

**On the Road to Carbon Market Integrity:  
Article 6.4's Higher Standard  
and the Risk of Fragmentation**

**SGFIN Whitepaper Series #14**

# On the Road to Carbon Market Integrity: Article 6.4's Higher Standard and the Risk of Fragmentation

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## **Abstract**

With the continued challenges facing the voluntary carbon market, it is becoming an even more uphill task to meet global climate targets. At COP29, countries agreed to operationalize standards for a centralised carbon market based on the Article 6.4 mechanism of the Paris Agreement. This development has the potential to promote greater standardisation in the generation and transfer of carbon credits, providing safeguards to ensure that carbon credits meet higher quality standards. Building on SGFIN's previous methodology for assessing the robustness of carbon crediting frameworks in promoting high-quality carbon credits, this whitepaper evaluates the strengths and weaknesses of the documents that form the foundation of the Article 6.4 mechanism framework. It finds that recent developments in the UNFCCC-led framework represent significant steps toward greater carbon market integrity, but also highlight a key implementation risk: if the rules are perceived as too stringent or costly to adopt, buyers and project developers may continue to rely on alternative standards, potentially contributing to market fragmentation and confusion.

**About SGFIN**

The Sustainable and Green Finance Institute (SGFIN) is a research institute established by National University of Singapore (NUS). SGFIN aims to develop deep research capabilities in sustainable and green finance with a focal point on Asia, and to provide thought leadership and shape sustainability outcomes in policymaking across the financial sector and the economy at large. Supported by exceptional domain experts across NUS, SGFIN equips businesses with critical cross-disciplinary knowledge, training, and toolkits to integrate sustainability dynamics into their business strategies and investment decisions to better quantify the environmental and social impacts of their business developments, operations, products, and services. In essence, SGFIN aims to help companies embed sustainability as a key pillar in their business decisions.

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## Foreword

It has become glaringly obvious that the world faces an immense uphill task in meeting the global goals it has set for itself. Targets such as keeping warming within 1.5 degrees Celsius are becoming increasingly out of reach. However, it remains essential that we continue to try to minimise climate-related damage, even as some global targets become increasingly difficult to attain.



In our previous whitepaper, we discussed why it is crucial for carbon credits to be of high quality if they are to serve as an essential component of the solution towards a more sustainable world. Ideally a global carbon crediting framework that manages the issuance of carbon credits would address many of the challenges currently affecting the voluntary carbon market and potentially align it more closely with the compliance carbon market.

At COP29, countries agreed on key standards to operationalise a centralised carbon crediting mechanism under Article 6.4 of the Paris Agreement, Ref [1]. Given that the carbon market is projected to reach a valuation of US\$50 billion by 2030, the operationalisation of a centralised, UNFCCC-overseen crediting mechanism could play an integral role in strengthening the integrity and credibility of internationally transferred carbon credits. Using the principles and requirements previously developed by SGFIN, this whitepaper assesses the emerging Article 6.4-based carbon crediting framework to determine its potential efficacy in facilitating the issuance of high-quality carbon credits.

We hope that the findings of this whitepaper will support the ongoing improvement and operationalisation of the Article 6.4 framework, and contribute to the development of a more credible, transparent, and internationally harmonised carbon market as part of the broader response to climate change.

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## Executive Summary

This paper evaluates the prospective carbon crediting framework based on Article 6.4 mechanism that was agreed to be established at COP29, Ref [1]. This framework was further refined during COP30, with a strong emphasis on implementation.

As the urgency to meet critical global temperature goals such as the 1.5 degrees Celsius pathways outlined in the Paris Agreement intensifies, current policies and efforts remain woefully short of the required pace. Carbon credits have emerged as a pivotal mechanism to bridge the gap, enabling nations and businesses to offset their remaining emissions while fostering sustainable projects that mitigate or remove emissions elsewhere.

The formation of the Paris Agreement Crediting Mechanism (PACM), more commonly known as the Article 6.4 mechanism, is intended to facilitate transfer of carbon credits across countries. This is meant to be an important pillar of the centralised carbon market that is to be formed.

The centralised carbon market standards agreed upon under the Article 6.4 mechanisms are intended to play a critical role in helping streamline the process of uniquely identifying carbon projects worldwide that meet the criterion to be considered high quality. By doing so, it is hoped that Article 6.4 mechanism would raise the bar for high quality carbon credits generated from projects across the globe.

The effectiveness and eventual success of this system depend heavily on the rigorous evaluation of carbon credit projects intended to be registered through the framework. It is paramount that the evaluation process effectively ensures that these projects are both "Additional" and "Real" in mitigating or removing emissions. If the carbon crediting framework fails to stimulate proper due diligence and robust verification, the credibility and impact of this framework are at risk, undercutting its prospects to contribute meaningfully to global climate objectives.

The analysis in this study evaluates the Article 6.4 mechanism to be a high-quality carbon crediting framework, with higher quality than existing frameworks. Significant improvement has also been observed across its development, reflecting its likelihood to be even higher quality in the future. However, there are still gaps that need to be addressed to strengthen its credibility and eventual ability to facilitate the generation of high-quality carbon credits. Moreover, the study discusses the concern that the mechanism might be overly strict and therefore discourage participation of carbon credit projects, potentially limiting supply generation.

## Key Takeaways

1. **Article 6.4 framework development marks an important step toward a more unified global carbon market.**

The UNFCCC-led framework can provide a common quality baseline for carbon credits, helping reduce inconsistencies across existing voluntary carbon market standards. Its relative strength compared with existing crediting frameworks suggests that Article 6.4 can credibly raise expectations for what high-quality carbon credits should look like.

2. **Recent UNFCCC-led framework developments show meaningful progress in raising the bar for carbon credit integrity.**

Updated Article 6.4 guidance has strengthened key requirements on baseline setting, additionality, leakage treatment, reversal risk, and monitoring. Over recent assessment iterations, Article 6.4 framework documents have improved and now perform strongly across most SGFIN evaluation principles: realness, measurability, consistency, additionality, transparency, and precision.

3. **Adoption risk remains the central challenge.**

The robust development of Article 6.4 requirements can be perceived as too costly, complex, or impractical. This could deter project developers, limit the supply of eligible credits, and lead buyers to continue relying on alternative standards, thereby limiting convergence around the UNFCCC framework.

4. **The path forward requires integrity without excessive rigidity.**

Article 6.4 can become the anchor for global carbon market integrity, but only if its credible standards remain transparent and practical enough to encourage broad participation rather than market fragmentation. This requires balancing strong safeguards, including monitoring and verification requirements, with sufficient flexibility for diverse project types and capacities.

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# 1 Desired Outcomes

This study aims to identify the strengths and gaps in the prospective Article 6.4 carbon market mechanism, with the goal of identifying whether Article 6.4 could facilitate the expected outcomes from the carbon credit market outlined in Table 1. These outcomes as per stated in Ref [2] are intended to support the generation of high-quality credits by projects that genuinely benefit environmental conservation and climate change mitigation.

Table 1 – Desired Outcomes of Carbon Credit Market, Ref [2]

	<b>Desired Outcomes</b>
1	<b>Permanence and Risk Management:</b> Verify the permanence of GHG emission reductions or removals, with measures to address and compensate for potential reversals, using robust scientific methods to quantify these activities conservatively.
2	<b>Science-Based Transparent Standards:</b> Use AI tools and innovations to establish science-based standards and transparent infrastructure for high-quality GHG emission reduction and removal credits, ensuring transparent, public access to information and consistent methodologies across projects.
3	<b>Robust Project Cycle and Effective Governance:</b> Promote a robust project cycle with transparent, simplified registration and carbon credit issuance procedures, alongside independent third-party validation and verification to ensure accuracy, accountability, and effective governance.
4	<b>Additional and Diverse Projects:</b> Ensure additionality and enable a greater variety of project activities by streamlining methodologies, incorporating efficient monitoring, reporting, and verification (MRV) approaches, and incorporating measures to prevent harm to the environment or society.
5	<b>Incentivising Participation in Emission Mitigation to Achieve Net Zero:</b> Facilitate and incentivise participation in GHG emission mitigation efforts, contributing to the UN Sustainable Development Goals (SDGs) and the objective of real carbon abatement achieving net zero GHG emissions by mid-century.

## 2 Introduction and Motivation

In the pursuit of achieving global climate goals, such as limiting global temperature rise to 1.5 degrees Celsius, carbon credits have emerged as a critical tool for mitigating greenhouse gas emissions. However, the effectiveness and credibility of carbon credits fundamentally depend on their quality. Specifically, carbon credits must originate from projects that are able to demonstrate the "Additional" and "Real" principles.

