Voluntary Carbon Markets for Wetland Conservation and Restoration

Policy paper

Wetlands INTERNATIONAL

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Cover picture: Peat swamp forest Central Kalimantan-Indonesia, by Yus Rusila Noor (Wetlands International)

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Wetland belonging to the area of Caserío Chacacancha, Ninacaca local community in Pasco, Peru. (Photo: © Alan Chamorro)

Foreword

Wetlands International has long supported efforts to amplify financing to safeguard and restore wetlands[1] – peatlands and mangrove swamps, salt marshes and river floodplains – for people and nature across the globe. While carbon markets have offered modest incentives for wetlands investment in the past, there is increasing interest among governments as well as non-state actors in using carbon finance to help innovate and roll-out Nature-Based Solutions (NBS) in general and wetland habitats in particular.

This policy paper reflects on the larger debate of using voluntary carbon markets for land-use projects and defines benchmark conditions for channelling carbon finance to wetland interventions.

[1] *According to the Ramsar Convention of 1971, "wetlands are land areas that are saturated or flooded with water either permanently or seasonally. Inland wetlands include marshes, ponds, lakes, fens, rivers, floodplains, and swamps."*

Picking mangrove fruits, Indonesia
(Photo: © Nanang Sujana)

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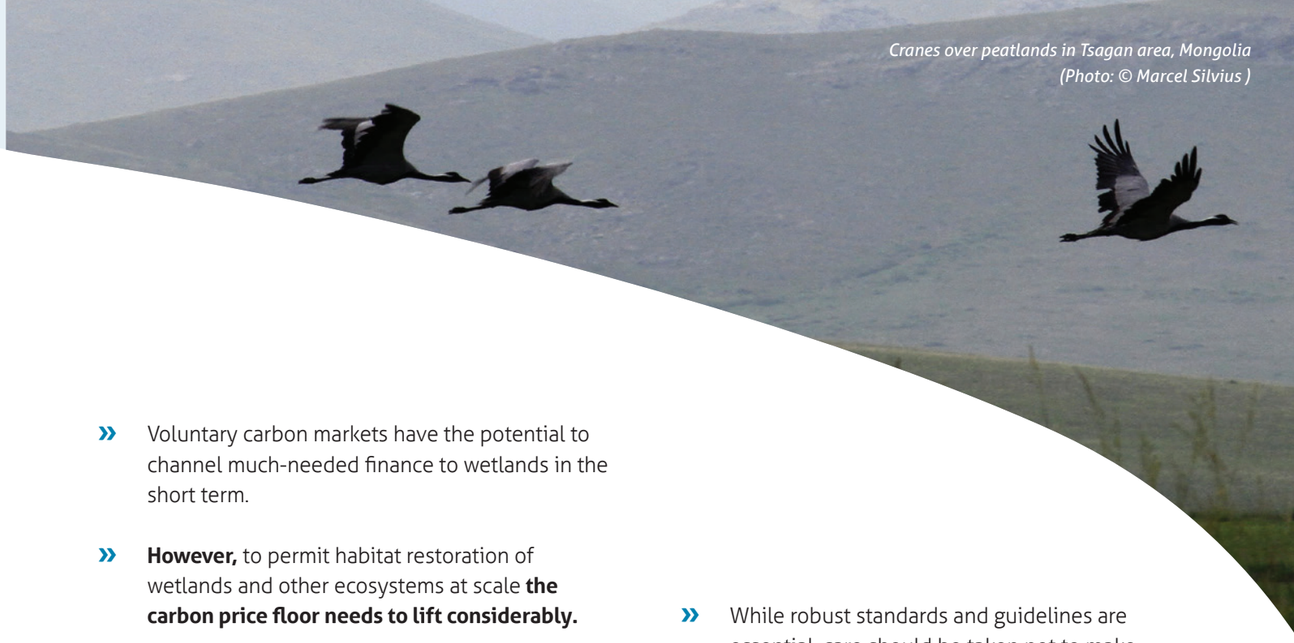

Cranes over peatlands in Tsagan area, Mongolia (Photo: © Marcel Silvius)

Executive Summary

The context for safeguarding and restoring our world's wetlands via the Voluntary Carbon Markets

Healthy wetlands store vast amounts of carbon in their soils and biomass, but they can become a huge source of emissions upon degradation. Peatlands, although covering only 3 % of the world's terrestrial area are the biggest natural carbon stores, storing twice the amount of carbon present in all forests. Mangroves typically hold five times as much carbon as a similar area of rainforest.

These habitats are at the centre of the planet's triple crisis of climate change, biodiversity loss, and land degradation. More than two thirds of natural wetlands have been lost or degraded, the vast majority of which has taken place over the past century.

The degradation of wetlands causes unimaginable destruction of biodiversity, as wetlands contain a greater concentration of life than anywhere else. Degraded wetlands fail to sustain essential ecosystem services such as food, freshwater supply, erosion, and flood control, all vital in the context of climate change adaptation.

Upon degradation, wetlands keep on releasing massive amounts of CO2 alongside CH4 (methane) and N2O (nitrous oxide) from their soils, adding to global warming. No less than five percent of annual global emissions – more than the aviation and shipping sectors combined – come from draining and converting peatlands alone.

This makes protecting and restoring our wetlands a number one global priority. But we need the funding to do it, now.

Why carbon markets?

Governments and public financing cannot foot the bill with urgency needed. Private sector funding must be mobilised at scale and at speed, and carbon markets offer a unique opportunity to channel domestic and international investment into wetland conservation and restoration.

Nature-Based Solutions (NBS) or Natural Climate Solutions (NCS) – including peat and coastal wetland conservation as well as restoration – could generate up to 12 billion tCO2e in mitigation benefits per year. This level of supply largely meets current expectations concerning the demand from voluntary carbon markets (1.5 - 2 billion tCO2e). Voluntary carbon markets are a means of supporting nature projects that were largely ignored by the Kyoto mechanisms. They have been a model for the design of new methodologies, at times paving the way for compliance markets, in which companies and governments who are regulated by mandatory national, regional, or international emission reduction regimes can trade their emission permits (allowances) or offsets to comply with their regulatory obligations.

Social-environmental integrity is the all-decisive touchstone for climate and market success. A supply of high-quality credits which are fair, equitable, and accepted by the leading carbon credit verification bodies needs to be secured along with the responsible corporate climate action.

This summary of our policy paper provides a point-by-point brief as to the opportunities, guidelines, and risks around mobilising the VCM for the safeguarding and restoring of out wetland habitats:

- **If we are to reach the 1.5° target of the Paris Agreement, we need to urgently safeguard and restore wetland carbon stores to avoid emissions and enhance sequestration.**
- To make that happen, **finance must be mobilised at scale:** US$ 300 billion for peatland restoration and US$ 15 billion for mangrove restoration are needed between 2021 and 2050.
- Nature-Based Solutions (NBS)– including wetland conservation and restoration – could generate **up to 12 billion tCO2e in mitigation benefits per year** if mobilisation challenges are overcome, thus meeting the expected demand from voluntary markets
- Voluntary carbon markets have the potential to channel much-needed finance to wetlands in the short term.
- **However,** to permit habitat restoration of wetlands and other ecosystems at scale **the carbon price floor needs to lift considerably.**
- In the case of wetlands, both **reducing conversion and degradation as well as restoration result in significant emission reductions.** On top of that, wetland conservation and restoration may both result in emission removals. This is because most wetlands have very carbon rich soils that continue to emit GHG upon conversion and degradation or that continue to sequester GHG (albeit slowly) when restored.
- After two decades of practice, the key voluntary standards have proved that their AFOLU projects largely comply with high standards of quality, and efforts are continuously being made to make them even more stringent. This means that supply of high-quality credits can be ensured.
- Voluntary carbon markets must not be used to justify business-as-usual GHG emissions by companies if we are to achieve the 1.5-degree target. **It is essential to guarantee environmental and social integrity in the sense of ambition towards, and compliance with, a net-zero pathway.** Companies should set and disclose robust, science-informed and high-ambition targets along with a roadmap with shorter- and longer-term milestones following the mitigation hierarchy.
- It is imperative that companies avoid and reduce emissions – particularly also those related to wetlands - **while simultaneously offsetting residual emissions that cannot yet be addressed.**
- While robust standards and guidelines are essential, care should be taken not to make them overly complex, to ensure accessibility to practitioners and to enable urgent action at scale.
- While there is extensive guidance on product-level carbon-neutrality claims, there is surprisingly little guidance at the corporate level concerning appropriate strategies for offsetting. This needs to be addressed urgently.
- Although net zero pledges have been growing, corporate performance to date is still relatively limited, and the **companies sitting idle far outnumber those taking an active position.**
- In our view, double claiming between voluntary corporate offsetting efforts and national NDCs does not pose a risk, at least in developing countries that require additional finance to achieve their NDCs. This is because efforts are only counted once at the level of the NDC of the host country, while additionality is secured by adherence to the voluntary standards.
- Hence, we encourage many developing countries to take a flexible approach, as allowed by the Article 6 Rulebook, recognizing that voluntary carbon markets can both be a means for corporations to **offset their interim or residual emissions and a meaningful contribution towards host country NDC compliance.** Countries and investors should report and communicate this in a transparent way.

Chapter 1

Urgency and scale of required wetland investment

Healthy wetlands store vast amounts of carbon in their soils and biomass, but they can become a huge source of emissions upon degradation. Peatlands, although covering only 3 % of the world's terrestrial area (Xu et al. 2018) are the biggest natural carbon stores, storing twice the amount of carbon present in all forests (Friedlingstein et al. 2020, 2021). Coastal wetlands – including mangroves, salt marshes and seagrasses - are crucial carbon stores as well. Mangroves typically hold five times as much carbon as a similar area of rainforest (Donato et al. 2011). Yet, these habitats are at the centre of the planet's triple crisis of climate change, biodiversity loss, and land degradation. More than two thirds of natural wetlands have been lost or degraded, the vast majority of which has taken place over the past century (IUCN 2019, Davidson 2014). Some 35% of wetland loss occurred between 1970-2015 alone, and annual rates of loss have accelerated overall since 2000 (Ramsar 2018), particularly in Asia, while decreasing in Europe and North America.

The degradation of wetlands causes unimaginable destruction of biodiversity, as wetlands contain a greater concentration of life than anywhere else. Degraded wetlands fail to sustain essential ecosystem services such as food, freshwater supply, erosion, and flood control, all vital also in the context of climate change adaptation. Upon degradation, wetlands keep on releasing massive amounts of CO2 alongside CH4 (methane) and N2O (nitrous oxide) from their soils, adding to global warming. No less than five percent of annual global emissions – more than the aviation and shipping sectors combined – come from draining and converting peatlands alone, and this does not include the vast emissions associated with peatland fires (Günther et al. 2020). A staggering 0.86 billion tonnes of CO2e[2] could be emitted from peatlands annually (Huang et al. 2021) and 2,4 - 3,4 billion tonnes CO2e from mangroves (Adame et al. 2020) across the globe by 2100 (Loisel et al. 2021).

