To the UN Special Rapporteur on human rights and the environment

Mr. David R. Boyd

**Submission on the impacts of Climate Geoengineering on Biodiversity and Human Rights**

**to the report on Healthy Ecosystems and Human Rights: Sustaining the Foundations of Life, 2020**

By Biofuelwatch, ETC Group and Heinrich Böll Foundation

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Dear Special Rapporteur Mr. David R. Boyd,

We greatly appreciate the opportunity to submit our considerations on the potential impacts that geoengineering could have on human rights and biodiversity. In the context of dire climate change and lack of governmental action in response, a series of large-scale technological proposals to manipulate the climate–by attempting to manage some of the symptoms–has emerged. In this submission we highlight the main aspects of geoengineering technologies and our concerns about the potential impacts of their development, especially on the human rights of indigenous peoples, peasant and local communities, and on biodiversity.

1. **What is geoengineering?**

Geoengineering refers to a set of proposed techniques to intervene in and alter earth systems on a large scale, particularly manipulations of the climate system as “technological solutions” to climate change. They all have potentially grave impacts. Proponents often categorize them under two umbrella terms: Solar Radiation Management (SRM) and Carbon Dioxide Removal (CDR). These geoengineering proposals include land-based interventions and interventions in the oceans or in the atmosphere. We think that referring to the ecosystems they plan to intervene in ([marine, terrestrial or atmospheric geoengineering](http://www.geoengineeringmonitor.org/2017/12/3087/)) is a more accurate way of reflecting the potential impacts on those ecosystems and the human communities that live within them. A list of the techniques and their potential impacts can be seen in the report “[The Big Bad Fix](https://www.boell.de/en/2017/12/01/big-bad-fix-case-against-geoengineering)” (ETC, Hbf, BfW, 2018).

Geoengineering techniques currently being advanced include Carbon Capture and Storage (CCS), Bioenergy with CCS and Direct Air Capture (DAC). Other kinds of techniques, such as ocean fertilization and enhanced weathering, and techniques included under Solar Radiation Management remain theoretical at present, although public and private research groups have done, or are planning to do, open-air experiments in these areas.[[1]](#footnote-1)

1. **UN moratoria based on precaution**

All of these geoengineering techniques would have [impacts on biodiversity](https://www.cbd.int/doc/publications/cbd-ts-84-en.pdf), and the Convention on Biological Diversity (CBD) has been cognizant of those risks for many years. Following its mandate to protect biodiversity and related livelihoods, the CBD has adopted several significant [decisions](https://www.cbd.int/climate/geoengineering/) relating to geoengineering, including a call for a moratorium on geoengineering deployment (CBD 2008, 2010, 2016, 2017, 2019).[[2]](#footnote-2)

The 1996 London Protocol of the London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matters was amended in 2013 to establish a governance framework to regulate activities involving ocean fertilization and other marine geoengineering activities. Sparked by controversial outdoor experiments, parties to the London Protocol agreed to prohibit all Ocean Fertilization (OF) activities unless assessed as constituting legitimate scientific research (IMO, 2013).[[3]](#footnote-3)

1. **Potential impacts**

The climatologist Alan Robock identified 20 reasons why geoengineering was a bad idea. Over a decade later, these are still current, and a later article increased the total number of reasons to 27 (Robock 2008 and 2016).

Each technique has its own specific impacts, but all share some general concerns, including:

**Scale**: For any geoengineering technique to have an impact on the global climate, it will have to be deployed on a massive scale. Unintended consequences could also be on a massive scale and transboundary.

**Unreliable and high-risk:** Geoengineering intends to intervene in poorly-understood, dynamic and complex systems, such as climate and ocean ecology. Interventions could go awry because of mechanical failure, human error, incomplete knowledge and climate data, unpredictable synergic effects, natural phenomena (such as volcanic eruptions, earthquakes and tsunamis), trans-boundary impacts, change in political regime or funding failures, among others. In some cases, such as Solar Radiation Management, sudden termination could lead to jumps in temperature and feedback effects that could be even worse than the climate effect meant to be addressed (Trisos *et al*, 2018).

