New model proposed to reduce carbon footprint

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Prior to the global pandemic, climate researchers identified an uncomfortable truth: the very meetings and events meant to support the fight against climate change were themselves causing vast greenhouse

gas emissions through international air travel.

Building on learnings from the COVID-19 pandemic, the University of Otago's Professor James Higham, of the Department of Tourism, and his Oxford University colleagues Ph.D. student Milan Klöwer, Professor Myles Allen and Associate Professor Debbie Hopkins have identified new measures that may reduce the carbon footprint of conference travel by up to 90%.

The study is published this week in the journal *Nature*.

"We've arrived at a new model that will be required to bring the carbon footprint of international conferences down. The model can apply to small regional conferences as well," Professor Higham says.

Lead author Milan Klöwer says the model identifies three key areas for action; carefully selecting venues to minimize transport emissions, hosting conferences every second year to instantly cut travel by 50%, and creating hubs so people travel shorter distances to still benefit from networking while linking virtually to other hubs.

Researchers found the sum total of travel associated with attendance at one large academic conference can release as much CO_2 as an entire city in a week. For the American Geophysical Union's conference held in San Francisco last December, it is estimated the 28,000 delegates traveled 285 million kilometers—almost twice the distance between Earth and the Sun.

However, Professor Higham says "there is evidence that shows that in actual fact very little is gained by traveling regularly to conferences in terms of career trajectory."

The study found that intercontinental flights account for a high

proportion of total emissions—far more than regional flights—meaning that promoting alternative regional modes of transport such as trains is limited in terms of reducing the overall carbon footprint of a conference. However, the researchers stressed the need to avoid excluding scientists based further away, and the need to improve inclusion for researchers from underrepresented regions including the Global South.

"This is particularly relevant to us here in New Zealand. Most of our conference travel is long haul given where we are in the world. And, of course, when we host conferences it's heavy in terms of the carbon footprint because most of our international delegates have to fly vast distances to attend."

Co-author Professor Myles Allan, of the University of Oxford, explains that "To overcome some of the limitations of purely virtual events, we propose a new 'three hub' model where multiple conferences would take place simultaneously in different locations, enabling attendees to travel to their nearest hub to interact personally while simultaneously linking virtually with those in other hubs. We estimate this could reduce combined travel emissions by 80%, which would go a long way to ensuring academics are doing their bit to reduce carbon emissions."

While conferences have largely moved online in response to COVID-19, co-author Associate Professor Debbie Hopkins, of the University of Oxford, warns that may not remain the norm.

"To reach net zero global emissions we need everyone, from funding bodies to academic institutions, to relegate this kind of travel excess to the past. Only through a concerted and co-ordinated effort will the transition towards a new model of academic conference gain traction."

More information: Milan Klöwer et al., An analysis of ways to decarbonize conference travel after COVID-19, *Nature* (2020). DOI:

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