ASEAN Capital Markets Forum

STUDY ON A HIGH-QUALITY VOLUNTARY CARBON MARKET FOR ASEAN

31 DECEMBER 2024

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Acknowledgments

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The main author of the Study is Mr. Andrew WK Chan, PwC's South East Asia Sustainability & Climate Change Leader. Mr. Ephyro Luis B. Amatong, Advisor to the ACMF Chair and ADB Consultant, provided input and coordinated the development of the project. Members from the ten ACMF jurisdictions also reviewed and provided feedback on the Study.

Voluntary Carbon Markets (VCM) relate to other ASEAN sustainable finance initiatives, such as the ASEAN Taxonomy for Sustainable Finance and ASEAN Transition Finance Guidance. In this regard, Mr. Eugene Wong, CEO of the Sustainable Finance Institute Asia (SFIA), and his team have been coordinating ACMF's discussions and work on VCM development, particularly in relation to the larger sustainable finance agenda in ASEAN.

This initiative was supported by the ADB. Specifically, Mr. Peter Rosenkranz (Senior Financial Sector Specialist) and Mr. Kelvin Lester Lee (Senior Financial Sector Specialist) provided comments and suggestions and supported the coordination of the Study.

Foreword
by Chair of the ASEAN Capital Markets Forum

As a region, ASEAN is among the most vulnerable to the adverse impact of climate change, including rising sea levels, floods, heat waves as well as increasingly unpredictable weather events. Most ASEAN Members States (AMS) are classified as being at 'very high risk' of extreme natural events and negative climate change impact. Hence, there is a shared imperative to transition the region towards a low-carbon economy and provide the financial frameworks to achieve that transition.

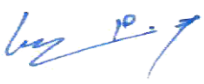
As part of its *Roadmap for ASEAN Sustainable Capital Markets*, the ASEAN Capital Markets Forum (ACMF) is pursuing initiatives aimed at financing the transition towards a low-carbon economy. By facilitating transition finance, it is hoped that ASEAN companies can raise the necessary capital to meet the challenges posed by climate change, meet sustainability targets and finance transitional projects.

Among the initiatives being explored, is the potential role that Voluntary Carbon Markets (VCMs) may play in financing and facilitating this transition – including their interplay with existing initiatives such as the ASEAN Green, Social, Sustainability and Sustainability-Linked Bond (GSS+) Bond Standards, the ASEAN Taxonomy for Sustainable Finance, the ASEAN Transition Finance Guidance as well as emerging global sustainability reporting standards (e.g. IFRS S1 and S2).

This Study on a High-Quality Voluntary Carbon Market for ASEAN marks another important step towards facilitating regional growth through sustainable, resilient and inter-connected capital markets. While acknowledging that different AMS have taken different approaches and are at different stages of VCM development, this study was initiated to build on previous work and provide: (1) standard guidelines and parameters for evaluating carbon offsets throughout ASEAN, (2) identify key carbon credit attributes and standardized criteria for disclosure and transparency; and (3) identify existing high-quality carbon projects to highlight examples of significant co-benefits, risk mitigation strategies and best practices that could strengthen credibility.

As ASEAN continues to move forward on its sustainable finance journey, we would like to acknowledge the Asian Development Bank for its continuing support to the ACMF, the various ASEAN sustainable finance initiatives and ASEAN capital market development in general.

We would also like to especially thank Mr. Andrew WK Chan, PwC's South East Asia Sustainability & Climate Change Leader, for his expert advice and comprehensive work in connection with this study.



Mrs. Phengsy Phengmuong
Secretary-General of the Lao Securities Commission Office
ACMF Chair 2024

Foreword
by Asian Development Bank

To mitigate and adapt to the adverse impacts of climate change, now widely recognized globally, enhanced regional collaboration is becoming increasingly critical. The ASEAN Capital Markets Forum (ACMF) is therefore prioritizing efforts to shape regional policies and frameworks, and foster integrated and sustainable capital markets in ASEAN to help combat climate change.

Central to this mission is the development of innovative, market-based solutions, such as voluntary carbon markets (VCMs). VCMs offer a means to price greenhouse gas (GHG) emissions accurately, correcting market failure to recognize their true economic costs, thus incentivizing their reduction while simultaneously funding sustainability projects. Such markets can foster long-term investments in sustainable practices by making it more feasible and attractive for businesses to invest in green technologies and improve their environmental footprint. The ACMF is well positioned to lead these efforts and, with this report, explore the potential of VCMs in ASEAN.

Countries in this region have made notable progress in developing national carbon markets. However, a unified regional VCM could significantly amplify collective impact by addressing the cross-border nature of climate change. It would boost efficiency, reduce costs, and improve coordination among member states and thus advance the global fight against climate change. Aligned with international frameworks, such a market would address the risks of fragmented national markets and lay a foundation for secondary markets, enhancing liquidity and transparency.

The ACMF can help ensure that the development of a regional carbon market is a transparent, standardized, and effective pricing mechanism for carbon emissions, and a credible channel for financial resources to support emissions reduction or removal. By coordinating efforts to build carbon markets based on rigorous standards and verifiable emissions reductions, the ACMF can help lead ASEAN member states towards regional solutions. This will strengthen the region’s competitiveness in the global economy and contribute to long-term economic growth and sustainability.

The report underscores the importance of robust governance, transparency, standardization, and verification processes to maximize impact and minimize risk. It can then help translate these into actionable steps for all key stakeholders working toward a common goal.

Building an effective carbon market ecosystem requires active engagement from regulators, policymakers, and market participants to ensure coordinated strategies and collaborative action. Continued cooperation among ASEAN member states is therefore crucial. By adopting a cohesive, unified regional approach, the credibility and impact of ASEAN's carbon markets can be significantly strengthened. With the leadership of the ACMF, we are proud to be part of this important opportunity to drive meaningful climate action and pave the way for a more sustainable future.



Christine Engstrom
Senior Director
Finance Sector Office
Asian Development Bank

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Executive Summary

The ASEAN Capital Markets Forum (ACMF) commissioned this study under the *Asian Development Bank Technical Assistance Promoting an Interconnected, Inclusive, and Resilient Association of Southeast Asian Nations Capital Market* to explore the potential of voluntary carbon markets (VCMs) in supporting ASEAN's transition to a low-carbon economy. The study evaluates the critical components of carbon markets, including key themes, criteria, and attributes for high-quality carbon credits, and their alignment with ACMF's sustainable finance initiatives. By enhancing credibility and transparency, VCMs can address hard-to-abate emissions while fostering investments in impactful projects.

Key insights include the importance of robust governance, transparency, standardisation, and verification processes to mitigate risks such as double counting, over-crediting and market confusion. The study also considers the feasibility of a secondary carbon market in ASEAN, identifying its potential to enhance market liquidity and transparency while addressing challenges like low standardisation and speculative risks. Recommendations emphasise the need for alignment with international standards, regulatory oversight, and introducing tools that can strengthen market credibility.

This report underscores the role of VCMs as a complementary tool for achieving regional climate goals, providing insights for policymakers, regulators, and market participants to contribute towards a credible and effective carbon market ecosystem in ASEAN.

1. Introduction

Climate change poses an unprecedented challenge, driving the urgent need for global efforts to mitigate greenhouse gas (GHG) emissions and transition to low-carbon economies. Carbon markets have emerged as a key mechanism in the climate change agenda, providing a platform for entities to trade carbon credits for verified avoidance, reduction or removal of emissions, thereby incentivising investments in sustainable projects. Voluntary carbon markets (VCMs), in particular, play a critical role in enabling organisations to offset hard-to-abate emissions while funding projects with co-benefits such as biodiversity conservation and community development.

The ASEAN Capital Markets Forum (ACMF), a high-level grouping of capital market regulators from all 10 ASEAN jurisdictions, is at the forefront of promoting a deep, liquid, and integrated regional capital market. Together with the ASEAN Working Committee on Capital Market Development, the ACMF is advancing the ASEAN Sustainable Finance Ecosystem through the development of three pillars: Taxonomy, Transitions, and Disclosures. Recognising the importance of VCMs along with the compliance market, in supporting the sustainability agenda, the ACMF is looking at the VCM as part of its work on Transitions and Disclosures.

In this context, the ACMF acknowledges the potential of VCMs to facilitate the low-carbon transition in ASEAN by offering credible offsets while ensuring alignment with regulatory guidance and good market practices. This study examines the dynamics of VCM within the ASEAN framework, providing insights into how VCMs can be structured to enhance credibility, transparency, and alignment with both local and regional sustainability goals.

This report covers:

1. **Carbon Offsets Review and Analysis:** This section evaluates selected carbon offset principles, standards, and frameworks, to determine a set of common themes that are essential for developing credible carbon offsets and making legitimate claims. Based on these themes, criteria for legitimate carbon offsets (focusing on supply-side perspective) and attributes for making valid offset claims (focusing on demand-side perspective) were established.
2. **“High-Quality” Projects**: This section covers the key characteristics of “high-quality” projects and three carbon offset projects that were selected for assessment. The analysis of selected projects underscores the importance of co-benefits like biodiversity conservation and socio-economic impacts, using best practices to enhance credibility.
3. **Carbon Registry Landscape:** This section explores the role of carbon registries, including their functions in tracking, verification, and credit retirement. The current challenges related to registries are highlighted.
4. **Risks and Issues on Voluntary Carbon Markets Implementation:** This section outlines the risks in VCMs, including double counting, over-crediting, and governance challenges. It also highlights potential social and environmental impacts from poorly managed projects. Mitigation strategies such as robust verification, improved governance, and transparency measures are discussed.

5. **Initial Feasibility Assessment on Secondary Carbon Market:** This section assesses the potential for a secondary carbon market in ASEAN to improve liquidity, price discovery, and transparency. It identifies challenges such as low liquidity, lack of standardisation, and speculative trading risks. Recommendations focus on aligning the market with regulations and adopting tools like blockchain for traceability.
6. **Next Steps:** Recommendations for ACMF to establish a strong foundation for VCM are highlighted, with initiatives focusing on the immediate term.

2. Carbon Offsets Review and Analysis

This section covers the review of key carbon offset principles, standards, and framework to derive a set of common themes that are essential for developing credible carbon offsets and making legitimate claims. Based on the common themes, the following are established:

- Supply-side Perspective: Criteria for Legitimate Carbon Offsets
- Demand-side Perspective: Attributes for Valid Offset Claims

Exhibit 1: Overview of carbon offsetting

How does carbon offsetting work?
Carbon offsetting involves buyers "offsetting" their tough-to-abate emissions by purchasing carbon credits.

For example:

- A company wants to offset 1 tonne of GHG emissions that is hard-to-abate
- The company looks for a listed project that generates carbon credits equal to 1 tonne of emission
- Offset project developer receives the payment and conducts the project to reduce 1 tonne of emissions; example projects include reforestation and methane capture
- The offset standard setter verifies and endorses the carbon credits generated by the offset project developer
- The company receives carbon credits to effectively offset 1 tonne of their hard-to-abate emissions

2.1. Principles, Standards, and Frameworks

There are various bodies that have developed principles, standards, and frameworks related to the VCM. For the purpose of this study, the following key considerations were applied to identify the most relevant for assessment:

- **Credibility and Authority**
    - Well-established and reputable organisations known for their expertise in carbon markets.
    - Endorsed by leading experts and institutions in the field.
- **Alignment with International Standards**
    - Compatible with international frameworks and facilitates high integrity and quality carbon credits.
    - Align with global standards to ensure consistency and comparability.
- **Comprehensive Coverage**
    - Covers critical aspects such as additionality, permanence, transparency, and verifiability.
    - Wide range of offset types (e.g., avoided emissions, carbon removal).
- **Regional Relevance**
    - Aligned with the specific climate goals and priorities of ASEAN countries.
- **Practicality and Applicability**
    - Practical and feasible for implementation by credit providers and buyers.

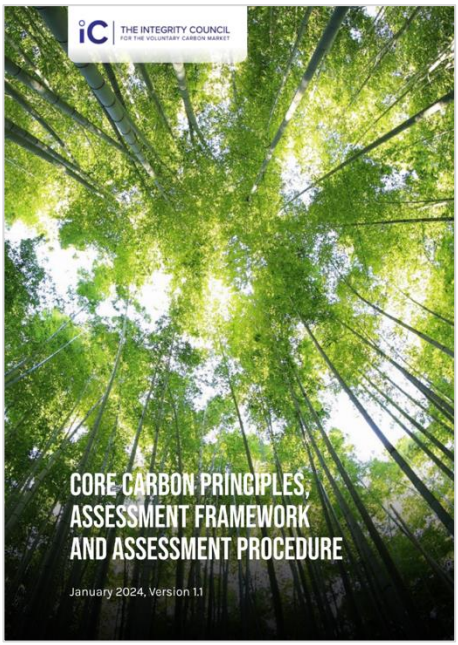
Exhibit 2: Selected principles, standards, and frameworks

Type	Category	Principle / Standard / Framework
Primary: Detailed analysis including case studies		
Principles on 'Quality' Carbon Offsets	**Both:** Impacts both supply- and demand-side, ensuring end-to-end integrity of carbon value chain	**Integrity Council for the Voluntary Carbon Market (ICVCM) Core Carbon Principles**: Principles for identifying high-quality carbon credits that create real, verifiable climate impact. The principles complement VCMI's guidance on the credible use of these high-quality credits.
		International Organisation of Securities Commissions (IOSCO) Final Report on on Promoting Financial Integrity and Orderly Functioning of Voluntary Carbon Markets (VCMs): Guidelines on how sound and effective VCMs should look like, including the role of financial regulators

	Demand-side: Focuses on corporate buyers using credible, high-integrity credits in claims	**International Emissions Trading Association (IETA) Guidelines for High Integrity Use of Carbon Credits:** Principles that guide the adoption of a pragmatic approach to the high integrity use of carbon credits by companies.
		Voluntary Carbon Markets Integrity (VCMI) Code of Practice: Set out requirements of how to credibly claim carbon credits, focusing more on the demand side by guiding how corporate buyers should make valid claims
Supplementary: Findings used to support key messages		
Carbon Offset Standards	**Supply-side:** Focuses on project developers generating high-quality credits	**Gold Standard:** Internationally recognised certification body that sets standards for high impact offset projects, ensuring that they are high-quality and provide real benefits
		Verra's The Verified Carbon Standard (VCS) Program: Most widely used GHG crediting programme which provides standards for project developers to generate carbon credits
		Additional standards reviewed: 1. **Global Carbon Council (GCC):** Carbon credit and sustainable development programme based in the Global South, focusing on standards and practices for developers in these regions 2. **Social Carbon:** Standard promoting the social benefits of carbon projects, emphasising standards that developers should meet to achieve both environmental and social goals
International Legislative Framework	**Both**	**Paris Agreement Article 6** (and related articles / working papers): International framework to govern carbon credits globally by establishing rules and standards for their creation, trade, and use

2.1.1. Principles of 'Quality' Carbon Offsets

2.1.1.1. Integrity Council for the Voluntary Carbon Market (ICVCM) Core Carbon Principles[1]



ICVCM developed a set of Core Carbon Principles (CCPs) in 2023, through a consultative process to ensure high-quality carbon credits. The CCPs outline **requirements for carbon credits** to ensure they deliver **credible** and **effective** climate benefits. These principles cover aspects such as **environmental integrity, additionality, permanence,** and **transparency.**

The key objective of the CCPs is to enhance the credibility and reliability of the VCM by establishing a robust framework.

