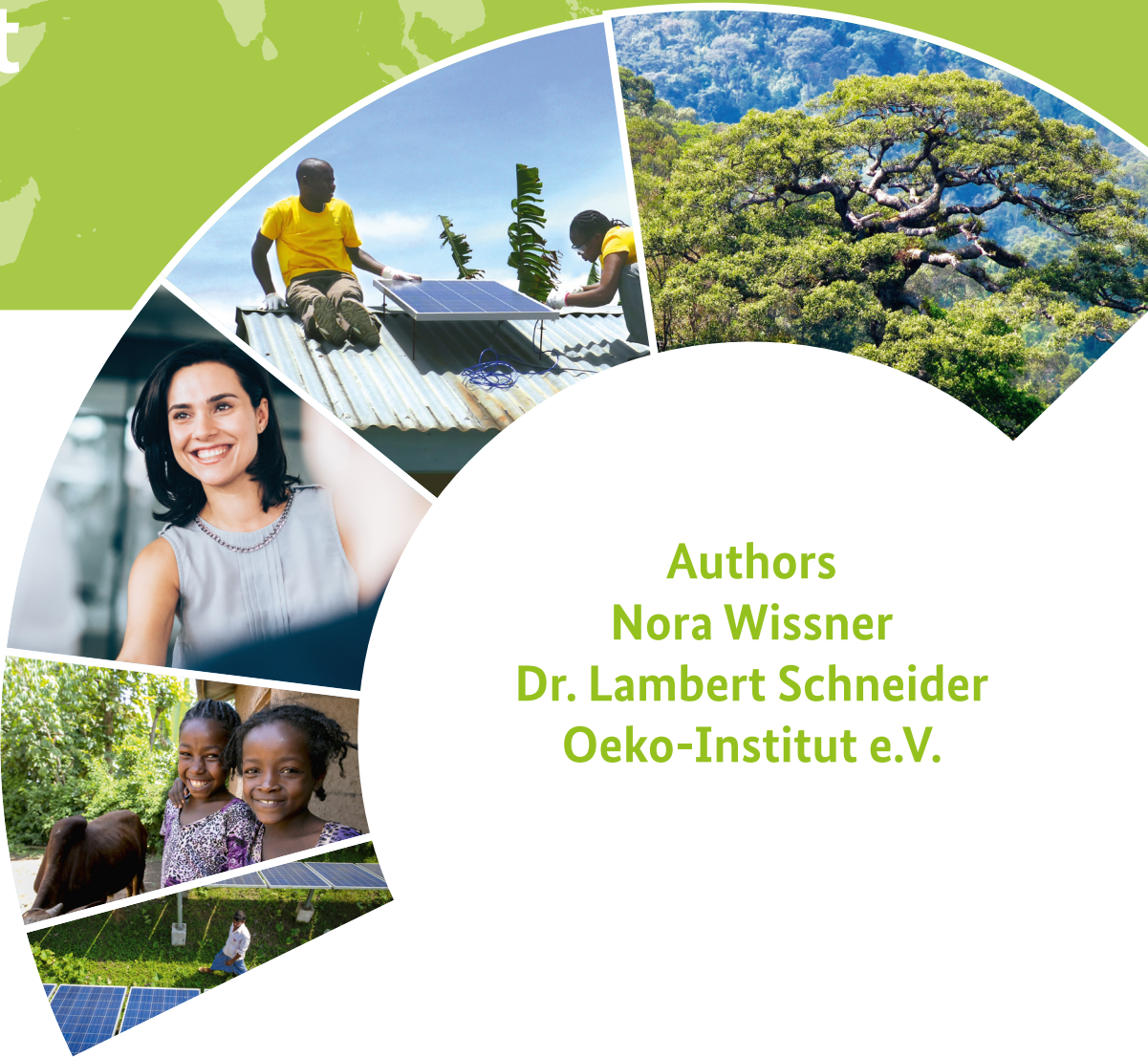


AN OVERVIEW OF APPROACHES -

Ensuring safeguards and assessing sustainable development impacts in the voluntary carbon market



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List of Abbreviations

A/R	Afforestation and Reforestation
CCBS	Climate, Community & Biodiversity Standards
CDM	Clean Development Mechanism
GHG	Greenhouse Gas
GS	Gold Standard for the Global Goals
SDGs	Sustainable Development Goals
SD VISta	Sustainable Development Verified Impact Standard
VCM	Voluntary Carbon Market
VCS	Verified Carbon Standard

Summary

The voluntary carbon market (VCM) has been growing considerably in recent years and demand for carbon credits will likely continue to increase in the future. Projects in the VCM can have considerable impacts beyond the reduction of greenhouse gas emissions. These impacts have gained more and more attention over the last few years. Increasingly, buyers of carbon credits want to ensure that projects do not cause harm and have wider positive impacts.

This paper provides an overview of how carbon crediting programs and complementary standards in the VCM address impacts of projects beyond climate change mitigation. It shows that the evaluated programs and standards differ considerably in how they ensure environmental and social safeguards and assess positive and negative sustainable development impacts. The paper identifies several areas in which their requirements could be improved.

- **Evaluation of potential negative sustainable development impacts:** All evaluated carbon crediting programs and complementary standards focus on attesting positive sustainable development impacts. We recommend that both positive and negative impacts be assessed.
- **Application of the Sustainable Development Goals (SDG) framework:** Using the SDG framework and existing tools to assess SDG interactions can help to analyze impacts in a systematic and comparable manner.
- **Timing of local stakeholder consultations:** To ensure that stakeholders can inform the design of a project, local stakeholder consultation should be conducted prior to the decision to proceed with a project.
- **Monitoring of possible adverse impacts as well as positive impacts:** Ongoing monitoring of a project's impacts can help provide additional assurance on how stakeholders are affected and whether any remedial measures are effective.
- **Elaboration of specific safeguards:** The current safeguard provisions could be strengthened, in particular with regard to prior, free and informed consent of indigenous people, an overarching gender policy, and safeguards for specific areas (e.g. labour rights, biodiversity).

Buyers of carbon credits should be aware of these current limitations. They can address these shortcomings in several ways. Firstly, they can buy carbon credits issued under carbon crediting programs, or combinations of programs and complementary standards, that provide more rigorous requirements. For example, the Clean Development Mechanism (CDM) is often used in combination with the Gold Standard (GS) and the Verified Carbon Standard (VCS) can be combined with the Sustainable Development Verified Impact Standard (SD VISTa) or the Climate, Community & Biodiversity Standards (CCBS). Secondly, large buyers can conduct their own due diligence to ascertain positive impacts of projects.

Additionally, they could make use of online tools to estimate the expected sustainable development impact and the quality of the carbon credit. Future work might explore producing a guidance document on or generalized assessment of typical sustainable development impacts of project types to help carbon credit buyers to make more informed decisions. A second work package in context of this project will look into this further.

