Elements related to carbon credit credibility

- A brief guide for offset credit buyers-

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Highlights

- To meet the Paris Agreement (PA) 1.5°C target and achieve net-zero greenhouse gas (GHG) emissions by 2050, all stakeholders, especially the private sector, must be involved to ensure decarbonisation across every sector worldwide. Many businesses have declared their commitment to a net-zero GHG emissions target by joining the Science Based Targets Initiative, setting emissions reduction targets through climate science aligned with the PA 1.5°C target.
- Carbon credits are considered one of the tools for the private sector to offset their unavoidable GHG emissions across the whole supply chain. However, there are concerns of the quality of offset credits, which could undermine the ambition of corporate climate actions. Credible and high quality credits must ensure environmental integrity, which should be real, quantifiable, verifiable, not increase global net emissions and not to harm community and environment.
- We have identified eight elements related to credit credibility and high quality of credits: E1. Additionality, E2. Baseline scenario in emissions reduction methodology, E3. Robust measurement, reporting and verification (MRV) system, E4. Permanence, E5. Avoidance of double counting, E6. Negative impacts - Social and environmental harm, E7. Positive impacts - Contributions to the SDGs, and E8. Governance and transparency.
- We have highlighted the risks related to each element, which would threaten credit credibility by lowering the environmental integrity of credits, over-estimating GHG emissions reductions, over-crediting, and greenwashing if these elements are violated or ignored. In addition, we also introduced how those risks are being addressed in crediting mechanisms for securing high quality carbon credits.
- The private sector (credit buyers) needs to consider these eight elements for selecting high quality carbon credits for offsetting their remaining GHG emissions in the supply chain. Credit buyers have to pay attention to the approaches taken by each crediting mechanism to reduce such risks, and use them as a screening tool to distinguish high quality credits in the voluntary crediting mechanisms (VCMs). Moreover, to reach net-zero by 2050, the business sector should develop corporate climate actions, including the strategy of the use of high quality offset credits, which would raise ambition towards the PA goal.

1. Introduction

The Paris Agreement (PA) goal can only be achieved by collective contributions from all members of society including national governments, sub-national governments, corporate entities and other civil organisations. It requires drastic decarbonisation transition in all sectors worldwide. To meet the PA 1.5°C target and to raise business ambition, the private sector has pledged net-zero carbon dioxide (CO_2) emissions by 2050, and more than 4000 companies and organisations have joined the Climate Ambition Alliance[1]. Another important international alliance for the business sector is the Science Based Targets Initiative[2] (SBTi). The initiative was established to provide support to businesses setting greenhouse gas (GHG) emissions reduction targets based on climate science aligned with PA 1.5°C and 2°C targets. Around 965 companies are taking action and have committed to the PA 1.5°C target by setting emissions reduction targets through the SBTi (*SBTi, 2021*).

To achieve net zero GHG emissions by 2050, businesses must align their climate actions with the PA 1.5°C target, to abate GHG emissions across the whole supply chain including Scope 1, 2 and 3 emissions (CDP, 2020). Only after a company has mitigated its GHG emissions can it then use carbon credits as one tool to offset unavoidable and remaining emissions within the supply chain. As the businesses have been making efforts to align corporate net-zero targets with the PA goal, there have been developments in voluntary carbon markets (VCMs), which is increased attention on the quality of carbon offset credits for use in corporate climate strategies in their net-zero commitment. The World Wide Fund for Nature (WWF) published a blueprint for corporate action on climate change mitigation, highlighting the importance of committing financial investment to support climate actions (*WWF, 2020*). This includes generating high quality carbon credits outside of the corporate value chain, which can be used to address those unavoidable GHG emissions. The Oxford principles for net-zero aligned carbon offsetting also encourage the use of high quality offset credits generated from emission removal projects related to forestry and agriculture sectors (*Allen, M., et al, 2020*).

However, there is growing global concern and criticism of VCMs regarding the quality of offset credits. The discussion has focused on how offset credits could undermine efforts and simply enable businesses to take to less ambitious climate actions. Some examples of public criticisms are: carbon offset credits do not represent valid GHG mitigation because methodologies in forest projects are not robust enough (*Guardian, 2021*), and selling carbon credits for well-protected forest undermines the sustainability efforts of the private sector (*Bloomberg, 2021*). To secure and scale up high-quality carbon credits to achieve the net-zero target by 2050, several international initiatives have been established. The following are the main initiatives to assure credit credibility in VCMs:

- Taskforce on Scaling up Voluntary Carbon Markets[3] (TSVCM): “A private sector-led initiative working to scale an effective and efficient voluntary carbon market to help meet the goals of the Paris Agreement”.
- Voluntary Carbon Markets Integrity Initiative[4] (VCMI): “A multi-stakeholder platform to drive credible, net-zero aligned participation in voluntary carbon markets”.

