



CCI Policy Document

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Climate Contingency Institute Mission and Restraint Statement





CCI Mission and Restraint Statement

Our Mission

The **Climate Contingency Institute (CCI)** is a nonprofit scientific research institute dedicated to advancing technologies and governance frameworks for severe atmospheric risk scenarios.

CCI was founded on a simple concern: catastrophic atmospheric events, whether caused by human activity or by nature, may arrive faster than society is prepared to respond. Emissions reduction, adaptation, and carbon removal remain the first and most important responses to climate change. They must be pursued urgently and at scale. But the atmosphere faces risks that extend beyond the pace of warming, and society should responsibly study contingency technologies before crisis conditions force rushed decisions.

CCI applies aerospace engineering, systems engineering, atmospheric science, and public-interest governance to examine whether contingency technologies could be technically feasible, scientifically understandable, and responsibly governed. We work at the intersection of hard engineering and careful policy - asking not only "can this be built?" but "should it be built, and under what conditions?"

Our role is not to advocate deployment. Our role is to help build the knowledge, transparency, and governance capacity needed to evaluate powerful technologies before they are needed.

The Contingencies We Study

The atmosphere is vulnerable to several categories of catastrophic disruption, each with distinct causes, timescales, and potential responses.

Volcanic winters. Large explosive eruptions can inject tens to hundreds of megatons of sulfur dioxide into the stratosphere, producing a dense aerosol veil that sharply reduces sunlight reaching the surface. The 1815 eruption of Tambora caused the "Year Without a Summer", with widespread crop failure across the Northern Hemisphere. Larger eruptions in the geological record, such as the Toba event 74,000 years ago, produced far more severe and prolonged cooling. There are currently no technological means to accelerate the clearing of volcanic aerosol from the stratosphere or to counteract its radiative effects at scale.



Nuclear winters. A large-scale nuclear exchange could inject massive quantities of soot into the upper atmosphere, producing prolonged cooling, agricultural collapse, and global famine. The physical mechanism, absorption and scattering of sunlight by suspended particulate, would operate on timescales of years to a decade. Countermeasures that could promote agglomeration and accelerate sedimentation of soot particles have received essentially no research attention.

Volcanic CO₂ forcing. Large igneous province eruptions, though rare, can release enormous quantities of carbon dioxide. These events have been associated with several of the major mass extinctions. Whether active atmospheric intervention could meaningfully respond to such forcing is a question that has received essentially no engineering attention.

Accelerated anthropogenic warming. If global warming accelerates past thresholds where irreversible tipping points are triggered, such as collapse of ice sheets, large-scale permafrost thaw, and Amazon dieback, society will face pressure to consider direct atmospheric intervention as a supplement to emissions reduction. This is the most politically complex contingency and the one where governance requirements are most demanding.

CCI studies these scenarios not because we believe deployment is imminent or desirable, but because each represents a catastrophic risk that currently has no technological response pathway. A responsible contingency program examines whether response options can be developed, evaluated, and governed before they are needed.

Our Position on SRM

CCI does **not** advocate deployment of Solar Radiation Modification (SRM) or Stratospheric Aerosol Injection (SAI).

SRM is not a substitute for emissions reduction, adaptation, or carbon removal. It would not remove carbon dioxide from the atmosphere, stop ocean acidification, or eliminate the need to transform energy, industry, agriculture, and land-use systems. Any discussion of SRM must begin with that fact.

CCI studies SRM-related technologies only as one potential application among several for general-purpose stratospheric delivery capability. We believe the responsible path is to study these technologies carefully, in the open, so that society can understand what is possible, what is dangerous, what is ungovernable, and what should not be pursued.



A responsible research program must be able to reach many possible conclusions, including that a technology is unsafe, unnecessary, ineffective, ungovernable, or inappropriate for further development.

Governance Before Capability

Technologies that could affect the atmosphere are not ordinary inventions. They may have global consequences. They may affect countries and communities that did not build them, fund them, or consent to their use. For that reason, CCI believes governance must develop alongside, and ultimately ahead of, deployment capability.

Our work is guided by the principle of **governance-first research**. Technical feasibility alone is not enough. A climate-contingency technology must also be evaluated for safety, monitoring, environmental effects, failure modes, public legitimacy, international governance, and risks of misuse.

Different applications carry different governance requirements. Counteracting a volcanic winter would be an emergency response to a natural disaster. That raises different questions than counteracting anthropogenic warming, where the decision to intervene is a choice rather than a reaction. CCI recognises this spectrum and does not treat all applications as equivalent.

CCI will not conduct, authorize, license, or materially assist climate-significant deployment of atmospheric intervention technologies. Such decisions must be made through legitimate public and international governance processes, not by CCI.

