

Carnegie Climate Geoengineering Governance Initiative (C2G2)

1 January 2017

A. Why engage in this subject?

Introduction

This initiative was prepared following extensive consultations with senior officials of relevant intergovernmental and civil society organizations, with people working on research in academia, as well as research of the existing literature.

What is Climate Geoengineering?

Climate Geoengineering (CG) (also often referred to as Climate Engineering or just Geoengineering) **is defined as large-scale, deliberate intervention in the Earth system to counteract climate change.** Two major sets of techniques are usually included: those that remove carbon dioxide from the atmosphere (Carbon Dioxide Removal – CDR), and those that interact with solar radiation to cool the planet (Solar Radiation Management – SRM). The former contributes to the solution of the cause of climate change by removing carbon from the atmosphere. The latter is able to rapidly reduce global temperatures, but does not directly affect the quantity of carbon in the atmosphere. In this sense, SRM is not a “solution”, but could, under certain circumstances, provide additional time to the world – a breathing space – to undertake the necessary decarbonization.

Why are we talking about Climate Geoengineering now?

Recently there has been increasing discussion and indeed concern about the potential deployment of CG. Some experts have stated that the ambitious goals of the Paris Agreement, namely to keep temperatures well below 2°C, and possibly to 1.5°C above pre-industrial levels cannot be met without using some combination of CG techniques.

Scenarios of the Intergovernmental Panel on Climate Change (IPCC) include substantial use of so-called negative emissions (i.e., CDR) in the next decades in order to reach the 2°C and in particular, the 1.5°C goals. Many of these techniques will have significant impacts on biodiversity, land use, water availability and consequently on food prices and food security.

Some experts believe that the world will also need to make use of SRM methods to reach the ambitious temperature goals – most likely in combination with CDR, and after intensive mitigation actions will have brought down net emissions to zero around the middle of this century.

The IPCC will produce its special report on “1.5 degrees” in 2018, and that report is expected to set the scene of what is possible, and what is not in terms of pathways to reach 1.5 degrees, and also

about the social, economic and environmental impacts of these pathways. In the same year, Parties to the UNFCCC and to the Paris Agreement will have a first informal consultation on their national climate change plans (Nationally Determined Contributions or NDCs), and on their collective impact on the temperature ambitions of the Paris Agreement.

There is a plausible scenario that in the coming years, and in particular after the events in 2018 described above, with possibly increasingly bad news about global emissions that continue to rise, and impacts that are getting considerably worse, a country, or a group of countries decide to move toward deployment – with or without agreement from the international community. It is likely that some private sector companies (in particular fossil fuel companies) are engaged in research and development of at least some CG techniques. Given potential security implications, the military and the security apparatus in different countries have also been active.

The above scenarios are neither desirable, nor the most likely. However, they are plausible. Yet the reality is that not enough is known enough about these CG techniques to be able to properly assess their viability, and the extent to which – if at all - they could be complimentary to other, more traditional methods of managing climate change.

The Governance Challenges

There is no systematic, coherent set of governance frameworks in place to guide further research; to facilitate decision making about potential deployment; and to guide eventual deployment.

There do exist a number of isolated, uncoordinated, and often contentious elements of intergovernmental response, such as a decision of the Convention on Biological Diversity (which some describe as a moratorium), or the decision to prohibit techniques like ocean fertilization by the London Convention / London Protocol.

The governance issues arising out of SRM, and in particular of stratospheric injection of aerosols pose particular challenges at the international level. To do the latter well, would require one or more countries possessing the relevant aerospace technologies to undertake this on behalf of the international community – and possibly do this for decades, and depending on the intensity of parallel mitigation efforts, possibly over hundreds of years. Who will decide to start – and eventually to end? Who will control the “global thermostat”? How will decisions be made to balance the global need to reduce the average global temperature with environmental and social impacts which may not all be equally distributed across the globe? How are local and global security considerations interfacing with eventual deployment and its impacts? How will the transfrontier and transgenerational ethical issues be addressed? How will decisions be made to balance the costs and benefits of traditional mitigation methods versus CDR and SRM, and of adaptation efforts that are not covered after all these methods are deployed? What are impacts regarding local and global justice, human rights and how can they be addressed? How will the required governance frameworks withstand potentially substantial geopolitical changes during the period in question? **The CG research community has addressed many of these issues, but the global policy community has not.**