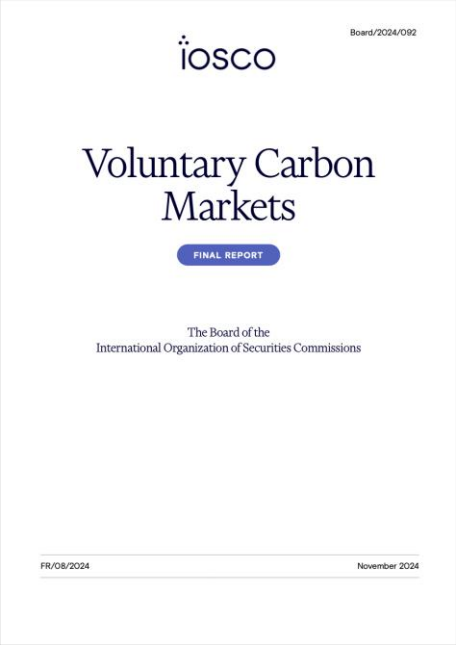
Exhibit 3: ICVCM Core Carbon Principles (CCPs)

Dimension	10 CCPs	Description
Governance	Effective Governance	The carbon crediting programme must have robust governance to ensure transparency, accountability, ongoing improvement
	Tracking	Use a registry to identify, record, and track mitigation activities and issued carbon credits to ensure secure identification
	Transparency	Clear, detailed and transparent reporting of project information on all mitigation activities and ensure it is publicly accessible
	Verification	Independent third-party verification is required to confirm claims
Emissions Impact	Additionality	Projects must achieve reductions beyond what would occur without them
	Permanence	Reductions should be durable and not reversed

[1] The ICVCM Core Carbon Principles, Assessment Framework and Assessment Procedure

	Measurement	Reductions must be accurately measured and verified
	No Double Counting	GHG emission reductions / removals should be counted only once towards mitigation targets, avoiding double issuance
Sustainable Development	Sustainable Development	Projects should contribute positively to both social and environmental outcomes
	Contribution to Net Zero transition	The mitigation activity must avoid endorsing GHG emissions, practices that hinder achieving Net Zero emissions by 2050

2.1.1.2. International Organisation of Securities Commissions (IOSCO) Final Report on Promoting Integrity and Orderly Functioning of Voluntary Carbon Markets (VCMs)[2]



The IOSCO report aims to identify and promote best practices and address existing challenges and gaps to enhance the integrity, transparency, and efficiency of VCMs.

The report identifies a set of 21 Good Practices aimed at ensuring financial integrity in VCMs, which could be applicable across all carbon credit markets. The Good Practices have three overarching objectives:

1. To support the establishment of sound market structures and appropriate architecture for custody, trading and settlement
2. To promote transparency to foster information asymmetry and ensure orderly and fair trading
3. To advocate for adequate market conduct and behaviour – to prevent fraud, market abuse, insider dealing and scams

[2] IOSCO Final Report on Promoting Integrity and Orderly Functioning of Voluntary Carbon Markets

Key insights from the report include, but are not limited to:

1. **Need for Standardisation:** Consistent standards and methodologies to promote reliability of carbon credits
2. **Transparency Importance:** Crucial for enhancing market integrity and building stakeholder trust
3. **Quality Assurance:** Carbon credits to represent real, additional and verifiable emissions reductions
4. **Market Efficiency:** Address challenges related to market liquidity and operational efficiency to support smoother transactions and market growth
5. **Regulatory Alignment:** Aligning VCM practices with existing frameworks to reduce uncertainty and enhance market stability

What is a primary market?

- Refers to the segments of the carbon market where **carbon credits are initially issued and sold**
- In this market, **carbon credits** are created and offered for **sale directly** by project developers or issuers
- Primary market is essential for **generating and distributing carbon credits to respective buyers**, including corporations, governments, and other entities that are looking to **offset their emissions** and / or **support climate projects**
- **Disclosure requirements** include project details[3] (e.g., type), credit issuance information, verification and validation, financial and operational transparency, registry and tracking

Key uses of a primary market *(non-exhaustive):*

1. **Funding Climate Projects:** Helps fund various projects by providing an initial revenue stream through the sale of carbon credits
2. **Supporting Emissions Reductions:** Facilitates the early-stage sale of carbon credits to entities that seek to meet their emission reduction targets or voluntarily offset their carbon footprint
3. **Driving Innovation:** By providing financial support to new and innovative projects, the primary market encourages the development and implementation of diverse climate solutions

VCMs should be **fair, orderly, and resilient,** with **transparent** pricing, information flow, and access**. Key good practices related to secondary market** trading include:

- Clear and open **access standards**

[3] Timing, duration and permanence are also key disclosure requirements for the primary market as these factors are part of the broader project details and credit issuance information to ensure that stakeholders understand a project's performance and credibility

- Well defined **rules and documentation** for operations and trading
- **Monitor for and addressing abusive** or manipulative activities
- Maintain **high quality and integrity** of assets
- Ensure **liquidity and effective** price discovery
- Manage **conflicts of interest**
- Provide transparency with thorough **recordkeeping and reporting**
- Ensure **customer** and **investor protection**

The following gaps and challenges were identified:

1. **Lack of Standardisation:** Lack of consistent standards and methodologies across the market, leading to variations in how carbon credits are measured, verified, reported thus reducing market confidence
2. **Quality and Integrity Issues:** Ensuring carbon credit quality is a significant challenge as it involves verifying their authenticity, additionality, permanence while addressing accuracy and reliability concerns
3. **Transparency and Disclosure:** Concerns about carbon market transparency include tracking and reporting of credits, while improved disclosure is needed for stakeholders to access all relevant information
4. **Environmental and Social Impacts:** Ensuring carbon projects provide real benefits and avoid negative impacts is a challenge requiring careful monitoring

2.1.1.3. International Emissions Trading Association (IETA) Guidelines for High Integrity Use of Carbon Credits[4]



IETA has developed a set of guidelines for Voluntary Carbon Markets (VCMs) in 2023 to ensure that carbon offset projects and trading activities are effective, credible and transparent.

Key objectives of these guidelines are to outline how the carbon credits should be used in parallel with other mitigation levers to avoid and reduce absolute emissions across all Scopes 1, 2 and 3 in line with ambitious mid- and long-term targets, and present a more practical view on how to use carbon credits to better support the transition.

The guidelines comprise six components[5], which primarily focuses on ensuring high-quality credits, additionality, environmental and social safeguards, transparency, robust monitoring and verification, and avoiding double counting:

- **Guidelines 1-3:** Covers the overall decarbonisation strategy, foundational aspects of governance, standards, and project design
- **Guidelines 4-6:** Focuses more on the verification, market integrity, and consumer engagement aspects of the VCM

As set out in Guideline 4 and Guideline 5, the use of “high-quality” carbon credits should be integrated in broader decarbonisation strategy:

Guideline 4: Use Carbon Credits In Line With The Mitigation Hierarchy[6]

- Emphasises the need to **integrate carbon credits** into a broader decarbonisation strategy, in alignment with the **mitigation hierarchy** which consists of **three** main steps:
  i. **Avoid** (prevent emissions from occurring in the first place)
  ii. **Reduce and / or Replace** (implement measures to reduce emissions that are still inevitable after avoidance efforts)
  iii. **Offset** (usage of carbon credits to compensate for emissions that still cannot be eliminated through the former)

[4] IETA VCM Guidelines

[5] These guidelines are periodically updated and refined by the IETA and are generally focused on several core principles

[6] The mitigation hierarchy is a structured approach to managing and reducing emissions that prioritises actions based on their effectiveness and immediacy

- Carbon credits can be used by companies to **achieve interim targets**

Guideline 5: Ensure That Only High-Quality Carbon Credits Are Used

Highlights the need to **maintain high standards for carbon credits** to effectively contribute to climate mitigation, covering **two** components:

1. **Due Diligence:** Procure carbon credits that have been issued by a reputable, experienced carbon crediting programme and those with an independent, third-party 'quality' label while ensuring a fit with the company's requirements
2. **Emission Reductions and Removals**: Reduction credits to curb further emissions produced while removals need to be increased significantly to net off residual emissions as we approach 2050

In addition, Guideline 6 brings to the fore the need for companies to publicly and transparently disclose their use of carbon credits:

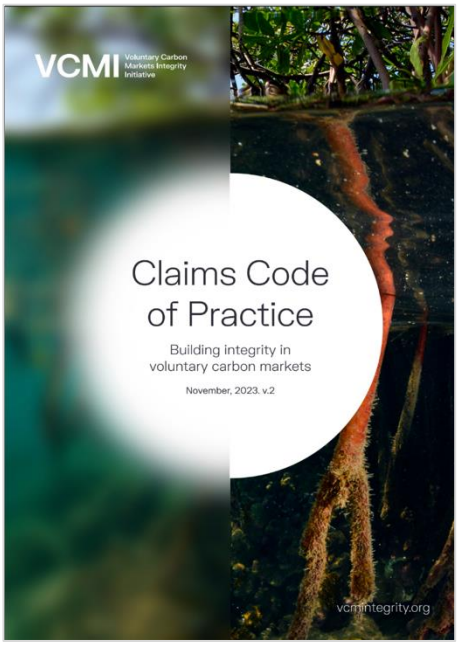
Guideline 6: Transparently Disclose Use of Carbon Credits

- Involves providing **details and quantities of the carbon credits** that the company has **retired** during the reporting year (i.e., project name, type, vintage, location, the programme and methodology under which the credits were issued, purpose of retirement, link to registry retirement listing and any relevant due diligence measures undertaken)
- Companies are also encouraged to **report** on **both** the **social and environmental benefits** and **risks** associated with their carbon credits
- In this context, there are **established disclosure frameworks,** both mandatory / voluntary that encompass the reporting of carbon credit use (e.g., the Transition Plan Taskforce Disclosure Framework, International Financial Reporting Standards [IFRS] - International Sustainability Standards Board)

IETA views the VCM's role is as follows:

1. **Serves as a robust mechanism:** Offers a strong mechanism for companies to reduce or remove emissions, contributing to global decarbonisation efforts
2. **Paves the way towards compliance markets:** Helps develop capacity and knowledge for governments and companies regarding best practices in registries, verification, etc.
3. **Acts as a catalyst for company engagement:** Facilitates emissions compensation and directing finance to areas in need
4. **Directs finance and addresses inequalities in the climate transition:** Channels finance to where it is most needed, including low- and middle-income countries, carbon removals, environmental conservation, and the achievement of the United Nations Sustainable Development Goals (UN SDGs)

2.1.1.4. Voluntary Carbon Markets Integrity (VCMI) Code of Practice[7]



VCMI developed the Claims Code of Practice (CCP) in 2022 with input from VCM stakeholders, including businesses, experts, and policymakers.

The key objectives are to ensure that claims are transparent, verifiable, and aligned with high standards for environmental integrity and impact and guide companies on credibly using and communicating voluntary carbon credits for their climate commitments.

VCMI is focused on the primary market where companies purchase and retire carbon credits to meet emissions reduction goals.

The VCMI CCP is targeted at the following stakeholders:

1. **Companies** seeking credible carbon credit use and VCMI validation
2. **Buyers** seeking and aiming for Net-Zero-aligned purchases
3. **Investors** / **stakeholders** evaluating a company's climate actions and carbon credit use
4. **Governments** / **regulators** creating standards for accurate carbon credit claims

The CCP is based on a four-step process:

Step 1: Comply with the Foundational Criteria

Foundational criteria, **aligned with the Paris Agreement and best practices**, **require** companies to:

- **Annually disclose** their GHG emissions inventory
- Set / publicly commit to **science-based near-term reduction targets** and Net Zero by 2050, and show progress in financial, governance, and strategic efforts towards these targets
- Ensure **public policy advocacy** supports the Paris Agreement and **not hinder climate regulation**

Step 2: Select a VCMI Claim to show progress towards near-term emission reduction targets

[7] VCMI Claims Code of Practice

VCMI defined **three claims** for companies exceeding internal decarbonisation:

- **Carbon Integrity Silver**: Purchase and retire[8] high-quality carbon credits for **10% - 50%** of remaining emissions after showing progress on near-term targets
- **Carbon Integrity Gold:** Purchase and retire high-quality carbon credits for **50% - 100%** of remaining emissions after showing progress
- **Carbon Integrity Platinum**: Purchase and retire high-quality carbon credits for **100%** of remaining emissions after showing progress

Step 3: Meet the required carbon credit use and quality thresholds

- Companies must use **high-quality carbon credits**, meeting ICVCM CCPs, to ensure credible claims and market integrity
- All Carbon Integrity Claims require **credits representing mitigation** outside the company's value chain, **contributing to global Net Zero goals**

Step 4: Obtain third-party assurance following the VCMI Monitoring, Reporting & Assurance (MRA) Framework

- To substantiate a Carbon Integrity Claim, **transparent reporting and assurance** are crucial
- Claimants must meet **all criteria** and **disclose key information** about purchased credits
- While these claims are voluntary, VCMI believes that **robust policies are vital** to combating climate change and **feedback** is welcomed at info@vcmintegrity.org

[8] "Purchase and retire" refers to the process in the VCM whereby a company buys carbon credits and then permanently removes them from circulation, ensuring they cannot be reused. This process determines the level of claims by showing how committed a company is to offsetting its remaining emissions after making progress on internal decarbonisation efforts

2.1.2. Carbon Offset Standards

A selection of carbon offset standards was reviewed, with Gold Standard and Verra's Verified Carbon Standard prioritised due to level of acceptance and recognition.

Exhibit 4: Overview of selected carbon offset standards

	Prioritised for this study			
Selected Standards	**Gold Standard[9]**	**Verra's VCS[10]**	**Global Carbon Council (GCC)[11]**	**Social Carbon Standards[12]**
Overview	The Gold Standard is a certification standard for **carbon offset projects and renewable energy (RE) projects** that places a strong emphasis on both **environmental integrity and sustainable development benefits**	Verra manages the Verified Carbon Standard (VCS), one of the most widely used standards in the VCM. The VCM framework **allows projects to generate carbon credits**, which are verified and certified to ensure they meet rigorous criteria	The GCC is a certification body which supports global GHG emissions reductions by providing a **framework for generating and trading verified carbon credits**, ensuring high **environmental and social standards**	Set of criteria developed to **assess** and **enhance the social and environmental benefits** of carbon offset projects, by ensuring that projects also contribute positively to **local communities and ecosystems**

[9] Gold Standard
[10] Verified Carbon Standard
[11] Global Carbon Council
[12] Social Carbon

Key Objectives	• **Promote sustainable development** to ensure that projects benefit local communities and support UN SDGs • **Foster transparency** by maintaining strict and high standards for verification, monitoring to build trust	• **Ensure integrity** by providing a framework for verifying the authenticity and effectiveness of carbon offset projects • **Promote flexibility** across a range of project types / methodologies	• **Foster innovation** through the support for market growth and innovation in carbon offset technologies, methodologies • **Facilitate collaboration** among public and private sectors, and align with international standards	• **Promote social benefits** by positively impacting local communities and improving livelihoods • **Support projects** that also deliver benefits like biodiversity conservation and ecosystem restoration
Key Insights[13]	Distinguished by its **emphasis** on significant environmental and social impacts, **rigorous certification**, and **alignment with the UN SDGs**	Notable for its **broad applicability**, **rigorous verification**, and **alignment** with global sustainability frameworks	Focuses on **regional needs with tailored frameworks** and unique **methodologies** for a **customised certification for local contexts**	Excels in **both carbon reductions**, environmental and **social benefits**, compared to others that may lack social impact considerations

[13] For more details on the key requirements and features of these carbon offset standards, please refer to the **"Appendix D. Carbon Offset Standards – Further Details"**

2.1.3. International Legislative Framework

Article 6 of the Paris Agreement[14] supports the use of carbon credits to achieve climate goals and enhance international cooperation.

The **key objective** of Article 6 of the Paris Agreement in relation to carbon credits is to establish a **framework** for countries to use internationally transferred mitigation outcomes (ITMOs)[15] and market-based mechanisms[16] to achieve their climate targets. This includes:

1. **Promoting Sustainable Development:** Supports carbon credit mechanisms that advance sustainable goals, particularly in developing countries
2. **Ensuring Environmental Integrity and Transparency:** Prevents the double counting of emissions reductions and ensures real reductions
3. **Disclosure and Accountability:** Transparent reporting and documentation provide stakeholders with accurate information carbon credits
4. **Market Integrity and Oversight (Supply and Demand Regulations):** Helps prevent fraud, maintains credit integrity, and ensures quality and effectiveness through supply-side oversight and demand-side regulations
5. **Standardising Carbon Credits Criteria:** Ensures consistency and comparability, creates a cohesive framework, boosting credibility and market acceptance
6. **Boosting Carbon Market Efficiency with Offset Types and Jurisdiction:** Ensures consistency and comparability, creates a cohesive framework, boosting credibility and market acceptance

[14] Paris Agreement "United Nations Framework Convention on Climate Change (2015)"

[15] ITMOs are carbon credits or emission reductions that one country can transfer to another under the Paris Agreement framework.

[16] Market-based mechanisms help to facilitate cost-effective emission reductions and promote international cooperation. Examples include cap-and-trade systems, carbon offsets and carbon pricing.

2.2. Common Themes for Credible Carbon Offsets and Valid Offset Claims

A set of common themes was derived based on the assessment of the selected principles, standards, and frameworks identified in **"2.1. Principles, Standards, and Frameworks"**. The common themes represent the **essential elements for developing credible carbon offsets and making legitimate claims**. They support **trust, transparency, and credibility** through genuine emissions reductions.

