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How natural are natural climate solutions ?

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Natural climate solutions, the idea to restore ecosystems to draw down carbon from the atmosphere, were in the spotlight through 2019. Leading environmentalist Greta Thunberg and George Monbiot led calls pushing for natural climate solutions, recognising that emissions reductions are unlikely to be sufficient to be enough to keep global temperature rises under 1.5 degrees. While their intentions are undoubtedly good, the same cannot be said for everyone. In November 2019, the Easyjet airline announced that it would offset the emissions for all its flights through environmental projects. Its share rose 3 per cent the same day. At the COP25 climate talks in Madrid, carbon markets were the major sticking point, as countries argued about whether left-over credits from previous offsetting schemes still counted. In this analysis, Frédéric Hache looks at natural climate solutions and similar proposals, arguing that, unless pursued with extreme care, they risk becoming just another offsetting tool – alibis for inaction and delay.

It is widely acknowledged that reducing greenhouse gas emissions will not be enough to prevent climate change. Whilst a fully decarbonised energy system is achievable, emissions cannot be reduced to zero in some sectors. As a result, absorbing part of the greenhouse gases already in the atmosphere will be necessary. This can be performed through 'carbon capture and storage' in trees and soils or in geological formations.

In this context, a new proposal has recently emerged: natural climate solutions. The term refers to the "restoration and creation of carbon-storing environments such as forests, mangrove swamps, peat bogs, salt marsh and seagrass beds." While the name is new, storing carbon in soils and trees is not. The idea has been around since the 1970s and implemented mostly unsuccessfully for more than a decade.

The Natural Climate Solutions campaign was launched in April 2019 by a small group of activists and scientists led by George Monbiot, and a short film featuring Greta Thunberg was released just ahead of the UN Climate Action Summit in September. The UN summit itself put forward nature-based solutions for climate, a similar initiative led by the UN Environment Programme whose related proposals were offered to world leaders at the Summit and will be followed up through the United Nations COP climate talks. (1)

To be clear, protecting natural forests and planting trees to absorb CO_2 in itself is a good thing – provided it is not monoculture tree plantation. There are however five major potential issues with natural climate solutions.

Impermanence and uncertain additionality

There is considerable evidence that storing carbon in soils and trees is not permanent and highly uncertain. Not only is accurate measurement of the impact of related projects extremely difficult due to the high scientific uncertainty, but there is also the very real possibility that stored carbon will be released after only a short time when trees are cut or burn, leading to an increase of cumulative atmospheric green-house gases within a relatively short

time frame.

Calculating the impact of carbon capture and storage projects would require first being determining with reasonable certainty a hypothetical world without the project and second assigning a single number to the greenhouse gas emissions associated with that world over the next 100 years – the approximate period carbon dioxide stays in the atmosphere. To put the staggering level of uncertainty involved in perspective, "if you can imagine Marconi and the Wright brothers getting together to discuss whether in 2009, EasyJet and the internet would be facilitating each other through internet booking, that's the level of … certainty you'd have to have over that period."

Accurate measurement of the impact of related projects is extremely difficult. It is impossible to know with certainty whether any given project has an impact.

In fact, the United States General Accounting Office stated in an assessment of the Kyoto Clean Development Mechanism carbon offset programme that "it is impossible to know with certainty whether any given project is additional", i.e. has an impact. More recently, a San Diego court rejected a climate action plan relying on carbon offsets for the third time, ruling that using carbon credits was not acceptable because the mitigation was unverifiable.

This is why forest conservation was excluded from the UN Clean Development Mechanism (CDM), a measure under the 1997 Kyoto Protocol that allowed countries to trade emissions credits, and the EU decided to ban offset credits from forestry and land use change activities in the European cap and trade market. And for very good reasons: there is an inherent high risk that forests do not represent real emission reductions due to the impermanence of forest carbon, inflated baselines, problematic additionality testing, and difficult monitoring reporting and verification. A 2017 study published by the European Commission confirmed this risk, finding that 85 per cent of the carbon offset projects used by the EU under the UN's Clean Development Mechanism had failed to reduce emissions.