The Essence of the Carnegie Initiative

It is important to underscore that the **highest priority at this time is for countries to pursue their activities to reduce emissions of greenhouse gases**, consistent with their commitments under the Paris Agreement. At the same time a prudent assessment of plausible scenarios indicates these efforts may not be enough to keep temperature increases below 1.5°C. Consequently, one also

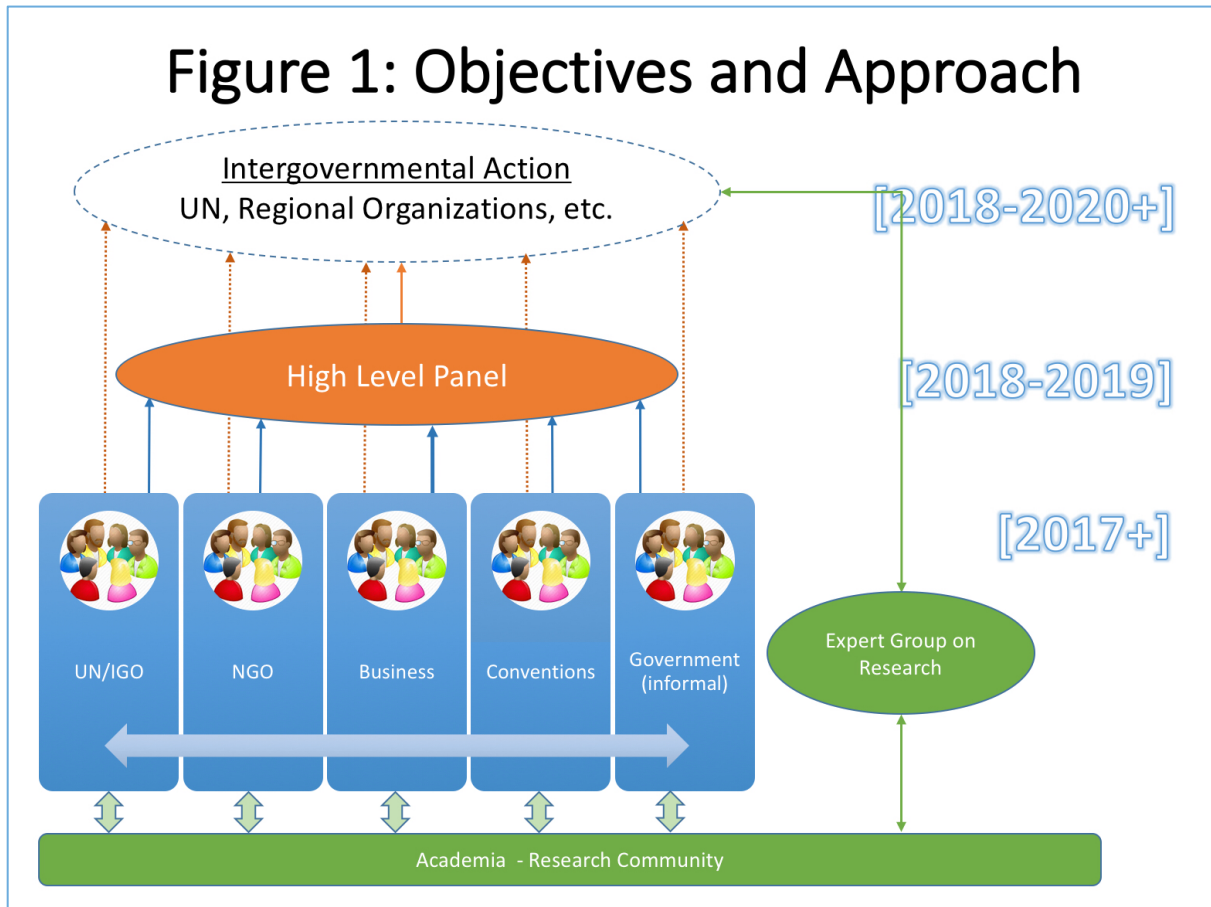
needs to consider a range of risk management scenarios, including the possibility that CG might also be used. With this in mind:

- The Carnegie Council, over the next four-five years, will **aim to shift the debate on CG governance from academia to the intergovernmental policy space**. This has not been done by any actor at the scale this initiative plans to do. It will do so by engaging with intergovernmental institutions, informally with government officials, as well as with a range of non-state actors, to further the dialogue on the subject, and to encourage and to contribute to the development of governance frameworks. Outputs from this initiative over the next years will include a series of workshops and conferences; reports including assessments as well as norms and standards; and networks of individuals and institutions in governments, intergovernmental and non-governmental organizations working on the governance of climate geoengineering. The ultimate result of this initiative after four-five years would be the emergence of intergovernmental action of different kinds, such as multistakeholder dialogues on the issue of governance for CG; cooperative actions between governments; development and acceptance of norms and standards; as well as preparations toward intergovernmental agreements.
- It is often stated that there is a **moral hazard** in engaging in such work, because by the mere fact of doing it, it could lead to a reduction of efforts for mitigation (i.e. the reduction of greenhouse gas emissions). This may be so, but the converse – not discussing, not engaging on this issue - could be worse, especially given the factors outlined at the beginning of this note. Moreover, the moral hazard may actually go in the other direction, as the more we find out about the complexity of the governance requirements, the more we find out that the world may not be ready to undertake such challenges, and the more the world will want to redouble its efforts for mitigation of emissions.
- **Shifting intergovernmental approaches takes time and sustained effort.** The understanding behind this initiative is that some such shifts can take place as a result of this initiative already in the period 2017-2018, and then in the period 2019-2020. However, some results, such as those outlined in the Proposed Work Plan detailed in Section 0 below may only appear after 4-5 years. In about four years from the beginning of this initiative (i.e. in 2020) it will be necessary to review what, if any, action is still needed and prepare in-time a follow-up project.

B. The Proposed Work Plan

The basic approach of the initiative is shown in Figure 1 below. The **expected result** of the initiative implemented in its totality is that by **4-5 years from the start, governments begin to take action** at national and in particular at intergovernmental levels.

Figure 1: Objectives and Approach



We will consider the initiative successful if by the end of this period most of the following results will have happened or be on the way to happening:

- Publication of a number of assessments undertaken by intergovernmental organizations on various aspects of climate geoengineering and related governance issues;
- Publication of various intergovernmentally approved norms and standards in relation to various aspects of climate geoengineering and related governance issues;
- A number of intergovernmental meetings on various aspects of climate geoengineering and related governance issues will have taken place, and will have contributed to an enhanced understanding and an uptake of aspects in governmental discourses and public positions;
- Appearance of the issue of various aspects of climate geoengineering and related governance issues on work agendas of various intergovernmental organizations and treaty processes;
- Intergovernmental decisions guiding further research on various aspects of climate geoengineering and on the related governance issues;
- Preparations for intergovernmental processes that could lead to decision concerning potential deployment of climate geoengineering.
- Catalyzing the **development of specific examples of governance frameworks will help to move this agenda forward in a practical way**. Two such examples are proposed: (1) the development of public policy guidelines for further research on climate geoengineering through the setting up of a Commission of Experts on Governance of Research, and (2) initiation of a process for the preparation of an intergovernmental agreement of basic

principles governing large-scale, intentional human interventions in nature for agreed sustainable development objectives (including climate geoengineering).

- Finally, the **most significant way to influence intergovernmental decision making would be through the recommendations of a high-level panel or commission** on governance for climate geoengineering. Such a panel or commission would also serve as an additional driving force for all the work streams in the project.

There are 9 work streams **that take place over the full length of the proposed initiative**, which, together, will result in catalyzing governmental and intergovernmental action while creating an enabling and informed environment.

The nine work streams:

The following nine work streams fully implemented would provide the fastest and highest impact with regard to the objective of the initiative. Work streams 1, 2, 3, 8, and 9 form the basis of the work (shown in bold below). Work streams 4, 5, and 6 will increase the impact and the speed at which that impact happens, but will need additional fund raising.