Over the years, numerous carbon credit frameworks have been developed to assess the quality of carbon credits, each offering unique methodologies and criteria. Such frameworks act as overseeing entities that necessitate rigorous due diligence and monitoring, thereby acting to certify the quality of issued credits.

However, these frameworks vary significantly in their stringency, scope, and effectiveness, leading to disparities in the quality of the credits they certify. Recognizing the need for a standardized and comprehensive approach in evaluating quality of these frameworks, the recently published SGFIN white paper outlines nine core principles and their corresponding requirements that should be considered in any high-quality carbon credit framework, Ref [2]. These principles provide a blueprint for evaluating the robustness of existing frameworks and their capacity to deliver credible carbon credits.

The common desire for a globally harmonised quality framework has led to the formation of the Paris Agreement Crediting Mechanism (PACM), or more commonly known as the Article 6.4 mechanism, by the United Nations Framework Convention on Climate Change (UNFCCC). The Article 6.4 mechanism is a centralised carbon crediting framework which allows for transfer of carbon credits across countries that can be used towards a country's Nationally Determined Contributions (NDC) targets through an accepted standard and registry governed by the UNFCCC.

A robust and credible framework based on Article 6.4 mechanism would help ensure that issued credits are real, additional, and verifiable. In light of the recent development that Trovix, in collaboration with Ernst & Young, has been awarded a multi-year contract by the UNFCCC to develop and maintain the Article 6.4 registry which reflects the current work to operationalise Article 6.4, Ref [3], it is essential to identify the current quality of Article 6.4 mechanism, using the framework developed by SGFIN. This would help determine whether the mechanism can generate high integrity of the credits and the impacts they are intended to deliver.

### 3 Breakdown of Standards under Article 6.4 Crediting Mechanism

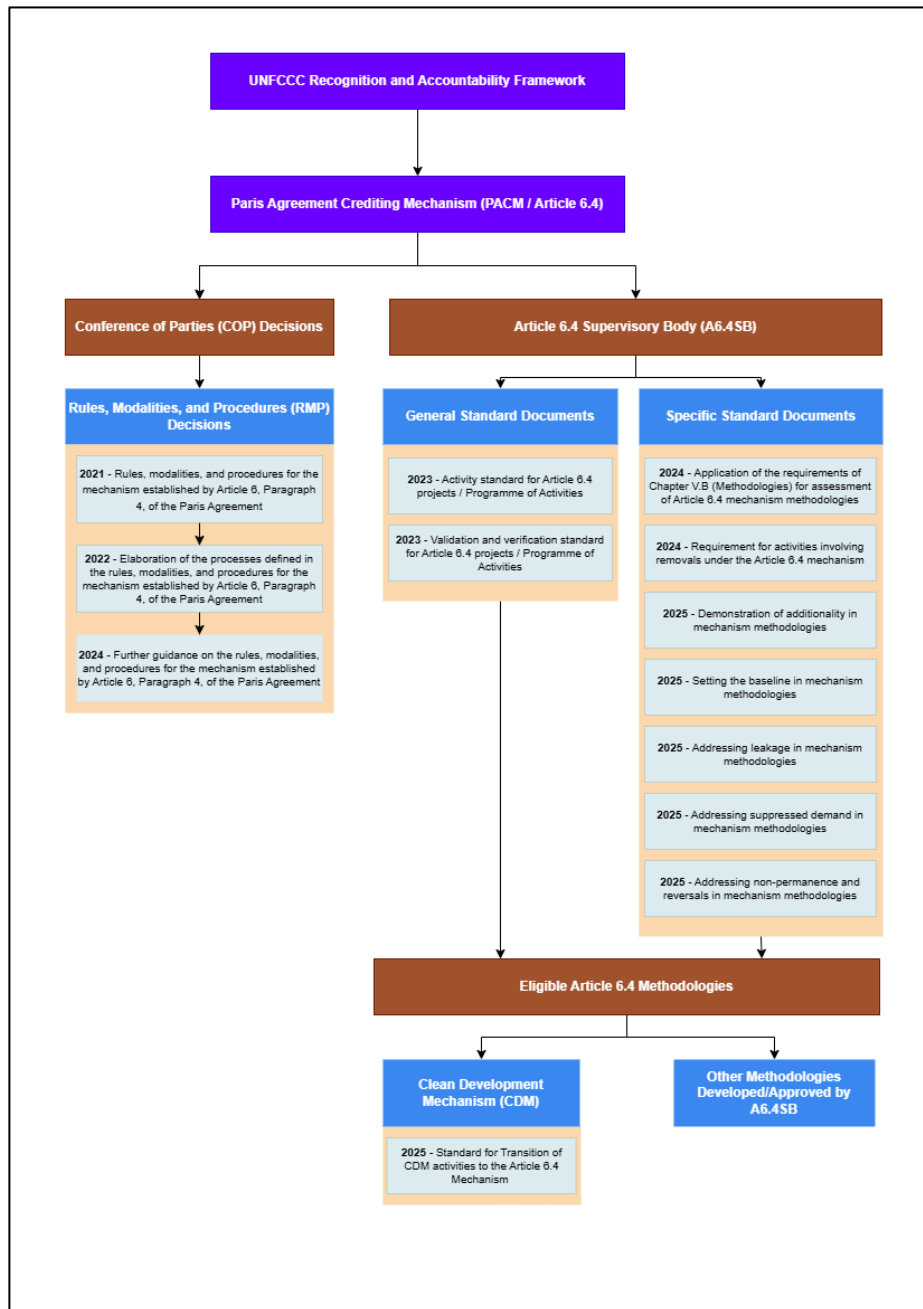


Figure 1 – Article 6.4 Mechanism's Documents Structure

The structure of the standards underlying Article 6.4 mechanism is shown in Figure 1. The key milestone that currently serve as the foundation for the operationalisation of the Article 6.4 mechanism is the Rules, Modalities, and Procedure (RMP), Ref [4], first introduced at COP 26 in 2021. Further amendments and additions on existing and new clauses were then included at COP27 in 2022, Ref [5], and subsequently at COP29 in 2024, Ref [6].

To operationalise the Article 6.4 mechanism, the Article 6.4 Supervisory Body (A6.4SB) was established. This body is tasked to develop the standard for eligible projects and evaluation methodologies, and to supervise the operation of proposed centralised carbon market, Ref [7]. This would lay the groundwork for the foundational mechanisms for international cooperation in carbon markets.

The published documents generated by the A6.4SB are shown on the right side of Figure 1. With the ongoing work by A6.4SB to further standardise methodologies in 2026, it can be expected that existing documents will be further updated and published.

## 4 Importance of Quality of Article 6.4 Mechanism

Article 6.4 of the Paris Agreement provides the starting point of a future framework for voluntary cooperation among countries in implementing their nationally determined contributions (NDCs) targets, Ref [8]. The Article 6.4 mechanism is pivotal in guiding global efforts to achieving targets such as the 1.5 degrees Celsius pathway.

There are several reasons why a high-quality Article 6.4 mechanism is essential. Given its role in setting global guidance on credit quality and project integrity, Article 6.4 has potential to establish a new UNFCCC-backed quality baseline for carbon markets. To be effective, its standards must therefore represent a clear improvement in identifying quality over other currently existing frameworks.

Moreover, a high-quality Article 6.4 mechanism is crucial as Article 6.4 credits could be used to contribute NDCs targets. Therefore, it is critical to avoid a worst-case scenario where Article 6.4 credits are used to satisfy NDC requirements and later found to lack environmental integrity.

Furthermore, given the global market access that Article 6.4-eligible credits would have, a high-quality Article 6.4 mechanism could incentivise both new and existing projects to improve their quality and integrity. New and existing projects seeking to capture wider international demand could align itself with the Article 6.4 mechanism. If the Article 6.4 mechanism succeeded in setting a higher-quality standard, projects would be compelled to work on its quality to be eligible for the mechanism, thereby leading to the development of more impactful projects.

Existing projects include projects from the Clean Development Mechanism (CDM), which originated from the Kyoto Protocol, for which the A6.4SB is currently developing a transition process to allow eligible projects to move into the Article 6.4 mechanism, Ref [6]. This transition process includes further revisions on CDM's baseline and monitoring methodologies to ensure CDM's alignment with the Article 6.4's own

requirements for its eligible methodologies. This signifies A6.4SB's concurrent desire to use Article 6.4 to improve the quality of existing projects.

