Avoided Unplanned Deforestation

July 2024
Version 1.0

Key CCQI findings

Forests significantly contribute to mitigating climate change by storing large amounts of CO_2, while also contributing to the preservation of biodiversity. Projects avoiding unplanned deforestation aim to maintain high forest carbon stocks, which is essential for transitioning to net zero emissions. Sustainable development benefits depend on the activities of the individual project.

Most projects are unlikely to be financially attractive without carbon credits. While this signals low non-additionality risks, the low additionality score reflects that the Verified Carbon Standard (VCS) allows projects to be listed three years after their start date and approves activities that are legally mandated but not systematically enforced.

The older VCS methodologies are likely to lead to a very large overestimation of emission reductions. The new methodology VM0048 considerably reduces this risk but could still lead to significant overestimation.

As forests are in jeopardy of being destroyed or degraded, non-permanence risks are material. While the VCS requires these risks to be assessed and reversals to be compensated, the minimum reporting period is only 20 years for projects registered before 2024.

What is this project type about?

Activities to avoid deforestation that is driven by multiple, mostly local agents. The deforestation occurs as a result of socioeconomic forces, such as subsistence agriculture of local communities, encroaching roads, or illegal logging. In addition, forest degradation may be reduced. Projects usually combine different activities to reduce deforestation, such as improving agricultural practices of local communities, providing alternative livelihoods, instituting patrols or assisting with land tenure reform. The activities are implemented in a geographical area defined at project level, not at jurisdictional level. The project type reduces emissions by avoiding the loss of forest carbon stocks.

Carbon market background

Among the major global carbon crediting programs, only the VCS offers this project type. It is often registered under the acronym REDD or REDD+, referring to the UNFCCC framework for reducing emissions from deforestation and forest degradation. The main project types under the REDD umbrella – Avoided Unplanned Deforestation and Avoided Planned Deforestation – collectively have the largest share of carbon credits in the voluntary carbon market.[1]

[1] **Source:** University of California, Berkley (2024) Voluntary Registry Offset database, v11

CCQI score summary

Additionality/Vulnerability
1 — **1.9**

Quantification Methodologies

1 VM0006 Version 2.2

1 VM0007 Version 1.7

1 VM0009 Version 3.0

1 VM0015 Version 1.2

1 VM0048 Version 1.0

Non-permanence
1

Compatibility with net zero
5

SDG Impacts
1 — **2**

Double issuance due to indirect overlaps between projects
1 — **5**

Why do I see a range of scores for some quality objectives?

In these cases, scores differ between carbon crediting programs, quantification methodologies, countries or other circumstances. The range represents the spectrum that applies for all possible combinations.
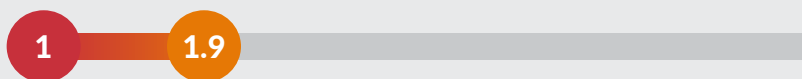
CCQI resources

- CCQI Methodology & Definitions
- FAQ on our assessments
- Directory of assessment sheets

www.carboncreditquality.org

This factsheet was commissioned by Foundation Development and Climate Alliance.

FOUNDATION Development and Climate Alliance

Main factors driving project type scores

	1 1.9
Additionality/Vulnerability	**Avoided unplanned deforestation projects are likely not financially attractive without carbon credits, but there is substantial variability, depending on the project activity**

Here we assess the likelihood that the mitigation activity typically would not have taken place in the absence of the added incentive created by the carbon credits (additionality).

In cases where the market for the type of carbon credit has collapsed (e.g., CDM for some project types), we assess whether the mitigation activity typically is at risk of discontinuing greenhouse gas abatement without ongoing revenues from carbon credits (vulnerability).

How do other project types score?

1   4.4

Graph shows the range of scores for all project types assessed by CCQI.

Looking at projects from a financial attractiveness perspective indicates that the risk of non-additionality is likely low but varies between projects. The projects come with some implementation costs, which vary substantially depending on the activities that are implemented. Moreover, there are opportunity costs for the local population, as they forego revenues from subsistence agriculture and illegal logging. However, they are not necessarily factored into the project developer's decision to implement a project.

Activities such as capacity building workshops or trainings for local communities do not generate revenues for project owners. Other activities, such as supporting non-timber forest products or forest patrols in commercial timber plantations may be financially attractive for project owners, even without revenues from carbon credits.

