



# THE IMPACT OF NEW TECHNOLOGIES FOR CLIMATE PROTECTION ON THE ENJOYMENT OF HUMAN RIGHTS

AMNESTY INTERNATIONAL SUBMISSION TO THE HUMAN RIGHTS COUNCIL ADVISORY COMMITTEE

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## INTRODUCTION

Amnesty International welcomes the opportunity to contribute to the report of the Human Rights Council Advisory Committee's report on the impact of new technologies for climate protection on the enjoyment of human rights, as requested by the Human Rights Council in resolution 14/48.<sup>1</sup>

The submission is structured around some of the questions laid out by the Advisory Committee in the call for submissions and draws from Amnesty International's publication from June 2021: [Stop Burning Our Rights – What governments and corporations must do to protect humanity from the climate crisis](#).

This submission only focuses on Carbon Dioxide Removal (CDR) mechanisms among the new technologies for climate protection. Amnesty International is aware of the human rights and environmental dangers associated with solar radiation management but has not conducted an independent analysis on these mechanisms.<sup>2</sup>

## THE HUMAN RIGHTS RISKS OF CARBON DIOXIDE REMOVAL MECHANISMS

(Responses to core questions 1-4)

Carbon dioxide removal (CDR) refers to both nature-based mechanisms<sup>3</sup> and geo-engineering industrial technologies<sup>4</sup> intended to deliver large-scale removal of CO<sub>2</sub> from the atmosphere. CDR mechanisms are considered to deliver "negative emissions" because of the assumption that the removal of CO<sub>2</sub> will help offset the emissions that we are currently unable to prevent. The balance over a specific period between carbon emissions and negative emissions is referred to as "net-zero emissions".

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<sup>1</sup> <https://www.ohchr.org/en/calls-for-input/calls-input/impact-new-technologies-climate-protection-enjoyment-human-rights>

<sup>2</sup> On the dangers associated with SRM, see CIEL, *Fuel to Fire: How Geo-Engineering Threatens to Entrench Fossil Fuels and Accelerate the Climate Crisis*, 2019, p. 9, [ciel.org/reports/fuel-to-the-fire-how-geoengineering-threatens-to-entrench-fossil-fuels-and-accelerate-the-climate-crisis-feb-2019/](http://ciel.org/reports/fuel-to-the-fire-how-geoengineering-threatens-to-entrench-fossil-fuels-and-accelerate-the-climate-crisis-feb-2019/) and W. Burns, *The Paris Agreement and Climate Geo-engineering Governance: The Need For a Human Rights-Based Component*, 2016, CIGI Papers, [cigionline.org/sites/default/files/documents/CIGI%20Paper%20No.111%20WEB.pdf](http://cigionline.org/sites/default/files/documents/CIGI%20Paper%20No.111%20WEB.pdf)

<sup>3</sup> Nature-based CDR mechanisms include reforestation, afforestation and forest management, soil carbon sequestration and ecosystems restoration.

<sup>4</sup> Industrial CDR technologies include bio-energy with carbon capture and storage (BECCS), direct air carbon capture and storage (DACCS), enhanced weathering, ocean iron fertilization and ocean alkalization. Another widely discussed geo-engineering approach, although not yet available, is solar radiation management (SRM), which does not entail carbon removal. SRM does not attempt to reduce GHG in the atmosphere but proposes to reflect a small amount of inbound sunlight back out into space before it becomes trapped in the atmosphere by GHG, thus reducing the effects of global heating.

In recent years, governments and companies have redoubled their interest in CDR mechanisms, both geo-engineering technologies and nature-based mechanisms involving tree-planting such as reforestation and afforestation.<sup>5</sup> Increasingly, these methods are becoming a central part of states' and companies' strategies for emission reductions and for achieving "net-zero" by 2050.<sup>6</sup>

However, CDR mechanisms should not be seen as a panacea to the climate crisis and only some nature-based mechanisms should be actively encouraged, provided that they are carried out in a human rights-consistent manner. This is because other mechanisms could pose severe risks of human rights harm, especially for people in developing countries, and possibly irreversible damage to the environment, especially if used on a large scale.<sup>7</sup> In addition, most technologies are not currently able to produce substantive negative emissions and an excessive reliance on their future development could represent a dangerous gamble and an unreasonable delay to the urgent phasing out of fossil fuels.