Therefore, it is critically important that the standards developed under the Article 6.4 mechanism guide the generation of high-quality credits, encompassing both new projects and existing projects transitioning to the proposed carbon credit framework. The following sections discuss how this paper evaluates the quality of the Article 6.4 mechanism and how the quality of this standard would compare with the existing standards in the voluntary carbon market.

## 5 Evaluation Flow

The evaluation methodology consists of nine principles, each of which comprises "Essential" and "Beneficial" requirements. "Essential" requirements represent the basic minimum needed to ensure that the credits are of high quality, whereas "Beneficial" requirements represent additional safeguards to enhance the framework's capacity to issue high-quality credits. The list of requirements can be found on the first two columns of Appendix A.<sup>i</sup>

Each principle is scored based on the weighted proportion of its corresponding requirements that have been fulfilled. For more details on the evaluation and scoring methodology, please refer to the previous whitepaper composed by SGFIN, Ref [2]. This evaluation methodology has also been used to evaluate existing crediting frameworks such as American Carbon Registry, Verra, and Gold Standard in the same whitepaper, Ref [2].

Two benchmarks are employed for the evaluation of framework based on the Article 6.4 mechanisms. The first is the 60% fulfilment benchmark, which represents the acceptable baseline for a developing carbon market. The second is the 80% fulfilment benchmark, which reflects a fully mature carbon market.

The evaluation is conducted in two stages. In Stage 1, the framework's ability to meet the "Essential" requirements is assessed using the 60% fulfilment threshold. In Stage 2, a more detailed evaluation that includes both "Essential" and "Beneficial" requirements will be carried out, using both the 60% and 80% fulfilment threshold.

The assessment was conducted at three time points. The first assessment took place at the end of 2024, following COP29's decision to operationalise the Rules, Modalities, and Procedures for the Article 6.4 mechanism. The second assessment was conducted in June 2025, after new and updated documents were released following the 15th and 16th meetings of the Article 6.4 Supervisory Body. The third assessment

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<sup>i</sup> According to industry feedback obtained from the first whitepaper, Ref. [2], we have made slight changes to a few selected requirements. All the assessment results in this whitepaper have accordingly been adjusted to the new requirements, including past assessment iterations.

took place in January 2026, incorporating updates from COP30, which marked a shift in emphasis from rulemaking towards implementation, including the endorsement of core methodologies.

For the first assessment, valuation was based on the guidelines provided through the available documents released by Article 6.4SB by December 2024, and the Article 6.4 documents generated from COP29. While some of these documents contained clauses that contained mere requirements and therefore have yet to be operationalised such as the transition requirements for CDM projects or the global registry details, the assessment assumed that these requirements would be fully embedded into the future versions of Article 6.4. As such, these clauses were included and assumed to be implemented in our evaluation, wherever applicable. Appendix C lists the documents included in the first iteration of the assessment.

The second assessment included new and revised versions of existing documents that were released through the 15th and 16th meeting of A6.4SB, Ref [11] and Ref [12]. Likewise, all clauses are assumed to be fully implemented in the proposed framework. The list of additional documents included in our evaluation can be found in Appendix D.

The third assessment incorporates updated documents published following the outcomes of COP30. It includes newly released materials addressing non-permanence and reversal risks, covering both endorsed methodologies and regulatory requirements. Appendix E provides a list of the updated documents considered in this assessment.

## 6 Results

### 6.1 Stage 1 – Assessment of only “Essential” Requirements

Table 2 – Summary Evaluation of “Essential” Requirements of Article 6.4 Mechanism

Pillars	Principles	"Essential" Requirements		
		1st Iteration (H2 2024)	2nd Iteration (H1 2025)	3rd Iteration (H1 2026)
Methodology	Real	83.33%	100.00%	100.00%
	Permanent	33.33%	66.67%	66.67%
	Measurable	100.00%	100.00%	100.00%
	Consistent	50.00%	83.33%	100.00%
	Traceable	66.67%	66.67%	83.33%
Authenticity	Additional	100.00%	100.00%	100.00%
	Transparent	83.33%	83.33%	100.00%
	Precise	75.00%	87.50%	100.00%
Feasibility	Legally & Financially Sustainable	0.00%	37.50%	37.50%

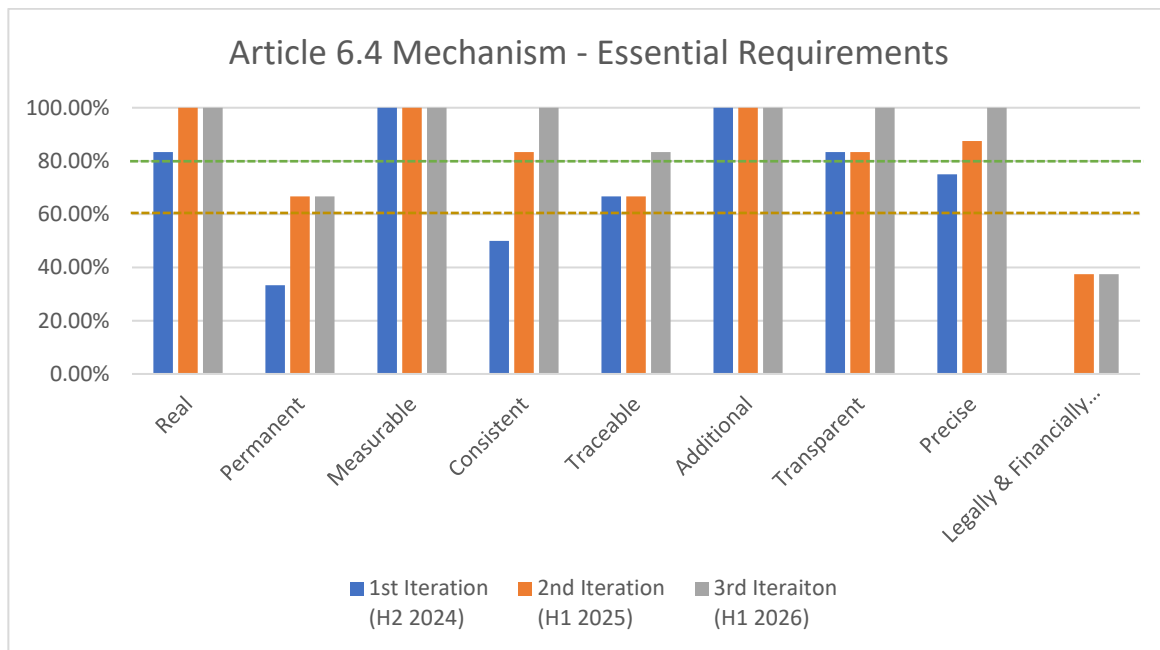


Figure 2 – Results of Evaluation of “Essential” Requirements of the Article 6.4 Mechanism

In Stage 1, in which only “Essential” requirements from each principle were considered, six principles successfully met the fulfilment benchmark of 60% during the 1<sup>st</sup> iteration, as shown by the blue-coloured bars in Figure 2. These principles are Real, Measurable, Traceable, Additional, Transparent, and Precise. Amongst these principles, the

Additional and Measurable principles meet all essential requirements. The former sets out clear guidance on establishing baseline conditions and identifying key barriers, whilst the latter specifies the methods for measuring non-default effects.

Using the new and updated documents listed in Appendix D for the second iteration, the evaluation revealed higher fulfilment rates across five principles. This results in eight principles fulfilling the 60% benchmark as reflected by the orange-coloured bars in Figure 2. Evident increases are observed in the Permanent and Consistent principles. A key requirement fulfilled in this second iteration is the explicit listing of reversal risk categories to be considered, such as regulatory uncertainty and natural disturbances, categorised under the Permanent principle. Regarding the Consistent principle, improvements were made on ensuring that data sampling methods of common variables are consistent, enabling easier comparison while assessing multiple projects.

The additional documents used for the third iteration are presented in Appendix E. The evaluation shows a further improvement in the expected quality of Article 6.4 framework. Six of the nine pillars now meet all "essential" requirements, while the remaining pillars have either maintained or improved their fulfilment rates. The latest documents emerging from COP30 provide greater clarity by specifying methodologies for how key data should be computed. They also introduce core approaches for baseline setting, additionality demonstration, leakage treatment, suppressed demand, and the management of non-permanence and reversals. This ensures that these critical elements can be applied consistently, under clearly defined requirements.