Moreover, activities to reduce deforestation may already be supported through various financing channels besides carbon markets, such as international development assistance. This might influence the likelihood of non-additionality further.

However, there might be cases in which baseline activities are not in compliance with local laws or in which legal requirements mandate some of the project activities (e.g., laws mandating forest patrols in the project area). The VCS requires project developers to demonstrate that this is not the case but accepts registrations for projects which can demonstrate that such requirements are not systematically enforced. Such exceptions entail a risk of non-additionality as they are more vulnerable to error when compared with provisions that exclude all legally required activities from registration.
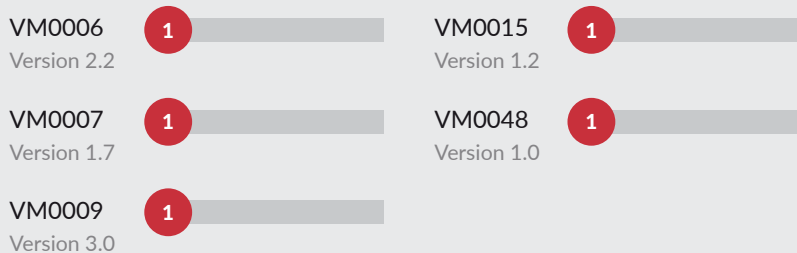
The VCS further allows listing projects three years after their start date. This introduces a further non-additionality risk as it is less plausible, that carbon credits were considered when making the investment decision for the project.

There is no market that has collapsed for avoided deforestation projects. Therefore, there is no score for vulnerability for this project type.
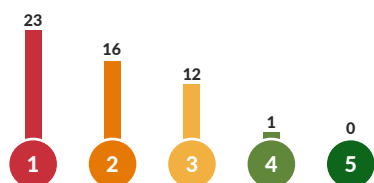
Quantification Methodologies

VM0006		VM0015	
Version 2.2	**1**	Version 1.2	**1**
VM0007		VM0048	
Version 1.7	**1**	Version 1.0	**1**
VM0009			
Version 3.0	**1**		

Avoided unplanned deforestation projects have a high risk that emission reductions are vastly overestimated. The new methodology VM0048 considerably reduces this risk but could still lead to significant overestimation.

Carbon crediting programs adopt methodologies for calculating the emission impact of a project. The methodologies prescribe, inter alia, equations, data sources and monitoring approaches. Here we assess whether quantification methodologies mitigate overestimation risks by applying conservative approaches for estimating emission reductions.

How do methodologies for other project types score?

23
16
12
1
0
1 2 3 4 5

Graph shows the score distribution for quantification methodologies assessed by CCQI.

**Inflated baselines are the largest risk of overestimation**

Establishing baselines for avoided deforestation projects is associated with very large uncertainty. The rate of future deforestation in a particular forest area depends on many unknown factors, such as changes in polices or in economic and social conditions. Uncertainty in the underlying (historical) data used to establish baseline deforestation rates is another important source of uncertainty. This poses the risk that the calculated emission reductions could only be partially attributable to the project intervention and could partially be an artefact of wrongly set baselines.

All older VCS methodologies assessed by CCQI (VM0006, VM0007, VM0009, VM0015) assume that historical deforestation rates or trends observed in a reference area will continue in the future. The methodologies provide considerable flexibility in defining these reference regions. This holds for their location, the duration of the historical reference period, and how historical data is extrapolated to the future. Figure 1 provides an example of a reference region used to estimate the rate of deforestation in the baseline.

