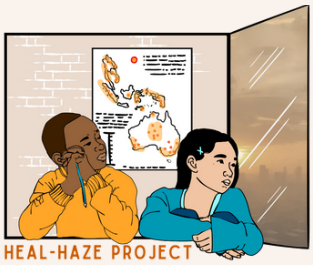
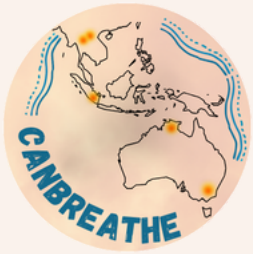
QUARTERLY NEWSLETTER





HEAL-HAZE and CANBREATHE

Vol.1 | 2025

MESSAGE FROM PRINCIPAL INVESTIGATOR

Welcome to the first edition of quarterly the CANBREATHE and HEAL-HAZE newsletter. We are excited to begin sharing regular updates across all partner countries as we work together on climate change, wildfire smoke, air quality, and health.

As we close 2025, we would like to reflect on key highlights from our projects and colleagues. This year, our teams strengthened collaboration cross Cambodia, Thailand, Lao PDR, Indonesia, and Australia through regional workshops and policy dialogues, university visits, research training, and school and community visits. Fieldwork in Palembang, Indonesia and Chiang Mai, Thailand has deepened our understanding of how households, schools, and local authorities experience haze pollution and adapt to it in practice. We have also begun testing affordable DIY air purifiers and deploying low-cost air quality sensors, building the evidence needed for practical clean-air solutions that can protect children and other vulnerable groups.

At the same time, we have advanced our analytical and methodological work. The Health Impact Assessment (HIA) Methods Meet-Up, our air quality and climate modelling collaboration, and our contributions to national and international workshops and conferences, including the Australian HIA Community of Practice Workshop and several other regional events, have helped showcase the importance and growing visibility of both projects across the region. At the HEAL Conference 2025, our team also contributed to an online panel discussion on tackling the health impacts of haze pollution in Southeast Asia.

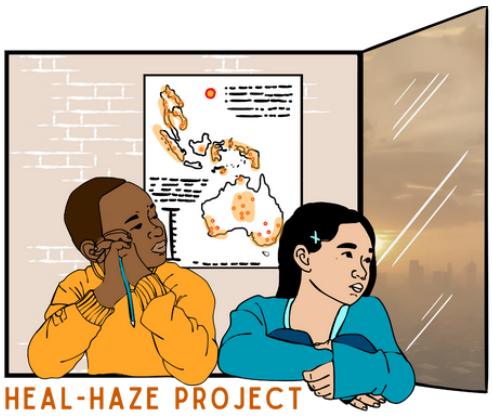
Looking ahead to 2026, we are excited to launch the HEAL-HAZE & CANBREATHE Community of Practice and plan a regional policy workshop on climate change and transboundary air pollution and health in Australia. Air quality sensor testing and deployment, as well as atmospheric modelling work, health impact analysis, and community engagement will continue in the new year, including two new case studies in Australia.

We would like to extend our warmest wishes for the holiday season to all our colleagues across Southeast Asia and Australia. Thank you for your collaboration, energy, and commitment throughout the year. We look forward to continuing our work together in the new year to build climate-resilient communities across the region.

Wishing you all a happy New Year!

Professor Sotiris Vardoulakis

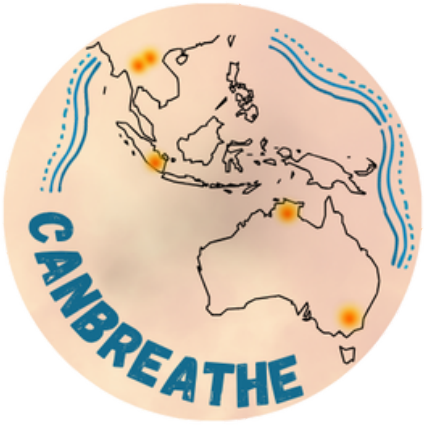
PROJECT SUMMARY



CLIMATE CHANGE ADAPTATION TO SMOKE HAZE FOR IMPROVED CHILD HEALTH IN SOUTHEAST ASIA

This cooperative research project, funded by the A$1M East Asia Science and Innovation Area Joint Research Program (e-Asia JRP), involves partners from Australia, Thailand, Indonesia, Cambodia, and Laos. It examines the effectiveness of climate change adaptation interventions that strengthen community resilience to wildfire smoke and support their wider adoption to protect children's health. Wildfire smoke from forest, peat, and agricultural fires is a growing public health threat in Southeast Asia, where one-third of global child deaths from air pollution occur. With climate change intensifying hot, dry conditions and worsening extreme smoke events, the project brings together local research teams and Australian experts to generate evidence and guide effective, child-focused adaptation strategies across the region.