Reverting the trend of degradation and associated ongoing emissions requires transformational changes to agricultural practice and infrastructure, as well as large-scale restoration efforts for those wetlands that are not irretrievably lost. The funding needs for this Herculean task – above today's business-as-usual trajectory – are large in aggregate: US$ 300 billion for peatland restoration and 15 billion for mangrove restoration are needed between 2021 and 2050, or at least US$ 10 billion per year (UNEP 2021).

The opportunities are numerous, however, and very cost-efficient in comparison with technological solutions. Cost-effective Nature-Based Solutions (NBS) or Natural Climate Solutions (NCS) – including peat and coastal wetland conservation as well as restoration – could generate up to 12 billion tCO2e in mitigation benefits per year (McKinsey 2021). Accounting for mobilisation challenges (including regulatory bottlenecks and long lag times), the number drops considerably but remains at or above 2 billion tCO2e annually (Ibidem, Griscom et al. 2017). This level of supply largely meets current expectations concerning the demand from voluntary carbon markets (1.5 - 2 billion tCO2e) (TSVCM 2021). Provided regulatory systems are implemented, including compliance market regimes that target NBS specifically, both supply and demand could further expand substantially.

[2] *CO2e or "carbon dioxide equivalent" means the number of metric tons of CO2 emissions with the same global warming potential as one metric ton of another. Note that 1 tonne = 1000 kg = 1 million gram (106). This can be converted to Gigatonnes (109 tonne or 1015 gram), Tera grams (1012 gram) or Peta grams (1015 gram) that are often used.*

Natural mangrove Senegal
(Photo: © Pieter van Eijk, Wetlands International)

Key Messages

- **If we are to reach the 1.5-degree target of the Paris Agreement, we need to urgently safeguard and restore wetland carbon stores to avoid emissions and enhance sequestration.**
- **To make that happen, finance must be mobilised at scale: US$ 300 billion for peatland restoration and US$ 15 billion for mangrove restoration are needed between 2021 and 2050.**
- **Nature-Based Solutions (NBS)– including wetland conservation and restoration – could generate up to 12 billion tCO2e in mitigation benefits per year if mobilisation challenges are overcome, thus meeting the expected demand from voluntary markets.**

Chapter 2

Unlocking private carbon finance for wetlands

As public budgets are strained after the financial crisis of 2008 and the pandemic crisis the world has been going through since 2020, one cannot expect that much of the additional funding needed will easily come from governments. Especially not from those developing country governments that are particularly burdened by debt, poverty, and food insecurity.

Private sector funding must be mobilised at scale and at speed, and carbon markets offer a unique opportunity to channel domestic and international investment into wetland conservation and restoration. Most of the existing carbon markets are government-backed, confined to domestic marketplaces, for example emissions trading in China, North America, and the EU. These existing markets work on the basis of a mandatory emission reduction target to be met and are therefore often referred to as 'compliance markets'. These compliance markets are primarily focused on industrial emissions (Joosten et al. 2016).

A small but growing voluntary carbon market is built by and for non-state actors, by contrast. These privately organized, non-regulated (non-compliance) initiatives – 'voluntary carbon standards' that provide procedures and methodologies for the crediting of emissions reduction/removal action – fill a triple gap.

First, voluntary carbon markets have an important transnational segment. Two of the big four standards – the Verified Carbon Standard (VCS) and the Gold Standard – are available across countries, and carbon credits can be traded across borders. The other two – the American Carbon Registry (ACR) and the Climate Action Reserve (CAR) – are available in the Americas.

Second, voluntary carbon markets have moved into the sectors left out by most compliance markets, notably agriculture, forestry, and other land-use (AFOLU), including wetland conservation and restoration. The AFOLU segment – dedicated to a wide range of NBS/NCS from sustainable cattle farming to forest and peatland conservation, restoration, and management – accounts for much of the (strong) growth of the voluntary carbon markets; accounting for a trading volume of 37 million tCO2e in 2019 (US$ 160 million), for 48 million in 2020 (US$ 270 million) and, in a huge leap, for almost 120 million tCO2e (US$ 545 million) in 2021 from January through August (Forest Trends' Ecosystem Marketplace, 2021a). While this is impressive, it is nowhere near the finance need of 10 billion US$ per year.

Third, voluntary carbon markets have been found to test the ground for, and ultimately amplify compliance market application, which is ultimately required to reach the desired scale of financing. Several emissions trading systems have started using voluntary standards as a provider of tradable credits within their relevant market system. The Climate Action Reserve, for instance, has been retained by the state governments of California (US), Ontario and Quebec (Canada) to develop specific protocols to that purpose, including on afforestation/reforestation, conservation cropping, avoided forest conversion, sustainable forest management, and grassland protection (Climate Action Reserve 2021). All these project types and categories grew out of voluntary engagement by non-state actors. The policy framework for Reducing Emissions from Deforestation and forest Degradation (REDD+) – today recognized in the Paris Agreement (Article 5.2) – also owes many of its early piloting activities to voluntary carbon standards (Streck and Costenbader 2012).

The scale that was able to be reached by including NBS in compliance markets is variable and depends on the level of integration and the growth rate in compliance systems that will pick them up. Broadly speaking, annual totals could get ever closer to the abstract annual potential of 12 billion tCO2e. Global emissions trading within Article 6 of the Paris Agreement alone (see below) may super-charge developments at the pace of 5.3 billion tCO2e per year (in 2030) (Yu et al. 2021).

In this policy paper, therefore, we zoom in on the opportunity and risks associated with voluntary carbon market financing for wetland conservation and restoration. We will also briefly reflect on recently emerging hybrid markets.

2.1. Voluntary Carbon Markets

Voluntary carbon standards operate as "baseline-and-credit" instruments. They define methodologies to calculate in detail 'baseline' (or business-as-usual) greenhouse gas (GHG) emissions from e.g., land conversion, drainage of peatlands, degradation, and then issue credits when and after the project verifies that climate change mitigation has been achieved compared to the baseline. Each credit stands for one (1) tonne of CO2e avoided, reduced, or removed (sequestered).

The credits are issued into a registry account where they can be freely traded. The registries follow all credit transfers from issuance to retirement; each credit has a unique serial number linking it to a specific project and a specific 'vintage' or generation year. However, there is no single marketplace for traders. Most of the trades happen over the counter, i.e., away from centralized platforms or brokers.

The end users are companies, other legal entities, and individual consumers that have committed to offset part or all of their GHG emissions. Offsetting, in this constellation, is a voluntary action by the end users. They are not under obligation from their government and the offsetting action does not show in a compliance registry or the accounting registry system under development at the level of the United Nations Convention on Climate Change (UNFCCC).

Voluntary carbon credits have in the past primarily been purchased by buyers from Europe (almost two thirds) and North America (almost one third), with the rest of the world representing only 5% of the offtake amount, according to figures for 2019 (Forest Trends' Ecosystem Marketplace 2021b). The market – despite the pandemic – has seen a steep growth rate between 2019 and 2021, trading a volume of about 100 million tCO2e in 2019, 188 million tCO2 in 2020, and 240 million tCO2 in the first eight months of 2021. Most voluntary projects are developed in Asia (92 million tCO2e in 2021 so far), followed by Latin America (37 million tCO2e) and Africa (24 million tCO2e). Most demand is corporate. The corporate (for-profit) share of European buyers in 2019 was 98% (Forest Trends' Ecosystem Marketplace 2021b). Energy firms are in the lead (21%), followed by finance/insurance (17%), consumer goods (16%), aviation (10%) and utilities (9%).

2.2. Carbon Pricing

Average prices per credit have remained low, hovering barely above US$ 3 per tCO2e (Forest Trends' Ecosystem Marketplace 2021a). These are average prices, however, that hide stark disparities in this non-commoditized market. Credits are traded at different prices depending on the country of generation and the project type. Renewable energy credits, for instance, are sold at US$ 0.87 per tCO2e, while AFOLU credits take in US$ 5.60 per tCO2e in average (2020 prices) (Ibidem).

Recently, a clear distinction in value has also begun to be made between credits based on avoided emissions and emission reductions, on the one hand, and removal credits, on the other hand. Removals have traded for almost US$ 8 per tCO2e in 2020 and 2021, with reduction credits (including REDD+) trading for less than US$ 2 per tCO2e. While the growing spread in prices may be influenced by the public debate around the role of offsetting on the path to Net Zero (see below), it is also a pragmatic reflection of the difference in costs of the actual interventions taking place on the ground.

Much more funding is needed to tap into the larger mitigation potential. To finance natural climate solutions worth 3.4 billion tCO2e in mitigation benefits, US$ 10 per tCO2e is calculated to be the cost threshold (Griscom et al. 2017). However, at a price of US$ 100 per tCO2e another 6.8 billion tCO2e in mitigation benefits could be realized. Many projects – in particular restoration projects – cannot be developed at a price below US$ 10.

Altogether, while today's carbon markets are open to a fairly wide price spread among different credits, it is crucial that the price floor be considerably lifted in the coming years to permit habitat restoration of wetlands and other ecosystems at scale. The valorisation of co-benefits for people and nature should help move price levels upwards substantially.

There are, indeed, tentative signs that a price shift is under way. The new public-private initiative LEAF ("Lowering Emissions by Accelerating Forest finance") that aims to mobilise at least US$ 1 billion in funding, has recently set a price floor of US$ 10 per tCO2e (LEAF 2021). Mangrove ("blue carbon") credits have recently picked up prices in the range of US$ 15 per tCO2e, while some peatland projects in Europe charge about US$ 100 or more per tonne and still find a buyer. This is also a reflection that purchasers are increasingly interested in Nature Based Solutions, and that they pay premiums for non-carbon benefits. The Gold Standard, which includes sustainable benefit tests, Plan Vivo, which is tailored to community benefits, and the Climate, Community and Biodiversity (CCB) Standard, which can be added to the VCS, all catch higher prices (Forest Trends' Ecosystem Marketplace 2021b).

2.3. Opportunities and Risks

Wetlands, the many services that they provide, and the local communities that rely on them may benefit substantially from this new focus on voluntary carbon projects and offsets. The voluntary markets provide funding in particular in developing countries, albeit not necessarily at the speed needed for many wetland interventions. Voluntary carbon markets increase the visibility of the land sector and of Nature Based Solutions as indispensable for the 2050 trajectory toward zero net emissions. And they demonstrate that the land sector can be reliably integrated in emissions trading systems, including in the compliance markets of the future.