[1] Climate Ambition Alliance, https://climateaction.unfccc.int/views/cooperative-initiative-details.html?id=94
[2] SBTi is a collaboration between CDP, the United Nations Global Compact, World Resources Institute, and the World Wide Fund for Nature, https://sciencebasedtargets.org/set-a-target
[3] Taskforce on Scaling up Voluntary Carbon Markets, 2020, https://iif.com/tsvcm
[4] Voluntary Carbon Markets Integrity Initiative, 2021, https://vcmintegrity.org/

- Carbon Credit Quality Initiative[5] (CCQI): "The initiative aims to enhance the integrity of carbon credits transacted in the market by enabling carbon credit buyers to identify high-quality credits".

The context of VCMs and the use of offset credits in the business sector has been dramatically changing due to progress on alignment with the PA 1.5°C target, further commitment to net-zero GHG emissions, as well as discussions on the quality of offset credits. Therefore, private companies and/or individuals (credit buyers) need to select high quality carbon credits in VCMs in order to avoid risks to their reputation.

The objective of this paper is to explain elements that are related to credit credibility and high quality carbon credits to buyers (private companies) who are considering the use of offset credits. These elements could serve as a general guidance and should be considered when purchasing offset credits from VCMs. In addition, in the paper we highlight the risks related to those elements that would undermine the quality of carbon credits. We also describe how independent crediting mechanisms can reduce those risks, which credit buyers should take into consideration when selecting high quality offset credits.

2. Elements related to credit credibility and quality

The definition of credit credibility and what exactly defines high quality carbon credits have not been clearly defined yet at an international level. However, "environmental integrity" is often referred to the credibility and quality of carbon credits (*GHG and SEI, 2019; WB 2021a)*. This is also highlighted in Article 6 of the PA (*UNFCCC, 2021*) and the requirements set out in the Carbon Offsetting and Reduction Scheme for International Aviation[6] (CORSIA) (*ICAO, 2019*). The environmental integrity of credits is mostly associated with ensuring no increase in GHG emissions globally, and therefore, must include the following aspects:

- **Real, quantifiable and verifiable** GHG emissions reductions and/or removals
- **Additional and permanent** GHG emissions reductions and/or removals
- No **environmental and social harm**

Table 1 shows a summary of elements related to credit credibility and high quality carbon credit to secure its environmental integrity. These elements were identified based on the existing literature of carbon credit quality, as well as the criteria for high quality credits from international research institutes and organisations, and from international initiatives such as TSVCM and CCQI (See Annex).

Table 1. Elements related to credit credibility and quality

Elements	Definition and Key Concern
E1. Additionality	A proposed project is considered additional if it would not be developed in the absence of crediting mechanisms (*GHG and SEI, 2019; EDF, WWF, Oko Institut 2020, WB 2021a)*. This means if GHG emissions reductions or removals of a project have occurred in any case without carbon credits, then they are not additional. Therefore, additionality is one of the most essential elements of high quality carbon credits. However, securing additionality is challenging because it

[5] Carbon Credit Quality Initiative, 2020, https://carboncreditquality.org/index.html

[6] Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) is an international offsetting scheme for airlines to offset the amount of CO_2 emissions that cannot be reduced through the use of technological and operational improvements, and sustainable aviation fuels. CORSIA, https://www.icao.int/environmental-protection/CORSIA/Pages/default.aspx

	requires counterfactual analysis based on what would have occurred without a market for offset crediting.
E2. Baseline scenario in emission reduction methodology	Baseline scenario is an important aspect to quantify emissions reductions from the proposed project. Baseline emissions are GHG emissions under the baseline scenario that would occur in the absence of proposed project activity. Therefore, a baseline scenario is typically developed based on evidence and data of technology dissemination. Emissions under the project scenario are compared to baseline emissions to determine project emission reductions. Net GHG emissions reductions = Baseline emissions – Project emissions
E3. Permanence	Carbon credits need to represent emissions reductions and/or removals that are effectively permanent. The length of permanence in the case of forest carbon projects is often considered around 100 years (*Ruseva, T., et al, 2017*; *GHG and SEI, 2019*).The issue of non-permanence applies only to carbon sequestration type of projects such as nature-based solutions[7] (NbS) projects that store and/or sequester emissions such as in biological sequestration (e.g. forests and soils) or through industrial technical storage (e.g. carbon capture and storage) (*WB, 2021a*).
E4. Robust MRV system	A measurement, reporting and verification (MRV) system ensures that GHG emissions reductions and/or removals from a project are monitored and tracked over time as well as verifying that project performance (e.g. GHG emissions reductions) meets the eligibility requirements of a crediting mechanism. In a robust and transparent MRV system, the validation and verification process should be performed rigorously and consistently. Validation is the process to review a project's documentation and then approve project registration under a crediting mechanism. Verification is the process to review a project's monitoring reports and then confirm that GHG emissions reductions and/or removals have been correctly quantified, complying with the requirements of the crediting mechanism.
E5. Avoidance of double counting	Double counting means GHG emissions reductions and/or removals are counted more than once. This can occur as double issuance of credits, double use of credit, or double claim of credits. **Double issuance** occurs when carbon credits are issued more than once for the same GHG emissions reductions/removals. **Double use** means the same credit is used twice toward for offsetting emissions reductions. **Double claim** means the same carbon credits are claimed by two different entities for offsetting their emissions. Avoidance of double claiming is at the centre of the current debate in VCMs, on whether to apply corresponding adjustments[8] (CAs) or not.

