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	**Improved forest management - Avoiding degradation**
Date of final assessment:	**21 February 2024**
Score:	**Projects in the US (with conservation easement that requires the project activity): 1** **Projects in the US (without conservation easement that requires the project activity): 2** **Projects in other countries: 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), and how revenues and costs compare between the project and the 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 investment costs (CAPEX) and operational expenditures (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 costs'. 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 agriculture and livestock, 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

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Assessment outcome

The scoring for the IFM activity 'avoiding degradation' can be taken from the following table:

Table 1 Scoring for IFM – Avoiding degradation projects

		Score
Projects in the US	With conservation easement that requires the project activity	1
	Without conservation easement that requires the project activity	2
Projects in other countries		2

Justification of assessment

Project type

The assessment refers to the following project type:

Improved Forest Management

“Changes in forest management that increase forest carbon stocks, and/or avoid the loss of forest carbon stocks.”

Project subtype - Avoiding degradation (AD)

“Avoiding the start of, or an increase in, harvesting that is assumed to occur in the baseline scenario and/or targeting harvesting towards higher quality timber, thereby avoiding the reduction of carbon stocks below current and recent levels.”

Cost comparison analysis

There are three measures that can be taken when implementing this project activity: the project avoids the start of harvesting, the project avoids an increase in harvesting, or the project aims to target harvesting towards higher quality timber. Each measure has different implications for the financial structure of a project, which is why we discuss them separately in our analysis.

Project scenario - Cost and revenues

a) Revenues in the project scenario

When implementing avoiding degradation measures, the revenues are as follows:

- If projects *avoid the start of harvesting*, there is no revenue in the project scenario from the sale of timber or other forestry products. There may be limited revenues from other activities, such as tourism.
- If projects *avoid an increase of harvesting*, harvesting may continue at the same rate as before the project start. Empirical evidence suggests that this is the case. Stapp and et al. (2023) evaluated the special and satellite data from 90 IFM projects in California. They found that in most cases, harvest did not decrease three or five years after the project began (Source 1). Similarly, Coffield et al. (2022) evaluated 16 IFM projects using geospatial remote sensing-based data in California, comparing harvesting rates for equal time periods before and after project start. They found that on average, harvesting rates stayed the same. While these studies did not specify the exact IFM activities that the projects implemented, the results strongly indicate that for IFM projects which allow harvesting, it is likely to be in the same range before and after the project start (Source 2). Consequently, it is likely that revenues from timber sales in the project scenario continue to be as high as before the project start.
- If projects aim *to target harvesting towards higher quality timber*, harvest is focussed on valuable trees, while leaving other trees intact. Thus, while the quantity of harvested timber may be reduced, revenues per volume will be higher than before the project start, as high-quality timber can be sold at a higher profit margin (Source 3). Therefore, it is likely that revenues from timber sales are in the same range than before the project start.

b) Cost of implementing project activities

The costs of implementing avoiding degradation measures are as follows:

- If projects *avoid the start of* or *an increase in harvesting* compared to the baseline scenario, current management practices remain unchanged. Thus, project implementation likely does not result in additional costs.
- If projects aim at *targeting harvesting towards higher quality timber*, harvesting needs more prior planning and may require different machinery. Thus, harvesting costs may increase. However, it is uncertain to what extent harvesting cost would change, as the costs of harvesting depend on a great variety of factors, such as harvested volume, operator experience, stem size, trail distance and equipment payload (Source 4).

Special circumstances – Conservation easements in the US

'Conservation easements' are incentive mechanisms for ecological objectives in the US, which can increase a project's economic attractiveness substantially. We therefore include them in our analysis of additionality for IFM projects in the US.

A conservation easement is a legal agreement under which private landowners voluntarily transfer certain land use rights to a conservation easement holder, such as a trustee or the government. A conservation easement is concluded with the aim of fulfilling certain conservation objectives, such as protecting trees or geological resources. Each conservation easement has its own specific terms. They can prescribe a variety of activities, from limiting the frequency of harvesting, to requiring certain management practices. In return, private landowners receive a remuneration in the form of substantial income tax reductions of up to 50% (or 100% for ranchers and farmers). These may be spread out over several years and may vary depending on the federal state or jurisdiction (Source 5, Source 6).

Due to the substantial financial benefits of conservation easements, they can make a project financially attractive without carbon credits. They therefore decrease the likelihood that a project activity is additional, if this activity is required by the conservation easement.

It is important to note that the two major carbon crediting programs that offer carbon credits from IFM projects in the United States, American Carbon Registry (ACR) and Climate Action Reserve (CAR), both restrict projects with long-standing conservation easements, as they consider them to be a legal requirement. Projects are not considered additional if the easement was recorded more than one year prior to the project's start date (Source 7, Source 8). However, they still permit newly concluded conservation easements. Thus, conservation easements are still a relevant consideration when assessing the additionality of IFM projects registered under ACR and CAR.

The Verified Carbon Standard (VCS), which also offers carbon credits from production to conservation projects in the US, has no provisions regarding conservation easements.

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

Opportunity costs for avoiding degradation projects are the foregone profits from timber harvesting. While literature suggests that the opportunity costs from timber production are lower than from converting the land to use it for other purposes (Source 9), exact estimates vary substantially. This is because revenues from timber harvesting depend on a variety of factors, such as species, geographic circumstances, the specific characteristics of each project as well as methodological differences in deriving estimates.

The analysis of Cubbage et al. (2022) underlines this: They determined the profitability of different timber plantations in 16 countries for 47 species and found substantial variety. In the countries where IFM projects are mostly implemented, i.e., the US, China and Mexico, the internal rate of return in 2017 ranged for the US between 0 and 10% (based on nine data points), for Mexico between 11.3-20.1% (based on four data points) and for China between 7.9 – 31.5% (based on two data points) (Source 10).

