Geoengineering at COP 13

Agenda Item 17.
Climate-related geoengineering

Draft decision: UNEP/CBD/COP/13/2/Rev.1

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Key points:

- CBD Decision X/33, 8 (w) on geoengineering remains valid and should be affirmed and strengthened.
- The potential impacts of geoengineering on biodiversity have been scarcely studied. Studies and policy recommendations on the impacts on biodiversity and associated livelihoods caused by any geoengineering intervention are, and should remain, under the mandate of CBD and its bodies.
- New research papers continue to demonstrate high risks and uncertainties associated with the full range of geoengineering proposals.
- Recent studies indicate that geoengineering proposals such as BECCS (bioenergy with carbon capture and storage) would have significant negative impacts on biodiversity, food security and livelihoods.
- The concept of "negative emissions" techniques is highly speculative and does not have proven viability. This poorly founded concept is used to justify geoengineering proposals that will have grave impacts on biodiversity and traditional livelihoods.
- Geoengineering functions as "the perfect excuse" for high carbon emitters to avoid real GHG reductions, a key measure that would help to protect biodiversity.
- Demands for geoengineering experiments, as well as suggestions to consider geoengineering proposals "case-by-case," are slippery slopes. They obscure the core issue: all geoengineering proposals attempt to modify the global climate, and should therefore remain the subject of global UN negotiations. CBD must affirm the precautionary approach. Open air experiments on geoengineering should not be allowed.
- Instead of technofixes, the CBD should strongly encourage governments to support natural pathways that offer a real means to confront climate change while protecting biodiversity, such as ecosystem restoration, protecting natural environments, communities and cultures that nurture biodiversity, including peasant agroecological agriculture and forest management, among other alternatives.

Geoengineering

...refers to a set of proposed techniques to intervene in and alter earth systems on a large scale – particularly to climate system manipulations as a "technofix" for climate change. These manipulations may include so-called solar radiation management (SRM) as well as other earth system interventions under the umbrella of carbon dioxide removal (CDR). Geoengineering can be land-based interventions, interventions in the oceans, or interventions in the atmosphere. Geoengineering schemes impact the global commons and will have transboundary effects.

Comments for COP 13 Draft Decision

Climate-related geoengineering will be considered under Agenda item 17. The draft recommendations (UNEP/CBD/COP/13/2/Rev.1 page 137) reflect action upon many of the potential risks.

Below, we offer changes to the text that could strengthen the recommendations.

The Conference of the Parties:

1. Reaffirms paragraph 8, in particular its subparagraph (w), of decision X/33, and decision XI/20;

2. Recalls paragraph 11 of decision XI/20, in which the Conference of the Parties noted that the application of the precautionary approach as well as customary international law, including the general obligations of States with regard to activities within their jurisdiction or control and with regard to possible consequences of those activities, and requirements with regard to environmental impact assessment, may be relevant for geoengineering activities but would still form an incomplete basis for global regulation;

All proposed artificial carbon sinks are geoengineering proposals. Unless carbon sinks are natural – such as natural forests and other ecosystems – and not subject to carbon markets, "increasing artificial carbon sinks" could have serious impacts on biodiversity, traditional livelihoods, and food security.

3. Recalling paragraph 4 of decision XI/20, in which the Conference of the Parties emphasized that climate change should primarily be addressed by reducing anthropogenic emissions by sources and by **increasing removals by sinks of greenhouse gases under the United Nations Framework Convention on Climate Change,** noting also the relevance of the Convention on Biological Diversity and other instruments, and also recalling paragraphs 8 (j)-(t) of decision X/33, and paragraph 5 of decision XII/20, reaffirms its encouragement to Parties to promote the use of ecosystem-based approaches to climate change adaptation and mitigation;

The second part of 3 referring to "increasing removals by sinks of greenhouse gases" is problematic as it may appear to promote "negative emissions" technologies. All proposed artificial carbon sinks are geoengineering. Unless carbon sinks are natural, such as natural forests or other ecosystems, and not subject to carbon markets, they could have serious impacts on biodiversity, traditional livelihoods and food security. This reference should be qualified: "increasing removals by natural sinks of greenhouse gases.

4. Notes that very few Parties responded to the invitation to provide information on measures they have undertaken in accordance with decision X/33, paragraph 8(w), and further invites other Parties, where relevant, to provide such information;

5. Also notes that more transdisciplinary research and sharing of knowledge among appropriate institutions is needed in order to better understand the impacts of climate-related geoengineering on biodiversity and ecosystem functions and services, socio-economic, cultural and ethical issues and regulatory options;

Many institutions may contribute in this task, but none is specialized on biodiversity and associated livelihoods, including socio-economic and cultural aspects. Only CBD have the capacity to coordinate the research needed, so it is not biased on sectoral, technical or narrow scientific views that leave out other perspectives and systems of knowledge, as referred in point 6. ***Analyses and policy recommendations on the impacts on biodiversity and associated livelihoods caused by any geoengineering intervention are, and should remain, under the mandate of CBD and its bodies.***

Gender considerations should also be included in any research on the impacts of geoengineering.