DISCOVER MORE



CLIMATE ATTRIBUTION OF WILDFIRE SMOKE IMPACTS ON PRIORITY POPULATION HEALTH IN SOUTHEAST ASIA AND AUSTRALIA

Climate change is driving more frequent and intense wildfires in Southeast Asia and Australia, causing serious health impacts and thousands of premature deaths, as seen during the 2015 Sumatra fires and Australia's 2019/20 Black Summer. Yet few studies directly link these impacts to climate change or focus on vulnerable groups such as Indigenous peoples, pregnant women, and children. CANBREATHE, a A$5 million Wellcome-funded project, uses climate attribution modelling to identify how climate change contributes to extreme wildfires and their health impacts. Working with policymakers, Indigenous communities, citizen scientists, and artists, the project co-designs innovative communication tools that blend scientific evidence with lived experience to support stronger adaptation strategies in wildfire-affected regions across Thailand, Laos, Indonesia, and Australia.

DISCOVER MORE

CANBREATHE LAUNCH

THE CANBREATHE PROJECT WAS OFFICIALLY LAUNCHED ON 20 MARCH 2025 AT THE UNIVERSITY OF CANBERRA.

The launch featured opening remarks from **Hon. Bill Shorten**, Vice-Chancellor and President of the University of Canberra, and **Prof Sotiris Vardoulakis**.

Project leaders from Australia, Thailand, Indonesia, and Lao PDR joined the event–both in person and online–including **A/Prof Veronica Matthews** (University of Sydney), **Prof Nguyen Thi Kim Oanh** (Asian Institute of Technology), **Prof Budi Haryanto** (University of Indonesia), **A/Prof Kraichat Tantrakarnapa** (Mahidol University), **Dr Tippawan Prapamontol** (Chiang Mai University), and **A/Prof Keonakhone Khounvilay** (National University of Laos).

A panel discussion, moderated by Kate Wilson, featured **Prof Fay Johnston** (University of Tasmania) and **Prof Geoffrey Morgan** (University of Sydney), highlighting the importance of transdisciplinary research and international cooperation in addressing climate-driven air pollution and protecting vulnerable populations.

The event concluded with closing remarks from ***Prof Rachel Davey***, Director of the Health Research Institute at the University of Canberra.

2025 UPDATES

REGIONAL VISITS AND COLLABORATIVE ACTIVITIES

In June 2025, we visited Southeast Asian countries–starting with Cambodia, Thailand, and Lao PDR–and later travelled to Indonesia in September. These visits included a series of regional policy workshops and dialogues, university visits and research training sessions, and school and community visits.

POLICY WORKSHOPS AND DIALOGUES

The project delivered a series of regional policy workshops and dialogues under the theme ***"Regional Dialogue on Tackling the Health Impacts of Haze Pollution in the Changing Climate of Southeast Asia and Australia."*** These sessions brought together researchers, policymakers, and community leaders to discuss the health impacts of air pollution and transboundary haze. Representatives from national ministries of health, education, and environment participated, along with regional NGOs and UN agencies such as WHO, UNDP, UNICEF, and GGGI. Their contributions enriched the discussions and strengthened cross-country collaboration on climate, air quality, and health.

UNIVERSITY VISITS AND RESEARCH TRAINING

We visited partner universities and institutions to tour laboratories, meet local research teams, and strengthen collaboration. During these visits, we also delivered a series of research training sessions to support capacity building across our partner network and helped align methodologies for air quality monitoring, health impact assessment, and climate-health research.

COMMUNITY VISITS

We also visited several communities to learn more about the challenges families face during wildfire smoke events. We met with village leaders and households to talk about their experiences, look at living conditions, and discuss simple ways to reduce smoke exposure. We also had the chance to visit an ethnic minority community at Mong Village, Doi Pui, and Baan Mae Sa Noi-Mai, Chiang Mai. These conversations helped us understand what families need and how we can support practical, community-led solutions to improve air quality.