It is encouraging that improvement is observed for most principles throughout the different iterations. This implies that the more recent documents and standards released by A6.4SB are headed in the right direction to facilitate the high integrity carbon market envisioned. The more specific, contextualised sub-standards such as the "Standard: Demonstration of additionality in mechanism methodologies" document, Ref [13], allows for more direct, tighter clauses addressing key concerns of integrity which therefore results in some of our stricter requirements being filled. Additionally, the more specific documents allow project developers to locate regulations related to a specific matter more easily, enabling them to navigate through the complex Article 6.4 regulations more seamlessly. Moreover, the new documents released following the conclusion of COP30 address reversal risk and outline procedures to mitigate it. This represents progress toward ensuring the long-term sustainability of projects assessed under the Article 6.4 mechanism.

Despite the overall improvement in fulfilment rates, the Legally and Financially Sustainable principle remains an area requiring further attention. While recent documents have introduced requirements for projects to conduct financial viability tests, additional safeguards such as contingency plans if carbon revenues fall below expectations have yet to be established.

## 6.2 Stage 2 – Assessment of All Requirements

As majority of the principles passed the 60% benchmark on Stage 1 of the assessment on both iterations, the second stage of analysis which includes all requirements – “Essential” and “Beneficial” - is performed.

Table 3 – Summary Evaluation of All Requirements of Article 6.4 Mechanism

Pillars	Principles	All Requirements		
		1st Iteration (H2 2024)	2nd Iteration (H1 2025)	3rd Iteration (H1 2026)
Methodology	Real	83.33%	94.44%	100.00%
	Permanent	50.00%	75.00%	75.00%
	Measurable	100.00%	100.00%	100.00%
	Consistent	62.50%	87.50%	100.00%
	Traceable	57.14%	57.14%	71.43%
Authenticity	Additional	100.00%	100.00%	100.00%
	Transparent	90.00%	90.00%	100.00%
	Precise	70.83%	79.17%	91.67%
Feasibility	Legally & Financially Sustainable	4.55%	36.36%	40.91%

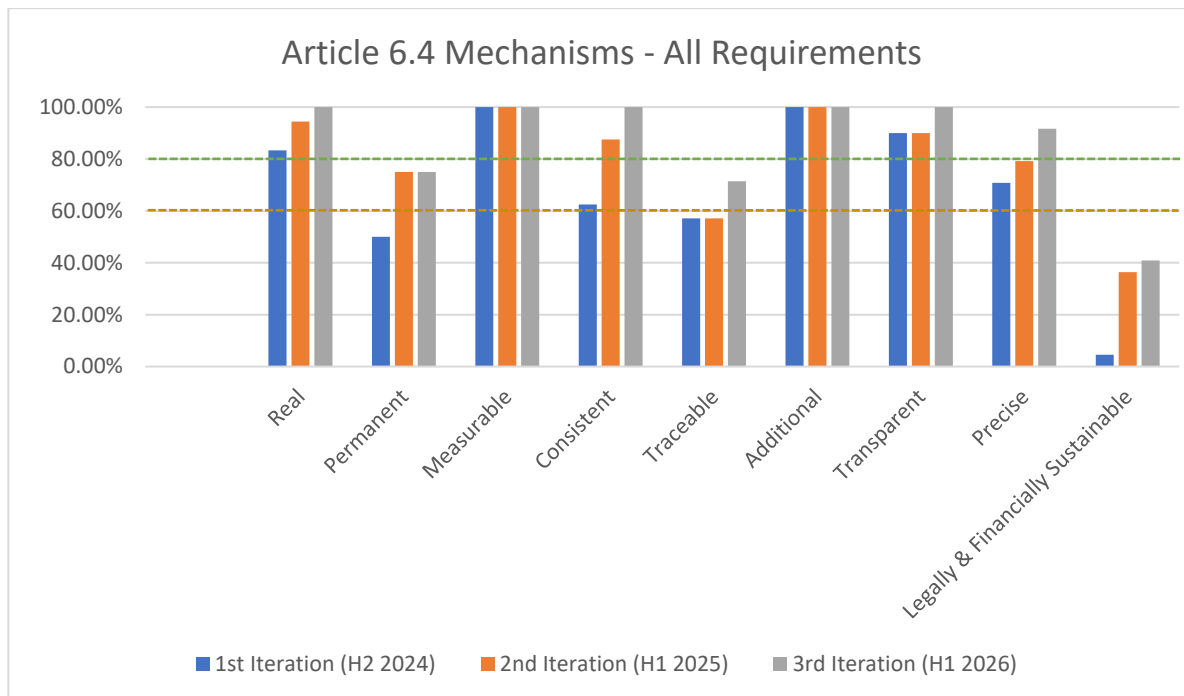


Figure 3 – Results of Evaluation of All Requirements of Article 6.4 Mechanism

As shown by Table 3 and Figure 3, six, seven and eight principles meet the 60% threshold for the first, second and third iteration respectively. In addition, the number

of principles meeting the 80% threshold increases progressively from four in the first iteration to six in the third iteration.

Similar to Stage 1 of the assessment which only included "Essential" requirements, improvement over time is observed for all requirements that did not already fulfil all of the requirements stated (Real, Permanent, Consistent, Traceable, Transparent, Precise, Legally and Financially Sustainable).

To identify the "Beneficial" requirements' fulfilment rates and how they have changed over time, Table 4 shows the comparison of assessment results between Stage 1 and Stage 2 for the 3<sup>rd</sup> iteration of assessment.

*Table 4 - Comparison between Stage 1 and Stage 2 results of the 3<sup>rd</sup> iteration of assessment (H1 2026)*

Pillars	Principles	3 <sup>rd</sup> Iteration of assessment (H1 2026)	
		Stage 1 – only "Essential" requirements	Stage 2 – all requirements
Climate Impact	Real	100.00%	100.00%
	Permanent	66.67%	75.00%
Methodology	Measurable	100.00%	100.00%
	Consistent	100.00%	100.00%
	Traceable	83.33%	71.43%
Authenticity	Additional	100.00%	100.00%
	Transparent	100.00%	100.00%
	Precise	100.00%	91.67%
Feasibility	Legally & Financially Sustainable	37.50%	40.91%

It can be observed that there are no extreme swings in fulfilment rates for any of the principles between the two stages. This suggests that "Beneficial" requirements are fulfilled at the same rate as the "Essential" requirements. The Real, Measurable, Consistent, Additional, Transparent, and Precise principles stand out, as all "beneficial" requirements are fulfilled. Improvements in fulfilment rates for the Permanent and Legally and Financially Viable principles are also welcomed, as these are areas where clear and detailed safeguarding measures can provide project developers with practical guidance on how to protect the quality and viability of their projects.

As the "Beneficial" requirements within our evaluation methodology tend to be more specific, the result of the assessment implies that the level of details in Article 6.4 documents has improved to a certain extent. This is shown by the fulfilment of more directed requirements, such as requiring explicit mention for any deviation of methodology to not reduce the conservativeness of the methodology used for

quantification and prescribing a standard for measurement equipment quality and calibration frequency.

However, there remains scope for further improvement in the “beneficial” requirements. For the Traceable and Precise principles, a slight decrease in the fulfilment rate is observed. This suggests that some “beneficial” requirements have yet to be met and could be targeted as priority areas for improvement to maintain the robustness of the principle and the framework.

Notable gaps include the need for clearer guidance on addressing potential risks arising from technological uncertainties or failures in quantifying the number of credits, as well as the absence of a publicly accessible mechanism to track the performance of project owners across their portfolios over time.

## 7 Comparison with Existing Voluntary Carbon Credit Frameworks

In this chapter, we compare the evaluation results of the proposed Article 6.4 mechanism framework against the evaluation of the American Carbon Registry (ACR), Verified Carbon Standard (VCS), and Gold Standard that was originally performed in Ref [2].

Given that new and revised documents have been released since the release of Ref [2], the evaluation of the three frameworks evaluated have been updated. The updated and additional documents used for the re-evaluation can be found in Appendix F. This is to be consistent with the latest documents used for the evaluation of the UNFCCC framework.