Kurzfassung

Der freiwillige Kohlenstoffmarkt ist in den letzten Jahren erheblich gewachsen, und die Nachfrage nach Emissionsgutschriften wird wahrscheinlich auch in Zukunft weiter steigen. Projekte im freiwilligen Kohlenstoffmarkt können erhebliche Auswirkungen haben, die über die Verringerung der Treibhausgasemissionen hinausgehen. Diese Auswirkungen haben in den letzten Jahren mehr und mehr an Aufmerksamkeit gewonnen. Die Käufer und Käuferinnen von Emissionsgutschriften wollen zunehmend sicherstellen, dass die Projekte keinen Schaden anrichten und breitere positive Auswirkungen haben.

Dieses Papier gibt einen Überblick darüber, wie Programme und ergänzende Standards im freiwilligen Kohlenstoffmarkt die Auswirkungen von Projekten über den Klimaschutz hinaus berücksichtigen. Das Papier zeigt, dass die bewerteten Programme und Standards sich erheblich darin unterscheiden, wie sie Maßnahmen zur Vermeidung negativer Umwelt- und Sozialwirkungen gewährleisten (sogenannte „safeguards“) und positive sowieso negative Auswirkungen auf die nachhaltige Entwicklung erfassen. Es werden mehrere Bereiche identifiziert, in denen ihre Anforderungen verbessert werden könnten:

- **Erfassung möglicher negativer Auswirkungen auf die nachhaltige Entwicklung:** Alle bewerteten Programme und ergänzende Standards konzentrieren sich auf den Nachweis positiver Auswirkungen auf die nachhaltige Entwicklung. Wir empfehlen, dass sowohl positive als auch negative Auswirkungen bewertet werden.
- **Anwendung der 17 Ziele für nachhaltige Entwicklung (SDG):** Die Anwendung des SDG-Rahmenwerks und bestehender Instrumente zur Bewertung der Wechselwirkungen zwischen den SDGs kann dazu beitragen, die Auswirkungen auf systematische und vergleichbare Weise zu analysieren.
- **Zeitpunkt für die Konsultation der lokalen Interessengruppen:** TUm sicherzustellen, dass die Interessengruppen in die Gestaltung eines Projekts einfließen können, sollte die Konsultation der lokalen Interessengruppen vor der Entscheidung über die Realisierung eines Projekts durchgeführt werden.
- **Überwachung möglicher negativer wie auch positiver Auswirkungen:** Die fortlaufende Überwachung der Auswirkungen eines Projekts kann dazu beitragen, zusätzliche Gewissheit darüber zu erlangen, wie die Interessengruppen betroffen sind und ob etwaige Abhilfemaßnahmen wirksam sind.
- **Ausarbeitung spezifischer „safeguards“:** Die derzeitigen Vorgaben der Programme und Standards könnten gestärkt werden, insbesondere im Hinblick auf die vorherige, freie und auf Kenntnis der Sachlage gegründete Zustimmung der indigenen Bevölkerung, eine übergreifende Gleichstellungspolitik und „safeguards“ für bestimmte Bereiche (z. B. Arbeitsrechte, biologische Vielfalt).

Die Käufer und Käuferinnen von Emissionsgutschriften sollten sich dieser derzeitigen Beschränkungen bewusst sein. Sie können diese Unzulänglichkeiten auf verschiedene Weise angehen. Erstens können sie Emissionsgutschriften kaufen, die im Rahmen von Programmen oder Kombinationen von Programmen und ergänzenden Standards ausgegeben werden, die strengere Anforderungen stellen. Der Clean Development Mechanism (CDM) wird beispielsweise häufig in Kombination mit dem Gold Standard (GS) verwendet, und der Verified Carbon Standard (VCS) kann mit dem Sustainable Development Verified Impact Standard (SD VISTA) oder den Climate, Community & Biodiversity Standards (CCBS) kombiniert werden. Zweitens könnten große Organisationen oder Firmen ihre eigene Due-Diligence-Prüfung durchführen, um die positiven Auswirkungen von Projekten zu ermitteln.

Außerdem könnten sie Online-Tools nutzen, um die erwarteten Auswirkungen auf die nachhaltige Entwicklung und die Qualität der Emissionsgutschriften abzuschätzen. Zukünftige Arbeiten könnten einen Leitfaden oder eine allgemeine Bewertung der typischen Auswirkungen von Projekttypen auf die nachhaltige Entwicklung untersuchen, die den Käufern und Käuferinnen von Emissionsgutschriften als Orientierung dienen kann. Dies wird in einem zweiten Arbeitspaket dieses Projekts weiterverfolgt.

1. Introduction

The voluntary carbon market (VCM) has been growing considerably in recent years and demand for carbon credits will likely continue to increase in the future. In 2020, the market turnover increased to 473 million USD as compared to a volume of 146 million USD in 2017 (Ecosystem Marketplace 2021a). In August 2021, the market size by traded value increased to more than 748 million USD (Ecosystem Marketplace 2021a) and will exceed 1 billion USD in 2021 in total (Ecosystem Marketplace 2021b). Indeed, many companies and organizations are raising their ambition in the area of climate change mitigation by reducing their own GHG emissions but also by offsetting emissions or financing emission reductions elsewhere.

While the primary objective of projects in the VCM is climate change mitigation, most projects also have a wide range of other impacts. Some projects reducing GHG emissions have mainly positive sustainable development impacts (co-benefits). For example, the use of more efficient cookstoves reduces GHG emissions while also improving (indoor) air quality and reducing the time needed to collect fuel wood (Lacey et al. 2017). However, some projects might also have negative sustainable development impacts and may thus involve trade-offs. Afforestation projects, for example, might not only increase carbon storage but also enhance water retention. Yet such projects, if not well designed, might inhibit subsistence use of forest resources by the local population. These impacts beyond climate change mitigation of projects have gained more and more attention over the last few years. Increasingly, buyers of carbon credits want to ensure that projects do not cause harm and have wider positive impacts in recognition of the fact that the climate crisis is also a development issue. It is important to note that environmental and social safeguards and sustainable development benefits are only one aspect of the quality of carbon credits. To ensure an overall high quality of carbon credits, buyers of carbon credits need to consider a range of other quality features, including that the mitigation activity is additional, that the emission reductions are robustly quantified, that potential non-permanence is addressed, and that emission reductions are not double counted.

