Negotiating community benefits in the climate transition

Theme: Environmental Justices

Associate Professor of Practice Amanda Tattersall (Faculty of Science) and Dr Claire Parfitt (Faculty of Arts and Social Science) were awarded a fellowship establish how useful Community Benefits Agreements might be in the climate transition in Australia.

Calculating the carbon footprint of medical procedures

Theme: Transformative Governance

Dr Fabian Sack (Faculty of Science) was awarded a fellowship to design a carbon footprint calculator for medical procedures.

Dr Sack's work will serve to inform public health policy so that it aligns with the nationally determined contribution to reduce greenhouse gas emissions by 43% below 2005 levels by 2030. This proof-of-concept project will build on Sydney Environment Institute research that analysed the carbon costs of common cardiovascular procedures.

Examining climate buffer projects in the Philippines

Theme: Climate Disaster and Adaptation

Dr Justin See (Sydney Environment Institute), Dr Sophie Webber (Faculty of Science), Dr Aaron Opdyke (Faculty of Engineering), Dr Sandra Seno Alday, (Business School), Ginbert Cuaton, (Hong Kong University of Science and Technology), and Pearly Joy Peja, (Eastern Visayas State University) were provided seed funding to examine climate buffer infrastructure in the Philippines.

They will examine the costs, benefits, decision-making processes, and business risks linked to infrastructure such as seawalls, wetlands, and mangroves as a means of climate adaptation, and consider the projects' implications for justice.

Climate transition planning for the property sector

Theme: Transformative Governance

Dr Aysu Kuru (School of Architecture, Design and Planning), Associate Professor Arianna Brambilla (School of Architecture, Design and Planning), Dr Ozgur Gocer (School of Architecture, Design and Planning), Dr Nader Naderpajouh (School of Project Management, Faculty of Engineering), and Dr Alastair Fraser (School of Economics, Faculty of Arts and Social Sciences) received seed funding to lead the development of a climate transition plan for the Australian property sector, focusing on performance, maintenance, retrofits, and asset management.

The project will benchmark against the National Australian Built Environment Rating System to help industry deliver on global decarbonisation targets.

Mapping climate disaster response networks

Theme: Climate Disaster and Adaptation

Dr Jo Longman, (Faculty of Medicine and Health), Emma Pittaway (Faculty of Medicine and Health), Associate Professor Petr Matous (Faculty of Engineering), Associate Professor Ken Chung (Faculty of Engineering), Professor Amanda Howard (Faculty of Arts and Social Sciences), and Associate Professor Margot Rawsthorne (Faculty of Arts and Social Sciences) were awarded funding to collect data on formal disaster response systems.

Building on SEI research on informal, community-led responses to disaster, they produced a social network map of connections between formal and informal responses to the catastrophic 2022 floods in Lismore.

Tackling ocean acidification through governance

Theme: Environmental Justices

Dr Claire Reymond (Faculty of Science), Professor Tim Stephens (Faculty of Law), Professor Christopher Wright (Business School), and Associate Professor Eleanor Bruce (Faculty of Science) were awarded funding to investigate the limits and opportunities for addressing ocean acidification under national, regional, and global governance frameworks.

They argued that the challenges of ocean acidification are unique and their project recognised the need for a coordinated effort, through policy and legislation, to address ocean acidification directly.

Rebuilding resilience in the Botany Wetlands

Theme: Biodiversity, conservation and culture

Associate Professor Josephine Gillespie, Dr Rebecca Hamilton, and Professor Dan Penny from the Faculty of Science were awarded funding to investigate the regulations and environmental history of the Botany Wetlands, a 4.5 km corridor of degraded freshwater wetlands and native woodland habitats in Sydney's inner east.

Their goal was to offer authorities a roadmap for the sustainable management and restoration of the wetlands, which filter stormwater runoff, accommodate floodwater, benefit human health, and host rare and endangered ecological communities.

Biodiversity Hub

In 2024, we launched the Biodiversity Hub to expand SEI's biodiversity work at the intersection of Science, Technology, Engineering, and Mathematics (STEM) and Humanities, Arts and Social Sciences (HASS) with a focus on developing new multidisciplinary projects in the biodiversity space

The following research areas were investigated through the Hub:

- **Urban biodiversity:** creating more liveable cities (especially in response to increasing heat risk) while protecting and restoring nature.
- **Intersection of climate and biodiversity:** what is the cost to nature of climate change? How do we transition swiftly, while protecting and restoring nature?
- **Implementing Nature Positive:** what information is needed to facilitate new laws and regulations around protecting nature and how do we measure nature at scale?

Image by Julia via Adobe Stock.

Three projects were supported via the Biodiversity Hub.

Urban Biodiversity

Professor Dieter Hochuli (School of Life and Environmental Sciences) and Professor Kurt Iverson (School of Geosciences) were awarded funding to develop the governance, policy and partner requirements to support biodiversity in urban settings. This research project is a collaboration between School of Life and Environmental Sciences, School of Geosciences and Sydney Informatics Hub. They have identified an opportunity to integrate the work they had produced through a previous SEI collaborative grant with a range of taxa and organisations, in order to embed the human dimensions of biodiversity conservation into a toolkit.

Biodiversity is everyone's business

Associate Professor Suwen Chen (Sydney Business School), Dr Brigitte Sommer, Dr Emma Thompson, Associate Professor Catherine Grueber and Professor Glenda Wardle (Faculty of Science) were awarded funding to develop a best-practice toolkit empowering businesses with strategies needed to genuinely participate in reversing biodiversity decline, ensuring a healthier and more sustainable future for all. This research project is a collaboration between the Business School, Faculty of Science and the DARE-ARC Training Centre.

Their goal was to leverage their research expertise to bridge the gap between scientific knowledge and societal impact. By communicating the vital connection between sustainability, biodiversity, and human outcomes to business and government stakeholders, they aim to influence behaviours and policies that reduce environmental impact.

MyClimate app

Dr Graeme Clark (Faculty of Science) was awarded funding for a project to create a web application, MyClimate, for disseminating climate change information to the public and providing resources and tools to manage climate issues relevant to their area. This research project is a collaboration between the Faculty of Science and the School of Architecture, Design and Planning.

Image by William via Adobe Stock.

SEI's biodiversity work intersects Science, Technology, Engineering, and Mathematics (STEM) and Humanities, Arts and Social Sciences (HASS) with a focus on developing new multidisciplinary projects in the biodiversity space.

Image by Petr Matousj. Street art in Lismore, NSW in response to severe flooding.

Thank you

The successes of the Sydney Environment Institute are thanks to dedication of our entire SEI community, including members, staff and partners. We deeply appreciate your hard work, passion, and commitment to SEI's mission throughout 2024.

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