Besides these opportunities there are also risks and potential trade-offs. Carbon crediting based on AFOLU projects has long faced categorical rejection from several environmental organizations and international grassroot movements[3]. They – often vehemently – question both the effectiveness as well as the integrity of emissions trading from nature-based interventions.

Regarding the effectiveness of markets, we recognize that carbon incentives alone are not sufficient to facilitate the sort of transformational changes needed to make the economic use of land truly sustainable. Critics are also right when noting inconsistencies in today's practice and the need for enhancing interlinkages within the AFOLU sector and with other sectors (Castagné et al. 2017). Carbon markets cannot remove all the structural gaps and deficiencies that hold us back on the path to decarbonization. However, they can close funding gaps and facilitate technological innovation. Further, carbon markets rely on the promise that the GHG emission reductions and removals that are traded are real and additional, not uncertain, imaginative ('hot air') or accidentally caused by other drivers outside carbon finance. In relation to integrity, it is key to ensure that AFOLU interventions are specifically designed to benefit local communities and biodiversity and that voluntary offsetting does not come at the expense of the necessary steep emission reductions by companies within their own supply chain.

If carbon markets fail to deliver on this promise of social and environmental integrity, the damage is ubiquitous: to local stakeholders, the credibility of the project, the reputation of the investor, to the carbon markets and ultimately to the combat against climate change. Supply of high-quality credits needs to be secured along with the responsible corporate climate action that determines the demand for these credits (see figure 1). Both aspects will be discussed in the next two chapters.

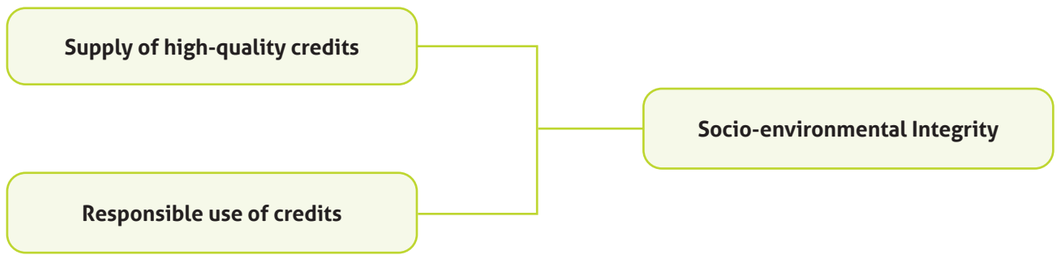

Figure 1: Socio-environmental Integrity in the supply and demand of credits

Key Messages

- **Voluntary carbon markets have done a lot to open nature conservation and restoration projects to private sector investment and can potentially channel much needed finance to wetlands in the short term.**
- **The carbon price floor needs to lift considerably to permit habitat restoration of wetlands and other ecosystems at scale. The valorisation of co-benefits should help move price levels considerably upwards.**
- **Social-environmental integrity is the all-decisive touchstone for climate and market success. Supply of high-quality credits needs to be secured along with the responsible corporate climate action that determines the demand for and use of these credits.**

[3] *Organizations mostly critical of carbon offsets from AFOLU projects include Friends of the Earth (Netherlands), Fern (UK, Belgium), WWF (Switzerland), and Greenpeace.*

Chapter 3

Ensuring the supply of high-quality credits

Social and environmental integrity is the backbone of a credible carbon market, and carbon standards are highly sensitive to criticism that some of their projects were lacking rigor on this front. They apply benchmarks and safeguards to ensure that real and additional climate change mitigation impact is achieved, without causing direct or indirect harm. In this chapter we first introduce different types of project interventions and then discuss the benchmarks and safeguards that ensure that these interventions really result in high quality impact for climate, people, and nature. While robust standards and guidelines are essential, care should be taken not to make them overly complex, to ensure accessibility to practitioners and to enable urgent action at scale. The issue of double counting is discussed separately, given recent debates around it. We finally discuss actual performance by projects against these standards.

3.1. Project Actions

An AFOLU carbon project is in essence a localized set of interventions to achieve climate change mitigation impact, developed in close consultation with, and directed at positively impacting, local stakeholders. Climate change mitigation impact can be achieved in the form of either reduced or avoided GHG emissions, or in the form of GHG removals or sequestration gains.

In the case of forests, reducing deforestation and degradation results in emission reductions and forest restoration results in emission removals. In the case of wetlands however, both reducing conversion and degradation as well as restoration result in emission reductions. On top of that wetland restoration may result in emission removals.[4] See also Table 1. This is because most wetlands have very carbon rich soils – consisting of decomposing vegetation that has accumulated over millennia - that continue to emit GHG upon conversion and degradation or that continue to sequester GHG (albeit slowly) when restored.

Preventing that a wetland is drained (for agricultural use), exploited (for energy or horticulture use), converted (to settlements or infrastructure) or degraded (due to infrastructure that changes hydrology and sediment dynamics) is a project activity (conservation) that avoids emissions or reduces them in case protection is only partial or if degradation is ongoing. Ecosystem restoration such as rewetting peatlands that are drained or restoring degraded mangrove areas not only sequesters carbon in biomass and soils, but also reduces emissions. The latter is because the drained habitats would otherwise emit GHG continuously until their organic soils are fully depleted, a process that may take hundreds or thousands of years, but that could be significantly accelerated by fires. In the case of peatland rewetting, GHG emission reductions far outweigh GHG sequestration, as the latter does not exceed 0.4billion tones CO2 yr−1 at the global scale (Frolking et al. 2011, Galego-Sala et al. 2018). Simultaneously, both conservation and restoration usually lead to wetland carbon stock growth, as healthy peatlands and mangroves continue to absorb more CO2 in their aboveground vegetation as well as in their soils.

This also means that conservation (in the sense of reducing conversion and degradation) and restoration activities must always go hand in hand. Conservation speaks to the need to keep wetland carbon in the ground and to protect the rich biodiversity and ecosystem services that healthy wetland habitats provide. Restoration, for its part, addresses the legacy of past habitat losses and degradation, while also protecting, i.e., conserving what remains of the disturbed habitat and carbon sink.

Impact / Project action	GHG Emission Reductions	GHG sequestration
Reducing conversion and degradation	• Forests • Wetlands	• Wetlands (albeit slowly)
Restoration	• Wetlands (particularly peatlands)	• Forests • Wetlands (particularly mangroves)

Table 1. Project actions result in both emission reductions as well as removals in the case of wetlands

[4] *Note that in specific circumstances, wetland restoration may cause (often temporary) emissions that need to be taken into account. For example in the case of boreal forests on peatlands, when long term drainage has resulted in a species composition that is no longer adapted to the wet conditions that will be reintroduced as part of restoration.*

Research in highland peatland in Solongot Davaa Pass, Mongolia (Photo: © Tatiana Minayeva)

3.2. Quality Benchmarks for Projects

Over the past decades, voluntary carbon markets for NBS/NCS have been hotly debated, which has resulted in a set of quality benchmarks, safeguards and co-benefits that are defined and upheld by several voluntary carbon standards. Hot topics notably include results-based-payments, baselines, additionality, leakage, non-permanence, stakeholder engagement, safeguards against negative impacts and lastly co-benefits. These topics will be discussed briefly here.

The specific project inter-vention design must prove robust in terms of the capacity to achieve climate change mitigation and meet a set of safeguards. First, carbon crediting follows the concept of **results-based financing** whereby climate finance is distributed on the condition that pre-defined climate mitigation achievements from a certain intervention have been achieved and verified[5]. This "ex-post" financing modality is widely applied across various climate policy instruments and lies at the core of emissions trading (carbon finance) as a whole: An emission reduction (or removal) has to be achieved ("generated"), reported and verified, before it can be issued and transferred and can thus be considered reliable.

Second, the question how to set a **baseline** and whether a GHG benefit has been generated relative to this baseline must be answered by using a pre-defined, scientifically sound and peer-reviewed methodology (see Box 1), and by following strict monitoring rules to trace actual emissions (or GHG fluxes in land).

[5] *Some standards allow so called ex-ante crediting, i.e. the issuance of credits in anticipation of future climate mitigation achievements. These ex-ante credits depend on the issuance of ex-post credits. The failure to achieve ex post crediting within a certain timeframe will usually nullify the ex-ante credits concerned.*

Box 1:
Wetland Standards

At present, most wetland projects (around 15) – terrestrial as well as coastal – and the greatest collection of methodologies can be found in the Voluntary Carbon Standard. The list of methodologies covers the avoided conversion of peat swamp forests (VM0004), the REDD+ Methodology Framework (REDD+MF), which includes tidal wetland conservation and restoration activities (VM0007), coastal wetland creation (VM0024), rewetting of drained tropical peatlands (VN0027), tidal wetland and seagrass restoration (VM0033), and rewetting drained temperate peatlands (VM0036).

Plan Vivo, a boutique international standard tailored to accommodate smaller projects (usually between 100 and 1,000 hectares) has three wetland projects in its portfolio. Both the Voluntary Carbon Standard and Plan Vivo have an international scope, permitting a priori the development of projects across the globe. The American Carbon Registry and Climate Action Reserve, by contrast, provide country-specific methodologies (US and Mexico).

Smaller national standards can be found in Germany, Switzerland, and the UK. The German MoorFutures Standard (Moor Futures 2021) has its origin in initiatives among academics, practitioners, and civil society in the Northeast of the country, and it retains elements of private stewardship, even though it is formally hosted and administered by state agencies in three different German states, Mecklenburg West Pomerania, Brandenburg, and Schleswig-Holstein.

In Switzerland, the peatland standard "max. moor" (Max Moor 2022) has been active since 2017. Designed by the Swiss Federal Institute for Forest, Snow and Landscape Research (WSL), it targets restoration activities for the country's raised bogs which are believed to emit some 19,000 tCO2eq each year (WSL 2017).

The UK Peatland Carbon Code (UK Peatland Code 2021a), developed under the auspices of IUCN, certifies mitigation benefits from restoration activities. Four projects are validated so far, with six under development and more in the pipeline. The four validated projects together cover 450 hectares of peatland, which equates to an estimated GHG emissions reduction of 101,944 tonnes of CO2eq. (UK Peatland Code 2021b).

Peatland, Flow Country, Scotland
(Photo: © Hans Schutten, Wetlands International)

Third, independent third-party **validation** of the project design and the methodological approach as well as an independent verification of these results are required.

Fourth, at the conditionality level, a topical concept for climate finance intervention in general and for carbon project development in particular, is the principle of ***additionality***. It means that a project is only eligible for carbon finance if it demonstrates that it cannot be developed without this incentive. In practice, this means that project developers must either present an individual, detailed scenario analysis to show that the envisaged project is not the most likely or profitable option and that there are barriers for its implementation. Some methodologies permit the use of a pre-defined 'positive list' of project types or project conditions that are deemed additional. These positive lists are a means to clarify and simplify how to deal with this aspect of environmental integrity. For conservation and restoration activities, they define thresholds for activity penetration permitting all projects that can show below-threshold activity to apply to claim automatic additionality. This enables funding to flow directly to interventions on the ground rather than to expensive scenario analysis.

