

Oversight Committee, ARIA's Exploring Climate Cooling programme

A note on the announcement of Exploring Climate Cooling R&D Creators

Congratulations to the teams selected for funding under the Exploring Climate Cooling programme.

Your work exploring the science, impacts, governance, and ethics of solar radiation modification and ice sheet thickening has the potential to set a significant precedent for responsible research on an important topic. "Geoengineering," as these approaches are sometimes referred to, is controversial. It should be debated. But any decision, whether to develop, use or ban them, should be made with as much information, and with as many perspectives and questions included, as possible.

Last year was the hottest year on record and the world and its oceans are warming at an unprecedented rate of over 0.2C per decade. Rainfall intensity and wildfire risks are increasing, along with the mounting health impacts of extreme heat.

Decarbonisation towards net zero and broader reduction of methane and other greenhouse gases must accelerate in order to limit warming and other environmental damages such as ocean acidification stemming from excess carbon dioxide. Stopping further warming, however, does not mean immediate cooling as carbon dioxide is a long-lived greenhouse gas.

Societies and ecosystems will need to adapt to living in this hotter world under more extreme conditions. Even with stable temperatures, ice will continue to melt and the deep ocean continue to warm, leading to centuries of sea-level rise. In some cases, there will likely be limits on how much it will be possible to adapt and more drastic actions such as abandoning low lying islands or changing staple food crops may be necessary.

There are possible ways to cool the planet. Achieving rapid reductions in short-lived greenhouse gases, especially methane or actively removing carbon dioxide from the atmosphere are expected to have a cooling effect. There are also various methods that

could cool the earth's surface by reflecting sunlight. These have been known, in principle, for decades. There are natural analogues: volcanic eruptions, for example, have a measurable (temporary) effect on surface temperatures. In practice, however, there are many unknowns about the efficacy, safety, and controllability of different approaches to cooling the earth's surface. There is much to learn - and many perspectives and disciplines to involve in that learning.

We want to commend ARIA for being deliberate in its choices about structuring this programme, including inviting us to constitute the beginnings of an oversight committee. The programme has taken care to solicit proposals from a range of research perspectives and geographies, including beyond the UK. It has a structured approach to reviewing and approving experiments, including specific requirements for respectful engagement with key communities. It commits to considering the wider context for how this research might be used. It has demonstrably done so in developing an IP policy unique from other ARIA programmes. Implementation of climate intervention governance, especially for small-scale outdoor experiments, is still in its early stages. There are important learnings of how to do oversight in ways that reinforce transparency, legitimate engagement, and scientific integrity that we hope this committee can guide.

To be clear: we do not exist to legitimise this programme. We advise ARIA on the risks and benefits of supporting proposed creator projects and how best to work with and across creator teams to support learning and to help ensure that findings are contextualised and communicated appropriately alongside mitigation and adaptation options. During project selection, we weighed in at various stages to advise the programme team on feedback to creators to strengthen research governance, and the ARIA leadership on prioritisation of proposals. We are pleased that ARIA has been receptive to our suggestions, including additional investment, supporting the creator teams in public and stakeholder engagement.

We are advisory: we do not have the power to prevent or withdraw funding. However, we are constituted to have an unconstrained voice that is independent of the programme, and, when needed, independent of ARIA as an organisation. We have started as a disciplinarily and geographically diverse set of actors. Membership of the committee will expand and change over the coming months. We will seek additional geographic, legal, ethical, governance scientific, and other expertise to adapt as the programme evolves. Our intention is to build the committee and wider set of collaborators to ensure that we have the expertise to ensure that key governance principles such as learning, transparency, collaboration, risk minimisation and community engagement become real and visible practice.

Looking ahead, we will advise ARIA on appropriate governance frameworks in handling different risks and opportunities around the programmes, especially for projects learning from real-world investigations. This is an opportunity to create space for a more constructive conversation on how to govern research, ensure greater inclusivity of research questions from diverse geographies, promote collaboration, and put theoretical principles into practice in ways that can serve as a governance model for research to come. We hope the work of our committee will contribute to resolving critical uncertainties about governability of approaches for climate cooling while at the same time keeping open the possibility that they will never be used.

Signed,

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