Responsible Disclosure and Stewardship

CCI supports open scientific assessment. We also recognise that some operational details of powerful atmospheric technologies may require careful handling until governance institutions are prepared.

Our disclosure approach is based on the principle of **open assessment with controlled operational enablement**. We will share enough information for independent scientific and public evaluation, while applying temporary safeguards to details that could materially accelerate premature or unauthorized deployment.

CCI will disclose uncertainties, limitations, funding sources, ownership structures, safety concerns, and adverse findings openly and without funder approval. We will not use secrecy to hide risks, exaggerate results, or shield our work from legitimate criticism.



If CCI develops patentable technologies, intellectual property will be used for public-interest stewardship, not private control. Patent rights will be transferred to a qualifying governing body that meets published criteria: multilateral membership, independent scientific assessment, transparent decision procedures, meaningful representation from climate-vulnerable states, and restrictions on unilateral and military use. CCI will not transfer exclusive control of deployment-enabling technologies to any single state, company, donor, or private actor.

Scientific Integrity

CCI is committed to scientific integrity, peer review, and independent assessment.

We will document assumptions, disclose uncertainties, publish limitations, and avoid overstating conclusions. Our work should be open to examination, criticism, replication, and challenge by the scientific community and the public.

We will publish negative results where appropriate. Failed approaches, safety concerns, and reasons to pause or abandon a research direction are not setbacks — they are part of responsible science. A technology that proves unsafe or ungovernable should be allowed to fail openly, and that outcome should be treated as a contribution, not a loss.

Inclusion and Public Legitimacy

Climate-contingency technologies raise questions that cannot be answered by engineers alone.

Responsible governance must include scientists, engineers, policymakers, legal scholars, climate-vulnerable states, developing countries, civil society, environmental justice experts, Indigenous communities where relevant, and critics of geoengineering. Those most affected by climate risks and by the potential risks of intervention must have a meaningful voice before technical pathways are fixed. Their participation is not a courtesy, it is a condition for legitimacy.

Public trust cannot be built after a crisis begins. It must be earned in advance through transparency, humility, participation, and accountability.



skypipe Within CCI's Mission

Skypipe is a conceptual ground-based stratospheric delivery and monitoring system under study at CCI. It is designed as a general-purpose platform, not as a single-application deployment system.

The engineering challenge Skypipe addresses, moving large quantities of material from the ground to stratospheric altitude continuously and at low cost, is the same regardless of the application. A platform that can deliver reflective aerosol to counteract warming can also deliver material to promote agglomeration and sedimentation of volcanic or nuclear soot, or alter stratospheric reflectivity in the opposite direction during a volcanic winter.

The purpose of Skypipe research is to examine whether a major logistics barrier in atmospheric contingency planning, the cost and complexity of sustained stratospheric delivery, can be addressed through aerospace systems engineering. That includes studying technical feasibility, failure modes, environmental constraints, operational risks, monitoring requirements, and governance implications.

Skypipe's architecture, a fixed ground-based installation with a known location, auditable throughput, and observable output, was chosen in part because it is inherently governable. A fixed installation can be inspected, permitted, regulated, monitored, and shut down by the host state. These properties distinguish it from dispersed delivery methods and make it more amenable to the verification, attribution, and oversight that responsible governance requires.

If Skypipe or any related technology crosses a threshold where it could become deployment-enabling, CCI will treat that moment as a governance event, not a commercialisation opportunity.

Our Restraint Commitments

CCI commits that it will not:

- Advocate near-term deployment of atmospheric intervention technologies.
- Conduct climate-significant atmospheric intervention.
- Treat SRM as a substitute for emissions reduction, adaptation, or carbon removal.
- Sell aerosol cooling as a carbon credit or offset.



- Transfer exclusive control of deployment-enabling technology to any single state, company, donor, or private actor.
- Suppress adverse findings or safety concerns.
- Accept funding conditioned on editorial control, suppression of results, or exclusive access to technology.
- Stage demonstrations designed to pressure governments or create a fait accompli.
- Claim private authority over decisions that belong to legitimate public institutions.

CCI's goal is not to control climate technology. Our goal is to help society understand difficult options before crisis conditions force decisions under fear.

Closing Statement

The atmosphere faces risks that range from accelerating anthropogenic warming to sudden volcanic or nuclear catastrophe. Some of these risks may require technological responses that do not yet exist. Developing the knowledge to evaluate those responses is work that should begin before it is urgent. This must be done honestly, transparently, and with appropriate restraint.

CCI exists to advance responsible science, systems engineering, and governance for atmospheric risk preparedness. We believe that knowledge should be developed before emergencies arise, but that capability must never outrun legitimacy.

The atmosphere is shared. Any technology that could affect it must be studied in the public interest, governed transparently, and constrained before it is ever considered for use.