6. Recognizes the importance of taking into account sciences for life and the knowledge, experience and perspectives of indigenous peoples and local communities when addressing climate-related geoengineering and protecting biodiversity.

Indigenous peoples, peasant and local communities should be particularly and adequately consulted and listened to when discussing climate and geoengineering. Both for the research on the impacts and for the proposals for solutions to climate change and protecting biodiversity

Small-scale experiments and 'case-by-case' basis should are bad ideas

Small-scale experiments?

Geoengineering proposals are mostly theoretical and none are ready to be deployed on a scale that would have impact on the climate. Therefore, those promoting geoengineering ask for "more research" and to allow "small-scale" experiments. But if the experiments are small, they will tell nothing about the influence on climate, and to do that, they would need to deploy them in a scale and during so many years that it could not be called an experiment: it would be deployment, with all its risk and likely irreversible impacts. Therefore, it is essential to strengthen a precautionary approach: experiments in the real world (open air, ocean, land) should not be allowed.

Case by case?

Geoengineering is by definition an attempt to manipulate the global climate: a shared, vital transboundary ecosystem. The call by some to take a case-by-case approach on geoengineering, precisely as with "small-scale experiments," is a slippery slope. Who will decide which technologies and which experiment are acceptable to carry out? Will those with the means and technology have more influence in those decisions than those who stand to be negatively affected?

Geoengineering will not address the drivers of biodiversity loss

Geoengineering proponents now speculate that geoengineering will have a "positive impact" on the "drivers of biodiversity loss." It is important to note that there is no evidence to support this – all geoengineering proposals are theoretical, and they aim to address the symptoms of problems, not the causes or "drivers." There is already a wealth of proposals to protect biodiversity and address the root causes of its erosion that are based on experience, derived from diverse systems of knowledge and cultures, and that work with nature and increase equality.

With decision X/33 8 (w), the CBD has set a global example on precaution and global fairness. It must be reaffirmed and strengthened.

Background:
The Case for Strengthening Decision X/33 8 (w)

1. Geoengineering proposals are based on unproven assumptions

No geoengineering proposals have proven to be economically or technically feasible at the required scale.[1] Many recent scientific articles and studies, including several quoted in CBD TS 84, show that no carbon dioxide removal geoengineering techniques are viable because they require too much energy, water or resources, are too expensive; or impossible because they would force to overstep planetary ecological boundaries.

2. Geoengineering poses a threat to biodiversity and its impacts have not been studied

The impacts of geoengineering on biodiversity have not been addressed in relevant documents and reports issued in recent years, including the Fifth Assessment Report of the IPCC (AR5). In some cases, there are references to impacts of some specific techniques, but the overall consequences on biodiversity are scarcely mentioned or considered. This is not surprising, since IPCC has not the knowledge to evaluate the impacts of geoengineering techniques on biodiversity. **The studies, analyses and policy recommendations on the impacts on biodiversity and associated livelihoods caused by any intervention are, and should remain, under the mandate of CBD and its bodies.**

Both climate change and the erosion of biodiversity are acute global problems that demand official attention and immediate policies to confront them. However, geoengineering proposals are a set of unproven techno-fixes that do not address the causes of climate change or loss of biodiversity, but could deviate the attention and resources from real, affordable, safe and globally much more fair alternatives to confront climate change and protect biodiversity. According to IPCC Expert Meeting on Geoengineering, these proposals are neither mitigation nor adaptation.[2]

3. Geoengineering would result in unequal negative impacts

Peer-reviewed research supports the overwhelming scientific opinion that most geoengineering techniques will produce significant negative effects, particularly Asia, Africa and Latin America endangering food and water sources for billions of people and causing more biodiversity erosion and climatic and social imbalance. In the case of SRM (solar radiation management) these consequences could be catastrophic.[3]

1 In a 2016 article in *Nature*, Phil Williamson from the Natural Environment Research Council, UK, puts on the table the need to "scrutinize the CO_2 removal methods," because they are being considered as an essential component to achieve Paris Agreement goals, but essential aspects, including viability and impacts on the environment and biodiversity, have not been considered.

2 IPCC Expert Meeting on Geoengineering, Lima, Perú, 2011. www.ipcc.ch/pdf/supporting-material/EM_GeoE_Meeting_Report_final.pdf

3 Several studies carried out under the Geoengineering Model Intercomparison Project (GeoMIP) (2013, 2014) point in this direction, as well as showing that once initiated, termination of SRM projects could be worse than the initial situation. GeoMIP is an international research collaboration to determine climate system model responses to solar geoengineering.