Promoting projects that have positive impacts beyond climate change is indeed critical, due to the strong linkages between

sustainable development and climate change mitigation and adaptation. Progress on sustainable development can facilitate climate change adaptation and mitigation. Sustainable development can enable and support the deep transformational changes required for limiting global warming to 1.5°C and improving resilience to climate change (Kolenda et al. 2020; ICAT 2020b; Roy et al. 2018). In turn, limiting global warming to 1.5°C will make it easier to make progress on sustainable development. Careful design of mitigation measures and the consideration of development issues in nationally determined contributions (NDCs) can therefore advance sustainable development simultaneously (Iyer et al. 2018; Roy et al. 2018). However, climate change mitigation and adaptation actions can also result in trade-offs with sustainable development (Roy et al. 2018). Prioritizing mitigation measures that also promote sustainable development is therefore an important strategy in transitioning towards net zero emissions.

This paper provides an overview of how carbon crediting programs and complementary standards in the VCM address impacts of projects beyond climate change mitigation. This concerns two dimensions:

1. The assessment of **environmental and social safeguards** which aim to ensure that projects adhere to minimum requirements to avoid adverse impacts. Safeguards enable a safe operating space for projects of the VCM.
2. The **assessment of the projects' sustainable development impacts** to leverage potential co benefits and to avoid significant trade-offs between sustainable development and climate change mitigation.

The paper provides, first of all, an overview of existing methodological approaches to assess safeguards and evaluate the (sustainable) development impacts of projects (chapter 2). In chapter 3, the approaches of selected programs and standards towards safeguards and sustainable development impacts are assessed. We also provide examples of the typical sustainable development impacts of two selected project types (chapter 4) and derive recommendations for actors in the VCM (chapter 5).

2. Overview of methodological approaches for ensuring safeguards and assessing the sustainable development impacts in the voluntary carbon market

In recent years, many stakeholders and organizations have developed methodological approaches for ensuring environmental and

social safeguards and for assessing sustainable development impacts of climate change mitigation projects.

2.1 Environmental and social safeguards

Environmental and social safeguards aim to avoid and minimize potential negative impacts of projects in the VCM (UBA 2020). As pre-defined indicators cannot be used for all safeguards, approaches are needed which can deal with any number of – and possibly unexpected – adverse impacts, e.g. through procedural mechanisms like grievance mechanisms and stakeholder consultations (UBA 2020). Therefore, environmental and social safeguards typically cover a range of approaches. In the context of carbon crediting mechanisms, they include:

- Conducting stakeholder consultations to ensure that affected stakeholders are identified, that they can voice their concerns, and that projects are implemented in ways to address their concerns;
 - Establishing grievance mechanisms to enable stakeholders to raise concerns and demand fair treatment;
 - Establishing specific safeguard requirements that must be adhered to in the implementation of projects so as to avoid or address any potential negative impacts;
 - Monitoring of any negative impacts on an ongoing basis;
 - Ensuring due diligence of the ability of the project implementers to implement and adhere to safeguards;
- and

- Validating and verifying the evaluation of environmental and social impacts by an independent third-party.

The implementation of these measures by carbon crediting programs has been assessed in a few existing studies. Oeko-Institut, WWF and EDF (2021) developed a methodology for assessing the quality of carbon credits, including with regard to environmental and social safeguards and sustainable development impacts. Their quality indicators focus on procedural requirements, requirements for local stakeholder consultations and the thoroughness of specific safeguards in relation to for example cultural heritage and gender issues as well as more general environmental and social safeguards.

ERM (2020) evaluates several programs or standards against guidelines for environmental and social safeguards from the sustainability guidelines of the KfW Development Bank, including the IFC PS,¹ the International Labour Organization and the UN Basic Principles and Guidelines on Development-based Evictions and Displacement.² The programs or standards were assessed with regard to whether they fulfill requirements in relation to risk management, labour and working conditions, community health/safety and more.

¹ https://www.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/Sustainability-At-IFC/Policies-Standards/Performance-Standards

² https://www.ohchr.org/Documents/Issues/Housing/Guidelines_en.pdf

2.2 Sustainable development impacts

Projects in the VCM mainly pertain to climate change mitigation actions, but many projects are likely to have a positive impact beyond that. There is a growing literature which evaluates the impact of specific projects or project types beyond GHG emission reduction, for example the health benefits of efficient cookstoves (e.g. Shankar et al. (2014) and Schilman et al. (2019)). ICROA (2014) conducted surveys with project developers to estimate co-benefits

from forestry/land-use, household device, and fuel switch projects in the VCM. It was found that the 59 analyzed projects delivered economic (e.g. job creation), social (e.g. improved public health) and environmental (e.g. conservation of ecosystems) benefits besides GHG emission reductions.

Below we briefly discuss key aspects for evaluating sustainable development impacts from projects in the VCM.

2.2.1 Using the SDG framework

The Agenda 2030 with its sustainable development goals (SDGs), adopted in 2015 by the United Nations Member States, is a very useful global framework for assessing the sustainable development impact of projects.³ The SDGs consist of 17 goals with 169 sub-targets (see Figure 1). The SDGs are universal, indivisible and

interlinked, meaning that the achievement of one development goal has impacts on other goals (United Nations 2015). From the SDG framework perspective, projects in the VCM are mainly about achieving progress on the SDG 13 with potential co benefits or trade-offs with other SDGs.

Figure 1: Overview of the SDGs



Source: <https://www.un.org/sustainabledevelopment/news/communications-material/>

³ Sustainable Development Goals of the United Nations: <https://sdgs.un.org/goals>

The SDG framework can therefore provide a systematic and standardized basis for assessing the sustainable development impacts of projects in the VCM, drawing on the nascent literature on addressing and analysing SDG interactions systematically. Nilsson et al. (2016) developed a concept of a 7-point ordinal scale to assess the interactions of SDGs. The scale includes seven interactions from the most positive (scoring of +3) to the most negative (scoring of -3). It describes the qualitative nature of the interaction and not the magnitude of the interaction. Weitz et al. (2018) and ICSU (2017) build on this concept and also apply this 7-point scale. Weitz et al. (2018) apply the scale in a cross-impact matrix and conduct a network analysis at national scale. For example, the results show that SDG target 13.2 (on integrating climate change measures into national policies, strategies and planning) has mostly a positive influence on other targets but also a negative impact on a few SDGs. ICSU (2017) tests the approach of Nilsson et al. (2016) with four selected SDGs. The 7 point scale was used to analyze key interactions at target level after a general analysis of the interaction at goal level.

While the assessment at goal level can provide a good rough estimate of the interaction, an analysis at target level provides a more refined approach and clearly allows for a more detailed analysis of SDG impacts (UBA 2020). It better reflects that there could be positive as well as negative interactions between targets under

one SDG goal. An assessment only at SDG goal level is not able to properly reflect this. However, an analysis at target level requires more effort and time.