The most relied-upon CDR approach, bio-energy with carbon capture and storage (BECCS), is based on the production of bio-energy associated with mechanisms to capture and store the CO<sub>2</sub> emitted in the process of energy production.<sup>8</sup> Dedicating areas of land to bio-energy increases competition for land. This often leads to governments and corporations acquiring large plots of land often at the expenses of Indigenous Peoples and smallholder farmers who are forcibly evicted and dispossessed of their land and livelihoods. For example, in Indonesia and Malaysia, palm oil companies have bulldozed entire Indigenous villages, leaving their residents homeless and unable to provide for themselves.<sup>9</sup> In Brazil, the Guarani People have lost much of their land to sugar cane cultivation, while in Central America the rush for sugar, driven also by the global biofuel demand, has led to threats, forced evictions and killings of Indigenous Peoples.<sup>10</sup>

In order to produce substantial negative emissions, BECCS would require massive amounts of land dedicated to it. For example, it has been estimated that delivering three gigatons of CO<sub>2</sub>-equivalent negative emissions annually from BECCS, which is a relatively modest amount, would require conversion of a land area of approximately 380-700 million hectares in 2100, translating into 7-25% of global agricultural land and 25-46% of arable and permanent crop area.<sup>11</sup> The impacts on the rights of Indigenous Peoples and rural communities and on food security, biodiversity and land degradation could be devastating.

Some nature-based CDR approaches present similar constraints on land as BECCS. For example, afforestation also requires dedicated land, as it involves growing a forest on land that has not historically contained forest. The IPCC confirmed that "there are limits to the deployment of land-based mitigation measures such as bio-energy crops or afforestation".<sup>12</sup> Large-scale use of "afforestation and bio-energy may compete with other land uses and could increase risks for food security, sustainable development, desertification, land degradation, biodiversity and other ecosystem functions and services".<sup>13</sup>

Reforestation poses less demand on new land than afforestation as it involves human efforts to re-grow a forest that once existed but was destroyed or degraded. However, the land impact is not inexistent as

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<sup>5</sup> The IPCC defines reforestation as the "conversion to forest of land that has previously contained forests but that has been converted to some other use" and afforestation as the "conversion to forest of land that historically has not contained forests". See [ipcc.ch/srcccl/chapter/glossary/](https://www.ipcc.ch/srcccl/chapter/glossary/).

<sup>6</sup> ActionAid and others, *Not Zero: How "Net Zero" Targets Disguise Climate Inaction*, October 2020, <https://actionaid.org/publications/2020/not-zero-how-net-zero-targets-disguise-climate-inaction>

<sup>7</sup> For example, ocean iron fertilization and ocean alkalization could alter the integrity of ocean ecosystems, resulting in loss of biodiversity and loss of livelihoods for communities who rely on fisheries. See W. Burns, *The Paris Agreement and Climate Geo-engineering Governance* (previously cited); W. Burns, "Can we tweak marine chemistry to help stave off climate change?", 12 March 2019, The Conversation, [theconversation.com/can-we-tweak-marine-chemistry-to-help-stave-off-climate-change-93174](https://theconversation.com/can-we-tweak-marine-chemistry-to-help-stave-off-climate-change-93174). Similarly, enhanced terrestrial weathering could result in negative impacts for marine biodiversity and in soil, water and food contamination. Royal Society and Royal Academy of Engineering, *Greenhouse Gas Removal*, 2017, [royalsociety.org/~/media/policy/projects/greenhouse-gas-removal/royal-society-greenhouse-gas-removal-report-2018.pdf#page=39](https://royalsocietypublishing.org/~/media/policy/projects/greenhouse-gas-removal/royal-society-greenhouse-gas-removal-report-2018.pdf#page=39). See also IPCC, *Special Report on Climate Change and Land, Summary for Policymakers* (previously cited); Climate Action Network, *Position on Carbon Capture, Storage and Utilization*, January 2021, [https://climatenetwork.org/wp-content/uploads/2021/01/can\\_position\\_carbon\\_capture\\_storage\\_and\\_utilisation\\_january\\_2021.pdf](https://climatenetwork.org/wp-content/uploads/2021/01/can_position_carbon_capture_storage_and_utilisation_january_2021.pdf)

<sup>8</sup> Carbon dioxide can be stored terrestrially or under the world's oceans, or potentially utilized for other purposes. For a technical explanation of BECCS see Royal Society and Royal Academy of Engineering, *Greenhouse Gas Removal* (previously cited), p. 37.