Fifth, the issue of **leakage** needs to be addressed. Leakage concerns the risk that the project leads directly or indirectly to an increase in emissions or a decrease in removals of greenhouse gases outside of the project area. In an example, a project developer of a peatland conservation project needs to ensure that the degradation drivers – e.g., palm oil production – does not simply move into peatland areas outside the project perimeter and aggravates matters there. Leakage considerations are, among others, behind the drive to move from projects to jurisdiction-wide programs and to find transformational solutions for structural degradation problems (Seymour 2020). All leakage that does occur must be calculated and discounted from the number of GHG emission reductions or removals achieved in the project area. The discounts can be as high as 100%, in which case a project is not viable.

Sixth, the issue of **non-permanence.** Projects that remove CO2, for example by growing trees and/or accumulating soil carbon, come with the risk that the CO2 is released in the future, either because a tree is cut or because a peatland is drained, fire strikes, or something else. The risk of reversal puts the long-term GHG benefit in doubt, which is one of the reasons why carbon markets have long resisted including the land sector in their coverage. If you look at the matter carefully, the problem seems to be confined to sequestration projects. A removal once achieved may risk getting lost in the future and the voluntary standards developed ways to handle this risk, as explained below. Projects that reduce or avoid emissions, by contrast, slow the rate of degradation, which is a permanent contribution to the climate. If one rewets a drained peatland for 10 years, for instance, the area will not release emissions during this time except for a short period at the start, providing greater benefits than letting the peatland degrade (Günther et al. 2020). Even if drainage restarts from year 11, the benefit of an emissions-free decade will continue to weigh in on the atmosphere.

The risk of non-permanence does not mean that reversal will materialize, and there are ways to mitigate the risk. In the compliance market, the Clean Development Mechanism (CDM) issued temporary credits to afforestation and reforestation projects (other forest and soil projects were not permitted under the CDM), that had to be continuously replaced (UNFCCC Secretariat 2013). While a consistent way to address the non-permanence risk, the temporary credit approach has proved difficult in practice and put forestry project de facto at a disadvantage compared to projects in other sectors (World Bank 2011). Voluntary standards have gone a different way. They make an ex-ante assessment of the non-permanence risk either across the portfolio or (as in the case of the VCS) in each project and stipulate a credit buffer amount in percentage on this basis. Whenever the project issues credits, the buffer share will be deducted by the standard and moved into a standard-wide buffer account. All credits – those issued to the project developer and those issued into the buffer account – are permanent credits. If a project faces a reversal event (and an associated release of GHG), the buffer account will compensate for this release through a retirement of credits in this amount.

Note that the permanence of emission reductions is ultimately the same across economic sectors. Installing a filter in an industrial production facility – for example

to produce fertilizer, a process that releases a potent GHG, nitrous oxide (N2O) – may generate emission reductions for a number of years (always seen against the baseline of unfiltered production). When emissions go back to baseline at the end of the filter's lifecycle the reductions achieved up to that point are rightly considered permanent, as the benefit of temporary low-carbon production is felt in the atmosphere in continuity. Despite the equivalence between the land sector and other economic sectors, carbon standards have come to treat them differently, i.e. the same as removals. Virtually all standards define the risk of reversal as implicit in all land-use projects.

Seventh, clear, specific and inclusive involvement of local **stakeholders** is a mandatory element in project design. Under the rules of the VCS (Verra 2022) this means that the project proponent must conduct a local stakeholder consultation prior to validation to "inform the design of the project and maximize participation from stakeholders" and provide for "mechanisms for ongoing communications". The consultation must be preceded in all AFOLU projects by a "thorough [stakeholder] assessment" that takes into account land tenure and access rights (including under customary law). A project may only affect property rights if free, prior, and informed consent (FPIC) is obtained. The FPIC protection that reflects standards developed at the UN level (FAO 2016) is particularly important for Indigenous Peoples (IP) and local communities (LC), and a project must not be validated if clear evidence of FPIC process cannot be provided. It also retains its relevance throughout implementation and monitoring.

Eighth, carbon standards also provide rules to account for and mitigate any indirect injury or damage. Under a standard's **safeguard provisions**, project developers must demonstrate that the activities will not negatively impact the natural environment, indigenous communities or local communities, and they shall identify and address any negative environmental and socio-economic impacts of project activities. Some standards trace positive impacts beyond climate mitigation, so-called **co-benefits**, such as enhanced biodiversity, resilience, poverty reduction, or the contribution to gender equality.

The way potential negative as well as positive impacts are acknowledged and measured differs from standard to standard. Almost all standards include safeguard requirements, based on the concept of "no harm": the project intervention must not threaten, cause damage to, or lead to an impingement of environmental or cultural goods or human and indigenous rights. Safeguard requirements range from an obligation "to describe" the environmental and socio-economic impacts of a project (e.g. CDM Afforestation/ Reforestation) to in-depth mandatory safeguard standards (cf. Gold Standard or American Carbon Registry). The VCS sets out certain specific safeguard requirements (in particular: native ecosystems must not be converted) and otherwise offers more detailed safeguard assessments like optional add-on standard, including the Climate, Community and Biodiversity Standard (CCBS) and the Women Organizing for Change in Agriculture and Natural Resource Management standard ("WOCAN W+ Standard"). (Verra 2021b).

The Gold Standard has in recent years transferred its various standards – those producing carbon credits as well as its water standard – into a single framework: the Gold Standard for the Global Goals (GS4GG)(Gold Standard 2019). The new framework allows, as the Gold Standard did before, for the generation and issuance of Gold Standard Emission Reductions. Yet, in addition, projects can apply one or more of any approved quantification methodologies to issue and separately monetize what the Gold Standard refers to as the "Gold Standard Certified SDG Impacts" concerning, among other, water benefits, gender benefits, as well as impacts to reduce short-lived climate pollutants. While the Gold Standard is not (yet) available for wetland interventions outside reforestation, its focus on a wider set of ecosystem services would boost the interest in wetland projects, as they naturally deliver on a vast number of additional benefits from healthy wetlands: from water quality to habitat for rare biodiversity to community resilience and poverty reduction.

Participatory project planning, Central Java, Indonesia (Photo: © Yus Rusila Noor, Wetlands International)

3.3. Double Counting

Double counting refers to the risk that the same activity or effect to reduce or remove GHG emissions is accounted for twice (or multiple times). Double counting can occur in different forms. A common typology differentiates four types of double counting (see Table 2). ***Double selling*** occurs where an issued unit is sold more than once to different actors. ***Double issuance*** refers to a scenario in which a unit is credited twice under different standards or in different registries or in which it is duplicated in the same registry. ***Double monetization*** refers to a situation in which the same GHG emission reduction effort is monetized multiple times, e.g., once by the government at an inter-governmental level and then by a company in a private transaction, or once as a GHG credit and once as a GHG allowance. ***Double claiming*** finally, occurs where two entities 'claim' the environmental benefit of the exact same reduction or removal unit.

Voluntary carbon standards have developed robust tools to prevent double-issuance, double-selling and double-monetization by requiring project developers to provide clear proof of ownership of the mitigation benefits concerned and by issuing individually traceable credits (each equipped with its own serial number) into individual accounts. The issue of double claiming is discussed separately in chapter 5 as it relates to responsible corporate climate action.

Double issuance	Double selling	Double monetization	Double claiming
A unit is issued at least twice	The same unit is sold at least twice (other than in a chain of sales)	The same unit or underlying effort is transferred for value or to meet a liability	The same unit or underlying effort is claimed by at least two different entities

Table 2: Double counting typology

3.4. Performance by projects

After two decades of practice, the key voluntary standards have proved that their AFOLU projects largely comply with high standards of quality and process. In a sign of confidence, the International Civil Aviation Organization's (ICAO) technical advisory body, when assessing the solidity and rigor of voluntary standards for their Carbon Offsetting and Reduction Scheme for International Aviation ("CORSIA", see Box 3), approved the ACR, CAR, and the VCS – all standards with important AFOLU segments (ICAO 2020). While ICAO made exceptions for certain methodologies of the VCS, all wetland restoration methodologies were confirmed as meeting the threshold of environmental integrity.

Where there are criticisms, they regularly concern forestry projects, in particular forest conservation projects (REDD+) and what is portrayed as the subjective nature of baseline calculations generated through modelling of complex deforestation risks. A project that incorporates implausibly high deforestation risk in the baseline will be able to claim more credits than its activities yield. In 2021, several observers – assembled by The Guardian, the newspaper, and Unearthed, the investigative arm of Greenpeace, the NGO – questioned the baselines of ten VCS forest protection projects, which they argued were "inconsistent with previous levels of deforestation in the area" (The Guardian 2021).

Verra – the organization that operates the VCS – reacted to the publication in strongest terms, calling it a "hit piece" (Verra 2021)[6], but other observers have also called for more consistent baseline rules across projects (Chagas et al. 2020). Even so, the findings hardly justify the scandalizing narrative of what was otherwise found – even by the investigators of The Guardian and Unearthed – to be "valuable conservation work". Be that as it may, Verra has been working for some time now on updating and streamlining its REDD+ (conservation) methodologies to "make them more streamlined and user-friendly, and to ensure consistency so that such projects estimate their climate change mitigation impact reliably" (Verra 2020). If the outcome of this work is a more standardized approach to baseline-setting, the AFOLU carbon markets at large will benefit.

It is worth mentioning in this context that the points raised in critique did not question the integrity of any wetland restoration projects. This is because of the peculiar degradation profile of wetlands, in particular peatlands. While the destruction of forest is immediate, the drainage of peatlands is a process that continuous for centuries. Rewetting both saves peatlands and rebuilds them. The baseline calculation for drained peatlands is much less error-prone than the baseline calculation for dynamic deforestation events.

Key Messages

- **In the case of wetlands, both reducing conversion and degradation as well as restoration result in significant emission reductions. On top of that, wetland conservation and restoration may both result in emission removals. This is because most wetlands have very carbon rich soils that continue to emit GHG upon conversion and degradation or that continue to sequester GHG (albeit slowly) when restored.**
- **After two decades of practice, the key voluntary standards have proved that their AFOLU projects largely comply with high standards of quality, and efforts are continuously being made to make them even more stringent. This means that supply of high-quality credits can be ensured.**
- **Some have been criticizing forest conservation (REDD+) projects on the grounds that the baseline calculations proved too favourable for the project developer. While such criticisms must be attended to and checked; the risks for wetland conservation and restoration projects are small.**
- **While robust standards and guidelines are essential, care should be taken not to make them overly complex, to ensure accessibility to practitioners and to enable urgent action at scale.**

[6] *The VCS alone has 169 operational AFOLU projects at the time of writing, cf. Verra Registry (2021).*

Whimbrel around crabs
(Photo: © Yus Rusila Noor, Wetlands International)

Chapter 4

Ensuring responsible use of credits

Much of the recent demand for credits is owed to "carbon neutrality" and "net zero" concepts that have caught on with many corporates. They promote their products and services as "carbon neutral" or "net zero" after calculating the carbon footprint of the production process – and sometimes the entire value chain or even lifecycle process – as well as investing in offset credits for the same amount.