**Irreversibility:** We know that many tipping points in the global climate system will be irreversible. For instance, no amount of “negative emissions” is likely to help to refreeze the Arctic. The same concept of irreversible tipping points applies to the application of geoengineering technologies which may cause irreversible ecological or social damage. In particular, so-called “termination shock” (a sudden large increase of temperature) would carry grave impacts to biodiversity and the livelihoods of communities, should we deploy SRM while continuing to emit fossil fuel emissions. (Robock, 2018, Trisos *et al,* 2018) Similarly, large scale land conversion to provide biomass for a global scale application of BECCS would, once undertaken, be irreversible within any meaningful time-frame. Ultimately, deployment of most of the technologies proposed would likely exacerbate rather than address climate change.

**Promotes climate inaction:** Geoengineering is a “perfect excuse” for governments seeking to avoid the political costs of carbon reductions. The oil industry has been promoting geoengineering as a way of justifying the continuation of fossil fuels extraction (CIEL, 2019).

**Deviates resources, funding and research capacity** away from urgently-needed, real, precautionary, ecological, justice-based pathways for mitigation and adaptation to climate change.

**Unilateral and unequal:** Many of the same powerful countries and corporations, that are the principal historical emitters of greenhouse gases (GHGs), control the budgets and the technologies and are best positioned to develop and execute geoengineering technologies. By keeping the polluters in charge of the solution to climate change, the interests of marginalized peoples will continue to be excluded. The negative impacts of many proposals will be particularly harsh among developing countries in the Global South.

**Environmental hazards:** All proposed geoengineering techniques have potentially serious environmental impacts. For example, ocean fertilization is able to disrupt the marine food chain, create harmful algae blooms and generate anoxia lethal to marine life. Deploying bio-energy with carbon capture and storage (BECCS) would necessitate “massive displacements of land and people, with global implications for food supply, land rights, and environmental justice” (Beck & Mahony, 2017). SRM,depending on details of the technique and geography, could result in depletion of the ozone layer, changes to weather patterns around the tropics and subtropics, and severe droughts in Africa and Asia, all of which could be catastrophic. These would severely affect the source of food and water for literally billions of people (Robock *et al*, 2010).

**Intergenerational injustice:** The idea that geoengineering will “buy time” to allow for a change towards low carbon sustainable policies in the coming decades is profoundly unrealistic and unjust for future generations.

**Weaponization:** The military origin and implications of geoengineering for warfare are often forgotten or intentionally not mentioned. Yet the concept of controlling the weather and climate originated from military strategies and was responsible for precipitating the international Environmental Modification Convention (ENMOD) (Fleming, 2010).

1. **Geoengineering and human rights**

We recognize that your report on the right to a safe climate recommended that natural gas plants be fitted with CCS technology.[[4]](#footnote-4) However there are profound concerns about the viability of CCS. Those concerns are laid out in Annex 1 on Bioenergy with CCS. Your report on a safe climate also makes reference to geoengineering strategies involving the large scale manipulation of natural systems, such as ocean fertilization, Solar Radiation Management and Stratospheric Aerosol Injection, noting that they are untested and could have massive impacts on human rights.[[5]](#footnote-5) As a result, it cautions against their use and advocates better understanding of their implications. We wholeheartedly agree with this approach for the reasons expressed above and wish to offer some thoughts on how this better understanding might be developed.

1. ***The importance of taking a rights and ecosystem-based approach to decisions relating to geoengineering***

As noted in your previous report on human rights and biodiversity, states have a general obligation to protect ecosystems and biodiversity, and the health of the ecosystems on which human rights depend is itself dependent on biodiversity.[[6]](#footnote-6) As such, human engagement with ecosystems must not destroy them. States’ obligations include protecting the environment from harm by businesses, and businesses also have a responsibility to respect rights relating to biodiversity.[[7]](#footnote-7) Likewise, the International Covenant on Civil and Political Rights (ICCPR) General Comment 36 on the Right to Life highlights environmental harms as some of the most serious present threats to this right and adds that international environmental law obligations should inform the obligation to protect the right.[[8]](#footnote-8) In particular, it flags the need to have due regard to the precautionary approach and the prohibition on transboundary harm. At the regional level, the Inter-American Court of Human Rights has issued an advisory opinion coming to a similar conclusion, adding that forests, rivers and seas could be protected in their own right, irrespective of known direct harms to particular individuals.[[9]](#footnote-9) Finally, the preamble to the UN Framework Convention on Climate Change (UNFCCC) Paris Agreement also makes clear that when taking action on climate change, states should “respect, promote and consider their respective obligations on human rights”, making specific reference to those most heavily impacted groups such as indigenous peoples and people in vulnerable situations.