[7] Nature-based solutions (NbS) are defined by IUCN as actions to protect, sustainably manage, and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits. https://www.iucn.org/commissions/commission-ecosystem-management/our-work/nature-based-solutions

[8] The application of CAs is to adjust GHG emission if ITMOs are transferred between two countries. The acquiring party subtracts the quantity of ITMOs from GHG emission and the transferring party add the same amount of ITMOs on GHG emission. UNFCCC, 2021, Draft CMA decision on

	The CAs shall be applied for internationally transferred mitigation outcomes[9] (ITMOs) under Article 6 to achieve a country's nationally determined contribution[10] (NDC) implementation (*UNFCCC, 2021*).
E6. Negative impacts: Social and environmental harm	High-quality credits should not come from the project that contributes to social and environmental harm. Harmful social impacts can include human rights violations during the project development, and negative environmental impacts can be about damaging the surrounding ecosystem such as water resources. Social and environmental harm should be prevented and mitigated, so that any significant negative impacts on the local community and environment should not occur during the project implementation.
E7. Positive impacts: Contributing to SDG achievement	To have a positive impact, high-quality carbon credits should generate impacts beyond GHG emissions reductions and/or removals. The impacts could include a wide range of environmental, social and economic impacts such as contributions to SDGs and other benefits (e.g. adaptation and biodiversity) from NbS. As climate change intensifies, NbS such as forestry and land use projects would become more important particularly in developing countries since they bring adaptation benefits such as improving climate resilience.
E8. Governance and Transparency	Governance and transparency of crediting mechanisms can assure that carbon credits under the mechanism are credible and reliable. Governance covers how crediting mechanisms should comply with its rules and regulations, and transparency ensures that the necessary guidelines and documents are publically available.

3. Risks associated with each element

E1. Additionality

Why is it important? What are the risks related to additionality?

Insufficient additionality carries the potential risk that GHG emission reductions and/or removals may not have actually occurred. This means carbon credits from non-additional projects do not have a compensatory function to offset GHG emissions; rather, carbon credits tend to lower environmental integrity. Recently, renewable energy (solar PV and wind power) and energy efficiency projects in some developing countries can be implemented without crediting mechanisms due to regulatory support to

guidance on cooperative approaches referred to in Article 6, paragraph 2, of the Paris Agreement (13 November 2021), https://unfccc.int/sites/default/files/resource/cma2021_L18_adv.pdf

[9] ITMOs refers the authorized emission reductions and removals from cooperative approaches, which transferred internationally to be used for the achievement of NDC or other international mitigation purpose. UNFCCC, 2021, Draft CMA decision on guidance on cooperative approaches referred to in Article 6, paragraph 2, of the Paris Agreement (13 November 2021), https://unfccc.int/sites/default/files/resource/cma2021_L18_adv.pdf

[10] Nationally determined contributions (NDCs) embody efforts by each country to reduce national GHG emissions and adapt to the impacts of climate change. UNFCCC, https://unfccc.int/process-and-meetings/the-paris-agreement/nationally-determined-contributions-ndcs/nationally-determined-contributions-ndcs

increase the share of renewable energy in the country (*WB, 2021a*). In this case, the carbon credits from such projects may have less additionality (*Calel, R., et al, 2021*).

Approaches used by crediting mechanisms to reduce risks

To secure additionality, crediting mechanisms requires multiple analyses to be taken to ensure that there is enough evidence and data to determine a project's additionality. The following are the most common analyses to demonstrate additionality (*WB, 2021a; GHG and SEI, 2019*).

- **A regulatory surplus analysis** is for demonstrating whether the proposed project is required under regulation or not. If the project is required by law or under regulation, then it is considered non-additional.
- **A financial analysis** is used to analyse whether the proposed project is financially viable or not. If the project is attractive without revenue from carbon credits, it is deemed non-additional.
- **A common practice analysis** demonstrates whether or not the technology of the proposed project is distinct within its context (e.g. within its region and industry). If the technology is likely to be implemented without crediting mechanisms, then the project is considered non-additional.

Additionality can be determined case-by-case, and is often specific to a particular project and/or region. Moreover, the additionality of the proposed project can shift over time due to regulatory requirements and/or technology dissemination, meaning that such renewable energy projects may be additional today, but will not be in 10 years' time (*WB, 2021a*). Therefore, credit buyers need to be cautious as to whether their purchasing offset credits are issued from activities that are additional or not. Buyers should confirm that the above common analyses are taken to demonstrate additionality.

E2. Baseline scenario in emissions reduction methodology

Why is it important? What are the risks related to a baseline scenario?

If baseline emissions are overestimated, this can lead to overestimating the GHG emissions reductions from the project. This overestimating of project emission reductions leads to over-crediting, which undermines the environmental integrity of carbon credits (*GHG and SEI, 2019*). Therefore, crediting standards should ensure that baseline emissions are conservative, and are not overestimated (*EDF, WWF, and Oko Institut, 2020*).