Figure 1: Project area and reference region used for estimating the rate of baseline deforestation for the project VCS844
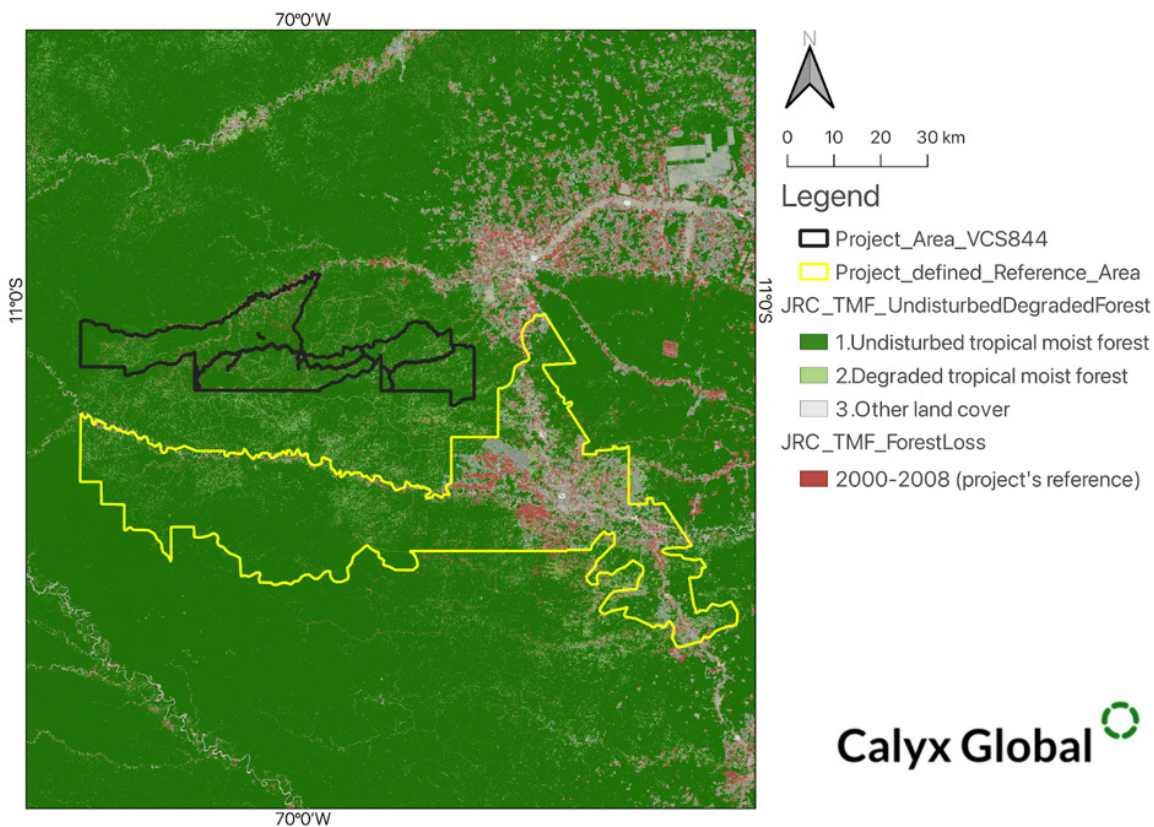
Note: Figure provided by Calyx Global. The reference region (yellow lines) includes an area with roads and settlements in which significant deforestation has been observed in the reference period. The project area (black lines) is further away from roads and is thus likely to face much lower deforestation risks.

The available literature suggests that baseline deforestation rates derived from these older VCS methodologies have likely been overestimated by several hundred percent on average.[2] Rating agencies that evaluated individual projects come to similar conclusions. For example, an evaluation of 73 projects concluded that only four projects estimated a conservative baseline.[3]

In November 2023, Verra released the new methodology VM0048 which will replace the four older methodologies. The new methodology takes an innovative approach towards baseline setting: instead of relying on reference regions, the methodology determines baseline deforestation for an entire jurisdiction and allocates deforestation risk to pixels across the entire jurisdiction. A second important change is that baseline deforestation rates are no longer determined by the project developers but provided by Verra. This effectively eliminates the largest overestimation risk of the older methodologies: project developers cannot construct baselines

[2] See for example: West et al. 2023; Guizar-Coutiño et al. 2022; Haya et al. 2023.

[3] Calyx Global 2023

based on arbitrary reference regions. Despite these important and significant improvements, we identify several integrity risks with baselines established through VM0048.

The methodology uses the average deforestation rates observed in a jurisdiction over the past ten years to predict how deforestation will continue in the next six years. This baseline is updated every six years and thus captures any longer-term trends, but only with a delay, as shown in Figure 2. If deforestation declines over time, as observed in some jurisdictions, the calculated baseline (red line) is systematically higher than the actual baseline (black line). The jurisdictional baseline would be conservative if deforestation forever continued to increase over time. Deforestation is indeed still increasing in several jurisdictions. However, at some point in the future, deforestation will always decline and be halted – at the latest when all forests are lost. Moreover, many governments and non-governmental actors have committed to slowing and halting deforestation by 2030. Though countries are not on track to achieve this target, the ongoing efforts could slow deforestation in many jurisdictions in the future.

