Application of the CCQI methodology for assessing the quality of carbon credits

This document presents results from the application of version 3.0 of a methodology, developed by Oeko-Institut, World Wildlife Fund (WWF-US) and Environmental Defense Fund (EDF), for assessing the quality of carbon credits. The methodology is applied by Oeko-Institut with support by Carbon Limits, Greenhouse Gas Management Institute (GHGMI), INFRAS, Stockholm Environment Institute, and individual carbon market experts. This document evaluates one specific criterion or sub-criterion with respect to a specific carbon crediting program, project type, quantification methodology and/or host country, as specified in the below table. Please note that the CCQI website Site terms and Privacy Policy apply with respect to any use of the information provided in this document. Further information on the project and the methodology can be found here: www.carboncreditquality.org

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Sub-criterion:	**1.1.3 Financial attractiveness**
Project Type	**Avoided planned deforestation**
Date of final assessment:	**02 July 2024**
Score:	**Project area is accessible: 4** **Project area is not accessible: 2**

Assessment

Application of the scoring methodology in the context of this project type

The CCQI methodology assesses the financial attractiveness of an individual project or a project type to estimate the likelihood that economic actors would normally not pursue the respective mitigation activity without carbon market revenues.

The CCQI methodology considers three factors in its assessment: the financial attractiveness without carbon credit revenues, the change in financial attractiveness due to carbon credit revenues, and the financial attractiveness with carbon credit revenues. To implement this approach, the methodology uses three indicators: the internal rate of return (IRR) without carbon credit revenues (indicator 1.1.3.1.), the change in the IRR due to carbon credit revenues (indicator 1.1.3.2.), and the IRR with carbon credit revenues (indicator 1.1.3.3.).

However, this type of analysis is not suitable for the project type 'avoided deforestation' and some subtypes of the project type improved forest management (IFM), as they typically do not involve a major investment at the start of the project. In contrast, they entail that an activity is not pursued (e.g., a forest is not deforested or degraded) or that an ongoing practice is changed (e.g., a change in forest management practice). In these cases, the most relevant consideration for financial attractiveness is what economic activity would be conducted in the absence of the project (baseline scenario).

We therefore deviate from the CCQI methodology to reflect the specific circumstances of these project types. As a first step, we implement a cost comparison analysis to assess the financial attractiveness, which substitutes for the analysis for indicator 1.1.3.1 of the CCQI methodology. This type of assessment takes into account the costs and revenues of the project scenario as well as of the baseline scenario.

As a second step, we further discuss the influence of carbon credit revenues on the financial attractiveness of the project (sub-)type. This analysis substitutes the assessment of indicators 1.1.3.2 and 1.1.3.3 in the CCQI methodology. If the carbon credit revenues have a strong influence on changing the financial attractiveness of an activity, it is more likely that they are critical in making the activity financially viable.

Cost comparison analysis

As a first step, we assess the difference in the financial attractiveness between the project scenario (without carbon credits) and the baseline scenario. We assume that the greater the difference between the two scenarios, the more likely it is that the baseline scenario would have occurred in the absence of carbon revenues. Consequently, a project is more likely to be additional. Our analysis is based on relevant scientific literature.

Since the decision to proceed with a project is made by the project developer, we focus on their costs and revenues. However, in some instances, such as projects reducing deforestation, the costs and revenues of relevant stakeholders (such as landowners and local communities) may be taken into account, since they may influence the decision to proceed with a project.

Project scenario- Costs and revenues while implementing the project

We consider the costs and revenues associated with implementing relevant activities. Implementation costs include capital expenditure (CAPEX) and operational expenditure (OPEX) associated with implementing the project activities. These may include expenses for planning, job training, infrastructure or machinery. Since the analysis compares scenarios without the impact of carbon credits, all transaction costs related to generating carbon credits are not considered.

Revenues include income from timber harvest, sale of other forest products or other economic activities, such as tourism. Other revenues may include subsidies or other financial incentives from policies.

Baseline scenario - Profits that would accrue in the absence of the project (opportunity costs)

The baseline is an 'alternative universe' in which the project activity does not take place. Thus, to evaluate the baseline scenario, we consider the profits that were foregone by employing the project activity, i.e., the foregone revenues minus the forgone costs. Scientific literature refers to these foregone profits as 'opportunity cost'. We adopt this term for this analysis.

