METHODOLOGY DOCUMENT
MSCI SUSTAINABILITY AND CLIMATE

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Improved Forest Management (IFM) Methodology

Carbon Project Ratings

Contents

Methodology overview

Objective

MSCI Carbon Project Ratings are composite ratings that independently assess the integrity and risks of carbon credit projects across multiple criteria, including their impacts on the climate, environment and society.

A project with a higher rating has a greater likelihood of having a positive emissions impact and a reduced risk of overestimating its emissions impact. It is also more likely that such an emissions impact would have been implemented in a way that supports positive social and/or environmental outcomes and upholds legal and ethical standards. Consequently, a project with a higher rating has a lower likelihood of incurring reputational risks.

This methodology evaluates the integrity of improved forest management (IFM) carbon projects by assessing both the risk that credits do not represent claimed climate benefits and the extent to which projects deliver meaningful environmental and social impacts. It provides a framework for the application of project-level analysis across key criteria—including additionality, quantification, permanence, and co-benefits—to capture both risk and impact dimensions of project performance.

Document description

This document describes the detailed project type-specific methodology used to assess Carbon Project Ratings and Pipeline Carbon Project Ratings (but not Preliminary Carbon Project Ratings) for improved forest management (IFM) projects.

This project type-specific methodology is applied in addition to, and partially in replacement of, the methodology that is described in the overall MSCI Carbon Project Ratings methodology document, "MSCI Carbon Project Ratings and Assessments Methodology." Where an element of the overall methodology is replaced by this project type-specific methodology, it is detailed below. Every element of the overall MSCI Carbon Project Ratings methodology also applies to MSCI Sustainability & Climate's[1] (MSCI S&C) assessment of Carbon Project Ratings of Carbon Project Ratings and Pipeline Carbon Project Ratings for IFM projects unless explicitly excluded in this document.

This methodology is subject to MSCI S&C's methodology governance and update process, as outlined in the overall methodology note. This ensures that updates and refinements to the methodology align with evolving best practices, stakeholder input, and data updates. For details on the governance process, methodology updates, and review timelines, please refer to Section 12 of the MSCI Carbon Project Ratings methodology document.

[1] MSCI Sustainability & Climate products and Services are provided by MSCI Solutions LLC in the United States, MSCI Solutions (UK) Limited in the United Kingdom and certain other related entities.

Section 2 introduces the core concept of carbon credit integrity and why its assessment is important to the development of the global carbon credit market. Section 3 introduces and defines IFM projects. Sections 4-8 provide details on the project type-specific methodology, including data sources and assumptions, used in MSCI S&C's Carbon Project Ratings and Pipeline Carbon Project Ratings assessments for IFM projects.

Introduction to carbon project integrity

What is carbon credit integrity?

Carbon credits have varying quality characteristics. These stem from fundamental differences in project types, but also from which methodologies have been used to define each project and create the credits (these methodologies are among the standards set by carbon crediting programs, and are hereafter called crediting program methodologies) and how rigorously they have been applied. Projects also differ in terms of their potential co-benefits and their legal and ethical characteristics.

This variation in quality was not intended. Standard setting and governance bodies attempted to create a system in which all carbon credits had an equivalent climate benefit (representing a tonne of carbon dioxide equivalent [CO_2e] removed or avoided) which could be used for voluntary or compliance purposes. This effort dates back to the Clean Development Mechanism (CDM) created under the 1997 Kyoto Protocol and has continued with the evolution of the carbon credit market.

A key challenge lies in the quantification of the climate benefit of a project — i.e., whether the carbon credits calculated for a project are genuinely equivalent to mitigating or removing one tonne of carbon dioxide from the atmosphere. This difficulty stems from the calculation method used to determine what would have happened in the absence of a project, i.e., in the "baseline" scenario (sometimes referred to as the "counterfactual" scenario).

Another difficulty is that projects differ greatly in age, size and technology. The science behind some crediting program methodologies has also evolved over time, as has the enforcement of standards and levels of governance.

Readers should note that, within the carbon markets, the words "quality" and "integrity" tend to be used somewhat interchangeably. Through the rest of this document, the word integrity is used when referring to carbon projects.

The importance of assessing carbon credit integrity

Corporate climate action is critical in the fight against climate change, and carbon credits represent one of the important mechanisms for corporates to mitigate their carbon footprint. However, concerns over carbon credit integrity may have held back, and may continue to hold back, the global carbon credit market from reaching its potential. These concerns center around the perception that many carbon credits are of low integrity and are not delivering the benefits they claim to.

In 2021, the Taskforce for Scaling the Voluntary Carbon Market (TS-VCM) found that credit integrity was at the "heart of buyers' hesitancy,"[2] with 45% of buyers identifying it as a key pain point. Buyer concerns around credit integrity and the related risk of being accused of

[2] "Taskforce on Scaling Voluntary Carbon Markets: Summary of the Public Consultation Report," ICVCM, June 3, 2021.

greenwashing due to the use of low-integrity credits have only grown since then. For example, some 55% of respondents to an April 2023 survey run by the Science-Based Targets Initiative (SBTi) stated that the risk of a greenwashing accusation was stopping them from buying more credits.[3]

Concerns over carbon credit integrity have been central to the creation of two major initiatives: the Integrity Council on the Voluntary Carbon Market (IC-VCM) and the Carbon Credit Quality Initiative (CCQI). The IC-VCM aims to create minimum standards of integrity with a set of Core Carbon Principles (CCPs), and the CCQI has developed a scoring system for certain project types. Both initiatives primarily assess integrity at the project-type level (primarily based on a project's methodology used) or at the project-registry level (a project registry is an organization that registers mitigation activities and issues carbon credits for the emission reductions or removals achieved by the mitigation activities). Neither initiative assesses integrity at the individual-project level.

MSCI S&C's assessment methodology draws on the IC-VCM's and CCQI's approach to assessing integrity, building on their principles to apply a more in-depth evaluation of integrity at the individual-project level.

The key components of carbon project integrity assessment

Market approaches to assessing carbon project integrity typically focus on three main issues:

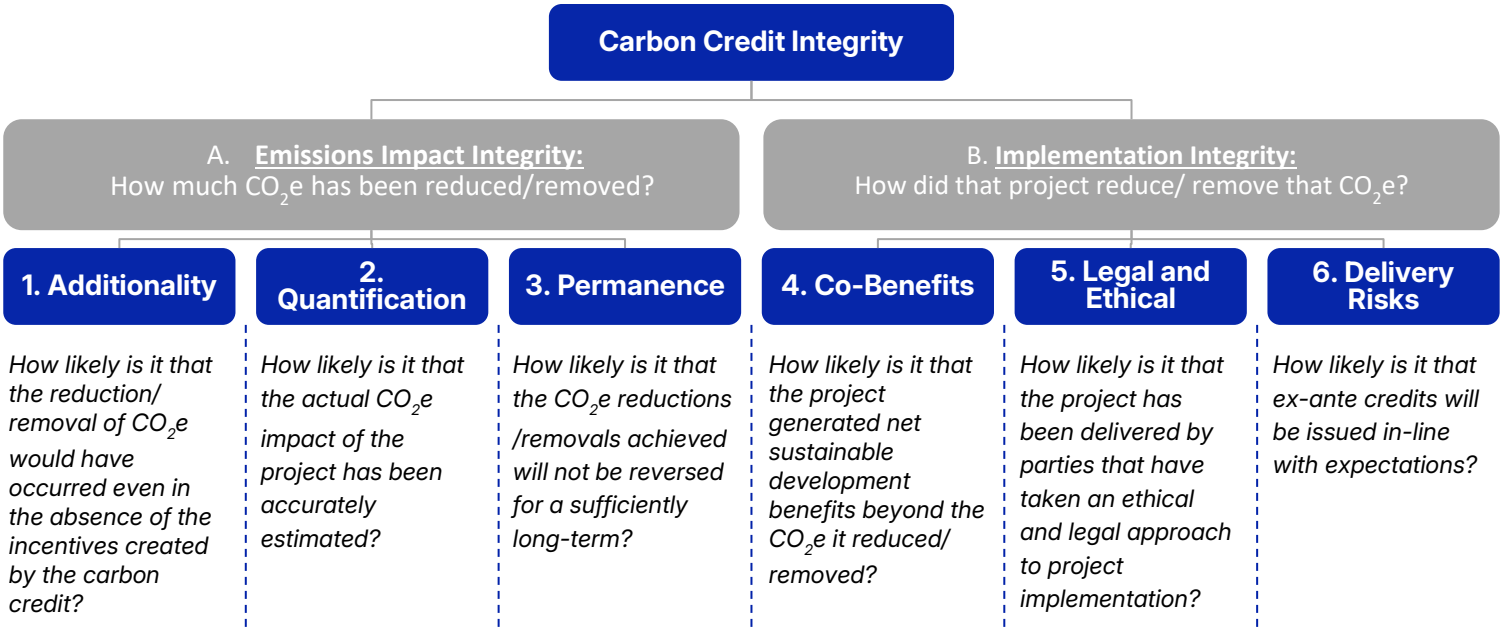
A. **Emissions impact integrity:** How much CO_2e has been reduced/removed?
B. **Implementation integrity:** How did that project reduce/remove that CO_2e?
C. **Usage integrity:** How are the credits then reviewed and used?

Emissions impact integrity and implementation integrity can each be further broken down into three main areas of common concern. These are summarized in **Figure 1**, and outlined in detail below.

Emissions impact integrity, implementation integrity and usage integrity are each described in more detail in the overall methodology document "MSCI Carbon Project Ratings and Assessments Methodology."

[3] "Beyond Value Chain Mitigation (BVCM) Research," SBTI_press_release, September 1, 2023.

Figure 1: Key components of carbon project integrity



Introduction to IFM projects

What are IFM projects?

Over 2 billion hectares of forest are actively managed around the world. The area of forest under management has been increasing in almost all regions — it has grown by over 200 million hectares in the 21st century.[4] Different forest management practices can result in very different levels of carbon stock within an area, meaning that the ways these areas are managed have important implications for their climate impact.

Improved forest management (IFM) projects are those that change the management practices within an area of forest to increase the net carbon stock that area of forest contains. Changes in forest management can lead to increases in net carbon stocks either through enabling forest growth that sequesters more CO_2 (removals), or the avoidance of greenhouse gas emissions through emissions reductions (reductions), or both. In this way, improved forest management projects tend to have a mixed impact by both generating emissions removals and reductions — though the exact mix varies significantly across projects.

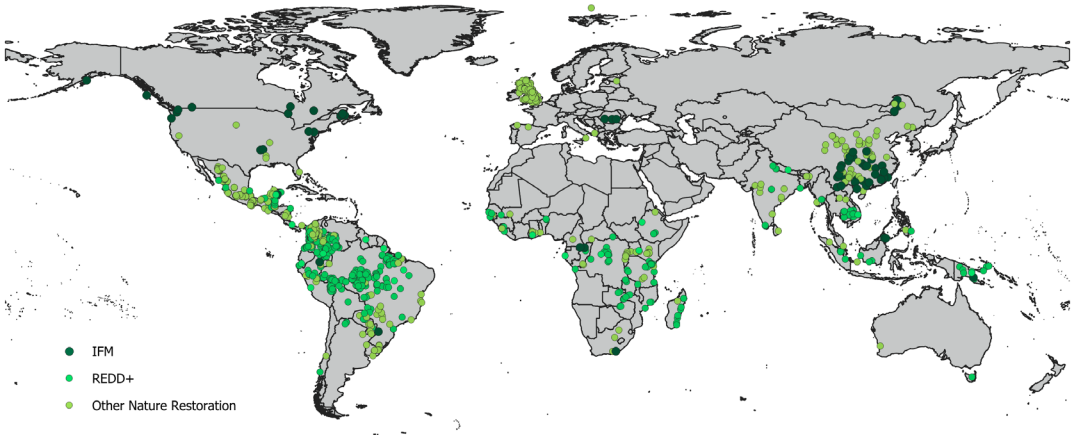
Changes in forest management can include extending the rotation cycle of when areas are harvested (extended rotation), converting previously harvested areas to full conservation (production to conservation), establishing activities that improve the health of trees and prevent mortality (avoided degradation), and more sustainable logging techniques (reduced-impact logging).

Market Overview

The geographic and registry mix of IFM projects is different from most other types of carbon credits. Over 90% of issued IFM credits are from North America-based projects, with the majority issued through either the American Carbon Registry (ACR) or the Climate Action Reserve (CAR). This geographical mix is shown in Figure 2, and illustrates the difference in locational distribution compared to reducing emissions from deforestation and forest degradation (REDD+) projects and afforestation, reforestation and revegetation (ARR) projects in particular.

[4] "Forests in the world," Forest Stewardship Council, Accessed on 18/09/2024 https://adria-balkan.fsc.org/en/forest-ecosystems/world#:~:text=More%20than%202%20billion%20ha%20of%20forests%20has%20management%20plans&text=The%20area%20of%20forest%20under,2.05%20billion%20ha%20in%202020.

Figure 2: Map of IFM and Other Nature-based Projects



Key Integrity Considerations

IFM projects are designed and measured differently from other forest carbon projects. Their mixed emissions impact type means that they combine many of the integrity risks of both REDD+ and ARR projects. Assessing the integrity of IFM projects therefore requires a detailed analysis across several integrity topics, with risks primarily found in five main areas:

1. **Common practice:** Given that forest management practices tend to be very specific to local conditions, understanding the most common practices in that region can determine whether a project's new management plan is truly additional to what would have likely otherwise occurred.
2. **Baseline harvest practices:** Assessing the counterfactual land management practices that would have been implemented if the credit program did not exist is essential. There can be significant over-crediting risk if baselines are not representative of the most likely alternative scenarios for that individual project.
3. **Carbon stock:** To estimate the emissions impact that a project creates, the developer must accurately estimate the carbon stock within a project area over time. Measuring the carbon stock within a single tree is complex. Measuring the carbon stock within an entire forest is even more challenging.
4. **Leakage:** It is of limited value to reduce the harvesting in one area of forest if this protection just leads to more harvesting elsewhere. Many IFM projects are highly embedded into timber markets, exacerbating the risk of this "leakage" occurring. Projects must counter this risk by appropriately mitigating and compensating for the risk that harvesting simply moves outside a project area.
5. **Permanence:** Nature-based projects carry an inherent risk of reversal from both human and natural causes (e.g., from fire), as any protected forest area could be subject to later deforestation or destruction. The impact of natural permanence risks is particularly important for IFM projects, given their concentration in the United States, which has

experienced high-severity wildfires recently. IFM projects must mitigate and compensate for this risk in both their design and operation (e.g., by putting in place firebreaks).

MSCI S&C assesses each of these five areas in detail when evaluating the integrity of an IFM project.

Approach to assessing the integrity of IFM projects

MSCI S&C's assessment of IFM projects builds on the overall MSCI Carbon Project Ratings methodology to provide more in-depth analysis of IFM projects. This project type-specific assessment includes sub-criteria that are additional to, and partially in replacement of, the sub-criteria of assessment used in the overall MSCI Carbon Project Ratings methodology, as detailed below. These project type-specific sub-criteria evaluate a deeper set of questions, which are focused on the most important, specific drivers of integrity for IFM projects.

These project type-specific assessments are conducted at the individual project level, including a review of each individual project's data and assumptions. In this way, these assessments represent a more granular, project-level review of IFM projects than what would be possible using the overall MSCI Carbon Project Ratings methodology alone.

In total, MSCI S&C assesses 14 sub-criteria and 26 metrics (see Figure 4) under this project type-specific methodology that are either not assessed or are assessed differently in the overall MSCI Carbon Project Ratings methodology, as illustrated in Figure 3. These sub-criteria are focused on addressing the key drivers of integrity for IFM projects. Each of these sub-criteria align with and replace corresponding sub-criteria scores in the overall MSCI Carbon Project Ratings methodology.

Figure 3: MSCI S&C Overall Carbon Project integrity assessment

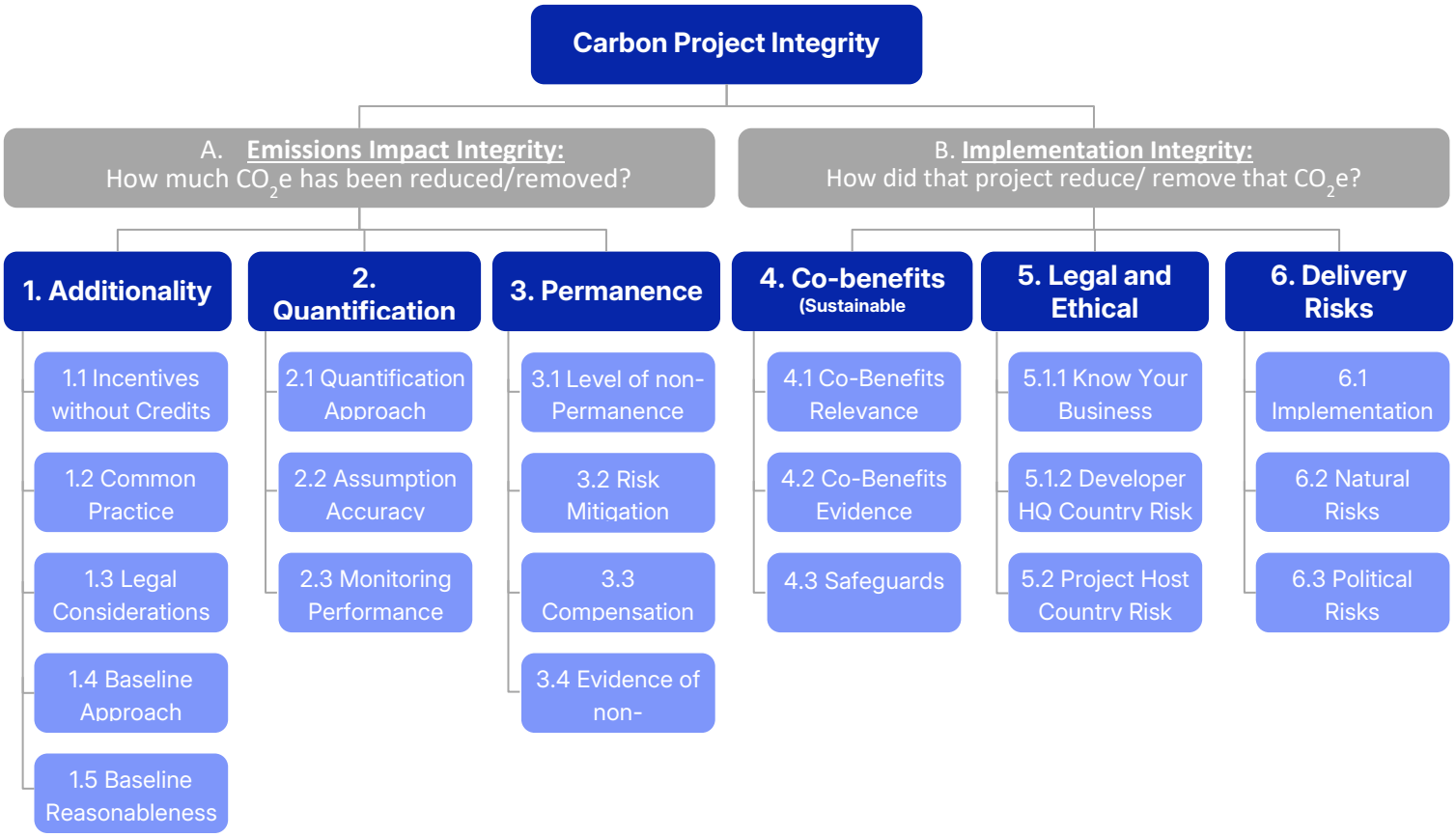
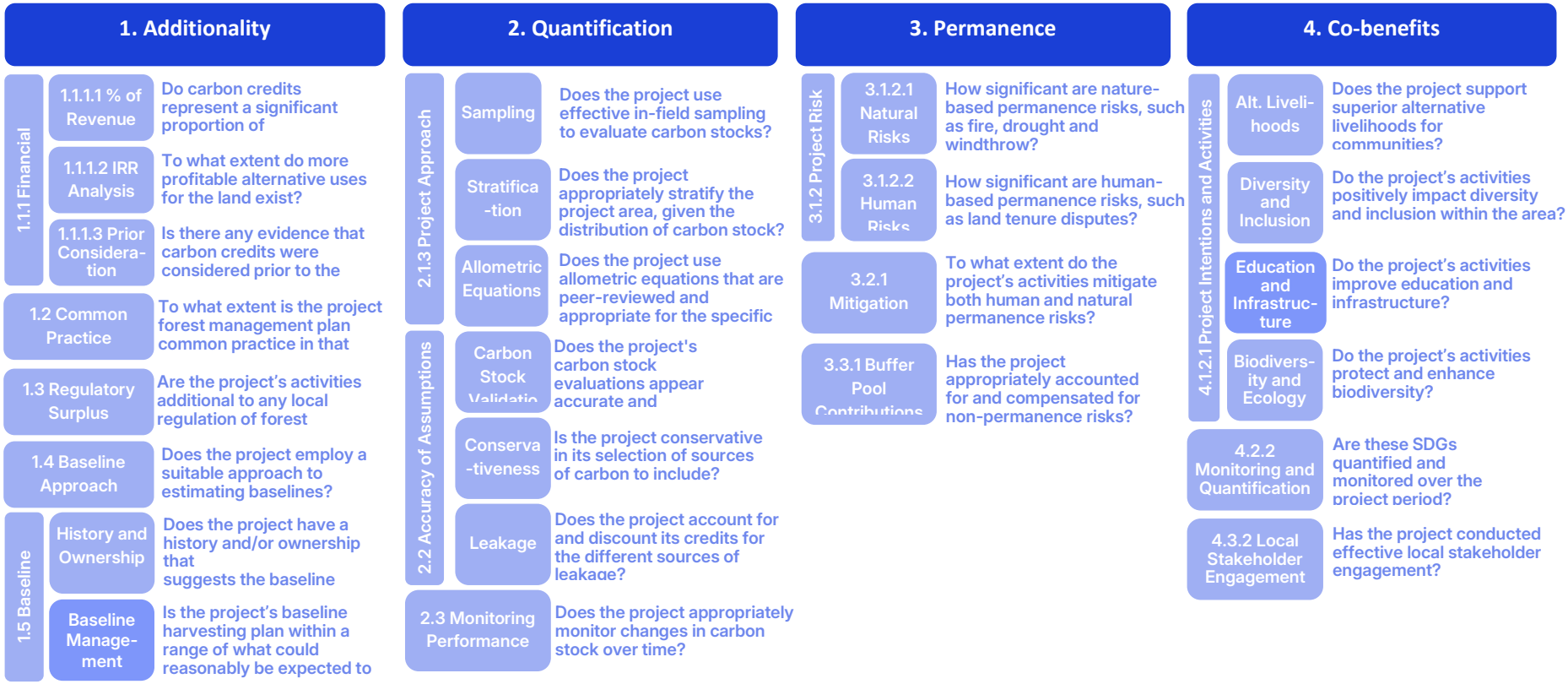