Exhibit 5: Common Themes for Credible Carbon Offsets

Theme		Description
T1	Integrity and Credibility	Carbon offset projects need to follow high standards and ethical practices to build trust in the market. This helps put requirements in place so that carbon credits reflect actual emissions reductions.
T2	Additionality and Avoidance of Double Counting	Additionality means emissions reductions would not have happened without the project, while double counting prevents credits from being claimed by multiple parties[17]. These measures protect the reliability of carbon credits.
T3	Transparency and Verification	Projects require ongoing monitoring and clear communication of their details and third-party audits to verify results. This process supports the accuracy and legitimacy of carbon credits.
T4	Standardisation	Standardisation involves using consistent methodologies across projects, making it easier to assess and compare carbon credits. This creates alignment in how credits are generated, valued, disclosed, and traded.
T5	Supporting the Transition	Carbon credits help businesses and economies reduce net emissions and move towards low-carbon operations. This aligns projects with long-term climate goals.
T6	Market Oversight	Market oversight involves setting rules and monitoring activity to prevent fraud and maintain ethical practices. This helps keep the carbon market functioning effectively.
T7	Type of Offsets	Different offset types, such as energy or forestry, use specific methodologies. These project types influence how carbon credits are generated and validated.

[17] Some jurisdictions may permit double claiming between Emissions Trading Systems (ETS) and VCM, but this requires clear and transparent reporting to maintain the integrity and credibility of both systems. For these projects, clear separation is required to avoid double counting and if often managed as separate projects. Examples: (i) In California's Cap-and-Trade Program, forestry projects can issue compliance-grade offsets that contribute to meeting regulated emissions caps and generate voluntary credits for the voluntary market, if reductions exceed compliance requirements. (ii) Australian Carbon Credit Units can be used for both compliance under the Emissions Reduction Fund (linked to Nationally Determined Contributions [NDCs]) and in voluntary markets. Project developers must specify credit usage from outset, ensuring clear separation between compliance and voluntary components.

2.3. Supply-side Perspective

The “supply-side” perspective focuses on the generation of carbon credits, including the development and funding of projects.

2.3.1. Criteria for Legitimate Carbon Offsets

Based on the common themes identified in **“2.2. Common Themes for Credible Carbon Offsets and Valid Offset Claims”**, eleven criteria for legitimate carbon offsets were defined.

Exhibit 6: Eleven criteria for legitimate carbon offsets

Theme		Criteria		Description
T1	Integrity and Credibility	C1	Integrity and Credibility	Projects must demonstrate verifiable reductions, adherence to established methodologies, and third-party validation to ensure high integrity
		C2	Permanence	Supply-side projects must ensure that carbon sequestration is long-term, with safeguards against reversals (e.g., through natural disasters)
		C3	Leakage	The potential for emissions reductions in one area to be offset by increases in emissions elsewhere, undermining overall impact
T2	Additionality and Avoidance of Double Counting	C4	Additionality	Projects must prove that the carbon reduction would not have occurred without the offset project, ensuring additionality
		C5	Avoidance of Double Counting	Mechanisms must be in place to prevent the same carbon reduction from being counted more than once across different markets or claims
T3	Transparency and Verifiability	C6	Verification and Monitoring	Supply-side participants must provide clear, accessible reporting on project activities, methodologies, and outcomes to maintain transparency and verifiability
T4	Standardisation	C7	Standardisation and Methodology	Projects should follow standardised methodologies for calculating, validating, and verifying carbon reductions, ensuring consistency across the market
T5	Supporting the Transition	C8	Supporting the Transition	Projects should facilitate the transition to a low-carbon economy by aligning with broader climate goals, including fostering

				innovation and scaling up sustainable practices
		C9	Co-benefits	Projects should provide additional social or environmental benefits, contributing to broader sustainable development goals
T6	Market Oversight	C10	Market Oversight and Regulations	Supply-side projects should comply with regulations and be subject to oversight to ensure they meet the required standards
T7	Type of Offset	C11	Project Type	The specific type of project (e.g., renewable energy, forestry) influences the methodologies that project developers must follow, ensuring consistent carbon credit generation that adheres to sector-specific standards

2.3.2. Key Gaps / Challenges and Considerations for ACMF

Exhibit 7: Key gaps and challenges that may be faced in the generation of carbon credits

Criteria		Key Application Gaps and Challenges	Considerations for ACMF
C1	Integrity and Credibility	• Market integrity issues such as **fraud** and **misrepresentations** (e.g., risk of fraudulent activities such as false claims or misrepresented project benefits) can undermine market integrity • **Inconsistent enforcement of standards** and/or regulations can lead to lack of confidence in the credibility of carbon offsets • **Inadequate verification** may affect the accuracy of reported emission reductions	• Encourage **strengthening of verification processes** (e.g., third-party audits, clear description of coverage) to enhance credibility requirements • Promote **consistent application of selected recognised standards** to build confidence and mitigate risks of inconsistencies
C2	Permanence	• **Risk of reversal both natural** (e.g., wildfires, floods) and **human-induced** (e.g., deforestation, land conversion) primarily for Agriculture, Forestry and	• Encourage the **integration of on-going monitoring and adaptive management strategies** to help address the risk of reversal

		Other Land Use (AFOLU) projects ● Accurately accounting for and reporting on permanence requires detailed methodologies and transparency as well as periodic review and verification, which **may not always be consistently applied across projects**	● Explore the **development or application of standardised methodologies** of permanence to support consistency across projects ● Encourage the implementation of mechanisms such as buffer pools, insurance / financial guarantees, and contractual clauses related to permanence
C3	Leakage	● **Difficulty in tracking emissions that are shifted** to another area rather than reduced ● Projects **may not account for indirect emissions** impacts from related activities	● Encourage consideration and reporting of leakage risk, **facilitating transparent disclosure of any potential emissions displacement** ● **Encourage adoption of established methodologies** (e.g., VCS AFOLU tools[18]) to track and minimise leakage
C4	Additionality	● Accurately predicting emissions reduction prior to conducting the project (as required) is **complex** and open to interpretation, potentially leading to **inaccuracies in proving additionality** ● Risk of **project selection bias** as some projects may be based upon favourable criteria / assumptions about additionality that are not always rigorously validated	● Encourage more rigorous **baseline determination methodologies** to improve accuracy of claims ● **Standardising additionality criteria** could help reduce selection bias and promote uniformity across projects ● Encourage **more inclusive and flexible framework** that takes into account the regional landscape when considering varying project types (e.g., blue carbon projects)
C5	Avoidance of Double Counting	● **Lack of centralised tracking** and registry fragmentation (e.g., multiple carbon credit registries may lead to difficulties in tracking credits across different systems)	● **Recognise selected recognised registries** that have robust systems in place ● **Encourage the use and collaborate with existing initiatives** targeted to bolster

[18] For example, VT0001

		● Cross-border issues such as **international coordination** (e.g., variability in regulations and tracking systems across countries) can complicate efforts to prevent double counting globally	data credibility (e.g., Climate Action Data Trust[19])
C6	Verification and Monitoring	● **Potential conflicts of interest[20]** between project developers and verifiers can compromise the independence and reliability of the verification process ● **Inconsistent or inadequate disclosure practices** regarding the financial, operational, and environmental aspects of projects can affect overall transparency ● **Weak and / or absent audit trails** can make it challenging to trace the origins and movement of carbon credits, impacting the ability to verify their authenticity and usage; differing jurisdiction and regulatory requirements adds cross-border complexity	● Encourage **application of selected recognised frameworks** for consistency and stakeholder confidence ● **Encourage strengthening of verification processes** (e.g., third-party audits) to enhance credibility requirements ● **Encourage alignment with international standards and potentially working with vetted independent bodies** to set and implement a **standardised approach for projects across ASEAN** in the longer term horizon
C7	Standardisa-tion and Methodology	● **Lack of a universal set of standards** leads to variability in how carbon credits are issued, verified, and reported, making it difficult to compare projects across different systems ● **Lack of local adaptation** as standards and methodologies may not	● Building on the ASEAN Taxonomy for Sustainable Finance, **encourage alignment with established international standards** for carbon credit issuance, verification, and reporting, factoring in ASEAN requirements

[19] The Climate Action Data Trust (CAD Trust) is a global initiative designed to enhance the traceability and transparency of carbon credits. Launched by the World Bank, International Emissions Trading Association (IETA), and the Government of Singapore, CAD Trust acts as a data-sharing platform for carbon markets.

[20] For example, in the carbon offset market, direct payments from a renewable energy (RE) project developer to a verification firm can create a conflict of interest. This may lead the firm to overlook discrepancies or inflate benefits to ensure continued business from the developer, compromising the independence of the verification process, thus resulting in inaccurate carbon credits

		always account for regional or sector-specific differences, affecting the accuracy of carbon offset projects	● Adapt globally recognised standards and methodologies to **regional and sector-specific nuances** as part of above alignment
C8	Supporting the Transition	● Certain projects may not always align with a company's broader decarbonisation goals and strategies, leading to **potential misalignment with overall climate objectives**[21] ● Some projects only focus on **short-term reductions** rather than long-term climate goals	● Encourage **alignment between carbon offset projects and broader decarbonisation goals** and disclosure on how offset fit into overall transition plans[22]
C9	Co-benefits	● Limited and/or **poor integration of social and environmental outcomes** as some projects tend to have a primary focus on carbon reductions and not consider co-benefits or unintended negative consequences ● **Lack of incentives** for projects to deliver measurable co-benefits	● Encourage the **integration of social and environmental co-benefits** into project evaluation criteria and design ● Encourage development of **guidelines for measuring and reporting co-benefits** for consistency, and enhancing transparency and accountability ● **Expand the green taxonomy to encourage projects** that deliver measurable environmental and social co-benefits
C10	Market Oversight and Regulations	● **Weak compliance mechanisms and poor enforcement** can lead to non-compliance (e.g., issuance of fraudulent	● Promote the **strengthening of compliance mechanisms** (e.g., requiring detailed reporting for carbon offset projects, establishing regular

[21] Example: A company with a goal to reduce supply chain emissions, primarily arising from Asia, invests in carbon credits from a wind farm in a European country that is already transitioning to clean energy. While the project generates valid credits, it does not contribute meaningfully to the company's overall decarbonisation strategy, as it doesn't address its supply chain emissions or focus on the company's hard-to-abate sectors in Asia

[22] Offset is part of the GHG mitigation hierarchy covering "Avoid", "Reduce", "Replace", "Compensate (Offset)", and "Neutralise (Remove)"

	credits) and undermining market integrity ● **Barriers to entry** as regulatory complexities and high costs can create barriers for smaller or newer projects to enter the market, limiting competition and innovation ● Regulatory uncertainty and evolving policies as **frequent changes in regulations / policies can create uncertainty**, impacting investment and the stability of carbon offset markets ● **Insufficient consideration of regional environmental policies** creates non-compliance risks	audit routines, provide clarity on compliance requirements) ● Leveraging on existing initiatives related to taxonomy, disclosures, and transition planning, further **strengthen and address regulatory uncertainty** by ensuring regulatory processes are transparent and establish stable policy frameworks ● Reduce barriers to entry and provide **support for smaller projects** by offering support mechanisms (e.g., technical assistance), simplifying regulatory processes (e.g. simplifying application procedures), and capacity building / training (e.g., provide training workshops, one-on-one support)
C11 Project Type	● **Some offset types,** particularly emerging sectors that are relevant to the region like blue carbon **lack comprehensive methodologies,** making it difficult for developers to follow standardised procedures ● **Smaller project developers may lack the technical expertise and financial resources** to implement detailed methodologies tailored to their specific project type, affecting project quality and credit issuance	● **Collaborate with "blue carbon" standard bodies** (e.g., Plan Vivo, Blue Carbon Initiative), **research bodies, and academia** that focuses on **sources common / unique to the region** (e.g., mangroves, peatlands, seagrass meadows) and **relevant to regional dynamics** (e.g., smallholder and community-based, smaller scale projects) to seek inclusion project types relevant to ASEAN ● Educate and encourage **collaboration between large-scale developers and smaller players to bridge resource gaps**, allowing for more consistent application of methodologies across different project types in the region

2.4. Demand-side Perspective

The “demand-side” perspective focuses on the use of carbon credits, including the purchase and use of credits.

2.4.1. Key Carbon Credit Attributes

Based on the common themes identified in **“2.2. Common Themes for Credible Carbon Offsets and Valid Offset Claims”**, eight key carbon attributes for valid offset claims were defined.

Exhibit 8: Eight key carbon attributes for valid offset claims

Theme		Attribute		Description
T1	Integrity and Credibility	A1	Vintage	The year in which the carbon reductions or removals occurred, with more recent vintages typically considered more relevant and aligned with current climate goals
		A2	Permanence	The durability of the carbon reductions, ensuring that the sequestration or avoidance of emissions remains effective over the long term
T2	Additionality and Avoidance of Double Counting	A3	Additionality	Ensures that the carbon reductions or removals would not have occurred without the offset project, making the emissions reduction truly “additional”
		A4	Ownership and Transferability	The clear and legal transfer of credits between entities, ensuring that credits are only counted once and can be properly tracked in the market
T3	Transparency and Verification	A5	Verification and Monitoring	The ongoing, independent assessment of the project’s performance to ensure that claimed emissions reductions are real, measurable, and permanent
T4	Standardisation			
		A6	Project Standards / Certification	Claimed carbon offset project adheres to recognised international standards (e.g., Verra, Gold Standard), ensuring quality and credibility
T5	Supporting the Transition	A7	Co-benefits	Additional positive outcomes from the project, such as biodiversity preservation or social benefits for local communities, that go beyond carbon reductions

T6	Market Oversight	*A4*	*Ownership and Transferability (repeated)*	*The clear and legal transfer of carbon credits between entities, ensuring that credits are only counted once and can be properly tracked in the market*
T7	Type of Offsets	A8	Type of Offset	The type of offset credits (e.g., removal, reduction, avoidance) purchased through projects such as forestry (including forest protection, deforestation prevention, reforestation), renewable energy, or methane capture can influence a buyer's selection based on corporate sustainability priorities

2.4.2. Key Gaps / Challenges and Considerations for ACMF

Exhibit 9: Key gaps and challenges that may be faced in the use of carbon credits

Attribute	Key Application Gaps and Challenges	Considerations for ACMF
A1 Vintage	● **Uncertainty around the relevance of credit vintage** (age) stemming from concerns that older credits may not align with current climate targets and evolving stakeholder expectations, potentially impacting the credibility of offset claims ● **Lack of transparency** around how credit age is factored into reporting	● **Educate market participants** on the role credit vintage plays and provide examples on how this can be accurately reported to prevent undermining credibility or perceived ambition of decarbonisation strategies
A2 Permanence	● **Long-term carbon sequestration** in forestry projects remains difficult to guarantee ● **Risk of reversal both natural** (e.g., wildfires**, floods) and human-induced** (e.g., activities like deforestation, land conversion can reverse the benefits of carbon sequestration projects)	● **Leverage existing methodologies like buffer systems** and **insurance or contingency funds** to hedge against risks of reversal, particularly in forestry projects ● Explore the **development or application of standardised methodologies** of

			permanence to support consistency across projects
A3	Additionality	● **Lack of clear guidance** on how to demonstrate additionality for offset projects ● **Confusion about setting appropriate baselines** and ensuring benefits beyond business-as-usual	● **Encourage adoption of established methodologies** for setting baselines and verifying additionality
A4	Ownership and Transferability	● **Lack of transparency** in carbon credit ownership and transfer processes ● **Risk of double-counting** when ownership is unclear, or credits are traded multiple times	● Promote the **use of transparent registries** to track ownership and transfers of credits ● **Collaborate with existing initiatives** focused on preventing double-counting to access established best practices and framework and **adapt to regional context**
A5	Verification and Monitoring	● Inconsistent or insufficient third-party monitoring, leading to over-crediting and errors ● Lack of clarity on frequency and depth of monitoring needed	● Encourage **application of selected recognised disclosure frameworks** for consistency and stakeholder confidence ● Encourage **strengthening of verification processes** (e.g., third-party audits, coverage requirements, level of frequency) to enhance credibility ● Align and establish recommendations for verifier requirements such as ISO standards and demonstration of track record
A6	Project Standards / Certification	● **Inconsistent certification** across projects, leading to market credibility issues ● **Difficulties in applying global standards locally** due to varying conditions	● Explore **alignment with established standards using an incremental approach**, for example: ○ Basic - Local-level frameworks (e.g., national ‘Reducing Emissions from Deforestation and Forest

			Degradation' [REDD+] programmes) ○ Intermediate - Recognised but designed to be more accessible (e.g., Plan Vivo) ○ International - Internationally recognised standards (e.g., VCS, Gold Standard)
A7	Co-benefits	● **Difficulty tracking additional benefits** like biodiversity and community development	● **Leverage international standards** (e.g., Gold Standard) that integrate co-benefits into certification processes and encourage linkage into transition plans ● **Expand the green taxonomy to encourage projects** that deliver measurable environmental and social co-benefits
A8	Type of Offset	● **Confusion regarding the credibility and effectiveness** of different types of offsets (e.g., forestry, renewables, etc.) ● **Lack of clarity** on how different offset types are verified and categorised	● **Align with existing frameworks** (e.g., VCS, Gold Standard) to enhance clarity on how different types of offsets are verified and categorised ● **Incorporate offset types in the capital markets green taxonomies** to define which types of projects are recognised by the capital markets for carbon credits within the region

2.4.3. Insights from Past Issues

2.4.3.1. <u>Example 1:</u> Irregularities related to the attributes could lead to claims being rejected, as demonstrated by Verra in China[23]



NEWS > VERRA REJECTS CHINA RICE C...