Table 5 – Comparison between Widely Used Carbon Credit Frameworks

	"Essential" Requirements			
	The American Carbon Registry	The Verified Carbon Standard	The Gold Standard	Article 6.4 Mechanism
Real	<b>100.00%</b>	<b>100.00%</b>	66.67%	<b>100.00%</b>
Permanent	<b>100.00%</b>	83.33%	50.00%	66.67%
Measureable	83.33%	66.67%	50.00%	<b>100.00%</b>
Consistent	83.33%	66.67%	33.33%	<b>100.00%</b>
Traceable	66.67%	66.67%	33.33%	<b>83.33%</b>
Additional	<b>100.00%</b>	<b>100.00%</b>	75.00%	<b>100.00%</b>
Transparent	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>
Precise	75.00%	25.00%	50.00%	<b>100.00%</b>
Legally & Financially Sustainable	37.50%	<b>62.50%</b>	37.50%	37.50%

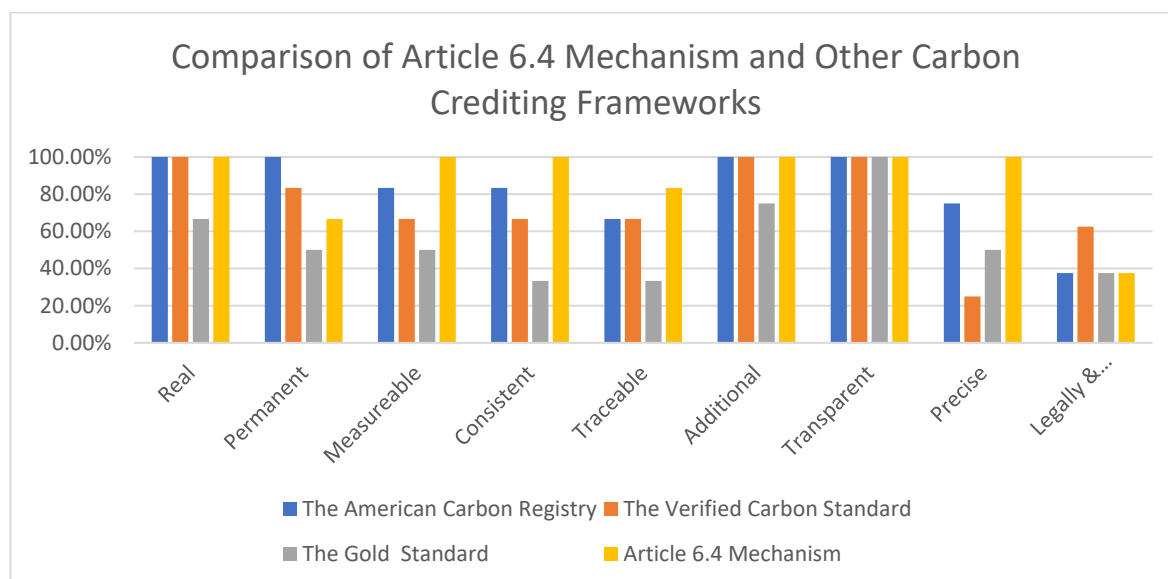


Figure 4 – Comparison of Article 6.4 Mechanism with Carbon Credit Frameworks

As shown in Figure 4, the proposed Article 6.4 Mechanism broadly outperforms the three widely used carbon crediting frameworks. It records the highest fulfilment rate across most principles, with the exception of the Permanent and Legally and Financially Sustainable principles. This indicates that Article 6.4 Mechanism has the capacity to serve as a strong benchmark for carbon crediting frameworks and potentially provide the foundation for future framework development. The analysis also suggests that the Article 6.4 framework is more standardised and prescriptive, likely benefiting from recent regulatory updates and centralised governance under the Paris Agreement. However, its relatively weaker performance on the Legally and Financially Sustainable principle indicates that further guidance may be needed to ensure that high-integrity requirements remain practical and financially viable for project developers.

## 8 Implementation Concerns for Article 6.4 Mechanism

Given that our evaluation methodology assumes that all clauses in the documents are fully implemented, it is important to note that although the prospective Article 6.4 mechanism performs exceptionally well with the requirements that have been composed, how the expected beneficial outcomes from the projects materialise are not always in sync with real-world outcomes.

Therefore, even if a carbon crediting framework appears to meet all the necessary criteria and theoretically issues high-quality carbon credits, verification and validation bodies must still ensure that due diligence is conducted to the highest standard.

The on-the-ground reality is that an overly strict standard can also make it more difficult for projects to qualify for eligibility. This goes against the 4<sup>th</sup> and 5<sup>th</sup> desired outcome from a high-quality carbon market discussed in chapter 1, that is to

incentivise diversified participation of sustainability projects. For instance, the most recent draft, as of this point of writing, on the "Standard: Requirements for activities involving removals under the Article 6.4 mechanism" document was found to be overly strict due to the stipulated monitoring requirements being considered unachievable for many nature-based removals projects, potentially leading to exclusion of impactful projects, Ref [14]. If the requirements for generating Article 6.4-eligible carbon credits are too strict, it could limit the number of qualifying projects and, in turn, reduce participation in both the registry and the broader market. This could ultimately undermine the effectiveness of the registry.

Beyond limiting project participation, overly stringent requirements may also affect demand-side adoption. If buyers perceive Article 6.4 credits as too scarce, costly, or administratively complex to procure, they may continue to rely on alternative crediting standards, including those assessed in this article. This could slow convergence around the UNFCCC-led framework and contribute to continued fragmentation and confusion in global carbon markets.

As such, a fine balance needs to be created between credit integrity protection and implementation feasibility while maintaining the view on the ultimate objective of Article 6.4 – to support impactful sustainability projects through enabling international trading of credits.

In the following, the SGFIN team identified several areas of the Article 6.4 requirements which could potentially be difficult for projects to faithfully apply.

## 8.1 Quantification Methodology

Within the requirements, the quantification of initial credits is predominantly based on measured effects, while default values from existing literature are largely considered secondary in quality. Although measured values remain the gold standard for ensuring reliability and comparability, comprehensive measurement of additional variables requires advanced technological capabilities that smaller, less-resourced projects may not possess. To encourage participation across projects of all scales, greater flexibility could be introduced regarding the use of default values from existing research literature.

In addition, the sampling methodology guidelines under Article 6.4 adopt a relatively narrow approach. The strict requirements mandate a minimum sample size of 30 and a precision threshold within 10 percent. However, this may make compliance challenging for resource-constrained projects. To broaden participation without compromising data quality, these thresholds could be relaxed, complemented by additional safeguards such as conservative baselines and carbon credit buffer pools.

## 8.2 Validation, Verification, and Monitoring Requirements

Currently, the Article 6.4 requirements for stakeholder confirmation warrants a detailed discussion. However, how detailed this discussion should be is unclear.

Stakeholder confirmation is also currently required to be continuous and should commence at project registration and continue until the crediting period ends. Maintaining a continuously open communication for stakeholder confirmation might be excessive and could be extremely costly.

Balancing post-crediting monitoring requirements with projects' availability of resources is also a key consideration. A project's level of resources is a large determinant of whether monitoring can be conducted in a timely manner and with sufficient detail to ensure accuracy. The latest Article 6.4 draft requires monitoring to be conducted at intervals ranging from one to five years, with the exact frequency determined by the methodology used. If the monitoring frequency is as frequent as every year, accuracy of the data might be compensated given that different projects have varying levels of capacity. It is important to remember that ensuring monitoring data to be high-quality should be of utmost priority, and the chosen monitoring frequency should be determined by balancing accuracy with frequency.

Under the Article 6.4 standard, there is absence of guidance on the level of quality assurance and control required for each parameter. It is essential to establish defined thresholds for verification to ensure greater clarity and consistency. A risk-based approach could also be adopted, with more stringent thresholds applied to parameters deemed of higher risk.

### **8.3 Reversal Risk and Permanence**

The latest draft of the Article 6.4 documents on removal standards introduced an indefinite post-crediting monitoring requirement for projects exposed to reversal risk. For nature-based removals such as afforestation, this implies that project developers would need to maintain and protect forests beyond the crediting period without additional revenue from credit sales. This requirement could make it significantly more challenging for nature-based projects to qualify for Article 6.4

This stems from the current perspective that the minimum permanence required for removals must be of a fixed term defined by a regulating body. However, it is important to understand the different projects have inherently designed project terms and consequently permanence terms. Therefore, it is imperative that flexibility is applied to the standard to reflect this reality. Rather than applying a fixed term, an adoption of a probabilistic approach to evaluate project specific minimum permanence horizons could be used. Ideally, this would allow the market to price in these differences and arrive at a more efficient outcome.

## **9 Conclusion**

The evaluation of the proposed Article 6.4 mechanism framework shows strengths in many of the principles and the requirements set out by this paper. In particular, the proposed mechanism met all beneficial and essential requirements of the Additional and Measurable principle. Nevertheless, the prospective framework still suffers from

gaps, particularly with regards to projects being legally and financially sustainable, which need to be addressed to strengthen market confidence in its ability to promote the generation of high-quality carbon credits. Failing to address these gaps could expose the prospective framework to similar criticisms levelled against existing voluntary carbon market frameworks.