- 1. Working with Intergovernmental Organizations (IGOs) and Non-State Actors (NSAs)**
- 2. Conventions/Treaties/Other Legal Approaches**
- 3. Informal Relationships with Government Officials**
4. Co-financing of Activities of IGOs and NGOs (**small fraction of this stream**)
5. Commission on Governance of Research (over 2 years)
6. Preparations for an Intergovernmental Agreement of Principles
7. High-level Panel on Governance of Climate Geoengineering (over 3 years)
- 8. Communications and Outreach**
- 9. Programme Management and Administration**

Each work stream is described in detail below.

1. Working with Intergovernmental Organizations (IGOs) and Non-State Actors (NSAs)

In this work stream, the initiative would build up cooperative relationships with selected IGOs and NSAs in order to catalyze action (or more action, as appropriate) by these entities on the issues of governance for climate geoengineering. These IGOs and NSAs would undertake assessments of CG and related governance issues from their perspectives. They would also develop standards and norms in relation to research or potential deployment of different CG technologies. Over time, these activities would collectively contribute to the development of networks of individuals and organizational entities in these IGOs and NSAs, as well as in national government offices linked to these entities who would increasingly be working on CG-related issues.

Activities under this work stream will include systematic and regular project staff contacts with staff of these IGO and NSA entities at high- as well as working-levels; participation in meetings and workshops; as well as joint activities in preparing assessments and reports. This will create the connective tissue and environment of trust to collaborate towards achieving the result of the project.

The list of priority entities to be considered under this work stream will include: UNESCO, UNEP, WMO, IPCC, FAO, Greenpeace, WWF, ETC, Friends of the Earth, and others. Initial consultations with

the respective heads of most of these entities have already taken place, and willingness to collaborate along the above lines has been established in principle.

2. Conventions/Treaties/Other Legal Approaches

In this work stream, the initiative will engage with secretariats and negotiation processes and representatives of Parties to the relevant conventions to see how best the governance issues related to CG could be incorporated into their formal agendas.

Activities will include regular interactions with secretariats; participation in certain relevant meetings; organization of joint meetings/workshops; participation in side events; etc.

The most relevant existing conventions are the United Nations Framework Convention on Climate Change (UNFCCC), the Convention for Biological Diversity (CBD), the London Conventions; the Law of the Sea (UNCLOS), amongst others.

In this work stream, the initiative will also explore legal options alternative to the existing treaty arrangements. Work will include the commissioning of papers, and the organization of workshops – jointly with other institutions.

3. Informal Relationships with Government Officials

A key component of the initiative will be to build a network of government officials in various departments of different (geographically and politically representative) countries. This will be done by preparing a list of key countries, and then systematically identifying relevant officials at high political as well as working levels.

The purpose of such contacts will be to build the capacities of government officials to better understand the issues, so that they can then undertake relevant CG Governance related activities in their countries. Furthermore, through such contacts, political and financial support will be sought from governments for different work streams, and in particular for the organization of the High-level Panel on Climate Geoengineering Governance (see work stream 7 below).

Activities will include systematic engagement through regular communications, visits, meetings (in capitals or at international meetings). Emphasis will be to build a network covering a range of countries in North, South, East and West, with special focus on government officials from developing countries.

4. Co-financing of Activities of IGOs and NGOs

In work streams 1, 2 and 3 above, staff will work with the various intergovernmental and non-governmental organizations to catalyze activities on CG governance. The cost to the initiative will include staff time, as well as costs of travel to meetings with those entities.

In order to considerably increase the depth and intensity of the engagement of these IGOs and NGOs, the initiative will be in a position to provide small amounts of co-financing for joint workshops and joint studies that could be undertaken in the context of outreach and engagement work with the various IGOs, NGOs and government officials in work streams 1, 2 and 3 above. Such co-financing would also assist the initiative in connecting various communities engaged in these issues, which would help in building common understanding and trust. Clearly, the more such co-financing the initiative is able to provide, the more engagement we will get from these entities. Within the

threshold financing of the initiative, a minimal contribution will be provided toward a report and a small workshop for each of the entities the initiative will be engaged with.

If the full funding for this work stream can be raised more substantial co-financing options can be provided, in order to increase the speed at which different entities engage, and also to increase the chances that the initiative meets its ultimate goal to have governments start taking serious responsibility for action in this area.