Verra Rejects China Rice Cultivation Projects, Sanctions Auditing Firms and Project Proponents

Unprecedented actions, including requiring project proponents to compensate for overissued VCUs, another step in Verra's effort to bring greater transparency and integrity to carbon projects

28 AUGUST 2024

Photo by Sergio Camalich via Unsplash.com.

WASHINGTON — Verra, the nonprofit that serves as the leading standards setter for the voluntary carbon market, today announced the rejection of 37 rice cultivation projects in China and imposed, for the first time, significant sanctions against the project proponents and validation/verification bodies (VVBs) involved in a project. The unprecedented action is the result of a rigorous quality control review by Verra, following section 6 of its *Verified Carbon Standard (VCS) Registration and Issuance Process* (PDF) and its new VVB Performance Monitoring Program.

Verra launched an investigation into several rice cultivation projects in China designed to reduce methane emissions.

Key Outcomes:

1. **Rejection of Projects:** Verra rejected 37 rice cultivation projects to ensure that only credible projects contribute to emission reductions
2. **Sanctions on Verifiers:** Verification bodies faced sanctions due to deficiencies in their practices
3. **Sanctions on Project Proponents:** Project proponents had their certifications suspended or cancelled for breaches and non-compliance
4. **Rectifications and Compensation**: Demanded corrective actions and sought financial compensation from project proponents and verification bodies for the over-issued credits

Exhibit 10: Key issues identified from Example 1 and relevant carbon credit attributes defined in "2.4.1. Key Carbon Credit Attributes"

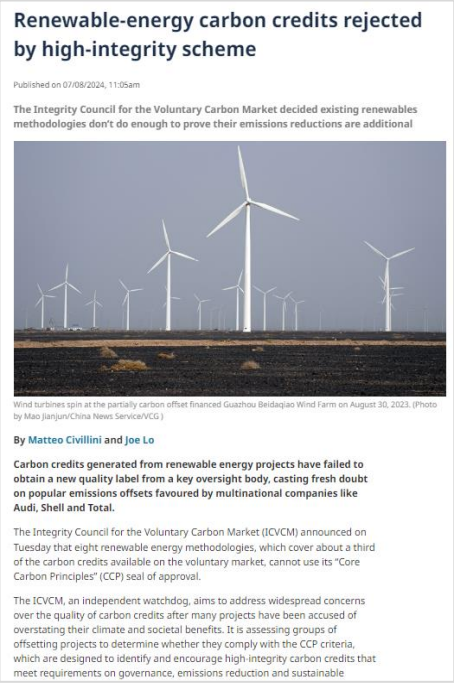
Key Issues Identified	Notable Attributes[24]	Importance of Attribute
Integrity and Additionality Concerns: Projects overstated environmental benefits, leading to doubts about actual additionality and integrity	A2 Permanence	Stresses the importance of environmental benefits being sustained over time to maintain the long-term integrity of the projects
	A3 Additionality	Emphasises necessity for projects to provide concrete, verifiable emission reductions that are additional to business-as-usual

[23] Verra "Verra rejects China rice cultivation projects, sanctions auditing firms and project proponents"

[24] These prominent attributes illustrate the key issues and outcomes related to the carbon credits in question but does not encompass all possible factors affecting the carbon credit

Verification Failures: Verifiers missed critical discrepancies, compromising the project's validation process	A5	Verification and Monitoring	Indicates the importance of diligent and transparent evaluations by verification bodies to ensure the reliability of carbon credit projects
	A6	Project Standards / Certification	Highlights the need for verifiers to uphold the highest standards in project evaluation to maintain confidence in market mechanisms
Non-compliance of Requirements: Projects did not meet required standards, questioning their compliance and threatening certification status	A5	Verification and Monitoring	Underlines the critical need for thorough and precise verification to ensure project outcomes are accurately reported and credible
	A6	Project Standards / Certification	Illustrates importance that adhering to standards is crucial for the legal validity and market acceptance of carbon credits

2.4.3.2. Example 2: Inability to adhere to rigorous standards has resulted in companies being unable to use their purchased credits[25]



Renewable-energy carbon credits rejected by high-integrity scheme

Published on 07/08/2024, 11:05am

The Integrity Council for the Voluntary Carbon Market decided existing renewables methodologies don't do enough to prove their emissions reductions are additional

Wind turbines spin at the partially carbon offset financed Guazhou Beidaqiao Wind Farm on August 30, 2023. (Photo by Mao Jianjun/China News Service/VCG)

By Matteo Civillini and Joe Lo

Carbon credits generated from renewable energy projects have failed to obtain a new quality label from a key oversight body, casting fresh doubt on popular emissions offsets favoured by multinational companies like Audi, Shell and Total.

The Integrity Council for the Voluntary Carbon Market (ICVCM) announced on Tuesday that eight renewable energy methodologies, which cover about a third of the carbon credits available on the voluntary market, cannot use its "Core Carbon Principles" (CCP) seal of approval.

The ICVCM, an independent watchdog, aims to address widespread concerns over the quality of carbon credits after many projects have been accused of overstating their climate and societal benefits. It is assessing groups of offsetting projects to determine whether they comply with the CCP criteria, which are designed to identify and encourage high-integrity carbon credits that meet requirements on governance, emissions reduction and sustainable

Eight methodologies used for renewable energy (RE) projects failed to meet the requirements of the Integrity Council for the Voluntary Carbon Market (ICVCM) due to issues related to verification and additionality.

Key Outcomes:

1. **Rejection by ICVCM:** The ICVCM rejected the carbon credits due to verification and additionality issues, reflecting its commitment to high standards
2. **Previous Rejections:** Verra and the Gold Standard also rejected these credits[26] for similar reasons, highlighting concerns about their credibility
3. **Impact on Stakeholders:** The rejections affect Audi, Shell, and Total's ability to use the credits for emission offsets, underscoring the need for rigorous standards in carbon crediting
4. **Calls for Reform:** The rejections have led to calls for improved standards, verification practices, and documentation to enhance carbon credit integrity

Exhibit 11: Key issues identified from Example 2 and relevant carbon credit attributes defined in "2.4.1. Key Carbon Credit Attributes"

Key Issues Identified	Notable Attributes[27]	Importance of Attribute
Verification Failures: The carbon credits were rejected due to significant verification issues, including accuracies in measuring and reporting emission reductions	A2 Permanence	Ensures that the emission reductions are sustainable and irreversible, enhancing the reliability of reported reductions
	A5 Verification and Monitoring	Ensures that reductions are accurately measured and reported, while rigorous

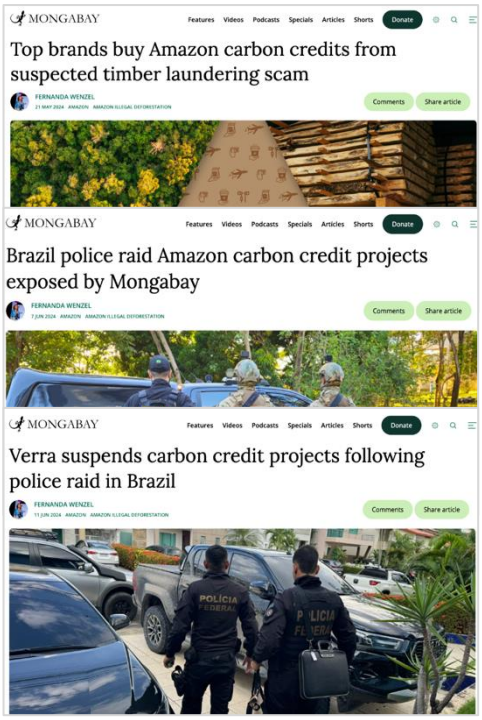
[25] Climate Change News "Renewable energy carbon credits rejected by high-integrity scheme"

[26] Verra and the Gold Standard had previously rejected the renewable energy credits scrutinised by the ICVCM due to credibility concerns over documentation accuracy

[27] These prominent attributes illustrate the key issues and outcomes related to the carbon credits in question but does not encompass all possible factors affecting the carbon credit

			verification ensures credibility of carbon credits
	A6	Project Standards / Certification	Provides a framework for high-quality verification and monitoring, ensuring accurate assessment emission reductions
Additionality Concerns: There were doubts about whether the emission reductions achieved by the projects were genuinely additional and would not have occurred without the carbon credit funding	A3	Additionality	Validates that emission reductions are genuinely extra and not part of a business-as-usual scenario
	A5	Verification and Monitoring	Confirms that emission reductions are real and additional through a series of rigorous checks and the conduct of ongoing assessments
	A6	Project Standards / Certification	Ensures adherence to established, robust standards and validates additionality claims through recognised certification
Documentation and Compliance Issues: Projects faced challenges in meeting the rigorous requirements set by carbon crediting bodies	A5	Verification and Monitoring	Ensures ongoing compliance with documentation requirements and identifies issues early in the process to detect gaps, inaccuracies
	A6	Project Standards / Certification	Proper certification defines valid documentation and compliance, ensuring the projects meet all necessary requirements
	A9	Geographical Jurisdiction	Complying with local regulations ensures proper documentation, alignment with regional standards, and avoids regulatory issues

2.4.3.3. Example 3: Lack of attention on attributes such as verification and certification can lead to unintended involvement in fraudulent schemes[28] [29]



Projects in the Brazilian Amazon, involving REDD+ initiatives were found to be linked to illegal timber laundering schemes, where credits issued were purchased by international companies.

Key Outcomes:

1. **Suspension of Projects:** Verra, the certifier these REDD+ projects, suspended the sale of new credits linked to these initiatives
2. **Legal Actions and Arrests:** Brazilian Federal Police conducted "Greenwashing Operation" and arrested key individuals linked to the scam
3. **Seizure of Assets:** Authorities seized assets worth over USD300 million, including land, luxury cars, and airplanes tied to illegal activities
4. **Increased Scrutiny of Projects:** The scandal triggered broader scrutiny and push for more rigorous oversight to ensure credibility

Exhibit 12: Key issues identified from Example 3 and relevant carbon credit attributes defined in "2.4.1. Key Carbon Credit Attributes"

Key Issues Identified	Notable Attributes[30]	Importance of Attribute
Fraudulent Timber Laundering: Projects falsely claimed carbon credits by laundering illegally extracted timber under the guise of REDD+ projects	A5 Verification and Monitoring	Demonstrates the importance of rigorous and continuous monitoring to detect discrepancies and prevent fraudulent activities
	A6 Project Standards / Certification	Highlights the critical need for strict certification standards and independent audits to

[28] Mongabay "Top brands buy Amazon carbon credits from suspected timber laundering scam", Mongabay "Brazilian investigators raid Amazon carbon credit projects exposed by Mongabay"

[29] Mongabay "Verra suspends carbon credit projects following police raid in Brazil"

[30] These prominent attributes illustrate the key issues and outcomes related to the carbon credits in question but does not encompass all possible factors affecting the carbon credit

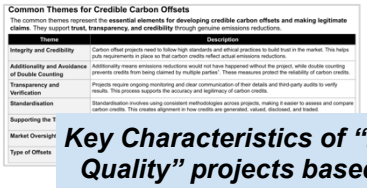
			ensure the credibility of projects
Non-compliance with REDD+ Standards: Projects did not adhere to REDD+ rules due to fraudulent activities and false reporting	A2	Permanence	Stresses the importance of environmental benefits being sustained over time to maintain the long-term integrity of the projects
	A3	Additionality	Emphasises the necessity for projects to provide concrete, verifiable emission reductions that are additional to business-as-usual
	A5	Verification and Monitoring	Accurate verification and transparent reporting are crucial for validating emissions reductions to produce reliable / credible data
	A6	Project Standards / Certification	Adherence to established standards ensures carbon credits meet rigorous criteria, preventing fraud and maintaining project integrity
Lack of Effective Monitoring: Monitoring failed to detect fraudulent practices, leading to large-scale land grabbing and fraudulently claimed carbon credits	A4	Ownership and Transferability	Effective management of ownership and transferability prevents disputes and maintains the integrity of carbon credit transactions
	A5	Verification and Monitoring	Underlines the necessity for independent and accurate monitoring to validate the environmental integrity of the projects
	A6	Project Standards / Certification	Proper certification helps to prevent fraudulent activities, maintains the integrity of project, and ensures genuine and verifiable benefits

3. “High-Quality” Projects

This section covers the key characteristics and considerations for what constitutes a “high-quality” project and the relevant case studies.

Exhibit 13: Approach to identify and analyse “high-quality” projects[31]

1 Establish key considerations to determine “high-quality” projects



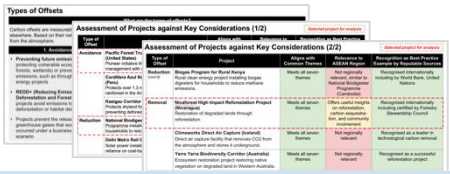
Key Characteristics of “High-Quality” projects based on Common Themes

Relevance to ASEAN

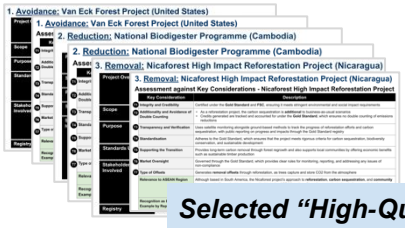
Recognised as Best Practice

The projects selected for analysis should **align with the identified common themes, are relevant to the ASEAN region** and **recognised as best practice examples by reputable sources.**

2 Identify “high-quality” projects for analysis



Long-list of Potential Projects Categorised by Type of Offset: (1) Avoidance; (2) Reduction; and (3) Removal



Selected “High-Quality” Projects

The long list of projects is **categorised by type of offsets to cover the diversity of carbon projects**. The **three selected “high-quality” projects** (one per type of offset) are determined based on their **alignment to the key considerations**.

3 Conduct analysis on selected “high-quality” projects

The analysis covers:

Assessment of the projects according to the 11 criteria for legitimate offsets and 8 attributes for valid claims

Past issues faced by REDD+ projects, highlighting potential risks that could jeopardise project quality

Key insights on “high-quality” projects

[31] Assessment of the projects are based on publicly available information.

3.1. Establish Key Considerations to Determine "High-Quality" Projects

Building on the themes identified in **"2.2. Common Themes for Credible Carbon Offsets and Valid Offset Claims"**, **key characteristics defining "high-quality"** were established to provide a basis for project selection.

Exhibit 14: Key characteristics of "high-quality" projects

Theme		Key Characteristic
T1	Integrity and Credibility	Undergo independent third-party verification, have clear frameworks, and maintain transparent project documentation to build trust and accountability
T2	Additionality and Avoidance of Double Counting	Demonstrate that emissions reductions are truly additional and not part of business-as-usual activities, with systems in place to prevent credits from being counted in multiple times
T3	Transparency and Verification	Projects are regular monitored, provides public access to verification reports, and have full traceability of carbon credits, ensuring the accuracy and accountability of emissions reductions
T4	Standardisation	Adhere to internationally recognised carbon standards (e.g., Gold Standard) and apply consistent methodologies for carbon credit generation and validation
T5	Supporting the Transition	Align with long-term decarbonisation strategies and provide co-benefits, such as job creation and biodiversity protection, contributing to broader environmental and social goals
T6	Market Oversight	Strong regulatory compliance and mechanisms for addressing non-compliance must be in place, with clear market oversight to ensure legitimacy and consistency across jurisdictions
T7	Type of Offsets	The project's offset type (avoidance, reduction, or removal) aligns with appropriate methodologies and clearly communicate the carbon reduction or removal potential while delivering co-benefits like ecosystem services

Along with the key characteristics**, relevance of the selected projects to the ASEAN region** and **recognition as best practice** were also considered.