Figure 4: IFM assessment framework



Assessment of all other criteria and sub-criteria, for example, Criterion 5, Legal and Ethical Risks, and Sub-criterion 3.3, Compensation, within the IFM analysis use the same metrics and methodology as in the overall MSCI Carbon Project Ratings methodology framework. The granularity of the overarching framework for those sub-criteria, and the fact that their assessment is consistent across all project types (i.e., with no IFM-specific characteristics), means that no further enhancement is required.

For a detailed explanation of MSCI S&C's approach to data quality and update processes —including measures to ensure data accuracy, handle missing data, and update data in a frequent and recurring manner — please refer to the overall methodology note. This document outlines the steps MSCI S&C takes to verify data reliability and address any data gaps, ensuring consistency and accuracy across all project types.

Criterion 1 – Additionality

If a mitigation activity is not additional, then purchasing carbon credits has not led to any additional reduction or removal of emissions. Additionality is therefore a crucial component of the integrity of carbon credits. A non-additional carbon credit has no direct net positive environmental impact given that the emission reductions/removals would have occurred anyway. However, it is worth noting that funding a non-additional credit may still indirectly help stimulate further investment in the same activity by raising its return.

The additionality of a project is not necessarily binary. Projects may be partly additional, where only a portion of emission reductions/removals are additional. For example, if, in the baseline scenario, some emission reductions would have been achieved anyway, but not as much as was achieved by the project, then only this difference in emission reductions is additional. If credits are issued for the total emission reductions rather than only the reductions that wouldn't have otherwise been achieved, then the credits are only partly additional.

There are two main components to assessing additionality: (i) is it likely a project's activities would have occurred without the incentive of a credit, and (ii) how accurately does a project's baseline scenario represent the amount of the CO_2e reduced/removed in the baseline scenario?

MSCI S&C's assessment of the additionality of IFM projects focuses on evaluating eight key topics. Figure 5 illustrates the sub-criteria and metrics through which the additionality of IFM projects is assessed, and the overall MSCI Carbon Project Ratings methodology sub-criteria that they refer to. The detailed sub-criteria are described in Figure 6.

Given the probabilistic nature of additionality, projects are scored based on the likelihood that their emission reductions or removals are additional.

To achieve a high additionality score, a project's activities must appear additional compared to a baseline scenario, and its baseline scenario reasonable. An inverse weighting formula is used to determine a project's overall additionality score, where the combined scores of sub-criteria 1.1, 1.2 and 1.3 are inversely weighted with the combined scores of sub-criteria 1.4 and 1.5. As a result, a good score in any one sub-criterion cannot offset a low score in another.

For example, an IFM project's new management plan might be very additional given there may have been few incentives for conserving the area without the availability of carbon credits. However, if the baseline assumes an aggressive harvesting strategy that is unrealistic, then a project's emissions impact may not be (fully) additional.

Figure 5: IFM additionality assessment approach

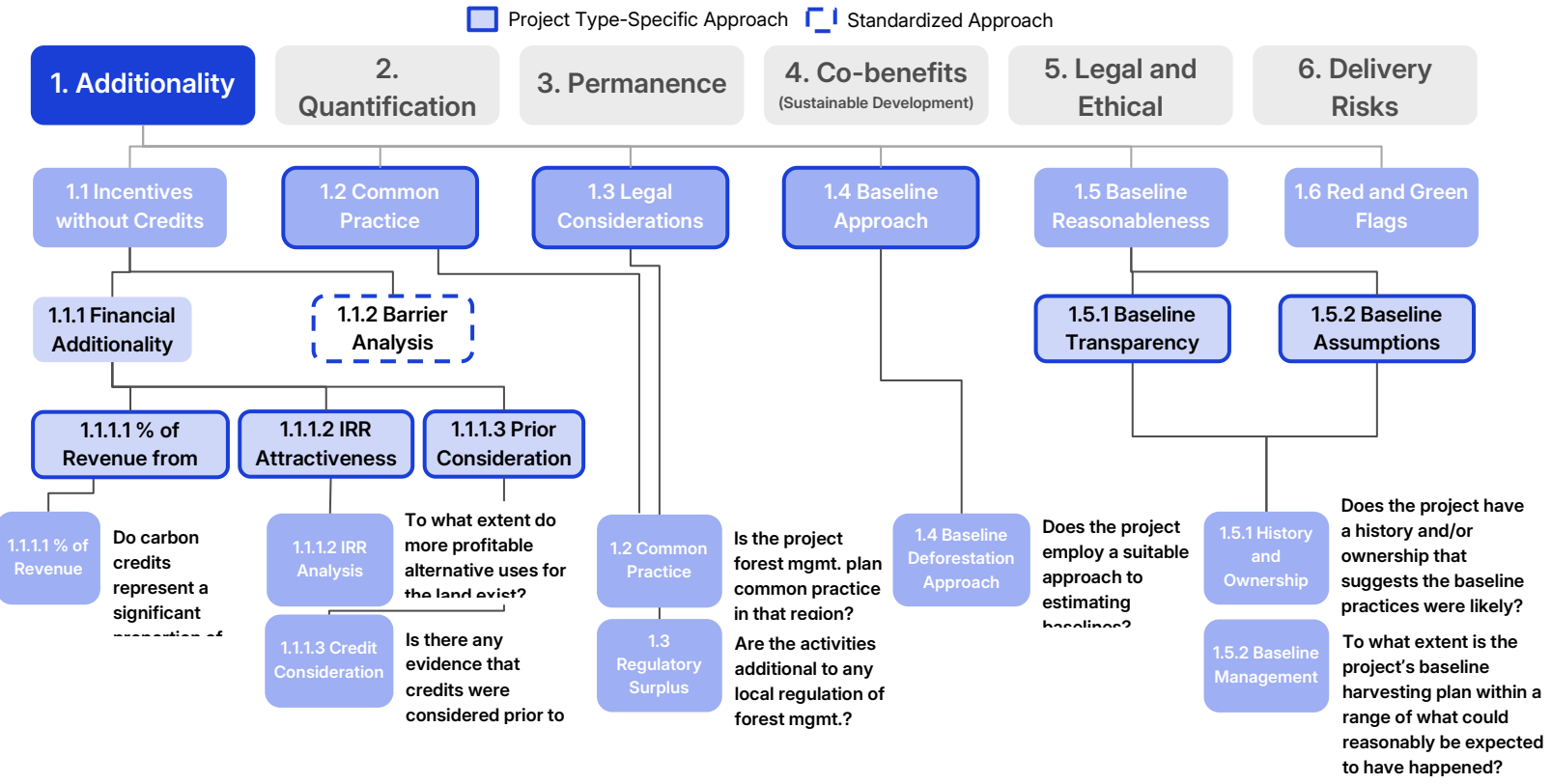


Figure 6: MSCI S&C Additionality integrity assessment framework

Sub-criteria		Metrics	Rationale	REDD+	Renewables	ARR	Cookstoves	Biochar	Landfill Gas	Safe Water	IFM	Waste Mgmt.	Blue Carbon
1.1 Incentives without Carbon Credits	1.1.1 Financial Attractiveness	1.1.1.1 % of Revenue from Carbon Credits	The higher the proportion of a project's revenue that comes from carbon credits, the greater the importance of credits to its financial attractiveness.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		1.1.1.2 IRR Analysis	Credits should play a decisive role in making a project financially attractive that would otherwise have not been.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		1.1.1.3 Prior Consideration	Carbon credits should have been clearly considered at the time the decision to go ahead with a project was taken.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	1.1.2 Barrier Analysis	Strength of Barriers	Projects that face high barriers to implementation would be less likely to go ahead without the added incentives of carbon credits.	✗	✓	✗	✓	✓	✗	✓	✗	✓	✓
1.2 Common Practice		Market Penetration	If a practice is already common within a market, it indicates that these types of projects will go ahead without the introduction of carbon credits.	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓
1.3 Legal Considerations		Legal Requirements	Projects that are legally required or incentivized are unlikely to be additional. However, if laws are not enforced, then may still be additional.	✗	✗	✗	✗	✗	✓	✗	✓	✓	✓
1.4 Baseline Approach		Baseline Approach	Each project methodology is scored on the extent to which it mitigates the key risks associated with establishing a baseline scenario.	✓	✗	✗	✗	✗	✗	✗	✓	✗	✓
1.5 Baseline Reasonableness		Baseline Transparency	Transparent detail on a project's assumptions is required to make an objective assessment of a project's performance and additionality.	✓	✗	✓	✗	✗	✗	✗	✓	✗	✓
		Baseline Assumptions	MSCI S&C assesses the key baseline scenario assumptions for each project type — for example, for IFM projects a project's baseline harvesting rates are assessed.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
1.6 Red and Green Flags		News scanning	Review of academic papers, industry sources and the news for Red or Green Flags to project's additionality.	✓ *Standardized approach*									

✓ *Assessed* ✗ *Not Assessed*

1.1.1.1 % of Revenue from Carbon Credits

% of Revenue refers to the proportion of a project's total revenue that comes from the sale of carbon credits.

Rationale	The higher the proportion of a project's revenue that comes from carbon credits, the greater the likely importance of carbon credits to the financial attractiveness of the project. If credits only represent a fraction of the financial return for the project, but the project can still claim credits representing 100% of the emission reductions or removals achieved, additionality is more uncertain.

Key Sources

Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
☑					

Scoring Definition	Each project is scored on a 1-5 scale, where 1 indicates that a very low proportion of revenue comes from carbon credits and 5 indicates that carbon credits are likely the only source of revenue for the project.
Scoring Approach	MSCI S&C conducts a detailed review of project documentation to identify all sources of revenue for a project. Where financial data on the size of these revenue sources is presented, the proportion of total revenue that is estimated to come from carbon credits is calculated based on their estimated annual emissions reductions and the average realized carbon credit price since the project started for IFM projects. Where financial data is not present, the proportion of revenue from each revenue source is estimated given the project's activities. This estimation is based on species- and region-specific prices for harvested wood products, assumptions about the density of oven-dry wood products, and the project's own estimates for the annual volume of harvested wood products in the baseline scenario. Projects then receive a score from 1 to 5 based on the proportion of revenue that carbon credits are estimated to represent in the following way: - 5 = 100% of revenue comes from carbon credits - 4.5 = A very high (95%+) proportion of revenue is estimated to come from carbon credits - 4 = A high (80-95%) proportion of revenue is estimated to come from carbon credits - 3 = A medium (50-80%) proportion of revenue is estimated to come from carbon credits - 2 = A low (10-50%) proportion of revenue is estimated to come from carbon credits - 1 = A very low (<10%) proportion of revenue is estimated to come from carbon credits

1.1.2 IRR Analysis[5]

It is important for IFM projects to demonstrate that without carbon credits there would have been more profitable alternative uses of that land that would have likely resulted in it being deforested or degraded. Projects can evidence this by transparently estimating the profitability of alternative land uses. Projects that conduct this analysis and illustrate a high degree of difference between the project scenario and the most profitable alternative land use support their additionality claims.

There are three metrics that are used to evaluate this sub-criterion:

- **1.1.2.1 Financial Tests and Transparency:** Whether a project uses well-evidenced and transparent approach to their financial analysis.
- **1.1.2.2 Financial Differences:** Whether there is a significant difference in profitability between the most profitable alternative land use and the project scenario.
- **1.1.2.3 NPV Assumption Accuracy:** Whether a project's net present value calculations are aligned to actual market conditions of timber demand in the region.

The overall score for this sub-criterion is reached by weighting each of these factors 20%, 60% and 20%, respectively.

1.1.2.1 Financial Tests and Transparency

Financial tests refer to whether the project uses a detailed and transparent approach to their financial analysis.

Rationale	A project that conducts a more granular financial analysis, in which key information is transparently given, provides more support and credibility to the outcome of this analysis.					
Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑					
Scoring Definition	Each project is scored on a 1-5 scale, where 1 indicates that the project has not conducted any financial analysis and 5 indicates that the project conducted a full internal rate of return (IRR) or net present value (NPV)[6] analysis, and included all relevant revenue and cost assumptions transparently.					
Scoring Approach	MSCI S&C reviews project documentation to identify all the necessary financial tests and disclosures made by a project.					

[5] The internal rate of return (IRR) is a financial method used to calculate an investment's rate of return and profitability. The IRR is the percentage return on each unit of investment across its lifecycle.

[6] Net present value (NPV) is a profitability metric that measures how much an investment is worth throughout its lifetime, discounted to today's value.

	The type of financial analysis methods, such as cost-benefit, NPV, and IRR, used by a project to justify the need for carbon credit revenue is identified. Key revenue and cost assumptions relevant to a project are also identified. Each project is then scored based on both the type of financial test and level of disclosure on a scale of 1 to 5, where 1 indicates no financial analysis is performed, 3 indicates basic financial analysis performed but with a lack of disclosure, and 5 indicates that a full NPV or IRR analysis has been performed with full cost disclosure.

1.1.2.2 Financial Differences

Financial differences relate to whether there is a significant difference in profitability between the most profitable alternative land use and the project scenario.

Rationale	If a project area could have been used for a much more financially attractive land use other than a project's activities, then it indicates that a project would not have gone ahead in the absence of carbon credits. Alternatively, if no other more financially attractive land use existed for a project, then it may have gone ahead even without credits. The larger the profitability gap between a project without carbon credits and the alternative land use, the greater the need for carbon revenue, implying higher additionality.					
Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑				☑	
Scoring Definition	Each project is scored on a 1-5 scale, where 1 indicates that the profitability gap between the project scenario and the alternative land use scenario is less than 20%, and 5 indicates that the profitability gap is more than 95% between the project and alternate land use scenario.					
Scoring Approach	MSCI S&C reviews project documentation to analyze the projected revenues in the project scenario without carbon credits and the alternate land use/baseline scenario. The two revenues are then compared to generate a profitability gap percentage. Where revenue data is not present, the proportion of revenue expected to come from each scenario is estimated. For example, information on the percentage of timber that is planned to be harvested in the baseline scenario is used and combined with third-party species-specific pricing data, to estimate the total baseline scenario revenue. Similarly, project scenario revenue is estimated for projects that have some level of planned timber harvest, using the project's stated volume of harvesting and third-party species-specific pricing data as above. In the case where a project does not conduct any timber harvesting, the project scenario revenue is assumed to be zero.					

Projects then receive a score from 1 to 5 based on the percentage of profitability gap between the project scenario and the baseline/alternate land use scenario in the following way:

- 5 = A very high (95-100%) profitability gap between a project and baseline scenario
- 4 = A high (75-95%) profitability gap between a project and baseline scenario
- 3 = A medium (50-75%) profitability gap between a project and baseline scenario
- 2 = A low (20-50%) profitability gap between a project and baseline scenario
- 1 = A very low (<20%) profitability gap between a project and baseline scenario

1.1.2.3 NPV Assumption Accuracy

Financial evidence relates to whether a project's net present value calculations are aligned to actual market conditions of timber demand in the region.

Rationale	NPV or IRR analyses require forecasting key assumptions over both the short and long term. While many assumptions are naturally based on historic information, it is crucial that these inputs reflect the most up-to-date market conditions and trends. Projects that do not adequately consider key drivers that are leading to upward or downward trends in key market inputs risk incorrectly estimating the profitability of different scenarios. In contrast, projects that appropriately consider relevant market trends will use more accurate long-term inputs and ensure that their profitability analysis is based on accurate estimates.

Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑				☑	

Scoring Definition	Each project is scored on a 1-5 scale, where 1 indicates that a project has failed to account for significant downward trends in price and volume, with no consideration of historical harvesting behavior, and 5 indicates that project already evidences historic harvesting behavior and both price and volume trends are upward.
Scoring Approach	MSCI S&C reviews project documentation to identify the primary timber species in a project area, analyze the ownership structure, and examine historical harvesting in the region. For the relevant timber species, a range of third-party data sources are leveraged to identify the long-term trends in both species volume and price within that

region.[7] This is then combined with historical harvesting behavior and ownership structure to predict future harvest intentions.

Long-term trends for specific timber species are modelled using third-party datasets, which include harvested volume and stumpage prices for each region-species-year. At least a decade of historic time series data is used to derive trends. Where third-party data is not available, projects are not scored on this sub-criterion.

Finally, projects are scored from 1 to 5 based on the direction of long-term market trends for the relevant timber species and the landowner's intent to harvest in the following way:

- 5 = Both volume and price trends are on an upward trajectory with very high intention to harvest
- 4 = Both volume and price trends on an upward trajectory with medium intention to harvest
- 3 = Either volume or price trend on a downward trajectory with medium intention to harvest
- 2 = Both volume and price trend on a downward trajectory with low intention to harvest
- 1 = Both volume and price trend on a downward trajectory with very low intention to harvest

1.1.3 Prior Consideration

Projects that can clearly demonstrate that carbon credits were considered prior to their decision to start, provide more evidence that credits acted as an important incentive in starting mitigation activities.

Two key sub-criteria are used to evaluate this:

- **1.1.3.1 Registration Gap:** Whether any evidence exists that credits were considered prior to the project start.
- **1.1.3.2 Productivity Changes:** The extent to which a project scenario represents a significant deviation from historic practices.

The overall score for 1.1.3 Prior Consideration is determined by an equal weighting of these sub-criteria.

