

# Solar Radiation Modification Governance

## Brief for UNEA-7

### Context

Following the African Ministerial Conference on the Environment (AMCEN) call for exploring a non-use agreement on Solar Radiation Modification (SRM) at the United Nations General Assembly (UNGA), many anticipated that a resolution might emerge at UNEA-7. While no resolution has been tabled, interest in SRM governance remains high among member states, civil society, and observers.

UNEA remains the only universal environmental body explicitly mandated to address emerging environmental issues, and several delegations (including from Africa, Latin America, and Europe) have signaled a desire for clearer information, inclusive dialogue, and structured pathways for international cooperation—without prejudging any eventual policy outcome.

This brief aims to support such conversations by outlining key concepts, governance developments, and considerations relevant for ministerial-level engagement during UNEA-7.

### Understanding Solar Radiation Modification (SRM)

Solar Radiation Modification (SRM)—often referred to as solar geoengineering—is a set of proposed approaches to reflect a small portion of incoming sunlight to cool the planet. SRM cannot address root causes of climate change and cannot substitute for mitigation, carbon removal, or adaptation.

It is sometimes discussed as a potential temporary complement if climate impacts accelerate faster than society’s ability to respond.

Balanced discussions increasingly rely on a risk–risk framing: weighing the risks of SRM research or deployment against the rising risks of extreme heat, crop failures, and climate-driven instability.

### Main SRM Techniques Being Studied

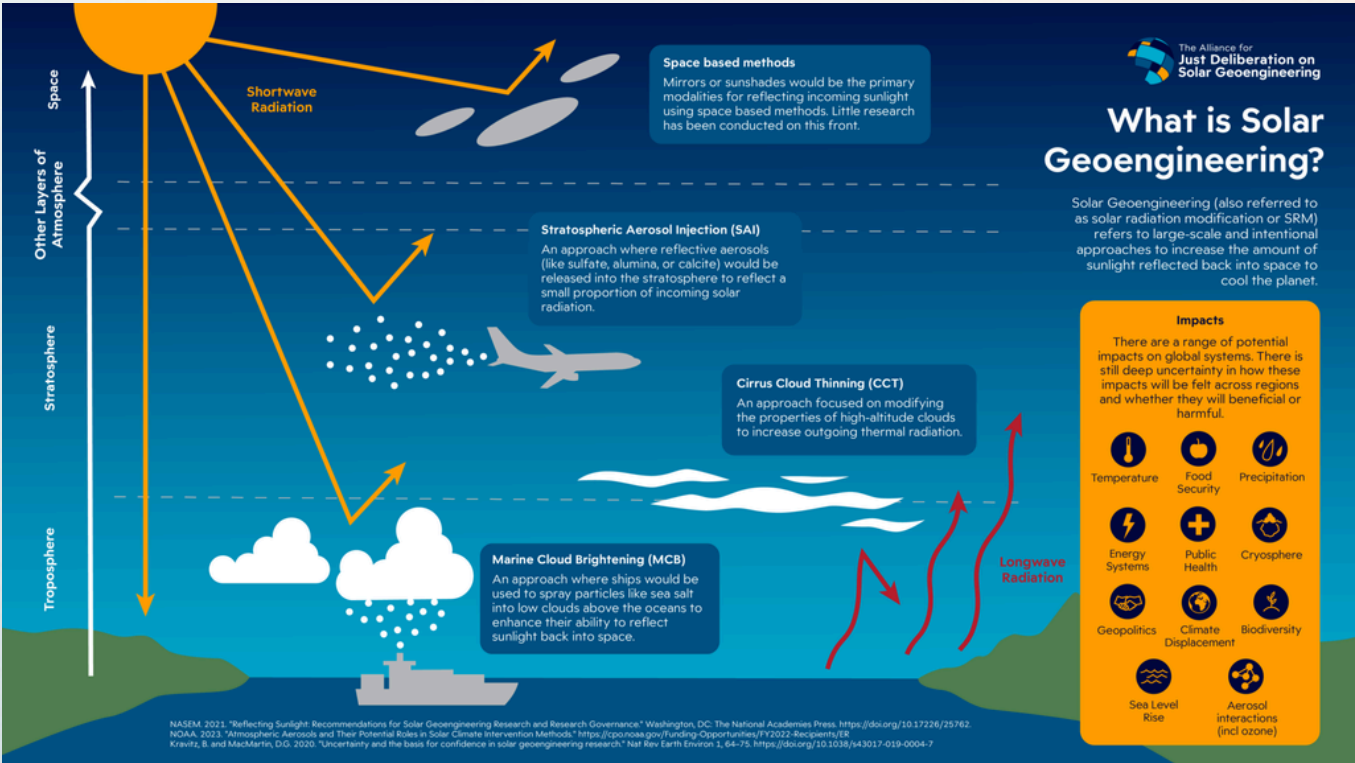
#### Stratospheric Aerosol Injection (SAI)

- Concept: Introduce reflective particles into the stratosphere to scatter sunlight.
- State of knowledge: Models suggest strong cooling potential; real-world impacts remain uncertain.
- Key considerations: Potential impacts on precipitation patterns, ozone recovery, and the need for globally coordinated governance.