Exhibit 15: Additional considerations to determine "high-quality" projects, beyond the key characteristics in Exhibit 14

Additional Considerations	Description
Relevance to ASEAN Region	● The project should provide insights that help address Southeast Asia's environmental challenges (e.g., deforestation, energy transition), taking into consideration local ecosystems and socio-economic dynamics ● This includes supporting the overall alignment with ASEAN nations' sustainability goals and local livelihoods within the region's context
Recognition as Best Practice Example by Reputable Sources	Acknowledgement of the project by reputable global organisations, demonstrating recognition for its impact and serving as a model for successful implementation, with minimal significant adverse publicity in the public domain

3.2. Identify "High-Quality" Projects for Analysis

To cover the diversity of carbon offset projects, an example of "high quality" project is selected for each type of offset[32].

Exhibit 16: Types of carbon offsets

What are the types of offsets?		
Carbon offsets are measurable, verifiable reductions in GHG emissions that are used to compensate for emissions made elsewhere. Based on their net emissions impact, there are generally **three types of offsets**: 1. Avoidance 2. Reduction 3. Removal		
1. Avoidance	**2. Reduction**	**3. Removal**
● **Preventing future emissions** by protecting vulnerable ecosystems (e.g., forests, wetlands) or preventing industrial emissions, such as through RE projects ● REDD+ projects avoid emissions by preventing deforestation or habitat destruction ● Projects prevent the release of greenhouse gases that would have occurred under a business-as-usual scenario	● Focuses on **reducing emissions at source** by improving efficiency or transitioning to cleaner energy (e.g., solar, wind, or energy-efficient technologies) ● Examples include replacing fossil fuel-based energy sources with renewables or improving industrial processes to be more energy efficient ● Results in direct cuts to greenhouse gas emissions through technological or operational changes.	● Involves **actively removing carbon dioxide** from the atmosphere through natural or technological means, such as reforestation, afforestation, or direct air capture technologies ● Carbon is sequestered in natural sinks like forests, oceans, or soils, or stored underground in artificial reservoirs ● Provides long-term sequestration, locking away carbon that has already been emitted into the atmosphere

[32] "Type of offsets" refers to the mechanism by which carbon emissions are mitigated (e.g., avoidance, reduction, or removal). "Carbon offset project type" refers to the approach or sector (e.g., renewable energy, reforestation) in which the offset is generated.

A list of potential projects for analysis were assessed against the key considerations.

Exhibit 17: Overview of assessment of projects against key considerations

Selected project for analysis

Type of Offset	Project	Aligns with Common Themes	Relevance to ASEAN Region	Recognition as Best Practice Example by Reputable Sources
Avoidance	**Pacific Forest Trust's Van Eck Forest Project (United States)** Pioneer initiative that integrated sustainable forest management with carbon avoidance.	Meets all seven themes	Offers useful insights on forest conservation, credit generation	Pioneer of sustainable forest management; contributed to the creation of California's VCM
Avoidance	**REDD+ Projects (Global)** Protects tropical rainforests from deforestation, including in Southeast Asia, Latin America, Africa, and Pacific Islands	Meets all seven themes	Relevant due to similar tropical rainforest ecosystem	Recognised internationally; however, has faced controversies and criticisms in recent years[33]
Reduction	**National Biodigester Programme (Cambodia)** Programme installing biogas digesters in rural households to reduce methane emissions.	Meets all seven themes	Highly relevant to rural energy needs in Southeast Asia	Recognised internationally including by World Bank
Reduction	**Delhi Metro Rail Corp Solar Project (India)** Solar power installations across Delhi Metro reduce reliance on coal-based electricity.	Meets all seven themes	Relevant due to proximity and coal usage	Recognition is focused on energy transition and urban mobility sectors

[33] Refer to "**3.3.2. Issues from REDD+ Projects"** for an overview of issues

Reduction	**Biogas Program for Rural Kenya** Rural clean energy project installing biogas digesters for households to reduce methane emissions.	Meets all seven themes	Not regionally relevant, similar to National Biodigester Programme (Cambodia)	Recognised internationally including by World Bank, United Nations
Removal	**Nicaforest High Impact Reforestation Project (Nicaragua)** Restoration of degraded lands through reforestation.	Meets all seven themes	Offers useful insights on reforestation in tropical region, sustainable livelihoods	Recognised internationally including certified by Forestry Stewardship Council
Removal	**Yarra Yarra Biodiversity Corridor (Australia)** Ecosystem restoration project restoring native vegetation on degraded land in Western Australia.	Meets all seven themes	Offer insights on reforestation but in drylands	Recognised as a successful reforestation project
Removal	**Climeworks Direct Air Capture (Iceland)** Direct air capture facility that removes CO2 from the atmosphere and stores it underground.	Meets all seven themes	Not regionally relevant	Recognised as a leader in technological carbon removal

3.3. Conduct Analysis on "High-Quality" Projects

3.3.1. Assessment of Selected Projects

3.3.1.1. Pacific Forest Trust's Van Eck Forest Project (United States)[34] [35] [36]

Project Overview:
The Van Eck Forest Project is a **carbon avoidance** initiative located in California, United States, aimed at preserving and enhancing forest ecosystems while mitigating climate change. By restoring old growth forest functions and implementing responsible harvesting strategies, the project seeks to sequester carbon dioxide effectively over a long-term horizon. Although the project focuses on temperate forest conservation, which differs from the tropical forests common in ASEAN, the approach and best practices employed by the project (e.g., risk management, community engagement strategies) offer practical insights that can be adapted in the region to develop credible carbon credits[37].

Scope:
Spanning approximately 2,200 acres, this project focuses on sustainable forest management practices that promote biodiversity, protect water resources, and significantly reduce GHG emissions. The project is expected to reduce more than 500,000 tons of CO_2 emissions over a 100-year period. In addition to carbon sequestration, the project supports biodiversity protection, water regulation, and sustainable livelihoods for local communities through agroforestry and eco-friendly income sources.

Standards Used:
1. **California Air Resources Board (CARB):** Compliance with California's GHG regulations ensures rigorous verification of emissions reductions
2. **Climate Action Reserve (CAR):** Participation in CAR protocols for additional verification and credibility in carbon accounting[38]

Stakeholders Involved:
1. **Project Developer:** The Pacific Forest Trust
2. **Local Communities:** Engaged in sustainable livelihoods, including agroforestry and eco-tourism
3. **Carbon Credit Buyers:** Corporations and organisations purchasing credits to offset emissions
4. **Certification Bodies:** Climate Action Reserve

Registry:
Climate Action Reserve Registry[39]

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[34] Pacific Forest Trust

[35] Land Trust Alliance Resource Center

[36] The New York Times

[37] In 2010, carbon credits from the Van Eck Forest Project were priced at US$19.95 per tonne, which was significantly higher than the average price of US$3 per tonne. (Source: University of Pennsylvania)

[38] Climate Action Reserve

[39] Project ID: CAR1141

Exhibit 18: Assessment of the Pacific Forest Trust's Van Eck Forest Project against the established key considerations[40]

Key Consideration	Description
Integrity and Credibility	● Certified under Climate Action Reserve (CAR), it was the first forest project registered under California's rigorous forest protocols ● Detailed project documentation is publicly accessible, enhancing transparency and accountability
Additionality and Avoidance of Double Counting	● Additionality is demonstrated through the prevention of deforestation and degradation of the forest that would otherwise be at risk due to logging or land conversion for agriculture – without the project, these forests would have been destroyed ● Credits are issued and retired under CAR, with strict protocols to prevent double-counting across different markets
Transparency and Verification	Conducts real-time monitoring (e.g., regular tree inventories, remote sensing), annual reporting to the California Climate Action Registry, and independent verification; reports generated are made public
Standardisation	Adheres to CAR protocols, providing a consistent methodology for measuring, reporting, and verifying carbon offsets related to forest projects
Supporting the Transition	Contributes to broader climate goals by demonstrating how sustainable forestry can play a role in reducing GHG emissions and subsequently, served as a model for transitioning other practices towards more sustainable approaches
Market Oversight	Operates under the oversight of regulatory bodies such as the California Air Resources Board (CARB)
Type of Offsets	Generates avoidance offsets through forest protection and preservation, which sequester carbon and prevent emissions from deforestation
Relevance to ASEAN Region	Principles demonstrated by the Van Eck Forest Project, such as sustainable land management and biodiversity conservation, are relevant to the ASEAN region where similar forest ecosystems exist
Recognition as Best Practice Example by Reputable Sources	Pioneering role in establishing California's VCM has garnered attention from environmental leaders and policymakers, reinforcing its status as a model for future projects globally

[40] Refer to **"3.1. Establish Key Considerations to Determine "High-Quality" Projects"**

Exhibit 19: Assessment of the Pacific Forest Trust's Van Eck Forest Project against criteria for legitimate carbon offsets[41]

Criteria		Description
C1	Integrity and Credibility	• Project developers ensure integrity by adhering to the **CAR methodologies** from the outset • Involves establishing robust internal protocols, baseline assessments, and verification procedures that align with the standards' requirements • Project developers must maintain high credibility through regular audits and transparent documentation, ensuring that all reported emissions reductions are genuine
C2	Permanence	• Project developers implement measures such as long-term forest conservation plans, fire prevention strategies, and pest management to protect the carbon stored in forests • Developers must account for **non-permanence risks** by creating **buffer pools[42]** – reserves of credits that compensate for potential future carbon reversals as part of compliance to CAR methodologies • This requires strategic planning, ongoing risk assessments, and investment in protective measures to maintain the project's carbon stocks over the long term
C3	Leakage	• Collaborates with local landowners to implement **sustainable timber management** outside the project boundaries • For instance, by promoting **forest thinning** and selective logging practices elsewhere, it reduces the pressure to clear-cut forests in other regions • The project also tracks leakage through **satellite monitoring** and local land-use surveys
C4	Additionality	• Demonstrated additionality by showing that the **old-growth forest area** protected was not legally required to be conserved and faced high risk of logging for commercial use • Demonstrated that it **required carbon finance to cover conservation costs** – sale from carbon offsets were crucial to cover project development and operating expenses

[41] Refer to **"2.3.1. Criteria for Legitimate Carbon Offsets"**

[42] All projects contribute approximately 15-20% of their credits to an insurance buffer pool that backstops emissions associated with project failure, principally as the result of fires, floods, hurricanes, and other natural disturbances.

C5	Avoidance of Double Counting	● Project registers all its carbon credits through the **CAR's public registry**, which tracks every issued and retired credit ● For instance, when credits are sold, the registry assigns a unique serial number to each credit, making them traceable – transfer of credits can be facilitated by third-party registries and exchanges, provided they adhere to proper tracking and retirement protocols established by CAR
C6	Verification and Monitoring	● Uses a mix of data from Geographic Information System (GIS) and on-the-ground inspections to monitor forest cover changes, carbon sequestration, and biodiversity indicators ● Undergoes **third-party verification**, which ensures that the reported carbon reductions are accurate and verifiable – most recently in 2023 by SCS Global Services, an accredited verification company under CAR
C7	Standardisation and Methodology	● Aligns to the **Forest Protocol under CAR**, which specifies the standardised methods for carbon measurement and reporting ● Includes protocols for measuring baseline carbon stocks, modelling future growth, and calculating the net carbon sequestration
C8	Supporting the Transition	● **Verified and registered emissions reductions** representing equivalent of taking 123,000 cars off the road for a year ● Successfully **increased timber volume** from 20,000 to 70,000[43] board feet per acre through sustainable forestry practices, enhancing economic returns while significantly improving carbon sequestration and promoting overall forest health and biodiversity ● **Promotes forest certification** (e.g., through the Forest Stewardship Council [FSC™]) among local landowners, supporting a broader transition to sustainable land management
C9	Co-benefits	● **Protects biodiversity** by maintaining habitats for species like the northern spotted owl and Pacific fisher, which depend on old-growth forests

[43] A board foot is a unit of measure for lumber that represents a volume of 1 foot long by 1 foot wide by 1 inch thick. It is commonly used in the timber industry to quantify the amount of wood in a log or tree. The project initially managed forests with a timber volume of about 20,000 board feet per acre. This indicates that the forest was not being managed optimally for growth or sustainability, potentially leading to lower yields and less healthy forest ecosystems.

		● Provides **local, sustainable employment** for loggers, truck drivers, mill workers, timber cruisers, biologists and foresters, among others through selective logging[44] ● **Economically self-sustaining**, with revenues covering all operating expenses while returning income to the landowner to support research and graduate scholarships at Purdue University
C10	Market Oversight and Regulations	● Complies with regulations set by the CARB[45], which oversees carbon trading within California's cap-and-trade system – the CAR registry, which the project is registered under is one of the approved offset project registries[46] ● Adheres to regular compliance checks and audits, ensuring that the credits generated meet the legal requirements for use in compliance markets
C11	Project Type	● Adheres to sector-specific methodologies[47] designed to **protect existing carbon stocks** ● Designed to enhance the landscape's ability to sequester carbon by: ○ Letting trees grow older and larger on average before harvest through Improved Forest Management projects ○ Implementing reforestation on former forestland (reforestation projects) ○ Prevent the loss or "conversion" of forests to non-forest uses like development, thus safeguarding their ability to serve as carbon sinks (avoided conversion projects)

[44] A sustainable forest management technique that involves the targeted removal of specific trees rather than clear-cutting an entire area and is part of the Improved Forest Management (IFM) approach

[45] California Air Resources Board Compliance Offset Program

[46] The Van Eck Forest Project follows the Improved Forest Management (IFM) protocol, which is one of the CARB-approved offset protocols under California's cap-and-trade system. This protocol is designed to ensure that emissions reductions are real, additional, quantifiable, verifiable, and enforceable, making it suitable for generating compliance offset credits.

[47] There is growing linkage between sector-specific methodologies and taxonomy definitions, driven by the need to align carbon markets with sustainable finance frameworks. This alignment facilitates clearer investment decisions, improves Environment, Social and Governance (ESG) reporting, and ensures that carbon projects contribute to broader climate and sustainability goals. (Source: CDP)

Exhibit 20: Assessment of the Pacific Forest Trust's Van Eck Forest Project against key carbon credit attributes[48]

	Attribute	Description
A1	Vintage	• Issued carbon credits across **multiple vintages**, representing the year in which carbon sequestration occurs (i.e., year in which specific carbon storage benefits occur and are measured) after improved forest management is implemented • Generated continuously since the project began, allowing purchasers to select credits that match their target vintage requirements – the project is expected to reduce 500,000 tons of carbon emissions over a 100-year period
A2	Permanence	• Potential risks like wildfires or pest outbreaks could threaten permanence – **uses mechanisms like buffer pools**, which withhold a portion of credits to compensate for any potential carbon losses • Buyers can be confident that permanence is enhanced through these risk mitigation measures, ensuring **durability over the long term**
A3	Additionality	• Provides **strong evidence of additionality**, demonstrating that the protected forests would likely have been logged without the project's intervention • Emissions reductions genuinely additional, meeting a critical criterion for buyers looking for credible carbon offsets • **Financial viability also depends on carbon finance**, further supporting the case for additionality
A4	Ownership and Transferability	• Ensures clear and legal transfer of carbon credits, tracked through **registries like the CAR** • Each credit has a unique identifier, ensuring that it is only counted once and can be properly tracked in the market
A5	Verification and Monitoring	• Undergoes **independent third-party verification** as part of its compliance with CAR standards – most recently in 2023 by SCS Global Services • Involves monitoring forest cover and carbon sequestration using satellite imagery and on-the-ground measurements. • **Reports and project-related documentation are available publicly** for transparency
A6	Project Standards / Certification	• **Certified under CAR** which is recognised internationally

[48] Refer to **"2.4.1. Key Carbon Credit Attributes"**

		● Assures buyers of the project's quality and credibility, as it adheres to best practices in carbon accounting, verification, and transparency
A7	Co-benefits	● Generates co-benefits like **biodiversity conservation**, **watershed protection**, and **local employment** ● By maintaining habitats for species such as the northern spotted owl and preserving water resources, the project contributes to broader sustainable development goals ● Buyers interested in biodiversity or ecosystem co-benefits would find this project particularly attractive
A8	Type of Offset	● Generates **carbon avoidance** credits focusing on preventing emissions from deforestation and forest degradation ● Relevant for buyers aiming to support forest conservation and protect existing carbon stocks, aligning with corporate sustainability goals that emphasise emissions avoidance rather than removal

3.3.1.2. National Biodigester Programme (Cambodia)[49] [50] [51] [52] [53]

Project Overview:
The National Biodigester Programme in Cambodia is a **carbon reduction** initiative that focuses on providing rural households with biodigesters that convert animal waste into biogas for cooking. This reduces the use of firewood, mitigates deforestation, and improves indoor air quality.

