

## Why the UNFCCC and CBD Should Refrain from Regulating Solar Climate Engineering

Jesse L. Reynolds

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Some form of international regulation of solar climate engineering (solar radiation management, or SRM) is needed, both to manage its possible benefits and to minimize and possibly compensate for its harmful impacts. There is no shortage of proposals for this. Many scholars argue that this should be developed within those existing legal institutions that have (near-) universal participation, and often toward binding rules.

For example, Albert Lin (2009, p.23) emphasizes the mandate and expertise of UN Framework Convention on Climate Change (UNFCCC) institutions, and states that its Conference of Parties (COP) should tackle climate engineering soon. Specifically, he envisions a Protocol allowing for non-consensual (i.e. supermajoritarian) decision-making, “with a default presumption against the implementation of any geoengineering project.” Similarly, Matthias Honegger and colleagues (2013) also argue that the UNFCCC is the logical site due to its legitimacy and scope, and the experience of its institutions. Instead of calling for a Protocol, they note that the UNFCCC COP is already tacitly approving the adoption of non-consensual decisions and assert that coalitions of various sizes can operate effectively within the UNFCCC architecture. This would allow developing guidance for solar climate engineering along with accompanying measures and with broad international support.

Partially in contrast, the staff of the Ecologic Institute advocates that the Convention on Biological Diversity (CBD) might better serve as the locus, rejecting the UNFCCC, in part, because “it might be intrinsically difficult for the current climate regime to pursue a precautionary approach that is *restrictive* to geoengineering” (Bodle et al., 2014, p. 174; emphasis in original). Instead, they claim that the CBD has a mandate to minimize environmental damage more broadly—not simply to prevent climate change—and should implement “a prohibition of geoengineering activities as a general rule combined with exceptions under well-defined circumstances” (ibid., p. 135). They believe that a protocol to the CBD might be warranted for this purpose.

However, I believe that it would be counter-productive to pursue binding regulation of SRM in international forums with (near-) universal participation, and in those of the UNFCCC and CBD specifically, at least for the near future. In general, it is too soon to initiate global negotiations toward a binding agreement. The proposed technologies remain “imaginaries” and what they may be able to accomplish, how they would operate, their reversibility, their costs, and their risks all remain uncertain. What understanding we do currently have is from relatively simple and extreme implementation scenarios (See, for example, Irvine et al., 2016; Kravitz et al., 2011; 2013; 2015).<sup>1</sup> Moreover, we are far from developing political consensus regarding what we may (not) want from SRM. The lack of knowledge and agreed-upon objectives would lead to highly divergent state interests and an absence of negotiation focal points. Any resulting binding agreement developed in the near term would lock us into commitments that may later seem unwise.

Moreover, consideration of SRM regulation in an international forum with (near-) universal participation is problematic. If representatives were to be aware of and rationally consider their countries’ vulnerabilities to climate change and how they might gain (or lose) through

potential SRM implementation, then global negotiations might be potentially fruitful. However, this ideal is not the case now, in part due to the current low state of knowledge described above. Under this condition, the more numerous developing countries may fear that permitting industrialized countries to pursue a technology that, from the former's perspective, would offer uncertain benefits while possibly giving the latter an excuse to delay mitigation while granting them the power to shape other countries' climate (but see Reynolds, 2015 as well).

Indeed, this appears to have been the case at the 2010 CBD COP, which produced a poorly worded, restrictive statement at the motivation of some developing countries.<sup>2</sup> This understandable predisposition against SRM is exacerbated by the pessimistic tone of the existing mainstream and academic discourses, which tend to emphasize climate engineering risks and obscure its potential to reduce climate change.<sup>3</sup> A prohibition, perhaps with only narrow exceptions, is a foreseeable result.

This would be undesirable because SRM does appear to hold the ability to lessen climate change risks, which are more severe in developing countries. A ban could also push field research to less responsible states, and may cause any eventual implementation—perhaps in response to sudden climate change—to be carried out based upon a comparatively thin knowledge base (Victor, 2008, p.325; Parker, 2014). Nevertheless, the countries that are interested in pursuing SRM research and may eventually have the capacity to implement it—which also tend to be relatively powerful—would likely not concede to such a proposal, resulting in either a stalemate, language that would be vague to the point of little use, or a prohibition without the participation of the countries with implementation capacity (Victor, 2008, p. 331).

Specifically, the UNFCCC possesses some particular drawbacks. First, its negotiations are already highly politicized, and arguably dysfunctional; stirring the pot now with SRM is unlikely to be fruitful. Second, the negotiators and staff there appear strongly committed to the dominant paradigm of mitigation and adaptation, and the institutional culture might be hostile to SRM.<sup>4</sup> Finally, several current and proposed provisions currently under the UNFCCC, such as the Green Climate Fund, the Loss and Damage Mechanism, technology transfer, and the Clean Development Mechanism would transfer wealth from rich to poor countries.<sup>5</sup> Potential recipients of these transfers may believe that SRM could undermine the justifications of these mechanisms, and consequently resist its serious consideration.

The CBD fares worse. It would be a stretch of its mandate to develop detailed regulations for activities to reduce climate risks. If the CBD were to attempt this, it would need the close cooperation of the UNFCCC, whose staff may feel that its administrative domain is being infringed upon (Bodle et al., 2014, p.134, 174).<sup>6</sup> Moreover, if the experience of genetically modified organisms is any guide, the politics of the CBD may cause its climate engineering policy to be based upon opposition to the practice itself rather than a weighing of its potential benefits for and risks to biodiversity (Strauss et al., 2009, p.519-520; Honegger et al., 2013, p.129). Finally, the United States—the world's leading research state—is not a party to the CBD.