Context matters in analyzing SDG impacts, e.g. the geographical and governance context or the time horizon (Nilsson et al. 2018). The context and the related sustainable development impact can vary considerably for different projects in the VCM. It is therefore preferable that SDG impacts are assessed for each individual project. However, some project types might generally have similar SDG impacts independently of the geographical context. For example, the use of efficient cookstoves is likely to always have a positive impact on (indoor) air pollution. If resources are limited, an alternative approach is therefore assessing the typical SDG impacts for well-defined project types. This approach is applied for selected project types in chapter 4 of this paper.

While it is valuable to assess the benefits of projects in the VCM beyond GHG emission mitigation, the simultaneous assessment of negative sustainable development impacts acknowledges the interlinked nature of the SDGs. The assessment of both positive and negative sustainable development impacts can provide valuable insights on local development issues and avoid significant trade-offs being overlooked. The SDG framework is again a useful framework for assessing these positive and negative interlinkages, as shown by Weitz et al. (2018).

2.2.2 Assessing impacts against a baseline

If the GHG emission reductions of a project in the VCM are evaluated, the GHG emissions from the project are compared to a baseline. For a fair and robust evaluation of the net sustainable development impacts, the comparison to a baseline scenario is also essential.

UBA (2020) and UNEP DTU and Gold Standard Foundation (2019) also determined the definition of a baseline scenario as an important criterion for the assessment of sustainable development impacts.

2.2.3 Selecting specific indicators

The evaluation of the impact on broad SDG goals or targets can be implemented or complemented by selecting indicators to determine specific impacts on sustainable development, such as in UBA (2020). The choice of indicators is context-specific and depends on the project (type). For example, the Gold Standard (GS)

provides a methodology to estimate and verify averted mortality and disability adjusted life years from cleaner household air.⁴ The methodology can be used to estimate the contribution of projects to SDG 3 (health and well-being) and is based on the exposure of people to fine particulate matter (PM_{2.5}).

⁴ https://globalgoals.goldstandard.org/411_hi_ics_methodology-to-estimate-and-verify-adalys-from-cleaner-household-air/

2.2.4 Applying qualitative and quantitative assessments

While a qualitative categorization of sustainable development impacts of activities or projects – e.g. the scale from Weitz et al. (2018) or certain online tools (see below) – can help to obtain an idea of the expected impacts, quantitative assessments are more robust when comparing a project against a baseline to appropriately estimate the net effect of a project and when monitoring sustainable development impacts. For example, a quantitative demonstration of sustainable development impacts could be carried out through measurement (reduction of indoor air pollution, number of jobs created or lost etc.) or through estimation (e.g. survey of locally affected stakeholders). Quantitative assessments (or indicators) are

not necessarily preferable to qualitative assessments; rather, they can complement each other.

So far, sustainable development impacts are identified mostly through expert-based assessment, such as a qualitative assessment of evidence in literature, judged by experts. While expert-based assessment might be at risk of an individual assessment bias, quantitative assessments might also be biased in the sense that the expert judgement is embedded in the underlying methodology leading to systemic bias. It is therefore important, for both qualitative and quantitative assessment, that the criteria and process applied are transparent and open to critique.

2.2.5 What tools are available for assessing SDG impacts?

There is a growing number of tools which facilitate assessment and visualization of SDG interactions for policymakers, project developers or alike: SDG Climate Action Nexus Tool,⁵ SDG Synergies tool,⁶ SDG Interaction Map⁷ and Climate Action Impact Tool.⁸

The Initiative for Climate Action Transparency (ICAT) developed a methodology for assessing the (sustainable) development impacts of policies and actions by using impact categories and indicators, including a quantitative approach with a baseline (ICAT 2020a). UBA (2020) analyzes how indicators would need to be designed for assessing sustainable development impacts in

the context of carbon market mechanisms like those of Article 6 of the Paris Agreement and what could be suitable indicators for certain impact categories. SDI (2020) also developed a guidance to help ex-ante assessment of the incorporation of sustainable development considerations within Article 6 activities. Drawing on the work from Nilsson et al. (2016) and Weitz et al. (2018), Oeko-Institut, WWF and EDF (2021) developed a methodology to assess the quality of carbon credits regarding their SDG impact.

Some carbon crediting programs and complementary standards have also developed methodologies for assessing sustainable development impacts (e.g. the GS⁹).

⁵ SCAN-Tool: https://ambitiontoaction.net/scan_tool/

⁶ SDG Synergies: <https://www.sdgsynergies.org>

⁷ <https://datablog.cde.unibe.ch/wp-content/uploads/2019/sdg/index.html>

⁸ UNDP CLIP Tool: <https://climateimpact.undp.org/#/>

⁹ <https://www.goldstandard.org/impact-quantification/certified-sdg-impacts> and <https://globalgoals.goldstandard.org/400-sdg-impact-quantification/>

3. Overview of approaches of selected programs and standards in the voluntary carbon market

This section provides an overview of how carbon crediting programs and complementary standards in the VCM approach environmental and social safeguards and sustainable development impacts. To this end, we compare and illustrate the approaches of three carbon crediting programs and two complementary standards that play an important role in the VCM.

This comparison includes the Clean Development Mechanism (CDM), the Gold Standard for the Global Goals (GS)¹⁰ and the Verified Carbon Standard (VCS). In addition, we evaluate two complementary standards that were developed by Verra to address specific (sustainable) development matters: the Sustainable Development Verified Impact Standard (SD VISTa) and the Climate, Community & Biodiversity Standards (CCBS). These standards are designed to be, and regularly are, used in combination with the VCS but can also be used in combination with other carbon crediting

programs. For example, a majority of VCS agriculture, forestry and other land use projects apply CCBS as well).

These programs and standards are compared in relation to key criteria for ensuring environmental and social safeguards and assessing sustainable development impacts. The criteria for the assessment are derived from a literature review of previous studies as summarized in chapter 2 (e.g. ERM (2020), Oeko-Institut, WWF and EDF (2021), UNEP DTU; Gold Standard Foundation (2019)). The assessments are based on information found in the programs' and standards' documents (as of October 2021) and other assessments in the literature (UBA 2020; UNEP DTU; Gold Standard Foundation 2019). The study thus assesses the programs' and standards' requirements and not the ways in which projects registered under these programs and standards apply these requirements.

3.1 Environmental and social safeguards

Most carbon crediting programs and standards have established requirements to avoid or manage adverse environmental or social impacts. This includes a range of measures, in particular approaches to identify and address the concerns of (locally) affected stakeholders. This is sometimes referred to as a “do-no-harm approach”. In the following, we assess specific aspects of environmental and social safeguards and not whether programs and standards generally adhere to a no-harm approach.

Based on the literature review in chapter 2, we select nine criteria for the evaluation and comparison of the programs and standards with regard to their environmental and social safeguards. Table 1 summarizes the assessment of each program and standard against these nine criteria. The colour coding indicates the degree to which a criterion is fulfilled.