However, offsetting can never be an end in itself. Each offsetting operation needs to be vetted against the need to decarbonize all sectors of the economy, and all operators, at speed. Voluntary carbon markets should not be used to justify continued ("business-as-usual") GHG emissions by companies if we are to achieve the 1.5-degree target. In this respect, as well, it is essential to guarantee environmental and social integrity – in the sense of compliance with a net-zero pathway. Increasingly, the terminology "net zero" vs. "carbon neutrality" is used to highlight this rationale. "Carbon neutrality" has no specific reduction target, it simply refers to full offsetting, whatever the emissions level. "Net zero", by contrast, implies a maximum emission reduction effort as a constitutive pillar. The concept associates with the "mitigation hierarchy"(SBTI 2021a). In this chapter we first introduce interventions that companies can take to comply with the mitigation hierarchy. We then discuss quality benchmarks and performance.

4.1. Corporate Actions and the Mitigation Hierarchy

Mitigation hierarchies have long been used in sustainable resource management, including waste management ("Reduce, reuse, recycle"), and biodiversity policies ("avoid, minimize, remediate, and offset"). They prioritize efficient, resource-protective management over resource-intensive and damage-calculating compensation. In the context of climate mitigation action, mitigation hierarchies set an order of preference starting with GHG emissions avoidance, GHG reductions and carbon stock restoration within the supply chain (each considered a form of "insetting"), and finally turning to compensation, implying emission reduction or sequestration efforts outside of the supply chain ("offsetting").

The role of offsets is to remedy residual (unavoidable) emissions, especially during the process of decarbonization (see Figure 2)[7]. The Science-Based Targets initiative (SBTI)[8] – grown out of a partnership between the Carbon Disclosure Project (CDP), the United Nations Global Compact, the World Resource Institute, and WWF – also used to differentiate between neutralization measures (carbon removals, within or beyond the value chain) and compensation measures (avoided and reduced GHG emissions outside the value chain)(SBTI 2020), but has since abandoned the terminology of compensation (SBTI 2021b).

[7] *Cf. World Business Council for Sustainable Development and Nature4Climate (2020).*
[8] *https://sciencebasedtargets.org*

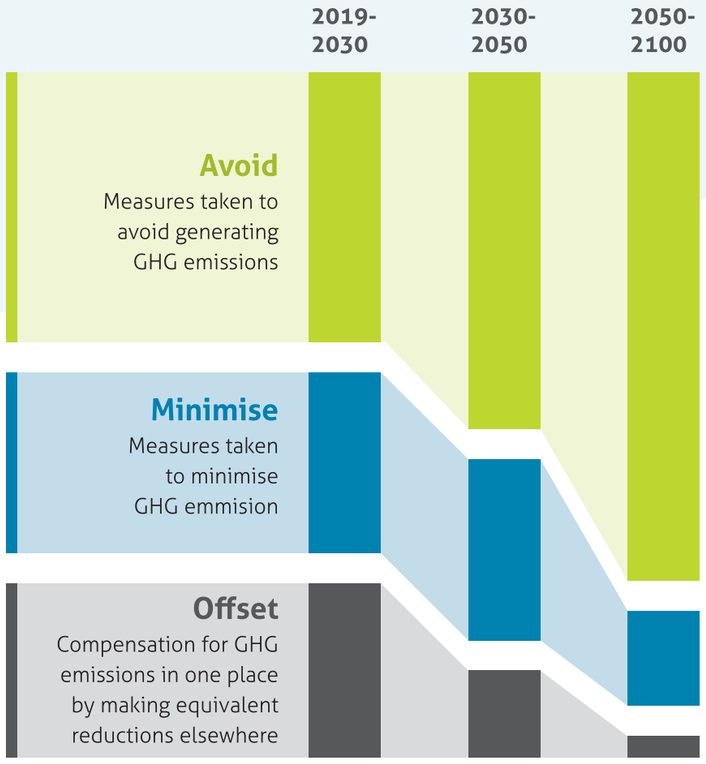

Figure 2. The mitigation hierarchy applied to climate action in a temporal dimension. Adapted from: World Business Council for Sustainable Development and Nature4Climate (2020).

Applied to corporate climate action, the mitigation hierarchy demands that the primary corporate responsibility is to avoid and reduce the GHG emissions in one's supply chain. In our context this pertains particularly also to GHG emissions related to direct or indirect impacts on wetlands. For example, by avoiding palm oil production on peatlands or by reducing impacts of changes in sediment dynamics or hydrology when designing infrastructure so that coastal wetlands are not damaged. Note that many sectors have a direct or indirect impact on wetlands that needs to be mapped, not only the land use sector. Offsetting is a complementary measure to remedy interim and residual emissions on the pathway to net-zero. In our view, as in Figure 2 above, we believe that offsetting is part of a broader decarbonization strategy which initially has high-volume needs (particularly during this decade, then decreasing) and which will allow corporations and investors to move to net-zero targets in parallel with ambitious mitigation actions within and outside their supply chain.

4.2. Quality Benchmarks for Corporations

While there is extensive guidance on product-level carbon-neutrality claims, with protocols for the calculation of and communication on the carbon footprint of products (including on lifecycle emissions)[9], there is surprisingly little guidance at the corporate level concerning appropriate strategies for offsetting. A leading initiative in the field, the Taskforce on Scaling Voluntary Carbon Markets (TSVCM), notes the risk of "greenwashing" (TSCVM 2021) of corporate interests and holds that "companies should publicly disclose commitments, detailed transition plans, and annual progress against these plans to decarbonize operations and value chains". It keeps its focus, however, on the mobilisation of "high quality, high integrity market for carbon credits with clear differentiation between neutralization (removal credits) and compensation (avoidance/reduction credits)" (TSVCM 2021). While several stakeholders, including the TSVCM and its recently set-up Integrity Council for Voluntary Carbon Markets, deal with the supply side dimension of environmental integrity, it is harder to find initiatives that focus on the interface between voluntary carbon markets and responsible corporate climate action.

Unfortunately, those networks and campaigns that have recently begun to engage in defining corporate standards for climate action barely recognize the role and potential of offsetting, in an attempt to avoid the risk or perception of greenwashing. A prominent example is the SBTI. It works with companies to define how much and how quickly they can and should reduce their GHG emissions in line with what the latest science deems necessary to meet the goals of the Paris Agreement: limiting global warming to "well below" 2°C above pre-industrial levels and pursuing efforts to limit warming to 1.5°C (Paris Agreement 2015)[10]. This guidance is highly relevant and much needed. While this is in line with the mitigation hierarchy, the SBTI's recent push to relegate offsets to the margins of decarbonization efforts is not: "Offsets (including neutralisation and compensation) do not count as reductions toward meeting your science-based targets"(SBTI 2021d). While the SBTI previously recommended that corporations might still undertake "efforts to compensate unabated emissions in the transition to net-zero", offsetting measures have no functional value for a company's net-zero target and pathway. In the latest release of its Corporate Net Zero Standard, it suggested discontinuing the terminology (and concept, it seems) of compensation altogether (SBTI 2021b).

In our view, given the urgency to address the interlinked climate, biodiversity and land degradation crises, and the need to mobilise the required private financing, it is imperative that companies avoid and reduce emissions while simultaneously offsetting residual emissions that cannot yet be addressed. With annual rates of losses accelerating since 2000, immediate, not deferred action is required. This said, responsible offsetting does not need to be a rebuttal of the priority for mitigation action. Most economic sectors and most firms will struggle to bring down their emissions to zero immediately, leaving residual emissions to address. Offsetting in these cases is a necessity, not a diversion. Offsetting of emissions should be done immediately and not only after reduction and avoidance of emissions prove successful, as this can take several years. Otherwise, there will be hardly a wetland left to protect or restore.

It is encouraging, then, to see new initiatives emerge that point to a more constructive relationship between ambitious corporate climate action and voluntary carbon markets. The Voluntary Carbon Market Integrity Initiative, a multi-stakeholder platform to "drive credible, net-zero aligned participation in voluntary carbon markets"(VCMI Initiative 2022) has recently committed to looking into responsible corporate climate action aiming to provide "clear guidance for corporations and other [non-state actors] on high-ambition voluntary ***use*** of carbon credits" (VCMI Initiative 2021: 7) (emphasis added). The Voluntary Carbon Market Global Dialogue argues that carbon crediting approaches can leverage transformational investments specifically in developing countries with broader development benefits and verified contributions to the Sustainable Development Goals (Voluntary Carbon Market Global Dialogue 2021).

[9] *ISO 14067:2018, at https://www.iso.org/standard/71206.html; ISO 14026:2017; PAS 2060 standard for carbon neutral products; PAS 2050 for calculating lifecycle emissions from a product*

[10] *The recent Glasgow Climate Pact (2021) "resolves to pursue efforts to limit the temperature increase to 1.5 °C".*

In this context, we also challenge the view that encourages the use of offsets only when these offsets are made through carbon removal (not emission reduction) credits (Oxford Principles for Net Zero Aligned Carbon Offsetting 2020). Wetland habitats are the best example of the intrinsic relationship between emission reductions and emission removals (see chapters 4.1). Keeping these separate does not make sense. Although a new embrace of restoration and sequestration projects is welcome and needed, the shift away from emission reductions is not just short-sighted but illogical. In the case of drained peatlands, long-term sequestration is possible only on the back of emission reduction activities like rewetting.

If we are to avert catastrophic climate change, then, both ecosystem protection (emissions reductions) and restoration (removals) are essential (Ibidem). In terms of urgency and priority, conserving tropical forests, peatlands, and mangroves is more important than restoration due to their high and often irrecoverable carbon stocks (Seymour and Langer 2021). Giving conservation priority is also important for reasons outside climate mitigation, namely biodiversity protection, enhancing resilience and adaptation capacity and the provision of other vital ecosystem services on which many of the most vulnerable and poorest communities rely.

4.3. Double claiming

The Paris Agreement has created a new playing field in that it obliges contracting Parties to prepare and maintain successive national plans to cut emissions (Article 4.2), the so called Nationally Determined Contributions (NDCs) and in that it lays out a "progression" pathway towards a contracting Party's "highest possible ambition" (Article 4.3). Most NDCs define economy-wide or sector-specific emission reduction targets, measured against baseline year emissions (for example the European Union) or measured against business-as-usual emissions (baseline scenario emissions). In NDC accounting terms, emissions and removals from wetlands fall in the land sector (land use, land-use change and forestry: LULUCF or Agriculture, Forestry and Other Land-Use: AFOLU), which a growing number of countries – developed as well as developing – cover in their NDCs.

