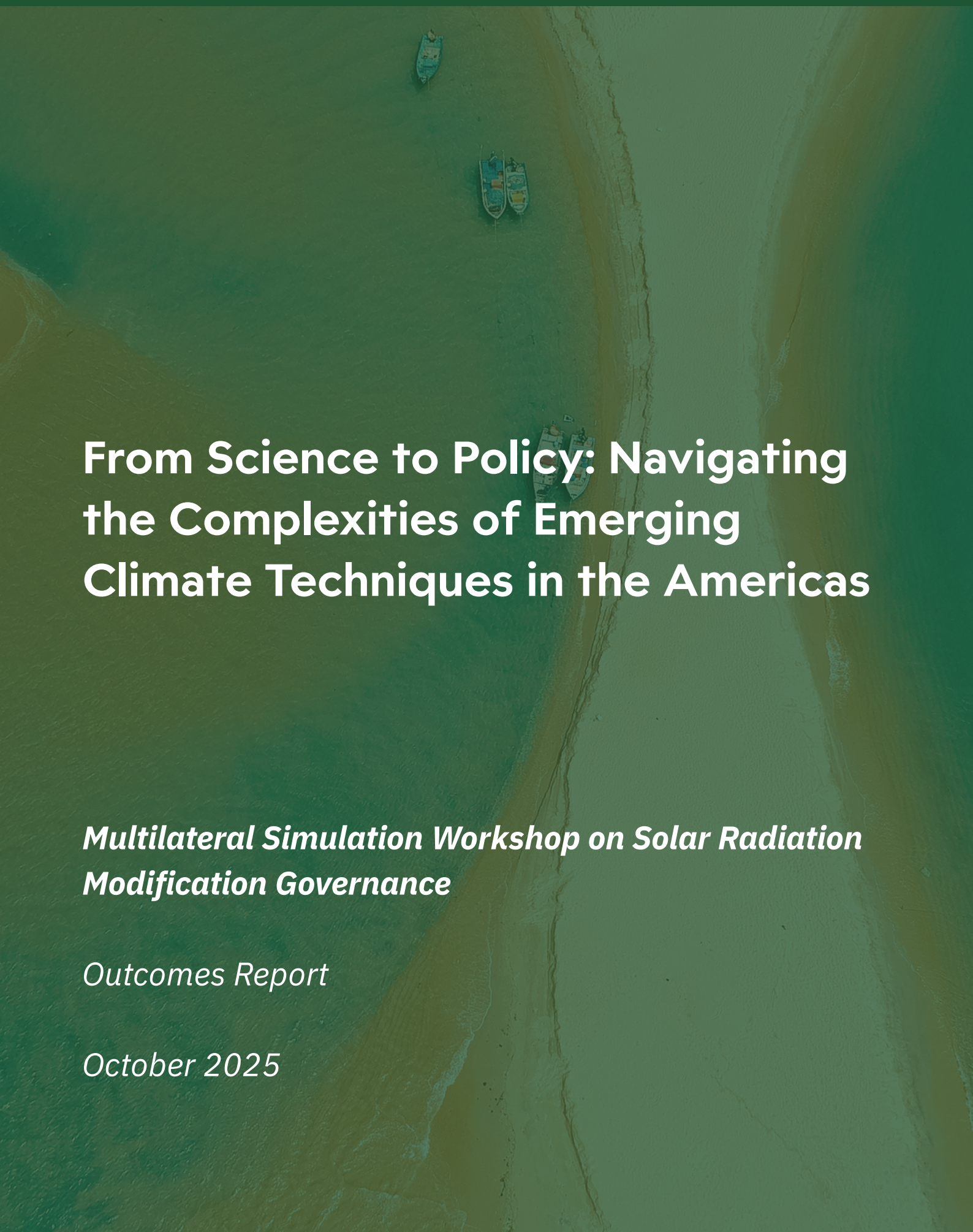
IAI Inter-American Institute for Global Change Research

The Alliance for Just Deliberation on Solar Geoengineering

The DEGREES Initiative



From Science to Policy: Navigating the Complexities of Emerging Climate Techniques in the Americas