In addition, we outline potential implementation issues that may foreshadow future challenges as rigid definitions and the pursuit of absolute assurance in credit quality could clash with practical realities on the ground. This implementation challenge creates an adoption risk. If Article 6.4 requirements are perceived as too stringent, costly, or impractical, project developers may struggle to qualify, while buyers may continue to rely on alternative crediting standards that are easier to access or already familiar to the market. In that scenario, Article 6.4 may succeed in raising the standard for credit integrity on paper, but fall short of becoming the common benchmark for global carbon markets in practice. This could slow convergence around the framework and instead contribute to continued fragmentation and confusion across carbon markets.

This adoption concern is especially relevant for smaller or less-resourced projects, which may be less able to comply with stringent requirements than larger, well-resourced counterparts. Ensuring that these smaller projects can participate in emerging carbon markets is therefore essential to enhance geographical and sectoral coverage, while also unlocking a broader pool of climate mitigation opportunities. Ultimately, the success of Article 6.4 will depend not only on the strength of its standards, but also on whether those standards can be implemented widely enough to support a credible and inclusive global carbon market.

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## Appendix A

The following table shows the detailed results of the assessment of the Article 6.4 mechanism framework.

Principle	Requirement	Beneficial or Essential	Fulfilment		
			1 <sup>st</sup> Iteration (H2 2024)	2 <sup>nd</sup> Iteration (H1 2025)	3 <sup>rd</sup> Iteration (H1 2025)
Additional	Require that the project's mitigation actions go beyond common practice	Beneficial	Y	Y	Y
Additional	Require a clear description of at least one implementation barrier that will be overcome by the project	Beneficial	Y	Y	Y
Additional	Require that the GHG emission reductions and/or removals generated by the project are materially above and beyond Business as Usual (BAU)	Essential	Y	Y	Y
Additional	Specify a robust methodology that satisfies scientific requirements to determine the baseline data and the resulting additionality for the project.	Essential	Y	Y	Y
Real	Require a detailed discussion of how the project's impacts will be verified through stakeholder confirmation.	Beneficial	Y	Y	Y
Real	Require a clear timeframe and milestones of the project's planned progress.	Beneficial	0.5Y	0.5Y	Y
Real	Require a clear description of how each milestone will be verified, including the description of technology and methods that will be used.	Beneficial	Y	Y	Y

Principle	Requirement	Beneficial or Essential	Fulfilment		
			1 <sup>st</sup> Iteration (H2 2024)	2 <sup>nd</sup> Iteration (H1 2025)	3 <sup>rd</sup> Iteration (H1 2025)
Real	Require that the GHG emission reductions and / or removals generated by the project are quantifiable and recorded accurately so that they are directly verifiable.	Essential	Y	Y	Y
Real	Require that the measured effects are verified using a robust methodology that satisfies scientific requirements.	Essential	0.5Y	Y	Y
Real	Provide a clear set of requirements regarding the documentation of evidence of the project's effects.	Essential	Y	Y	Y
Measurable	Prescribe a standard for the quality of the measurement equipment and the required (re)calibration frequency.	Beneficial	Y	Y	Y
Measurable	Require adherence to common practice for sampling methodology and statistical confidence	Beneficial	Y	Y	Y
Measurable	Require that the measured effects are recorded in accordance with applicable reporting requirements and performance standards, clearly documenting the data sources and methodology used for measurement.	Essential	Y	Y	Y
Measurable	State the maximum permissible errors allowed in the measurement of specific effects.	Essential	Y	Y	Y

Principle	Requirement	Beneficial or Essential	Fulfilment		
			1 <sup>st</sup> Iteration (H2 2024)	2 <sup>nd</sup> Iteration (H1 2025)	3 <sup>rd</sup> Iteration (H1 2025)
Measurable	Prescribe the acceptable timeframe and frequency of measurements of specific effects.	Essential	Y	Y	Y
Permanent	Provide a clear set of guidelines for the discussion of non-permanence risks as per project methodology approved by the framework	Beneficial	Y	Y	Y
Permanent	Require process of the deposit of credits into buffer pool to mitigate against risk to permanence to be laid out	Beneficial	Y	Y	Y
Permanent	Ensure that the project has a lasting and permanent effect on the reductions and/or removals of GHG	Essential	N	Y	Y
Permanent	Require that conservative and realistic assumptions are used in the framework methodology, accounting for various risk factors such as reversibility and leakage, regardless of intentionality.	Essential	Y	Y	Y
Permanent	Prescribe specific deadlines for project owners to state the minimum project term, the benefit horizon, and the start of the project's permanence period.	Essential	N	N	N
Transparent	Require the accreditation of the validation entity performing independent verification	Beneficial	Y	Y	Y

Principle	Requirement	Beneficial or Essential	Fulfilment		
			1 <sup>st</sup> Iteration (H2 2024)	2 <sup>nd</sup> Iteration (H1 2025)	3 <sup>rd</sup> Iteration (H1 2025)
Transparent	Require a clear description of the audit team, with specific roles and responsibilities of each team member	Beneficial	Y	Y	Y
Transparent	Require a clear description of the procedures that will be used to track the project's GHG emission reductions and/or removals, and how these are transferred to other parties aiming to meet their own targets.	Beneficial	N	Y	Y
Transparent	Provide a clear set of guidelines for the discussion of measured and expected impacts within the verification report	Beneficial	Y	Y	Y
Transparent	Require a clear and thorough documentation of the project (including its design, scope, and measurement methodology) to allow for replication and outside review	Essential	N	0.5Y	Y
Transparent	Require independent framework setters, measurement and verification team, and project owners who have no conflict of interest with all other parties involved.	Essential	N	Y	Y
Transparent	Require adherence to the materiality threshold determined by the framework.	Essential	Y	Y	Y

Principle	Requirement	Beneficial or Essential	Fulfilment		
			1 <sup>st</sup> Iteration (H2 2024)	2 <sup>nd</sup> Iteration (H1 2025)	3 <sup>rd</sup> Iteration (H1 2025)
Precise	Provide a clear set of guidelines for the discussion of the avoidance and/or elimination of potential biases in the quantification methodology of GHG emissions, including the use of site-specific emission factors and the inputs for the estimation of the measurement of baseline and future emissions.	Beneficial	Y	Y	Y
Precise	Require a thorough documentation verifying the level of assurance required through documentation.	Beneficial	0.5Y	0.5Y	Y
Precise	Require that any future deviations from the proposed program methodology approved by the framework does not reduce the conservativeness of the quantification of emission reductions or removals.	Beneficial	Y	Y	Y
Precise	Require a clear discussion of how the quantification methodology will leverage technological practices to enhance its accuracy, while also addressing the potential risks of technology failure in this context.	Beneficial	N	N	N
Precise	Require a clear discussion of the process undertaken to validate the accuracy of the measurement of the project's effects. For example, requiring that the emission factors used in the measurements are derived from a scientific peer-reviewed sources, are	Essential	Y	Y	Y

Principle	Requirement	Beneficial or Essential	Fulfilment		
			1 <sup>st</sup> Iteration (H2 2024)	2 <sup>nd</sup> Iteration (H1 2025)	3 <sup>rd</sup> Iteration (H1 2025)
	appropriate for the specific GHG emitter, and account for any potential uncertainty.				
Precise	Prescribe a minimum materiality threshold	Essential	Y	Y	Y
Precise	Require adherence to the benchmarks, specific and quantifiable goals that are required by the approved methodology.	Essential	N	0.5Y	Y
Precise	Require a validation of the measured effects of the project using methodologies evaluated and approved by the framework setter.	Essential	Y	Y	Y
Consistent	Require high-quality sources of information and comparison for data with high levels of uncertainty to elicit a greater confidence on the assurance process.	Beneficial	Y	Y	Y
Consistent	Require existing projects to update their PDDs when any changes to the Standard/Methodology are made.	Beneficial	Y	Y	Y
Consistent	Require a consistent methodology that can be applied across all projects within the same project type	Essential	0.5Y	0.5Y	Y
Consistent	Require measurements and data sampling of similar variables to be conducted consistently to enable easy comparison across assessed projects.	Essential	N	Y	Y