Scope:
The program has installed over 20,000 biodigesters across Cambodia, reducing CO_2 emissions and improving living standards in rural communities. The programme aims to promote clean energy access, reduce GHG emissions, and enhance agricultural productivity by producing organic fertiliser as a by-product of biogas production.

Standards Used:
Gold Standard: Ensures the project not only delivers verified carbon reductions but also meets social and environmental benefits, such as improved health and reduced deforestation

Stakeholders Involved:

1. **Project Developers:** The Ministry of Agriculture, Forestry, and Fisheries (MAFF), in partnership with SNV Netherlands Development Organisation
2. **Local Communities**: Rural households benefiting from biogas installations, improved health, and agricultural productivity
3. **Carbon Credit Buyers**: Corporates purchasing Gold Standard carbon credits
4. **Certification Bodies**: Gold Standard (for certification and monitoring)
5. **International Donors and Non-Governmental Organisations (NGOs)**: Providing financial and technical support for the expansion of the biodigester programme

Registry:
Gold Standard Impact Registry[54]

[49] National Biodigester Programme
[50] World Bank
[51] SNV
[52] Stockholm Environment Institute
[53] SkootEco
[54] GS ID: 751

Exhibit 21: Assessment of the National Biodigester Programme against the established key considerations[55]

Key Consideration	Description
Integrity and Credibility	Certified under the Gold Standard, ensuring third-party verification and transparent reporting on emission reductions and community benefits
Additionality and Avoidance of Double Counting	● Additionality is demonstrated by the replacement of traditional biomass fuels with biogas, which would not have occurred without the project's intervention ● The Gold Standard registry ensures there is no double-counting of credits, with transparent tracking of emissions reductions
Transparency and Verification	Regular monitoring of biodigester installations and their emissions reductions is carried out, with public reporting on progress and impacts through the Gold Standard registry
Standardisation	Adheres to the Gold Standard, ensuring consistency in carbon accounting for emissions reductions from clean energy access and methane capture
Supporting the Transition	Supports Cambodia's transition to clean energy, providing rural households with sustainable energy solutions while improving livelihoods and health outcomes
Market Oversight	Governed through the Gold Standard, which provides clear rules for monitoring, reporting, and addressing any issues of non-compliance
Type of Offsets	Generates reduction offsets by reducing methane emissions and replacing traditional fuels with biogas for cooking, which lowers overall greenhouse gas emissions
Relevance to ASEAN Region	Highly relevant to the ASEAN region, addressing rural energy access, reducing deforestation, and providing direct social and environmental benefits to rural communities in Cambodia
Recognition as Best Practice Example by Reputable Sources	Featured as a model for clean energy access and sustainable development in Southeast Asia including by World Bank[56]; noted for improving livelihoods through introduction of biogas technology, reducing emissions, and promoting organic agriculture

[55] Refer to **"3.1. Establish Key Considerations to Determine "High-Quality" Projects"**

[56] The World Bank

Exhibit 22: Assessment of the National Biodigester Programme against criteria for legitimate carbon offsets[57]

Criteria		Description
C1	Integrity and Credibility	• Verified under **Gold Standard**, which require adherence to established methodologies for biogas and methane reduction projects • **Compliance requires project validation**, including third-party audits, ensuring that emissions reductions are genuine and accurately reported
C2	Permanence	• **Captured methane is transformed into biogas and immediately utilised for cooking or electricity**, eliminating the risk of future emissions release • This makes the emissions reductions relatively permanent, as the methane is no longer available for atmospheric release
C3	Leakage	• The project has a **low risk of leakage** • By transforming waste into energy, it **reduces reliance on fossil fuels and does not shift emissions elsewhere** • Programme works closely with local farmers and households to ensure that emissions reductions from biogas generation do not result in increased emissions from other sources, thereby controlling potential leakage effectively
C4	Additionality	• Demonstrated strong additionality as **biodigesters are not typically part of standard agricultural practices** in most developing countries • Relies on **carbon finance to make biodigester installation financially viable** for households
C5	Avoidance of Double Counting	• Carbon credits generated by the programme are uniquely identified and tracked through **Gold Standard registry** • Each credit is registered and transferred under a transparent tracking system
C6	Verification and Monitoring	• Undergoes **third-party verification** to ensure that the methane captured and converted into biogas is accurately measured • This includes **monitoring parameters** like the amount of waste fed into biodigesters, biogas production levels, and methane emissions reductions

[57] Refer to **"2.3.1. Criteria for Legitimate Carbon Offsets"**

C7	Standardisation and Methodology	• Uses well-established methodologies for **biogas and methane reduction projects as outlined by Gold Standard** • These methodologies specify how methane capture, biogas utilisation, and emissions reductions should be measured and reported, ensuring standardisation and comparability with other projects
C8	Supporting the Transition	• **Contributes to the low-carbon transition** by providing RE source (biogas) and reducing the use of fossil fuels for cooking and electricity • **Fosters innovation in waste management and renewable energy**, aligning with broader climate goals
C9	Co-benefits	• **Generates significant co-benefits**, such as improved air quality (by replacing wood or charcoal burning), better sanitation (by reducing unmanaged animal waste), and enhanced energy access for households • Contributes to **public health** by reducing indoor air pollution **and created employment** for local community (e.g., trained masons[58] and supervisors for implementation)
C10	Market Oversight and Regulations	• Adheres to **regulatory frameworks set by Gold Standard** • Undergoes regular compliance checks and audits
C11	Project Type	• **Carbon reduction project** focused on methane capture and utilisation • Adheres to specific methodologies for biogas projects under recognised standards

Exhibit 23: Assessment of the National Biodigester Programme against key carbon credit attributes[59]

Attribute		Description
A1	Vintage	• Reflect the year of methane capture and biogas production, with vintages often aligned with the ongoing installation of biodigesters • Buyers can select recent vintages that align with their target years for emissions reductions
A2	Permanence	• Since the **methane is captured and converted into biogas**, the permanence of emissions reductions is immediate and durable

[58] Masons are trained as skilled labourers who can construct biodigesters and engage in marketing efforts for the biodigesters.

[59] Refer to "**2.4.1. Key Carbon Credit Attributes"**

		● Provides buyers with confidence that the **reductions are not reversible**, as the methane is utilised rather than stored, making the emissions reductions effectively permanent
A3	Additionality	● Clearly demonstrates additionality, as **biodigesters are not a common investment** for most small-scale farmers and households **without financial incentives** ● Buyers are assured that the credits represent genuine, additional emissions reductions, given the dependency on carbon finance to fund biodigester installations
A4	Ownership and Transferability	● Carbon credits are **legally transferable and tracked through the Gold Standard registry**, ensuring clear ownership for buyers ● Credits are uniquely serialised and transferred once purchased, ensuring that they are only counted once and can be properly tracked
A5	Verification and Monitoring	● **Undergoes third-party verification** to ensure that methane capture and biogas production are accurately reported ● The verification process involves monitoring metrics like waste input, biogas production, and emissions reductions
A6	Project Standards / Certification	● Adheres to **Gold Standard**, which is internationally respected for their stringent requirements ● This certification ensures that the credits are of high quality, credible, and meet buyers' needs for verified offsets
A7	Co-benefits	● Offers **range of co-benefits**, such as improved air quality, better health outcomes, reduced deforestation (by replacing wood fuel), and increased energy access for rural communities ● Make the credits appealing to buyers looking for **broader sustainable development impacts** beyond carbon reductions
A8	Type of Offset	● Generates **carbon reduction** offsets by capturing methane emissions and converting them into renewable biogas ● Aligns well with buyers' goals to **reduce existing emissions**

3.3.1.3. The Nicaforest High Impact Reforestation Project (Nicaragua)[60] [61] [62]

Project Overview:
The Nicaforest High Impact Reforestation Project is a **carbon removal** initiative that focuses on reforesting degraded lands in Nicaragua, planting native and commercial tree species to sequester CO_2 while promoting sustainable timber production. The project contributes to long-term carbon removal and biodiversity restoration, while supporting local communities through employment and sustainable forestry practices.

Scope:
The project covers 362 hectares of previously degraded or deforested land in the Southeastern region of Nicaragua, aiming to restore the ecological function of these lands. In addition to carbon sequestration, the project aims to enhance biodiversity, promote sustainable land management, and support local economic development through sustainable timber production and community engagement.

Standards Used:
Gold Standard[63]: Ensures the project not only delivers verified carbon reductions but also meets social and environmental benefits, such as improved health and reduced deforestation

Stakeholders Involved:

1. **Project Developers:** Across Nature AS and Across Forest AS
2. **Local Communities**: Providing jobs in reforestation efforts and promoting sustainable use of land
3. **Carbon Credit Buyers**: Corporates purchasing Gold Standard carbon credits
4. **Certification Bodies**:
    - Gold Standard (focusing on carbon offsetting)
    - Forest Stewardship Council (FSC™) (focusing on responsible forestry practices and environmental stewardship)

Registry:
Gold Standard Impact Registry[64]

[60] NicaForest
[61] Across Nature
[62] Explorer.Land
[63] Gold Standard
[64] GS ID: 4220

Exhibit 24: Assessment of the Nicaforest High Impact Reforestation Project against the established key considerations[65]

Key Consideration	Description
Integrity and Credibility	Certified under the Gold Standard and FSC™, ensuring it meets stringent environmental and social impact requirements
Additionality and Avoidance of Double Counting	● As a reforestation project, the carbon sequestration is additional to business-as-usual scenarios ● Credits generated are tracked and accounted for under the Gold Standard, which ensures no double counting of emissions reductions
Transparency and Verification	Uses satellite monitoring alongside ground-based methods to track the progress of reforestation efforts and carbon sequestration, with public reporting on progress and impacts through the Gold Standard registry
Standardisation	Adheres to the Gold Standard, which ensures that the project meets rigorous criteria for carbon sequestration, biodiversity conservation, and sustainable development
Supporting the Transition	Provides long-term carbon removal through forest regrowth and supports local communities by offering economic benefits such as sustainable timber production
Market Oversight	Governed through the Gold Standard, which provides clear rules for monitoring, reporting, and addressing any issues of non-compliance
Type of Offsets	Generates removal offsets through reforestation, as trees capture and store CO_2 from the atmosphere
Relevance to ASEAN Region	● Although based in South America, the Nicaforest project's approach to reforestation, carbon sequestration, and community involvement offers valuable insights applicable to the ASEAN region ● Given the region's similar challenges with land degradation and deforestation, its focus on sustainable timber production and biodiversity restoration aligns with ASEAN's priorities for both environmental and socio-economic benefits
Recognition as Best Practice Example by Reputable Sources	Certified by FSC™ and received the Gold Standard for the Global Goals certification[66] for contribution to the UN SDGs

[65] Refer to **"3.1. Establish Key Considerations to Determine "High-Quality" Projects"**

[66] The Global Goals certification links carbon projects directly to UN SDGs. It tracks multiple benefits such as improvement to health, education, and biodiversity along with carbon reductions, thereby requiring more detailed

Exhibit 25: Assessment of the Nicaforest High Impact Reforestation Project against criteria for legitimate carbon offsets[67]

Criteria		Description
C1	Integrity and Credibility	• Verified under **Gold Standard,** ensuring adherence to methodologies for carbon removal through reforestation • Built on third-party validation, which confirms that the carbon sequestration reported is accurate and genuine, and further strengthened by third-party audits • **Certified by FSC™**, highlighting adherence to their environmental and social standards
C2	Permanence	• Focuses on reforestation, which sequesters carbon over a long period as the trees grow and mature – **implements mechanisms such as buffer pools to account for potential carbon losses as required by Gold Standard** (Gold Standard requires a fixed 20% contribution[68]) • Long-term forest management plans enhance the likelihood of maintaining permanence over time
C3	Leakage	• Working with local communities to **promote sustainable land use** • Provide **alternative income opportunities**, such as agroforestry and sustainable timber production, which help reduce the pressure on nearby forests – by avoiding reforested areas displacing deforestation to other regions, the project actively mitigates leakage risks
C4	Additionality	• Demonstrates strong additionality, as **large-scale reforestation of degraded lands in Nicaragua is not common practice** without financial support from carbon credits • Relies heavily on carbon finance to be financially viable, making the emissions reductions genuinely additional
C5	Avoidance of Double Counting	• Carbon credits generated by the project are **registered under the Gold Standard registry**, which ensure clear tracking and transferability • Each credit has a unique identifier, preventing double counting across markets
C6	Verification and Monitoring	• Undergoes **third-party verification to confirm the actual amount of carbon sequestered by the reforested areas**

monitoring across broader socio-economic benefits claimed. In Nicaforest's case: SDG 4: Quality Education, SDG 8: Decent Work and Economic Growth, and SDG 13: Climate. (Source: Klimate)

[67] Refer to **"2.3.1. Criteria for Legitimate Carbon Offsets"**

[68] Gold Standard – Nature Based Solutions

		• Monitoring includes on-the-ground measurements of tree growth, biomass, and carbon stock changes • Provides accurate and transparent verification, ensuring that claimed emissions reductions are real and measurable
C7	Standardisation and Methodology	• Follows recognised **reforestation methodologies under Gold Standard**, which outline the procedures for calculating, validating, and verifying carbon sequestration • Ensures consistency in how emissions reductions are reported, aligning with best practices in the carbon market
C8	Supporting the Transition	• By **transforming degraded lands into productive forests**, the project supports the transition to a low-carbon economy • Contributes to sustainable development through **carbon removal, ecosystem restoration, and sustainable land management**, aligning with broader climate action goals
C9	Co-benefits	• Generates **significant co-benefits**, including enhanced biodiversity, improved soil quality, and sustainable timber production • **Provides job opportunities and community development initiatives**, contributing to social and economic well-being in local communities • Has **shared benefit agreements with local farmers** in place to provide an economically viable alternative to cattle ranching • Promotes **gender equality** through various employment practices, training opportunities, contract allocation, engagement processes, and management activities – aligned with the FSC™ certification's emphasis on equal opportunities for all genders in certified projects
C10	Market Oversight and Regulations	• Complies with regulatory standards established by **Gold Standard** • Undergoes regular compliance checks and audits to ensure that it meets all requirements for generating and trading carbon credits
C11	Project Type	• As a **reforestation project**, the Nicaforest initiative adheres to sector-specific methodologies for carbon removal, which involves planting trees on degraded land to capture atmospheric CO_2 • This makes it a suitable choice for buyers interested in **removal offsets**, as opposed to carbon avoidance

Exhibit 26: Assessment of the Nicaforest High Impact Reforestation Project against key carbon credit attributes[69]

Attribute		Description
A1	Vintage	• Carbon credits are linked to the year of carbon sequestration, with **vintages reflecting the specific years when carbon absorption was measured and verified – c**arbon sequestration is measured at **periodic intervals**, ensuring credits reflect both rapid early growth and stable mature carbon storage over time • Buyers can select credits from recent vintages, aligning with their target years for emissions reductions and ensuring relevance to current climate goals
A2	Permanence	• Emissions reductions are relatively permanent, as **trees store carbon over decades** • Measures like **buffer pools** (Gold Standard requires a fixed 20% contribution[70]) further enhance permanence, ensuring that any potential carbon losses due to natural disturbances are covered
A3	Additionality	• Additionality is demonstrated as **reforesting degraded lands in Nicaragua is not a common practice without carbon finance** • Emissions reductions would not have occurred without the project's intervention, making the carbon credits genuinely additional
A4	Ownership and Transferability	• Ensures clear and legal transfer of carbon credits, tracked through **the Gold Standard registry** • Each credit has a unique identifier, ensuring that it is only counted once and can be properly tracked in the market
A5	Verification and Monitoring	• Undergoes **third-party verification** including monitoring of tree growth, biomass, and carbon stock changes • This ongoing verification provides buyers with assurance that the claimed carbon removals are real, measurable, and permanent, making the credits reliable
A6	Project Standards / Certification	• Adheres to Gold Standard, which is internationally recognised, and certified by FSC™ • Received the **Gold Standard for the Global Goals certification[71]** for contribution to the UN SDGs

[69] Refer to "**2.4.1. Key Carbon Credit Attributes"**

[70] Gold Standard – Nature Based Solutions

[71] The Global Goals certification links carbon projects directly to UN SDGs. It tracks multiple benefits such as improvement to health, education, and biodiversity along with carbon reductions, thereby requiring more detailed monitoring across broader socio-economic benefits claimed. In Nicaforest's case: SDG 4: Quality Education, SDG 8: Decent Work and Economic Growth, and SDG 13: Climate.