Multilateral Simulation Workshop on Solar Radiation Modification Governance

Outcomes Report

October 2025

OUTCOMES REPORT

BACKGROUND

Recognizing a significant knowledge gap on emerging climate intervention techniques among climate and environmental negotiators and policymakers in the Americas, the Inter-American Institute for Global Change Research (IAI), the Alliance for Just Deliberation on Solar Geoengineering (DSG), and The Degrees Initiative developed a three-part workshop series—two virtual sessions followed by an in-person technical meeting. To maintain a focused scope, the series centered on solar radiation modification (SRM) as a case study.

SRM, also referred to as solar geoengineering, encompasses large-scale approaches designed to increase the reflection of sunlight back into space. While SRM has the potential to reduce global temperatures, its possible effects on physical and social systems—including precipitation patterns, agriculture, biodiversity, public health, and geopolitics—remain uncertain. Over the past three years, interest in SRM research and governance has increased across multilateral and national institutions. Bodies such as the UN Human Rights Council have called for analysis of SRM's human rights implications, while UNEP has contributed scientific assessments identifying key areas of uncertainty and governance gaps. Governments, including the United States and the United Kingdom, have commissioned systematic national assessments examining SRM research and governance needs.

The two virtual workshops introduced the scientific, ethical, social, and governance dimensions of SRM, featuring presentations from regional climate and SRM experts. The report from those workshops is available here.

The final component of the series was an in-person workshop in Bogota, hosted by Colombia's Institute of Hydrology, Meteorology and Environmental Studies (IDEAM). The meeting convened government representatives and researchers from across Latin America and the Caribbean (LAC) to examine international decision-making processes related to SRM, and to explore issues including ethics, equity, science–policy interfaces, and existing institutional frameworks.

This initiative contributes to the objective of the IAI to support scientific capacity, advance science-policy engagement, and strengthen regional cooperation. The following sections summarize the main themes of the workshop discussions and identify priorities for future engagement. Additional information on the IAI, DSG, and The Degrees Initiative is provided in the Appendix.

PARTICIPANT PROFILE

The participants were officially nominated by their governments. They represented a diverse group of senior policy officials, technical specialists, and academic leaders from government agencies, research institutes, and science-policy bodies. The IAI also invited members of its Advisory Committees to participate as observers, including a representative from the Indigenous Peoples Advisory Committee (IPAC).

The group included negotiators and high-level public officials working on mitigation, adaptation, and carbon-pricing policies; directors and coordinators of national climate units; technical experts from air-quality assessment, environmental evaluation, and climate-monitoring programs; and research-oriented profiles such as scientists, university faculty, and programme managers.

This combination brought together participants with strategic decision-making authority, applied technical capacity, and academic expertise. They were nominated by a wide range of institutions, including environment ministries, climate-change directorates, meteorological and environmental monitoring agencies, national science and technology councils, and academic or research organizations. Together, these nominating bodies reflected the breadth of the region's science–policy landscape, providing a strong foundation for informed engagement in any future national, regional, or multilateral deliberations on SRM.

WORKSHOP OBJECTIVES

This workshop series aimed to build and strengthen the capacities of key climate and environmental government representatives in the Americas. The overall objectives were to:

- Provide a comprehensive understanding of the science, ethical, social, and governance dimensions of SRM framed around the science and modeling of climate change, as well as engineering/technological developments.
- Facilitate the development of national/regional perspectives and capacity to engage in international SRM discussions and decision-making processes.
- Empower participants with the knowledge and tools necessary for evidence-based contributions to the deliberative multilateral process.

WORKSHOP PROGRAM

To support active learning and hands-on engagement, the workshop combined expert presentations with interactive exercises designed to mirror real-world regional consultations and multilateral negotiations.

The workshop was structured as an interactive simulation exercise composed of two parts: a regional preparatory consultation to explore how countries in the Americas might assess and articulate their priorities and concerns related to SRM governance; and a simulated multilateral negotiation based on a fictional draft resolution and fictional country profiles, designed to introduce participants to the complexities of negotiating on emerging technologies for which limited conclusive scientific evidence is available.

