

# Perceptions of solar geoengineering in the six Asia-Pacific countries: An online survey study

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The 2015 Paris Agreement marked a watershed moment in climate change mitigation. More and more governments, businesses, and municipalities are embarking on ambitious mitigation action. And yet, the global emissions have not begun decreasing at the rate required by the 2-degree or 1.5-degree targets enshrined in the Paris Agreement.

This slow progress of climate change mitigation led some scientists to explore unconventional options such as climate engineering or geoengineering. Among climate engineering methods, solar geoengineering, especially stratospheric aerosol injection, is gaining traction since it is considered to be cheap and fast.

Stratospheric aerosol injection is based on the same physics as with global cooling due to major volcanic eruptions. Earth system modeling studies have given support to the cooling effect but also identified regionally different impacts as well as possible side effects, including a sharp rise in global temperature after sudden cessation.

In light of high stakes of this putative global technology, scientists began global conversations and public engagement. Burns et al. (2016, <https://doi.org/10.1002/2016EF000461>) found about 30 such studies, including deliberative workshops and opinion surveys. Although initiatives such as C2G (Carnegie Climate Governance Initiative) and SRMGI (Solar Radiation Management Governance Initiative) are making significant efforts to foster global conversations, most academic engagement studies have been limited to Global North (with some notable exceptions).

Against this background, here we report the results from a 2016 online survey in which we asked undergraduate students in the six Asia-Pacific countries (Australia, China, India, Japan, South Korea, and the Philippines). We asked about 500 students from each country, and posed about 20 questions related to their attitudes toward global warming, science and the environment. We presented a short description of stratospheric aerosol injection and asked what they thought about the technology. To facilitate respondents' understanding, we used the word "climate engineering" in the description.

The results showed that students were more concerned about global warming in the Global South (China, India, and the Philippine). Perhaps because of this, when asked about climate engineering, the undergraduate students from the Global South were more supportive of stratospheric aerosol injection than those from Global North (Australia, Japan, and South Korea), be it emotional feeling, cognitive support, or support of scientific field experiments. These differences were confirmed statistically by a Kruskal-Wallis non-parametric one-way ANOVA.

Despite the differences, the students agreed on the need for governance of research. Many supported international regulations on research and agreed with the so-called "Oxford Principles," including citizen consultation, full disclosure of scientific results, independent assessment of research, and no

business involvement in research activities.

When asked about who should be leading research, the students provided interesting results. The students from China, Korea, and Japan (countries with Confucian traditions) stated that countries with high scientific expertise should lead whereas those from other countries indicated that past emitter countries should do so.

Our findings imply that more attention should be paid to perceptions of publics in different regions, if we were to capture nuanced opinions about stratospheric aerosol injection across different regions.

This presentation is based on our recent publication (Sugiyama, Kosugi, & Asayama, 2020, Environmental Communication, <https://doi.org/10.1080/17524032.2019.1699137>).

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