		● Certifications align with buyers' expectations for rigorous verification and transparency
A7	Co-benefits	● Delivers **extensive co-benefits**, including biodiversity enhancement, soil restoration, improved livelihoods for local communities, and gender equality ● Buyers interested in **broader sustainable development impacts** will find these co-benefits appealing, as they align with social and environmental goals beyond carbon removal
A8	Type of Offset	● Generates **carbon removal** offsets, as it sequesters atmospheric CO_2 through reforestation ● Suitable for buyers seeking removal-based credits as part of their sustainability strategies, particularly those focusing on long-term carbon storage

3.3.2. Issues from REDD+ Projects

Over the recent years, there have been numerous issues and criticisms faced by REDD+ projects[72]. These issues, summarised below, provide **additional viewpoints on how quality is defined** for carbon offset projects.

Exhibit 27: Summary of key issues faced by REDD+ projects

No.	Issue	Description
1	Inadequate Community Engagement and Land Rights Violations	● Projects **failed to adequately consult and involve local and Indigenous communities**, leading to disputes over land rights and a lack of social legitimacy ● **Lack of meaningful engagement** increases the risk of social conflict, delays, or even project cancellation; raises questions about additionality, as emissions reductions may be seen as imposed rather than community-driven ● Ignoring Free, Prior, and Informed Consent (FPIC) of the indigenous community not only **damages credibility but also exposes projects to legal challenges and reputational damage**, making them less attractive to buyers and investors
2	Governance and Transparency Failures	● **Weak governance and lack of transparency** have led to mismanagement of funds, unclear benefit distribution, and inaccurate carbon accounting in many REDD+ projects ● Such governance failures can result in **misallocation of funds, erosion of trust**, and **over-crediting**, where emissions reductions are overstated

[72] Refer to **"Appendix C. Overview of Key Issues Faced by Verra"** for additional details.

		● This not **only reduces market confidence** but can also lead to **regulatory backlash**, further damaging the project's viability and certification status
3	Social Safeguard Violations and Human Rights Concerns	● Resulted in **unintended social impacts**, such as community displacement, inadequate compensation, and human rights violations ● **Severely compromise project integrity**, exposes stakeholders to legal risks, and leads to **loss of buyer trust**, particularly from corporations with strong Environment, Social and Governance (ESG) commitments ● Projects linked to social harm are at risk of suspension, reduced demand, and lower credit prices, as they fail to meet ethical and legal standards
4	Over-crediting and Unclear Additionality	● Over-crediting and questionable additionality remain significant challenges in REDD+ projects – leading to **market devaluation** and **reduced buyer confidence**[73] ● Exposes projects to **scrutiny** and **potential financial issues**, as buyers may demand refunds or compensation if credits are found to be overstated ● Projects with unclear additionality struggle to maintain credibility, which can limit their market access

[73] A recent study found methodology challenges have made it difficult to ascertain actual impact.

3.3.3. Key Insights on "High-Quality" Projects

Exhibit 28: Summary of key insights from the three assessed projects and the issues faced by REDD+ projects

No.		Theme	Insight	Description
1	T1	Integrity and Credibility	Permanence Must be Actively Managed	● Managing permanence is essential, whether through buffer pools in reforestation or risk mitigation in methane capture projects**; ensuring the durability of emissions reductions is vital for long-term credibility** ● Projects that are transparent about their risks and implement clear risk management strategies are more likely to maintain buyer confidence and deliver lasting climate benefits
2	T3	Transparency and Verification	Robust Verification and Certification Build Trust	● **Recognised standards like Gold Standard, or CAR** are essential for credibility and market acceptance; **rigorous third-party verification and monitoring** for transparency and to build trust with buyers ● Projects that consistently adhere to these standards and undergo thorough verification are more likely to succeed, delivering reliable and verifiable carbon credits that are trusted in the voluntary market
	T4	Standardisation		
	T6	Market Oversight		
3	T2	Additionality and Avoidance of Double Counting	Clear Additionality is Critical for Credible Carbon Credits	● Demonstrating strong additionality is fundamental; projects must prove that their **emissions reductions would not occur without carbon finance**, ensuring that the climate impact is genuine and meaningful ● Additionality is not merely a compliance step – it is critical for buyer confidence and market demand. Projects that clearly establish additionality from the outset are more competitive in the VCM

4	T5	Supporting the Transition	Co-Benefits Amplify Impact and Attract Buyers	● Projects that deliver **tangible co-benefits** (e.g., biodiversity conservation, improved livelihoods, better health outcomes) tend to be more attractive to buyers, especially those with broader ESG goals ● Co-benefits are not just a desirable add-on but a vital part of the project's value proposition; they make the project more compelling[74] and align it with both climate and sustainable development objectives
	T7	Type of Offsets		
5	T5	Supporting the Transition	Community Engagement Drives Success and Reduces Risks	● **Engaging local communities is crucial**; projects that involve communities in planning, decision-making, and benefit-sharing achieve better outcomes, reduce leakage risks, and build stronger social support ● Genuine community involvement fosters long-term success by creating local ownership and addressing potential socio-environmental challenges; this leads to more sustainable and widely accepted project outcomes
6			Alignment with Broader Climate Goals Adds Strategic Relevance	● Projects that **align with global and national climate strategies**, such as the UN SDGs or national emissions targets, are better positioned to contribute to systemic change and attract greater interest ● Strategic alignment not only boosts the project's climate impact but also enhances its relevance to corporate buyers seeking holistic contributions to sustainability

[74] Ecosystem Marketplace reported that in 2021, credits from projects with co-benefit claims had a clear price premium over the global benchmark. (Source: Carbon Pulse)

4. Carbon Registry Landscape

This section covers the assessment of the carbon registry landscape relevant to the VCM and highlights the related issues and challenges. For wider applicability, the assessment provides a higher-level guidance and is sector-agnostic.

4.1. Overview and Key Objectives of Carbon Registries[75] [76]

Exhibit 29: Definition, purpose and key functions of a carbon registry

Definition	A system that tracks the **creation**, **verification**, and **retirement** of carbon credits. These credits represent a **reduction** or **removal of one metric ton of CO_2** or its equivalent in other GHGs
Purpose	To develop carbon credit **standards**, **certify verifiers**, and **oversee methodologies** to ensure accurate documentation and **verification of emission reductions / removals**
Key Functions	• **Registration**: Projects that reduce or remove GHGs register their credits in the system • **Verification**: Independent third-party bodies verify the emissions reductions • **Issuance**: Verified credits are issued and recorded in the registry • **Trading**: Credits can be bought / sold in the carbon market • **Retirement**: Credits are retired to ensure they are not reused, preventing double counting
Examples of Carbon Registries, Exchanges, and Related Trading Platforms[77]	Verified Carbon Standard, A VERRA STANDARD; Gold Standard; IDXCarbon; American Carbon Registry; CLIMATE ACTION RESERVE; GLOBAL CARBON COUNCIL; BURSA CARBON EXCHANGE; PLAN VIVO; eex; SOCIALCARBON®; Climate Impact X

[75] Carbon Offset Guide "Registries & Enforcement"

[76] Bursa Sustain "Understanding the Voluntary Carbon Market Landscape"

[77] The voluntary carbon credit market includes various registries, exchanges and trading platforms developed by governments, independent non-profits, and the private sector. However, this study focuses specifically on **two** types of registries: **standards-driven** and **regulatory-driven**. These examples are not exhaustive but represent key players currently operating in the market.

4.2. Overview of Standards-Driven and Regulatory-Related Registries

Exhibit 30: Definitions, purpose and key features of standards-driven and regulatory-related registries

	Focus for this study	
Item	**Standards-driven Registries**	**Regulatory-related Registries**
Definition	Managed by independent organisations, these registries issue, verify, and track credits for voluntary participation, promoting credibility and flexibility for project developers and best practices in project design and implementation	Established by government authorities, these registries enforce compliance through mandatory reporting and verification of carbon credits, supporting Emissions Trading Systems (ETS)[78] for accountability and transparency, with some permitting use of offsets
Key Purpose	**Promote VCMs**, sustainable projects	**Ensure compliance** with mandatory reduction targets
Framework	Created by **independent** organisations (e.g., Verra)	Established by **government-related requirements or regulations** (e.g., cap-and-trade)
Flexibility	More **flexible**; accommodates a wide range of projects	More **rigid**; follows specific laws, compliance requirements
Examples[79] *(Non-Exhaustive)*	Verra Registry (VCS), Gold Standard Registry, Global Carbon Council (GCC) Registry, Climate Action Reserve (CAR), Thailand Voluntary Emission Reduction (T-VER) Program[80], Bursa Carbon Exchange (BCX)[81]	European Union (EU) ETS[82], New Zealand Emissions Trading Register[83], Singapore's Eligibility List for International Carbon Credits[84], Indonesia Carbon Registry[85], California Cap-and-Trade Program[86]

[78] An ETS allows companies to buy and sell GHG emission allowances, incentivising cost-effective reductions by enabling those who cut emissions to sell excess permits

[79] These examples are not exhaustive but have been selected for their prominence and relevance to the study

[80] Thailand's T-VER Program is a voluntary program which provides a framework for project developers to quantity, monitor, and verify GHG emission reductions or removals

[81] BCX is a hybrid model combining standards-driven and regulatory-driven carbon registries currently focusing on VCMs while offering market infrastructure and compliance to enhance trading integrity, with its integration of Islamic finance further positioning it as an innovative player

[82] The EU's ETS is primarily a compliance market, however, it does allow for some voluntary participation through the use of offsets

[83] The New Zealand ETS is primarily a compliance scheme but also allows for voluntary emissions reductions using New Zealand Units (NZUs)

[84] Singapore's Eligibility List for International Carbon Credits (ICCs) under the Carbon Tax Regime allows carbon-tax liable companies to use eligible ICCs to offset up to 5% of their taxable emissions

[85] Indonesia's Carbon Registry is part of the National Carbon Accounting System, heping to implement government policies for emissions reduction and enable compliance mechanisms, while also facilitating voluntary carbon trading

[86] California Cap-and-Trade Program is primarily a compliance market but also allows for voluntary carbon credits to be used to meet obligations

4.3. Examples of Notable Carbon Registries[87] [88] [89] [90] [91] [92]

Exhibit 31: Key examples of notable standards-driven carbon registries and the rationale for inclusion

No.	Registry	Description	Rationale for Inclusion
1	Gold Standard	Certifies projects through the Gold Standard Registry that **reduce emissions and promote sustainable development** with rigorous validation and monitoring	**Social Impact Emphasis:** Renowned globally, especially in Asia, Europe, for integrating the UN SDG goals with rigorous standards, has over 3,000 projects in over 100 countries
2	VERRA	Manages the VCS and Verra Registry, **certifying emission reduction projects**, focusing on transparency of carbon credits	**Global Recognition:** Widely used in North, Latin America, Europe, and Asia-Pacific for diverse projects, with over 2,000 VCS projects in more than 90 countries
3	American Carbon Registry	Certifies projects that deliver **verifiable emission reductions**, ensuring rigorous validation, monitoring while **supporting sustainable development goals**	**Supports Diverse Projects:** Renowned for its rigorous standards, with over 700 projects driving emissions reductions, making it increasingly relevant for initiatives within ASEAN
4	GLOBAL CARBON COUNCIL	Supports carbon offsetting in **developing countries** via the GCC Registry, providing a **user-friendly platform** for project registration	**Emerging Markets Focus:** Recognised in Southeast Asia and Africa for local RE projects, with a strong commitment to transparency, the Council has over 80 registered projects
5	PLAN VIVO For nature, climate and communities	Operates the Plan Vivo Registry for **community-based sustainable land use and forestry projects**, emphasising participatory management	**Sustainable Land Use:** Recognised for community-based reforestation in Africa and Central America, and has beyond 28 projects across Latin America, Africa, and Asia-Pacific

[87] Gold Standard
[88] Verified Carbon Standard
[89] American Carbon Registry
[90] Global Carbon Council
[91] Plan Vivo
[92] Carbon Credits "The 4 Best Carbon Offset Programs for 2024"

4.4. Overview of Broader Issues and Challenges[93]

The carbon registry landscape within the region is currently fragmented with lack of harmonisation.

Key Issues and Challenges:

1. **Proliferation of Registries:** The registries landscape is crowded, which can lead to **fragmentation among stakeholders**, driven by **several key factors[94]**, including but not limited to:
    - **Diverse Market Needs:** Different registries address various compliance and voluntary needs
    - **Varied Project Types:** Registries support diverse project types, such as Thailand's VCM (T-VER) for RE projects and the Philippines' emphasis on forestry initiatives
    - **Increased Demand for Credibility and Transparency:** New registries increasingly prioritise robust verification to enhance market trust, with initiatives across ASEAN exploring potential standards for transparent certification processes
    - **Regional and Local Needs:** Localised approaches address specific climate goals, such as Indonesia's REDD+ projects targeting deforestation and Vietnam's Green Growth Strategy supporting sustainable development aligned with national priorities
2. **Varied Standards and Methodologies:** Varying verification criteria can **impact trust and comparability** (e.g., different methodologies may lead to inconsistent carbon credit quality)
3. **Market Dynamics and Competition:** Intense competition among registries can **dilute quality** (e.g., lowering standards creates "race to the bottom" scenarios that undermine integrity)
4. **Uncertainty of Regulations:** Lack of harmonised regulations complicates compliance (e.g., differing reporting requirements raise costs for companies)

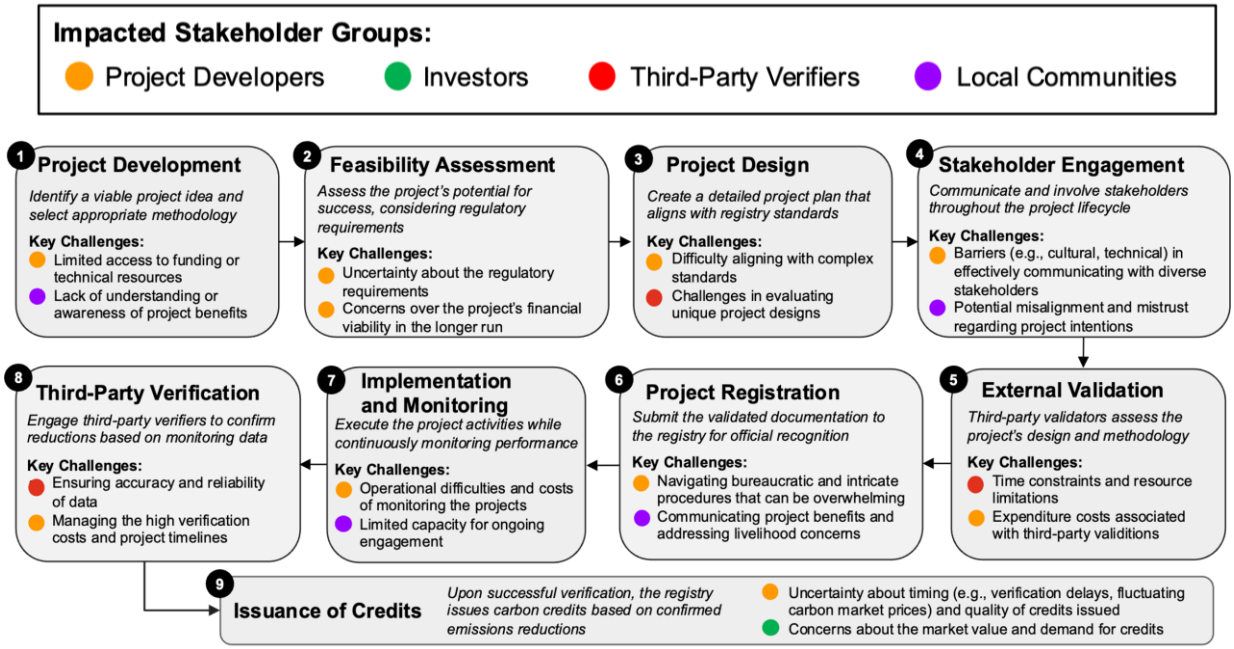
[93] Carbon Better "Intro to Carbon Offset Registries"

[94] The highlighted factors are key contributors to market fragmentation and non-exhaustive. Emerging technologies also drive new registries, reflecting ongoing market evolution and innovation.