SCHOOL VISITS

As part of our engagement activities, we visited schools in Cambodia, Thailand, Lao PDR, and Indonesia. We talked with teachers and students about how wildfire smoke affects them, looked at classroom conditions, and discussed options such as clean air rooms, better ventilation, and awareness activities. These visits helped us see what schools need and how we can design simple, child-focused measures to keep students safer during smoke events.

FOCUS GROUP DISCUSSION WITH LOCAL AUTHORITIES IN PALEMBANG

Kopernik hosted the international team from the University of Canberra, the Asian Institute of Technology, and Universitas Indonesia in Palembang. A focus group discussion was held with local authorities, including representatives from environmental, planning, health, education, and disaster management agencies. The team presented the project, followed by discussions on community engagement, sensor calibration, contingency plans, and household sampling. Participants also shared their roles in haze mitigation.

TESTING AFFORDABLE DIY AIR PURIFIERS THROUGH LEAN EXPERIMENTATION

Kopernik conducted a benchmark study to explore effective, affordable designs of the Corsi-Rosenthal air purifier implemented globally. Successful models typically use a low-wattage box fan with simple speed controls, lightweight construction, and filters suited to the fan's size

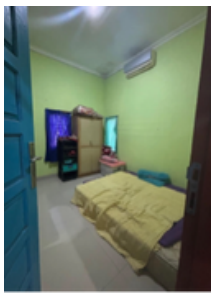
After reviewing locally available fans and HEPA filters in Indonesia, Kopernik identified suitable components and built two prototypes: a three-filter and a two-filter design. Both were tested at different fan speeds to measure noise, Clean Air Delivery Rate (CADR), unit cost, and coverage area. The two-filter model performed effectively for a 25 m^3 bedroom at the lowest fan speed. In simulated haze using incense smoke, it achieved a PM2.5 reduction rate of up to 20.1 $\mu g/m^3$ per minute. With a cost of around AUD 80, it offers an affordable and practical household solution for haze resilience.

FIELDWORK AND COMMUNITY ENGAGEMENT IN PALEMBANG, INDONESIA

ENGAGING PALEMBANG STAKEHOLDERS

From 28 July to 4 August 2025, Kopernik conducted our first field visit to Palembang following initial coordination with local authorities and communities. The visit aimed to engage stakeholders, secure research permits, and carry out preliminary household experiments. Meetings were held with the Departments of Education, Environment, Health, and Disaster Management, as well as local residents, to understand community responses during haze periods.

Data from the South Sumatra Forestry Department show that major hotspots occur every four years during El Niño events. Although 2025 is predicted to have fewer fires, hotspots have already increased between May and July. In 2023, the highest number of forest fires in five years occurred, mainly in surrounding areas such as OKI, Ogan Ilir, Banyuasin, Musi Banyuasin, and Muara Enim. During severe haze, schools shift to online learning, masks become mandatory, and households rely on fans or air conditioners while staying indoors. This visit provided valuable insights into local adaptation and helped refine the research design.



RECRUITING HOUSEHOLDS FOR THE CLEAN AIR ROOM EXPERIMENT

After the field visit, Kopernik's coordinators began recruiting 60 households for participation. Criteria included air-conditioned rooms with Wi-Fi and closed ventilation, no indoor smoking, and members of vulnerable groups such as children, pregnant women, or the elderly. Given the area's demographics, households with elderly residents were prioritized. Kopernik also recorded room volume and kitchen location to support analysis. To date, 35 potential households across six urban villages have been identified for participation.

COLLABORATING WITH AIRGRADIENT TO STRENGTHEN AIR QUALITY MONITORING

As part of our engagement activities, we visited schools in Cambodia, Thailand, Lao PDR, and Indonesia. We talked with teachers and students about how wildfire smoke affects them, looked at classroom conditions, and discussed options such as clean air rooms, better ventilation, and awareness activities. These visits helped us see what schools need and how we can design simple, child-focused measures to keep students safer during smoke events.

COMMUNITY DIY AIR PURIFIER DEMONSTRATIONS

In September, Kopernik completed procurement of materials to build 30 DIY air purifiers for household experiments. Thirty box fans, 60 HEPA filters, and 30 rolls of duct tape were purchased. Fans and duct tape sourced locally in Palembang, and filters ordered online. These materials will be used for community demonstrations on DIY air purifier construction, followed by community-led sessions. Each event will include a focus group discussion on local experiences and adaptation strategies during haze.