Regional researchers with expertise in SRM actively participated throughout the exercises, offering technical guidance in response to participants' questions and requests. Their involvement replicated the role of scientific advisors within national delegations at intergovernmental meetings, helping ensure that scientific perspectives were integrated meaningfully into the negotiation process.

The objective of the simulation was not to reach consensus or produce policy recommendations, but rather to give participants hands-on experience with the challenges of multilateral deliberation on complex issues such as SRM—challenges that include navigating scientific uncertainty, ethical considerations, institutional mandates, and geopolitical dynamics.

The full workshop agenda is available in the Appendix.

DISCUSSION THEMES

National and Regional Empowerment

- Participants reaffirmed the constructive role that LAC countries have historically played in global climate negotiations. They identified an opportunity to strengthen institutional capacities related to SRM research and governance within the region. While acknowledging differences in technical capacity compared to institutions in the Global North, participants highlighted that assessing local and sub-regional impacts would enable more equitable engagement in international discussions. Several noted that many countries in the region have achieved progress in mitigation and that LAC's overall share of global greenhouse gas emissions remains relatively low.

Need for Impacts Research and Access to Data

- There was broad agreement on the need for expanded research to better understand the potential physical and socio-economic impacts of SRM in the region. Participants expressed interest in improving access to existing evidence through a centralized portal or database and building capacity to interpret or conduct relevant climate and SRM modeling. As one participant summarized: "*science on the region, by the region, for the region—without isolating ourselves from the Global North*."

Inequality Between Responsibilities and Impacts

- Participants discussed disparities between the region's relatively low contributions to global emissions and its high vulnerability to climate impacts. Conversations touched on historical responsibility, the distribution of potential risks and benefits associated with SRM, and mechanisms through which research funding could better support developing countries.

Relationship Between SRM and Existing Climate Commitments

- Participants identified potential implications of SRM for existing commitments under the Paris Agreement, including Nationally Determined Contributions (NDCs). They noted risks that SRM could create moral hazard or shift attention away from mitigation and adaptation priorities. Several countries indicated that institutional capacity constraints could make it difficult to incorporate a new and technically complex issue into existing climate agendas without additional support.

Justice and Governance Considerations

- Discussions emphasized that any future governance system for SRM should be grounded in principles of equity, climate justice, and biodiversity protection. Participants reflected on the sequencing of research and governance—whether stronger governance frameworks should precede research or whether both could evolve jointly.

Translating Science to Policy

- Participants highlighted challenges in communicating SRM science to policymakers who must navigate multiple priorities. The hypothetical nature of SRM and associated uncertainties complicate efforts to secure sustained political attention. Strengthening science–policy interfaces was identified as a key need.

Long-Term Outlook

- Given the long-term nature of SRM as a policy issue, participants noted that short political cycles may limit sustained engagement. Some recommended establishing long-term state policies, rather than government-led programs, to ensure continuity in research, observation, and institutional knowledge.

Interest in Continued Engagement

- Participants expressed a strong interest in additional learning opportunities. Many saw value in sub-regional collaboration among countries with common climate risks or geographic characteristics. They also expressed interest in partnering with the IAI and other regional institutions to highlight research needs and advance regional capacity.

KEY TAKEAWAYS

Participants expressed interest in more opportunities for regional discussion on SRM. They were of the view that countries would benefit from examining their national priorities related to SRM to instigate research questions that would respond to their needs. Participants also agreed on the need for greater regional cooperation, potentially through international regional organizations such as the IAI. There was agreement on the need to enhance research in the region and that such research was needed to provide countries with the data and information needed for more effective participation at multilateral intergovernmental fora.

Suggestions included the need for greater South-South cooperation and triangular South-South-North cooperation when appropriate. Such cooperation could begin through the provision of access to data, thereby creating greater synergies among universities and research centers.

Finally, the participation of Indigenous Peoples and local communities was emphasized, noting the need for free, prior and informed consent on research proposed on or over their traditional lands and territories.