<sup>9</sup> Human Rights Watch, "When We Lost the Forest, We Lost Everything" – Oil Palm Plantations and Human Rights Violations in Indonesia, 22 September 2019, [hrw.org/report/2019/09/23/when-we-lost-forest-we-lost-everything/oil-palm-plantations-and-rights-violations](https://www.hrw.org/report/2019/09/23/when-we-lost-forest-we-lost-everything/oil-palm-plantations-and-rights-violations); Amnesty International, *The Forest is Our Heart-Beat: The Struggle to Defend Indigenous Land in Malaysia* (Index: ASA 28/9424/2018), 29 November 2018, [amnesty.org/en/documents/asa28/9424/2018/en/](https://www.amnesty.org/en/documents/asa28/9424/2018/en/)

<sup>10</sup> ActionAid, *Feeling the Biofuels Pressure – Human Rights Abuses in Guatemala*, 2013, [ms.dk/sites/default/files/filarkiv/dokumenter/jordtyveri/guatemala\\_report.pdf](https://www.actionaid.org/sites/default/files/filarkiv/dokumenter/jordtyveri/guatemala_report.pdf); EarthRights International, "Honduran Farmers Sue World Bank Group for Human Rights Violations", 2017, [earthrights.org/media/honduran-farmers-sue-world-bank-group-for-human-rights-violations/](https://www.earthrights.org/media/honduran-farmers-sue-world-bank-group-for-human-rights-violations/)

<sup>11</sup> W. Burns, *The Paris Agreement and Climate Geo-engineering Governance: The need for a human rights-based component* (previously cited).

<sup>12</sup> IPCC, *Special Report on Climate Change and Land, Summary for Policymakers*, August 2019, p. 21, <https://www.ipcc.ch/srcccl/chapter/summary-for-policymakers/>

<sup>13</sup> IPCC, *Special Report on Global Warming of 1.5°C, Summary for Policymakers*, October 2018, p. 23, <https://www.ipcc.ch/sr15/chapter/spm/>; IPCC, *Special Report on Land, Summary for Policymakers* (previously cited), p. 21.

degraded forest land is often used for habitation or agriculture purposes. Also, the climate mitigation and environmental benefits of reforestation could be reduced if it involves planting large-scale monoculture tree plantations that replace natural ecosystems, or lands that were in the process of ecosystem restoration. Monoculture tree plantations store less carbon than natural forests and their regular harvesting releases CO<sub>2</sub> into the atmosphere every 10 to 20 years.<sup>14</sup> They can also have negative environmental impacts, such as displacing existing biodiversity, run-off pollution from water and nutrient inputs, and altering local hydrological flows.<sup>15</sup> Large monoculture tree plantations can also have negative human rights implications, as they are often established on land taken from Indigenous Peoples and rural communities.<sup>16</sup> Despite these drawbacks, it is estimated that the majority of forest restoration commitments will be met by planting monoculture tree plantations.<sup>17</sup>

According to the Climate Land Ambition and Rights Alliance (CLARA), on the other hand, forest restoration that happens either by removing elements such as weeds and grazing that suppress forest recovery (natural regeneration) or by re-planting or re-seeding the known native mix of species present prior to clearing (reforestation) can result in greater carbon sequestration, biodiversity and forest resilience.<sup>18</sup> Ultimately, avoiding forest degradation and deforestation in the first place presents the highest opportunity for carbon removal, as trees take on average 30 years to achieve their maximum capacity for carbon storage.<sup>19</sup>