Approaches used by crediting mechanisms to reduce risks

In order to avoid overestimating project emissions reductions, baseline emissions should be conservative and realistic based on the acceptable scenario of current available technologies. Crediting mechanisms have to ensure a conservative baseline by taking the following key approaches into consideration for determining a baseline in GHG emissions reduction methodologies (*GHG and SEI, 2019; WB, 2021a*):

- **Project-specific approach** for estimating baseline emissions refers to conducting a specific assessment to determine the most realistic practices by using project-specific data and information. This approach requires a significant amount of data and information at the project level.

- **Standardised approach** for setting baseline emissions is based on sectoral data. It can therefore be applied to similar types of technologies or projects to ensure accuracy and coherency. This approach uses the average performance at the sector and/or industry level.

Crediting mechanisms should ensure that the proposed project utilises one of the above two approaches that fits better for estimating baseline scenario. All the required data and information including additional surveys and historical trends for developing baseline scenario should be included in the project methodology document. This allows credit buyers to review and understand how emissions reductions are calculated. Furthermore, the baseline scenario should be regularly revised. This is because it represents assumptions that fit with the current situation; however, as technologies improve due to policy interventions, the assumptions of the baseline scenario will need to be re-determined. In the second phase TSVCM report, it was clearly stated that some methodologies used in renewable energy and energy efficiency projects will be assessed and reviewed to make sure GHG emissions reductions are not overestimated (*TSVCM, 2021*).

E3. Permanence

Why is it important? What are the risks related to non-permanence?

If GHG emissions reductions and/or removals from a project are re-emitted into the atmosphere, then carbon credits from that project have no value as a compensatory function to offset emissions. This risk is related to non-permanence and often occurs with NbS such as forestry and agricultural projects (*Ruseva, T., et al, 2017*). In such projects, there could be a natural disaster (e.g. wildfire) or man-made accident (e.g. illegal logging) at a project site, and this could result in stored carbon being re-emitted into the atmosphere.

Approaches used by crediting mechanisms to reduce risks

To address and avoid non-permanence risks, crediting mechanisms have already established several tools such as buffer pools, temporary crediting, discounting and insurance. Among independent crediting mechanisms, the buffer pool is a common and well-established system to avoid non-permanence risk. In the buffer pool approach, carbon credits from each project are deposited into a buffer account, which functions as an insurance mechanism to compensate for damages at the project site. These credits are released to compensate for reversals of GHG emissions reductions/removals (e.g. natural disasters such as flood or insect damage). In general, the buffer account should maintain a sufficient amount of stock credits to cover reversed GHG emissions reductions/removals to secure the environmental integrity of carbon credits. In case of VERRA[11], the amount of buffer credits deposited into the account depends on the non-permanence risk assessment of the proposed project, which includes risks such as natural disaster, project longevity and financial liability (*VERRA, 2019*).

If credit buyers purchase credits generated from projects like NbS, it is important to consider how those projects are being managed to address the risk of non-permanence inherent to these types of activities. To review and check rules and guidelines related to permanence set by each crediting mechanism is crucial to understand how project developers are requested to manage such reversal risks, from project planning to operation. Crediting mechanisms with stricter requirements for managing reversal risks are likely to generate higher quality credits (*GHG and SEI, 2019*).

[11] VERRA is an independent standard for certifying carbon emissions reductions, https://verra.org/

E4. Robust measuring, reporting and verification (MRV) system

Why is it important? What are the risks related to validation and verification?

If the third party body conducting validation and verification in a MRV system is weak, then this could undermine the robustness of an auditing process, potentially lowering the credit quality and project performance. The auditing process (validation and verification) approves proposed projects and certifies the amount of credits from that project based on the requirements of the crediting mechanism. Therefore, third party validation and verification bodies should be independent professional organisations that are accredited to perform such comprehensive services.

Approaches used by crediting mechanisms to reduce risks

To make sure the auditing process for validation and verification is sufficiently robust, crediting mechanisms in the VCM rely on professional accreditation bodies. Most independent crediting mechanisms require third party bodies to be accredited by the International Organization for Standardization (ISO) 14065[12] standard for auditors conducting GHG accounting. However, each crediting mechanism should develop standardized guidelines for validation and verification in order to maintain consistency between proposed projects and ensure the quality of auditing. In general, guidelines on validation and verification should cover the following areas:

- Requirements of how validation and verification must be clarified. One of the common requirements that independent crediting mechanisms refer to is the ISO 14064-3[13]. This standard is applicable for verifying and validating GHG emissions on organisations, projects and products.
- Frequency of verification must be clarified in the guidelines. Crediting mechanisms typically refrain issuing credits that have not been verified. This usually depends on the crediting period which is based on a project type.

E5. Double counting

Why is it important? What are the risks related to double counting?

Any type of double counting (double issuance, double use, double claim) can undermine the environmental integrity of carbon credits because the same amount of emissions reductions is counted twice for emissions reduction targets. The current discussion on double claiming in VCMs is focused on what would happen if carbon credits are transferred internationally and claimed both by companies to meet their net-zero emission targets and also by a host country toward their NDC achievement. Under Article 6 of the PA, if mitigation outcomes are transferred internationally to achieve NDC targets between two countries, CAs should be applied so that the countries can balance their emissions (*UNFCCC, 2021*). If the Article 6 rule on CAs is applied to VCMs, it would take additional coordination to issue carbon credits because in order to apply CAs the host country needs to authorize it, so that they would not claim those emissions reductions toward its NDC.

