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OPINION

A paradigm shift? African countries call for the non-use of solar geoengineering at UN Environment Assembly

Frank Biermann[1]*, **Aarti Gupta**[2]*

1 Copernicus Institute of Sustainable Development, Utrecht University, Utrecht, The Netherlands,
2 Environmental Policy Group, Wageningen University and Research, Wageningen, The Netherlands

* f.biermann@uu.nl (FB); aarti.gupta@wur.nl (AG)

Introduction

The 6th United Nations Environment Assembly (UNEA-6), held in February 2024 in Nairobi, will be remembered as one of the first intense international negotiations about the potential role of solar radiation modification (SRM), or solar geoengineering, in addressing the climate crisis. The debate was initiated by Switzerland, which tabled a resolution that would have mandated the UN Environment Programme to establish a scientific expert group to assess information on this speculative suite of technologies that aim at cooling the planet by blocking parts of incoming sunlight [1].

Yet the very first deliberations on the resolution made it clear that the call for an expert group was controversial and consensus far away. Over the course of ten days, the Swiss submitted revised versions of their draft resolution, only to see these subjected to lengthy additions, deletions, and bracketed reservations by opposing groups of countries. In the end, Switzerland was compelled to withdraw the resolution, in a déjà-vu moment from 2019 when it had proposed a resolution on geoengineering that also failed to reach agreement [2, 3].

Competing coalitions of countries

Broadly speaking, three coalitions of countries emerged as leading voices in the negotiations.

First, the group of African countries, skilfully led by Djibouti, tabled various lines of critique against the Swiss proposal. As an alternative to an expert group report, they supported a repository into which governments and other actors could submit broad categories of SRM-related information, to advance transparency and knowledge-sharing. The African group also wished the resolution to note the 2023 decision by the African Ministerial Conference on the Environment (AMCEN/19/6) on "the need for a global governance mechanism for non-use of solar radiation management" [4]. As a second group, the United States, supported by Saudi Arabia, generally saw the resolution as prematurely putting "policy" before the science on SRM was further advanced, and opposed calls for inter-governmental information gathering processes under UNEP. They also objected to references herein to broader considerations on global regulations, ethics, or human rights. Somewhere in the middle was the European Union, which emphasized, among other things, the need for a broad assessment approach, an explicit reference to the precautionary principle, a much wider understanding of "expertise" and the need for intergovernmental involvement in any information-gathering on SRM.

Most other countries aligned with these three main groups to varying extent, with Japan following the United States, Norway supporting the European Union, and the United Kingdom,

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Australia and Canada offering a softer, often vague stance somewhere between the EU and the US. The African position was supported by several other Global South countries, including Colombia, Fiji, Mexico, Pakistan, and Vanuatu. The positions of China, India and Russia were harder to ascertain, and did not clearly align with any of these three groups.

Core lines of conflicts

As negotiations on the resolution proceeded, key conflict lines became ever clearer, with the main country alliances adopting divergent positions on these.

A core conflict centred around whether to consider only risks or also benefits of SRM. While the United States suggested that any SRM assessment should also consider the "potential benefits" of this speculative technology, this was anathema to the African group of countries and many others, who demanded an assessment of the risks only. Fundamentally disputed was also the breadth of scientific assessments and what constitutes relevant SRM-related "expertise". Should assessments be narrowly focused on climate risks, or also cover broader environmental, social, and economic impacts of SRM, as well as issues of regulation and governance, ethics and justice, global security and geopolitics, and perspectives from local and Indigenous knowledge? The United States, often supported by Saudi Arabia, objected to inclusion of these broader considerations, while the African group, the EU and others called for a wider remit for assessments as well as for what constitutes relevant expertise in this field.