These obligations and findings are very important for geoengineering as they highlight the importance of protecting ecosystems as fundamental to upholding human rights standards. Likewise, they indicate the necessity of the application of the precautionary principle and the duty to avoid transboundary harm when considering geoengineering technologies. The Guiding Principles on Busines and Human Rights set out that states are required to “protect against human rights abuse within their territory and/or jurisdiction by third parties, including business enterprises”, including by “taking appropriate steps to prevent, investigate, punish and redress such abuse through effective policies, legislation, regulations and adjudication”.[[10]](#footnote-10) However, there are currently no procedures in place to consider the human rights impacts of geoengineering technologies on communities. Given that the impacts of geoengineering are potentially massive, as described above, it is key that they are not sidelined in favor of technical discussions as seems to be the case at present.[[11]](#footnote-11)

1. ***Public participation***

Environmental procedural rights are recognized as falling within the human rights obligations of states. The environmental rights to information, participation and access to justice, as mentioned in Principle 10 of the Rio Convention in 1992, have formed a fundamental part of environmental law at the domestic level and have been enshrined in a number of treaties, such as the [Aarhus Convention](https://www.unece.org/fileadmin/DAM/env/pp/documents/cep43e.pdf) in the European region and the [Escazú Agreement](https://repositorio.cepal.org/bitstream/handle/11362/43583/1/S1800428_en.pdf) in the Latin American region. The importance of public participation and access to information is given specific recognition in the climate context through Article 6 of [UNFCCC](https://unfccc.int/resource/docs/convkp/conveng.pdf) and Article 12 of the [Paris Agreement](https://unfccc.int/sites/default/files/english_paris_agreement.pdf). Article 4(1)(f) of the UNFCCC highlights impact assessments as a method of minimizing adverse effects on the economy, public health and the quality of the environment stemming from projects or measures taken to mitigate or adapt to climate change.

These procedural rights are very much relevant to geoengineering as a proposed “solution” to climate change. Discussions around geoengineering are often very technical and scientific, promoted by particular, often commercial, interests, and with little opportunity for meaningful public engagement. Given the massive potential impacts of geoengineering on human rights this is not acceptable. Previous reports by your office note that environmental information must be provided in a way that enables the public to understand and discuss a situation, project or policy and its effects, as well as providing real opportunities for them to be heard and influence the decision-making process and that there should be a particular emphasis on groups most affected.[[12]](#footnote-12) These points are very relevant to discussions on geoengineering, from the international to local level. These discussions cannot be confined to top-down discussions among government officials and technical experts. The public, particularly the potentially negatively affected people, should be able to take part in decision-making processes relating to geoengineering and challenge proposals and projects that threaten to violate their rights.[[13]](#footnote-13) Even “small scale” geoengineering experiments, (a concept that is not defined and lends itself to dangerous ambiguity), cannot be disconnected from the deployment of the projects on a larger scale, and public participation in discussion of these projects should likewise extend beyond those directly impacted (Ribeiro, 2019).

All proposed geoengineering projects must respect the UN moratoria (or prohibition in the case of ocean fertilization), as well as the provisions of the UN Declaration on the Rights of Indigenous Peoples (UNDRIP) and the UN Declaration on the Rights of Peasants and Other People Working in Rural Areas. Indigenous peoples’ knowledge systems and practices ensure that they have been able to live in harmony with nature for countless generations. As such they offer proven solutions and models for effectively addressing the climate and other environmental crises. However, virtually all geoengineering proposals, if deployed, would have very significant impacts on indigenous peoples, peasant and other communities. Overall, civil society, including those most vulnerable to negative impacts of geoengineering have not been consulted or engaged in any meaningful way. For instance, geoengineering projects that are already announcing open air experiments, such as [SCoPEx](http://www.geoengineeringmonitor.org/2017/11/scopex/) and [Ice911](http://www.geoengineeringmonitor.org/2018/04/ice-911-geoengineering-experiment-briefing/) in the US or [Oceaneos](https://www.nature.com/news/iron-dumping-ocean-experiment-sparks-controversy-1.22031) in Chile and Peru, have not taken into account these norms and agreements established at the UN. In [the case of Oceaneos](http://www.eula.cl/musels/wp-content/uploads/2017/05/10-razonesOK_difusi%C3%B3n.pdf), the company is a progeny of the [Haida Salmon Restoration Corporation](http://www.etcgroup.org/content/case-study-ocean-fertilization-near-haida-gwaii), which misled an Indigenous community in Canada in order to use their territory for a large-scale unregulated ocean fertilization experiment (Geoengineering Monitor, 2018; Tollefson, 2017; ETC Group, 2013; Leiva, 2019).