When implementing the different avoiding degradation measures, the opportunity costs are as follows:

1. If projects *avoid the start of harvesting*, opportunity costs are likely to be low, since there was no prior logging before the project start. There are two reasons for this: First, if there was no prior logging before the project start, this suggests that harvesting was not economical in the first place, and consequently the forest owner did not forego any profits. In this case, there are no opportunity costs. This may not apply universally, as there is the possibility that a change of circumstances could have made the timber production economically viable. However, generally, there is still an increased likelihood that opportunity costs are low. Second, if there was no logging infrastructure in place before the project start, this investment would still need to be made in the baseline scenario, lowering the opportunity costs. This notion has been supported by economic modelling (Source 11).
2. If projects *avoid an increase in harvesting*, the project developer is forgoing profits from the sale of timber. According to research, opportunity costs vary substantially, depending on the project's context. For example, a study by Man et al. (2015) analysed the opportunity costs of three forest estates in Canada, located in the Coastal, Central Interior and Northern Interior Forest regions in British Colombia. Assuming a 0% discount rate and a harvest rate of 30% of the baseline, the authors estimated the opportunity costs at USD 40.1, USD 31.1, and USD 3.5 per tonne of CO_2, respectively (Source 12).
3. If projects *target harvesting towards higher quality timber*, it is unclear if the project developer is forgoing revenues, as the increased profit margin of more valuable timber may compensate for the overall decrease in harvested volume.

Impact of carbon credits on the projects' financial attractiveness

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. However, since there is no dataset that contains information specifically on the total cost of avoiding degradation projects and the corresponding carbon price, we use scientific literature and aggregated price data for IFM projects.

The total project costs for avoiding degradation projects are almost exclusively driven by opportunity costs (Source 12). Estimates of opportunity costs differ depending on the difference in methodological approaches, reference years, discount rates and assumed reduction in harvesting.

Consequently, modelling exercises largely indicate that while carbon revenues can incentivise a reduction in harvesting, the required carbon price varies substantially. For example, findings of Pukkala (2019) indicate that in Finland, a substantial carbon price of EUR 40.90 would be needed to cease all logging, whereas a CO_2 price of EUR 13.60 would decrease the optimal harvest rate to about 90% (South Finland) to about 70% (North Finland) of the baseline (Source 13). Moreover, Pohjola et al. (2018) found that a carbon price of EUR 5 can already lead to an increase in carbon sink through reduced harvesting in Finland (Source 14).

According to a report by Ecosystems Marketplace, the price in the voluntary carbon market for carbon credits from IFM projects ranged between USD 6.54 and USD 18.84 in 2019 (Source 15) [1]. This may indicate that the CO_2 price could be in the same range to cover the costs for foregoing harvesting revenues in some cases. However, the variability of project circumstances, cost estimates and carbon prices does not allow for a definitive conclusion.

Conclusion

Table 2 gives an overview of the cost comparison analysis for each measure:

Table 2 Summary table – Cost comparison analysis avoiding degradation

Measures	Revenues in the project scenario	Costs of project implementation	Opportunity costs (foregone profits that would be accrued in the baseline scenario)
Avoided start of logging	No revenues through the sale of timber. There may be some revenues through activities such as tourism	No costs of implementing the project, since there is no change in forest management practice	Foregone profits from sale of timber Since there was no prior logging, it is likely that foregone profits are low
Avoided increase in logging	Likely still substantial revenues through the sale of timber, as projects often continue to harvest at the same rate as before the project start	No costs of implementing the project, since there is no change in forest management practice	Foregone profits from the sale of timber
Harvesting towards higher quality timber	Likely still substantial revenues. The loss in harvested volume is compensated by an increase in revenue, as higher quality timber sells at a higher profit margin	Potential increase in harvesting cost through higher expenses for planning the harvest and possibly new machinery	It is uncertain if there is a loss in profits, as higher quality timber sells at a higher profit margin

Source: Own assessment

For each of the implemented measures, the results can be summarized as follows:

- If projects *avoid a start in harvesting*, there is little to no revenue in the project scenario. However, opportunity costs are likely to be low and there are no implementation costs.
- If projects *avoid an increase in harvesting*, there are opportunity costs from foregoing timber revenues, which may vary widely. However, revenues from timber and other forestry products are likely to remain substantial, and there are no implementation costs.

[1] These are the most recent estimates; there is no time series data available.

- If projects *harvest towards higher quality timber*, there may be project implementation costs. However, it is possible that revenues from the sale of timber continues to be substantial, and there may be no forgone revenues due to the increased profit margin of higher value timber.

These findings strongly suggest that the difference in costs between the project and baseline scenario is likely to be small but may vary on a case-by-case basis. Overall, this indicates a low likelihood of additionality for this project activity.

An analysis of the potential impact of carbon credit was inconclusive, due to the substantial variability of total cost estimates.

Thus, based on expert judgement, we consider the likelihood of additionality for this activity to be low. We assign this activity a score of 2.

Furthermore, we lower the scoring by two points if there is a conservation easement in place. A conservation easement constitutes a *de facto* subsidy for landowners and is therefore a substantial income in the project scenario, which reduces the likelihood of additionality. As there is no score lower than 1, we score the likelihood of additionality for this activity in this case with 1.

The scoring for the IFM activity 'avoiding degradation' can be taken from the following table:

Table 3 Scoring for IFM – avoiding degradation projects

		Score
Projects in the US	With conservation easement that requires the project activity	1
	Without conservation easement that requires the project activity	2
Projects in other countries		2