On 23 September 2025, the team visited Neighbourhood, Silaberanti Subdistrict, Jakabaring District, Palembang City, South Sumatra, Indonesia where about 15 residents and officers joined a hands-on DIY air purifier session. Participants quickly learned the process and noted that the devices were easy to make and maintain. This activity supported local understanding of practical, low-cost adaptation options to improve indoor air quality during heavy smoke periods.

COMMUNITY-LEVEL EXPERIENCES AND PERCEPTIONS, THAILAND

Focus group discussions were conducted with representatives from the parents of nine communities across the educational area in September 2025. A total of 78 parents participated and provided insights on: 1) Their knowledge and awareness about $PM_{2.5}$ pollution and its health impacts on young children; 2) Awareness of diseases related to pollution, such as respiratory infections, asthma, and irritation of the eyes and skin; 3) Adaptation and preventive measures at the individual and household levels, including the use of masks, air purifiers at home, and behavioural or activity changes; 4) Challenges in preventing $PM_{2.5}$ exposure, such as the obstacles in using masks or air purifiers, the prevention of $PM_{2.5}$ in daycare centres, and the enabling factors for effective prevention by family members and young children. This information supports policy development and project planning at the household level, tailored to each context with broader environmental and social limitations.

The public has a high level of awareness regarding the risks associated with air pollution, particularly $PM_{2.5}$ dust. Those who could afford air purifiers often choose to purchase and use them. However, significant gaps remain, especially for lower-income populations, particularly ethnic groups, who cannot afford air purifiers, making them more vulnerable to the impacts of pollution. These ethnic groups often consist of migrant workers living in rental housing that is not tightly sealed and lacks air conditioning. Although there is some awareness about the need to change air purifier filters and the health impacts of $PM_{2.5}$ dust, this awareness is not consistent across different population groups. There are financial constraints and challenges in accessing reliable information about the use of air purifiers.

Participants were able to identify allergies and respiratory diseases caused by $PM_{2.5}$, but they had not connected them to heart disease, developmental delays, or cognitive impairments, such as memory loss, attention deficit, and other neurological disorders. Mask-wearing campaigns had been in place before the COVID-19 outbreak but had not been successful until the COVID-19 pandemic made wearing masks more common. However, encouraging the public to wear masks remains a challenge due to the lack of law enforcement and the impracticality of certain daily-life recommendations, such as making children wear masks, which is problematic since children like to play outdoors and find masks uncomfortable.

Many people may not understand the dangers of $PM_{2.5}$ or may not realize that their own behaviours (e.g., burning waste) contribute to the problem. Changing public behaviour requires long-term education and communication. In certain areas (e.g., Hang Dong District), $PM_{2.5}$ levels often spike during the winter or the dry season, especially during wildfire events or after the longan harvest, making year-round pollution control challenging.

LOCAL POLICY AND MUNICIPAL RESPONSES

Local policymakers and municipal authorities generally follow provincial policies because there was no Clean Air Act (at the time of data collection, now the Clean Air Act has been passed in the parliament), and there is a lack of clear guidelines and budgetary support for dealing with emergencies such as wildfires. Municipalities lack a comprehensive air quality monitoring network, making it difficult to obtain accurate and location-specific data, which hampers effective identification and management of the most severe pollution sources. Municipalities also lack the authority to regulate major pollution sources, such as highways or industrial factories, which are usually under the control of the national government.

Despite existing laws or regulations, enforcement remains ineffective due to a lack of personnel, budget, or political will. Air quality is closely linked to transportation systems, urban planning, energy policies, and waste management. Coordination between agencies may hinder effective implementation. Solutions often require cooperation from multiple sectors. Air quality management also requires significant financial investment, whether in monitoring equipment, public transport systems, green space development, or law enforcement—all of which require long-term investment. At the same time, other pressing needs, such as public health, housing, or infrastructure, are often prioritised over air quality in municipal budgets.

BUILDING CAPACITY AND COLLABORATION

TUC CONTRIBUTIONS TO CANBREATHE

Technical University of Crete (TUC) and, specifically the Atmospheric Environment & Climate Change Lab (climate.tuc), led by **Professor Apostolos Voulgarakis**, has initiated its contributions on the CANBREATH project.

In October, the Postdoctoral Researcher **Dr Eleni Dovrou** traveled to Australia for a two-month secondment at the University of Canberra (UC), working with the Group of Professor Sotiris Vardoulakis.