Figure 2: Implications of using historical data to establish the jurisdictional baseline deforestation rates if deforestation is declining over time
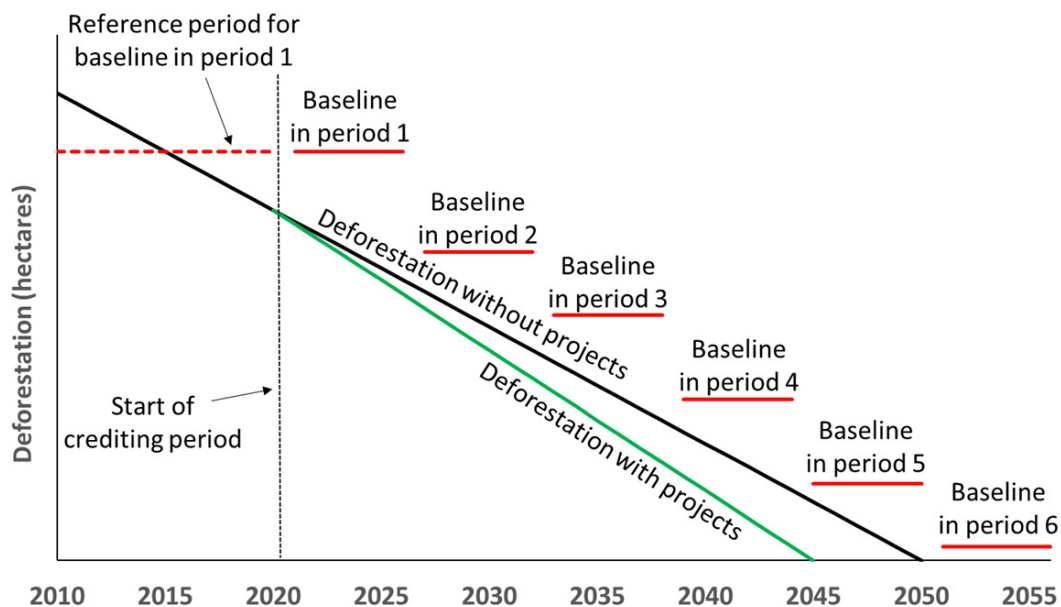
Source: Own illustration. In this example, we assume that without carbon crediting projects deforestation in the jurisdiction would decrease linearly and would be halted by 2050 (black line). We further assume that the implementation of carbon crediting projects brings this decline forward by five years (green line). The baseline for the period 2021 to 2026 (red line) is determined based on the average deforestation observed in the period 2011 to 2020 (red dotted line). Due to the decline in deforestation levels, the baseline is significantly higher than the actual deforestation levels without the projects (black line). This also holds for subsequent baseline periods.

An important improvement in VM0048 is that uncertainty in the underlying data is accounted for more comprehensively than in the previous methodologies. But the methodology does not account for all important sources of uncertainty. Uncertainty from short-term changes in political, economic or social conditions or uncertainty in the model regarding the allocation of deforestation across the jurisdiction is not reflected in the quantification of emission reductions. These 'random uncertainties' can lead to a large overestimation of baseline emissions for some projects, and large underestimation for others. One might argue that underestimation in some projects would compensate for overestimation in other projects. In practice, however, large uncertainties can lead to selection bias or adverse selection, in particular if paired with information asymmetry. Projects with an overestimated baseline have a competitive advantage because they receive more carbon credits, while projects with underestimated baselines may not move forward or fail as they do not receive sufficient credits to cover their costs. This can lead to more carbon credits being generated from projects with overestimated baselines, which would thereby undermine the integrity across the portfolio of projects. There is also a risk that project proponents select project areas for which baselines are overestimated as they may have knowledge about the area that is not graspable by the models used by Verra to predict deforestation risk. The methodology also allows projects to retroactively register areas in which past deforestation has been lower than estimated by Verra, or to exclude certain project areas after registration. Another source of potential overestimation is that the methodology determines carbon stocks at the start of each six-year baseline period and does not account for degradation that may occur during this period.