[12] ISO 14065: 2020, General principles and requirements for bodies validating and verifying environmental information, https://www.iso.org/standard/74257.html
[13] ISO 14064-3: 2019, Greenhouse gases — Part 3: Specification with guidance for the verification and validation of greenhouse gas statements, https://www.iso.org/standard/66455.html

Approaches used by crediting mechanisms to reduce risks

To avoid double issuance and double use, there should be a stringent and transparent registry system within crediting mechanisms. Registry systems should use serial numbers to record and track carbon credits in order to ensure that one credit is issued per reduction in emissions. This serial number for individual credits can track their issuance, and record their transfer and retirement. Registry systems should be operated in a transparent manner, so that credit buyers are able to check their purchasing credits to prevent any double use.

To avoid double claiming issues, some independent crediting mechanisms have updated their standards to make their credits and/or projects fit in the post-2020 era. For instance, VERRA updated its verified carbon standard in April 2021 to put Article 6 labels on verified carbon units (VCUs) if it is requested by project developers. This indicates that those labeled VCUs are applicable to be used under Article 6 (*VERRA, 2021).* Another crediting mechanism, ART (Architecture for REDD+ Transactions) programme published the REDD+ Environmental Excellence Standard (TREES), which explains that if credits under TREES can be used by entities, the host country should issue an official letter to authorise the use of credits by the credit buyers and apply CAs to its national emissions (*ART, 2020*).

E6. Negative impacts: Social and environmental harm

Why is it important? What are the risks related to social and environmental harm?

If carbon credits are being generated by projects that harm local communities and environment, it could lower the environmental integrity of credits. The high quality credits must not be issued if they generate such negative impacts. There are potential risks to the reputation of a company if buyers utilise such carbon credits to offset their GHG emissions. If negative impacts are not addressed there may be the potential for criticisms on how the rights of indigenous people are violated and natural land is destroyed in a local community to generate carbon credits.

Approaches used by crediting mechanisms to reduce risks

Depending on the location of the project, a lack of compliance or regulations, social and environmental harm may occur during project implementation. Therefore, in order to avoid these negative impacts, environmental and social safeguards should be established. Most of the independent crediting mechanisms have developed safeguarding principles within the scheme to ensure that any harm is identified and mitigated during project operation. For instance, Gold Standard[14] has nine safeguarding principles including social, economic, environmental and ecological aspects such as human rights, safety and working conditions, cultural heritage, corruption, water and land use (*Gold Standard, 2019a*). In general, to avoid negative social and environmental impacts, crediting mechanisms should include the following aspects:

- Conduct social and environmental safeguard assessment
- Identify, mitigate, monitor, and report any risks if they occurred
- Conduct local stakeholder consultation meetings
- Ensure public transparency regarding safeguard assessment

[14] Gold Standard is an independent carbon mechanism that certifies carbon emissions reductions, https://www.goldstandard.org/

All safeguarding documents related to the assessment of social and environmental harm including local stakeholder meetings, should be publically available in a registry system. Credit buyers can review how the safeguards are being planned, implemented and monitored to avoid negative impacts. Credits issued from the projects in developing countries, where national regulations are not fully reinforced, may have risks for violating human rights. Therefore, conducting consultation meetings with local communities prior to project operationalisation is important (*WB, 2021a*). For credit buyers, double checking the safeguarding assessment of projects would secure high quality offset credits.

E7. Positive impacts: contributions to SDG achievement

Why is it important? What are the risks related to positive impacts?

Over-claiming positive impacts from a project is one example of greenwashing. This is also known as SDGs-washing[15], which is when mitigation activities align with the SDGs without making a meaningful contribution. Such over-claimed credits pose a threat to credit credibility, since they do not directly contribute to achieving the SDGs in developing countries. As SDGs and adaptation benefits have been valued, it would be fraudulent if no actual contributions are generated from projects. Therefore, such positive impacts should be monitored, reported and verified to make the SDG claim is accurate, and not just greenwashing.

Approaches used by crediting mechanisms to reduce risks

To enhance positive impacts from projects, crediting mechanisms should create specific requirements for designing projects from the early stages in order to generate direct impacts on SDG achievement. Furthermore, to avoid over-claiming positive impacts, an approach to measure and assess such development benefits should be established. For instance, Gold Standard requires all projects to demonstrate a clear, direct contribution to sustainable development and positive impacts on at least three SDGs, one of which must be SDG 13, combating climate change (*Gold Standard, 2019b*). In order to generate positive impacts other than GHG emissions reductions, crediting mechanisms could take the following approaches:

- **Design projects to generate SDGs impacts:** Project developers need to design projects that could contribute to actual and meaningful positive impacts from project planning stages. Especially in developing countries, this way of developing projects would bring the most fitted development and adaptation benefits to the local community.
- **Measure, report and verify positive impacts:** Crediting mechanisms should establish rules and guidelines for the MRV system on SDGs positive impacts to claim tangible and direct SDG impacts generated by each project.