As demonstrated by CLARA, the protection and restoration of natural ecosystems such as of forests, peatlands and grassland is one of the most effective nature-based mechanisms for carbon removal that protects biodiversity and does not interfere with human rights. The report also showed that when Indigenous Peoples and local communities manage land and forests, ensuring their security of tenure represents “a far more equitable and cost-effective way to achieve climate mitigation targets than other carbon capture and storage measures”.<sup>20</sup>

Similarly, the IPCC stated that some nature-based CDR measures “such as restoration of natural ecosystems and soil carbon sequestration could provide co-benefits such as improved biodiversity, soil quality, and local food security”.<sup>21</sup> In the Working Group III report the IPCC specified that “reforestation, improved forest management, soil carbon sequestration, peatland restoration and blue carbon management are examples of methods that can enhance biodiversity and ecosystem functions, employment and local livelihoods, depending on context (high confidence). In contrast, afforestation or production of biomass crops for BECCS or biochar, when poorly implemented, can have adverse socio-economic and environmental impacts, including on biodiversity, food and water security, local livelihoods and on the rights of Indigenous Peoples, especially if implemented at large scales and where land tenure is insecure (high confidence)”.<sup>22</sup>

## THE HUMAN RIGHTS IMPERATIVE OF PRIORITISING FOSSIL FUEL PHASE OUT AND REDUCING ENERGY CONSUMPTION

(Response to core question 6)

While conserving and enhancing natural carbon sinks, enhancing land management and shifting to more sustainable agricultural practices could remove significant amounts of CO<sub>2</sub> from the atmosphere and contribute to avoiding emissions, it is important that even nature-based mechanisms are seen as complementary and not a substitution for other approaches to avoid and reduce emissions, including measures to reduce energy demand and consumption and a rapid phase-out of fossil fuels.<sup>23</sup>

Without such rapid and far-reaching measures in all sectors, global average temperatures will exceed 1.5°C. As the IPCC said, if average global temperature rises to 1.5°C even temporarily, people and ecosystems will face additional severe risk, as some irreversible impacts might unfold, such as such as increased wildfires,

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<sup>14</sup> I. Kaminski, “We might not be planting the right kind of forests”, 25 December 2019, Wired, [wired.com/story/we-might-not-be-planting-the-right-kinds-of-forests/](https://www.wired.com/story/we-might-not-be-planting-the-right-kinds-of-forests/)

<sup>15</sup> CLARA, *Missing pathways to 1.5°C*, 2018, <https://climatelandambitionrightsalliance.org/report>, p. 17.

<sup>16</sup> Global Forest Coalition, *Monoculture Tree-Plantations – Fuelling the Fire*, 2017, [www.globalforestcoalition.org/7432-2/](http://www.globalforestcoalition.org/7432-2/)

<sup>17</sup> New York Declaration on Forests, *Five Year Assessment Report, 2019*, <https://efi.int/publications/new-york-declaration-forests-five-year-assessment-report-2019-10-09>

<sup>18</sup> CLARA, *Missing pathways to 1.5°C* (previously cited), p. 17.

<sup>19</sup> I. Kaminski, “We might not be planting the right kind of forests” (previously cited).

<sup>20</sup> CLARA, *Missing pathways to 1.5°C* (previously cited), p. 1.

<sup>21</sup> IPCC, *Special Report on Global Warming of 1.5°C, Summary for Policymakers* (previously cited), pp. 23-24.

<sup>22</sup> IPCC, *Climate Change 2022 – Mitigation of Climate Change, Working Group III contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, Summary for Policymakers*, para C.11.2, [https://report.ipcc.ch/ar6wg3/pdf/IPCC\\_AR6\\_WGIII\\_SummaryForPolicymakers.pdf](https://report.ipcc.ch/ar6wg3/pdf/IPCC_AR6_WGIII_SummaryForPolicymakers.pdf)

<sup>23</sup> See for example FERN, “What are carbon sinks?”, 2016, [fern.org/news-resources/what-are-carbon-sinks-332/](https://fern.org/news-resources/what-are-carbon-sinks-332/); CIEL, *Fuel to Fire: How Geo-Engineering Threatens to Entrench Fossil Fuels and Accelerate the Climate Crisis* (previously cited), pp. 56-57.