NEXT STEPS

The organizers have begun informal discussions with countries to better identify their research and capacity needs. Additional workshops are being considered—subject to the availability of external financial support—to help governments and researchers navigate evolving governance debates, recent scientific developments, and the growing role of private initiatives, such as the recent venture-funded activities announced by companies like Stardust Solutions.

This workshop builds on a small but growing number of SRM-related dialogues that have taken place in the region over recent years. By providing a space for governments to engage directly with scientific and governance considerations, the initiative contributes to a more informed and regionally grounded discussion on the topic.

Parallel to these capacity-building efforts, regional researchers are undertaking complementary initiatives, such as a review paper synthesizing existing SRM-related research and identifying research gaps across Latin America and the Caribbean. This emerging body of work may help strengthen policymakers' understanding of the region's scientific landscape and research needs.

Looking ahead, future steps may focus on strengthening the sustainability of SRM-related research in the region and on building networks that enhance the exchange of data, methods, and expertise. Latin America possesses exceptional human scientific capacity but often lacks access to emerging technologies. Expanding access to these resources would empower researchers and enhance the governance capacities of governments, providing new options for addressing the challenges and uncertainties posed by SRM.

APPENDIX

ABOUT THE ORGANIZERS

The Inter-American Institute for Global Change Research (IAI) is a regional intergovernmental organization that promotes interdisciplinary scientific research and capacity building to inform decision-makers on the continent and beyond. Since the establishment of the Agreement in 1992, 3 additional nations have acceded the treaty, and the IAI has now 19 Parties in the Americas, which come together once every year in the Conference of the Parties to monitor and direct the IAI's activities.

The Alliance for Just Deliberation on Solar Geoengineering (DSG) is a global initiative that advances inclusive, globally participatory governance of Solar Radiation Modification (SRM) by centering climate-vulnerable communities and nations in decision-making. DSG builds governance capacity, supports policy engagement, fosters regional collaboration, and facilitates inclusive deliberation on SRM—without advocating for or against deployment. DSG is committed to procedural justice, ensuring fairness in decision-making and resource allocation.

The Degrees Initiative is a non-profit that builds the capacity of developing countries to evaluate solar radiation modification (SRM). It has run more than 30 SRM engagement workshops across the Global South and its research funds are changing how the world evaluates SRM. To date they have supported 37 SRM research projects in 23 developing countries in the physical and social sciences, with more than 170 researchers exploring how SRM could affect their regions. These are the first SRM research projects of any kind in South America, the Caribbean, Africa, the Middle East, and Southeast Asia, and the experts who came into SRM research through Degrees' research funds are now providing an expert Southern voice in all SRM discussions.

Please note that neither the IAI nor the co-organizers take a position on whether climate intervention techniques should be used but rather support well-governed research and inclusive, science-based discussions at both regional and global levels.

PARTICIPATING PARTIES

IAI Parties:

- Argentina
- Bolivia
- Brazil
- Colombia
- Costa Rica
- Ecuador
- Guatemala
- Jamaica
- Panama
- Paraguay
- Uruguay
- Venezuela

Observers:

- IAI Science Diplomacy Center
- IAI Scientific Advisory Committee
- IAI Indigenous Peoples Advisory Committee
- Regional SRM science and governance researchers

AGENDA

DAY 1: CONTEXT SETTING AND STRATEGIC PREPARATION

09:00–10:00	Opening Remarks and Participant Introductions
10:30–11:15	Refresher on SRM Science and Governance
11:15–12:00	Panel: Science-Policy Reflections from the Region
12:00–13:30	Building Regional Perspectives
14:30–15:15	Regional Dialogue: Informal Statements and Perspectives
15:45–16:45	Game - “Decisions for the Decade”
16:45–17:00	Strategy Check-In and Simulation Assignments

DAY 2: NEGOTIATION SIMULATION AND REFLECTION

09:00–11:00	Multilateral Negotiation Simulation (Part I)
11:20–13:00	Multilateral Negotiation Simulation (Part II)
14:00–15:15	Debrief and Key Takeaways
16:00-16:45	Final Reflections and Evaluation
16:45–17:00	Closing Remarks