Geoengineering and the CBD

At COP10 in 2010, a landmark decision, X/33 8 (w), adopted a de facto moratorium on climate-related geoengineering activities that may affect biodiversity, marking the first time that an international body began to establish oversight over this new field. COP11 wisely reaffirmed the moratorium (decision XI/20) and requested the Secretariat to prepare an update on the potential impacts of geoengineering techniques on biodiversity, and on the regulatory framework of climate-related geoengineering relevant to the Convention on Biological Diversity. It also requested to gather "further views of Parties, other Governments, indigenous and local communities and other stakeholders on the potential impacts of geoengineering on biodiversity, and associated social, economic and cultural impacts, taking into account gender considerations."

SBSTTA 19, in November 2015, took note of the "Update on Climate Geoengineering in relation to the Convention on Biological Diversity: Potential Impacts and Regulatory Framework," which later become the CBD Technical Series report No.84 (www.cbd.int/doc/publications/cbd-ts-84-en.pdf).

The most important message of this update is that the impacts of geoengineering on biodiversity have not been studied, nor there is a "science based, global, transparent and effective control and regulatory mechanisms for geo-engineering."[4]

The updated report cites evidence that shows geoengineering proposals are technically faulty, unfeasible or carry unacceptable risks. Notwithstanding, the report also includes a speculation that geoengineering may impact "positively or negatively" on the "drivers" of biodiversity loss. This distracts from the mandate of the report, which was to focus on the impacts of geoengineering on biodiversity, not on "drivers."

The statement that geoengineering may impact positively on the drivers of biodiversity loss is unsubstantiated, as geoengineering proposals are theoretical and not proved viable. There are numerous other, much safer, ways to address the drivers of biodiversity loss.

New developments since COP 12

Numerous studies on geoengineering have been published since the former CBD report came out in 2012. A number of them appear crafted to promote different geoengineering techniques, sometimes by writers with commercial or other conflicts of interest in the technologies.

The Paris Agreement on climate change, signed at UNFCCC in December 2015, called to hold the global temperature increase "well below 2 degrees" until 2100. The UNFCCC also requested the IPCC to produce a report on the impacts of global warming of 1.5°C and related global greenhouse gas emission pathways. These are important and fair demands. However, it has also motivated a new wave of pushes and publications in favor of geoengineering, particularly the proposals associated with so called "negative emissions" technology.

The IPCC AR5 report that came out at the end of 2014, is clear in the need to cut down emissions drastically, up to 70% before 2050. It is also clear on the main sources of emissions, fossil fuels, industrial agriculture, deforestation and others. But the IPCC proposed scenarios to keep the temperature from increasing have created much controversy and confusion, because instead of pointing out how to cut the main sources of emissions, the IPCC scenarios are heavily based on "negative emission" technologies, particularly BECCS.

4 As decision CBD X/33, 8 (w) demands.

One of the main critiques of the concept "negative emissions" is that it may never function for the climate, but it functions already as a "political panacea" allowing high emitters to continue emitting GHGs if they in the future apply some technology that would sequester more gases than those emitted.[5] As researcher Kevin Anderson calls it, "negative emissions technologies are not an insurance policy but rather an unjust and high-stakes gamble."[6]

"... IPCC's roughly 5,000-page Fifth Assessment Report, released in 2013 and 2014, leaves out one crucial consideration: the environmental impacts of large-scale CO_2 removal. This omission is striking because the set of IPCC emissions scenarios that are likely to limit the increase in global surface temperature to 2°C by 2100 (...) mostly relies on large-scale CO_2 removal."

– Phil Williamson in Nature, 2016[7]

BECCS and SRM technologies

To BECCS or not to BECCS? The dilemma of bioenergy

The notion that bio-energy with carbon capture and storage (BECCS) would serve to counteract climate change is based on faulty assumptions and perverse accounting. Indeed, according to several scientific studies,[8] the replacement of fossil fuels by large-scale bioenergy will increase, not decrease, the amount of GHG emissions, and will negatively affect biodiversity.[9]

Burning biomass emits carbon dioxide and decreases the amount of organic carbon stored in plants in soils, reducing also its ability to retain organic carbon. The assumption that biomass burning could be offset by plant growth only works if that plant growth is additional to what is already being exploited for other purposes; otherwise it is double accounting.