With countries assuming country-wide or sector-specific targets, it is sometimes argued that such targets would create a conflict with voluntary carbon markets in that every emission reduction and removal achieved by a voluntary project would be claimed or accounted for both at the level of the project (or the investor behind it) and at the country (NDC) level[11]. While other forms of double counting are addressed effectively through the voluntary carbon standards as discussed above (Chapter 4.3), in particular by using transparent digital registries, it is debated to what extent voluntary standards can and should contain the risk of double claiming against NDC commitments. While the Gold Standard decided to make a so called "Corresponding Adjustment" (see Box 2) from the host country obligatory if the project proponent wants to issue credits that can be used for offsetting, even when not used for compliance purposes, the VCS decided against such a requirement. The new Glasgow Climate Pact agreed November 2021, which lays out the rules for carbon markets, leaves it entirely up to the host country how it wishes to treat the voluntary carbon market. A host country may grant an authorization to a voluntary carbon project which in turn triggers a Corresponding Adjustment. The absence of an authorization, however, does not mean that a voluntary project could not be developed. It only means that a host country will not account for it through a Corresponding Adjustment (see Box 2).

[11] *Several thinktanks, including the Wuppertal Institute and NewClimate Institute, are vocal proponents of this view, see Kreibich / Hermwille (2021); Fernehough et al. (2020); Schneider et al. (2015); Schneider et al. (2020).*

Box 2:
Article 6 Trading and Corresponding Adjustments (Paris Agreement)

The Glasgow Climate Pact – the outcome of COP26, held in November 2021, in Glasgow, United Kingdom – finally delivered the main missing parts in the set of implementing rules ('rulebook') for the Paris Agreement. Notably the guidance on "cooperative approaches", as established under Article 6.2 of the Paris Agreement, and rules, modalities and procedures for the mechanism established by Article 6.4 of the Paris Agreement (UNFCCC 2021) .

The instrument on cooperative approaches (Art. 6.2 of the Paris Agreement) covers Internationally Transferred Mitigation Outcomes (ITMOs) and enables Parties to the Paris Agreement to engage in emissions trading in a decentralized, bilateral or multilateral manner. The mechanism established under Article 6.4 of the Paris Agreement resembles the Clean Development Mechanism (CDM) of the Kyoto Protocol in being the more centralized instrument governed by a Supervisory Board responsible for the accreditation of validation and verification entities (Designated Operational Entities or DOEs), the approval of methodologies, the registration of activities, and the operation of a centralized registry. Article 6.2 activities are bilaterally (and sometimes unilaterally, by the host country) defined and developed. Article 6.4 activities are developed under rules and methodologies that are a priori the same for all countries. These rules include provisions on set-asides (quotas of each issuance) that are cancelled or transferred to benefit overall mitigation efforts and adaptation purposes.

Both instruments allow for the trade in "emission reductions" as well as "emission removals" (either herein referred to as ER), provided these are "real" (not hypothetical), "verified" (independently confirmed) and additional (not accidental, in other words: generated because of the incentive offered by emissions trading). Tradable ERs are those generated in 2021 or later. The Article 6.4 decision also provides for the use of some pre-2021 units issued under the Clean Development Mechanism between 2013 and 2020, for use towards the first NDC period.

In contrast to voluntary standards and voluntary emissions trading, both Article 6 instruments imply a form of 'approval' and/or 'authorization' of a specific ER activity or outcome by the host country. For Article 6.2 authorizations, this means that the host country will need to make a 'Corresponding Adjustment', i.e., neutralize the amount of traded emission reductions or removals (ITMOs) from its balance sheet when accounting for its nationally determined contribution (NDC). In other words: An emission reduction traded under Article 6.2 must not be considered towards the host country's own emission reduction (NDC) target.

Article 6.4 approvals do not require a Corresponding Adjustment per se. However, in practice, if a host country seeks to trade Article 6.4 emission reductions/removals to another country, the authorization procedure of Article 6.2 applies as well (i.e., the host country must approve under Article 6.4 and authorize under Article 6.2).

There are three sub-types of Article 6.2 authorizations for Corresponding Adjustments: The host country can authorize (i) the use towards another country's NDC, (ii) the use for an "international mitigation purpose" other than towards an NDC, and (iii) the use for "other purposes". The first variation (towards an NDC) allows another (investor) country to purchase mitigation outcome from the host country

Box 2

and use it for its own NDC (though such use is not obligatory). The second variation (international mitigation purpose other than NDC) aims at CORSIA and potentially other schemes that seek to curb international emissions (for example international shipping). The third variation (other purposes) is a default authorization ('any other purpose'), and a host country may define this "other purposes" to include voluntary carbon markets, in which case an authorization and Corresponding Adjustment in that host country are required when internationally transferred. It is important to note that a host country is under no obligation to regulate or otherwise interfere with voluntary carbon projects. An authorization of a mitigation activity for other purposes (including for the use of voluntary offsetting) remains at the discretion of the host country. In turn, this means that voluntary standards can operate outside the Article 6 framework and outside NDC accounting.

Nature-based Solutions (NBS) are not specifically referenced nor excluded in either the decision on Article 6.2 or Article 6.4. However, a parallel decision on "non-market approaches" (Article 6.8 of the Paris Agreement) – which created the Glasgow Committee on Non-market Approaches – references "blue carbon" as an example for a potential focus area. NBS are still implicitly recognized both in the decision on Article 6.2 and the decision on Article 6.4, as they acknowledge that "emission reductions and removals" can qualify as ITMOs (Article 6.2) and that activities can be designed to increase removals (Article 6.4), respectively. Both decisions also include language involving the need to mitigate the "risk of non-permanence" and "reversals", confirming that the land-sector and its specific characteristics fall within the scope of the Article 6 instruments. This is a major departure from the mechanisms of the Kyoto Protocol, in particular the CDM, which excluded most NBS or land-based projects from its scope.

This said, both COP26 decisions also come with reservations. The decision on Article 6.2 refers the question whether "emission avoidance" could be considered an ITMO to a subsidiary body for further reflection. The decision on Article 6.4 requests the subsidiary body to "elaborate further" on "[activities] involving removals". This does not, however, indicate that NBS or certain aspects of NBS would not yet be seen as operational. The reference to "emission avoidance" should not be understood as a caveat concerning nature conservation projects in general, or REDD+ in particular. Rather, the section must be read as referring to long-standing discussions to what extent national decisions not to exploit any fossil fuel fields could be credited under an emission reduction mechanism established within the UNFCCC. (Marcu 2021)

Related to Article 6 discussions, it is worth referring to the San Jose Principles for High Ambition and Integrity in International Carbon Markets. In 2019, during the Pre-COP 25 session held in San Jose, Costa Rica, a group of countries foreseeing the slow pace of negotiations regarding Article 6, decided to work together to define a set of principles that would guide their work. They wanted to ensure that carbon markets would be guided by environmental integrity principles and enhance the highest possible mitigation ambition. While negotiations on Article 6 finally concluded in Glasgow (COP 26), the group reiterated their commitment to their principles. For instance, while the agreed Glasgow Pact authorizes the carry-over of CDM (Clean Development Mechanism) credits emitted from 2013-2020 to the new Article 6.4 mechanism, nationally they will not buy nor sell such credits. The group of countries is committed to continue working together in the coming intergovernmental processes, which will further define Article 6 and its elements.

It is too early to see how this liberal solution to voluntary carbon markets will play out in practice and how the carbon markets will react. For now, the discussion seems oddly prolonged, with all sides claiming that Glasgow has vindicated their views.

We would like to set the discussion in the context of both the overall purpose of NDC accounting and the specific needs of developing countries, from a standpoint of environmental justice, international climate finance and private sector investment.

First, NDCs and associated GHG inventories are taking stock of what all sectors and actors in that country collectively will or have achieved as enabled by that country. This also includes a priori efforts by voluntary carbon projects that are financed through carbon markets. Second, this finance must generally be considered as instrumental in assisting a country to reach its NDC targets. Indeed, NDCs – especially those from least developed countries (LDCs) and small island developing states (SIDS) – are often framed as conditional to such finance coming in. Voluntary carbon market efforts in these cases speak to the need for multi-layered engagement and orchestration.

Conversely, requiring projects to obtain a Corresponding Adjustment could create a sharp chilling effect which cannot be afforded again given the urgency to address climate change. Consider the situation for voluntary carbon projects in industrialized countries during the Kyoto years, from 2008 to 2020 when emission reduction targets applied for most industrialized countries. Neither the VCS nor the Gold Standard at the time banned voluntary carbon projects in the affected countries. Instead, they required projects located in these countries to present what the Gold Standard called "satisfactory assurances that an equivalent amount of [government units] will be retired to back-up the [voluntary credits] issued". In practice, no government has ever offered a retirement commitment from public books of this sort, and both standards remained (mostly) unavailable in the affected industrialized countries. This is not surprising given the considerable capacity needs and transactional costs to governments for validation, monitoring and verification control alone, assuming that they would not give blanket authorization to a specific voluntary standard.

If there was an upside in the de facto non-availability of the big voluntary standards in most industrialized countries, it is that developing countries benefited most from carbon market investments. That edge would disappear if a mandatory Corresponding Adjustment feature were added to the voluntary carbon market. Indeed, the dual onus for voluntary carbon projects – create a GHG mitigation benefit and have host country governments agree on debiting their national accounts – would directly and negatively affect developing countries, i.e., those countries that are disadvantaged in terms of capacity and funding to transform their economies and adapt to the impact of climate change. Outside the United States (which has its own set of voluntary standards) and a few other countries that have built domestic carbon markets, voluntary carbon projects have been implemented in developing countries. Restrictions on Corresponding Adjustments will almost exclusively be felt there – a dubious policy result from the perspective of environmental (climate) justice.

Another consideration in this context concerns the participation of local communities. Many voluntary carbon projects – especially those in the land-use sector – are implemented by local communities, many of which are particularly vulnerable to climate change. While the past decade has contributed to the understanding of the participatory ("carbon") rights of individuals and communities, the argument that those would be conditional on a Corresponding Adjustment by central governments is regressive.

For these reasons, we argue that there is no general answer to the question concerning the appropriateness of Article 6's "other purpose" authorizations and that instead, countries and markets should follow specific needs assessments. It seems reasonable for developed countries to have voluntary offsetting within their boundaries linked to Article 6 "other purpose" authorizations implying a Corresponding Adjustment. Many developing countries, by contrast, particularly those with conditional NDCs, should be granted a more flexible approach, based on the understanding that voluntary carbon markets – outside authorization procedures (which many will have difficulties to set up) and outside the mechanism of Corresponding Adjustments – are both a means for corporations to offset their interim or residual emissions and a meaningful contribution to host countries moving towards compliance with their NDCs.