Identifying potential negative social and environmental impacts is a key prerequisite for mitigating them. Most assessed programs and standards require project owners **to identify and mitigate negative social and environmental impacts** to some degree. The CDM limits the evaluation of impacts to environmental aspects and only requires the identification, but not the mitigation, of such impacts. However, if it is deemed necessary for a project to conduct an environmental impact assessment, the national laws for these assessments may require mitigating negative environmental impacts. An exception is afforestation and reforestation (A/R) projects for which both environmental and socio-economic impacts must be assessed and remedial measures to address these impacts must be undertaken. GS and VCS require the identifica-

tion and mitigation of adverse social, economic and environmental impacts for all types of projects. SD VISTa requires that all direct positive and negative consequences of projects shall be identified, monitored and reported. Any threats to the expected sustainable development benefits are required to be identified and mitigated. A project should only apply the SD VISTa if it has at least a net positive impact on either natural capital or ecosystem services or on stakeholders. For both categories, impacts shall be identified, and negative impacts mitigated. The provisions of the CCBS focus on climate, community and biodiversity. The CCBS require the identification and mitigation of social impacts (potential positive and negative impacts on the well-being of stakeholders) as well as environmental impacts, including biodiversity but also any negative impacts on special areas such as endangered or threatened species and protected areas. Like SD VISTa, CCBS additionally require identifying potential threats to the expected climate, community and biodiversity benefits. Noting that SD VISTa and CCBS are complementary standards, other social and environmental impacts might still be assessed when applied in conjunction with a carbon crediting program like the VCS.

In cases where projects may cause adverse impacts, **monitoring of any adverse impacts** after the implementation of the project is important for assessing the degree to which stakeholders are affected and whether any remedial measures are effective. The CDM and VCS do not require the monitoring of adverse impacts on an ongoing basis, whereas GS does so and SD VISTa and CCBS require it for their respective focus areas.

¹⁰ Note that the requirements under the “Gold Standard for the Global Goals” partially differ from those under the previous “Gold Standard”.

A **third-party validation** of the assessment of environmental and social impacts by the project owners can provide additional reassurance that adverse impacts have been appropriately identified. The CDM only prescribes that an independent auditor should determine whether the environmental impacts have been analyzed and if these impacts have been considered significant by the project developer or the host Party. If impacts were considered significant, the auditor shall validate whether the necessary environmental impact assessment has been conducted in accordance with procedures as required by the host Party and depending on the applicable national environmental impact assessment laws. The assessment is limited to environmental impacts. An exception is A/R projects for which the validation extends to both environmental and socio-economic impacts and includes a validation of the documentation provided by the project owners on their assessment. The other four carbon crediting programs and complementary standards always require third party validation of both environmental and social impacts prior to the registration of a project.

Grievance mechanisms enable affected stakeholders to raise complaints and potentially achieve compensation in relation to negative impacts. The CDM has no explicit program-related grievance mechanism in place and relies on mechanisms at national level. The other assessed programs and standards have their own dedicated grievance procedures in place.

Conducting **stakeholder consultations** is essential to allow for feedback, consider concerns and address input received. While global consultations enable feedback from a wide range of stakeholders, local stakeholder consultations aim to ensure that affected people can voice concerns. This requires that the consultations are conducted in a culturally appropriate and inclusive manner. All programs require projects to conduct stakeholder consultations. A key distinction is, however, the **timing** of such consultations. Stakeholder consultations can only inform the design of a project if they are conducted prior to the decision to invest in and implement the project (in the following referred to as “project implementation”). Under the CDM the timing of local stakeholder consultations is dependent on the rules of the host Party. If no host Party rules exist, the CDM prescribes that the consultation should be conducted prior to project implementation (referred as the “start date” under the CDM). The CDM provisions require a global stakeholder consultation prior to project implementation. The GS does not distinguish between local and global stakeholder consultations but sets out a single process for stakeholder consultations to be conducted before project implementation. The process must include one physical meeting of local stakeholders and one stakeholder feedback round (comments on the project documents from globally interested stakeholders via the website) lasting for at least two months. The VCS prescribes that both global and local stakeholder consultations shall be conducted prior to project implementation as they are intended “to inform the design of the project”. The global consultation is done via a public comment period. The SD VIS-

ta program requirements foresee local and global stakeholder consultations to be conducted before project design and during implementation. Globally interested stakeholders can provide feedback on the design via public comment periods at different stages, including before project implementation. CCBS require local stakeholder consultations to influence project design and implementation. They do not have a clear timing provision for public comments from global stakeholders. CCBS also allow consultations to be conducted at a later stage if the CCBS are applied to projects already under implementation.

Projects in the VCM could potentially have many different types of adverse impacts, such as damaging cultural heritage, adversely affecting health, undermining labour rights causing environmental hazards, or negatively affecting indigenous people. Requiring project owners to adhere to a **specific set of safeguards** is one important measure to mitigate this risk. The assessed programs and standards have different types of such safeguards in place. The CDM does not establish any specific safeguards that project owners must adhere to. It relies on relevant national law and requires that the host country confirms, in a letter of approval, that the project assists the country in achieving sustainable development. The GS has the most extensive list of specific safeguards, amongst others regarding labour rights and safety, health, environmental risks and hazards and indigenous people. SD VISTA has only specific safeguard provisions on working conditions, next to the more general provisions that projects must identify and limit negative impacts (see above). CCBS have more safeguards in place than SD VISTA, including the areas of well-being of community groups, vulnerable and marginalized groups, workers’ rights and biodiversity, but not in relation to, for example, cultural heritage, indigenous rights, hazardous wastes and materials and other environmental hazards. Although the VCS requires that there should be no net negative impacts or damage caused by projects, a specific list of safeguards is not provided.

Physical and economic displacement is a very severe and adverse potential impact of projects. Programs and standards therefore should have procedures in place to avoid this as much as possible and handle it appropriately if unavoidable. GS, SD VISTA and CCBS have provisions in place to avoid physical and economic displacement or to ensure that any displacement is managed through appropriate forms of legal protection and compensation. The CDM and the VCS do not have any explicit provisions in their program requirements to address physical or economic displacement.

Another particularly important aspect are the rights of **indigenous**, tribal or traditional people, especially in relation to land-use projects. One possible measure for protecting these rights is to require their informed **consent** to a project. Only the GS requires free, prior and informed consent if indigenous, tribal or traditional people are affected by a project. While the CDM has no such provision in place, the VCS, SD VISTA and CCBS require free, prior and informed consent if the property rights of indigenous people are affected.