The so-called "marginal lands" and "forest wastes" that are proposed to be used as bioenergy sources generally are already utilized by marginal communities, or required by ecosystems to stay healthy and fertile. In any case, they could not satisfy the demand for enormous quantities and dense pulp that proposals say are needed to avoid climate change.[10] Global biomass is already over-harvested, used at a faster pace than it is permitted to be renewed, and thus it is already a non-renewable resource.[11] There is simply not enough land to deploy bioenergy plantations without competing with food crops, displacing indigenous and peasant communities, invading natural ecosystems and destroying cultural and natural biodiversity.

5 Glen Peters, "Best available science to inform 1.5o policy choices." *Nature Climate Change,* 11 April 2016. www.nature.com/nclimate/journal/v6/n7/full/nclimate3000.html

6 Kevin Anderson and Glen Peters, The trouble with negative emissions. *Science,* October 2016.

7 Phil Williamson, "Emissions reduction: Scrutinize CO_2 removal methods," *Nature,* 10 February 2016. www.nature.com/news/emissions-reduction-scrutinize-co2-removal-methods-1.19318

8 National Academy of Sciences (2015), "Climate Intervention: Carbon Dioxide Removal and Reliable Sequestration," www.nap.edu/download.php?record_id=18988#
Searchinger T & Heinlich (2015) Avoiding Bioenergy Competition for Food Crops and Land. Working Paper 9 of Creating a Sustainable Food Future. World Resources Institute, Washington DC, 44pp. www.worldresourcesreport.org,

9 Haberln, Helmut et al, "Correcting a fundamental error in greenhouse gas accounting related to bioenergy" in *Energy Policy,* October 2012;

10 Smolker, R., Biofuelwatch, "Comments on biochar and bioenergy with carbon capture and storage to CBD," www.biofuelwatch.org.uk/2015/cbd-geoengineering-comments/

11 Global Footprint Network, www.footprintnetwork.org/en/

It would be foolish to rely on carbon capture and storage (CCS) to "sequester" the additional GHG caused by bioenergy, as this expensive technology is not proven to function or to reliably and permanently retain the injected gases, much less guarantee safety. Globally, there are only three fully-operational dedicated CCS facilities, all heavily subsidized by public funds.[12] If all CCS plants were in full operation, with absolutely no leaks and even if all the industry's optimistic calculations turn out to be correct, CCS would still only absorb less than 0.1 percent of the excess C02. And that´s before discounting the GHG emission from the additional oil extraction.[13] [14]

Clouds on the horizon: solar radiation management is not acceptable

The Fifth Global Assessment Report of the IPCC concluded that "SRM is untested and is not included in any of the mitigation scenarios. If it were deployed, SRM would entail numerous uncertainties, side effects, risks and shortcomings and has particular governance and ethical implications. SRM would not reduce ocean acidification. If it were terminated, there is high confidence that surface temperatures would rise very rapidly, impacting ecosystems susceptible to rapid rates of change."[15]

Several scientific studies, some referenced in the updated report, have shown that various proposals for solar radiation management, if deployed, would worsen the depletion of the ozone layer and could increase ocean acidification, two major global environmental problems that adversely affect biodiversity. As mentioned earlier, studies also show that SRM schemes would disrupt rain and wind patterns and will further imbalance the climate, affecting particularly the most vulnerable countries of the South.[16]

Because of these high risks and the possibility that SRM could be deployed unilaterally by any private or public "coalition of the willing," the CBD cannot be ambiguous on the undesirability of solar radiation management, much less in combination with other untested CDR geoengineering techniques. To neglect clarity on this matter courts the possibility of alarming and unacceptable risks to biodiversity.

12 The CCS industry list another dozen facilities, but the goal of those facilities is primarily "Enhanced Oil Recovery" (EOR), and thus to burn more fossil fuels. Their intent is to extract more oil from existing reserves. When that oil is burned, this will of course increase GHG emissions.

13 Dhara, Sagar, "The challenge is deeper than technology," *The Bulletin of Atomic Scientist,* October 2015, http://thebulletin.org/technologys-role-climate-solution8815

14 For a detailed information on BECCS promises and realities, see the report "Last ditch climate option or wishful thinking? BECCS" Biofuelwatch, 2015 www.biofuelwatch.org.uk/category/reports/beccs/

15 IPCC AR5, Climate Change 2014, Synthesis Report, Summary for Policy Makers, page 25. www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf

16 Robock, Alan, "20 reasons why geoengineering may be a bad idea." 2015. *Bull. Atomic Scientists,* 64, No. 2, 14-18, 59, doi:10.2968/064002006
Kleidon and M. Renner, "Thermodynamic limits of hydrologic cycling within the Earth system," 2015. *Earth Syst. Dynam.*, 4, 455-465
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More information:

www.GeoengineeringMonitor.org

http://etcgroup.org/issues/geoengineering

www.biofuelwatch.org.uk

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