Dr Eleni has successfully installed the Weather Research and Forecasting Model coupled with Chemistry (WRF-Chem) on the UC computing system and has participated in collaborative visits to the NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW). In addition, she took part in the Centre for Safe Air Workshop held in Melbourne and presented her work at the HEAL 2025 Annual Conference.

The ongoing collaboration between the TUC and the UC teams – through online meetings and the Eleni's in-person visit - has supported the progress of the CANBREATH project. TUC expresses its gratitude for the productive partnership and for the excellent hosting provided to Eleni in Australia.

PROJECT ORIENTATION AND WORKSHOP ON THE DIY AIR PURIFIER AND $PM_{2.5}$ SENSOR

Project orientation and workshop were carried out at Chiang Mai UNISERV Thailand 24 July 2025 that governed by Chiang Mai university.

The workshop explained the project' s background along with the presentation of the DIY air purifier device and the installation of the $PM_{2.5}$ sensor.

Teachers from all targeted were included and participated our workshop. The demonstration of low-cost sensor and air purifier operation was performed for all participants.

HEALTH IMPACT ASSESSMENT METHODS MEET-UP

Our first online HIA Methods Meet-Up was held on 14 August 2025, with team members joining from Australia, Thailand, and Laos. The goal of this session is to build a shared understanding of key methodological components for HIA work and strengthen knowledge sharing across the project team.

The "Methods Meet-Up" aims to help our teams connect and learn from each other. The session provided a friendly space for team members from different countries and disciplines to share experiences, discuss challenges, and learn from one another. The meeting featured a series of short presentations on core HIA topics:

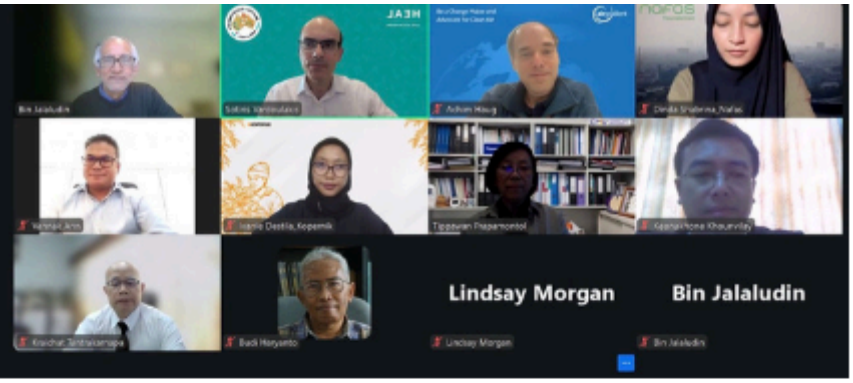
- Scoping in HIA (policy perspective) – **Dr Timothy Chaston** outlined approaches for defining the assessment focus, scope, and policy context.
- Qualification and attribution – **Dr Pattheera (Paire) Somboonsin** presented on ageing and life-expectancy methods, followed by **A/Prof Kraichat Tantrakarnapa** on estimating the burden of haze and PM2.5 above health thresholds using local baseline incidence data.
- Air pollution context in Laos – **A/Prof Vanphanom Sychareun** provided an overview of pollution patterns, local challenges, and data needs in Laos.
- Exposure–response functions (ERFs) – **A/Prof Ivan Hanigan** discussed the epidemiological foundations of ERFs and key decision points for modelling health impacts.

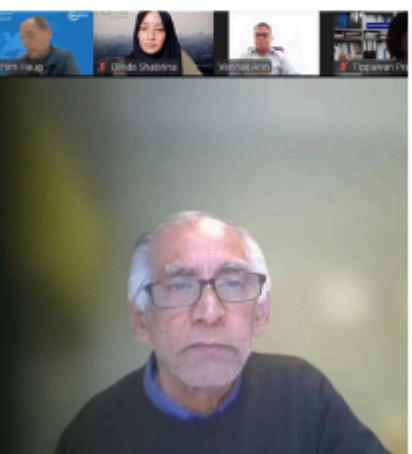
The meeting concluded with a wrap-up discussion facilitated by **Prof Geoff Morgan**, focusing on next steps, preparing for future HIA training sessions, and supporting a shared, regionally informed approach to environmental health impact assessment.