1.1.3.1 Registration Gap

Registration gap evaluates the gap between the start date of the project activity and the project being registered with a crediting standard and able to issue credits.

Rationale	Evidence that carbon credits were considered prior to the project start date indicates that credits played an important role in this decision process. On the other hand, if no

[7] USDA Forest Service (DATIM Home [usda.gov], Forest Economics and Policy (RWU-4804) | US Forest Service Research and Development [usda.gov]), Oregon Government (Oregon Department of Forestry : Timber sales : Forest resources : State of Oregon), Vermont Government (Stumpage Price Reports | Department of Forests - Parks and Recreation [vermont.gov]).

	evidence of prior consideration exists, there is a higher chance that the decision to go ahead with the project occurred without any expectation of carbon credits.

Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑					

Scoring Definition	Each project is scored on a 1-5 scale, where 1 indicates a very significant gap between the initial decision date and the registration date and 5 indicates a short or inconsequential gap.
Scoring Approach	MSCI S&C analyzes project documentation to determine the project's start date and compared this to the date of registration and date of first issuance of the project using the MSCI S&C Carbon Markets platform. The project stated start date is compared to the registration/issuance date and then categorized the gap between these dates into a 1 to 5 scale: - 5 = 2 years or fewer - 4 = 3-4 years - 3 = 5 to 6 years - 2 = 7-9 years - 1 = 10 years or higher

1.1.3.2 Productivity Changes

Productivity Changes relates to the extent to which a project scenario represents a significant deviation from historic practices.

Rationale	The more significant the change in a project's activities compared to historic or baseline activities, the more likely that carbon credits were a motivating factor in the initial decision to go ahead with this change. If productivity of a project area in a project scenario is considerably lower than the baseline scenario, consideration of credits is more likely to be a determining factor in the developer deciding to make this significant change.

Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑					

Scoring Definition	Each project is scored on a 1-5 scale, where 1 indicates very limited difference between a project and baseline scenario, and 5 indicates a substantial gap in productivity between a project and baseline scenarios.

MSCI S&C analyzes land use types and forest management practices, baseline, and historical scenarios to determine the level of change implemented by a project. For instance, a shift from commercial harvesting to full conservation represents a 100% change. Similarly, transitioning from clear cutting to thinning reflects a 70% change.

The percentage reductions in harvested wood products in both a project and baseline scenario are also measured, with significant reductions indicating substantial productivity shifts, and a consequent greater need for carbon credits.

Scoring Approach

Each project is then scored on a 1-5 scale, based on the level of change and harvest reduction as follows:

- 5 = Very high degree of change in management practices and/or 100% harvest reduction in the project scenario compared to the baseline
- 4 = High degree of change in management practices and/or 80% harvest reduction in the project scenario compared to the baseline
- 3 = Medium degree of change in management practices and/or 70% harvest reduction in the project scenario compared to the baseline
- 2 = Low degree of change in management practices and/or 60% harvest reduction in the project scenario compared to the baseline
- 1 = No degree of change in management practices and/or 50% or less harvest reduction in the project scenario compared to the baseline

1.2 Common Practice

If the developer implements a new forest management strategy that is already common practice within that region at the time a project started, then it suggests that a project's activities could have been implemented without carbon credits.

There are three metrics that are used to evaluate this sub-criterion:

- **1.2.1 Evidenced Common Practice:** Whether a project provides clear evidence that its activities were not common practice in that region.
- **1.2.2 Historic Similarity:** Whether the historic harvesting practices appear to be in line with harvesting practices in that region.
- **1.2.3 Geospatial Common Practice:** The extent to which a project's planned forest management strategy is already common in similar plots in the surrounding area.

Each criterion is assessed independently on a scale of 1 to 5. The overall score is then based on weighting 1.2.1 Evidenced Common Practice at 10%, 1.2.2 Historic Similarity 30% and 1.2.3 Geospatial Common Practice at 60%.

1.2.1 Evidenced Common Practice

Evidenced Common Practice relates to whether a project provides clear evidence that its activities were not common practice in that region.

Rationale	By providing a clear justification and evaluation that the forest management strategy is not common practice in that specific region, projects can demonstrate that the nuances of their management strategy are unique and not common.
Key Sources	Project Documentation ☑ | Geospatial | Project Methodology Documentation | Academic Literature | Third-party Data | MSCI Carbon Markets
Scoring Definition	Each project is scored on a 1-5 scale, where 1 indicates no common practice analysis was conducted and 5 indicates an effective common practice analysis was conducted that revealed no similar projects exist in that region.
Scoring Approach	MSCI S&C conducts a detailed review of project documentation to assess the evidence provided to justify the type of common practice identified by a project. The type of common practice activity mentioned may include clear-cutting, short rotations, industrial regime, conversion to plantations or conservation activities. The common practice analysis is then scored on a scale of 1 to 5, where 1 indicates no common practice assessment was performed, and 5 indicates that a common practice assessment was performed and clearly evidenced that the penetration of a project's forest management strategy is very rare in the surrounding region.

1.2.2 Historic Similarity

Historic Similarity relates to whether the historic harvesting practices appear to be in line with harvesting practices in that region.

Rationale	Assessing historic forest loss and degradation patterns provides insight into whether project activities represent a meaningful deviation from historic land-use practices. Where historic forest change within a project area aligns closely with surrounding areas, this may indicate that subsequent changes under the project scenario represent a departure from regionally common practices.
Key Sources	Project Documentation ☑ | Geospatial ☑ | Project Methodology Documentation | Academic Literature | Third-party Data | MSCI Carbon Markets
Scoring Definition	Each project is scored on a 1–5 scale, where 1 indicates that historic forest loss and degradation rates within the project area are materially lower than those observed in the surrounding region, and 5 indicates that historic forest loss and degradation rates within the project area are closely aligned with those observed in the surrounding region.
Scoring Approach	MSCI S&C conducts a geospatial analysis of deforestation and forest degradation rates within the project boundary over the period from 2000 to the project start year,

and compares these rates with corresponding rates in 10 km and 50 km buffer zones surrounding the project area.

Projects whose historic forest change trends are closely aligned with surrounding areas receive higher scores, while projects whose historic forest loss and degradation rates are materially lower than those of the surrounding region receive lower scores.

1.2.3 Geospatial Common Practice

Geospatial Common Practice assesses the extent to which a project's planned improved forest management strategy is already common in the surrounding area.

Rationale	A geospatial analysis of similar plots across the surrounding areas to a project can reveal whether similar improved forest management strategies are already common practice in the area. If surrounding areas with similar characteristics appear to be implementing similar forest management strategies to a project's strategy, it indicates that these types of initiatives may already be common practice in that locality.

Key Sources

Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
☑	☑				

Scoring Definition	Each project is scored on a 1-5 scale, where 1 indicates a project's forest management strategy is already common practice in the surrounding area, and 5 indicates that a project's forest management strategy is not practiced in the surrounding area.
Scoring Approach	Geospatial common practice analysis is performed through a detailed analysis of the current forest management strategies implemented in similar plots to a project. This is conducted through two approaches: (i) reference plot analysis; (ii) surrounding region analysis. **(i) Reference Plot Analysis** First, similar plots to a project area are identified based on 12 main factors: (i) ownership type; (ii) forest type; (iii) productivity class; (iv) elevation; (v) slope; (vi) diameter at breast height (DBH) ; (vii) distance to improved roads; (viii) tree age; (ix) inventory year; (x) eco-province; (xi) regeneration stocking; (xii) commercial stocking. Through this process, all plots within the same state and eco-province from a project area that share each of these characteristics are identified and included in the similarity set. For each plot within the similarity assessment, the predominant forest management strategy of each of these plots is then analyzed. More information on this geospatial similarity and carbon stock modelling approach can be found in Appendix – Geospatial similarity and forest management assessment. **(ii) Surrounding Region Analysis**

MSCI S&C use geospatial data from Hongtao Xu et al. (2024) to determine the main type of forest management in 1 km, 5 km and 10 km buffers surrounding each ARR project through the years 2001-2020.[8]

The project activity is then matched to the most common forest management type in the surrounding area to evaluate the extent to which that project activity is common practice.

For both (i) and (ii), a project's forest management strategy in its project scenario is then compared against the forest management strategy in these similar plots to assess the extent to which this strategy is already common practice in the similar plots. If projects have a forest management strategy that is performed by a significant proportion of similar plots, that indicates that carbon credits are not necessarily required to motivate a landowner to conduct that practice.

Each project is then assigned a score from 1 to 5 based on the proportion of similar plots that perform the forest management strategy in the project scenario as follows:

- 5 = <20% of similar plots perform the project scenario's forest management strategy
- 4 = 20-39% of similar plots perform the project scenario's forest management strategy
- 3 = 40-59% of similar plots perform the project scenario's forest management strategy
- 2 = 60-79% of similar plots perform the project scenario's forest management strategy
- 1 = 80%+ of similar plots perform the project scenario's forest management strategy

1.3 Regulatory Surplus

Foresters in most regions are subject to a combination of federal and local regulations that may determine the types of management practices that are either allowed or incentivized to happen. If a project region already has strict forest management regulations regarding sustainable forestry, landowners will be more incentivized to adopt sustainable practices even without carbon credits. Therefore, a project's activities may not be additional as the project scenario may have been enforced or incentivized without carbon credits.

Two main sub-criteria are considered under regulatory surplus:

- **1.3.1 Evidenced Regulatory Test:** Whether a project conducts a well-evidenced regulatory surplus test as part of its additionality analysis.
- **1.3.2 Regional Regulatory Status:** Whether a project is situated in a region with high sustainable forestry regulation.

[8] Xu, Hongtao, et al. (2024) "Changes in the Fine Composition of Global Forests from 2001 to 2020." Journal of Remote Sensing : 0119.

Each of these criteria is assessed independently on a scale of 1 to 5. The overall score is then based on weighting 1.3.1 Evidenced Regulatory Test at 10% and 1.3.2 Regional Regulatory Status at 90%.

1.3.1 Evidenced Regulatory Test

Evidenced Regulatory Test relates to whether a project conducts a well-evidenced regulatory surplus test as part of its additionality analysis.

Rationale	By providing a clear justification and evaluation that the specific mitigation activity is above and beyond locally stipulated regulations regarding forest management, projects can indicate that the specifics of their activities are additional to any regulation.					
Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑					
Scoring Definition	Each project is scored on a 1-5 scale, where 1 indicates no regulatory surplus test was conducted and 5 indicates a rigorous regulatory surplus test was conducted that proved project activity was not stipulated by any existing forest regulation in the region.					
Scoring Approach	MSCI S&C conducts a review of project documentation to assess what type of regulatory surplus test was performed and what, if any, evidence was cited or not. The strength of this regulatory surplus test is then scored on a scale of 1 to 5, where 1 indicates no regulatory surplus test was performed, 3 indicates a regulatory test has been performed but existing regulations of the region have not been cited, 5 indicates that a detailed regulatory surplus test was performed, which specifically charts the existing regulations in the region at the project start date and evidences that project activities are going beyond these stipulations.					

1.3.2 Regional Regulatory Status

Regional Regulatory Status assesses whether a project is situated in a region with high sustainable forestry regulation.

Rationale	A regional regulatory benchmarking scale is crucial for assessing if projects are in areas with regulations or incentives. Projects in regions where existing rules mandate a shift towards sustainable forest management or impose limits on timber harvest levels have a higher probability of being incentivized to go ahead even without carbon credits.					
Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets

	☑	☑	☑
Scoring Definition	Each project is scored on a 1-5 scale, where 1 indicates that a project is in a region with strict stipulations, and 5 indicates that a project is in a region with no regulatory mandates on forest management or timber harvesting.		
Scoring Approach	Through a detailed review of third-party and academic literature sources, in particular national and sub-national forest policy frameworks, MSCI S&C assesses the policy environment relevant to each IFM project. The assessment considers the existence and applicability of policies across six policy components: (i) harvesting restrictions; (ii) wildlife habitat and species protection rules; (iii) sector-specific targets and strategies; (iv) restocking and regeneration mandates; (v) financial incentives; and (vi) capacity building and training programs. The relevance of each policy component is evaluated in relation to the specific IFM project subtype, recognizing that different management changes are subject to different regulatory and incentive structures. For example, harvesting restrictions and conservation mandates are more relevant for production-to-conservation projects, while rotation length rules, restocking requirements and financial incentives are more relevant for extended rotation projects. For each project, MSCI S&C identifies which of the six policy components are both in force at the project start date and directly relevant to the project's stated management activities. The cumulative presence of relevant policies is then used to assess the likelihood that the project's activities could have been required or incentivized in the absence of carbon credit revenue. Based on the locality of the project boundary and its IFM subtype, projects are assigned a score on a 1 to 5 scale, where: – 5 = No relevant policies or incentives exist that would require or materially incentivize the project's forest management activities. – 4 = Limited relevant policies or incentives exist, but they are unlikely to materially influence implementation of the project's activities. – 3 = A moderate set of relevant policies or incentives exist that could partially support the project's activities. – 2 = A strong set of relevant policies or incentives exist that materially support the project's activities. – 1 = A comprehensive and enforceable policy framework exists that would likely require or strongly incentivize the project's activities.		

1.4 Baseline Approach

The net emissions impact of a project's activities relies on comparing the emissions impact under the project scenario to what would have occurred in the counterfactual baseline scenario. For IFM projects,

this baseline represents the forest management strategy, and subsequent forest carbon stock changes, that would have occurred without a project's activities.

There are numerous approaches IFM projects can use to set this baseline. The most common approaches are net present value (NPV) maximization, historical trend analysis, common practice analysis or dynamic baselining. Each of these approaches aims to predict how the forest would have been managed without a project.

Each approach has inherent advantages and disadvantages, and fundamentally differs in its relevance depending on a project's characteristics. For example, an NPV maximization approach is well suited for timber companies with a history of industrial forest management where profit-maximization has been the primary motivator of decision-making. But it may be less suitable for a family/conservation landowner type that has different behavior and motivations.

The time period in which the baseline scenario is modelled also plays an important role in whether that scenario is reasonable and minimizes the risk of overestimation.

Two main sub-criteria are considered to determine the baseline approach:

- **1.4.1 Type of Approach:** Whether a project's approach for determining its baseline scenario is suitable given that project's characteristics.
- **1.4.2 Number of Years:** Whether a project has considered an appropriate time frame for setting the baseline scenario.

Each of these criteria is assessed independently on a scale of 1 to 5. The overall score is then based on weighting 1.4.1 Type of Approach at 80% and 1.4.2 Number of Years at 20%.

1.4.1 Type of Approach

Type of Approach relates to whether a project's approach for determining its baseline scenario is suitable given that project's characteristics.

Rationale	Different methodological approaches (NPV, Common Practice, etc.) can lead to very different determinations of the most likely baseline scenarios. Projects that use an unsuitable methodological approach given their characteristics carry a greater risk of estimating an unreasonable baseline scenario. The choice of approach should suit the behavioral characteristics of the landowner.					
Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑			☑	☑	
Scoring Definition	Each project is scored on a 1-5 scale, where 1 indicates that the selected baseline approach appears highly unsuitable given the landowner's behavior and 5 indicates that there appears to be a high suitability of the baseline approach given the landowner's behavior.					

Scoring Approach

MSCI S&C reviews project documentation to assess what type of baseline approach a project used to establish its baseline scenario. Further, the ownership type of the landowner is also determined using project documentation and desk research. This landowner type is classified under various categories such as small corporate, local timber company, local government, NGO, private landowner/family, etc.

Based on academic literature on the behavioral characteristics of different landowner types, each project is then scored based on the type of baseline setting approach for a particular type of landowner, in the following way:

		Baseline Approach				
		Economic Incentive Plan/NPV Maximization	Aggressive Industrial Harvest Regime	Historical	Common Practice	Dynamic Baseline
Landowner Type	Federal Government	2.5	2.5	4	4	5
	State Government	3	3	4	5	5
	Local Government	3	3	4	3	5
	Large Corporate: (National or Multinational) Timber/Forest Management Company	5	5	3	2.5	5
	Small Corporate: Local Timber/Forest Management Company	4	4	4	3	5
	Private Landowner/Family	3	3	5	5	5
	NGO	1	1	5	3	5
	Other Private	3	3	4	5	5
	Tribal	3	3	5	3	5
	University or Educational Institution	2	2	5	3	5
	Other (please specify)	2.5	2.5	3	3	5

1.4.2 Number of Years

Number of Years assesses whether a project has considered an appropriate time frame for setting the baseline scenario.

Rationale

Projects model their baseline scenario on varying timescales, ranging from several years to 100 years or greater. Longer timescales ensure that the modelling approach appropriately accounts for long-term harvesting cycles and forest management strategies. They better reflect the long-term timeframe through which most foresters manage land.

Key Sources

Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
☑					

Scoring Definition

Each project is scored on a 1-5 scale, where 1 indicates that the timescale is not appropriate to consider longer-term silvicultural prescriptions and 5 indicates that the timescale is appropriate for longer-term silvicultural prescriptions.

Scoring Approach	MSCI S&C reviews project documentation to assess the number of years the baseline scenario has been modelled for. The different timescales are then scored in the following way: - 1 = Fewer than 15 years - 2 = 15 to 19 years - 3 = 20 to 39 years - 4 = 40 to 99 years - 5 = 100 years or greater

1.5.2 Baseline Reasonableness

IFM projects primarily focus on medium-growth forest areas that contain economically valuable timber species. The key premise of these projects is that without carbon credits, landowners would have harvested the land. To calculate the net emissions impact of a project, IFM developers must determine what the forest management practice would have been in this baseline scenario. Projects that overestimate the amount of harvesting that would have occurred, and subsequently the carbon that would have been removed in the baseline scenario, will overestimate their emissions impact.

Establishing this baseline scenario, which represents a counterfactual, is inherently complex. As it is not possible to know for certain what would have happened in this counterfactual, assessing the reasonableness of a project's baseline scenario assumptions must be done in a probabilistic way.

Further, given the uncertainties that exist, it is important that any estimates of baseline deforestation rates do not overly rely on one single approach. The reasonableness of an IFM project's baseline scenario is therefore assessed through a number of considerations that avoid placing an over-reliance on a single approach and build a rich picture of that project's individual context.

Four sub-components are considered to evaluate a project's baseline reasonableness:

- **1.5.2.1 History and Ownership:** How plausible the baseline scenario is given the history, ownership, and geographical context of a project.
- **1.5.2.2 Project Region Market Access:** Whether a project area is located in a region with clear access to commercial markets through which it can sell harvested products.
- **1.5.2.3 Gerrymandering:** Whether a project appears to have carefully chosen plots that were difficult to harvest, and hence would likely have been conserved anyway.
- **1.5.2.4 Baseline Carbon Stock Reasonableness:** Whether a project's baseline carbon stock assumption appears reasonable when compared against similar areas.

Each of these criteria is assessed independently on a scale of 1 to 5.

The overall score is then based on weighting 1.5.2.1 History and Ownership at 45%, 1.5.2.2 Project Region Market Access at 5%, 1.5.2.3 Gerrymandering at 5% and 1.5.2.4 Baseline Carbon Stock Reasonableness at 45%.

1.5.2.1 History and Ownership

History and Ownership evaluates how plausible the baseline scenario is given the history, ownership and geographical context of a project.

Rationale	To assess the plausibility of a project's baseline scenario, it is important to evaluate the specific historic conditions and context of a project, and whether any factors or trends exist that would have motivated a departure from historic land use in the baseline. For IFM projects, the baseline scenario usually centers around significant amounts of harvesting that the developer claims would have occurred without a project. A detailed analysis of the history and ownership of a project can help to build a picture of the behavior of the landowners and the likelihood of this baseline harvesting strategy. Considering both the history and drivers of change for a project can therefore build up a more nuanced view on the plausibility of baseline harvesting strategy. For example, in a project area with no harvesting history, if recent factors (such as landowner financial constraints) exist that indicate that it is likely the landowner would have departed from historic practices, then a baseline harvesting strategy would be more reasonable.

Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑	☑		☑	☑	

Scoring Definition	Each project is scored on a 1-5 scale, where 1 indicates a very low intention to harvest and 5 indicates a very high intention to harvest.
Scoring Approach	Evidence of Intention to Harvest uses a logic-based approach to determine harvest intention through a detailed analysis of project context, relevant academic literature, third-party media discourse and geospatial data. The logic model is based on three main stages: 1. **History and Ownership:** Does the history and ownership of the land indicate high likelihood of harvesting? 2. **Drivers of Change:** Has anything changed to make the likelihood of future harvesting different to what occurred historically? 3. **Red or Green Flags:** Are there any other red flags associated with the intention to harvest? **1. <u>History and Ownership</u>** Through a detailed review of project documentation combined with third-party desk research, the ownership type of the current landowner is categorized. This is then combined with geospatial analysis on the historic harvesting rates within a project over the past 25 years. This analysis identifies whether past harvesting has taken place in a project area and its intensity.

In combination, projects are then categorized into two groups:

I. **Projects owned by a timber company or with past harvesting history.**
II. **Projects with no harvesting history.**

2. Drivers of Change

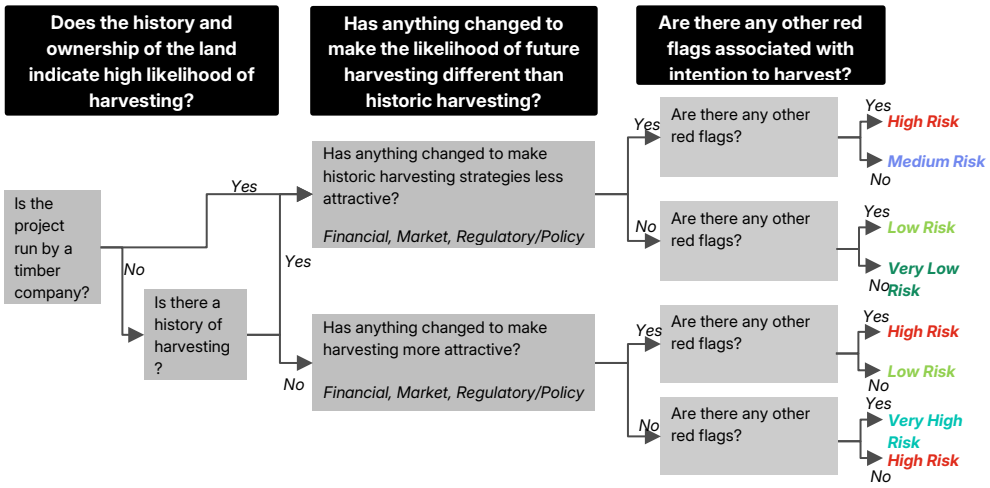
MSCI S&C then assesses whether any trends or drivers exist that were likely to have disrupted this status quo, and therefore mean that future land use was likely to differ from the historic one. For example, for category I projects, potential drivers that would have made harvesting less attractive and likely are reviewed (such as changes in market conditions, and/or regulatory policy). For category II projects, potential drivers that would have made harvesting more plausible than historically are analyzed (such as the specific financial context of the landowner).

This assessment is done through third-party analysis (e.g., news sources, company documents and other financial documentation) on each of these drivers alongside developer outreach to better understand a project's context and to identify any evidence that indicated a driver of change.

3. Red or Green Flags

Lastly, further desk research is conducted to identify any red or green flags that provide either opposing or supportive evidence for the intention to harvest. For example, a red flag might involve an article in which a landowner claims that they would not have harvested the land area even without carbon credits.

The overall logic is shown in the flow chart below:



The output of the above assessment is synthesized into a 1 to 5 score in the following way:

For category I projects, those owned by a timber company or with past harvesting history:

- 5 = Discourse analysis shows that status quo is still applicable, i.e., harvesting is not unlikely/less attractive. No red flags reported in opposition. Thus, appears there was likely very high intention to harvest at the time a project started.
- 4 = Discourse analysis shows that status quo is still applicable, i.e., harvesting is not unlikely/less attractive. Low evidence of red flags reported in opposition. Thus, likely high intention to harvest.
- 3 = Discourse analysis shows that status quo has changed to a certain extent i.e., harvesting is unlikely/less attractive because of larger market or policy changes. Low evidence of red flags reported in support. Thus, likely medium intention to harvest.
- 2 = Discourse analysis shows that status quo has changed to a high extent i.e., harvesting is unlikely/less attractive because of financial or ownership change. Medium evidence of red flags reported in support. Thus, likely low intention to harvest.
- 1 = Discourse analysis shows that status quo has changed to a very high extent i.e., harvesting is unlikely/less attractive because of financial or ownership change. High evidence of red flags reported in support. Thus, likely very low intention to harvest.

For category II projects, those with no harvesting history:

- 5 = Discourse analysis shows that status quo has drastically changed, i.e., harvesting is likely/more attractive because of imminent threat of property purchase for commercial development. High evidence of red flags reported in support. Thus, appears there was likely very high intention to harvest at the time a project started.
- 4 = Discourse analysis shows that status quo has largely changed, i.e., harvesting is likely/more attractive because of lack of funding for current conservation activities. Medium evidence of red flags reported in support. Thus, likely high intention to harvest.
- 3 = Discourse analysis shows that status quo has changed, i.e., harvesting is likely/more attractive because of regulatory/policy change in favor of relaxed norms for harvesting. Low evidence of red flags reported in support. Thus, likely medium intention to harvest.
- 2 = Discourse analysis shows that status quo has not changed, i.e., harvesting is unlikely/less attractive. Low evidence of red flags reported in support. Thus, likely low intention to harvest.
- 1 = Discourse analysis shows that status quo has not changed, i.e., harvesting is unlikely/less attractive. High evidence of red flags reported in support of low intention to harvest. Thus, likely very low intention to harvest.

1.5.2.2 Project Region Market Access

Project Region Market Access relates to whether a project area is located in a region with clear access to commercial markets through which it can sell harvested products.

Rationale	If projects are located in areas without easy access to commercial markets through which to sell any harvested products, then any proposed harvesting strategy appears less feasible. Market accessibility is determined by geospatial indicators, such as the

	topographic characteristics of a project (e.g., slope, elevation) and key economic indicators (e.g., distance to roads, population density, and protected areas).

Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
		☑				

Scoring Definition	Each project is scored on a 1-5 scale, where 1 indicates a project has very limited access to local markets and 5 indicates that a project has high market access.
Scoring Approach	Project area maps are used to build a profile of various geospatial indicators for each project area, such as elevation, slope, distance to roads, distance to protected areas, and population density. MSCI S&C then analyzes these indicators to assess the extent to which a project is connected to relevant timber markets. For example, if a project area contains areas of steep slopes with no nearby roads, it is likely that harvesting, hauling, and transporting the harvested timber logs would be practically very challenging. The output of the above assessment is synthesized into a 1 to 5 score in the following way: - 5 = Project is very highly accessible and connected to local markets - 4 = Project is highly accessible and connected to local markets - 3 = Project is moderately accessible and connected to local markets - 2 = Project faces some challenges regarding its accessibility and local connectedness - 1 = Project faces significant challenges regarding the accessibility and connectedness to local markets

1.5.2.1.3 Gerrymandering

Gerrymandering relates to whether a project has manipulated its project boundaries to include plots that were particularly difficult to harvest.

Rationale	Project areas may include areas that are particularly hard to access and/or harvest. For example, project areas situated in locations of high elevation, or between ridges, or in a gorge or canyon, will have lower likelihood of harvesting due to these practical challenges. If a project has included areas of low harvesting plausibility, there is higher risk that the baseline carbon stocks will be unreasonable when including these areas.

Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑	☑				

Scoring Definition	Each project is scored on a 1-5 scale, where 1 indicates that a project boundary has high risk of gerrymandering and 5 indicates a project boundary appears to have been drawn in an unbiased way.
Scoring Approach	An isoperimetric quotient is built for each project through analyzing project area maps geospatially. An isoperimetric quotient is a measure of the level of commonality and contiguousness within a project area. Project areas which have low homogeneity will have a low isoperimetric quotient. Alternately, projects sites which are in close proximity to each other and have higher homogeneity will have a higher isoperimetric quotient. A low isoperimetric quotient suggests that given the variation in a project area, the baseline scenario is less representative of the entire project area. On the other hand, high isoperimetric quotient suggests that the sites are nearby and almost all the sites are equally placed for any harvesting plans the landowner might have. The output of the above assessment is synthesized into a 1 to 5 score in the following way: - 5 = Very high isoperimetric quotient of 0.9-1. Projects appear to have a very low chance of gerrymandering. - 4 = High isoperimetric quotient of 0.7-0.8. Projects appear to have a low chance of gerrymandering. - 3 = Medium isoperimetric quotient of 0.5-0.6. Projects appear to have a medium chance of gerrymandering. - 2 = Low isoperimetric quotient of 0.3-0.4. Projects have a high chance of gerrymandering. - 1 = Very low isoperimetric quotient of 0.2 or lower. Projects have a very high chance of gerrymandering.

1.5.2.4 Baseline Carbon Stock Reasonableness

Estimating the baseline harvesting strategy and change in carbon stock that would have occurred if a project did not happen is the hardest-to-measure assumption for IFM projects. As it is not possible to know for certain what would have happened in this counterfactual scenario, assessing the reasonableness of a project's baseline scenario assumptions must be done in a probabilistic way.

IFM projects identify a baseline forest management strategy through a number of methods, and then model the changes in carbon stock that would have occurred due to this strategy.

Through comparing this modelled view of baseline carbon stocks with the carbon stocks in similar plots in the surrounding areas, it is possible to analyze how reasonable a project's baseline carbon stocks are. Baseline carbon stock reasonableness is assessed in two ways:

- **1.5.2.4.1 Dynamic Baseline Reasonableness:** Whether a project's baseline carbon stock changes appear reasonable given the carbon stock changes in similar plots.
- **1.5.2.4.2 Trend Analysis:** Whether trends in carbon stock within the project area prior to the project start date indicate that carbon stock growth may have occurred even without the project's activities.

Each criterion is scored on a 1 to 5 scale, and the overall score is reached by weighting 1.5.2.4.1 Dynamic Baseline Reasonableness at 70% and 1.5.2.4.2 Trend Analysis at 30%.

1.5.2.4.1 Dynamic Baseline Reasonableness

Dynamic Baseline Reasonableness relates to whether a project's baseline carbon stock changes appear reasonable given the carbon stock changes in similar plots since a project started.

Rationale	Typically, the baseline forest management strategy and carbon stocks used by a project should not be dissimilar to the forest management strategies and carbon stocks of other representative plots (that don't have carbon credit projects) in the surrounding area. There is an increased risk of over-crediting if a project baseline carbon stock reduction is (significantly) higher than the rates in similar surrounding areas during a project's operation.

Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑	☑				

Scoring Definition	Each project is scored on a 1-5 scale, where 1 indicates that a project's baseline carbon stock appears highly unreasonable compared to regional carbon stocks and 5 indicates that a project's baseline carbon stock appears highly reasonable.
Scoring Approach	Given it is a counterfactual scenario, it is not possible to say with 100% certainty what would have happened in a project area in the absence of carbon credits. However, through analyzing a multitude of similar representative plots to a project area, it is possible to build up a detailed picture of the most likely scenarios that would have occurred. If the carbon stock changes in the vast majority of these representative areas all produce a lower carbon stock reduction than that assumed by a project, it would suggest that a project has overestimated its baseline. A project's baseline carbon stock is compared to a set of similar representative plots. The set of similar representative plots are created through identifying all those within the same ecoregion and state to a project region that share 12 criteria: (i) ownership type; (ii) forest type; (iii) productivity class; (iv) elevation; (v) slope; (vi) diameter at breast height (DBH); (vii) distance to improved roads; (viii) tree age; (ix) inventory year; (x) eco-province; (xi) regeneration stocking; (xii) commercial stocking. The geospatial modelling used to construct these similar representative plots is described in more detail in the Appendix – Geospatial similarity and forest management assessment section of this document. In total, a project's baseline carbon stock and forest management strategy are compared to a large number of data points from these representative plots. For each of the representative plots, both the rate of carbon stock change and the predominant forest management strategy are assessed over a 20-year time-period from 2000 to 2020. Given how carbon stocks can fluctuate significantly year-by-year

depending on the harvesting strategy, the longer time horizon reduces the impact of annual volatility. The carbon stock changes in the representative plots are then compared to a project's baseline carbon stock change, which is computed for the 20-year baseline period by analyzing annual above-ground carbon stock assumptions from project documentation.

The carbon stock change in a project's 20-year baseline scenario is then compared with the representative plots in two ways: (i) difference in average percentage of carbon stock loss year-on-year, and (ii) difference in highest percentage of carbon stock loss observed within 20 years. The closer a project's assumed baseline carbon stock changes are to the carbon stock changes within the reference plots, the more reasonable a project's baseline is. In contrast, higher differences indicate a less reasonable, more unconservative baseline scenario.

Each project is scored on a 1 to 5 scale as follows:

- 5 = Project's baseline scenario is within 3% of the average and highest percentage carbon loss within the representative plots, indicating a project's baseline is highly reasonable.
- 4 = Project's baseline scenario is greater than 3% and less than 6% of the average and highest percentage carbon loss within the representative plots, indicating a project's baseline is somewhat reasonable.
- 3 = Project's baseline scenario is greater than 6% and less than 12% of the average and highest percentage carbon loss within the representative plots, indicating moderate risk that a project's baseline is overestimated.
- 2 = Project's baseline scenario is greater than 12% and less than 20% of the average and highest percentage carbon loss within the representative plots, indicating high risk that a project's baseline is overestimated.
- 1 = Project's baseline scenario is greater than 20% of the average and highest percentage carbon loss within the representative plots, indicating very high risk that a project's baseline is overestimated.

1.5.2.4.2 Trend Analysis

Trend Analysis relates to whether trends in carbon stock within the project area prior to the project start date indicate that carbon stock growth may have occurred even without the project's activities.

Rationale	Analyzing historic trends in forest carbon stocks provides insight into whether carbon stocks were already increasing prior to project start. Sustained upward trends may indicate a higher likelihood that carbon stocks would have continued to increase under a baseline scenario, increasing the risk of overestimating additional removals. However, given the long harvesting cycles typical of forest management, observed biomass growth does not necessarily imply baseline carbon stock growth. This consideration is particularly relevant for IFM projects that generate removals without harvesting activity.

Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets

	☑	☑
Scoring Definition	Each project is scored on a 1–5 scale, where 1 indicates that carbon stocks exhibit a significant and consistent upward trend prior to project start, and 5 indicates that no clear upward trend is observed in pre-project carbon stocks.	
Scoring Approach	MSCI S&C conducts a geospatial analysis of above-ground carbon stock changes within the project boundary over the 20 years prior to the project start date. A regression analysis is then used to assess the direction and consistency of carbon stock trends over this period. Projects exhibiting a statistically consistent upward trend in carbon stocks receive lower scores, reflecting a higher likelihood that carbon stocks would have increased in the baseline scenario. Projects exhibiting flat, declining, or highly variable trends receive higher scores, reflecting lower baseline growth likelihood. Results are interpreted in the context of project type and management regime. For removal-only IFM projects with no harvesting, trend analysis is given particular weight, as historic growth patterns provide important evidence for assessing baseline carbon stock assumptions.	

Criterion 2 – Quantification

Quantification refers to the likelihood that the emission reduction or removals claimed by a project are accurate, assuming the baseline scenario is correct. It includes both emission reductions or removals within a project area and emissions released or generated outside the project area, known as leakage.

Along with the strength of baseline assessment, quantification is a key determinant of the risks of over-crediting: whether the number of credits issued by the project is equal to the CO_2e actually reduced/removed. In theory, all carbon credits are worth the equivalent of 1 tonne of CO_2e reduced or removed. A low Carbon Quantification Score means that the emission reductions or removals delivered by the credit is likely to be less than 1 tonne. In this case, buyers should be cautious in using one credit to offset 1 tonne of their own emissions as they are unlikely to be equivalent.

Quantifying an IFM project's emission reductions, even assuming the baseline scenario has been accurately estimated, requires a complex estimation. As natural living ecosystems spread over what is often a very large and sometimes inaccessible area of land, measurement of a IFM project's carbon stock inevitably involves a degree of estimation and inaccuracy. Historically, carbon stock was measured by teams on the ground taking occasional samples of an area's biomass, although geospatial datasets and analysis are increasingly being used to complement this manual sampling.

Further, compared to other nature-based projects, the risk of leakage is particularly high for IFM projects as project sites may be highly connected to timber markets, and any reduction in harvesting within a project area may be easily offset by more harvesting elsewhere.

Figure 7 illustrates the sub-criteria through which MSCI S&C assesses the quantification of IFM projects, and the Integrity Assessment framework sub-criteria to which they refer. The detailed sub-criteria are described in **Figure 8**.

Figure 7: IFM Quantification assessment approach

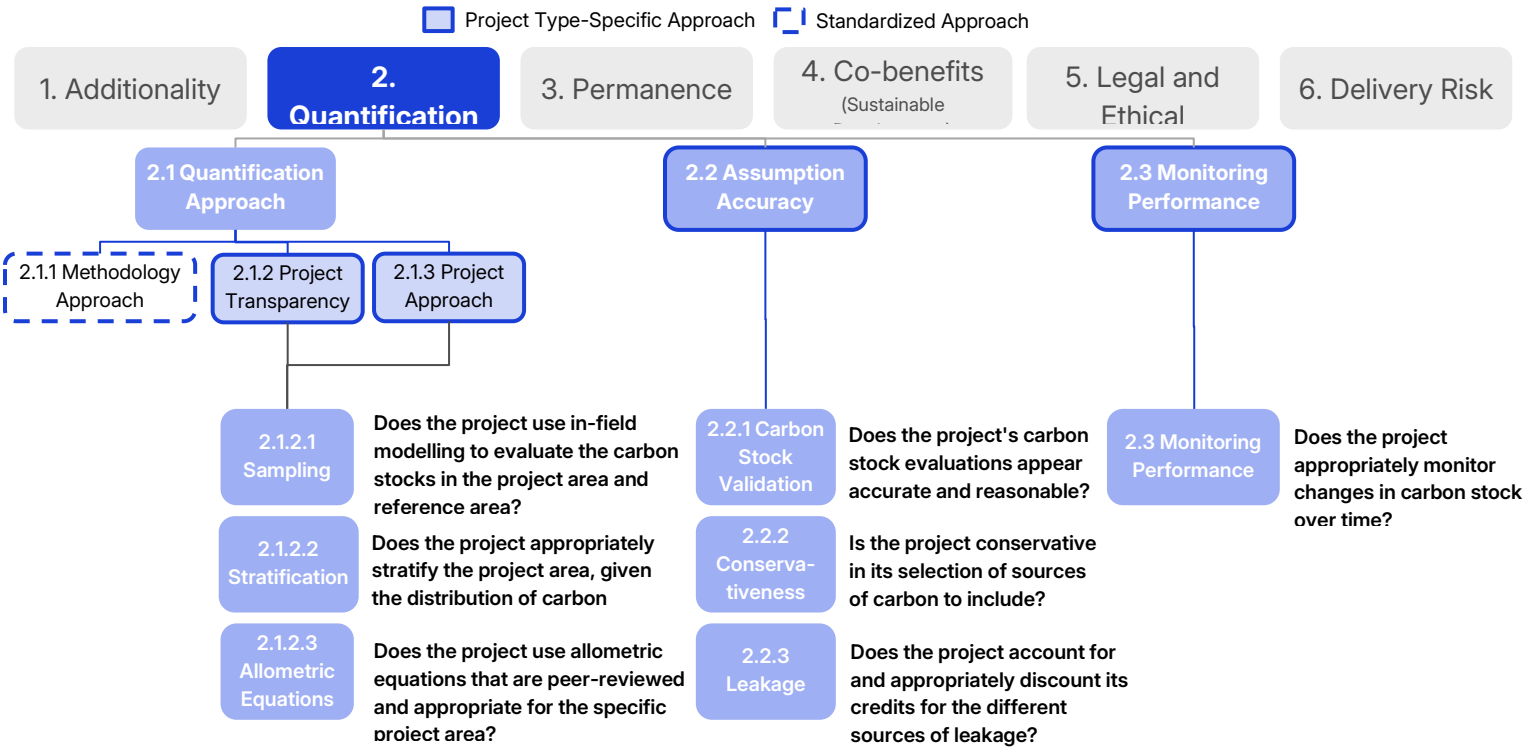


Figure 8: MSCI S&C Quantification integrity assessment framework

Sub-criteria	Metrics	Rationale	REDD+	Renewables	ARR	Cookstoves	Biochar	Landfill Gas	Safe Water	IFM	Waste Mgmt.	Blue Carbon
2.1 Quantification Approach	**2.1.1 Methodology Approach**	Through setting the assumptions that projects must make, and the sources that can be used to estimate them, crediting program methodologies can play an important role in reducing or even increasing the level of quantification risk.	✓ *Standardized approach*									
	2.1.2 Project Transparency	Transparent documentation and detail on a project's assumptions are required to make an objective assessment of its approach to carbon quantification.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	2.1.3 Project Approach	Two projects with the same methodology may carry different quantification risks depending on the approaches that each uses.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2.2 Assumption Accuracy	**Quantification Accuracy**	Each project type has a set of key assumptions that determine the accuracy of their carbon quantification. Evaluating the reliability and accuracy of these key assumptions shows whether a project has over- or understated their emission reductions or removals.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2.3 Monitoring Performance	**2.3.1 Monitoring Plan**	Projects that have effective processes in place to regularly monitor and measure key quantification inputs and assumptions are more likely to accurately estimate and update their emissions impact.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	2.3.2 VVB Analysis	Projects that use a diverse mix of well-regarded verification and validation bodies (VVBs) will improve the likelihood that key quantification details are accurately checked and validated.	✓ *Standardized approach*									
2.4 Red and Green Flags	**News scanning**	Review of academic papers, industry sources and the news for Red or Green Flags relating to project's quantification.	✓ *Standardized approach*									

2.1.2 Project Quantification Approach

Projects that use scientifically best-practice techniques to estimate key components of their quantification increase the probability that CO_2e impact will be accurately measured.