As high quality and credible credits should generate positive impacts beyond GHG emission reductions, buyers need to prioritise selecting offset credits contributing to SDG achievement and generating adaptation benefits. One example of such projects would be NbS such as reforestation, sustainable forest management, livestock management, conservation of coastal wetland, which could bring biodiversity and community development benefits. However, due to the nature of these types of projects, they have the risk of non-permanence; therefore, buyers have to confirm and pay attention to the approaches taken by crediting mechanisms to address this risk.

[15]OECD, Ever heard of SDG washing? The urgency of SDG Due Diligence, 2017 https://oecd-development-matters.org/2017/09/25/ever-heard-of-sdg-washing-the-urgency-of-sdg-due-diligence/

E8. Governance and transparency

Why is it important? What are the risks related to governance and transparency?

If governance does not function well, and if transparency is lacking in crediting mechanisms, the quality of carbon credits could be threatened. Governance and transparency are key filters to protect and preserve credit credibility by overseeing the rules and procedures related to methodology development, validation and verification, and safeguarding assessment (*EDF, WWF, Oko Institut, 2020*). Therefore, if crediting mechanisms are not governed transparently, it could pose a risk of reducing credit credibility. Transparent and well-governed mechanisms can ensure improvements to decision-making processes, resulting in high quality carbon credits.

Approaches used by crediting mechanisms to reduce risks

Efficient and transparent governance is important for project developers and for those carrying out the administrative work of crediting mechanisms. In order to design such a governing body, the following functions should be arranged within crediting mechanisms (*WB, 2021a*).

- **Overseeing policy**: To adopt necessary rules and guidelines for compliance and operation of crediting mechanisms. This also covers the scope of sectors, technology coverage, and types of projects that are allowed in crediting mechanisms.
- **Ensuring implementation of rules and guidelines**: To oversee daily operations including reviewing proposed project documents, ensuring validation and verification processes, and issuing credits.
- **Providing technical advice**: To establish a technical advisory team made up of experts from different sectors to carry out reviews of new methodologies and technical guidelines.

In regard to transparency, the relevant information on all projects should be publically accessible on a registry system including detailed data on methodology, monitoring reports, permanence risk reports and safeguarding assessment. Transparency also refers to the public input for necessary decisions such as approval of methodologies and project registration processes. Furthermore, local stakeholder engagement in project development should be established to ensure transparent and robust crediting mechanisms and to avoid any social and environmental negative impacts.

4. Discussion

The World Bank reported that in 2020 alone, the credits issued in VCMs increased by 30% compared to 2019, with business climate actions making up 96% of this increase (*WB, 2021b*). As more private companies raise their climate change ambition and commit to net-zero GHG emissions targets by 2050, which align with the PA goal, the need of high quality carbon credits in the business sector is likely to increase. For the use of offset credits, there has been increasing concern as to the quality and credibility of such credits since offset credits should not undermine mitigation activities by the private sector. If businesses use low quality carbon credits, it would undermine the PA goal and commitments to net-zero. Therefore, TSVCM, CCQI and VCMI have been established to secure high quality carbon credits and to scale up VCMs because financial support from the private sector is necessary to meet the PA 1.5°C target. The TSVCM Phase II report highlights the necessity to assess methodologies for additionality and baseline setting in renewable and energy efficiency projects. The TSVCM will evaluate independent crediting

mechanisms based on core carbon principles (Table A-4) to secure high quality carbon credits. The CCQI has also developed a methodology for assessing the quality of credits in VCMs using a system of scoring from 1 to 5 based on the likelihood of carbon credits meeting CCQI criteria (*EDF, WWF and Oko Institut, 2021*).

VCMs are changing fast and becoming dynamic, and as such, carbon credits should only be used to offset unavoidable GHG emissions within the supply chain, not to become replacing corporate climate actions. Credible and high quality credits must ensure environmental integrity, which should be associated with actions that do not increase global emissions and do not damage the environment. We have identified eight elements related to credit credibility and high quality of credits: E1. Additionality, E2. Baseline scenario in methodology, E3. Robust MRV system, E4. Permanence, E5. Avoidance of double counting, E6. Negative impacts - Social and Environmental harm, E7. Positive impacts - Contributions to the SDGs, and E8. Governance and Transparency. This paper explained the elements that are related to credit credibility, which should be considered as a guide to selecting high quality carbon credits for the private sector. In addition, we highlighted the risks related to each element, giving an overview of how crediting mechanisms can address and reduce those risks. For credit buyers, paying attention to approaches taken by each mechanism to reduce such risks could be a screening step to distinguish high quality credits in VCMs.