#### Marine Cloud Brightening (MCB)

- Concept: Spray fine sea-salt particles to increase cloud reflectivity.
- State of knowledge: Early research; scientific uncertainties remain high.
- Key considerations: Regional climate effects, cloud microphysics, ocean-atmosphere interactions.

No SRM technique has been tested at climatically meaningful scale. Any future research would require robust environmental, ethical, and societal safeguards.



## The Evolving and Fragmented Governance Landscape of SRM

Governance of SRM remains dispersed across a range of international norms and institutions, none of which provide a coherent or comprehensive framework. Elements of governance do exist: the Convention on Biological Diversity was the first multilateral body to articulate precautionary guidance, emphasizing that no geoengineering activity should proceed without adequate scientific understanding, risk assessment, and appropriate oversight. The London Convention and Protocol has adopted similar cautionary language, particularly in relation to marine cloud brightening, underscoring that activities must remain within the bounds of legitimate scientific research. The UN Human Rights Council, through its Special Rapporteur system, has drawn attention to the human rights and equity challenges inherent in SRM, calling for inclusive governance processes that center the perspectives of climate-vulnerable and historically marginalized communities.

Despite these touchpoints, previous attempts at UNEA—such as the Swiss proposals at UNEA-4 and UNEA-6 to initiate formal assessments—have not achieved consensus. These outcomes reflect the reality that member states recognize both the growing relevance of SRM and the difficulty of determining the appropriate institutional home, timing, and scope for global governance. Similar dynamics exist across other international bodies: the Montreal Protocol’s scientific panels have assessed potential ozone-layer interactions; the UNFCCC has not formally taken up the issue; and regional institutions such as the African Union have expressed strong views on precaution and non-use. What emerges is a picture of governance that is active but incomplete—providing useful signals while leaving fundamental questions about authority, legitimacy, monitoring, public participation, and international coordination unresolved.

This fragmented landscape increases the risk that SRM-relevant activities will unfold faster than the international system can organize to manage them. It has also created uneven expectations among states and communities about who is responsible for oversight and how decisions will be made. As research interest grows globally and private sector activity accelerates, the absence of a shared governance framework becomes increasingly consequential.

## Scientific and Institutional Assessments

Scientific bodies across the UN system and national academies consistently reinforce three themes. First, SRM approaches—particularly stratospheric aerosol injection—have a strong physical basis for their potential to lower global average temperatures, at least in the near term. Second, the uncertainties associated with climatic, ecological, social, ethical, and geopolitical impacts remain substantial, especially at regional scales. And third, governance challenges are not secondary to the science itself; they constitute a core risk.

The IPCC’s assessments, the UNEP “One Atmosphere” report, UNESCO’s COMEST ethical analysis, and national reviews such as those by the Royal Society and the French Academy of Sciences all highlight these points with varying emphases. Across these assessments, there is no support for deployment, and no credible scientific body presents SRM as a substitute for emissions reductions or adaptation. Instead, these reports stress that the knowledge gaps are significant, the distribution of impacts may be unequal, and any research—particularly outdoor experiments—requires robust governance, transparency, and societal engagement. Many also note that without improved international cooperation, the security, equity, and ethical concerns surrounding SRM may intensify.

## Key Actors in the SRM Landscape

The landscape of actors engaged with SRM has diversified rapidly, creating a complex governance environment. Research institutions and national laboratories continue to explore the physical science of aerosols, clouds, and radiative effects, but social scientists, ethicists, and legal scholars increasingly play central roles in shaping debates about legitimacy, justice, and decision-making structures. Civil society organizations have become especially important, with many advocating for precautionary approaches or non-use positions, and drawing attention to the moral hazard risk and to potential inequities if decisions are centralized among a small group of technologically advanced states or private actors.

Private sector actors have emerged in ways that have surprised many policymakers. Companies such as Make Sunsets and Stardust Solutions have undertaken or

announced small-scale SRM-related activities, highlighting the low barrier to unilateral action and raising governance concerns. These developments illustrate how entrepreneurial initiatives can outpace regulatory structures, underscoring the need for clearer norms and oversight mechanisms.

Government positions are similarly varied. Some states, including the United States and the United Kingdom, have increased research investments, while others have enacted restrictions or bans. Regional bodies, notably

within Africa, have articulated strong precautionary principles, with AMCEN's call for a non-use agreement marking one of the most forward-leaning regional positions globally. Intergovernmental organizations—ranging from the WMO to the Arctic Council—have touched on SRM in sector-specific contexts, but none possess the mandate or institutional architecture to coordinate a global governance response.