Furthermore, the promotion and equal and fair treatment of women and all genders has a huge potential to progress sustainable development in many aspects (IPCC 2018). Most programs have no dedicated **gender policy**. Although SD VISTa and CCBS require projects to conduct stakeholder consultations in a gender-sensitive manner and to ban discrimination based on gender and require equal working opportunities for women, these programs have no overarching dedicated gender policy. The GS has an overarching dedicated gender policy.

Table 1: Comparison of provisions on environmental and social safeguards

No.	Criterion	CDM	GS	VCS	SD VISTa	CCBS
1	Identification and mitigation of negative impacts: Does the program or standard require project owners to identify potential negative environmental and social impacts, including any likely risks to local and affected stakeholders, and to mitigate them?	● except for A/R projects	●	●	●	●
2	Monitoring impacts: Does the program or standard require the monitoring of potential negative environmental and social impacts on an ongoing basis?	●	●	●	●	●
3	Third party validation: Does the program or standard require that the evaluation of environmental and social impacts by the project owners is validated by a third party prior to project registration?	●	●	●	●	●
4	Grievance: Does the program or standard have a grievance mechanism in place?	●	●	●	●	●
5	Timing of stakeholder consultations: Does the program or standard require that global and local stakeholder consultations are conducted prior to project implementation?	● depends ¹¹	● global & local	● global & local	● global & local	●
6	Specific safeguards: Does the program or standard have specific safeguards in place, e.g. in relation to cultural heritage, health, labour rights, indigenous people, environmental hazards?	●	●	●	●	●
7	Displacement: Does the program or standard have provisions to avoid physical and economic displacement or to ensure that any displacement is managed through appropriate forms of legal protection and compensation?	●	●	●	●	●
8	Consent of indigenous, tribal or traditional people: Does the program or standard require free, prior and informed consent if indigenous, tribal or traditional people are directly affected by a project?	●	●	● only for property rights	● only for property rights	● only for property rights
9	Gender policy: Does the program or standard have a dedicated gender policy?	●	●	●	●	●

Source: Own compilation

Colour coding indicates fulfillment of criterion:

- Green = fulfilled
- Yellow = partially fulfilled
- Red = not fulfilled

¹¹ This is required unless host country regulations require different timing.

Comparing the individual assessments in Table 1, the GS fulfills all criteria and has the most robust environmental and safeguards in place. The CDM meets only a few of the criteria and mostly relies on the authorization of projects by host Parties. The VCS has a mixed performance. SD VISTa and CCBS have requirements regarding negative impacts of their focus area (sustainable development and climate, community and biodiversity). An analysis

by ERM (2020) confirms our findings that the GS has the best safeguards in place while the safeguards for VCS projects can be enhanced when used in combination with a complementary standard such as SD VISTa or CCBS.

It should be noted, however, that this combination still has some gaps concerning environmental and social safeguards according to our analysis.

3.2 Evaluation of sustainable development impacts of projects

In recent years, many carbon crediting programs and complementary standards have established provisions for assessing the sustainable development impacts of projects. We select here ten criteria for the evaluation and comparison of programs and standards regarding their approaches to assessing the sustainable development impacts of projects. For this short study, we focus on criteria that we deem particularly important for assessing sustainable development impacts and in which the programs and standards differ. The selection is based on the literature review in chapter 2 and draws on previous studies such as UNEP DTU and Gold Standard Foundation (2019). Table 2 summarizes the assessment of each program or standard against the ten criteria. The colour coding indicates to which degree a criterion is fulfilled. Among the five evaluated programs and standards, the VCS does not require the assessment of sustainable development impacts at all and thus fulfils none of the criteria. Verra developed the complementary standards SD VISTa and CCBS for this purpose. The VCS is therefore not included in the assessment in Table 2.

Firstly, a clear and structured assessment of the sustainable development impacts of a project can provide carbon credit buyers with comparable information across projects. From the four assessed programs and standards, all **assess** sustainable development **impacts of projects in a structured way**, although to different extents and by using different approaches. The CDM SD tool only provides a checklist on thematic impact areas and is voluntary. The CDM generally requires that the host country confirms, in a letter of approval, that the project assists the country in achieving sustainable development. The CCBS guidelines do not require an assessment of all sustainable development impacts, but benefits to climate, community and biodiversity of land-use projects must be thoroughly assessed as this is the main purpose of this complementary standard. Both GS and SD VISTa require project owners to assess sustainable development impacts in a structured manner. The GS requires that projects demonstrate the contribution to a minimum of three SDGs (SDG 13 included). The GS provides three options in this regard: project developers can develop their own approach with indicators from the official

SDG targets, they can use a GS approved methodology, or they can use a GS SDG impact tool,¹² which will be mandatory from March 2022 onwards. The GS has pre-defined methodologies for certain project types. The SD VISTa also provides several options for assessing sustainable development impacts: project owners can either develop their own methodology through a defined procedure or follow pre-defined methodologies (so far only available for SDG 3 and SDG 13).

Although the **SDGs** represent a useful global framework (chapter 2), only two of the assessed programs and standards use the SDGs in their assessment of sustainable development impacts. Only GS and SD VISTa provide the option to assess sustainable development impact through the SDG framework, requiring an assessment at SDG target level. The CDM SD tool and CCBS do not use the SDG framework for their assessment but group their assessment in thematic areas. The CDM SD tool structures the questionnaire in environmental, social and economic categories. The CCBS cluster the whole assessment according the benefits on climate, community and biodiversity.

For carbon credit buyers it is important to understand both **positive and negative impacts** of a project. The goal should be to create a net benefit in terms of sustainable development and to understand the local interlinkage of development issues and the implementation of the project. The focus of the programs and standards evaluated here is clearly on assessing and rewarding co-benefits of projects. Negative impacts of projects are only considered in terms of environmental and social safeguards (compare section 3.1). The available literature on SDG interactions suggests, however, that most projects are likely to have both positive and negative sustainable development impacts and may thus involve trade-offs. Provisions of safeguards are not the same as the assessment of negative sustainable development impacts, as they will not allow buyers to understand in what areas and to what a degree a project involves trade-offs. There is a risk that projects which have sustainable development co-benefits for the achievement of some SDGs might have significant trade-offs or even adverse impacts on the progress of some SDGs.

¹² <https://globalgoals.goldstandard.org/430-iq-sdg-impact-tool/>

As for GHG emissions reductions, sustainable development impacts should be compared to a **baseline** to determine the net effect of the project. GS, SD VISTa and CCBS require the use of a baseline or reference scenario for the determination of the (net) sustainable development impact. The CCBS, for example, requires evaluating land-use scenarios with and without the project regarding their climate, community and biodiversity benefits respectively. The CDM SD tool does not require comparison with a baseline scenario.

As for environmental and social safeguards, a **third-party validation** of sustainable development impacts can provide a higher assurance to carbon credit buyers. The GS, SD VISTa and CCBS require the validation of the impact assessment by a third party, where the CDM does not require that findings in the CDM SD tool are validated.