The opportunity costs of forest-related projects depend on the land use in the absence of the project. Depending on the type of project, these could include foregone revenues from land conversion, such as for agriculture and/or livestock farming, as well as revenues generated by harvesting the forest, such as the sale of timber or other forest products. We do not consider foregone employment in the region or changes in livelihood for local communities.

Impact of carbon credits

In a second step, we analyse the impact of carbon credits on the financial attractiveness of the project type. To do this, we consider what the typical total costs of the project type are, and how high the average carbon credit price for that project type is in comparison. If it is likely that the revenues from carbon credits are high enough to turn a project of the project type from financially unattractive to attractive, it increases the likelihood that the project type is additional. Information sources considered

1 Verified Carbon Standard. VM0007 REDD + Methodology Framework (REDD + MF), Version 1.6.

2 Verified Carbon Standard. VM0009 Methodology for Avoided Ecosystem Conversion, Version 3.0.

3 Verified Carbon Standard. VMD0015 Methods for monitoring of greenhouse gas emissions and removals (M-REDD), v2.3.

4 Verified Carbon Standard. VM0048 Reducing Emissions from Deforestation and Forest Degradation, v1.0

5 Verified Carbon Standard. VMD0055 Estimation of Emission Reductions from Avoiding Unplanned Deforestation, v1.0

6 Calyx Global (2023) Turning REDD into Green – Improving the GHG integrity of avoided deforestation credits.

7 Verra (2023) Registry. Verified Carbon Standard. Available at: https://registry.verra.org/

8 FAO (2022) The State of the World's Forests 2022. Forest pathways for green recovery and building inclusive, resilient and sustainable economies. Rome, FAO. https://openknowledge.fao.org/items/0c46e9fb-5fec-4738-9db5-65b474f0b9b7

9 Energy Transition Coalition (2023) Financing the Transition: Supplementary Report on the Cost of Avoiding Deforestation.

10 Haya, B. K., Alford-Jones, K., Anderegg, W. R., Beymer-Farris, B., Blanchard, L., & Bomfim, B. (2023) Quality Assessment of REDD+ Carbon Credit Projects.

11 Rakatama, A., Pandit, R., Ma, C., & Iftekhar, S. (2017). The costs and benefits of REDD+: A review of the literature. Forest Policy and Economics, 75, 103-111.

12 Olsen, N., & Bishop, J. (2009). The financial costs of REDD: evidence from Brazil and Indonesia. IUCN.

13 Irawan, S., Tacconi, L., & Ring, I. (2014). Designing intergovernmental fiscal transfers for conservation: The case of REDD+ revenue distribution to local governments in Indonesia. Land use policy, 36, 47-59.

14 Dang Phan, T. H. D., Brouwer, R., & Davidson, M. (2014). The economic costs of avoided deforestation in the developing world: A meta-analysis. Journal of forest economics, 20(1), 1-16.

15 Yang, H., & Li, X. (2018). Potential variation in opportunity cost estimates for REDD+ and its causes. Forest Policy and Economics, 95, 138-146.

16 Joppa, L. N., & Pfaff, A. (2009). High and far: biases in the location of protected areas. PloS one, 4(12), e8273.

17 Ecosystem Marketplace (2021) A Green Growth Spurt – State of Forest Carbon Finance 2021.

Assessment outcome

The scoring for this project type can be taken from the following table:

Table 1 Scoring for avoided planned deforestation projects

	Score
Project area is accessible	4
Project area is not accessible	2

Justification of assessment

Project type

The assessment refers to the following project type:

Avoided planned deforestation

"Activities to avoid deforestation that is legally authorized and planned by an identifiable, commercial agent. In addition, forest degradation may be reduced. The activities are implemented on a dedicated project level geographical area (not at jurisdictional level). The project type reduces emissions by avoiding the loss of forest carbon stocks."