The extent to which these matters will lead to an overestimation of emission reductions is difficult to judge as the methodology has not yet been applied by projects. The integrity risks also depend on how much a project reduces emissions. For example, if a project reduces emissions only by 10%, a baseline that is inflated by 20% would mean that emission reductions would be overestimated by 300%. By contrast, if the project reduces emissions by 80%, the overestimation only amounts to 25%. In addition to addressing the uncertainty in baselines, it is therefore

important that projects have a strong and lasting impact on deforestation levels.

Leakage is likely to be underestimated

The main leakage risk for avoided deforestation projects arises from potential increases in deforestation elsewhere. This may occur due to "activity shifting," which is the relocation of deforestation drivers to surrounding areas, or "market leakage," which occurs when avoiding deforestation alters market conditions by reducing the production of a traded commodity relative to the baseline, thereby creating incentives for others to intensify deforestation. Both forms of leakage are methodologically difficult to estimate.

The VCS methodologies use a variety of approaches to account for leakage. All assessed VCS methodologies account for leakage from activity shifting and market effects, except for VM0015 which only considers leakage from activity shifting. To estimate activity shifting, the methodologies account for increases in deforestation rates in designated leakage zones around the project, also referred to as "leakage belts". To account for market leakage, the methodologies use default leakage rates.

In practice, about 60% of the existing projects, covering both avoided planned and unplanned deforestation, have not applied any leakage deductions. When projects apply leakage deductions, they are relatively low and depart from the values calculated in the relevant research.[4] These values do not match the literature, which suggests that in particular market leakage could be considerably higher. One reason for this might be that the methodologies often provide flexibility to project proponents on how to determine leakage. In some instances, the assumptions used in the leakage calculation are not consistent with the assumptions used to determine baseline emissions. None of the assessed methodologies account for international leakage, though such leakage is likely to occur. Overall, leakage effects are likely to be underestimated with all the methodologies, though the risk is lower for avoided unplanned deforestation than for avoided planned deforestation projects.

[5] Haya et al. 2023; Calyx Global 2023

Outdated data and flexibility in quantifying carbon stocks

Under all methodologies, some data sources to quantify carbon stocks are outdated. For example, all methodologies allow values of 49% or 50% to be used for the fraction of carbon in forest biomass. More recent research suggests that these values are too high, particularly for tropical trees.[5] The methodologies also provide considerable flexibility on how to determine some parameters, such as aboveground and belowground biomass volumes. This creates the risk that project proponents pick favourable values that lead to an overestimation of emission reductions. For example, one study evaluated a sample of projects and found that picking favourable parameters for biomass estimates led to an overestimation of emission reductions by 23% to 30%.[6]

Lack of clarity

The methodologies also lack clarity. To date, they have not provided guidance on how forest, deforestation and forest degradation should be defined in the context of ecosystems and landscapes of the project or jurisdiction. Guidance on the inclusion or exclusion of emission sources and carbon pools is not always clear. Sometimes the guidance in the methodologies is inconsistent with guidance provided in underlying modules or tools.

Overall assessment

Overall, we find that emission reductions are likely to be overestimated by more than 30% under all VCS methodologies. The degree and risk of overestimation is much larger under the older methodologies (VM0006, VM0007, VM0009 and VM0015), with which overestimation is likely to amount to several hundred percentage points on average. VM0048 uses a novel approach towards baseline determination that considerably reduces this risk, but the methodology could still lead to significant overestimation. Verra announced several updates to the modules and tools used under VM0048 and informed CCQI that several issues identified in our assessments will be considered as part of these revisions.

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[5] Martin et al. 2018
[6] Haya et al. 2023

Non-permanence

This project type has material non-permanence risks, which are addressed through risk assessments and a pooled buffer reserve. However, for projects registered before 2024, the minimum requirement for monitoring reversals is only 20 years.

Non-permanence means that emission reductions or removals achieved by a project are later reversed e.g., due to a natural disaster or project mismanagement.

We assess whether the project type has significant non-permanence risks.

For project types that do have significant non-permanence risks we assess the robustness of carbon crediting program provisions to address these risks.

How do other project types score?

1 —————————— 5

Graph shows the range of scores for all project types assessed by CCQI.