5. Commission on Governance of Research (over 2 years)

Most research currently being undertaken in the area of climate geoengineering is being defined by the research community itself, without clear public policy inputs. This work stream would begin to remedy this by setting up an **Expert Group** or **Commission on Governance of Research** which would bring together experts, including representatives of the key research communities working on climate geoengineering worldwide **with one or more intergovernmental policy processes in order to begin generating signals to the research community on the directions for further research**, and specific deliverables of the research that would help intergovernmental decisions in the future about the extent to which (if at all) CG techniques would become an additional set of tools to be used in managing the global climate.

Activities would include the establishment of the expert group or commission; commission specific background papers, and the organization of joint workshops with intergovernmental processes, such as the preparations for the IPCC's 6th Assessment Report. Once such signals concerning research directions are available, follow-up communications and outreach activities will need to be organized, including through series of webinars.

6. Preparations for an Intergovernmental Agreement of Principles

The *Anthropocene* marks a new age in which collective human activities have led to the alteration of the Earth system. This reframing of relationship of humans with nature calls into question the adequacy of existing international environmental law and policy to address the aggregate effects of environmental threats that push beyond planetary boundaries, as well as the governance of proposed large-scale intentional measures and technologies to deal with such damage. This phase of the initiative proposes the elaboration of high-level general principles to govern **large- (planetary-) scale human interactions with nature** irrespective of the technology involved. It is envisaged that such principles could provide the impetus and content for a new multilateral agreement on human interactions with nature.

Based on existing principles, such as the "Oxford Principles for Geoengineering Governance" and the recent "UNESCO Declaration on Ethical Principles in Relation to Climate Change", it may be possible, step by step, to prepare for a broad intergovernmental agreement of such fundamental principles. Once achieved, it would then be possible to develop specific, technology-related protocols covering specific climate geoengineering technologies (or for that matter other, non-CG-related technologies as well).

This work stream would begin **preparations for such an intergovernmental agreement** by commissioning relevant papers, organizing workshops, and by engaging in outreach activities through the other work streams of the initiative.

7. High-level Panel on Governance of Climate Geoengineering (over 3 years)

One of the most **significant ways to have impacts on governments would be through a well-prepared report of a high-level panel or commission, chaired by a knowledgeable and well-known ex head of state or government.** Members of such a high-level panel would include other retired heads of states and government, and senior government officials, including science advisors, as well as representatives of intergovernmental organizations, civil society and the private sector.

In addition to delivering impacts in their own right, all the work streams of the initiative could be directed to provide inputs into, and strengthen the deliberations of the high-level panel. This would **also maximize the outputs of each of the work streams and at the same time provide a forum for bringing all this together under one framework.**

Activities in this work stream would include the identification and invitation of the members; commissioning a series of papers; and hosting up to 6 meetings of the panel. Given the planned high level of the panel, its work will need to be supported by a Sherpa process, which itself will require the hosting of meetings. Outreach from the Panel has to start during the development of its report through various regional hearings, and will then continue by engaging in a well-planned outreach activity after the release of its report (for an additional year after completion).

While foundation support will be essential to get this work stream going, the chances of success will be much higher if one or more governments also provide political and if possible financial support as well. Such support will be sought from the beginning, including in relation to the selection of the Chair and Members of the panel.

8. Communications and Outreach

This work stream will cut across the other work streams mentioned above, in that each of these will have strong communications and outreach components. In addition to supporting the broadening of the discussion among and across the target groups within the work streams, ultimately, any action by governments will need the broadest support possible. In addition to the in-depth cooperation outlined in sections 1-3 above, this work stream will also engage with a series of individuals and institutions active in this space, or who need to be active.

A key objective of this work stream will be to build on the work of the other work streams, and then package the results in different ways for communicating them through traditional as well as contemporary channels of communications. Appropriate use will be made of print media, website and different social media channels.

The initiative will also aim to develop a network of representatives of mainstream and specialized media who are prepared to communicate about CG Governance issues through written, as well as video media.

Through leadership and support from the initiative's Communication Director, all staff will be required to engage in communicating the collective outputs of the initiative to a range of audiences, including through the organization of webinars.