The result is a dynamic but disjointed field in which multiple actors shape the trajectory of SRM discussions, often with differing assumptions, priorities, and capacities.

## Additional UNEA-Relevant Context

Several contextual factors are important for understanding why SRM is a topic of interest at UNEA-7, even in the absence of a resolution, and why not taking formal action at this session is appropriate given member state priorities and an already demanding agenda.

### 1. Political Dynamics at UNEA-7

UNEA-7 is convening amid a convergence of pressing environmental negotiations—chemicals, plastics, climate-linked humanitarian pressures, and financing for implementation. Delegations arrive with limited bandwidth and a strong desire to avoid opening complex new agenda items without adequate preparation. Informal conversations indicate that member states differ widely in their understanding of SRM and in their views on whether UNEA is the right home for governance discussions. Many delegations prefer to build understanding and trust through dialogue rather than rush into formal processes. In this context, engaging SRM through side events, briefings, and expert dialogues—rather than a negotiated text—aligns well with the political realities of UNEA-7.

### 2. The AMCEN–UNEA Connection

AMCEN's call for a non-use agreement has drawn global attention, but African delegations are still determining how that regional stance should translate into multilateral processes. AMCEN's decision reflects legitimate concerns about equity, historical injustices, and risks of unilateral or private-sector action. However, African governments also recognize that regional positions do not automatically map onto multilateral negotiations, particularly when issues require broader scientific assessment, institutional design, and cross-regional dialogue. UNEA-7 offers an opportunity to socialize the AMCEN perspective without expecting a formal outcome, creating space for other regions to articulate their views, identify shared concerns, and explore constructive avenues for cooperation.

### 3. Need for Capacity-Building and Global South Research Agency

A consistent theme across Global South governments and civil society is the need for strengthened domestic and regional capacity to evaluate SRM science, ethics, and governance. Many countries lack access to the modeling tools, legal expertise, and research infrastructure needed to independently assess risks and opportunities. Uneven capacity creates asymmetric influence over the global conversation and reinforces concerns that SRM could entrench existing power imbalances. Capacity-building—through training, regional research networks, and inclusive expert dialogues—is therefore a prerequisite for any legitimate global governance process, and an area where UNEA can add value without requiring a formal mandate.

### 4. Environmental and Geopolitical Context

UNEA-7 is taking place in a moment of intensifying climate impacts, heightened geopolitical competition, and growing public scrutiny of technological interventions in the environment. Many delegations are navigating multiple crises at once, from water scarcity to biodiversity loss to climate-accelerated economic pressures. In this context, SRM surfaces as an issue precisely because climate impacts are worsening, but it is also viewed with caution given the geopolitical risk of unilateral action and the potential for SRM to complicate broader environmental cooperation. The global political climate favors dialogue and trust-building, not decisive or divisive action.



### **5. UNEA's Comparative Advantage—and the Appropriateness of Not Taking It Up Now**

UNEA is the only universal environmental assembly with a mandate to address emerging environmental challenges that cut across sectors, regions, and scientific disciplines. Its inclusivity and environmental focus make it a credible venue for future cooperative dialogue on SRM governance, should member states choose to pursue it. At the same time, UNEA-7's agenda is exceptionally full, and attempting to negotiate an SRM-related resolution now could crowd out urgent priorities or force deliberations before delegations are ready. Recognizing this, many member states and observers view not taking up SRM formally at UNEA-7 as a prudent choice that respects political realities while still enabling meaningful engagement through side events, bilateral dialogues, expert briefings, and regional consultations. These softer mechanisms can help build the grounding needed—scientific, ethical, political, and institutional—for any future deliberation within the UN system.

### **Key Messages for UNEA-7**

1. A governance gap persists, and UNEA is a credible venue for discussing how to close it.
2. The issue is not whether to endorse SRM, but whether the world should clarify expectations, safeguards, and information pathways before events overtake institutions.
3. Precaution and inclusion must guide all discussions, especially given the strong positions articulated by African governments and Indigenous groups.
4. Research governance—not deployment—is the immediate question, and UNEA can help shape pathways for improved transparency, capacity-building, and global participation.
5. UNEA can facilitate a process-oriented approach, such as:
  - expert dialogues;
  - capacity-building initiatives;
  - improved coordination among UN bodies;
  - mapping governance options without committing to any.
6. Risk–risk framing is essential, but so is reinforcing that SRM cannot replace emissions reductions or adaptation.
7. Understanding the diverse actor landscape (public research, private actors, philanthropy, civil society) is necessary for any effective governance arrangement.

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