The project type "avoided unplanned deforestation" has a material non-permanence risk: forests are in jeopardy of being destroyed or degraded, and thus releasing the stored carbon back into the atmosphere, e.g., in cases of land conversion or wildfires.

The VCS has a robust approach for avoiding or reducing non-permanence risks as it requires that a non-permanence risk assessment is conducted according to a pre-defined methodology. It further has provisions in place that incentivize the project owners to avoid reversals. These include, for instance, requiring legal titles to the land and/or relevant carbon reservoirs on the land, updating the risk assessment in the case of reversals, and assigning responsibility for compensating for intentional reversals to project owners.

However, when it comes to accounting and compensating for reversals, the program lacks sufficiently robust provisions. On the one hand, the program requires that both intentional and unintentional reversals are compensated and deploys a pooled buffer reserve, for which the share of carbon credits set aside is determined by the risk assessment. On the other hand, for projects registered before 1 January 2024, project owners must monitor and compensate for reversals for a minimum period of only 20 years, which is not sufficient for making robust compensation claims, considering that CO_2 can remain in the atmosphere for several hundred years. Under its updated requirements, applicable for projects registering with the VCS from on 1 January 2024, project owners must monitor and compensate for reversals for a minimum period of 40 years.

Compatibility with net zero

5

Halting deforestation globally is essential for the transition towards net zero emissions

Here we assess whether the technology or practices applied by the project type facilitate the transition towards net zero emisisons.

How do other project types score?

3 ———— **5**

Graph shows the range of scores for all project types assessed by CCQI.

Avoided unplanned deforestation projects aim to maintain carbon stocks at high levels. Carbon stocks have an important function in offsetting residual emissions for which there is no mitigation option. They are therefore an important building block for achieving global net zero emissions. This project type is therefore assigned the best possible CCQI rating for this criterion.

SDG Impacts

1 — **2**

Extra care required in project design when working with vulnerable local communities

Here we assess whether the project type contributes to the achievement of the Sustainable Development Goals (SDGs).

Note that projects implemented in Small Island Developing States (SIDS) and Least Developed Countries (LDCs) receive an upgrade to the score by one point due to the special circumstances of these countries.

How do other project types score?

1 ———— **5**

Graph shows the range of scores for all project types assessed by CCQI.

Typically, a range of activities is implemented under this project type, which can lead to varying sustainable development impacts for each individual project.

This project type contributes to achieving SDG 6 (clean water and sanitation) and SDG 15 (life on land). Project activities likely contribute to reducing flood risks in the project area as healthy forests have a better ability to retain water. Project activities also have a positive impact on maintaining or improving the state of the forest ecosystem as they avoid deforestation or degradation of forest areas by introducing sustainable management practices or extending conservation areas on land previously dedicated as buffer zones. However, not all projects might necessarily halt deforestation activities; thus, impacts might vary significantly between individual projects.

Some projects might clarify land rights and introduce alternative income sources or benefit sharing. However, if not well designed or implemented, access to forest resources

or the expansion of agricultural practices into the forest is restricted without providing sufficient alternatives, thus negatively impacting the livelihoods of local communities (SDG 1, no poverty). Especially in tropical forest regions, land tenure is contested, and there have been projects in the past in which indigenous customary land rights were not recognized or upheld. Additionally, research shows that risks and negative impacts often most strongly affect marginalized, vulnerable and poor populations. If not explicitly addressed in the project design, this project type might even reinforce gender inequality and patriarchal forest decision-making structures by restricting access to forest land (SDG 5, gender equality).

The impact of this project type on SDG 10 (reduced inequalities) and SDG 16 (peace, justice and strong institutions) is highly dependent on the local context and the implemented activities. In cases in which projects are not well designed and take place in areas with disputed land ownership, there might be a high risk that project activities reinforce and perpetuate dispossession and inequity. There is evidence that past projects under this project type have led to evictions and human rights abuses. Project activities might thus involve significant risks to progress on SDG 10 and 16.

The conflicting objectives between forests as a carbon sink and using wood products as a source for fuelwood and timber is a challenge inherent to this project type. Further, some positive and negative impacts are highly contextual (e.g., the creation of jobs, land-dependent livelihood, impact on women) and depend on the implemented activities.