Principle	Requirement	Beneficial or Essential	Fulfilment		
			1 <sup>st</sup> Iteration (H2 2024)	2 <sup>nd</sup> Iteration (H1 2025)	3 <sup>rd</sup> Iteration (H1 2025)
Consistent	Require a clear description of the methodology used for measurement. Methodology is to be made publicly available to ensure consistency amongst all projects evaluated under the framework.	Essential	Y	Y	Y
Traceable	Promote coordination among registries to ensure that a specific project (or activity) is not registered with more than one registry.	Beneficial	N	N	N
Traceable	Issue a unique serial number to each unit of carbon credit issued.	Essential	Y	Y	Y
Traceable	Prescribe the use of a reputable carbon registry to track the issuance, ownership, and retirement and/or cancellation of carbon credits.	Essential	Y	Y	Y
Traceable	Require availability and public access to the carbon registry information so that the credits are verifiable with other registries.	Essential	N	N	0.5Y
Legally & Financially Sustainable	Require a detailed contingency plan to address potential changes in regulations or governmental structures	Beneficial	0.5Y	0.5Y	0.5Y
Legally & Financially Sustainable	Require a discussion of potential situations where targeted GHG emissions reductions or removals are not met, and the proposed viable mechanisms to address these situations.	Beneficial	N	0.5Y	Y

Principle	Requirement	Beneficial or Essential	Fulfilment		
			1 <sup>st</sup> Iteration (H2 2024)	2 <sup>nd</sup> Iteration (H1 2025)	3 <sup>rd</sup> Iteration (H1 2025)
Legally & Financially Sustainable	Promote publicly accessible mechanisms to track and evaluate the performance and success rate of project owners in ongoing and completed GHG emission reduction/removal projects	Beneficial	N	N	N
Legally & Financially Sustainable	Require a thorough discussion regarding viability and self-sufficiency of the project, particularly once the project initial funding runs out and / or carbon related revenues (e.g. carbon credits) are absent. Consider the absence of carbon revenues for project viability and determine if projects are self-sufficient once initial funding is used	Essential	N	0.5Y	0.5Y
Legally & Financially Sustainable	Require a thorough assessment of whether the proceeds from the carbon credits (e.g., subsidies and carbon market potentials) associated with the project's location jurisdiction, can cover the costs of the proposed mitigation actions.	Essential	N	N	N
Legally & Financially Sustainable	Require a contingency plan if the resulting revenues from carbon credits, subsidies, and tax incentives, are not sufficient to cover the proposed mitigation actions.	Essential	N	N	N
Legally & Financially Sustainable	Require that the project owners have (1) complied with all current policies and regulations and (2) considered potential future changes in policies and regulations.	Essential	N	Y	Y

## Appendix B

The table below illustrate the updated evaluation from Ref. [2] using the updated and new documents listed in Appendix E.

Principle	Requirement	Beneficial or Essential	Fulfilment		
			The American Carbon Registry	The Verified Carbon Standard	The Gold Standard
Additional	Require that the project's mitigation actions go beyond common practice	Beneficial	Y	Y	Y
Additional	Require a clear description of at least one implementation barrier that will be overcome by the project	Beneficial	Y	Y	N
Additional	Require that the GHG emission reductions and/or removals generated by the project are materially above and beyond Business as Usual (BAU)	Essential	Y	Y	0.5Y
Additional	Specify a robust methodology that satisfies scientific requirements to determine the baseline data and the resulting additionality for the project.	Essential	Y	Y	Y
Real	Require a detailed discussion of how the project's impacts will be verified through stakeholder confirmation.	Beneficial	Y	N	Y
Real	Require a clear timeframe and milestones of the project's planned progress.	Beneficial	N	N	0.5Y

Principle	Requirement	Beneficial or Essential	Fulfilment		
			The American Carbon Registry	The Verified Carbon Standard	The Gold Standard
Real	Require a clear description of how each milestone will be verified, including the description of technology and methods that will be used.	Beneficial	Y	N	Y
Real	Require that the GHG emission reductions and / or removals generated by the project are quantifiable and recorded accurately so that they are directly verifiable.	Essential	Y	Y	N
Real	Require that the measured effects are verified using a robust methodology that satisfies scientific requirements.	Essential	Y	Y	Y
Real	Provide a clear set of requirements regarding the documentation of evidence of the project's effects.	Essential	Y	Y	Y
Measurable	Prescribe a standard for the quality of the measurement equipment and the required (re)calibration frequency.	Beneficial	Y	Y	Y
Measurable	Require adherence to common practice for sampling methodology and statistical confidence	Beneficial	Y	N	N
Measurable	Require that the measured effects are recorded in accordance with applicable reporting requirements and performance	Essential	0.5Y	Y	Y

Principle	Requirement	Beneficial or Essential	Fulfilment		
			The American Carbon Registry	The Verified Carbon Standard	The Gold Standard
	standards, clearly documenting the data sources and methodology used for measurement.				
Measurable	State the maximum permissible errors allowed in the measurement of specific effects.	Essential	Y	Y	0.5Y
Measurable	Prescribe the acceptable timeframe and frequency of measurements of specific effects.	Essential	Y	N	N
Permanent	Provide a clear set of guidelines for the discussion of non-permanence risks as per project methodology approved by the framework	Beneficial	Y	Y	Y
Permanent	Require process of the deposit of credits into buffer pool to mitigate against risk to permanence to be laid out	Beneficial	N	Y	N
Permanent	Ensure that the project has a lasting and permanent effect on the reductions and/or removals of GHG	Essential	Y	Y	Y
Permanent	Require that conservative and realistic assumptions are used in the framework methodology, accounting for various risk factors such as reversibility and leakage, regardless of intentionality.	Essential	Y	Y	0.5Y

Principle	Requirement	Beneficial or Essential	Fulfilment		
			The American Carbon Registry	The Verified Carbon Standard	The Gold Standard
Permanent	Prescribe specific deadlines for project owners to state the minimum project term, the benefit horizon, and the start of the project's permanence period.	Essential	Y	0.5Y	N
Transparent	Require the accreditation of the validation entity performing independent verification	Beneficial	Y	Y	Y
Transparent	Require a clear description of the audit team, with specific roles and responsibilities of each team member	Beneficial	N	N	Y
Transparent	Require a clear description of the procedures that will be used to track the project's GHG emission reductions and/or removals, and how these are transferred to other parties aiming to meet their own targets.	Beneficial	N	Y	N
Transparent	Provide a clear set of guidelines for the discussion of measured and expected impacts within the verification report	Beneficial	N	0.5Y	0.5Y
Transparent	Require a clear and thorough documentation of the project (including its design, scope, and measurement methodology) to allow for replication and outside review	Essential	Y	Y	Y

Principle	Requirement	Beneficial or Essential	Fulfilment		
			The American Carbon Registry	The Verified Carbon Standard	The Gold Standard
Transparent	Require independent framework setters, measurement and verification team, and project owners who have no conflict of interest with all other parties involved.	Essential	Y	Y	Y
Transparent	Require adherence to the materiality threshold determined by the framework.	Essential	Y	Y	Y
Precise	Provide a clear set of guidelines for the discussion of the avoidance and/or elimination of potential biases in the quantification methodology of GHG emissions, including the use of site-specific emission factors and the inputs for the estimation of the measurement of baseline and future emissions.	Beneficial	N	N	Y
Precise	Require a thorough documentation verifying the level of assurance required through documentation.	Beneficial	Y	Y	N
Precise	Require that any future deviations from the proposed program methodology approved by the framework does not reduce the conservativeness of the quantification of emission reductions or removals.	Beneficial	Y	Y	Y
Precise	Require a clear discussion of how the quantification methodology will leverage	Beneficial	Y	Y	Y

Principle	Requirement	Beneficial or Essential	Fulfilment		
			The American Carbon Registry	The Verified Carbon Standard	The Gold Standard
	technological practices to enhance its accuracy, while also addressing the potential risks of technology failure in this context.				
Precise	Require a clear discussion of the process undertaken to validate the accuracy of the measurement of the project's effects. For example, requiring that the emission factors used in the measurements are derived from a scientific peer-reviewed sources, are appropriate for the specific GHG emitter, and account for any potential uncertainty.	Essential	Y	N	N
Precise	Prescribe a minimum materiality threshold	Essential	Y	Y	Y
Precise	Require adherence to the benchmarks, specific and quantifiable goals that are required by the approved methodology.	Essential	N	N	N
Precise	Require a validation of the measured effects of the project using methodologies evaluated and approved by the framework setter.	Essential	Y	N	Y