In the above elements, avoidance of double claiming in VCMs heavily overlaps with the application of CAs under Article 6 of the PA. If a business claims internationally transferred offset credits toward its net-zero target and if the host country reports the same amount of GHG emissions reduction towards achieving its NDC, this results in double claiming, which may undermine the environmental integrity of credits. Some argue that if host countries count GHG emissions reductions, the business sector should not use the same emissions reductions for its own net-zero target (*Gold standard, 2021; Carbon Market Watch, 2021*). Others claim that accounting processes on GHG emissions for countries and for businesses are two separate processes, and that they represent different emissions reductions (*VERRA, 2021*). The draft decision of Article 6.2 guidance taken at COP 26 defined ITMO as “Mitigation outcomes authorized by a participating Party for use for international mitigation purposes other than achievement of an NDC (hereinafter referred to as international mitigation purposes) or authorized for other purposes as determined by the first transferring participating Party (hereinafter referred to as other purposes) (international mitigation purposes and other purposes are hereinafter referred to together as other international mitigation purposes)” (*UNFCCC, 2021*). These “other international mitigation purposes” may imply that internationally transferred offset credits for the use of corporate net-zero targets can be referred as ITMOs. If so, in this case, those offset credits will be required to apply CAs. The draft decision has not clarified what can be classified under “other international mitigation purposes”, which require more in-depth discussion and clarification for VCMs in the future. Gold Standard has already presented that it will apply CAs to its verified emission reductions if they are transferred internationally to be used for the net-zero target in the private sector (*Gold Standard, 2021b*). The CAs application on VCMs would significantly affect the rules and guidelines of independent crediting mechanisms, including how much the host countries would involve in credit issuance and authorisation of internationally transferred credits. In the post-PA era, there may be various carbon credits with the CAs or without them in VCMs, which would depend on the purpose of their use such as net-zero commitment and NDC implementation.

Carbon credits from GHG emissions removals based on NbS are particularly highlighted, as they would generate benefits in areas such as adaptation, biodiversity conservation, and food security

(*Seymour, F., & Langer, P., 2021*). A SBTi report on foundations for science-based net-zero target setting for businesses has been published to ensure that company climate actions should be consistent with the PA 1.5°C target to achieve net-zero by 2050 (*CDP, 2020*). The report acknowledges the importance of NbS since carbon removals from such projects would neutralise residual emissions toward net-zero transition in the long term (*CDP, 2020*). However, the risk of non-permanence is inherent of this type of project (e.g. land use and forest management). Therefore, it is the responsibility of credit buyers to review what approaches are taken by crediting mechanisms to address the risk of non-permanence for those projects in the event of a natural disaster.

SDG contributions and other benefits from NbS have strong links with high quality carbon credits (*EDF, WWF, Oko Institut, 2020; Seymour, F., & Langer, P., 2021; VCMI, 2021*). Recently in VCMs, credit buyers often prioritise carbon credits with SDG positive impacts such as improving water accessibility in rural areas or enhancing vocational skills for local people, rather than those without those impacts (*GHG and SEI, 2019*). However, those positive claims from projects must be monitored to ensure they are actual claims, as there is a risk of over-claiming benefits. Furthermore, no high quality carbon credits should be generated from projects that harm the local community and environment. Therefore, companies considering high quality offset credits should select those carbon credits that generate direct SDGs impacts, and conduct safeguarding assessment to avoid any such negative impacts.

The SBTi corporate net-zero standard and criteria states that carbon removal credits can be considered to neutralise unavoidable emissions. Moreover, the standard highlights the fact that the private sector needs to finance mitigation actions in NbS outside of its value chain to contribute to reducing global net emissions (*CDP, UN Global compact, WRI, WWF, 2021a and 2021b*). The VCMI developed 10 principles for high integrity and high ambition voluntary corporate climate action such as science-based actions (e.g. prioritising Scope 1, 2 and 3 emissions reductions), comprehensive GHG inventories, actions consistent with the SDGs, actions to restore nature and biodiversity, and disclosure of information and approaches for a net-zero strategy (*VCMI, 2021*). Corporate climate actions including use of carbon credits should raise ambition, not aim for low-hanging fruit. Hence, the private sector needs to develop climate actions including strategies on how companies can use high quality offset credits to fit their own business model, and thus achieve their net-zero target by 2050.

Acknowledgements

The authors would like to thank Mr. Naoki Matsuo, principal researcher, and Dr. Xianbing Liu from the Climate and Energy Area, IGES, for their valuable comments and inputs to improve the paper. We also greatly appreciate Ms. Emma Fushimi from IGES for providing proofreading.

Annex

Table A-1. Overview of the quality objectives and criteria used to assess the quality of carbon credits (*EDF, WWF and Oko institut, 2020*)

Objective	Criteria
Robust determination of the GHG emissions impact of the mitigation activity	a. Additionality b. Vulnerability c. Robust quantification of emission reductions and removals
Avoiding double counting of emission reductions or removals	a. Avoiding double issuance b. Avoiding double use c. Avoiding double claiming with international mitigation targets d. Avoiding double claiming with domestic mitigation targets or emissions trading systems
Addressing non-permanence	a. Significance of non-permanence risks b. Robustness of approaches for addressing non-permanence risks
Facilitating transition towards net zero emissions	a. Enhancing adoption of low, zero or negative emissions technologies b. Demonstration of host country commitment to the global temperature goals
Strong institutional arrangements and processes of the crediting program	a. Overall program governance b. Robust third-party auditing c. Transparency and stakeholder consultation
Enhancing positive and preventing negative environmental and social impacts	a. Assessment of environmental and social impacts b. Contribution to improving adaptation and resilience c. Supporting the poorest and most vulnerable and affected by climate change

