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20 April 2022

Geoengineering could increase infectious disease burden in the Global South – new study

Geoengineering the climate could have massive repercussions for the health of billions of people living in tropical countries with malaria. Solar geoengineering (emergency proposals to inject aerosols into the stratosphere to increase the reflection of sunlight back to space to offset global warming) could produce large trade-offs in health risks among Global South countries that are often excluded from geoengineering conversations.

This is according to new research by an international team including University of Cape Town (UCT) researcher Dr Christopher Trisos. He shared: "The potential for geoengineering to reduce risks from climate change remains poorly understood, and it could introduce a range of new risks to people and ecosystems."

The study focused specifically on the effects of solar geoengineering (also called solar radiation modification, or SRM) on the occurrence of malaria; mosquitoes (that carry the disease) are particularly sensitive to temperature.

Additionally, malaria's burden is measurable enough that it impacts economic growth and population-level mortality; if geoengineering is intended to reduce the health risks of climate change in developing countries, perhaps one of the greatest reductions could be experienced through impacts on malaria.

In the study, the researchers used climate models to simulate what malaria transmission could look like in two future scenarios, with medium or high levels of global warming, with and without geoengineering. The models identify which temperatures are most conducive for transmission by the *Anopheles* mosquito vectors, and identify how many people live in areas where transmission is possible. According to the research team's simulations, proposed geoengineering schemes could lead to local benefits in east Africa, but also large adverse impacts on west Africa and southern Asia.

Assistant Research Professor Colin Carlson from the Center for Global Health Science and Security at Georgetown University Medical Center who led the study elaborated: "One of the most surprising findings was the scale of potential trade-offs between regions. For example, in both scenarios, we found that geoengineering might

substantially reduce malaria risk in the Indian subcontinent even compared to the present day. However, that protective effect would be offset with an increase in risk in southeast Asia. For decision-makers, this might complicate the geopolitical reality of climate intervention.”

Trisos continued: “These scenarios illustrate that solar geoengineering could have adverse impacts on health in cases where the burden of infectious diseases does not strictly increase with warming temperatures.

“If infectious diseases are a priority for climate policy in developing countries (as malaria still is in much of the world), we suggest that current proposals for geoengineering might therefore be mismatched to the aim of reducing climate injustice and inequality of climate impacts in the health sector.”

“If geoengineering does not reduce risk to people then should we even consider doing it? Only with greater involvement of developing countries can any discussion of geoengineering meaningfully reflect its impacts on the people most vulnerable to human-caused climate change,” he concluded.

[Access the study 'Solar geoengineering could redistribute malaria risk in developing countries' online.](#)

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