Hence, we believe that provided that voluntary carbon projects prove to generate real and additional climate change mitigation impact in a host country, there is no need to discount voluntary carbon credits from that country's (conditional) NDC through a Corresponding Adjustment, whether or not the investors (credit purchasers) claim them as part of their own net-zero strategy. Indeed, the investor could claim to deliver on a dual strategy: aiming at net-zero emissions at the company-level and at facilitating the host country to achieve its NDC target. This assumes, however, that the investors will not use the voluntary credits for domestic compliance purposes, and that the credits will also not be counted towards the NDC of the country where the company is based, nor towards stand-alone international commitments like CORSIA (see Box 3). In either case, the transaction would lose its voluntary nature and instead meet an official purpose. That function can only be achieved with foreign credits as part of an ITMO.

We do agree that transparency can and should be improved, and that guidance on the type of claim a government or a non-state actor makes is needed. This is even more the case now that the fresh Paris rulebook decisions offer a dual approach: voluntary carbon transactions with Corresponding Adjustments and voluntary carbon transactions without (see Box 2 above). Carbon standards and registries could consider issuing labels that indicate credit issuance against Corresponding Adjustment. Countries and investors in turn could be encouraged to report on the voluntary carbon impact that contributed to achieving their NDC or company target and how voluntary efforts are embedded in NDCs.

Box 3:
International Aviation – International Shipping

A new hybrid market – that blends the compliance aspects (regulatory obligations) with voluntary market aspects (use of voluntary credits) – is the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), an instrument set up by the International Civil Aviation Organization (ICAO), a specialized United Nations agency (ICAO 2019). Emissions from international aviation are not controlled by national governments, and they do not show in NDCs. To build an emissions reduction program outside NDCs and outside the Paris Agreement, ICAO introduced CORSIA, and airline operators have pledged to offset a portion of their GHG emissions (CO2 emissions but no other GHG, and accounting for international flights only) that they produce above a baseline 2019 level. CORSIA sets standards for acceptable projects and credits to offset those emissions, and airlines across the globe will ultimately (from 2027) be obliged to monitor their international emissions and surrender offset credits. A pilot phase in which participation (for countries) is optional, started in 2021.

Likewise, international shipping may create demand for voluntary carbon projects and credits in the future. The industry burns about 2bn barrels of the heaviest fuel oil made annually (Financial Times 2021) and, like the aviation industry remains largely unchecked by domestic or international climate mitigation targets. Under increasing political pressure to contribute to global climate action, the International Maritime Organization (IMO), which regulates the industry at the international level, has been discussing the use of "market-based measures" or "MBMs" for a number of years, though with little success so far. Several countries and organizations have promoted the use of "approved emission reduction units" to offset emissions above a designated "target line", while others (including industry representatives) favour a global levy on carbon emissions (IMO 2021). Like international aviation, carbon-neutral technology is not yet available, at least not for large vessels. Several operators have turned to the use of carbon offsets to minimize their carbon footprint in the meantime.

Note that there is a difference between voluntary emissions trading and trading under the hybrid CORSIA scheme. CORSIA fills a jurisdictional gap: While voluntary trading and offsetting occurs within 'capped' environments, i.e., the emissions of the offsetting entity are accounted for in the NDC of the country where the entity is located, emissions from international aviation are not covered by any NDC. ICAO targets represent a substitute for the missing NDC commitments. As CORSIA is designed to meet the ICAO target and to the extent that voluntary carbon credits are accepted under CORSIA, these must be supported by Corresponding Adjustments as per the new Article 6 rulebook, or else the climate change mitigation impact of the intervention concerned would show (be double accounted for) both at the (host country) NDC level and at ICAO level.

4.4. Performance by Corporations

More and more businesses embrace climate action and other sustainability strategies. While the market for offsets is growing fast, so is the corporate focus on reducing emissions along the mitigation hierarchy. More than 2,000 businesses now are working with the SBTI to reduce their emissions in line with climate science, as the initiative reports (SBTI 2021c). Almost 1,000 companies have raised their ambition by committing to what the initiative calls "Business Ambition for 1.5°C" (Ibidem). Despite these encouraging facts, the corporate performance at large has been mixed (at least to date).

This concerns not only the level of participation in climate action but also the level of ambition. The number of companies sitting idle is far greater than the number of those taking an active position, and unfortunately much of the action of those that do engage turns out to be negligeable ("greenwashing") and insufficient. A surprise judgment (Milieudefensie et al. vs. Royal Dutch Shell 2021) by a Dutch court (The Hague District Court) from May 2021 gives fresh and insightful evidence of corporate underperformance. The court found the climate plans of oil major Royal Dutch Shell materially lacking. It ordered the firm to strengthen its global corporate climate targets with a reduction target of 45% by 2030 (compared to 2019 levels) for its direct ('Scope 1') and indirect emissions ('Scope 2') and a best-effort target for achieving an equal reduction along its global value chain ('Scope 3')[12]. While this may have been a consequential judgement (Shell is filing an appeal), it is still all too rare. Most corporations will not be tried or tested on their climate ambition.

Yet, it also concerns the level of commitment to offset projects, in general, and nature conservation projects, in particular. Investment in offsets remains tiny given the task, and while conceptual scaling efforts are under way – the TSVCM and the VCMI Initiative are witness to that effort – much of that scaling has yet to happen.

Greenchoice representative, visiting Scottish peatlands (Photo: © Femke Tonneijck, Wetlands International)

[12] *The court used the taxonomy of the World Resources Institute Greenhouse Gas Protocol which categorizes greenhouse gas emissions in Scope 1, 2 or 3 as follows:*

- *Scope 1: direct emissions from sources that are owned or controlled in full or in part by the organization.*
- *Scope 2: indirect emissions from third-party sources from which the organization has purchased or acquired electricity, steam, or heating for its operations; and*
- *Scope 3: all other indirect emissions resulting from activities of the organization but occurring from greenhouse gas sources owned or controlled by third parties, such as other organizations or consumers, including emissions from the use of third-party purchased crude oil and gas.*

Key Messages

- **Voluntary carbon markets must not be used to justify business-as-usual GHG emissions by companies if we are to achieve the 1.5-degree target. It is essential to guarantee environmental and social integrity in the sense of ambition towards, and compliance with, a net-zero pathway. Companies should set and disclose robust, science-informed and high-ambition targets along with a roadmap with shorter- and longer-term milestones following the mitigation hierarchy.**
- **Given the urgency to address the interlinked climate, biodiversity and land degradation crises, and the need to mobilise the required private financing, it is imperative that companies avoid and reduce emissions – particularly also those related to wetlands - while simultaneously offsetting residual emissions that cannot yet be addressed.**
- **While there is extensive guidance on product-level carbon-neutrality claims, there is surprisingly little guidance at the corporate level concerning appropriate strategies for offsetting. This needs to be addressed urgently and it is encouraging to see emerging initiatives like the Voluntary Carbon Market Integrity Initiative and the Voluntary Carbon Market Global Dialogue along with the Science Based Targets initiative.**
- **Although net zero pledges have been growing, corporate performance to date is still relatively limited, and the companies sitting idle far outnumber those taking an active position. While conceptual scaling efforts are under way much of that scaling has yet to happen.**
- **In our view, double claiming between voluntary corporate offsetting efforts and national NDCs does not pose a risk, at least in developing countries that require additional finance[13] to achieve their NDCs. This is because efforts are only counted once at the level of the NDC of the host country, while additionality is secured by adherence to the voluntary standards.**
- **Hence, we encourage many developing countries to take a flexible approach, as allowed by the Article 6 Rulebook, recognizing that voluntary carbon markets can both be a means for corporations to offset their interim or residual emissions and a meaningful contribution towards host country NDC compliance. Countries and investors should report and communicate this in a transparent way.**

[13] *NB. Voluntary corporate offsetting implies that the companies do not use the voluntary offsets for domestic compliance purposes and consequently these offsets do not feature in an NDC other than that of the host country. While a corresponding adjustment in this case is not necessary, investors should clarify that their offsetting action helps implement the host country achieve its NDC.*

Chapter 5

Literature

Adame, M.F., Connolly, R.M., Turschwell, M.P., Lovelock, C.E., Fatoyinbo, T., Lagomasino, D., Goldberg, L.A., Holdorf, J., Friess, D.A., Sasmito, S.D., Sanderman, J., Sievers, M., Buelow, C., Kauffman, J.B., Bryan-Brown, D. and Brown, C.J. (2021), Future carbon emissions from global mangrove forest loss. Glob Change Biol, 27: 2856-2866. https://doi.org/10.1111/gcb.15571

Carbon Market Watch (2020), at https://carbonmarketwatch.org/wp-content/uploads/2020/12/CMW_AboveAndBeyondCarbonOffsetting.pdf.

Castagné et al. (2017). Carbon Markets and Agriculture. Why Offsetting is Putting on the Wrong Track, at PNAS October 31 (2017) 114 (44) 11645-11650; first published October 16, 2017; https://doi.org/10.1073/pnas.1710465114.

Chagas, T. et al. (2020), A close look at the quality of REDD+ carbon credits, at https://www.climatefocus.com/sites/default/files/A%20close%20look%20at%20the%20quality%20of%20REDD%2B%20carbon%20credits%20%282020%29%20V2.0.pdf.

Climate Action Reserve (2021). Offset Protocols, at https://www.climateactionreserve.org/canada/adapting-offset-protocols-for-ontario-quebec-and-other-jurisdictions-2/.

Davidson, N. (2014): How much wetland has the world lost? Long-term and recent trends in global wetland area, Marine and Freshwater Research 65(10):936-941, at https://www.researchgate.net/publication/266388496_How_much_wetland_has_the_world_lost_Long-term_and_recent_trends_in_global_wetland_area.

Donato, D. C., et al. (2011). Mangroves among the most carbon-rich forests in the tropics. Nat. Geosci. 4, 293–297. doi: 10.1038/ngeo1123

Huang, Y., Ciais, P., Luo, Y. et al. Tradeoff of CO2 and CH4 emissions from global peatlands under water-table drawdown. Nat. Clim. Chang. 11, 618–622 (2021). https://doi.org/10.1038/s41558-021-01059-w

Fernehough et al., Future role for voluntary carbon markets in the Paris era (2020), at https://www.carbon-mechanisms.de/fileadmin/media/dokumente/Publikationen/Bericht/2020_11_19_cc_44_2020_carbon_markets_paris_era.pdf;

Financial Times (2021). 29 May 2021, at https://www.ft.com/content/642b6b62-70ab-11e9-bf5c-6eeb837566c5.