Principle	Requirement	Beneficial or Essential	Fulfilment		
			The American Carbon Registry	The Verified Carbon Standard	The Gold Standard
Consistent	Require high-quality sources of information and comparison for data with high levels of uncertainty to elicit a greater confidence on the assurance process.	Beneficial	N	Y	0.5Y
Consistent	Require existing projects to update their PDDs when any changes to the Standard/Methodology are made.	Beneficial	0.5Y	N	Y
Consistent	Require a consistent methodology that can be applied across all projects within the same project type	Essential	Y	N	N
Consistent	Require measurements and data sampling of similar variables to be conducted consistently to enable easy comparison across assessed projects.	Essential	0.5Y	Y	N
Consistent	Require a clear description of the methodology used for measurement. Methodology is to be made publicly available to ensure consistency amongst all projects evaluated under the framework.	Essential	Y	Y	Y
Traceable	Promote coordination among registries to ensure that a specific project (or activity) is not registered with more than one registry.	Beneficial	N	N	N

Principle	Requirement	Beneficial or Essential	Fulfilment		
			The American Carbon Registry	The Verified Carbon Standard	The Gold Standard
Traceable	Issue a unique serial number to each unit of carbon credit issued.	Essential	Y	Y	N
Traceable	Prescribe the use of a reputable carbon registry to track the issuance, ownership, and retirement and/or cancellation of carbon credits.	Essential	N	N	N
Traceable	Require availability and public access to the carbon registry information so that the credits are verifiable with other registries.	Essential	Y	Y	Y
Legally & Financially Sustainable	Require a detailed contingency plan to address potential changes in regulations or governmental structures	Beneficial	N	N	N
Legally & Financially Sustainable	Require a discussion of potential situations where targeted GHG emissions reductions or removals are not met, and the proposed viable mechanisms to address these situations.	Beneficial	N	N	N
Legally & Financially Sustainable	Promote publicly accessible mechanisms to track and evaluate the performance and success rate of project owners in ongoing and completed GHG emission reduction/removal projects	Beneficial	N	N	N
Legally & Financially Sustainable	Require a thorough discussion regarding viability and self-sufficiency of the project, particularly once the project	Essential	Y	Y	Y

Principle	Requirement	Beneficial or Essential	Fulfilment		
			The American Carbon Registry	The Verified Carbon Standard	The Gold Standard
	initial funding runs out and / or carbon related revenues (e.g. carbon credits) are absent. Consider the absence of carbon revenues for project viability and determine if projects are self-sufficient once initial funding is used				
Legally & Financially Sustainable	Require a thorough assessment of whether the proceeds from the carbon credits (e.g., subsidies and carbon market potentials) associated with the project's location jurisdiction, can cover the costs of the proposed mitigation actions.	Essential	0.5Y	0.5Y	N
Legally & Financially Sustainable	Require a contingency plan if the resulting revenues from carbon credits, subsidies, and tax incentives, are not sufficient to cover the proposed mitigation actions.	Essential	N	N	N
Legally & Financially Sustainable	Require that the project owners have (1) complied with all current policies and regulations and (2) considered potential future changes in policies and regulations.	Essential	N	Y	0.5Y

## Appendix C

The following table lists the Article 6.4 documents used in the 1<sup>st</sup> iteration of the assessment, in December 2024:

Document Name	Document URL	Last Accessed
Article 6.4 Activity Standard for Projects, Version 01.0, A6.4-STAN-AC-002	<a href="#">Link</a>	24/6/2025
Activity 6.4 Validation and Verification Standard for Projects, Version 01.0, A6.4-STAN-AC-003	<a href="#">Link</a>	24/6/2025
Article 6.4 activity standard for programmes of activities, Version 01.0, A6.4-STAN-AC-004	<a href="#">Link</a>	24/12/2024
CDM Methodology Booklet, December 2022	<a href="#">Link</a>	24/12/2024
CDM project standard for project activities, Version 03.0, CDM-EB93-A04-STAN	<a href="#">Link</a>	24/12/2024
CDM validation and verification standard for project activities, Version 03.0, CDM-EB93-A05-STAN	<a href="#">Link</a>	24/12/2024
Monitoring Report Form for Article 6.4 Projects, Version 01.0, A6.4-FORM-AC-021	<a href="#">Link</a>	24/12/2024
Project Design Document (PDD) Form for Article 6.4 Projects, Version 01.0, A6.4-FORM-AC-020	<a href="#">Link</a>	24/12/2024
Rules, modalities, and procedures for the mechanism established by Article 6, Paragraph 4, of the Paris Agreement (and corresponding previous draft versions), FCCC/PA/CMA/2024/L.16	<a href="#">Link</a>	24/6/2025
Standard: Application of the requirements of Chapter V.B (Methodologies) for the development and assessment of Article 6.4 mechanism methodologies, Version 01.0, A6.4-SBM014-A05	<a href="#">Link</a>	24/6/2025
Standard: Article 6.4 mechanism accreditation, Version 01.0, A6.4-STAN-ACCR-001	<a href="#">Link</a>	24/6/2025

Standard: Requirements for activities involving removals under the Article 6.4 mechanism, Version 01.0, A6.4-SBM014-A06	<a href="#">Link</a>	24/6/2025
Standard: Transition of CDM activities to the Article 6.4 mechanism, Version 02.0, A6.4-SBM008-A07	<a href="#">Link</a>	24/6/2025
Validation Report Form for Article 6.4 Projects, Version 01.0, A6.4-FORM-AC-022	<a href="#">Link</a>	24/12/2024

## Appendix D

The following table lists the new and revised Article 6.4 documents used in the 2<sup>nd</sup> iteration of the assessment, in June 2025:

Document Name	Document URL	Last Accessed
Article 6.4 Activity Standard for Projects, Version 02.0, A6.4-STAN-AC-002	<a href="#">Link</a>	24/6/2025
Activity 6.4 Validation and Verification Standard for Projects, Version 02.0, A6.4-STAN-AC-003	<a href="#">Link</a>	24/6/2025
Package: Revision of the activity standard and validation and verification standard regulatory documents for Article 6.4 projects and programmes of activities, Version 01.0, A6.4-SBM016-AA-A11	<a href="#">Link</a>	24/6/2025
Procedure: Article 6.4 activity cycle procedure for projects, Version 02.0, A6.4-PROC-AC-002	<a href="#">Link</a>	24/6/2025
Standard: Application of the requirements of Chapter V.B (Methodologies) for the development and assessment of Article 6.4 mechanism methodologies, Version 01.1, A6.4-STAN-METH-001	<a href="#">Link</a>	24/6/2025
Standard: Demonstration of additionality in mechanism methodologies, Version 01.2, A6.4-STAN-METH-003	<a href="#">Link</a>	24/6/2025
Standard: Setting the baseline in mechanism methodologies, Version 01.0, A6.4-STAN-METH-004	<a href="#">Link</a>	24/6/2025
Standard: Addressing leakage in mechanism methodologies, Version 01.0, A6.4-STAN-METH-005	<a href="#">Link</a>	24/6/2025
Standard: Transition of CDM activities to the Article 6.4 mechanism, Version 04.0, A6.4-STAN-AC-001	<a href="#">Link</a>	24/6/2025

## Appendix E

The following table lists the new Article 6.4 documents used in the 3<sup>rd</sup> iteration of the assessment, in March 2026:

Document Name	Document URL	Last Accessed
Addressing non-permanence and reversals in mechanism and methodologies, Version 01.0, A6.4-STAN-METH-007	<a href="#">Link</a>	30/3/2026
Elements related to non-permanence and reversals for inclusion in relevant regulatory documents, Version 01.0, A6.4-SBM018-A14	<a href="#">Link</a>	30/3/2026
Annual report of the Supervisory Body for the mechanism established by Article 6, paragraph 4, of the Paris Agreement to the Conference of the Parties servicing as the meeting of the Parties to the Paris Agreement, FCCC/PA/CMA/2025/12, 10 November 2025	<a href="#">Link</a>	30/3/2026

## Appendix F

The following table lists the updated documents used to update the evaluation of ACR, Gold Standard, and Verra VCS performed in Ref [2].

Document Name	Document URL	Last Accessed
Methodology Development and Review Process, v5.0, 18 June 2025	<a href="#">Link</a>	24/6/2025
AFOLU Non-Permanence Risk Tool, v4.2, 3 May 2024	<a href="#">Link</a>	24/6/2025
Principles & Requirements, Version 2.1, 31 January 2025	<a href="#">Link</a>	24/6/2025
Stakeholder Consultation and Engagement Guidelines, Version 2.0, 4 May 2022	<a href="#">Link</a>	24/6/2025
Programme of Activity Requirements and Procedures, Version 3.0, 12 November 2024	<a href="#">Link</a>	24/6/2025
Validation and Verification Standard, Version 2.0, 12 November 2024	<a href="#">Link</a>	24/6/2025