A further line of contestation was the appropriate institutional home for knowledge-gathering around SRM. Should it be "scientific" and run by scientists; or be a more political process mandated by governments? As one of the most contested aspects of the negotiations, the United States pushed strongly for a central role for the World Climate Research Programme (WCRP) and its recently launched project on "climate intervention research" [5]. In asserting that this programme offered what the global community currently needed on SRM knowledge-sharing, the US wanted a UNEA-6 resolution to confine itself to "welcoming" this initiative. For many other countries, a sole focus on the WCRP was inacceptable. As countries noted, this programme appeared to be a narrow network of climate scientists, with little expertise in broader questions of social science, economics, regulation, ethics, and justice. That the WCRP project on "climate intervention research" is co-chaired by a leading SRM-researcher rang further alarm bells among some delegations. Most countries thus strongly pushed for multilateral political arenas rather than technical, natural-science based arenas for SRM-related deliberations.

The preambular paragraphs were also fiercely debated. Conflicts here revolved around whether and how to acknowledge the Convention on Biological Diversity's *de facto* moratorium on geoengineering agreed by countries in 2010 [6], or how the precautionary principle should be reflected. African countries also insisted that the preamble acknowledge their call for a global governance mechanism on "non-use" of solar geoengineering, a proposal aligned with the 2022 call by academics for such a "non-use agreement" that has now been signed by over 500 scholars from 67 countries and endorsed by more than 1900 civil society organizations [7, 8].

With the fate of the draft resolution hanging in the balance, a final proposed compromise was to simply explore the need to set up a repository of SRM information, one that was neither a formal expert group report, nor a mechanism for multilateral oversight. But even this minimalist compromise did not find sufficient support, given the many fundamental fault-lines, and a persisting atmosphere of mistrust around how narrow or broad its remit would be, who would feed what kind of information into it, and what multilateral processes, if any, would be linked to it.

Where to go from here?

Even though a resolution on SRM has not been agreed at UNEA-6, the negotiations seem to have strengthened the resolve of some countries of the Global South to take a strong and proactive critical stance against a solar geoengineering agenda being pushed by a few Global North scientists [9] along with philanthropic foundations that have pumped millions of dollars into lobby campaigns [10]. Africa stood firm in its call for non-use, finding support for this position from more Global South countries. Mexico was also vocal about the need for international condemnation of outdoor experiments of SRM, carried out on its territory without its consent by a small US-based company, until Mexico banned such experiments [11]. Civil society groups also remained aligned in their strong stance against solar geoengineering, with interventions by "Major Groups" of Women, NGOs, and Science and Technology all affirming their fundamental critique of SRM and staunch support for a global non-use agreement [12].

The outcome of UNEA-6 also raises questions around the UN Environment Programme's role in this debate. While UNEP enjoys a good reputation in many quarters and is generally well trusted across the Global South, it remains an environmental programme with little power and a strong consensus-oriented culture. Potential scenarios of unilateral development and control of geoengineering technologies by a few powerful countries suggest that solar geoengineering surpasses traditional "environmental" policies. Instead, solar geoengineering implicates unequal and shifting global power dynamics, mitigation delay for the wealthy, geopolitical conflicts and, for some, a novel threat of neocolonial imposition. For that reason, the road from Nairobi might well point to additional institutional directions. These could include the United Nations General Assembly, where the Global South has a firmly established majority of votes [13], or the human rights system of the United Nations. Even links to international criminal law, if unilateral geoengineering is seen as constituting "ecocide", have been suggested in the corridors. It remains to be seen how African countries will build on their strong leadership at UNEA-6 to strengthen emerging alliances with countries in the Pacific and Latin America, and with like-minded industrialized countries.

For SRM research advocates, the World Climate Research Programme is likely to remain the main locus of attention for the next years. Yet, after this year's UN Environment Assembly, it will be increasingly difficult for SRM researchers to claim that their work is needed for the benefit of the Global South [14, 15]. The global context has shifted. African diplomats have firmly called in a UN setting for an international non-use mechanism on solar geoengineering. Those promoting and investing in research that may result in technology development will need to acknowledge this new political reality of strong Southern rejection and fierce NGO opposition. Whether to engage in SRM research is no longer simply a matter of academic curiosity. Instead, this decision is now part of an emerging global political conflict over a speculative technology with wide-ranging planetary-scale consequences, were it ever to be developed and deployed.

Author Contributions

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