EVENT HIGHLIGHTS

HEAL CONFERENCE 2025: WEAVING DIVERSE KNOWLEDGES INTO CLIMATE ACTION FOR BETTER HEALTH

At the HEAL Conference 2025, speakers from our projects joined a pre-conference session on Global South action on climate change and health on 3 November. The session included a panel discussion on Tackling the Health Impacts of Haze Pollution in Southeast Asia, moderated by **Prof Bin Jalaludin**. This discussion highlighted our two collaborative projects and showed how they bring together scientific evidence, community engagement, and policy innovation to strengthen climate–health resilience across the region.





PANEL 1: SCIENTIFIC EVIDENCE AND POLICY ON WILDFIRE SMOKE AND HEALTH

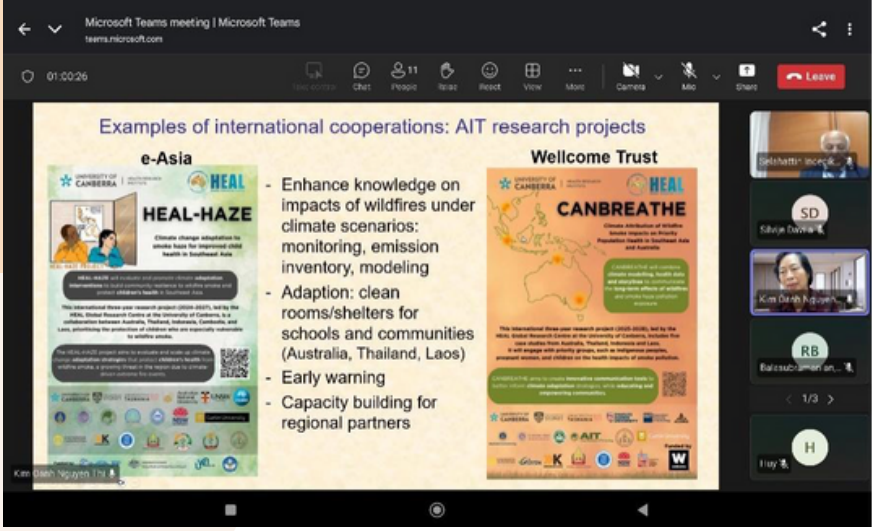
Speakers included **A/Prof Kraichat Tantrakarnapa** (Mahidol University, Thailand), **Asst Prof Keonakhone Khounvilay** (National University of Laos, Lao PDR), **Distinguished Prof Nguyen Thi Kim Oanh** (Asian Institute of Technology, Thailand), and **Prof Budi Haryanto** (University of Indonesia). They discussed how tools such as health impact assessments, air quality modelling, and environmental monitoring help us understand the effects of wildfire smoke and support more informed public health decisions. The panel also touched on ongoing challenges, such as data gaps, limited local monitoring, and the need for stronger coordination across sectors.

PANEL 2: ADAPTATION, COMMUNITY RESILIENCE, AND LOCAL CAPACITY BUILDING

Speakers included **Dr Tippawan Prapamontol** (Chiang Mai University, Thailand), **Dr Vannak Ann** (Institute of Technology of Cambodia), **Ms Ivanie Destila** (Kopernik, Indonesia), **Ms Dinda Shabrina** (NAFAS Foundation, Indonesia), and **Mr Achim Haug** (AirGradient, Thailand). This panel showcased school-based and community-led initiatives to reduce smoke exposure and build resilience. Speakers shared practical lessons on community engagement, the role of traditional knowledge, and the importance of behaviour change and awareness-raising. They also discussed sustainability challenges and opportunities for regional collaboration and knowledge exchange.

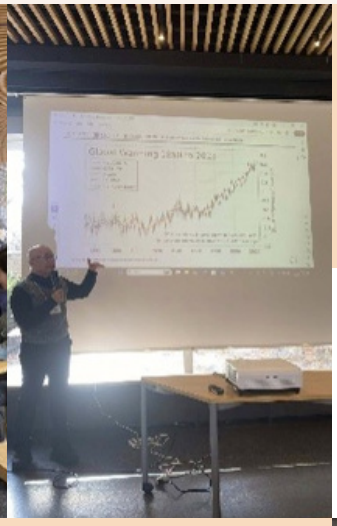
DISCOVER MORE

HEAL-HAZE AND CANBREATHE SPOTLIGHTED AT IUAPPA SPECIAL SESSION



The Air Quality Nexus Centre (AirQC) team participated in the International Union of Air Pollution Prevention and Environmental Protection Associations (IUAPPA) Special Session held in Zadar, Croatia, on Friday, October 24, 2025.