1. **Conclusions**

The case for geoengineering assumes that existing and alternative approaches will not work and that therefore it is necessary to take the risk of enabling new technologies despite their unknown consequences for humans and the environment and that their potential side-effects could worsen climate imbalance. A human rights approach enables reconsideration of the role of groups such as indigenous peoples and local communities whose traditions and practices offer alternative, proven guidance for how to live sustainably. It also reorients our legal relationship with the non-human world rather than trying to make further attempts to control it. Such approaches are undoubtedly less risky and will prove far more fruitful than further industrial-scale, highly risky manipulation of poorly understood earth systems.

At present the discussions on geoengineering exist in relatively small circles dominated by technical and commercial interests. It is crucial that this space is broadened in order to allow for public understanding and engagement in the proposals, particularly by those communities most impacted, at the international, regional, national and local levels as appropriate. In addition, further research is needed into the likely human rights and ecosystem impacts of the proposed technologies so that geoengineering is considered through the lens of human impacts, values, equity and the kind of world we would like to live in. This should take place before the proliferation of open-air experiments, because these could later be used as an argument to build on existing investments and continue to deployment.

We would greatly appreciate the support of the Special Rapporteur in highlighting the importance of applying public participation/Principle 10 rights–human rights, ecosystem considerations and international environmental law principles–when exploring this highly controversial topic. We would be very happy to provide further information and/or discuss this matter further if helpful.

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**Annex 1**

**BECCS as an example of the impacts of a geoengineering technology**

We are aware that in previous reports the Special Rapporteur has also noted the potential for poorly implemented Carbon Dioxide Removal (CDR) technologies to displace other types of land use and impact food security, biodiversity and human rights. He has described how biofuel policies have contributed to hikes in food prices, riots and a significant increase in those suffering from hunger, with forestry-related policies likewise raising concerns about land rights, access to food and cultural activities.

Bioenergy with Carbon Capture and Storage (BECCS) is a widely discussed CDR technique which involves planting massive monocultures of trees or crops for biomass, burning them to generate energy, and then capturing the resulting CO2and storing it permanently in geological formations or under the seabed. The inclusion of BECCS by the Intergovernmental Panel on Climate Change (IPCC) in its Fifth Assessment Report (AR5) was later [criticized by scientists](https://science.sciencemag.org/content/354/6309/182) because BECCS has neither been proven to be functional nor to produce “negative emissions”, but the illusion of this option delayed real greenhouse gas (GHG) reductions (Anderson & Peters, 2016).

A large body of peer-reviewed literature shows that large-scale production of energy with [biomass is a source of additional GHG emissions](http://www.biofuelwatch.org.uk/biomass-resources/resources-on-biomass/). The presumption that “new trees will grow” to offset emissions from burning wood for energy is the basis for the misguided industry-promoted “carbon neutral” designation. The addition of carbon capture and storage is then presumed to render the process “carbon negative”. However, burning trees for energy is far from “neutral”, there is no guarantee that trees will regrow and the timescale over which that would happen is anyway far too long. Thus the overall process simply cannot be described as being “carbon negative” either. Protection of forests and ecosystems is fundamental to protecting human rights. A vast increase in demand for wood is precisely the opposite of what is needed.

In addition, CCS projects are extraordinarily expensive, rarely tested, and cannot ensure either the safety or the permanent locking away of stored gas.

Capturing CO2 from fossil fuel power plants has proven to be not only economically untenable but also highly challenging from a technical point of view. Most projects where it has been attempted have operated at far lower capacity than anticipated, and/or have abandoned capture altogether. Powering the capture of carbon from these facilities incurs an energy penalty (roughly 30% of the energy produced at the facility is needed to power the capture itself), rendering the process highly inefficient. Application of CCS to bioenergy would be even more inefficient, given the problems outlined above, and has not been achieved at anything approaching commercial scale (other than capturing CO2 from fermentation in corn ethanol production).