Cost comparison analysis

Cost and revenues of project scenario

a) Revenues from the sale of timber or other forest products

By 2024, the two most commonly used methodologies for avoided planned deforestation projects are VM0007 and VM0009. [1] Both allow for limited harvesting of timber[2] and the generation of other forest products (Source 1, Source 2). Thus, there can still be income from economic activities in the project scenario (Source 6). This is confirmed by an analysis of ten avoided unplanned deforestation projects registered under VM0007 and VM0009, which showed that two projects implemented selective logging during project implementation, and one other project allows for rudimentary tourism or subsistence agriculture (Source 1, Source 2, Source 7). While research has shown that revenues from these economic activities are low for most projects, in some cases, revenues may be substantial (Source 6).

Projects may also receive financial support from other sources than carbon crediting. Forest protection is a policy goal in many countries and declared target of the international community. Thus, there are a variety of other funding instruments for avoided deforestation projects, such as domestic subsidies, bilateral official development assistance, as well as multilateral funds such as the Green Climate Fund, or other private grants (Source 8). However, there are still significant funding gaps for avoided deforestation activities (Source 9), and whether a project benefits from financial support other than carbon credits strongly depends on its context.

a) Cost of implementing project activities

The main activity of this project type, avoiding planned deforestation, requires negotiating and entering an agreement, which establishes that the agents of deforestation will refrain from harvesting the project area. There are different ways in which this can be done: if, for example, the project developer is a public entity owning the land, or a timber company with the right to harvest, they simply forego the right to cut down the forest. In other cases, however, the project developer does not have the appropriate rights to the land (such as the right to generate carbon credits). For example, they might be businesses or non-governmental organizations (NGOs) which dedicate themselves to creating carbon market projects (Source 10). In these cases, project developers need to negotiate

[1] For VM0007, the monitoring module VMD00015 specifies that selective logging may only take place within forest management areas that poses a Forest Stewardship Council certificate (Source 3). VM0009 implicitly allows it by including harvesting in the project scenario in the calculation of emission reductions (Source 2).

[2] Please note that the methodology VM00048, released in 2024, prohibits harvesting trees to generate income in its module VMD0055, unless the trees have been planted during the project lifetime for leakage mitigation or community development (Source 4, Source 5). As there are no projects implemented at the time of writing, we cannot determine the extent to which projects still harvest.

agreements with landowners or logging companies, confirming that they will not deforest the land. This might involve transferring the appropriate rights to the project developers. These negotiation processes may vary in their complexity, and it is therefore uncertain if and how many costs incur.

However, in addition to entering an agreement, avoided planned deforestation projects tend to implement similar activities as avoided unplanned deforestation projects. These include establishing surveillance systems to prevent illegal logging, creating alternative sources of income for local communities whose livelihoods depend on forestry products, strengthening the resources of the local population, and improving forest management. However, the most common methodologies (VM0007 and VM0009) for avoided planned deforestation projects do not require any of these activities to be implemented (Source 1, Source 2, Source 7).

Thus, for most projects there are likely some implementation costs, which can vary in their extent. However, if a project only does the minimum to avoid planned deforestation, i.e., agreeing to not deforest an area or negotiating an agreement with landowners or a logging company, implementation costs may be limited.

Opportunity cost: Foregone revenues

Research strongly suggests that opportunity costs are the most important cost component for avoided deforestation and similar projects; they are estimated to be about three times as high as implementation and transaction costs (Source 11).

The opportunity costs of avoided planned deforestation projects are the foregone revenues and costs from other land uses. Alternative land uses are crop production (such as palm oil, soybean agriculture or pulp) or pasture for ranching. Thus, foregone revenues can include income from selling the timber after land conversion, crops, cattle or other animal products.

Opportunity costs depend on a great variety of variables, such as the alternative land use, soil and climate conditions (e.g., how suitable an area is for agriculture), labor costs, technology, supply chain costs (e.g., transport and distribution), and the amount of carbon stored in the forest. Furthermore, methodological approaches vary greatly, so estimates do not use the same parameters, time frames or discounting rates (Source 11, Source 14, Source 15).