Food and Agriculture Organization of the United Nations (2016). 'Free, Prior, and Informed Consent.' An Indigenous peoples' right and a good practice for local communities. Manual for Project Practitioners, at http://www.fao.org/3/i6190e/i6190e.pdf

Forest Trends' Ecosystem Marketplace (2021a): 'Market in Motion', State of Voluntary Carbon Markets 2021, Installment 1. Washington DC: Forest Trends Association.

Forest Trends' Ecosystem Marketplace (2021b). Buyers of Voluntary Carbon Offsets, a Regional Analysis, at https://app.hubspot.com/documents/3298623/view/125182374?accessId=a759f9.

Frolking, S. et al. Peatlands in the Earth's 21st century climate system. Environ. Rev. 19, 371–396 (2011).

Friedlingstein et al. Global Carbon Budget 2020 in Earth Syst. Sci. Data, 12, 3269–3340, 2020 https://doi.org/10.5194/essd-12-3269-2020

Gallego-Sala, A.V., Charman, D.J., Brewer, S. et al. Latitudinal limits to the predicted increase of the peatland carbon sink with warming. Nature Clim Change 8, 907–913 (2018). https://doi.org/10.1038/s41558-018-0271-1

Glasgow Climate Pact (2021), Decision --/COP.26 (unedited version), at https://unfccc.int

Gold Standard for the Global Goals, Principles & Requirements, version 1.2 (23 October 2019), accessible at https://www.goldstandard.org/project-developers/standard-documents.

Griscom, B. et al (2017). Natural climate solutions, PNAS October 31, 2017 114 (44) 11645-11650; first published October 16, 2017; https://doi.org/10.1073/pnas.1710465114, calculate as the cost-efficient annual mitigation benefit (at a carbon price up to US$ 100).

Günther, A. (2020): Prompt rewetting of drained peatlands reduces climate warming despite methane emissions. Nat Commun 11, 1644 (2020). https://doi.org/10.1038/s41467-020-15499-z.

International Civil Aviation Organization (2020). Technical Advisory Body (TAB): Recommendations on CORSIA Eligible Emissions Units, at https://www.icao.int/environmental-protection/CORSIA/Documents/TAB/Excerpt_TAB_Report_Jan_2020_final.pdf.

International Civil Aviation Organization (2019). At https://www.icao.int/environmental-protection/Documents/EnvironmentalReports/2019/ENVReport2019_pg207-210.pdf.

International Maritime Organization (2021). At https://www.imo.org/en/OurWork/Environment/Pages/Market-Based-Measures.aspx.

Joosten, H. / von Unger, M. / Emmer, I. (2016), Peatlands, Forests and the Climate Architecture: Setting Incentives Through Markets and Enhanced Accounting, UBA Climate Change 14/2016, at https://www.umweltbundesamt.de/sites/default/files/medien/378/publikationen/climate_change_14_2016_peatlands_forests_and_the_climate_architecture.pdf.

Kreibich, N. / Hermwille, L. (2021). Caught in between: credibility and feasibility of the voluntary carbon market post-2020 (2021), at https://epub.wupperinst.org/frontdoor/deliver/index/docId/7792/file/7792_Kreibich.pdf;

Leifeld, J., Wüst-Galley, C. & Page, S. Intact and managed peatland soils as a source and sink of GHGs from 1850 to 2100. Nat. Clim. Chang. 9, 945–947 (2019). https://doi.org/10.1038/s41558-019-0615-5

Lowering Emissions by Accelerating Forest Finance (2021). https://leafcoalition.org.

Loisel, J. et al. (2021). Expert assessment of future vulnerability of the global peatland carbon sink. Nat. Clim. Chang. 11, 70–77 (2021). https://doi.org/10.1038/s41558-020-00944-0.

McKinsey (2021) Taskforce on Scaling Voluntary Carbon Markets (McKinsey Analysis), at https://www.mckinsey.com/business-functions/sustainability/our-insights/a-blueprint-for-scaling-voluntary-carbon-markets-to-meet-the-climate-challenge.

Max Moor (2017). Hochmoorschutz, at https://www.wsl.ch/de/newsseiten/2017/11/klimaschutz-durch-hochmoorschutz-maxmoor-machts-moeglich.html.

Milieudefensie et al. vs. Royal Dutch Shell (2021). Hague District Court. English translation at https://uitspraken.rechtspraak.nl/inziendocument?id=ECLI:NL:RBDHA:2021:5339

Moor Futures (2021). Peatland Carbon Standard, at https://www.moorfutures.de.

Oxford Principles for Net Zero Aligned Carbon Offsetting (2020), at https://www.smithschool.ox.ac.uk/publications/reports/Oxford-Offsetting-Principles-2020.pdf.

Ramsar (2018). Ramsar (2018). Global Wetland Outlook. State of the World's Wetlands and Their Service to the People, at https://static1.squarespace.com/static/5b256c78e17ba335ea89fe1f/t/5b96ca4f4d7a9cea789498e7/1536608860191/Ramsar+GWO+SUMMARY_ENGLISH_WEB.pdf.

Schneider, L. et al. (2019), at https://www.tandfonline.com/doi/full/10.1080/14693062.2019.1674628;

Schneider, L. et al. (2015), at https://link.springer.com/article/10.1007/s10584-015-1398-y;

Science-Based Targets Initiative (2021a). Beyond Value Chain Mitigation FAQs, at https://sciencebasedtargets.org/resources/files/Beyond-Value-Chain-Mitigation-FAQ.pdf.

Science-Based Targets Initiative (2021b). SBTI Corporate Net Zero Standard.

Science-Based Targets Initiative (2021c). At https://sciencebasedtargets.org/companies-taking-action#table.

Science-Based Targets Initiative (2021d). The SBTi Net Zero Corporate Manual (version 1.1, July 2021), at https://sciencebasedtargets.org/resources/files/SBTis-Net-Zero-Standard-Corporate-Manual.pdf.

Science-Based Targets Intiative (2020). Foundations for Science-Based Net-Zero Target Setting in the Corporate Sector (version 1.0), at https://sciencebasedtargets.org/resources/files/foundations-for-net-zero-full-paper.pdf.

Seymour, F. (2020). Insider: 4 Reasons Why a Jurisdictional Approach for REDD+ Crediting is Superior to a Project-Based Approach, at https://www.wri.org/insights/insider-4-reasons-why-jurisdictional-approach-redd-crediting-superior-project-based.

Seymour, F. / Langer, Paige (2021). Consideration of Nature-Based Solutions as Offsets in Corporate Climate Mitigation Strategies, at https://files.wri.org/d8/s3fs-public/consideration-nature-based-solutions-offsets-corporate-climate-change-mitigation-strategies.pdf.

Streck, C. / Costenbader, J. (2012). Standards for Results-Based REDD+ Finance, at https://www.climatefocus.com/sites/default/files/standards_for_resultsbased_redd_finance.pdf.

Taskforce on Scaling Voluntary Carbon Markets (2021). Final Report.

Taskforce on Scaling Voluntary Carbon Markets (TSVCM), at https://www.iif.com/Portals/1/Files/TSVCM_Report.pdf.

The Guardian (2021). Carbon offsets used by major airlines based on flawed system warn experts, published on 4 May 2021, at https://www.theguardian.com/environment/2021/may/04/carbon-offsets-used-by-major-airlines-based-on-flawed-system-warn-experts; Unearthed, 4 May 2021, at https://unearthed.greenpeace.org/2021/05/04/carbon-offsetting-british-airways-easyjet-verra/.

UK Peatland Code (2021a). At http://www.iucn-uk-peatlandprogramme.org/peatland-code.

UK Peatland Code (2021b). At https://www.ukri.org/our-work/responding-to-climate-change/developing-new-behaviours-and-solutions/restoring-peatlands-to-soak-up-carbon-and-improve-water-quality/.

UNFCCC (2021). Decision -/CMA.3: Guidance on cooperative approaches referred to in Article 6, paragraph 2, of the Paris Agreement and Decision -/CMA.3: Rules, modalities and procedures for the mechanism established by Article 6, paragraph 4, of the Paris Agreement (advance, unedited versions).

UNFCCC Secretariat (2013), Afforestation and Reforestation Projects under the Clean Development Mechanism, at https://cdm.unfccc.int/public_inputs/2013/arcdm_01/AR_CDM_Manual_Draft_01.pdf

United Nations Environment Programme (2021). State of Finance for Nature 2021. Nairobi, at https://www.unep.org/resources/state-finance-nature

Verra (2022). VCS Standard (version 4.2), at https://verra.org/wp-content/uploads/2022/01/VCS-Standard_v4.2.pdf.

Verra (2021a). Open Letter of 4 May 2021, at https://verra.org/verra-response-to-guardian-article-on-carbon-offsets-used-by-major-airlines/.

Verra (2021b). Women Organizing for Change in Agriculture and Natural Resource Management Standard (WOCAN W+ Standard), at https://verra.org/wocan-and-the-w-standard-how-the-scaling-of-voluntary-carbon-markets-can-amplify-gender-equality-impacts/.

Verra (2020). At https://verra.org/request-for-proposals-consultancy-for-consolidating-redd-methodologies/.

Verra Registry (2021). At https://registry.verra.org/app/search/VCS/All%20Projects.

Voluntary Carbon Market Global Dialogue (2021). The Voluntary Carbon Market as a Catalyst of Climate Ambition in Developing Countries, at https://vcm-gd.org/wp-content/uploads/2021/10/VCM_Consolidated_final.pdf.

Voluntary Carbon Market Integrity Initiative (2021). At https://vcmintegrity.org/wp-content/uploads/2021/10/Roadmap_Final.pdf.

World Bank (2011), BioCarbon Fund Experience. Insights from Afforestation and Reforestation Clean Development Mechanism Projects, at https://openknowledge.worldbank.org/bitstream/handle/10986/27108/765660WP0Bioca00Box374386B00PUBLIC0.pdf;jsessionid=BA0E0E3FFF42F5BC377F322EBCBA02BE?sequence=1.

World Business Council for Sustainable Development and Nature4Climate (2020). Natural Climate Solutions, at https://docs.wbcsd.org/2019/09/WBCSD-Natural_climate_solutions-the_business_perspective.pdf.

Xu, J., Morris, P. J., Liu, J. & Holden, J. PEATMAP: refining estimates of global peatland distribution based on a meta-analysis. Catena 160, 134–140 (2018)

Yu, S. et al (2021). The Potential Role of Article 6 Compatible Carbon Markets in Reaching Net-Zero, at https://www.ieta.org/resources/Resources/Net-Zero/Final_Net-zero_A6_working_paper.pdf.

Community member doing ecological mangrove restoration, Guinea Bissau (Photo: © Abdoulaye Ndiaye, Wetlands International)

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