There are three metrics that are used to evaluate this sub-criterion:

- **2.1.2.1 Sampling:** Whether the project uses suitable and representative sampling approaches to estimate its carbon stock.
- **2.1.2.2 Stratification:** Whether a project appears to employ an appropriate stratification of the project area.
- **2.1.2.3 Allometric Equations:** Whether the project employs a peer-reviewed and suitable allometric equation as part of its carbon stock calculations.

The overall score is then based on weighting 2.1.2.1 Sampling at 50%, 2.1.2.2 Stratification at 25% and 2.1.2.3 Allometric Equations at 25%.

2.1.2.1 Sampling

Sampling relates to whether the project uses suitable and representative sampling to measure the carbon stock within the project area.

Rationale	To estimate the carbon stock within their project area, projects must use tree measurements from a sample of the project area as an input in their calculations. Given that these measurements are then extrapolated over the entire project area, the accuracy of the estimate is dependent on how representative the sampled area is to the entire project area. Projects that use more representative sampling techniques over a larger area increase the chances that this sampled area will be representative of the entire project area.					
Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑					
Scoring Definition	Each project is scored on a 5-point scale from 1 to 5, where 1 indicates a relatively low sampling representativeness and 5 indicates a relatively high sampling representativeness.					
Scoring Approach	MSCI S&C conducts a detailed review of each project's key documents to understand its approach to carbon stock estimation and its sampling procedures during both its design and monitoring phases. For each project, two key factors are considered. First, if the project combined in-field sampling with any remote sensing. Second, the number and size of plots sampled to understand what proportion of the total project area had been sampled. Projects that sample over 0.1% of their area and support this with remote sensing receive the highest score of 5. Projects that sample less than 0.01% of their project					

area or do not provide any transparent information on their sampling receive the lowest score of 1.

For project areas with high homogeneity, if the number of sampling plots is higher than 300, then a project will receive a score of 5, given that increasing the number of plots beyond this number is unlikely to materially improve the statistical significance of the estimate.

2.1.2.2 Stratification

Stratification refers to whether a project appears to employ an appropriate stratification of its area.

Rationale	Stratification relates to the layers of different vegetation within a forest. Appropriately stratifying a project's land into areas of distinct vegetation is an important part of accurately estimating and recording the carbon stock within a project area. Projects that do not appropriately stratify their land may use samples from one vegetation layer to make estimates for another vegetation layer, which may have very different characteristics.

Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑	☑			☑	

Scoring Definition	Each project is scored on a 5-point scale from 1 to 5, where 1 indicates that no stratification appears to be used despite clear differences in tree species, age and forest type, and 5 indicates that an appropriate amount of stratification has been used by a project.
Scoring Approach	MSCI S&C reviews in detail each project's documentation to understand if and how they have created different strata within the area. The number of strata is then compared to the number of tree species planted to validate whether the stratification appears appropriate based on tree types. Projects receive a point if they stratified their area based on species, age and region, with a maximum score of 3 achieved based on *how* projects created their stratification. Projects then could receive an additional 2 points if the number of strata was more than the number of tree species planted in the area. These individual scores were then summed up, with all projects receiving a score of between 1 and 5.

2.1.2.3 Allometric Equations

Allometric Equations relates to whether the project uses peer-reviewed allometric equations that are appropriate for the region, forest type and biome type.

Rationale	Allometric equations are used to convert tree measurements into the amount of carbon they contain. The accuracy of this calculation is therefore dependent on the appropriateness of the allometric equation used. The most scientifically appropriate equations will be peer-reviewed and specifically chosen by a project based on their relevance to the project's key characteristics.

Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑				☑	

Scoring Definition	Each project is scored on a 5-point scale from 1 to 5, where 1 indicates that a non-peer reviewed allometric equation was used that does not appear to be appropriate for the region or species, and 5 indicates that a species/region/forest-type relevant equation from a peer-reviewed study was used.
Scoring Approach	MSCI S&C identifies the specific allometric equation(s) a project uses in its carbon stock calculations. This specific study for the allometric equation is then researched to determine whether it was peer-reviewed and its relevance for the project's key characteristics. Projects that use a peer-reviewed equation receive 2 points. Projects receive an additional point if their equation is relevant to each of the region, tree species and forest type.

2.2 Accuracy of Assumptions

The accuracy of key project quantification assumptions is evaluated against a combination of internal and third-party estimates to determine whether they appear reasonable.

There are three components that are used to evaluate this sub-criterion:

- **2.2.1 Carbon Stock Accuracy:** Whether the project's carbon stock assumptions appear accurate and reasonable over the project lifetime.
- **2.2.2 Conservativeness:** Whether the project has conservatively excluded certain sources of carbon pools from its calculations.
- **2.2.3 Leakage:** Whether the project appropriately accounts for and compensates for the threat of leakage.

Each of these components are evaluated on two dimensions:

- **A percentage accuracy**, reflecting how closely the project's assumptions align with independent data. Values above 100% indicate conservative assumptions (i.e., underestimation of impact).
- **A 1- 5 score**, reflecting the level of alignment and uncertainty.

The overall score is reached through a weighted multiplicative approach based on the percentage accuracy of each component. A multiplicative approach is applied to the percentage accuracy values to

calculate an overall accuracy score. This method reflects consistent alignment across components and preserves credit for conservative assumptions where applicable.

Each of these components are evaluated on a 1 to 5 scale. To reach the overall score, 2.2.1 Carbon Stock Accuracy is weighted at 30%, 2.2.2 Conservativeness is weighted at 20% and 2.2.3 Leakage is weighted at 50%.

2.2.1 Carbon Stock Accuracy

Carbon Stock Accuracy is assessed through three sub-criteria:

- **2.2.1.1 Carbon Pools:** Whether the project has excluded certain sources of carbon pools from its calculations.
- **2.2.1.2 Carbon Stock Validation:** Whether the project's carbon stock assumptions at project start appear accurate and reasonable.
- **2.2.1.3 Biomass Growth Validation:** Whether the project's carbon removal estimates for above-ground biomass appear accurate and reasonable.

Each of these sub-criteria are evaluated on a 1 to 5 scale. To reach the overall score, 2.2.1.1 Carbon Pools is weighted at 20%, 2.2.1.2 Carbon Stock Validation is weighted at 50% and 2.2.1.3 Biomass Growth Validation is weighted at 30%.

2.2.1.1 Carbon Pools

Carbon Pools relates to whether the project has excluded certain sources of carbon pools from its calculations.

Rationale	The carbon stock of a forested area comprises not only the trees that are visible above-ground, but also the below-ground biomass, such as soil organic carbon and other dead wood. Deforestation and degradation can impact the carbon stored in each of these carbon pools but is not always accounted for by projects. Projects that do not estimate the carbon stock within certain pools, such as soil organic carbon, will estimate their emissions impact more conservatively than if they include all these pools in their calculations.					
Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑			☑		
Scoring Definition	Each project is scored on a scale of 3.25 to 5, where 3.25 indicates no optional carbon pools were excluded from a project's calculations and 5 indicates that only biomass carbon pools were included in a project's carbon stock calculations.					
Scoring Approach	MSCI S&C conducts a detailed review of each individual project's documents to identify which carbon sources were included in its carbon stock calculation. The carbon sources reviewed include: above-ground biomass; below-ground biomass; dead wood; wood products; soil organic carbon and litter.					

Given that each of these pools has different significance to the overall carbon stock, the proportion of the total carbon stock that any excluded pools likely represent are estimated based on an average from similar projects and academic literature findings. For example, soil organic carbon is, on average, four times more important as a carbon source than dead wood or litter, so its exclusion is more conservative than the exclusion of dead wood or litter.

All projects received a score of at least 3.25 for including mandatory above-ground and below-ground biomass sources. Projects then receive an additional 1 point if they conservatively exclude soil organic carbon, and 0.25 points if they conservatively exclude each of dead wood, litter and wood products.

2.2.1.2 Carbon Stock Validation

Carbon Stock Validation refers to whether a project's carbon stock estimates appear accurate and reasonable.

Rationale	Carbon stock per hectare assumptions are subject to calculation uncertainty. Projects that overestimate their carbon stock may overestimate their emission reduction impact.

Key Sources

Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑				

Scoring Definition	Each project is scored on a continuous percentage scale, where 100% indicates that geospatial estimates (once accounting for uncertainty intervals) match the project's assumption, 50% indicates that the project's carbon stock per hectare is only half of the project's assumption and 200% indicates that the project's carbon stock per hectare may be over double the project's assumption.
Scoring Approach	Through a detailed review of project documentation, MSCI S&C identifies the above-ground carbon stock estimated by a project at the start year of a project and successive years of the overall crediting period. As projects do not provide this in a standardized way, three main inputs are considered in the following order of priority: - **Carbon stock estimates:** Project assumptions on the total or per-hectare above ground carbon stock within a project area over time. - **Total merchantable volume of timber:** Project assumption on the merchantable volume of timber per hectare from various onsite species. - **BCEF and CF:** biomass conversion and expansion factors (BCEF) and carbon fraction (CF) of species on a project site. For projects that provide above-ground carbon stock estimates, these estimates are used directly. For projects that do not provide this information directly, the total

merchantable volume of timber, BCEF and CF are used to calculate the above-ground carbon stock per hectare assumed by a project.

A project's estimated values are then compared to geospatial values, using third-party data from Chloris Geospatial, which estimates the above-ground biomass (AGB) within a project area on a per-forested hectare basis using geospatial techniques. Chloris provides these estimates as an uncertainty range to reflect the inherent modelling uncertainties that exist, and the average value of its lower-bound and upper-bound uncertainty intervals are used to compare against a project's estimate.

AGB carbon stock comparison is conducted based on the project's start year. Chloris' geospatial estimate is compared to a project assumption, with the percentage score based on the difference between the two values. This percentage score is then converted into a 1 to 5 numeric scale where 0% equals a score of 1, 50% equals a 2.5 and anything over 100% equals a 5.

2.2.1.3 Biomass Growth Validation

Biomass Growth Validation refers to whether a project's carbon removal estimates appear accurate and reasonable.

Rationale	Estimation of above-ground carbon stock within a project area is subject to calculation uncertainty. Estimating the change and growth in carbon stock is critical, particularly for IFM projects with a high removals focus. Projects that overestimate their growth in carbon stock relative to the removals that have actually occurred will therefore overestimate their emission removal impact.

Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
		☑				

Scoring Definition	Each project is scored on both a 1 to 5 scale and a continuous percentage scale, where 100% indicates that MSCI S&C estimates (once accounting for uncertainty intervals) match the project's estimate, 50% indicates that the project's carbon stock per hectare is only 50% of the project's issued removal credits and 200% indicates that the project's carbon stock growth may be over double the project's assumption.
Scoring Approach	Through a detailed review of project documentation, MSCI S&C identifies the estimated volume of removal credits issued by the project since the project start date. For projects that provide estimates of removals, these estimates are used directly. For projects that do not provide this information directly, MSCI S&C estimate the proportion of total emissions impact based on the project and baseline activities, and multiply this by the total number of issuances.

A project's removal issuances are then compared to geospatial values, using third-party data from Chloris Geospatial, which estimates the above-ground biomass (AGB) within a project area on a per-forested hectare basis using geospatial techniques. Chloris provides these estimates as an uncertainty range to reflect the inherent modelling uncertainties that exist, and the average value of its lower-bound and upper-bound uncertainty intervals are used to compare against a project's estimate.

Chloris' geospatial estimates are compared to the estimate of the project's removal credits and the percentage score is derived based on the difference between the two values.

2.2.2 Conservativeness

Conservativeness refers to the extent to which a project's quantification approach avoids overestimating its emissions impact by applying precautionary assumptions and deductions.

For IFM projects, conservativeness is reflected both in how uncertainty is treated within emissions calculations and in whether potential emissions reductions are deliberately excluded from crediting. To capture these dimensions, this sub-criterion is assessed across two components:

- **2.2.2.1 Uncertainty Deductions:** Whether uncertainty is appropriately reflected through explicit deductions in emissions calculations.
- **2.2.2.2 Foregone Reductions:** Whether a project forgoes crediting emissions reductions that could reasonably have been claimed under the baseline scenario.

Each of these criteria are evaluated on a 1 to 5 scale. To reach the overall score, 2.2.2.1 Uncertainty Deduction is weighted at 20 and 2.2.2.2 Foregone Reductions is weighted at 80%.

2.2.2.1 Uncertainty Deductions

Uncertainty Deductions relates to whether uncertainty is appropriately reflected through explicit deductions in emissions calculations.

Rationale	Carbon quantification involves multiple sources of uncertainty. Projects that explicitly deduct for uncertainty reduce the risk of over-crediting relative to projects that rely on point estimates without adjustment.					
Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑					
Scoring Definition	Each project is scored on a 1–5 scale, where 1 indicates that limited or no explicit deductions are applied to account for uncertainty in emissions calculations, and 5 indicates that comprehensive deductions are applied across baseline uncertainty, project uncertainty and total uncertainty.					

Scoring Approach	MSCI S&C reviews project documentation to identify the level of uncertainty deduction applied within emissions calculations. Three elements are evaluated: – (i) Baseline uncertainty deductions, reflecting uncertainty in baseline assumptions; – (ii) Project uncertainty deductions, reflecting uncertainty in measured or modelled project outcomes; and – (iii) Total uncertainty deductions, reflecting the combined treatment of uncertainty across the quantification approach. Projects applying higher and more comprehensive uncertainty deductions receive higher scores, while projects applying limited or no deductions receive lower scores.

2.2.2.2 Foregone Reductions

Foregone Reductions relates to whether a project forgoes crediting emissions reductions that could reasonably have been claimed under the baseline scenario.

Rationale	Some IFM projects, particularly removal-only projects, may conservatively choose not to claim emissions reductions associated with avoided or reduced harvesting. Forgoing such reductions reduces credited emissions impact and may indicate a more conservative crediting approach.					
Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑	☑				☑
Scoring Definition	Each project is scored on a 1–5 scale, where 1 indicates that the project credits most or all estimated emissions reductions associated with baseline harvesting, and 5 indicates that the project forgoes crediting a material share of estimated emissions reductions.					
Scoring Approach	For relevant projects, MSCI S&C models expected baseline harvesting schedules using project-provided information or, where project-specific data is not available, extrapolation from similar projects. Based on this modelling, the expected share of emissions reductions that would arise from baseline harvesting is estimated. Projects for which a material share of potential emissions reductions is estimated but not credited receive higher scores, reflecting greater conservativeness. Projects that credit the majority of estimated reductions receive lower scores. This assessment is particularly relevant for projects that issue removal-based credits only or do not receive credits for reductions.					

2.2.3 Leakage

Leakage relates to whether a project appropriately accounts for and compensates for the threat of emission increases occurring elsewhere because of a project's activities.

Rationale	When reducing harvesting in a project area, there is a risk that this leads to higher harvesting in another area instead, resulting in little climatic benefit. This concept of leakage captures what happens when a project's activities lead to increased emissions elsewhere. It's crucial for projects to carefully address and account for the risk of leakage in order to accurately measure their total net emissions impact. In the context of IFM, leakage is a significant concern as projects can be highly integrated into timber markets.

Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑	☑	☑	☑	☑	

Scoring Definition	Each project is scored on a scale of 1 to 5, where 1 indicates no leakage deduction is made despite a very high leakage threat and 5 indicates that leakage is appropriately accounted for despite the threat, or the threat is very low.
Scoring Approach	To evaluate the appropriateness of a project's leakage deductions, both the threat of leakage and the extent to which it is appropriately accounted for are considered. **Threat of leakage** The primary leakage threat for IFM projects is "market" leakage, in which a project's activities lead to changes in market prices, resulting in increased supply elsewhere in response to this market change. The size of market leakage is inherently difficult to quantify: Academic sources have indicated that under certain circumstances leakage could be as high as 60-80% (though these models tend to assume perfect information). Assessing the sufficiency of leakage deductions requires modelling of the specific leakage risks to a project based on its characteristics and then a comparison against the deductions themselves. Based on academic literature regarding forest leakage,[9] a leakage threat model is created based on four main categories of drivers: 1. **Harvest reduction:** The threat of leakage is higher if a project's activities represent a significant reduction in harvesting compared to historic practices. To analyze this driver, key aspects, such as historical harvesting behavior, percentage reduction of

[9] Haya, B.K., Evans, S., Brown, L., et al. 2023. "Comprehensive review of carbon quantification by improved forest management offset protocols." *Frontiers in Forests and Global Change* 6: 958879. https://doi.org/10.3389/ffgc.2023.958879; and Murray, B. C., Bruce A. McCarl, and Heng-Chi Lee. 2004. "Estimating Leakage from Forest Carbon Sequestration Programs." *Land Economics* 80(1): 109–24. https://doi.org/10.2307/3147147.

harvest in a project and baseline scenario and if a project's areas have sustainable harvesting certifications, are considered.

2. **Geography**: The risk of displacement of harvesting to surrounding areas is lower if a project is surrounded by protected areas, where harvesting is unlikely to occur. The size of a project area is analyzed geospatially, whether the boundary abuts onto protected areas and/or non-forested areas. Small-sized projects (less than 1,000 hectares) are likely to have a low leakage threat. Further, if the level of clear-cutting appears to have increased in the surrounding area significantly since project start, leakage risk is also considered higher.
3. **Productivity:** The threat of leakage must be determined based on the amount of carbon, not area, impacted. If a project takes place on relatively unproductive land (where productivity is defined by the amount of timber output per hectare), then the risk of leakage at a carbon level is lower as a smaller area of land would have to be used to produce the same amount of output. In contrast, a project located in a highly productive region is likely to have more leakage threat, as any displaced harvesting would need to occur over a larger area to reach the same output.
4. **Market integration:** Fundamentally, projects that are more highly integrated into timber markets, both regionally and internationally, have higher risk of displacement as market supply will be more responsive to changes in a project's planned harvesting. Projects located in countries where there is a high integration into the global timber supply chain are likely to carry more leakage threat. Key aspects, such as the primary timber output of a project and its integration to global market measured by its contribution to world timber exports, are assessed.

Through a combination of geospatial analysis, academic research, and project reviews, each of these drivers is assessed and quantified (in terms of the percentage of net emissions impact at risk of leakage), and then combined into an overall leakage model.

Leakage Deduction

The leakage threat score is then compared to the leakage deduction applied by a project.