The IUAPPA Special Session is part of the International Conference and the 14th Croatian Scientific and Professional Meeting “Air Protection 2025”. **Prof Nguyen Thi Kim Oanh** delivered a speech on “Biomass open burning in Southeast Asia: Emissions and multiple effects” online, and she introduced the HEAL-HAZE and CANBRETHE project in her presentation



SPECIAL LECTURE IN THE INTERNATIONAL TRAINING AT HOKKAIDO UNIVERSITY, JAPAN

A/Prof Kraichat Tantrakarnapa provided a special lecture titled “Climate Change, Air Pollution and Health Impacts: Southeast Asia and Thailand Perspective at Hokkaido University, Japan (13-14 November 2025)

CLIMATE CHANGE AND ONE HEALTH IN TAIWAN

At International conference at National Taiwan University, Taipei, Taiwan, **A/Prof Kraichat Tantrakarnapa** joined a panel discussion on “Climate change and one health” on 17 November 2025.

INTERNATIONAL CONFERENCE ON CLIMATE RESILIENCE AND HEALTH FROM ASSESSMENT TO ACTION

A/Prof Kraichat Tantrakarnapa presented at international conference on Climate Resilience and Health from Assessment to Action titled “Strengthening Adaptation Measures for Climate Change: A Case of The Health Sector” as an invited speaker on 18 November 2025.

CLIMATE-INDUCED HEALTH INEQUITY FROM PLANETARY HEALTH LENS UNDER PROJECT HEAL HAZE & CANBREATHE

A/Prof Kraichat Tantrakarnapa and team organised the symposium in JITMM 2025 international conference at the Eastin Hotel Bangkok (2-5 December 2025) and provide two presentations i) Adapting to $PM_{2.5}$ in Northern Thailand: Community Responses and Local for Protecting Young Children and ii) Climate Change and Adaptation in Health Sectors: Thailand Perspective.

STRENGTHENING URBAN HEALTH RESILIENCE TO CLIMATE CHANGE

Prof Sotiris Vardoulakis presented the HEAL National Research Network's work on "*Strengthening Urban Health Resilience to Climate Change*" at the 21st Annual International Conference on Urban Health (ICUH 2025), held from 17–21 November 2025 in Wellington, New Zealand. The conference focused on building healthier and more resilient cities that prioritise sustainability and wellbeing for all.

THAILAND-AUSTRALIA TRACK 1.5 DIALOGUE ON STRENGTHENING COOPERATION IN THE MEKONG REGION

Prof Sotiris Vardoulakis was invited to participate in the Thailand-Australia Track 1.5 Dialogue on Strengthening the Mekong Region, held in Bangkok on 26 September 2025. The dialogue focused on transboundary environmental issues and aimed to strengthen Thailand-Australia cooperation in addressing pressing challenges in the Mekong region, particularly in two thematic areas: transnational crime and transboundary environmental issues. It sought to identify actionable recommendations for development cooperation to address contemporary transnational challenges.

Prof Sotiris Vardoulakis with the Australian Ambassador to Thailand, Her Excellency Dr Angela Macdonald PSM, and the Royal Thai Ambassador to Australia, Her Excellency Ms Arjaree Sriratanaban.

AUSTRALIAN HEALTH IMPACT ASSESSMENT (HIA) COMMUNITY OF PRACTICE WORKSHOP

The Australian Environmental Health Impact Assessment (HIA) Community of Practice Workshop: Advancing Quantitative Methods in Environmental HIA was held on 8 December 2025 in Adelaide. The event was led by **A/Prof Ivan Hanigan** and hosted by the Curtin University WHO Collaborating Centre for Climate Change and Health Impact Assessment (WHOCC). It was organised in collaboration with the NHMRC Centre for Safe Air (CSA), the NHMRC HEAL National Research Network, the Institute of Australian Geographers (Health Geography Study Group), the University of Adelaide Environment and Health Research Group, and the ARC Centre for Australian Research into Access (CARA). The workshop focused on strengthening national capacity in Environmental HIA, including quantitative methods and burden of disease modelling for air quality, fire smoke, and heat. It brought together invited national experts in HIA, air quality, and climate–health research. Our project team also contributed to the workshop, with **Prof Sotiris Vardoulakis**, **Dr Timothy Chaston**, and **Dr Pattheera (Paire) Somboonsin** joining as invited speakers.