A **quantitative assessment** of impacts is useful for the comparison of the project impact with a baseline. The CDM SD tool assesses sustainable development impacts in a rather qualitative manner, in terms of the extent of the impact, and very little guidance is given on how to assess the categories listed in the checklist. GS and SD VISTa require qualitative and quantitative assessments of sustainable development impacts, often specifying which parameters or indicators need to be assessed qualitatively and which

ones quantitatively. For example, the GS guidance on clean water benefits requires the qualitative assessment of the human right to access clean water, but also the measurement of quantitative parameters like litres of waters provided for drinking or number of people with access to clean water.¹³ The CCBS also require qualitative and quantitative assessments, but again only for the program's focus on climate, community and biodiversity.

In the same manner as the level of GHG emission reductions might change over time or might even be reversed, sustainable development impacts (also negative ones) might change throughout the project lifetime. While certain safeguards may avert some negative changes, **monitoring** of sustainable development impacts can provide a higher assurance of the actual impacts and can provide incentives for project owners to take measures to continuously deliver positive impacts and mitigate negative impacts. GS, SD VISTa and CCBS provide guidance on monitoring of sustainable development impacts. Their provisions require mandatory monitoring. The CCBS guidance only refers to mandatory monitoring of climate, community and biodiversity benefits. The CDM foresees only a voluntary ex-post monitoring of the sustainable development impacts and provides little guidance on the design of the monitoring plane.

¹³ https://globalgoals.goldstandard.org/425_wbcs_wash_water-access-and-water-sanitation-and-hygiene-wash-projects/

Table 2: Comparison of the provision of sustainable development impact assessments

No.	Criterion	CDM SD Tool	GS	SD VISTa	CCBS
1	Does the program or standard provide methodologies to assess sustainable development impacts of projects (ex-ante) in a structured way ?	● but only checklist	●	●	● only CCBS specific benefits
2	If so, is the assessment mandatory ?	●	●	●	● only CCBS specific benefits
3	Do the program or standard requirements/ methodologies refer to the SDG framework?	●	●	●	●
4	If so, is the SDG impact assessed at SDG goal or target level ?	○	● goal & target	● target	○
5	Does the assessment include both positive and negative sustainable development impacts?	● focus on positive	● focus on positive	● focus on positive	● focus on positive
6	Does the program or standard require a comparison of sustainable development impacts with a baseline or reference scenario?	●	●	●	●
7	Does the program or standard require a quantitative or qualitative assessment of sustainable development impacts?	● qualitative	● qualitative and quantitative	● qualitative and quantitative	● qualitative and quantitative
8	Does the program or standard require that the sustainable development assessment is validated by a third party?	●	●	●	●
9	Does the program or standard provide guidance on how any ex-post monitoring of sustainable development impacts should be conducted?	●	●	●	● only CCBS specific benefits
10	If so, is the ex-post monitoring of SD impacts mandatory ?	●	●	●	●

Source: Own compilation

Colour coding indicates fulfillment of criterion:

- Green = fulfilled
- Yellow = partially fulfilled
- Red = not fulfilled
- White = not applicable

To summarize, the four evaluated programs and standards perform differently regarding the evaluation of sustainable development impacts. The current CDM SD Tool can still only be considered as a bare minimum of sustainable development assessment. The SD VISTa provides good guidance on sustainable development impact assessment as a complementary standard in the VCM. The GS also performs well on our chosen indicators. It requires the contribution to the Agenda 2030 alongside oth-

er basic requirements. The CCBS cannot be applied to generally assess sustainable development impacts of projects because the focus is on land-use projects.

However, even land-use projects might have wider sustainable development impacts than only on climate, community and biodiversity impacts, as mainly assessed by the CCBS (for example other environmental benefits like increased water retention of afforested areas).

4. Typical sustainable development impacts of selected project types

To offer an example of the types of sustainable development impacts that projects in the VCM can have, we use available literature and online tools (see also chapter 2) in this section to illustrate the potential impacts of two selected project types. As sustainable development impacts are highly contextual, this assessment at project type level can only illustrate typical impacts.

To illustrate the impacts, we draw on the discussion of methodological aspects in section 2.2 and use here a simplified approach, drawing on the work by Weitz et al. (2018), and the methodology developed by Oeko-Institut, WWF and EDF (2021). In doing so, we estimate whether the two project types have a positive or negative influence on specific SDGs. Further work might explore the approach developed and used in Oeko-Institut, WWF and EDF (2021) in a more structured manner by applying it to several project types using the scale for every SDG target. For an assessment at project type level, a thorough (ex-ante) classification of project types in the VCM would be necessary.

Improved cookstoves

The use of improved cookstoves is a popular project type in the VCM. Improved cookstoves are typically more efficient than traditional biomass cookstoves in terms of fuels use, thereby reducing CO₂ emissions. The increased efficiency and improved design compared to traditional cookstoves also help to reduce air pollutants like carbon monoxide and particulate matter. This can bring health benefits: Schilmann et al. (2019) show that exposure to fine particulate matter (PM_{2.5}) is reduced by about 50% if households used mainly improved cookstoves.

A more efficient cookstove can result in further benefits beyond reducing air pollution and climate change mitigation. The use of improved cookstoves can reduce deforestation, result in benefits for households by reducing time, money and labour required for gathering fuel (Shankar et al. 2014). However, it cannot be guaranteed that these identified benefits will materialize in every improved cookstove project. To obtain and maintain these positive impacts, projects need to be designed and implemented correctly, e.g. through a correct and consistent use of improved cookstoves after the project start (Shankar et al. 2014).

Using the online SDG SCAN-tool,¹⁴ we here identify several potential SDG impacts from a typical improved cookstove project. First and foremost, the adoption of improved cookstoves contributes to target 3.2 (By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being)¹⁵ of SDG 3 (good

health and well-being) because it reduces (indoor) air pollution. This is a very strong and positive impact. An improved cookstove project also has a positive influence on SDG 7 (affordable and clean energy), due to an increase in energy efficiency (target 7.3) and access to sustainable energy services (target 7.1.). Additionally, the use of improved cookstoves might contribute to SDG 11 (sustainable cities and communities) because it reduces air pollution in cities, reduces local deforestation (as less fuel wood is collected). SDG 8 (decent work and economic growth) might be supported because the use of improved cookstoves might increase resource efficiency through the decoupling of growth/energy consumption and environmental degradation. SDG 12 (responsible consumption and production) might be supported through an increase in resource efficiency through more energy efficient cookstoves (target 12.2) and through the reduction of air pollution through reduced fuel consumption (target 12.4). However, if fuel wood is collected from endangered forest habitats, like mangroves, the project might, for example, have a net negative impact on SDG 14 (life below water) even though the collection of fuel wood from mangroves is reduced. An analysis by Vivid Economics (2019) concluded that improved cookstoves contribute to SDGs 1, 3, 4, 5, 7, 8, 13 and 15. The difference to the analysis with the SDG SCAN-tool are the contributions to SDG 1 (no poverty) and 4 (quality education). Vivid Economics (2019) assume that households save money if they have to buy less fuel through the increased efficiency of the cookstoves, and that children have more time for school if they need to collect less fuel wood. This, however, depends on what kind of households use these improved cookstoves and who is collecting the fuel wood. This demonstrates the limits of evaluating sustainable development impacts at project type level instead of at the individual project.