The overall leakage score is based on the difference in the percentage leakage threat and leakage deduction.

2.3 Monitoring Performance

Monitoring Performance relates to whether a project frequently monitors the carbon stock and conducts forest inventory checks throughout its lifetime.

Rationale	As tree growth may vary over time, it is important to ensure this is monitored throughout a project life to ensure any changes in carbon stock are accounted for. Therefore, a project regularly monitoring its carbon stock will provide a more accurate account of t CO_2 sequestered over time.

	This can also be supported by the quality of the monitoring technique used. A more effective plan will ensure monitoring occurs annually and includes field measurement and remote sensing data to accurately estimate carbon stock changes.
Key Sources	Project Documentation: ☑ | Geospatial: | Project Methodology Documentation: | Academic Literature: | Third-party Data: | MSCI Carbon Markets:
Scoring Definition	Each project is scored on a 5-point scale from 1 to 5, where 1 indicates monitoring of forest inventory and carbon stock every 10 years and 5 indicates regular monitoring of less than 5 years.
Scoring Approach	MSCI S&C assesses the frequency of carbon stock and forest inventory updates conducted by a project. Projects are then scored on a 1-5 scale in the following way: - 5 = Carbon stock update and forest inventory happens in less than 3-year intervals - 4 = Carbon stock update and forest inventory happens in less than 5-year intervals - 3 = Carbon stock update and forest inventory happens at 5-year intervals - 2 = Carbon stock update and forest inventory happens in less than 10-year intervals - 1 = Carbon stock update and forest inventory happens in more than 10-year intervals

Criterion 3 - Permanence

Permanence refers to the likelihood that the emission reductions or removals achieved by a project will be sufficiently long-term and not released back into the atmosphere. There is growing consensus that 100 years represents a good benchmark for projects to be classified as permanent. The IC-VCM's Core Carbon Principles require a monitoring and compensation period of at least 40 years for nature-based projects.

A permanent reduction or removal can only be guaranteed where it is physically impossible for a reversal to occur. However, for most projects, a risk of reversal does, to some extent, exist. This risk may be due to natural risks, such as wildfires, or human risks, such as poor project management.

IFM projects involve both human and natural permanent risks in protecting the area. For example, regarding human risks, most IFM projects have insufficient crediting periods, particularly with respect to the Core Carbon Principles requirements, as most projects only have a crediting period of 20 years. In addition to this, they also bring natural permanence risks such as fire — as do other nature-based projects. The significance of this permanence risk depends on both the level of natural and human risks, and the extent to which these have been mitigated by project activities. This net risk must then be sufficiently compensated for in a project's crediting methodology.

Given the interplay of permanence risk, mitigation and compensation activities, the overall permanence assessment is conducted in three main steps:

1 **Significance of Risks:** Each relevant risk factor is assessed on a 1 to 5 scale that signifies the proportion of credits at risk of reversal and the likelihood of this occurring. These 1 to 5 scores are also converted into a percentage of carbon stock at risk, which represents a more quantitative measure of the percentage of carbon stocks that are expected to be at risk. These risks are then individually summed to reach an overall permanence risk, reflecting the percentage of all achieved emissions reductions that would be expected to be reversed without any mitigation or compensation activities.

2 **Net Permanence Risk:** The extent to which applied mitigation activities address the permanence risks defined in the significance of risk. This is to ensure that the relevant mitigation activities are used to reduce the relevant components of permanence risks for the project. Each mitigation activity is mapped to the specific permanence risk that it relates to, with assumptions made regarding the proportion of this risk that can be mitigated.

3 **Post-Compensation Risk:** Comparing the net permanence risk score to the buffer pool contribution to ensure any risks that are not mitigated are accounted for. The net permanence risk, which is calculated as a percentage, is directly compared to the project's percentage buffer pool contribution as part of this step.

The remaining percentage of credits therefore represents the percentage of credits for which the project either under- or overcompensated. A negative post-compensation risk score indicates that the buffer pool appears over-sufficient given the net permanence risk of the program. A positive post-

compensation risk score indicates that the buffer pool appears insufficient given the net permanence risk of the program.

Figure 9: Permanence integrity assessment approach, illustrates the sub-criteria through which MSCI S&C assesses the permanence of the emissions reductions achieved by IFM projects, and the Integrity Assessment framework sub-criteria that they refer to. The detailed sub-criteria are described in Figure 10.

Figure 9: Permanence integrity assessment approach[10]

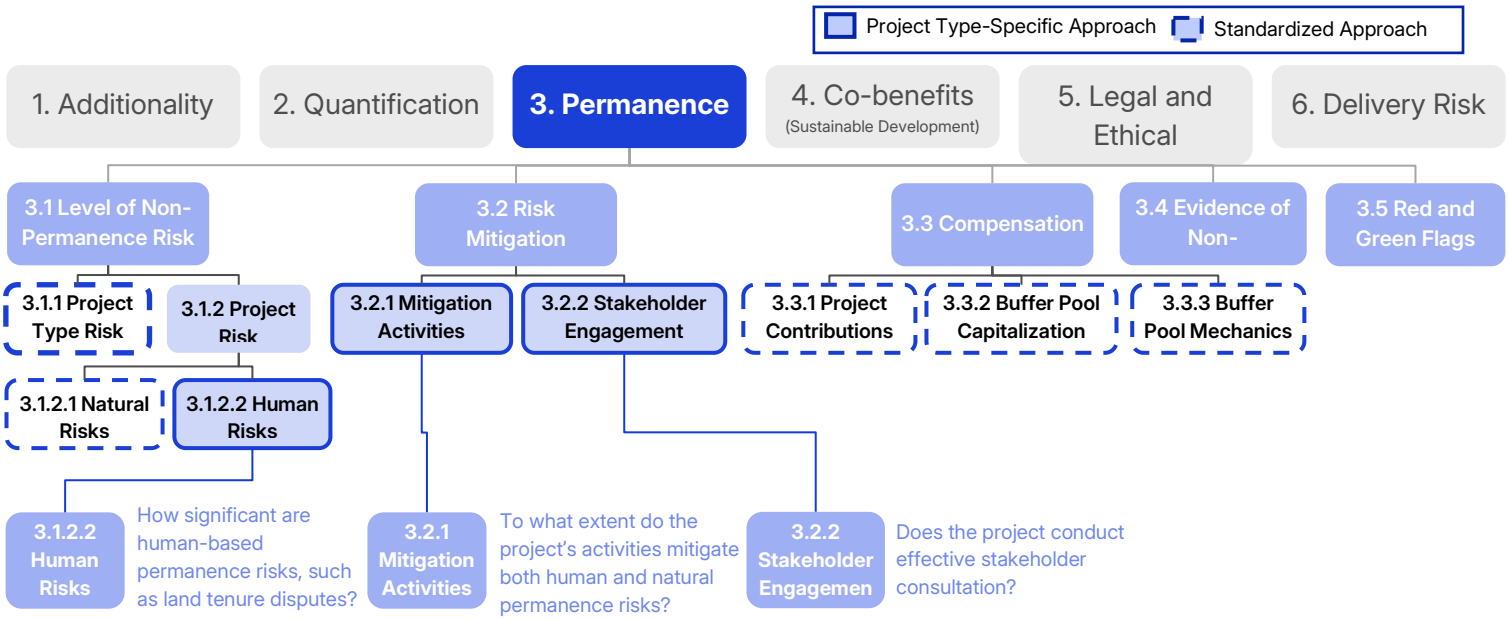


Figure 10: MSCI S&C Permanence integrity assessment framework

Sub-criteria		Metrics	Rationale	REDD+	Renewables	ARR	Cookstoves	Biochar	Landfill Gas	Safe Water	IFM	Waste Mgmt.	Blue Carbon
3.1 Level of Non-Permanence Risk	3.1.1 Project Type Risk	Project Type Significance	Different project types have inherently different levels of non-permanence risk.	✓ *Standardized approach*									
	3.1.2 Project Risk	3.1.2.1 Natural Risks	The risk of fire, drought, landslide and other natural risks in that project area.	✓		✓					✓		✓
		3.1.2.2 Human Risks	Human-related permanence risks include the strength of land tenure rights or a project developer's experience.	✓		✓					✓		✓

[10] The approach used to assess 3.2.2 Stakeholder Engagement is outlined in the Co-benefits section below, under 4.3.2, Local Stakeholder Engagement.

3.2 Mitigation	**3.2.1 Mitigation Activities**	Projects can mitigate non-permanence risks through implementing activities that focus on addressing key risks.	✓		✓	✓	✓		✓	✓		✓
	3.2.2 Local Stakeholder Engagement	Successfully engaging with local stakeholders lowers the risk of human-based non-permanence.	✓		✓	✓	✓		✓	✓		✓
3.3 Compensation and Contributions	**3.3.1 Project Contributions**	A project's buffer pool contributions should appropriately account for the non-permanence risk.	✓		✓	✓	✓		✓	✓		✓
	3.3.2 Buffer Pool Capitalization	An under-capitalized buffer pool may have insufficient credits to cover future losses.	✓ *Standardized approach*									
	3.3.3 Buffer Pool Mechanics	A buffer pool should have mechanisms in place to ensure projects appropriately account for and estimate their buffer pool credits.	✓ *Standardized approach*									
3.4 Evidence of Non-Permanence	**Non-Permanence Events**	If significant reversals have occurred without being accounted for, then carbon stock reversals have already occurred.	✓		✓					✓		
3.5 Red and Green Flags	**News scanning**	Review of academic papers, industry sources and the news for Red or Green Flags relating to project's permanence.	✓ *Standardized approach*									

3.1.2.1 Natural Risks

Natural risks refer to the significance and likelihood that such risks within a project area might lead to a reversal in the emission reductions/removals achieved.

Rationale	Natural disturbances, such as drought, fire or landslides, can threaten the CO_2e stored in land-based carbon pools. These risks are most relevant for nature-based projects, where the CO_2e is stored in carbon pools that are susceptible to a range of natural risks. For example, wildfires may burn down trees within an IFM project, resulting in CO_2 being released into the atmosphere.

Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑	☑			☑	

Scoring Definition	Each project is scored on a 5-point scale from 1 to 5 for each natural risk type, where 5 indicates no permanence risk and 1 indicates a very significant permanence risk.
Scoring Approach	MSCI S&C has considered five main types of natural risk in the assessment: (i) fire, (ii) drought, (iii) landslide; (iv) windthrow/tropical cyclone (or uprooting of trees by wind);

(v) biotic. These risks are assessed independently using MSCI S&C's geospatial analysis.

MSCI S&C only assesses natural risks where they are relevant to that project type. For many types, natural risks do not represent a permanence risk as the CO_2e is not stored in a carbon pool at risk of natural disturbances.

Major natural risks are assessed for each individual project through geospatial analysis of its boundary, as shown in **Table 1**. For each risk, MSCI S&C looks at the historical trends and patterns of natural risk. Then, these risks are forecasted using in-house climate models that account for the projected change in likelihood as temperatures and climates change. This modelling results in a specific estimate of risk within that project boundary.

More detail on MSCI S&C's geospatial permanence methodology can be found in separate methodology note: "MSCI Carbon Project Ratings - Geospatial Methods in Assessing Permanence"

Table 1: Analytical Approach for each natural risk

Wildfire	Forecast of the future frequency and severity of fires based on a geospatial analysis and internal modelling.
Drought	Forecast of the intensity and frequency of drought risk for each project.
Landslide	Assess the percentage of project areas that are currently susceptible to landslides based on the NASA landslide susceptibility map.[11]
Windthrow	Estimate the tropical cyclone return interval for each project area based on a 10,000-year synthetic dataset.
Biotic	Assess biotic outbreaks (% of area at risk/not at risk), based on the National Insect and Disease Risk Map (NIDRM) 2018.[12]

3.1.2.2 Human Risks

Protected forests are also subject to human-based risks of reversal, given that the areas may be deforested once the crediting period ends. If an IFM project successfully maintains an area for 20 years but is deforested once this ends, a project's emissions impact will only be transitory. While even a transitory reduction is helpful in providing the climate with some short-term relief, it is less valuable than

[11] Thomas Stanley and Dalia B. Kirschbaum, 2017. "A Heuristic Approach to Global Landslide Susceptibility Mapping," *Natural Hazards* 87(1): 145–64, https://doi.org/10.1007/s11069-017-2757-y, 2017.

[12] US Forest Service, "National Insect and Disease Risk Map (2018 NIDRM)," 2018.

a more permanent reduction/removal and cannot be said to be a true offset of a fossil fuel emissions (which stay in the atmosphere for a very long time).

In order to assess human-based permanence risks, one must consider the different underlying drivers of human-based deforestation. As part of this assessment, three primary components of human risk are considered:

- **3.1.2.2.1 Length of Commitment:** Whether plans are in place to safeguard the forest beyond a project's lifetime to ensure ongoing protection of the area.
- **3.1.2.2.2: Land Tenure:** Whether disputable or unsecure land tenure may impact the stability
- of the project area's governance and protection.
- **3.1.2.2.3: Opportunity Cost:** Whether a deforestation-linked alternative land use represents a high opportunity cost for a project and therefore may incentivize deforestation in the future.
- **3.1.2.2.4: Project Management:** Whether a project has significant project management risks given the developer's level of experience.

3.1.2.2.1 Length of Commitment

Length of Commitment impact relates to whether plans are in place to safeguard the forest beyond a project's lifetime to ensure ongoing protection of the area.

Rationale	An IFM project may have a lifetime of 20-40 years, beyond which its proponents may not be obligated to protect the area. Particularly for IFM projects run by timber companies, it is crucial that the crediting period extends beyond the normal harvesting cycle practiced by the developer. The risk of abandonment of a project is heightened after the end of this lifetime. In contrast, developers that legally commit to preserving the area beyond a project's lifetime reduce this risk.

Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑					☑

Scoring Definition	Each project is scored on a scale of 1 to 5, where 1 indicates very high risk of abandonment and 5 indicates very limited risk of abandonment within a 100-year period.
Scoring Approach	MSCI S&C conducts a detailed review of each individual project's key documents to identify a project's lifetime and whether any commitments exist beyond this to protect the area. Further, the drivers of deforestation are also considered, as projects in which the agents of deforestation are the project participants may have higher abandonment risk after the crediting period ends. For example, commercially owned projects with 20-year crediting periods may simply deforest the area at the end of this period. The total risk is therefore determined through a consideration of both the length of legal commitment and project subtype as follows:

	Length of Commitment (# of Years)

		0 to 20	20-30	30-40	40+
Project type	Conservation	High	Medium	Low	Very Low
	Sustainable	High	Medium	Low	Very Low
	Mixed	High	Medium	Low	Very Low
	Commercial	Very High	High	Medium	Low

3.1.2.2.2 Land Tenure

Land Tenure refers to whether any land tenure issues or uncertainties exist in the project area which impact the potential for deforestation in the future.

Rationale	Project areas that have secure land tenure are less prone to illegal settlements or the threat of communities being removed from their land. In this way, agents of deforestation from outside the project area are less likely to inhabit and control the project area.

Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑			☑	☑	

Scoring Definition	Each project is scored on a scale of 1 to 5, where 1 indicates very high land tenure risks and 5 indicates very secure and stable land tenure with low risk of being seized by agents of deforestation.
Scoring Approach	MSCI S&C conducts a detailed review of each individual project's documents to identify the security and strength of land tenure rights and the existence of any current or historic land disputes. This is then combined with third-party data on the regional stability of property and land rights. First, the stability and security of land tenure and whether any disputes for the project area existed is considered. This is assessed through the type of land rights in the area and whether documentation is provided to evidence this. Projects with very secure and stable rights received a score of 5. While projects with insecure land rights and known disputes received a score of 1. Second, the security of property and land rights within the relevant region is assessed using third party data from the World Economic Forum and World Bank. For larger countries, such as Brazil, regional state-level data is used. Each area was scored on a 1 to 5 scale based on the stability of property rights and land rights recognition. The overall project score is based on a straight average of these two scores.

3.1.2.2.3 Opportunity Cost

Opportunity Cost refers to whether a deforestation-linked activity represents a very attractive alternative land use compared to the project scenario.

Rationale

If an alternative land use represents a significantly more attractive activity for the owner than a project's activities, then agents of deforestation may still be incentivized to deforest the area after a project activity is complete. In IFM projects, high economic value of the standing timber creates a higher risk that the forest may be harvested by the landowner.

Key Sources

Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
☑				☑	

Scoring Definition

Each project is scored on a scale of 1 to 5, where 1 indicates that the opportunity cost per hectare of land area is very low and 5 indicates that the opportunity cost per hectare of land is very high.

Scoring Approach

MSCI S&C conducts a detailed review of each individual project's key documents is conducted, including its design document and non-permanence risk reports, to understand the financial attractiveness of alternative land uses compared to the project scenario.

Where project documentation was not transparent, the rough proportion of revenue that the project expected to achieve in the baseline scenario is estimated. For example, information on the percentage of timber that is planned to be harvested in the baseline scenario is used and then combined with third-party species-specific pricing data, to estimate the total baseline scenario revenue. This is then compared to the size of the project area to calculate a USD/per hectare value. If a project has a very high USD/per hectare value, the opportunity for alternative land use is very high. Thus, there is a greater human risk that the trees may be harvested once the crediting period is over.

The above analysis is synthesized into a 1 to 5 score in the following way:

Opportunity Cost	
USD/per hectare value of land	Points
Less than USD 250	5
USD 251 to USD 500	4
USD 501 to USD 1,500	3
USD 1,501 to USD 3,000	2
USD 3,001 to USD 5,000	1

3.1.2.2.4 Project Management

Project Management refers to the ability of the developer to manage and implement the activity to ensure it is maintained throughout a project's lifetime.

Rationale	If a project has a developer with experience in managing IFM projects, there will be a lower risk of failure and therefore a lower permanence risk. This is because a project's activities will have higher chance of being maintained over the long-term.					
Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑					
Scoring Definition	Each project is scored on a scale of 1 to 5, where 1 indicates that a project developer has no prior experience in managing nature-based carbon projects and 5 indicates that the developer has prior experience managing/developing nature-based carbon projects.					
Scoring Approach	MSCI S&C conducts a detailed review of each individual project's key documents, including its design document and non-permanence risk reports, to understand the prior experience of the developer in project management.					

3.2.1 Mitigation Activities

Developers can mitigate both natural and human-based permanence risks through their project design and implementation. Though it is not possible for developers to completely eliminate risks of reversals which lie outside of their control, risks can be reduced and contained through careful project design.

In order to assess the effectiveness of mitigation activities, one must consider the full spectrum of activities that affect the underlying natural or human-based drivers of permanence risk. As part of this assessment, five primary components of mitigation are analyzed:

- **3.2.1.1 Ecosystem Diversity and Resilience:** Whether the planting strategy supports a biodiverse and resilient ecosystem within a project area.
- **3.2.1.2 Fire Prevention:** Whether a project has explicitly implemented activities to prevent fire.
- **3.2.1.3 Pest Management:** Whether a project has explicitly implemented activities to prevent pests and diseases.
- **3.2.1.4 Community Engagement:** Whether a project has conservation easement or considers the local community in order to minimize permanence risks.
- **3.2.1.5 Longevity:** Whether a project has a longer longevity than the crediting period and if there are any legal requirements to continue a project outside of the crediting period.

Each of these criteria is evaluated on a 1 to 5 scale. To reach the overall score, 3.2.1.1 Ecosystem Diversity and Resilience is weighted at 25%, 3.2.1.2 Fire Prevention is weighted at 25%, 3.2.1.3 Pest

Management is weighted at 25%, 3.2.1.4 Community Engagement is weighted at 10% and 3.2.1.5 Longevity is weighted at 15%.

3.2.1.1 Ecosystem Diversity and Resilience

Ecosystem Diversity and Resilience refers to whether the planting strategy supports a biodiverse and resilient ecosystem within a project area.

Rationale	The types and variety of tree species managed play a critical role in the long-term sustainability of the forest. Projects with native species that are highly suited to a project area not only improve their biodiversity potential, but also increase the resilience of the forest. This resilience therefore increases the forest's ability to react to and cope with natural permanence risks.

Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑					

Scoring Definition	Each project is scored on a scale of 1 to 5, where 1 indicates that it has planted a monoculture of non-native tree species, and 5 indicates that it has planted a diverse mix of native trees designed to support a wide range of threatened species.
Scoring Approach	MSCI S&C reviews the key project documents to identify the number and types of tree species planted as part of the activities. Projects are then scored based on both the types and range of tree species planted:

		Number of Tree Species	
		Monoculture	**Multispecies**
Type of Tree Species	**Native**	3	5
	Mixed	2	4
	Non-Native	1	3

3.2.1.2 Fire Prevention

Fire Prevention relates to whether a project has explicitly implemented activities to prevent fire.

Rationale	By implementing prevention strategies, such as firebreaks, projects can reduce both the severity and likelihood of nature-based reversal risks.

Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑					

Scoring Definition	Each project is scored on a scale of 1 to 5, where 1 indicates that a project has no explicit fire prevention activities in place, and 5 indicates that a project has clear fire prevention activities in place.
Scoring Approach	MSCI S&C reviews a project's key documents to identify whether it has implemented any activities related to the monitoring or mitigating of fire risk. Projects are then scored based on the presence of these activities. Projects that implement fire prevention strategies received a score of 5.

3.2.1.3 Pest Management

Pest management relates to whether a project has explicitly implemented activities to prevent pests and diseases if they are a problem in the area concerned.

Rationale	By implementing pest prevention strategies, projects can reduce both the severity and likelihood of nature-based reversal risks.					
Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑					
Scoring Definition	Each project is scored on a scale of 1 to 5, where 1 indicates that a project has no explicit disease prevention activities in place, and 5 indicates that a project has clear pest and disease prevention activities in place.					
Scoring Approach	MSCI S&C reviews a projects' key documents to identify whether they have implemented any activities related to the mitigating of pest and disease risk. Projects are then scored based on the presence of these activities. Projects that implemented pest/disease prevention strategies received a score of 5.					

3.2.1.4 Community Engagement

If there is a local community nearby, its involvement in a project activity can reduce the human risk to permanence.

Rationale	If the community is involved with a project's decisions and a project has conservation easements in place, there is a lower human permanence risk.					
Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑					

Scoring Definition	Each project is scored on a scale of 1 to 5, where 1 indicates that there is no mention of community or social risk mitigations and 5 indicates there is a high level of community engagement or there are no local communities to create a permanence risk.
Scoring Approach	MSCI S&C reviews a project's key documents to understand the impact of the local community on a project's permanence. This includes the project documents and non-permanence reports. This information is scored based on whether any risks were mitigated. If there is no local community in a project area, community engagement is not relevant to risk mitigation and therefore this factor is not included.

3.2.1.5 Longevity

Longevity refers to whether a project has made any commitment to extend its lifetime outside of the crediting period.

Rationale	Projects with a longer longevity, or that have a legal commitment to a period longer than the crediting period, have a lower permanence risk and are more likely to maintain emission reductions for longer.					
Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑					
Scoring Definition	Each project is scored on a scale of 1 to 5, where 1 indicates that there is no information suggesting a project will last longer than the crediting period and a 5 indicates that a project is legally committed to a 100-year longevity once the crediting period ends.					
Scoring Approach	MSCI S&C reviews key project documentation to determine the longevity and any disclosure of legal commitments to a longer term than project activity. This score is then determined based on the logic that a project with a longer commitment has a greater mitigation of permanence risks.					

Criterion 4 – Co-benefits

Co-benefits reflect the sustainable development benefits (and safeguards) of a project beyond the CO_2e it saves — i.e., its "externalities." These are typically positive but can, on occasion, be negative.

Relative to other nature-based undertakings, IFM projects do not deliver as many inherent co-benefits. Indeed, the premise of IFM projects is to use carbon credits to change the land use towards less economically oriented approaches. Furthermore, as projects tend to take place in more managed forests, the biodiversity impacts can be more limited. Nevertheless, through careful design and implementation, IFM projects can improve the ecosystem strength of a project area and promote economic outcomes.

The approach to co-benefit assessment builds on the United Nations' Sustainable Development Goals (SDGs) framework. The focus is on understanding both the SDG significance of a project and the extent to which the project provides evidence of these outcomes being achieved through effective monitoring.

Figure 11 illustrates the sub-criteria through which MSCI S&C assesses the co-benefits of IFM projects, and the Integrity Assessment framework sub-criteria that they refer to. The detailed sub-criteria are described in Figure 12.

Figure 11: Co-benefits integrity assessment approach

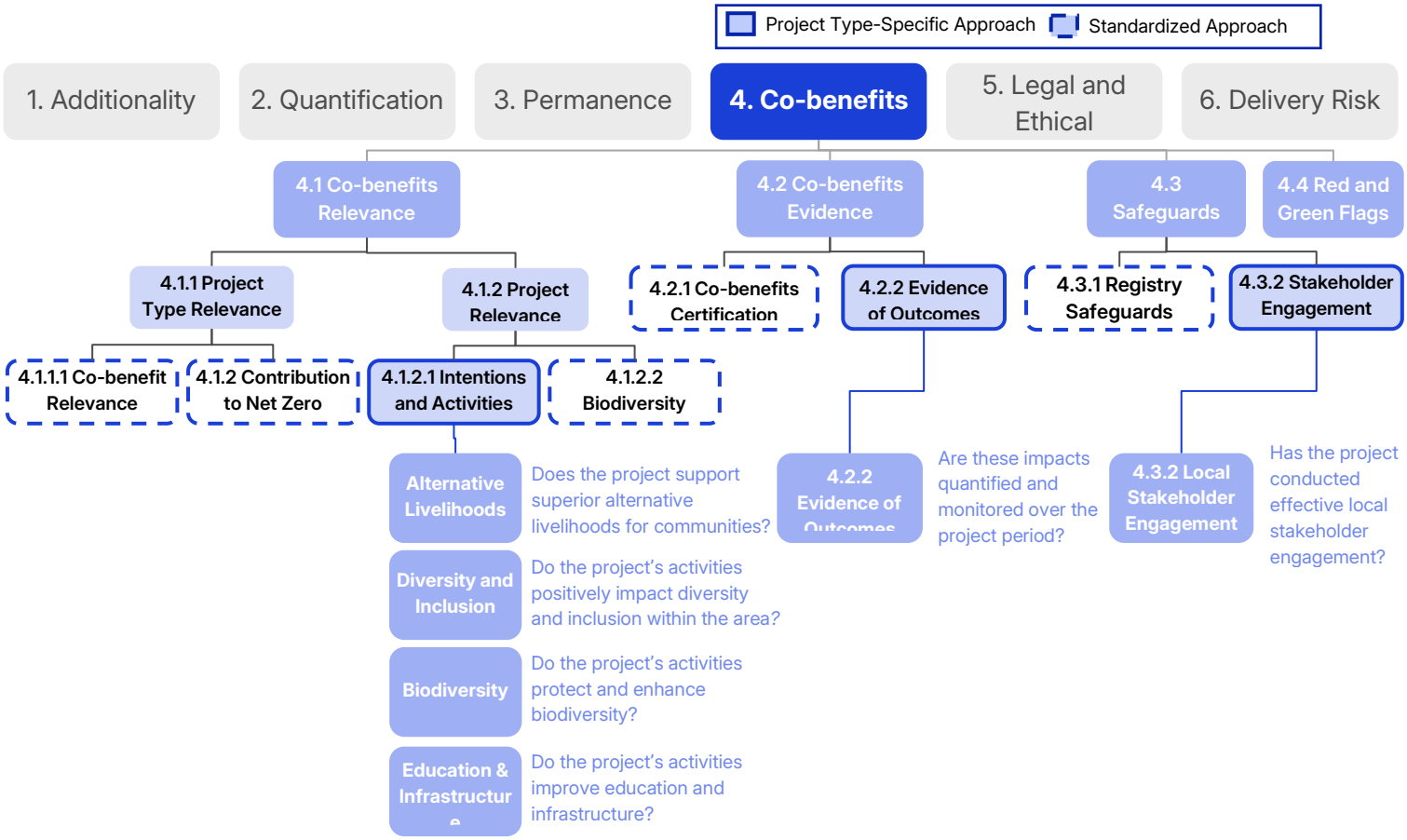


Figure 12: MSCI S&C Co-benefits integrity assessment framework

Sub-criteria		Metrics	Rationale	REDD+	Renewables	ARR	Cookstoves	Biochar	Landfill Gas	Safe Water	IFM	Waste Mgmt.	Blue Carbon
4.1 Co-benefits Relevance	4.1.1 Project Type Relevance	4.1.1.1 Relevance to Project Type	Different project types have an inherently different impact on each sustainable development impact.	✓ *Standardized approach*									
		4.1.1.2 Contribution to Net Zero	Some project types create 'carbon lock-ins' of technologies or practices that are not compatible with a net zero economy.	✓ *Standardized approach*									
	4.1.2 Project Relevance	4.1.2.1 Project Intentions to Activities	The specific design and implementation of a project's activities are critical drivers for	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

			whether a project generates positive sustainable development impact.										
		4.1.2.2 Biodiversity Value	Nature-based projects that enhance or protect areas of rich biodiversity have greater environmental value.	✓		✓					✓		✓
4.2 Co-benefits Evidence		**4.2.1 Certification**	Achieving certification involves more stringent project verification. This improves the likelihood that a project's co-benefits have been realized.	✓ *Standardized approach*									
		4.2.2 Quantification of Outcomes	Projects can increase the confidence that co-benefits are attributed to their actions through measuring, monitoring, and quantifying the outcome.	✓		✓	✓	✓		✓	✓		✓
4.3 Safeguards		**4.3.1 Registry Safeguards**	More effective environmental and social safeguards required by registries reduce the likelihood of projects causing harm.	✓ *Standardized approach*									
		4.3.2 Local Stakeholder Engagement	Projects that successfully engage with local stakeholders reduce the likelihood of any negative impacts occurring.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4.4 Red and Green Flags		**News scanning**	Review of academic papers, industry sources and the news for Red or Green Flags relating to project's co-benefits.	✓ *Standardized approach*									

4.1.2.1 Project Intentions to Activities

While IFM projects can impact a range of social or environmental goals, the significance of these co-benefits is heavily determined by a project's design and implementation. A detailed understanding of a project's activities and design is hence required in order to fully assess its co-benefit impact.

There are four categories of sustainable development impacts that are evaluated as part of this sub-criterion:

- **4.1.2.1.1 Alternative Livelihoods:** Whether the project provides a superior alternative livelihood to stakeholders beyond that which would have been achieved with the previous land use.
- **4.1.2.1.2 Diversity and Inclusion:** Whether the project promotes and drives increased diversity and inclusion within the project area, supporting the needs of any disadvantaged groups.
- **4.1.2.1.3 Education and Infrastructure:** Whether the project supports and invests in local education, health and infrastructure.
- **4.1.2.1.4 Biodiversity:** Whether the project protects an area of high biodiversity value, supporting continued ecosystem value and resilience.

Each project is scored on a scale of 1 to 5 based on the evaluation of these metrics. Alternative livelihood is weighted 20%, Diversity and Education is weighted 10% each and Biodiversity is weighted as 60%. Biodiversity is weighted higher given its direct relevance to all IFM projects, and the fact that the other three criteria do not apply to IFM projects based in remote regions.

4.1.2.1.1 Alternative Livelihoods

When an IFM project is developed, depending on the location, it may impact the economic opportunities available to local people. For example, it may reduce the job opportunities for local foresters who would have been employed to cut down the forest without a project activity. However, a project may mitigate this negative impact by supporting additional activities that may provide alternative employment opportunities.

Assessing Alternative Livelihoods therefore requires an understanding of the employment opportunities maintained within the project activity and any potential support provided to local people:

- **4.1.2.1.1.1 Target SDGs:** Whether a project targets specific sustainable development goals related to the employment and financial opportunities for local communities.
- **4.1.2.1.1.2 Benefit Sharing and Community Support:** The extent to which a project shares the proceeds of its revenue from carbon credits directly with local communities.
- **4.1.2.1.1.3 Job Creation:** Whether a project promotes a diverse and permanent range of quantified employment outcomes.

These criteria are assessed on a scale of 1 to 5. The overall score is based on a weighting of these factors, with 5% weighting to 4.1.2.1.1 Target SDGs, 35% to 4.1.2.1.2 Benefit Sharing and Community Support and 60% to 4.1.2.1.3 Job Creation.

4.1.2.1.1.1 Target SDGs

Whether the project targets specific sustainable development goals that relate to alternative livelihood opportunities.

Rationale	Explicitly targeting certain development goals increases the chance that these goals and impacts will be given priority by the project. That chance is further increased by the need to complete SDG goal verification during a project's registration process.					
Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑					
Scoring Definition	Each project is scored on a scale of 1 to 5, where 1 indicates that no relevant sustainable development goals have been targeted and 5 indicates that the three most relevant sustainable development goals to alternative livelihoods have been targeted.					
Scoring Approach	MSCI S&C conducts a detailed review of project documentation to identify whether a project has either explicitly or implicitly targeted either SDG 1 (No Poverty), 2 (Zero Hunger) or 8 (Decent Work and Economic Growth). For projects that do not use SDGs, all the sustainable development impacts mentioned by a project (such as employment and job opportunities) are identified.					

Projects are then scored based on the number of relevant targeted SDGs either explicitly or implicitly mentioned:

- 1 = No relevant SDGs either implicitly or explicitly mentioned
- 3.5 = 1 relevant SDGs either implicitly or explicitly mentioned
- 4.5 = 2 relevant SDGs either implicitly or explicitly mentioned
- 5 = 3 relevant SDGs either implicitly or explicitly mentioned

4.1.2.1.1.2 Benefit Sharing and Community Support

Whether a project transparently shares the proceeds of carbon credit revenues with local communities.

Rationale	The proceeds of carbon credit revenues can sometimes be directly shared with local communities in order to ensure that they financially benefit from a project. This could also be used to maintain recreational activities in a project area.

Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑					

Scoring Definition	Each project is scored on a scale of 2 to 5, where 2 indicates that no benefit sharing appears to be in place and 5 indicates that transparent benefit sharing agreements have been clearly disclosed and are in place, pursuant to which a significant proportion of proceeds are delivered to local communities rather than to larger institutions (e.g., private companies or international charities) or governments.
Scoring Approach	MSCI S&C assesses the use of proceeds of carbon credits, and whether benefit sharing agreements were in place. Benefit sharing for each project is scored based on three components: (i) presence and type of benefit sharing, (ii) proportion of revenue shared, and (iii) governance and evidence of benefit sharing. These criteria are weighted 50%, 30% and 20%, respectively, to reach an overall score between 2 and 5 for each project.

4.1.2.1.1.3 Job Creation

Job creation relates to whether a project creates quantified employment for local communities.

Rationale	Project activities can directly provide employment opportunities for local communities, and therefore contribute to sustainable alternative livelihoods.

Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets

	☑
Scoring Definition	Each project is scored on a scale of 1 to 5, where 1 indicates that no employment opportunities appear to have been created and 5 indicates that employment will be guaranteed with safety precautions.
Scoring Approach	MSCI S&C reviews each project's key documents to identify the employment opportunities it created and how permanent they are. The project activity type is also evaluated to determine the risk of job loss once a project is implemented.

4.1.2.1.2 Diversity and Inclusion

IFM projects located in rural areas and community lands may disadvantage the local communities in terms of resource access and governance power. A project can engage in certain activities that can help the participation of local communities and disadvantaged groups to improve inclusivity. The majority of IFM projects are in the United States, with mostly privately held land tenure regimes, so this aspect is not as important there in comparison to projects located elsewhere.

To assess a project's impact on diversity and inclusion, four sub-criteria are considered:

- **4.1.2.1.2.1 Target SDGs:** Whether a project targets specific Sustainable Development Goals related to diversity and inclusion.
- **4.1.2.1.2.2 Land Tenure:** Whether there are land tenure issues within a project area.
- **4.1.2.1.2.3 Female Empowerment:** Whether a project supports more equal gender outcomes through active and representative inclusion of women in its activities.
- **4.1.2.1.2.4 Free Prior Informed Consent (FPIC):** Whether FPIC has been given for project activities.

Each of these criteria are evaluated on a 1 to 5 scale. To reach the overall score, 4.1.2.1.2.1 Target SDGs is weighted 5%, 4.1.2.1.2.2 Land Tenure is weighted 50%, 4.1.2.1.2.3 Female Empowerment is weighted 30% and 4.1.2.1.2.4 Free Prior Informed Consent (FPIC) is weighted 15%.

4.1.2.1.2.1 Target SDGs

Target SDGs refers to whether a project explicitly targets sustainable development goals related to diversity and inclusion.

Rationale	Explicitly targeting certain development goals increases the chance that these goals and impacts will be given priority by a project. That chance is further increased by the need to complete SDG goal verification during a project's registration process.					
Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑					

Scoring Definition	Each project is scored on a scale of 1 to 5, where 1 indicates that no relevant Sustainable Development Goals appear to have been targeted and 5 indicates that both the most relevant Sustainable Development Goals have been targeted.
Scoring Approach	MSCI S&C conducts a detailed review of project documentation to identify whether the project has targeted either Sustainable Development Goal 5 (Gender Equality) or 10 (Reduced Inequalities). Each project is then scored based on the number of relevant targeted SDGs or sustainable development impacts: - 1 = No relevant SDGs - 4 = 1 relevant SDGs - 5 = 2 relevant SDGs

4.1.2.1.2.2 Land Tenure

Projects with land tenure rights issues suggest a higher risk of diversity and inclusion issues.

Rationale	Projects that actively prevent land tenure rights issues from arising are more likely to have beneficial impacts on diversity and inclusion.					
Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑					
Scoring Definition	Each project is scored on a scale of 1 to 5, where 1 indicates that there are land tenure rights issues in a project area and 5 indicates that there are no land tenure rights issues in a project area.					
Scoring Approach	MSCI S&C reviews key project documentation to determine the evidence provided that land tenure rights are secure and no risks exist.					

4.1.2.1.2.3 Female Empowerment

Female Empowerment relates to whether a project supports more equal gender outcomes through active and representative inclusion of women in project activities.

Rationale	Projects can support more equal gender outcomes by involving women in their key activities and decisions.					
Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑					

Scoring Definition	Each project is scored on a scale of 1 to 5, where 1 indicates that activities do not appear to support more equal gender outcomes and 5 indicates that project activities seem to involve the significant participation of women.
Scoring Approach	MSCI S&C conducts a review of key project documents to assess the participation of women in project activities. Projects are scored based on whether there is a mention of female involvement in their activity or decision making.

4.1.2.1.2.4 Free Prior Informed Consent (FPIC)

Projects granting free prior informed consent (FPIC) to local communities within a project area or in areas surrounding a project area have a beneficial impact on diversity.

Rationale	Projects can include and support local communities through granting FPIC.					
Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑					
Scoring Definition	Each project is scored on a scale of 1 to 5, where 1 indicates that a project does not grant FPIC to local communities and 5 indicates FPIC has been granted to local people.					
Scoring Approach	MSCI S&C conducts a review of key project documents to assess if FPIC is used in the planning process.					

4.1.2.1.3 Education and Infrastructure

As well as supporting direct, near-term social impacts, IFM projects may support education and training on more sustainable forest management practices. IFM projects can lay the foundations for future forestry education and local development by investing in local education, health and infrastructure.

To assess a project's impact on education and infrastructure, three sub-criteria are considered:

- **4.1.2.1.3.1 Target SDGs:** Whether a project targets specific Sustainable Development Goals related to education and infrastructure.
- **4.1.2.1.3.2 Education Impact:** Whether a project funds any upskilling of local communities through its activities.
- **4.1.2.1.3.3 Health Impact:** Whether a project explicitly supports and monitors improved health through its activities.

Each of these criteria are evaluated on a 1 to 5 scale. To reach the overall score, 4.1.2.1.3.1 Target SDGs is weighted 40%, 4.1.2.1.3.2 Education is weighted 30% and 4.1.2.1.3.3 Health is weighted 30%.

4.1.2.1.3.1 Target SDGs

Target SDGs refers to whether the project explicitly targets Sustainable Development Goals (SDGs) related to education and infrastructure.