Table A-2. Approaches to managing supply-side risk (*Seymour, F., & Langer, P., 2021*)

Concern	Approaches to risk management
Leakage	Ensure that activities that generate emissions are not simply displaced: ▪ Discount crediting to reflect the assessed risk of direct and indirect leakage ▪ Credit at the scale of national or large subnational jurisdictions
Permanence	Ensure that emissions reductions and removals are not reversed, or if reversed, are compensated: ▪ Require risk mitigation measures ▪ Require long-term monitoring and reporting ▪ Require mechanisms to compensate for reversals (e.g., withholding credits in buffer pools)
Additionality	Ensure that emissions reductions and removals are "real" and would not have happened anyway: ▪ Require crediting reference levels to be established in ways that avoid "cherry-picking" reference periods and inflated baselines ▪ Use jurisdictional-scale historical emissions, conservatively adjusted in the case of high forest, low deforestation countries
Accuracy of measurement	Ensure that reporting on emissions reductions and removals is accurate: ▪ Utilize data and methods consistent with Intergovernmental Panel on Climate Change guidance ▪ Take advantage of new monitoring technologies and use conservative approaches
Uncertainty	Ensure that the risk of measurement errors is reduced: ▪ Discount crediting to reflect the assessed uncertainty in the monitoring data and calculation methods
Social safeguard	Ensure that programs do not harm affected communities and that benefits are equitably shared: ▪ Independently verify implementation of a national safeguard system
Double counting	Ensure that each credit for emissions reductions is claimed only once: ▪ Certified emissions reductions are unique and maintained on a registry ▪ Internationally transferred post-2020 credits are reflected in corresponding adjustments to the nationally determined contribution in host countries' reporting to the United Nations Framework Convention on Climate Change

Table A-3. CORSIA Emissions Unit Eligibility Criteria (*ICAO, 2019*)

Criteria	Description
1. Additional	Carbon offset programs must generate units that represent emissions reductions, avoidance, or removals that are additional. A
2. A realistic and credible baseline	Carbon offset credits must be based on a realistic and credible baseline.
3. Quantified, monitored, reported, and verified	Carbon offset credits must be quantified, monitored, reported and verified
4. A clear and transparent chain of custody	Carbon offset credits must have a clear and transparent chain of custody within the offset program. Offset credits should be assigned an identification number that can be tracked from when the unit is issued through to its transfer or use (cancellation or retirement) via a registry system(s).
5. Represent permanent emissions reductions	Carbon offset credits must represent emissions reductions, avoidance, or carbon sequestration that are permanent.
6. Assess and mitigate against potential increase in emissions elsewhere	A system must have measures in place to assess and mitigate incidences of material leakage. Offset credits should be generated from projects that do not cause emissions to materially increase elsewhere (this concept is also known as leakage).
7. Are only counted once towards a mitigation obligation	Measures must be in place to avoid: a) Double issuance (which occurs if more than one unit is issued for the same emissions or emissions reduction). b) Double use (which occurs when the same issued unit is used twice, for example, if a unit is duplicated in registries). c) Double claiming (which occurs if the same emissions reduction is counted twice by both the buyer and the seller
8. Do no net harm	Carbon offset credits must represent emissions reductions, avoidance, or carbon sequestration from projects that do no net harm. Offset projects should not violate local, state/provincial, national or international regulations or obligations.

Table A-4. Core carbon principles (*TSVCM, 2021*)

Core carbon principles	**Description**
Additionality	Additional beyond GHG emission reductions or removals that would otherwise occur without revenue from credits. Projects demonstrate a conservative baseline scenario and must be surplus to regulatory requirements. Jurisdictional programs demonstrate additional reductions below the reference level.
Permanence	Only issued for GHG reductions or removals that are permanent or, if they have a reversal risk, must have requirements for a reasonable multidecadal term and a comprehensive risk mitigation and compensation mechanism in place
Leakage	Assessed, mitigated, monitored, and estimated considering any potential increase in emissions outside of the boundary, attributable to the credited activity, including taking appropriate deductions.
No net harm	The Standard must have requirements to ensure that all projects and programs consider related environmental and social risks and take actions to prevent and mitigate associated harm.
Baselines	Credited only beyond performance against a defensible, conservative baseline estimate of emissions in the absence of the activity. Baselines should be recalculated on a regular, conservative timeframe.
MRV	Calculated in a conservative and transparent manner, based on accurate measurements and quantification methods. Must be validated/verified by an accredited, third-party entity. MRV should be conducted at specified intervals
Counted once	Carbon credits should be counted once toward mitigation targets. It depends on credit use (e.g., developers double-listing credits, buyers double-claiming credits)
Real	Measured, monitored and verified ex-post to have actually occurred.
Additional attributes	**Description**
Type	• Removal • Avoidance/ reduction or mixed
Removal/reduction	• Nature-based • Technology-based
Storage method	• Biological • Geological • Products (e.g., building materials) • No storage
Co-benefits	• Co-benefits associated (e.g., one or more of: technology catalyst benefits, SDGs, CBB () or other accredited label etc.) • None
Corresponding Adjustments	• Letter of Authorization • CAs associated • None

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