Impact on fossil fuel emissions reductions

Natural climate solutions will in practice likely come instead of and not in addition to reductions in avoidable fossil fuel emissions. It is sometimes claimed that carbon sequestration will enable to greatly increase our climate ambitions. But nothing guarantees that this will be the case. While in theory carbon sequestration is not supposed to substitute emission reductions. In practice it can and does.

Many countries are planning to set or have already set net-zero emission targets, to be reached by or before 2050. These net-zero emissions national targets are based on the idea that "if it proved impossible to reduce CO_2 emissions to zero, it would be necessary, in order to halt climate change, to absorb an amount of greenhouse gases from the atmosphere each year equivalent to those emissions that remained. This would bring the world to 'net zero' CO_2 emissions."

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The issue is that net-zero targets combine emission reductions and carbon capture and storage in the same metric,

creating a strong risk that carbon capture and storage will come instead of avoidable emission reductions if the former is cheaper and despite the many associated issues.

Evidence of this risk is already clear. As a prominent academic recently noted, the British Committee on Climate Change's latest report relies on "approximately 40% higher negative emission technologies by 2050 than in their previous analysis. As we fail on mitigation, we simply turn up the negative emission technologies' dial." The same is true for polluting industries, a number of major oil and aviation companies have expressed their interest in planting trees to offset emissions, while expanding their polluting activities.

The recent Nature-Based Solutions for Climate Manifesto developed for the UN climate action summit in 2019 pushes to exponentially scale up nature-based solutions in nationally determined contributions, the efforts each country undertakes to reduce national emissions and adapt to the impacts of climate change in the context of the Paris Agreement. This would mean further increasing the ability of governments to meet their international climate commitments with carbon capture and storage instead of reductions in avoidable fossil fuel emissions.

In fact, the list of contributions received under the nature-based solutions initiative already includes projects promoting REDD (reducing emissions from deforestation and forest degradation) and REDD+ carbon offset crédits (2) and calling for the inclusion of nature-based solutions in carbon markets and countries' nationally determined contributions. While it is stated that such proposals should be used only to compensate for emissions that are unavoidable and must address the concerns associated with carbon credits, nothing guarantees that this will be the case.

The age of offsetting should be over

Carbon capture and storage is typically financed by the granting of tradable offset credits wrongly equating temporary sequestration with permanent fossil fuel emissions. These credits can then be sold to fossil fuel emitters to 'offset' their own emissions. Yet there is a fundamental difference between capturing carbon in trees and soils where it is stored for a few decades at best and emissions from fossil fuels which stay in the atmosphere for 100 years.

The appalling track record of carbon offsets has been amply documented as having led to an increase of emissions. It was found that "in the EU alone, emissions increased by over 650 million tonnes of CO_2 as a result of the use of CDM credits in the EU Emissions Trading System. This is because an overwhelming majority of CDM projects essentially issue 'junk' credits that do not lead to real-world emission reductions."

There is a strong risk that natural climate solutions will be used as carbon offsets.

For natural climate solutions to really come in addition to emission reductions, they need to be severally capped within nationally determined contributions and net-zero emissions targets, where they could compensate for lower ambitions in reducing avoidable fossil fuel emissions, and excluded from any carbon market where they would be used to offset fossil fuel emissions.

The issue in doing so is that hardly anyone would likely be interested in financing them anymore, as their political appeal resides precisely in their lower cost compared to emission reductions. There is therefore a strong risk that natural climate solutions will be used as carbon offsets.

In this respect, the statement that "the age of offsets is over" is welcome, as is the call to finance natural climate

solutions with additional government spending instead of offset markets. It must be noted, however, that early project contributions to nature-based solutions already call to include them in carbon markets in order to develop them at scale. Contributions calling to include nature-based solutions in countries' nationally determined contributions without explicit requirements that they come on top of emission reductions objectives are another cause for concern. Finally, there is a strong risk that stretched public finances will be used as an excuse to finance natural climate solutions with new offset market mechanisms.

A devastating social impact?

Many carbon offset projects have been shown to result in land ownership conflicts, land grabs, and human rights violations against indigenous communities. Documented issues include a private company blocking access to land vital for the livelihoods of local communities in Uganda in order to claim credits for planting forests.