Afforestation and reforestation

Besides the desired effect for climate change mitigation, afforestation can increase soil water infiltration capacity and thereby influence groundwater discharge, reduce soil erosion and run-off (Ilstedt et al. 2007). An overview by IIED (2021) illustrates the local development outcomes from nature-based solutions. It found that participatory reforestation of previously degraded lands can decrease soil erosion and flooding while also supporting local livelihoods through forest resources. However, fast-growing tree species could also negatively affect the hydrological cycle and, by increasing the nutrient input, could cause ecological damage (IPCC 2018).

¹⁴ https://ambitiontoaction.net/scan_tool/

¹⁵ <https://sdgs.un.org/goals>

Using again the online SDG SCAN-tool,¹⁶ we identify several positive contributions to SDGs by a typical afforestation project on land (not mangroves). We assume that the area is not afforested on agricultural land and that the project does not include re-settlement activities. Otherwise, there could be negative SDG impacts, for example on SDG 1 (no poverty) or SDG 2 (zero hunger). An afforestation project might positively impact SDG 6 (clean water and sanitation) because it can improve water quality and reduce run-off and erosion (targets 6.3 and 6.6). The project will increase afforestation globally (target 15.2), might increase biodiversity (target 15.9 and 15.1) and might have a positive impact on water and soil retention (targets 15.3, 15.9). Furthermore, the project might po-

sitively impact SDG 12 (responsible consumption and production) through sustainable management of natural resources due to sustainable subsistence use of the afforested area (target 12.2). If jobs are created for the afforestation and conservation/maintenance of the afforested area, then the project would also contribute to SDG 8 (decent work and economic growth). It should be noted that the identification of SDG impacts with the online tool is to some degree subjective as many assumptions about the project have to be made. Especially for afforestation projects, the context and the exact project design (e.g. location or species) matter greatly, which limits the identification of typical sustainable development outcomes on the project type level.

¹⁶ https://ambitiontoaction.net/scan_tool/

5. Conclusion and recommendations

The brief analysis offered in this paper shows that the carbon crediting programs as well as complementary standards differ in how they ensure environmental and social safeguards and assess sustainable development impacts.

Overall, the CDM has very few safeguards in place. The VCS has some provisions on environmental and social safeguards but no provisions regarding sustainable development impacts. We therefore recommend that these carbon crediting programs be used in combination with complementary standards. For example, the CDM is often used in combination with the GS and the VCS can be combined with the SD VISTA or the CCBS. If carbon credits from the CDM and VCS are purchased without applying a complementary standard, particular caution and due diligence may be applied with respect to environmental and social safeguards. Based on our selected criteria, the GS has the most robust safeguards in place and also the most detailed guidance on assessing positive sustainable development impacts.

The analysis offered in this paper also reveals several areas in which carbon crediting programs and complementary standards can further improve their requirements. These include in particular:

- **Evaluation of potential negative sustainable development impacts:** A key weakness of all evaluated programs and standards is that they focus on the evaluation or attestation of positive sustainable development impacts. Understanding the potential trade-offs of climate change mitigation projects is, however, critical for mobilizing the synergies between climate change mitigation and other sustainable development goals. We recommend that carbon crediting programs and complementary standards require project owners to assess both positive and negative sustainable development impacts.
- **Application of the SDG framework:** Using the SDG framework, and existing tools to assess SDG interactions, can help to analyze impacts in a systematic and comparable manner. We recommend that carbon crediting programs and complementary standards use this commonly accepted framework and draw on the existing tools.
- **Monitoring of possible adverse impacts as well as positive impacts:** Monitoring on an ongoing basis the degree to which stakeholders are affected, whether any remedial measures are effective, and whether the project continues to deliver the expected (net positive) sustainable development impacts, provides incentives for project owners to continue to implement best practices and provides higher

assurance to buyers that goals are actually achieved. We therefore recommend that carbon crediting programs and complementary standards require ongoing monitoring of the project's impacts, at least for project types with higher environmental and social risks.

- **Elaboration of specific safeguards:** Many carbon crediting programs and complementary standards could introduce or strengthen specific safeguards. This holds especially for requirements on prior, free and informed consent of indigenous people, an overarching gender policy, and safeguards for specific areas (e.g. labour rights, biodiversity).

Buyers of carbon credits should be aware of these current limitations. They can address these shortcomings in several ways. Firstly, they can buy carbon credits issued under carbon crediting programs, or combinations of programs and complementary standards, that provide more rigorous requirements. Secondly, they could conduct their own due diligence and assess key aspects for specific projects. They could, for example, pay attention to the timing of the conducted stakeholder consultation when choosing a certain project or require projects to use the SDG framework to transparently evaluate both positive and negative impacts. Additionally, buyers can make use of various online tools (section 2.2.5). These can help to obtain a rough understanding of what sustainable development impacts can be expected. However, sustainable development impacts are highly contextual and might thus vary in each case. There is currently no tool available to compare the impacts of different projects. Future work might explore producing a guidance document on or generalized assessment of typical sustainable development impacts of project types that can help carbon credit buyers to develop an idea of the expected impact of a project if the program or standard does not provide a thorough assessment.

Finally, it is important to note that environmental and social safeguards and sustainable development benefits are only one aspect of the quality of carbon credits. To ensure an overall high quality of carbon credits, buyers of carbon credits need to consider a range of other quality features, including that the mitigation activity is additional, that the emission reductions are robustly quantified, that potential non-permanence is addressed, and that emission reductions are not double counted. Several tools and websites aim to help buyers to navigate this complex landscape.¹⁷ Further research will be needed to improve and amend these tools based on the growing knowledge in this field.

¹⁷ See, for example: <https://www.offsetguide.org/>; <https://carboncreditquality.org/>; https://www.umweltbundesamt.de/sites/default/files/medien/376/publikationen/ratgeber_freiwillige_co2_kompensation_final_internet.pdf; <https://www.umweltbundesamt.de/umwelttipps-fuer-den-alltag/mobilitaet/kompensation-von-treibhausgasemissionen#hintergrund>

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