Summary of the Scientific Opinion on

Solar Radiation Modification

Scientific Advice Mechanism
to the European Commission

December 2024

Issue

For decades, technologies have been proposed that would reduce or counteract **global warming** by **reflecting sunlight away from the Earth.** These proposals, known as **"solar radiation modification" (SRM)** technologies, include stratospheric aerosol injection, cloud brightening, and others. **Climate modelling suggests** that some of these technologies **might have the potential to prevent further global warming** and reduce some of its effects, such as extreme weather events and rising sea levels.

Challenge

The benefits and risks of solar radiation modification technologies are highly uncertain. Deploying them could have effects on the climate in different parts of the world which would be difficult to predict and difficult to manage in practice.

They **could** have **negative impacts on ecosystems, change rainfall patterns, and hamper food production.** Moreover, they would not address the direct impacts of greenhouse gases, such as ocean acidification or changes in vegetation patterns.

Requirements

How can the EU address the risks and opportunities associated with research on Solar Radiation Modification and with its potential deployment? What are the options for a governance system for research and potential deployment taking into account different SRM technologies and their scale?

Recommendations

- **Prioritise reducing grennhouse gas (GHG) emissions as the main solution** to avoid dangerous levels of climate change.
- Agree on an **EU-wide moratorium on the use of SRM** as a measure for offsetting climate warming.
- Proactively negotiate a **global governance system for deployment of SRM** by means of a multilateral process with international legitimacy. Given the current state of knowledge (8 December 2024), the EU position in these negotiations should be for the non-deployment of SRM in the foreseeable future.
- Ensure that **research on SRM is conducted responsibly, with scientific rigour and in accordance with EU ethical principles in research.** This should include research into the full range of direct and indirect effects and unintended impacts of SRM on the climate system, the biosphere and humankind, including governance and justice issues.
- **Reassess the scientific evidence on risks and opportunities** of SRM research and deployment **periodically, every 5-10 years.**

Impact

This Scientific Opinion has been produced to support the development on an EU position and EU policies on solar radiation modification technologies.

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This is a one-page summary of a scientific opinion by the Group of Chief Scientific Advisors, an independent expert group providing high-quality and timely scientific advice to the European Commission, to inform European Union policies and legislation. It is informed by the SAPEA evidence review report. Read the full report **here** https://data.europa.eu/doi/10.2777/391614

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