Double issuance due to indirect overlaps between projects

1 ━━━━━━━━━━━━━━━━━━━━━ **5**

Carbon crediting programs might accidentally issue credits for the same emission reductions to avoided unplanned deforestation projects and to projects reducing timber consumption

Here we assess whether the project type has low risks to overlap with other project types in the carbon market.

For project types where we identified a high risk, we also assess if carbon crediting programs have robust provisions in place that avoid that the same credit is issued twice for the same emission reduction in the case that two projects.

How do other project types score?

1 ━━━━━━━━━━━━━━ **5**

Graph shows the range of scores for all project types assessed by CCQI.

The risk of double issuance due to indirect overlaps between projects is oftentimes overlooked for avoided unplanned deforestation projects. Double issuance can arise when an avoided unplanned deforestation project and a project reducing timber consumption, i.e., a cookstove project or a household biodigester project, take place in the same area. The latter aims to reduce the consumption of non-renewable biomass and thereby preserve carbon stocks in surrounding forest areas. If a project that aims to reduce deforestation is implemented in the same forest area, it might claim the same emission reductions.

Our assessment of the VCS provisions showed that the program does not apply systematic checks to identify and avoid overlaps between avoided deforestation and other carbon market projects.

Starting points for further due diligence

This factsheet summarizes key risk factors for the quality of carbon credits from this project type, as identified in CCQI's detailed assessments. Individual projects might outperform any of our scores by making project-design choices that mitigate these risks. CCQI scores therefore do not apply to individual projects. They can however inform further due diligence when assessing the quality of individual projects. Questions to ask might include:

- Does the project receive government support or support through international development assistance? If so, how high is the share of carbon credits in the overall financing? If the share is low, the mitigation activities might not be additional.

- Are there legal mandates that require the implementation of the project activities? If so, is the provided line of argumentation to demonstrate that these are systematically not enforced plausible? If not, this might be associated with non-additionality risks.

- Was the project registered with the carbon crediting program after its start date? If so, the mitigation activity might not be additional.

- Do the projects effectively address local drivers of deforestation, or do they only benefit certain portions of the local population? If the latter is the case, the project might not be effective in inducing behavioral change needed to halt deforestation.

- Are the assumptions about what would have happened in absence of this project, i.e. the 'baseline scenario,' plausible? Is it credible that deforestation would occur in the baseline scenario? If not, the project's emission reductions might be overestimated.

- Does the project use the newer methodology, VM0048, for quantifying emission reductions? If so, the risks of overestimation are lower than with the older VCS methodologies.

- Does the project use conservative approaches to quantify carbon stocks? If so, this can help to minimize the remaining overestimation risks associated with VM0048.

- Do the project owners monitor the project area beyond the minimum period of 20 years required by the VCS for projects registered before 2024? If not, the project may have high non-permanence risks.

For assessments of specific projects, you may contact specialized rating agencies such as BeZero, Calyx Global or Sylvera.
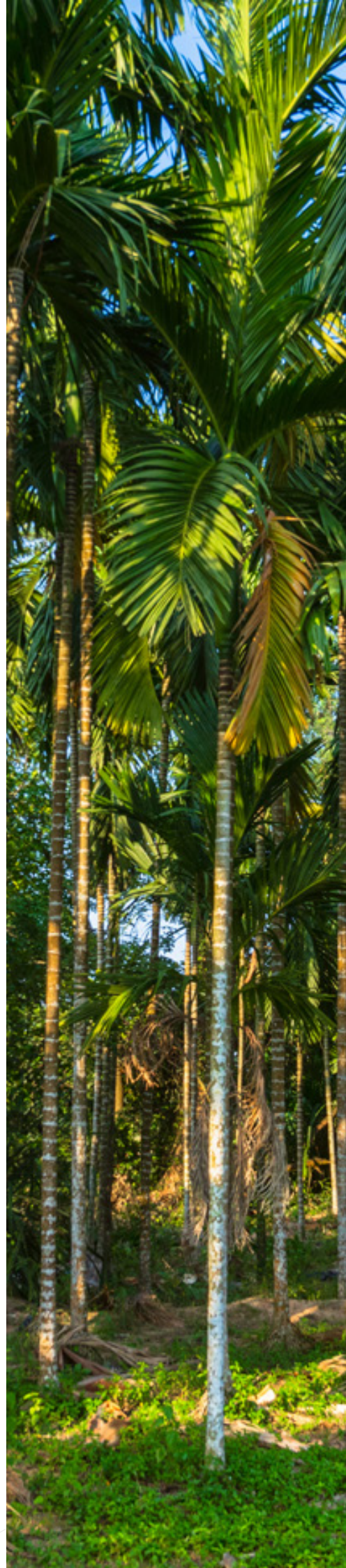
About CCQI