Rationale	Explicitly targeting certain development goals increases the chance that these goals and impacts will be emphasized and focused on by the project. That chance is further increased by the need to complete SDG goal verification process during a project's registration process.

Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑					

Scoring Definition	Each project is scored on a scale of 1 to 5, where 1 indicates that no relevant Sustainable Development Goals have been targeted and 5 indicates that five or more Sustainable Development Goals relevant to education and infrastructure have been targeted.
Scoring Approach	MSCI S&C conducts a detailed review of key project documents to identify whether a project has targeted either SDG 3 (Good Health and Wellbeing), 4 (Quality Education), 6 (Clean Water and Sanitation), 7 (Affordable and Clean Energy), 9 (Industry, Innovation and Infrastructure), 11 (Sustainable Cities and Communities), 12 (Responsible Consumption And Production), 16 (Peace, Justice and Strong Institutions), or 17 (SDG Partnerships). Projects are then scored based on the number of relevant targeted SDGs or sustainable development impacts: - 1 = no relevant SDGs - 3 = one relevant SDGs - 3.5 = two relevant SDGs - 4 = three relevant SDGs - 4.5 = four relevant SDGs - 5 = five or more relevant SDGs

4.1.2.1.3.2 Education Impact

Education is related to whether a project funds any educational opportunities through its activities.

Rationale	Projects can directly invest in and support local education initiatives to improve social outcomes in the local community.

Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑					

Scoring Definition	Each project is scored on a scale of 1 to 5, where 1 indicates that a project does not appear to fund additional skill improvement activities and 5 indicates that project has invested in activities that involve skill improvement among the local stakeholders.
Scoring Approach	MSCI S&C reviews project documents to assess whether there are any communities nearby and whether a project offers upskilling opportunities to them. Each project is then scored on a 1 to 5 scale in the following way: - 5 = Improved education is key objective, activities highlighted, and impacts quantified - 4 = Improved education is key objective, activities highlighted, and impacts mentioned - 3 = Improved education is key objective, only activities highlighted - 2 = Improved education is mentioned as an objective, no other attestations - 1 = No initiatives mention improved education or skills

4.1.2.1.3.3 Health Impact

Health relates to whether a project explicitly supports and monitors improved health offerings through its activities.

Rationale	Projects can directly contribute to, quantify, and monitor improved health offerings in their local community.

Key Sources

Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
☑					

Scoring Definition	Each project is scored on a scale of 1 to 5, where 1 indicates that a project does not appear to positively impact local health, and 5 indicates that a projects' activities seem to positively impact the health of local households.
Scoring Approach	MSCI S&C reviews key project documents to assess whether a project funds activities that relate to improvement of local health services among the stakeholders. Projects are then scored on a 1 to 5 scale in the following way: - 5 = Improved health is key objective, activities highlighted and impacts quantified - 4 = Improved health is key objective, activities highlighted, and impacts mentioned - 3 = Improved health is key objective, only activities highlighted - 2 = Improved health is mentioned as an objective, no other attestations - 1 = No initiatives mention improved health or related services

4.1.2.1.4 Biodiversity

By improving the management of forested areas, IFM projects not only capture more carbon within the forests and reduce emissions, but also enrich and support diverse ecosystems within them. In this way, IFM projects have environmental benefits beyond their emissions impact.

The significance of this impact depends on the number of species living in a project area, the biodiversity context (i.e., richness) of the specific project area and the activities undertaken by a project to protect, enhance and monitor that biodiversity.

To assess a project's impact on biodiversity, five sub-criteria are considered:

- **4.1.2.1.4.1 Target SDGs:** Whether a project targets specific Sustainable Development Goals related to biodiversity.
- **4.1.2.1.4.2 Geospatial Biodiversity Value:** Whether a project is located within an area of high biodiversity value.
- **4.1.2.1.4.3 Planting Biodiversity:** Whether a project plants a suitable and diverse mix of tree species for the area that maximizes its biodiversity potential.
- **4.1.2.1.4.4 Species Richness:** The extent to which a project area supports important and/or endangered species and habitats.
- **4.1.2.1.4.5 Soil and Water Health:** Whether a project supports improvements in soil and water quality.

Each of these criteria are evaluated on a 1 to 5 scale. To reach the overall score, 4.1.2.1.4.1 Target SDGs is weighted at 5%, 4.1.2.1.4.2 Biodiversity Ecoregions and Protection is weighted at 25%, 4.1.2.1.4.3 Planting Biodiversity is weighted at 15%, 4.1.2.1.4.4 Species Richness is weighted at 15% and 4.1.2.1.4.5 Soil and Water Health is weighted at 40%.

4.1.2.1.4.1 Target SDGs

Target SDGs refers to whether the project explicitly targets Sustainable Development Goals (SDGs) related to biodiversity.

Rationale	Explicitly targeting certain development goals increases the chance that these goals and impacts will be emphasized and focused on by the project. That chance is further increased by the need to complete SDG goal verification process during a project's registration process.					
Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑					
Scoring Definition	Each project is scored on a scale of 1 to 5, where 1 indicates that no relevant sustainable development goals appear to have been targeted and 5 indicates that both land and water biodiversity sustainable development goals have been targeted.					

Scoring Approach	MSCI S&C conducts a detailed review of key project documents to identify whether the project has targeted either Sustainable Development Goal 14 (Life Under Water) and 15 (Life On Land). Projects are then scored based on the number of relevant targeted SDGs or sustainable development impacts: - 1 = No relevant SDGs - 4.5 = 1 relevant SDGs - 5 = 2 relevant SDGs

4.1.2.1.4.2 Geospatial Biodiversity Value

This criterion refers to whether the project conserves an area of high biodiversity value.

Rationale	The biodiversity impact and conservation value of a nature-based project is likely to be higher if it is located in an area of high biodiversity and species richness.

Key Sources

Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑				

Scoring Definition	Each project is scored on a scale of 1 to 5, where 1 indicates the project has very limited biodiversity value, and 5 indicates the project supports and conserves an area of very high biodiversity value.
Scoring Approach	MSCI S&C conducts detailed geospatial analysis on the project area to assess four components: (i) ecosystem scarcity; (ii) biodiversity intactness; (iii) biodiversity threat; and (iv) biodiversity support. More detail on the approach is found in the MSCI Carbon Project Ratings Overall Methodology Note.

4.1.2.1.4.3 Planting Biodiversity

Planting biodiversity refers to whether the tree species mentioned in the site are native, and the overall mix in a project area.

Rationale	The biodiversity impact of an IFM project is likely to be higher if it has a greater number of native species within its area.

Key Sources

Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
☑					

Scoring Definition	Each project is scored on a scale of 1 to 5, where 1 indicates that a project has either not recorded the number of species onsite or only has 1 species mentioned, and 5 indicates that a project has many different species.
Scoring Approach	MSCI S&C conducts a detailed review of key project documents to identify the number of different native species in a project area that would be conserved or protected by its activities. Projects are then scored based on the species type and number of species mentioned: - 1 = Monoculture, or only 1 non-native species found in project area. - 2 = 3 or more non-native species mentioned directly. - 3 = 5 or more mixed (native/non-native) species mentioned directly. - 4 = 7 or more native species mentioned directly. - 5 = 10 or more native species mentioned directly.

4.1.2.1.4.4 Species Richness

Species richness refers to the number of endangered species and vulnerable habitats that a project directly protects or manages.

Rationale	IFM projects can be corridors and habitats for endangered flora or fauna species. Projects that actively design initiatives to protect such species/habitats will improve the overall biodiversity in the region.					
Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑					
Scoring Definition	Each project is scored on a scale of 1 to 5, where 1 indicates that a project does not protect any endangered species or manage vulnerable habitats and 5 indicates that a project actively aids in activities that protect vulnerable habitats or endangered species.					
Scoring Approach	MSCI S&C reviews project documentation to count the number of endangered species within a project area. Key project activities that help in the protection of endangered species or vulnerable habitats are also analyzed. Each project is then scored on a 1 to 5 scale in the following way: - 1 = No endangered species or relevant protection activities listed - 2 = No endangered species but project mentions conservation management practices - 3 = No endangered species but project actively engages in habitat protection - 4 = One endangered species and project actively protects habitat - 5 = More than one endangered species and active habitat protection in place					

4.1.2.1.4.5 Soil and Water Health

Soil health refers to the extent to which a project improves and monitors the soil health and water quality within its area.

Rationale	Projects can support soil health and water quality through conserving biodiversity and improving management practices. They can also implement specific activities and monitoring techniques to ensure these benefits are maximized and accurately measured.

Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑					

Scoring Definition	Each project is scored on a scale of 1 to 5, where 1 indicates that a project does not have specific activities targeted at improvement of soil health and water quality indicators, and 5 indicates that a project has specific activities in place to improve soil health and water quality indicators.
Scoring Approach	MSCI S&C reviews a project's key documents to understand whether specific activities are in place to improve soil health and water quality inside its boundaries. Further, whether a project properly monitors and tracks the improvements made in this regard are also analyzed. Each project then receives a score on a scale of 1 to 5 in the following way: - 1 = No activities are mentioned that improve soil health or water quality - 3 = Activities that enhance soil health and water quality are mentioned but there is no impact tracking - 5 = Activities that enhance soil health and water quality are mentioned, with quantified impact metrics

4.2.2 Quantification of Outcomes

Quantification of outcomes relates to whether the project monitors and/or quantifies the impact of the project on targeted Sustainable Development Goals.

Rationale	Assessing the evidence of co-benefit impacts is crucial to evaluating the degree to which co-benefits are achieved and can be attributed to a project. Projects that measure, quantify, and monitor their co-benefit impacts provide greater evidence in support of the targeted social and environmental benefits being achieved.

Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets

	☑
Scoring Definition	Each project is scored on a scale of 1 to 5, where 1 indicates there is no quantification or monitoring of SDGs and 5 indicates that benefits are quantified and monitored.
Scoring Approach	MSCI S&C assesses the level to which co-benefits have been quantified and/or monitored.

		Quantified	
		Yes	No
Monitored	Yes	5	1
	No	3	1

4.3.2 Local Stakeholder Engagement

The quality of engagement by IFM project organizers with local stakeholders plays a key role in ensuring communities benefit from their activities while helping to mitigate human-based permanence risk. Projects that put additional resources and time into consulting with local communities and modify project design/operations to suit locals are more likely to realize their social objectives.

This is evaluated through the following sub-criteria:

- **4.3.2.1 Effective Consultation:** How effective was the project consultation process?
- **4.3.2.2 Representation and Inclusivity:** Has the project ensured proper and inclusive representation of stakeholders?
- **4.3.2.3 Access to Information:** Has the project relayed relevant information to stakeholders?
- **4.3.2.4 Feedback and Grievances:** Does the project display effective feedback and grievance redressal mechanisms?

Each project is scored on a 1 to 5 scale for each of these sub-criteria. An overall score for criterion 4.3.2 is then reached by weighting effective consultation and representation and inclusivity by 35% each and access to information and feedback and grievance 15% each. Projects scoring a 5 are those that undertake substantial stakeholder consultations.

4.3.2.1 Effective Consultation

Effective consultation relates to whether the project uses best-practice techniques to engage and consult with stakeholders.

Rationale	Projects that engage with stakeholders toward the start of a project's conception and use multiple methods of in-person consultation provide more open and effective channels to engage with stakeholders and receive any feedback.					
Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑					

Scoring Definition	Each project is scored on a scale of 1 to 5, where 5 indicates that the project appeared to conduct effective in-person engagements prior to its start, and 1 indicates that very limited in-person stakeholder consultation seemed to have been performed prior to the start of the project or thereafter.
Scoring Approach	Through a detailed review of key project documents, three main components of stakeholder consultation effectiveness are assessed. First, the first date of stakeholder consultation is compared to the project start date. Projects that conducted their initial consultation prior to their start date receive a score of 2. Second, the types and range of consultation conducted are considered. Projects that conducted multiple forms of engagement including an in-person consultation receive 2 points. Third, the frequency with which ongoing consultation is conducted is assessed. Projects that perform ongoing consultation receive 2 points. These component scores are summed up to a maximum possible score of 5.

4.3.2.2 Representation and Inclusivity

Representation and Inclusivity relates to whether the project has ensured that it consults with a representative and inclusive range of stakeholders.

Rationale	Projects which consult a greater number of stakeholders tend to incorporate more representative feedback and ensure that they are designed with a representative set of stakeholder interests in mind.					
Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑					
Scoring Definition	Each project is scored on a scale of 1 to 5, where 5 indicates that a project transparently consults with a representative group of stakeholders, including women, while 1 indicates that no information is provided on the which stakeholders were consulted.					

Scoring Approach

MSCI S&C assesses whether the number of stakeholders in attendance has been provided and whether the number of female attendees was disclosed. This is then scored as shown in the table below.

		No. Stakeholders Consulted		
		Unknown	**<50**	**50+**
Transparency of Disclosures	Total, including women	3	4	5
	Total	2	3	4
	None	1	n/a	n/a

4.3.2.3 Access to Information

Access to Information refers to whether the project provides transparent information to local stakeholders regarding its activities.

Rationale	By providing greater access to information, stakeholders will be better informed on a project's activities and more able to provide feedback to the project.					
Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑					
Scoring Definition	Each project is scored on a scale of 1 to 5, where 5 indicates that a project provides very transparent access to information through both documentation and in-person meetings, and 1 indicates that limited access to information is provided to stakeholders.					
Scoring Approach	MSCI S&C conducts a detailed review of relevant project documentation to understand whether in-person meetings were conducted to present project information to stakeholders and whether clear documentation was provided to stakeholders. Projects receive a score of 2 if project organizers have conducted in-person meetings to present information to stakeholders. Projects receive a score of 3 if Project Design Documents (PDDs) or pamphlets were provided to stakeholders, or a score of 1 otherwise. These component scores are summed up to a maximum possible score of 5.					

4.3.2.4 Feedback and Grievance

Feedback and Grievance refers to whether the project has procedures in place to receive and act on feedback received from stakeholders.

Rationale	By providing local stakeholders with a clear feedback mechanism and committing to disclose and act on this feedback, then projects are more likely to satisfy the needs of stakeholders by both listening and responding to their feedback.					
Key Sources	Project Documentation	Geospatial	Project Methodology Documentation	Academic Literature	Third-party Data	MSCI Carbon Markets
	☑					
Scoring Definition	Each project is scored on a scale of 1 to 5, where 5 indicates that a project provides very transparent access to information through both its documentation and in-person					

	meetings and 1 indicates that stakeholders appear to have only limited access to information.
Scoring Approach	Three aspects of a project's feedback procedure are assessed: - **Feedback Mechanism:** Whether a project has a feedback and grievance procedure in place. - **Feedback Disclosure:** Whether a project transparently discloses any feedback received. - **Feedback Response:** Whether a project has clearly acted on any feedback received. Projects receive a score of 3 if they have a feedback mechanism in place, and 1 otherwise. For the other 2 factors, projects receive a score of 1 if they satisfy this factor. The overall scores are then based on adding each of these components to reach a score from 1 to 5.

Appendix – Geospatial similarity and forest management assessment

MSCI S&C's approach for assessing dynamic baselines follows the VM0045 methodology for improved forest management (IFM) projects, with some modifications to address specific challenges and enhance the rigor of the assessment process.

The VM0045 methodology features a quasi-experimental design to establish dynamic baselines for IFM projects, which MSCI S&C uses in its methodology. This methodology uses a matching approach, creating matched pairs of project treatments and control baselines. Carbon stock changes are monitored directly in permanent sample units representing both project and baseline scenarios. The baseline is represented by a collection of sample plots outside a project area, matched to the initial conditions of each paired project plot.

Matching Design

For each project, a group of similar constituent baseline plots are sourced from a donor pool from the Forest Inventory and Analysis Database[13] The chosen plots are used to create a composite baseline.

Matching is achieved by using a k-nearest neighbor (k-NN) optimal matching approach with replacement and where k is equal to 10. The k-NN approach assigns a weight to each matched constituent baseline plot based on the similarity to a project site.

The selection and weighting of constituent baseline plots remain constant throughout a project crediting period.

Matching conditions reference one or more covariates representing biophysical and anthropogenic factors influencing carbon stock change. The following twelve covariates are considered:

1. State,
2. Site productivity class,
3. Ecoregion,
4. Land ownership type,
5. Elevation,
6. Slope
7. Forest type group,
8. Stand age,
9. Diameter at breast height,
10. Distance to improved roads,

[13] Burrill, et al., (2024), Forest Inventory and Analysis Database (FIADB) https://research.fs.usda.gov/nrs/programs/fia#overview. The FIADB addresses landowner privacy and plot integrity by using methods known as fuzzing and swapping. Fuzzing consists of approximating the plot location by 1 mile or less; swapping replaces up to 20% of the private plot coordinates with another similar private plot within the same county, that is only the coordinates of the plot are swapped — all the other plot characteristics remain the same. While swapping is not a concern in MSCI S&C's analysis, fuzzing could impact the IFM site characterization; fuzzing is accounted for by extending the area of search by the FIA plots locations' disclosed uncertainty.

11. Commercial stocking, and
12. Regeneration stocking.

While adhering to the core principles of the VM0045 methodology, specific modifications are made in MSCI S&C's methodology to address challenges in project areas in the United States not covered by the Forest Inventory and Analysis Database (FIADB). For IFM projects lacking FIADB data, alternative data sources are used to ensure coverage. In these projects, the matching characteristics are adjusted as follows: replacing distance to improved roads with distance to mills and stand age with stand height. Distance to mills is calculated using a U.S. mills location dataset,[14] while stand height is extracted from the submeter Global Canopy Height Maps dataset.[15] Stand height data is then used to predict diameter at breast height (DBH).

Measured tree height (TREE.ACTUALHT) and diameter (TREE.DIA) data from the FIADB is used to model the relationship between these two variables. By filtering the data by state, site productivity class, and forest type, a second-degree polynomial regression model is developed to capture the relationship between height and diameter. Next, this trained model is applied to predict DBH for IFM sites not covered by the FIADB. For these IFM projects, tree height is sampled from the Global Canopy Height Maps dataset and used as inputs in the model to estimate DBH. These predicted DBH values are subsequently used to calculate commercial and regeneration stocking percentages.

Analysis of Matched Plots

The forest management practices and carbon stock changes within the matched reference plots are then compared to a project area in two primary ways:

1. **Carbon stock change**

MSCI S&C's baseline quantification focuses on the measured carbon stock change in composite dynamic baselines, representing scenarios that may have occurred in the absence of project activity. Each project sample unit has a corresponding paired composite baseline, composed of one or more constituent baseline plots. The carbon stock change for each constituent baseline plot is then calculated at remeasurement time, annualized, and combined as a weighted sum to form the composite baseline.

2. **Common practice**

Silvicultural common practices are analyzed after defining the composite dynamic baselines. For each constituent baseline plot, the observed silvicultural treatment recorded in the FIADB is used. The type of treatment can vary from plot to plot. All the observed treatments are accounted for and weighted based on the percentage of plots following that treatment.

[14] Consuelo Brandeis and Karen Lee Abt. 2019. "Roundwood use by southern wood pellet mills: Findings from timber product output mill surveys." *Journal of Forestry*, 117(5): 427–434.

[15] Tolan, J. et al. [2024]. "Very high resolution canopy height maps from RGB imagery using self-supervised vision transformer and convolutional decoder trained on aerial lidar," *Remote Sensing of Environment*, 300: 113888, ISSN 0034-4257, https://doi.org/10.1016/j.rse.2023.113888.

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Change log

Version	Date	Key Changes
1.0	19-Sep-2024	Initial publication
1.1	30-Mar-2026	- Addition of new sub-criterion (1.5.2.4.2) to assess the trends in historic carbon stock for baseline analysis. - Incorporation of species-specific oven-dry density figures in revenue estimation modelling (1.1.1.1). - Addition of issuance-based comparison of carbon stock growth based on geospatial modelling for removal credits (2.2.1.3). - Analysis of the amount of foregone reduction credits that a "removal-only" project may have (2.2.2.2). - Incorporation of tonne discount factor quantitative modelling for quantification criteria. - More granular assessment of the size and suitability of benefit sharing agreements (4.1.2.1.1.2).

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