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NTU launches new research facility to study health risks of climate change in the tropics

Senior Minister of State for Sustainability and the Environment Dr Amy Khor speaking at the launch of the Centre for Climate Change and Environmental Health (CCEH) on April 15. PHOTO: NTU

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SINGAPORE - A new research centre that aims to tackle the health risks of climate change in the tropics was launched at Nanyang Technological University on April 15.

Research efforts at the Centre for Climate Change and Environmental Health will focus on three pillars – air quality, extreme heat, and water supply and quality, said its director Steve Yim.

These are issues that are becoming increasingly urgent in South-east Asia due to rising global temperatures and environmental changes, he added.

Associate Professor Yim said there is a significant lack of research focusing on tropical regions like South-east Asia, which faces issues specific to the region. These include high humidity, monsoons and transboundary haze pollution, all of which have impacts on human health and well-being.

“South-east Asia is one of the regions most exposed to climate-related health risks, yet remains under-represented in global research,” he said.

The centre was officially launched at the Experimental Medicine Building at NTU on April 15. Senior Minister of State for Sustainability and the Environment Amy Khor was the guest of honour.

Dr Khor said Singapore, being a highly urbanised and densely populated city-state, is exceptionally vulnerable to climate impacts on its environment and public health.

For example, climate change causes changes in rainfall patterns and a higher likelihood of extreme weather events. This potentially contributes to the increase and spread of various vector-borne diseases, especially arboviruses, which are those spread by mosquitoes, according to the Duke-NUS Medical School.

“(The centre’s research) will build on findings from Singapore’s Third National Climate Change Study to advance our understanding of tropical climate variability and its potential impact on Singapore and the larger South-east Asia region,” she added.

The new centre will bring together researchers at NTU who conduct research in the domains of climate and health. These experts come from NTU’s Lee Kong Chian School of Medicine, Asian School of the Environment, Earth Observatory of Singapore, Singapore Centre for Environmental Life Sciences Engineering, and Nanyang Environment & Water Research Institute.

Over the next five years, they will be trained in interdisciplinary studies on the health impact of climate change, said Prof Yim.

“By bringing together experts across fields and partnering with regional centres, we will develop practical solutions to help governments, hospitals and communities respond more effectively.”

The centre also aims to establish a regional consortium to bring universities and health institutes from Indonesia, India, Thailand, Taiwan and Britain together to

study the relationship between human health and climate change in the three research areas.

Imperial College London's Medical Research Council Centre for Environment and Health was revealed as one contributing member of the consortium.

Local partners like the National Environment Agency and Ministry of Sustainability and Environment are also expected to contribute in supporting the development of evidence-based policies and solutions.

Between 2030 and 2050, climate change is expected to cause approximately 250,000 additional deaths per year from malnutrition, malaria, diarrhoea and heat stress alone, according to the World Health Organisation. The direct damage costs to health are estimated to be between US$2 billion (S$2.63 billion) and US$4 billion per year by 2030.

Additionally, around 489,000 heat-related mortalities had been reported annually between 2000 and 2019, with an estimated 45 per cent of cases in Asia.

Unicef had also in February 2025 reported that more than 100 children under the age of five die each day in East Asia and the Pacific from air pollution-related causes.

Research done under the centre would add to pre-existing interdisciplinary research on the climate-health nexus being conducted by NUS entities.

This includes the Heat Resilience and Performance Centre and Centre for Sustainable Medicine at the NUS Yong Loo Lin School of Medicine, as well as the Climate, Environment and Health programme by Saw Swee Hock School of Public Health.

Existing studies are being further developed under the centre, including one led by Prof Yim, and co-authored by Dr Tao Huang, a research fellow at NTU's Lee Kong Chian School of Medicine and the Centre for Climate Change and Environmental Health.

The study looks at how heat caused by greenhouse emissions and air pollution combine to affect human health in various regions across the world.

The project currently involves the joint collaboration between researchers and PhD students from NTU's Lee Kong Chian School of Medicine, Earth Observatory of Singapore and Asian School of the Environment. They recently received a grant to collaborate with experts from the National University of Singapore and Stanford University School of Medicine.

"Many government agencies like the National Environment Agency, National Parks Board and Land Transport Authority have also supported us by offering us real-time information like weather-related data, urban morphology and traffic data respectively. We hope we will be able to work with more organisations through this centre to expand on the study," said Dr Huang.

Such studies show how climate change is a multidisciplinary topic that requires the combined knowledge of climate science, environmental science and health science, Prof Yim said.

However, he said the different organisations are not working as effectively as they should be with one another.

"We now have to fix this problem. (The centre) thus offers a platform for multiple perspectives to work with each other to understand and tackle issues in a more robust manner, so that we can provide feasible solutions for policymakers," he said.