Development of a large scale CCS program would require construction of a massive infrastructure to compress, transport and store CO2, and the viability of long term safe storage is highly questionable (concentrated CO2 gas is lethal).

Currently, most existing CCS projects supply compressed CO2 for Enhanced Oil Recovery, thus producing more greenhouse gases. The proposed (and largely unproven) option to use the captured CO2 to produce synthetic fuels or other products does not permanently sequester it. At best it would only delay greenhouse gas emissions–while using massive amounts of valuable renewable energy to power the production process. (BFW, 2011- 2020; CIEL 2019).

The IPCC, in its subsequent special report on [Global Warming of 1.5 oC](https://www.ipcc.ch/sr15/), recognized that for BECCS to function at a scale that could remove even a minimally significant part of the excess CO2, it would need to be deployed on a massive scale with monoculture crop and tree plantations for biomass, thus constituting a threat to biodiversity and competing for land currently used for food production. It also expressed concerns about potential impacts on ecosystems, food security, land rights and human rights, based on a wide variety of studies and prior experience with biofuels (Fuss, 2014; Smith 2015; Vaughan 2016).

The same observations have been made by other scientists and civil society with a strong emphasis on the threats to indigenous and peasant communities (Smolker, 2019; Fern 2018).

1. Open air geoengineering experiments include, among others, spreading synthetic microbubbles in the Arctic (Ice911), Stratospheric Aerosol Injection in the US (SCoPEx), and Marine Cloud Brightening (MCB) in Australia. More information on these experiments can be found at [GeoengineeringMonitor.org](http://www.geoengineeringmonitor.org/) [↑](#footnote-ref-1)
2. CBD Decision [X/33 (w)](https://www.cbd.int/decision/cop/?id=12299)calls on Parties and other governments to ensure that no climate-related geoengineering activities take place until a series of conditions are met, constituting for most governments a *de facto* moratorium. CCS is the only technique that is explicitly excluded from this decision. [↑](#footnote-ref-2)
3. This has been done through listing Ocean Fertilization in a new Annex 4 on marine geoengineering. A new Annex 5 also established an Assessment Framework for more marine geoengineering activities to be considered for listing under Annex 4 (International Maritime Organization, 2013). The amendment of the London Protocol that prohibits the geoengineering techniques included in Annex 4 (currently only Ocean Fertilization) has not yet entered into force. [↑](#footnote-ref-3)
4. <http://www.srenvironment.org/sites/default/files/Reports/2019/UNGA%20Safe%20Climate%20Report%202019.pdf>, Paragraph 78(b) [↑](#footnote-ref-4)
5. Paragraph 83 [↑](#footnote-ref-5)
6. A/HRC/34/49 at https://www.ohchr.org/EN/Issues/Environment/SREnvironment/Pages/Biodiversity.aspx See e.g. para 5 [↑](#footnote-ref-6)
7. A/HRC/25/53, paras. 58-61 [↑](#footnote-ref-7)
8. <https://tbinternet.ohchr.org/_layouts/15/treatybodyexternal/Download.aspx?symbolno=CCPR/C/GC/36&Lang=en> [↑](#footnote-ref-8)
9. <https://www.asil.org/insights/volume/22/issue/6/inter-american-court-human-rights-advisory-opinion-environment-and-human> [↑](#footnote-ref-9)
10. (A/HRC/17/31, principle 1) referred to in A/HRC/25/53 para 59 [↑](#footnote-ref-10)
11. See for example the consideration of a draft ISO standard on geoengineering in a secretive and commercially driven process. <https://www.france24.com/en/20190823-industry-guidance-touts-untested-tech-as-climate-fix> , and

    <https://www.etcgroup.org/files/files/geoengineering_iso_brief_sep2019.pdf> [↑](#footnote-ref-11)
12. Human Rights and Climate Change, Knox, 2016 A/HRC/31/52, para 59 <http://srenvironment.org/sites/default/files/Reports/2018/A-HRC-31-52-advance-edited-version.pdf> [↑](#footnote-ref-12)
13. Human Rights and Climate Change, Knox, 2016 A/HRC/31/52 (see above footnote) para 82 [↑](#footnote-ref-13)