9. Programme Management and Administration

The initiative is very ambitious. It will require a small team of dedicated, flexible, specialized and experienced staff to deliver the necessary results. The initiative will establish a small virtual secretariat of people working in different countries – some full time, as part of the core secretariat, and others working full-time or part time for shorter or longer time periods to enable the project to

attract the best available people depending on the topic, and the operational characteristic. The distributed secretariat will need to be managed for results and high performance. Continuous interactions with the Steering Committee will be undertaken (see section below).

Activities in this work stream will include strategic and continuous planning of the work – which inevitably will evolve over time, given the nature of the work and of the different work streams, whose outputs are not always predictable. Moreover, and especially given the distributed virtual team, emphasis will be on regular on-line meetings and other electronic means of collaboration between team members. It will be essential for team members to work together on cross cutting issues to avoid developing silos. The initiative will not need to spend resources on office space and related costs, it will rather invest in collaborative technologies and in one yearly in-person retreat.

The initiative will involve the organization of a series of workshops (some by specialized staff alone, and many more in cooperation with other entities); travel for these workshops and other events; and the recruitment of short term experts and staff for various lengths of time. Efficient administration of these processes, as well as financial monitoring and reporting will be key components.

C. Partnerships

As a programme within the Carnegie Council, the initiative will aim to cooperate with the other Carnegie programmes, especially those dealing with communications and outreach. In the same spirit synergies and expertise would be sought within programs of donors.

The aim of this initiative is to build on existing work undertaken in the area of governance for CG, and to work in partnership with others with similar objectives. By building on what is existing and enhancing the ability to connect and collaborate, the energies of various entities and processes can all be turned toward the delivery of the long-term objective of this project: namely to catalyze intergovernmental actions in this area.

Some potential partnerships are already known and others will emerge over time. For now, the following partnerships are being pursued:

- **The Forum for Climate Engineering Assessment (FCEA) has convened the Academic Working Group on International Governance of Climate Engineering (AWG).** This process has engaged governance experts who are developing relevant analysis and recommendations to the policy community on the governance challenges of SRM, in particular. FCEA is also engaged in a range of other work streams focused on building robust, anticipatory forms of governance to guide and, where appropriate, to constrain development of CE technologies. This work will be very helpful substantive input into the initiative, and consequently the initiative and the AWG will work in partnership.
- **The Solar Radiation Management Governance Initiative (SRMGI)** is a partnership launched by the Royal Society, The World Academy of Sciences (TWAS), and the Environmental Defence Fund (EDF) in order to bring developing country voices into discussions on how solar radiation management research is governed. Working in partnership with SRMGI would help the initiative to reach out to developing country professionals in the area of climate geoengineering governance.
- **The University of Calgary (UC) is hosting the Geoengineering Research Governance Project (GRGP)** for the further development of the “Code of Conduct for Scientific Research involving Geoengineering” involving Oxford University and the Institute for Advanced Sustainability Studies (IASS). Activities to exploit synergies between the two initiatives will

include the organization of workshops with a few key intergovernmental organizations and programmes (e.g., UNESCO, UNEP) and be used to support further interviews and follow-up research once the GRGP draws to close in December 2017. This process would also increase the policy salience of the revised Code and potentially lead to its institutionalization. This partnership will also contribute to the work stream “Preparations for an Intergovernmental Agreement of Principles”.

- **Engagement with the public** in different parts of the world will be crucial for the overall success of this initiative. The project will cooperate with the **Heinrich Böll Foundation (HBF)** in Berlin which is in the process of preparing a project to engage the broader public on climate geoengineering issues, in cooperation with a number of other Civil Society Organizations. Initial discussions are under way for how that cooperation may evolve during the course of this project and the eventual HBF project.

The project will also seek partnerships with other foundations working generally in this area to improve the overall effectiveness of resources spent and objectives achieved. Plans are already under way to establish one such partnership with the Children’s Investment Fund Foundation (CIFF) in London.

D. **Funding**

As of 4 December, sufficient funding has been raised to cover most of the work streams 1, 2, 3, 8 and 9 for 2017-2018, passing the threshold necessary to start the work programme of the initiative. Funding for the remaining work streams is being sought from a variety of potential donors, including foundations and also from interested governments.

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