The statement in the research study underlying natural climate solutions that "the majority of potential reforestation area is located in the tropics" and not in the Global North is a cause for concern. So is the suggestion that natural climate solutions should be implemented on land whose agricultural yields are low, as such land is typically owned by more vulnerable communities. Monbiot's statement that "projects must work with the free, prior and informed consent of indigenous people and other local communities" is a welcome intention. But to be credible, it will require related binding rules, including deterring penalties, and adequate resources dedicated to enforcement.

Effects on food prices

A recent study published in the journal Environmental and Resource Economics found that "meeting half the Paris Agreement's goal for atmospheric carbon reduction would send food prices soaring, especially in developing economies." As forest carbon sequestration competes with cropland and affects disproportionately the poor, it can at best only be a small piece of the puzzle. As one of the authors of the study put it, "if we want to be serious about climate change, there is no way around reducing emissions."

While Monbiot's manifesto does acknowledge that it is "essential to ensure that natural climate solutions does not compete with the need to feed a growing global population", it is unclear how this statement can be reconciled with meaningfully scaling them up. Crucial initiatives encouraging dietary change away from meat and changes in agriculture production techniques would significantly improve our ability to feed the world. But they should not, and could not, compensate for the loss of agricultural land linked to tree planting as an alternative to curbing fossil fuel emissions.

Last but not least, the Natural Climate Solution campaign's call to action states that it would not require putting a price on ecosystems nor rebranding nature as natural capital. This statement is commendable, as these approaches and related biodiversity offset markets have been shown to be unable to meet their environmental objectives. It is worth nothing, though, that early project contributions to the UN's nature-based solutions already include projects aimed at "mainstreaming natural capital accounting", projects preparing investment opportunities in "natural capital projects", and projects calling to put a price on nature-based solutions and trade them in international markets.

No replacement for real emissions

Early project contributions confirm that nature-based solutions are only the latest rebranding of failed carbon offsets and doomed natural capital approaches. The more recent natural climate solutions for their part offer a number of well-meaning promises. As there are no projects attached yet, it is not known whether these promises will be fulfilled. The fact that natural climate solutions are supported by the same institutions as nature-based solutions strongly suggest that they will follow a similar path.

Protecting natural forests is a good thing and negative emissions are necessary. But they must not come instead of ambitious fossil fuel emission reductions, nor promote doomed offsets and natural capital. Ensuring the environmental and social integrity of natural climate solutions and nature-based solutions would require that:

- They be severely capped by COP climate talks parties and EU member states within nationally determined contributions and national net-zero emissions targets, to ensure that they do not exceed emissions that are demonstrably unavoidable.
- Failing that, at the very least EU member states and COP parties must define and disclose separate sub-objectives for emission reductions and negative emissions within net-zero emission targets and Nationally Determined Contributions. This would provide far more transparency and accountability, reduce the risk that we reduce one while increasing the other, and remove the illusion that both are equivalent.
- Natural climate solutions and nature-based solution projects are not financed through the granting of tradable offset credits that can be sold on carbon markets to offset fossil fuel emissions, as both are not comparable. The United Nations Environment Programme (UNEP) should explicitly exclude all offset projects from the nature-based solution projects contribution platform.
- Projects fostering the monetary valuation or trading of ecosystem services and biodiversity destruction are excluded from project contributions. UNEP should thus also explicitly exclude all projects linked to natural capital from its contribution platform.
- Binding rules are developed by UNEP to prevent predatory behaviour with local indigenous communities, together with deterring penalties and adequate enforcement resources.

Only by meeting these criteria can we ensure that these initiatives are not used to reorientate the climate debate away from reducing avoidable fossil fuel emissions, and can fulfil their (limited) potential to contribute to addressing climate change. Unless such criteria are included, contradictions are resolved and controversial projects removed, they will only be the latest rebranding of failed carbon offsets.

Footnotes

1. Nature-Based Solutions are defined as “actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits”. They include forest restoration and tree planting and aim at climate change mitigation among other objectives. While the two initiatives are different, they share a lot of characteristics and institutional support.

2. The REDD+ Acceleration Facility (RAF): Scaling Finance for Tropical Forest Protection (EDF)
UN-REDD: Supporting countries with complex policy and institutional reforms to scale up climate actions and ambitions on sustainable land and forest management, conservation and restoration.
The Architecture for REDD+ Transactions (ART): Attracting New Investment to Protect and Restore Forests

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