It is better to conceptualize the unfolding of international regulation of SRM as a process instead of a singular, final, and known destination. If the technologies are actually developed, they will pass through various stages, each presenting different problem structures (Reynolds, 2014a, p.284-288). In the short term, we need more knowledge of their capabilities, risks,

means, costs, and reversibilities. This can be improved through research, including field tests which can gradually and cautiously increase in complexity, scale, and perturbation. For the time being, the risks of these can be managed through existing national and international environmental law, institutions, and norms.<sup>7</sup> This research should be internationally coordinated, but not made monolithic in a manner that drowns out sceptical views.

Meanwhile, we need to work toward consensus as to what we do and do not want from climate engineering and its research. This requires engagement with the public and policy makers; for well-informed, balanced debate; and for the continuation of norm development. At some time, these norms should be operationalized into more detailed guidelines and best practices. In these processes, an international institution could help to facilitate and coordinate research, to foster international cooperation, to provide a site for norm development and operationalization, and to help ensure that field experiments are responsibly conducted. This need not be highly legalized, but if field work increases in scale and perturbation, greater legalization would be warranted.<sup>8</sup> Regardless, all the researching countries should be represented here.

Looking much further ahead, if a deployable SRM technology were eventually ready to be used, an international institution that takes a managerial approach, described above, might be adequate to prevent its misuse, but a multilateral agreement may ultimately be warranted. Even if only a few countries would be capable of global implementation, and would thus be the only ones which *must* participate in its regulation, for both normative and political reasons a larger—although not necessarily universal—forum would be preferable. The UNFCCC institutions, or perhaps those of the CBD, may or may not turn out to be an effective site for this.

Regardless, I assert that it is presently not a productive endeavour to dwell on how states might collectively govern technologies which do not yet fully exist; whose forms, benefits, risks, costs, and reversibilities remain unknown; and under what circumstances and for what purposes they might be used are uncertain. Indeed, this focus can even be counterproductive, if fears of an intractable, distant, arguably unlikely future hinder a less problematic present course which may lead the reduction of human suffering and environmental degradation.

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<sup>1</sup> The scenarios of the largest modelling project to date, the Geoengineering Model Intercomparison Project (GeoMIP) keep radiative forcing or the magnitude of SRM constant. The scenarios either stop abruptly or continue indefinitely. They are neither balance residual temperature and precipitation anomalies, vary with the time of year or with latitude, merely slow down the effects of climate change, nor phase out gradually. Many of them use the an impossibly great atmospheric carbon dioxide concentration in order to produce clearer results. This is not intended as a critique of the project, but instead to highlight the limited state of current modelling.

<sup>2</sup> Sugiyama and Sugiyama, 2010, p.8 note that "the information at the [COP] site was very limited and delegates were not well informed about the science of geoengineering." ETC Group, 2013 report that "The push... came largely from governments of the global South..."

<sup>3</sup> This perception is empirically supported. For example, among policy documents (including national and international, as well as governmental, intergovernmental, and nongovernmental) which discuss climate engineering, more than twice as many express concerns than hopes. Huttunen et al. 2014, 10. An unpublished survey of 101 articles on climate engineering in 18 major news sources in three countries indicates that, among articles which discuss SRM, 50% are negative, 47% are balanced, and 3% are positive. Twenty-three percent of these SRM articles mention no potential benefits while 94% bring up one or more risks. Elblaus, 2014, p. 4, 7, and personal communication. David Keith found that roughly half of all results from a Google search on climate engineering discussed the concern that SRM would dramatically reduce the summer monsoon in south Asia, a result from early modelling which more recent work has shown to likely be a less severe problem. Keith, 2013, p.55. In the academic discourse, I am most familiar with international law, where almost all reviews consider how climate engineering should be regulated to reduce its own risks yet do so without considering how it might reduce climate change risks. Reynolds, 2014b, p.427-434.

<sup>4</sup> On the other hand, the UNFCCC has become increasing receptive to adaptation, which for many years was somewhat off-limits. The situation with regard to SRM could similarly change.

<sup>5</sup> For a discussion of these transfers' rough magnitudes and some problematic implications, see Posner and Weisbach 2010. This is a key criticism of emissions permits among economists. See Cooper 2010.

<sup>6</sup> Although Bodle et al. discuss regime complexes, in which multiple international institutions govern a particular issue area, they provide no specifics as to how the CBD and the UNFCCC would cooperate.

<sup>7</sup> Norms and other forms of soft law are important in international regulation, particularly for technical and dynamic phenomena and for those undertaken by transnational actors, both of which are characteristics of climate engineering research. These norms are emerging for climate engineering, as seen in Bipartisan Policy Center's Task Force on Climate Remediation, 2011; Leinen 2011; Rayner et al. 2013. As another example, human subjects research is internationally governed by nonbinding, nonstate documents such as the Declaration of Helsinki.

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<sup>8</sup> See the examples of internationally coordinated scientific research in Ghosh 2017 in this volume. An example of an international institution with a managerial approach to scientific research and the responsible conduct thereof is the International Atomic Energy Agency. See Reynolds 2014b.