Correspondingly, the estimates for opportunity costs for avoiding planned deforestation vary substantially between studies, but also between different scenarios within each study. For example, Olsen and Bishop (2009) estimated the opportunity costs for ranching in Brazil between 0 and 3 USD per tonne of CO_2, between USD 2.5 and 3.4 for soybean, and between USD 0.18 and 19.6 for palm oil in Indonesia (Source 12). Irawan et al. (2014) found a higher values for palm oil in Indonesia, ranging from USD 12.89 to USD 56.34 per tonne of CO_2 (Source 13). Another analysis estimated the opportunity costs of commodity-driven deforestation between USD 25 and 45 per ton of CO_2, based on the average price of basket of commodities most commonly linked to deforestation (Source 9). Meta-analysis of opportunity costs for avoided deforestation and similar projects come to similarly inconclusive results (Source 14, Source 15).

Further complicating the analysis is the fact that project developers are not necessarily the ones foregoing revenue, i.e., they are not the ones incurring the opportunity costs. This is the case if the project developer does not own the land or the right to harvest, as the agents foregoing those rights are the ones foregoing revenues (e.g., timber companies). However, these agents are likely to consider

opportunity costs before entering an agreement, hence opportunity costs still play a significant role in the decision to implement a project. Nevertheless, there is an additional negotiation process before a project is implemented, involving two or more stakeholders (e.g., several landowners or timber companies with harvesting rights). It is therefore possible that opportunity costs might not be adequately reflected in the decision-making process.

Thus, due to methodological inconsistencies of estimates but also due to the varying geographical and socio-economic circumstances of each project, we cannot define a specific range of opportunity costs for this project type.

Factor influencing opportunity costs – Accessibility of project area

Deforestation tends to occur from the edge of a forest towards the inside. Thus, the most threatened forest areas, and therefore the most financially attractive, are on the edge of the forest (Source 9). Conversely, if forest patches are very remote, it is likely that making the land accessible would be very expensive, as developing the necessary infrastructure to clear the area is very costly (Source 16). In this case, the cost for deforesting might come close to or even exceed the potential revenues from agricultural conversion. The opportunity costs would therefore be small or even negative.

Hence, an important factor influencing opportunity costs is whether the project area is accessible for land conversion, e.g., if forest patches close to the project area have already been deforested or if there is a road network or waterways in the project area or nearby.

Impact of carbon credits

To assess the impact of carbon credits, we would need to compare the total project cost per ton of CO_2 to the carbon price. The average price of carbon credits from avoided planned deforestation projects on the voluntary carbon market in the year 2019 ranged from USD 0.86 to USD 19.50 (Source 17).

Due to the substantial variance of opportunity costs, which can range from under 10 USD per ton of CO_2 to more than 50 USD, selling carbon credits at the observed price levels may generate revenues that cover the total costs of avoided deforestation projects in some cases, but not in others. Thus, assessing the impact of revenues from carbon credits on the financial attractiveness of the project type does not allow for a definitive conclusion.

Conclusion

The cost comparison analysis showed that avoided deforestation projects come with some implementation costs. At the same time, they generate little to no revenues besides income from selling carbon credits. However, in some cases, revenues from economic activities may be substantial, or projects may receive funding from sources other than carbon crediting.

Opportunity costs are the most important cost component for this project type. However, due to methodological inconsistencies of estimates but also due to the varying geographical and socio-economic circumstances of each project, we cannot define a specific range of opportunity costs. Nevertheless, it is likely that there are some opportunity costs that are considered before the decision to go ahead with a project.

An analysis of the potential impact of revenues from carbon credits on the financial attractiveness of the project type was inconclusive, due to the substantial variability of total cost estimates.

We conclude that avoided planned deforestation projects are likely to be additional, as implementation costs and opportunity costs occur, and there is likely no or limited income from project activities. However, there is considerable uncertainty regarding each component of the cost comparison analysis. It is possible that some projects have substantial other sources of income or receive subsidies, that implementation costs are low or that there are only limited opportunity costs. We therefore score this project type with 4.

Moreover, the accessibility of the project area is a major factor influencing the opportunity costs. Thus, we deduct two points from the scoring if the land is not accessible, e.g., or no forest patches close to the project area have already been deforested or if there is no road network or waterways in the project area or nearby.

Therefore, we differentiate the scoring in the following way:

Table 2 Scoring for avoided planned deforestation projects

	Score
Project area is accessible	4
Project area is not accessible	2