mass mortality of trees, drying of peatlands, and thawing of permafrost. These impacts will weaken natural land carbon sinks and release additional greenhouse gases, exacerbating global warming. This will result in even more devastating impacts for human rights.<sup>24</sup>

Allowing for global average temperature to exceed 1.5°C or adopting emission reduction pathways that do not heavily prioritise measures to reduce energy demand and a rapid phase-out of fossil fuels mean that governments will need to resort to CDR mechanisms on a large-scale.<sup>25</sup> This will have “significant impacts on land, energy, water or nutrients”,<sup>26</sup> and severe human rights consequences, particularly for people in developing countries who are already more disadvantaged. Allowing emissions to increase and then resorting to dangerous CDR measures would expose people who are already marginalized to even further suffering, leading to human rights violations on a massive scale. In practice, it would mean that most disadvantaged people and future generations pay the price for wealthy governments not acting now to reduce emissions.<sup>27</sup>

To protect human rights, phasing out the use and production of fossil fuels with a timeline aligned with the imperative of keeping global warming within 1.5°C is the utmost priority, with wealthier states doing so faster than lower-income countries.<sup>28</sup> At the same time, the transition to renewable energy and a zero-carbon economy must be just, sustainable and human rights-consistent, to facilitate access to energy to all and ensure it is not carried out to the detriment of communities and individuals who are already marginalized or disadvantaged. This includes complementing fossil fuels phase out policies with measures aimed at reducing the overall energy demand and consumption, such as promoting and funding home-insulation, investing in mass, physically accessible and affordable public transport and fostering a circular economy.

## RECOMMENDATIONS

- States must prioritize climate mitigation measures that prevent and reduce emissions, including those that reduce energy demand and consumption and lead to a rapid phase out of fossil fuels, to avoid over-reliance on the use of CDR mechanisms.
- Among CDR measures, states should prioritize nature-based mechanisms, and particularly those that provide the best outcomes for ecosystems and human rights and do not compete with them for land use.
- Before adopting CDR projects, including afforestation and reforestation, states must carry out environmental and human rights impact assessments to accurately assess the potential harm and identify possible mitigation and redress measures.
- Prior to the approval of CDR projects, states must carry out consultations with local communities, allowing for the meaningful participation of all and especially of the most marginalized groups and individuals, and respect the right of Indigenous Peoples to free, prior and informed consent.

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<sup>24</sup> IPCC, Climate Change 2022, Climate Impacts, Adaptation and Vulnerability, *Working Group III contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, Summary for Policymakers*, para SPM.B.6.2, [https://report.ipcc.ch/ar6wg2/pdf/IPCC\\_AR6\\_WGII\\_SummaryForPolicymakers.pdf](https://report.ipcc.ch/ar6wg2/pdf/IPCC_AR6_WGII_SummaryForPolicymakers.pdf)

<sup>25</sup> The IPCC stated with high confidence that “avoiding overshoot and reliance on future large-scale deployment of carbon dioxide removal (CDR) can only be achieved if global CO<sub>2</sub> emissions start to decline well before 2030”. See IPCC, *Special Report on Global Warming of 1.5°C, Summary for Policymakers* (previously cited), p. 24.

<sup>26</sup> IPCC, *Special Report on Global Warming of 1.5°C, Summary for Policymakers* (previously cited), pp. 23-24.

<sup>27</sup> Amnesty International, “Failure to act swiftly on climate change risks human rights violations on a massive scale”, 8 October 2018, [amnesty.org/en/latest/news/2018/10/failure-to-act-swiftly-on-climate-change-risks-human-rights-violation-on-massive-scale/](https://www.amnesty.org/en/latest/news/2018/10/failure-to-act-swiftly-on-climate-change-risks-human-rights-violation-on-massive-scale/)

<sup>28</sup> Amnesty International, “Urgent fossil fuels phase-out critical to protect rights”, 4 April 2022, <https://www.amnesty.org/en/documents/ior40/5405/2022/en/>