PROJECTS SPOTLIGHTED AT 10TH IICAQM 2025

CANBREATHE and HEAL-HAZE projects were spotlighted at the Indian International Conference on Air Quality Management, held from 17-19 December 2025. **Prof Sotiris Vardoulakis** was invited to speak on *"Wildfires, Air Pollution, and Public Health in the Changing Climate of Southeast Asia and Australia."*

Professor Sotiris Vardoulakis
Healthy Environments And Lives (HEAL) National Research Network
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Wildfires, Air Pollution and Public Health in the Changing Climate of SE Asia and Australia

ABSTRACT

Climate change is increasing the frequency, intensity and duration of extreme wildfires in Southeast Asia and Australia. Smoke haze pollution from wildfires and agricultural activities exacerbate respiratory and cardiovascular illness, causing premature deaths and disproportionately impacting women, children, and Indigenous/ethnic minorities and remote communities. Transboundary smoke haze and its associated effects on human health are shared problems requiring interventions to be implemented across international jurisdictions. The causes of smoke haze are also deeply entrenched in local social, political, industrial and economic systems. Policy making and community engagement are, hence, essential for effective adaptation and mitigation interventions. The CANBREATHE and HEAL-HAZE projects, led by the HEAL Global Research Centre (University of Canberra), apply climate attribution and chemistry-transport modelling, as well as storylines, to assess the influence of climate change on the risk and characteristics of extreme wildfires and related smoke haze exposure in five heavily affected regions of Southeast Asia and Australia. Clean air interventions are also tested in schools and households in these regions to develop targeted public health advice and co-design innovative health protection communication tools.

ABOUT THE SPEAKER

Sotiris Vardoulakis is Professor of Environmental Public Health at the University of Canberra, Director of the HEAL (Healthy Environments And Lives) National Research Network, and Adjunct Professor at the Indian Institute of Technology Madras. He is co-Director of the Clean Air and Planetary Health in Asia (CEPHA) Network and the Clean Energy for Healthy Environments And Lives (CE4HEAL) partnership. Previously he was Director of Research and Head of the WHO Collaborating Centre on Occupational Health at the Institute of Occupational Medicine in Edinburgh, and before that Head of the Environmental Change Department at Public Health England. He also held academic positions at the Australian National University, the London School of Hygiene and Tropical Medicine, and the University of Birmingham. Professor Vardoulakis' main research interests include climate change, air pollution and health, sustainable cities, exposure assessment, health impact assessment, environmental epidemiology, and public health communication and policy. He was one of the lead authors of the first UK Climate Change Risk Assessment and contributor to the National Adaptation Programme. He served as a member of the National Institute for Health and Care Excellence (NICE, UK) Public Health Advisory Committee on Air Pollution and of the Royal College of Paediatrics and Child Health Working Group on Indoor Air Quality. He is a currently a Coordinating Lead Author of the UNEP Global Environmental Outlook (GEO-7) Air Chapter

UPCOMING EVENTS

COMMUNITY of PRACTICE (CoP)

FIRST SESSION PLANNED FOR FEBRUARY 2026 (TO BE CONFIRMED)

We will launch a joint Community of Practice (CoP) for colleagues across all countries, bringing together diverse disciplines and cultural perspectives to share updates, methods, and capacity-building activities. The CoP will support consistent collaboration across the region and strengthen links between research, policy, and practice.

POLICY WORKSHOP IN AUSTRALIA

CANBERRA IN 2026 (TO BE CONFIRMED)

The final regional workshop will take place in Canberra, Australia and will bring together researchers, policymakers, and partners to discuss wildfire smoke, climate change, and health, and to explore future collaboration opportunities

"**The Conference of the Parties (*COP30) showed that climate cooperation is alive and kicking, keeping humanity in the fight for a livable planet***.

Billions are asking basic questions: Will my child breathe clean air? Are the people and places I love, will they be safe from the next flood, fire, or storm? This COP has begun to deliver on these everyday concerns – not perfectly, not fast enough, but concretely.

What we have seen at COP30 is 'mutirão' – a collective effort.
This spirit of working together is how we protect lives, strengthen resilience, and move toward a healthier future for all."

– Simon Stiell, Executive Secretary, UN Climate Change, at COP30 –

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