

NUS scientists closely studying health impacts of climate change

New research programme to help tackle public health risks in climate crisis

Cheryl Tan

With temperatures continuing to soar globally due to climate change, scientists at the National University of Singapore (NUS) are now closely studying the impacts on human health, with a new research programme to be launched in 2023.

Kimberly Fornace, a visiting senior research fellow with the NUS Saw Swee Hock School of Public Health, stressed that healthcare professionals will need to understand the complex links between human health and the environment, given the current scale of the climate crisis.

This will help them to adequately address future public health risks, said Dr Fornace, who will likely be helming the new programme, alongside Associate Professor Yann Boucher from the same school.

The World Health Organisation has declared climate change to be the single biggest health threat facing humanity.

Rising temperatures due to global warming are leading to increased heat stress, while air pollution arising from wildfires could increase one's susceptibility to cancer and various cardiovascular and respiratory diseases.

Rising sea levels and coastal flooding could also bring about an onset of water-borne diseases.

Witnessing or experiencing these catastrophic events also has a bearing on one's mental health, with research showing that young people are increasingly facing eco-anxiety - a term referring to the fear and worry ensuing from climate change and its impacts.

Dr Fornace - a Sir Henry Dale Fellow from the School of Biodiversity, One Health and Veterinary Medicine at the University of Glasgow - noted that climate-related disasters and extreme weather events could also cause hospitals to close, disrupt supply chains and prevent people from getting access to healthcare facilities.

The research programme will champion a data-centric approach to understanding and measuring the impacts of climate on health, both locally and in South-east Asia, said Professor Teo Yik Ying, who is the NUS school's dean.

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The World Health Organisation has declared climate change to be the single biggest health threat facing humanity, and rising temperatures are leading to increased heat stress. PHOTO: LIANHE ZAOBAO

EVALUATE TECHNOLOGIES

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means we have the capability to evaluate which of these climate-related technologies are genuinely useful and can be scaled for larger adoption, particularly in resource-scarce settings," said Prof Teo.

For instance, Dr Fornace noted that closely monitoring trans-boundary haze pollution in the region could help hospitals and clinics decide when it is necessary for them to be on high alert.

Similarly, a project funded by the UK Space Agency has been able to use seasonal weather forecasts and earth observation data to predict water availability in catchments, allowing scientists to determine the next potential dengue outbreak a few months in advance.

As mosquitoes breed in stagnant water, this initiative helps governments to eliminate mosquito breeding sites and prevent dengue outbreaks.

The project has been rolled out in Malaysia, Sri Lanka and Vietnam so far, but it could possibly be ex-

tended to more countries regionally if viable, Dr Fornace added.

There is also the possibility of using bioacoustic monitoring to examine how zoonotic diseases could spread between humans and wildlife, particularly with land-use changes that could lead to habitat fragmentation, she said.

Bioacoustic monitoring involves the recording of sounds made by animals to infer animal distribution, abundance and behaviour.

For example, such monitoring could help to track human movement and land use patterns during the key biting season of the *Anopheles* mosquitoes, which carry the malaria parasite.

This could play a role in reducing the risk of malaria outbreaks, especially as the mosquitoes tend to prefer habitats with vegetation, such as freshwater swamps.

These initiatives will be evaluated to determine their financial sustainability and scalability, said Prof Teo, who has recently been ap-

pointed as the school's vice-president (global health).

The team is planning to work with other organisations in the region and discussions are ongoing.

Asked if any courses on climate and health will be launched for students, Prof Teo said the programme will presently focus on policy, implementation and research, while providing some capacity-building in South-east Asia.

There will also be opportunities for undergraduates and graduate students to work on projects relating to planetary health, he added.

The programme's researchers will consider developing more specific courses in the coming years.

"We often talk about how infectious diseases and pandemics know no boundaries, but the same goes for climate change - no climate mitigation strategy would involve closing borders or isolating a country from the rest of the world."

"So it is really down to countries and agencies who have the know-

how, the financial ability and the commitment, to contribute to tackling this global problem," said Prof Teo.

Two other research initiatives will be launched by the NUS Yong Loo Lin School of Medicine - one zeroing in on the health impacts of heat, and the other on the environmental sustainability of hospitals.

On average, healthcare systems account for over 4 per cent of global carbon dioxide emissions, with a report released in 2021 finding that Singapore's healthcare sector was one of the top carbon emitters in the world.

More details of the programmes will be released at the United Nations' COP28 conference, which will be held from Nov 30 to Dec 12 in Dubai. For the first time, the conference will have a day dedicated to discussing health issues, and host the first-ever climate-health ministerial meeting.

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