The Carbon Credit Quality Initiative (CCQI) was established to provide free, transparent information on the quality of different types of carbon credits, enabling users to understand what types of carbon credits are more likely to deliver actual emission reductions as well as social and environmental benefits.

CCQI was founded and is managed by Environmental Defense Fund (EDF), World Wildlife Fund (WWF-US) and Oeko-Institut, a leading European research and consultancy institution working for a sustainable future. Scores published by CCQI are derived from applying the CCQI assessment methodology. The assessment is led by Oeko-Institut, with support from experienced carbon market experts from Carbon Limits, Greenhouse Gas Management Institute (GHGMI), INFRAS and Stockholm Environment Institute (SEI). Draft results are reviewed by the full CCQI team before public release. All experts involved in CCQI have deep expertise in carbon markets and are not employed by project developers or carbon crediting programs.

This factsheet was commissioned by

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and Climate
Alliance

www.allianz-entwicklung-klima.de

www.carboncreditquality.org

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How does CCQI assess quality?

CCQI assesses quality aspects of different types of carbon credits. The following main features define a type for our assessments:
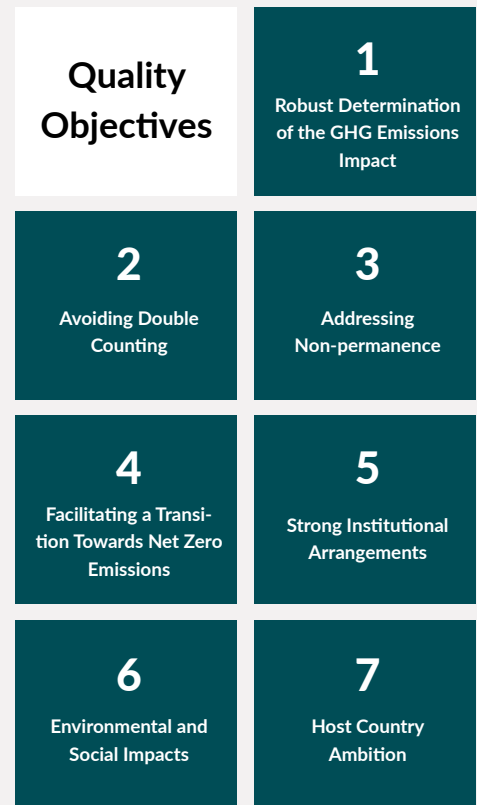
- The type of project (e.g., landfill gas utilization)
- The carbon crediting program (e.g., Verified Carbon Standard)
- The quantification methodology used to estimate emission reductions for the project activity
- The country in which the activity takes place

We assess each type against several criteria, sub-criteria and indicators that are clustered around seven quality objectives.

Each assessment follows our publicly available methodology.

In this factsheet we present results for selected quality objectives, criteria and sub-criteria whose scores depend primarily on characteristics of the type of project.

To see how this project type scores against all our criteria, explore our scoring tool.

Quality Objectives

1 Robust Determination of the GHG Emissions Impact

2 Avoiding Double Counting

3 Addressing Non-permanence

4 Facilitating a Transition Towards Net Zero Emissions

5 Strong Institutional Arrangements

6 Environmental and Social Impacts

7 Host Country Ambition

VISIT CCQI SCORING TOOL

www.carboncreditquality.org/scores.html

How to interpret CCQI Scores?

Our scores use an interval scale from 1-5, with 5 representing the highest score.

Scores are risk-based and indicative of the confidence or likelihood that the assessment subject meets the quality objective.

We do not provide an aggregated score for types of carbon credits to provide users with a nuanced picture on different quality aspects.

CCQI Score Scale

Level of confidence that the assessment subject meets the criterion or quality objective

Very High	**5**
High	**4**
Moderate	**3**
Low	**2**
Very Low	**1**