4.5. Operational Level Challenges

At the operational level, stakeholders face numerous challenges during the registration process.

Exhibit 32: Typical project registration process[95] [96] and associated key challenges faced by stakeholder groups[97]



[95] Gold Standard "Certification Process: Step by Step"

[96] Verra "Registration and Issuance Process Version 4.5"

[97] Groups listed are the most prominent, though others may also be involved

4.6. Key Considerations by Stakeholder for Carbon Registry Selection

Exhibit 33: Key considerations to guide the evaluation process of different carbon registries (by stakeholder)

Consideration	Project Developers	Corporate Buyers	Regulators
Reputation and Credibility	Prefer registries with established reputations and credibility to enhance **project trustworthiness and attract more investors**	Choose registries **recognised for credible and transparent practices** to align with corporate ESG and sustainability goals	Encourage use of registries with **robust processes and frameworks that align with international best practices and considers ASEAN's environmental priorities** and regulatory credibility
Cost and Fees	Consider registries with **fair fee structures and easier access to both primary and secondary markets** for enhanced project viability	Select **cost-effective registries that offer reasonable fees** and enable access to secondary markets for better **credit liquidity and price discovery**	Promote registries with **fair pricing** that encourages participation in cross-border trading, reducing barriers for smaller projects across ASEAN
Standard Requirements	Evaluate registries that **balance rigorous standards with the feasibility of compliance** for various project types, especially for smaller developers	Choose registries with **robust standards** that align with corporate sustainability targets and provide reliable offset claims	Support registries with standard requirements that **align with regional frameworks**, fostering consistency within ASEAN markets, and **international standards** for trading and scalability
Verification, Monitoring, and Reporting	Select registries that offer strong **third-party verification**, **comprehensive monitoring**, and **clear reporting** to enhance project accountability	Prioritise registries with rigorous verification and transparent **reporting to support corporate ESG disclosures** and audit requirements	Encourage registries that **mandate regular verification and provide transparent reporting** for regulatory compliance and market trust
Flexibility and Adaptability	Look for registries that **allow for a range of project**	Prefer registries that **accommodate diverse offset**	Advocate for registries with adaptive standards that can

	types and are **adaptable to emerging technologies and methodologies**	**types**, offering flexibility to align with varying corporate decarbonisation strategies	**accommodate ASEAN-specific carbon reduction needs** and different offset types relevant to the region
Regional Relevance	Prefer registries that address Southeast Asian environmental challenges, with **standards and practices adapted to local contexts**	Opt for registries that **reflect ASEAN-specific carbon priorities,** allowing corporate buyers to invest in regionally relevant projects	Promote registries that **incorporate ASEAN environmental goals and support localisation efforts**, enhancing regional resilience and cooperation
Support Services	Favour registries offering **training**, **technical guidance**, and **capacity-building** to aid in project development and implementation[98]	Understand which registries that provide **education on credit use and associated benefits**, helping buyers understand offset impacts and compliance[99]	Recommend registries that offer resources for **capacity-building and regulatory guidance** to assist in developing robust carbon markets across ASEAN[100]

[98] Examples: Verra provides technical guidance and training materials, while Gold Standard offers resources on methodology development and project implementation

[99] Examples: CAR offers comprehensive guidance for corporate users, including information sessions on credit usage

[100] Verra and Gold Standard both provide resources and support for regulators to enhance market understanding and regulatory frameworks

5. Risks and Issues on Voluntary Carbon Markets Implementation

This section covers the potential risks and issues on the implementation of a VCM for ASEAN. The risks and issues are categorised by primary and secondary markets for targeted assessment. For this study, they are defined as below.

Exhibit 34: Primary and secondary markets in VCMs

Category	Description
Primary Market	● Refers to the **initial issuance** and **sale of carbon credits** directly from project developers to buyers ● The market that credits are first introduced before any trading or resale ● Key participants include project developers, certification and standards bodies, and buyers (corporations or other entities looking to meet voluntary climate commitments by purchasing credits directly from developers ● Risks and issues are mainly tied to project quality, verification, and ensuring that the credits reflect genuine emissions reductions
Secondary Market	● Allows for the **buying and selling of carbon credits after they have been initially issued in the primary market** ● Enhances liquidity and flexibility, enabling a broader range of participants—such as corporations, investors, and financial institutions—to trade and manage their carbon credit holdings ● Serves companies aiming to meet their sustainability or ESG goals by voluntarily offsetting emissions, providing opportunities for price discovery and easier access to high-quality credits that support verified projects. ● Risks and issues are more focused on liquidity, pricing, and market integrity

5.1. Risks and Issues – Primary Market

Exhibit 35: Risks and issues of VCM implementation for primary market

Theme	Risks / Issues *(non-exhaustive)*	Mitigation Considerations for ACMF
T1 Integrity and Credibility	● Potentially issuing low-quality or unverifiable credits ● Lack transparency and reliable verification ● Issuance of credits without recognised standardised methodologies	● Align with stringent verification standards and transparent methodologies for credit issuance ● Require third-party audits and certification for all credits by recognised certification bodies
T2 Additionality and Avoidance of Double Counting	● Projects not delivering genuine additionality or emissions reductions, supporting greenwashing ● Potential displacement of emissions (leakage)	● Encourage robust additionality requirements to ensure genuine emissions reductions ● Implement leakage monitoring mechanisms and assessments
T3 Transparency and Verification	● Inadequate monitoring and reporting infrastructure ● Lack of standardised reporting frameworks ● High cost of data integrity solutions	● Encourage use of advanced monitoring technologies (e.g., satellite imagery, blockchain) by project developers ● Develop a regional emissions reporting platform to ensure data transparency
T4 Standardisation	● Issuance of credits without recognised standardised methodologies ● Inconsistent standards for credit issuance across ASEAN	● Encourage use of robust and recognised methodologies and frameworks for carbon credit issuance and usage
T5 Supporting the Transition	● Lack of local stakeholder involvement and potential resistance from local communities ● Projects are not linked to transition plans of buyers, supporting greenwashing	● Require early and continuous stakeholder engagement, particularly local surrounding communities ● Prioritise projects addressing region-specific environmental challenges

		● Projects not aligned with regional environmental challenges (e.g., deforestation, mangrove loss)	(e.g., deforestation, mangrove loss)
T6	Market Oversight	● Fragmentation in legal and regulatory frameworks, with lack of effective enforcement ● Uncertainty about compliance with international frameworks (e.g., Paris Agreement) ● At country-level, complexities arising from overlapping commitments of national and sub-national climate policies, potential introduction of ETS, and VCMs	● Encourage interoperability between regulatory frameworks for carbon markets in ASEAN ● Strengthen enforcement mechanisms and compliance monitoring ● Put in place clear framework on different stakeholder roles across the local ecosystem on VCM (e.g., ministries, regulators)
T7	Type of Offsets	● Forest-related projects: ○ Have a higher risk of project failure before credit issuance ○ Uncertainty about long-term viability of projects ○ Lack initial capital for high-quality projects	● Facilitate access to finance for developers through green bonds or other mechanisms ● Collaborate with relevant government bodies to attract investments from global corporate buyers (e.g., offering financial incentives) and funding from international organisations ● Encourage insurance mechanisms for high-risk projects

5.2. Risks and Issues – Secondary Market

Exhibit 36: Risks and issues of VCM implementation for secondary market

	Theme	Risks / Issues *(non-exhaustive)*	Mitigation Considerations for ACMF
T1	Integrity and Credibility	● Risk of trading low-quality or expired / retired credits that undermine trust in the market ● Lack of transparency in carbon credit ownership and previous transactions ● Difficulty verifying the original source or quality of traded credits	● Mandate clear standards for credit transparency and traceability, ensuring a robust record of credit ownership and quality ● Require public registries or platforms that display credit history and verification details for transparency
T2	Additionality and Avoidance of Double Counting	● Difficulty in tracking ownership and avoiding double counting of credits during multiple trades ● Lack of standardised technology solutions for maintaining consistent data on credits across different platforms	● Leverage existing initiatives (e.g., CAD Trust) for credit tracking across ASEAN to prevent double counting and ensure traceability ● Encourage the adoption of technologies such as blockchain to provide secure, transparent credit ownership data ● Work with international partners to ensure interoperability of ASEAN platforms with global carbon platforms
T3	Transparency and Verification	● Limited accessibility to verification reports, making it difficult for stakeholders to evaluate the credibility of carbon credits ● Insufficient verification frequency or updates, leading to outdated information and potential misrepresentation of a project's ongoing carbon benefits	● Ensure all verification reports are publicly accessible, promoting transparency and enabling stakeholders to assess the quality of credits ● Encourage more frequent verification intervals, requiring periodic updates that reflect the most recent data on emissions reductions and co-benefits

T4	Standardisation	● Lack of harmonised regulations for cross-border trading, leading to regulatory gaps ● Uncertainty in compliance with different local laws when trading credits between countries ● Difficulty ensuring that credits comply with international frameworks post-issuance (e.g., credits can be traded multiple times across different platforms and jurisdictions, making it challenging to meet evolving requirements)	● Develop and enforce a harmonised ASEAN-wide regulatory framework for secondary market trading ● Establish guidelines for cross-border trading to ensure compliance with both regional and international standards, including the Paris Agreement
T5	Supporting the Transition	● Difficulty verifying the original source or quality of traded credits ● Credits that are resold multiple times may disconnect from original environmental and social co-benefits	● Establish rules that ensure the traceability of the credit's environmental and social co-benefits and have this data available during resales
T6	Market Oversight	● Price volatility due to fluctuating demand making it hard for market participants to manage risk ● Lack of liquidity, leading to difficulties in buying or selling credits quickly without significant price impact ● Potential linkage between VCM and a country's ETS (if introduced) could: ○ Create conflicts between different regulatory frameworks ○ Lead to market distortions (e.g., price fluctuations, artificial inflation in VCM) if ETS rules allow for	● Create mechanisms to enhance market liquidity, such as market makers or liquidity providers ● Work with relevant ministries / bodies to develop a clear regulatory framework for VCM-ETS linkages, ensuring consistent standards for credit issuance, verification, and acceptance across both markets to prevent conflicts

		high volume of voluntary credits to be used for compliance	
T7	Type of Offsets	● Secondary market trades may prioritise financial gain over regional environmental and social goals ● Lack of alignment between traded credits and ASEAN's specific environmental priorities (e.g., biodiversity, deforestation)	● Prioritise credits from projects that are relevant to ASEAN's environmental challenges, ensuring that traded credits align with regional goals ● Implement reporting requirements that keep the original social and environmental benefits visible during secondary trades

6. Initial Feasibility Assessment on Secondary Carbon Market

This section covers the initial assessment on the feasibility of establishing an active secondary carbon market.

6.1. Overview of Secondary Market for Voluntary Carbon Credits

The secondary market for voluntary carbon credits enables the **buying and selling of credits after primary issuance**.

The secondary market for carbon credits allows for the buying and selling of carbon credits after they have been initially issued in the primary market. It enhances liquidity and flexibility, enabling a broader range of participants—such as corporations, investors, and financial institutions—to trade and manage their carbon credit holdings. This market serves companies aiming to meet their sustainability or ESG goals by voluntarily offsetting emissions, providing opportunities for price discovery and easier access to high-quality credits that support verified projects.

The functions of the secondary market are as below:

1. Unlike the primary market, where credits are purchased directly from project developers, the secondary market **enables trading among participants**, increasing the availability and ease of access to carbon credits.
2. It plays a critical role in **determining the "real" market value of carbon credits through supply-demand interactions**, offering transparency in pricing.
3. Companies or investors can **buy or sell credits** depending on their emissions targets, business needs, or investment strategies. The secondary market can also facilitate short-term transactions or speculative trading, helping entities hedge risks.
4. Allows businesses to **meet their offset requirements flexibly by trading credits** after the initial issuance and before retirement.

Secondary carbon markets can generally be classified into two types: **compliance and voluntary**.

Exhibit 37: Examples of secondary carbon markets

Description	EU ETS[101]	California Cap-and-Trade Program[102]	Climate Impact X (CIX)[103] [104]
Type	Compliance Market	Compliance Market	Voluntary Market
Overview	• Largest and most established compliance carbon market • Operates under cap-and-trade framework • Companies receive or purchase allowances that represent the right to emit a certain amount of CO_2 • Fully regulated	• Established as part of California's Global Warming Solutions Act • Operates under cap-and-trade framework • Permits the use of offset credits from voluntary projects to meet compliance obligations (up to 4%) • Linked to Québec Cap-and-Trade Programme	• Voluntary platform based in Singapore launched to meet demand for high-quality carbon offsets • Focus on providing transparency and credibility by offering a marketplace for verified carbon credits (e.g., Gold Standard, Verra) for trading • Offer credits from nature-based projects due to co-benefits
Scope	Energy, industrial sectors, and aviation	Energy, industry sectors, transportation, and other high-emitting industries	Voluntary participants, primarily private sector players with ESG commitments
Purpose	To reduce emissions in line with EU climate goals, with a target of achieving net-zero emissions by 2050	To reduce emissions by 40% below 1990 levels by 2030	To create a transparent and efficient market for high-quality carbon credits
Market	One of the largest carbon markets; billions of euros in carbon allowances traded annually	One of the largest subnational carbon markets in the world, linked with Québec for enhanced trading options	Emerging market that caters to companies seeking to offset voluntary emissions as part of ESG commitment

101 European Commission
102 California Cap-and-Trade
103 Climate Impact X (CIX)
104 SGX

6.2. Key Features of An Active Secondary Carbon Market

The following features are essential for an active secondary market[105]:

1. **Liquidity and Volume:** High trading volumes and a diverse mix of participants ensuring liquidity, making credits readily available for buyers and sellers
2. **Price Transparency**: Real-time price discovery, based on supply-demand dynamics, allowing participants to track prices and make informed decisions
3. **Efficient Market Infrastructure**: Well-developed trading platforms supporting seamless trading, settlement, and clearing, ensuring efficient credit transfers between market participants
4. **Standardisation and Harmonisation:** Clear, consistent standards across jurisdictions ensuring credit quality and smooth cross-border trading, enhancing market credibility
5. **Regulatory Support and Market Integrity**: Strong regulatory oversight and tracking systems safeguarding transparency, prevent fraud, and ensuring the integrity of carbon credits
6. **Flexibility and Accessibility**: The market must be open to a wide range of participants and offer diverse trading products to support risk management and flexibility

The identified key features guide the **initial feasibility assessment** to establish an active secondary carbon market.

[105] Features are based on key recommendations in IOSCO Final Report on Promoting Integrity and Orderly Functioning of Voluntary Carbon Markets

Exhibit 38: Initial feasibility assessment for establishing an active secondary carbon market

Feature	Key Questions	Current State in ASEAN	Considerations for ACMF
Liquidity and Volume	What is the current supply of carbon credits in ASEAN?	Limited supply of "high-quality" credits from verified projects	Consider incentives for the development of high-quality carbon offset projects, especially those aligned with international standards (e.g., Verra, Gold Standard)
	Is there sufficient demand from corporates, investors, and speculators?	Growing awareness but limited demand from corporates. Investors and speculators are only starting to engage	Promote corporate and investor education on the role of carbon credits for meeting ESG targets and consider regulatory incentives for businesses to participate in carbon markets
	Are there enough projects in the pipeline to ensure continuous supply?	Insufficient across ASEAN countries to meet long-term demand in the secondary market	● Advocate for regional initiatives to increase carbon project development[106] ● Increase awareness on VCM and financials, and produce guidance for project developers on developing high quality projects
Price Transparency	Are there mechanisms for transparent price discovery in ASEAN's carbon markets?	Limited price transparency across the region –Singapore's CIX in growth stage	● Support development of platforms that facilitate real-time price discovery ● Explore regional cooperation to create unified price tracking systems for carbon credits
	How are prices currently set for carbon credits in ASEAN?	Prices are largely set by bilateral agreements or international	● Encourage the development of standardised pricing frameworks across

[106] For example, through public-private partnerships or support for emerging project developers

		platforms, with little regional coordination	ASEAN to provide transparency and support market confidence ● Consider regional benchmarks for price discovery
	Are there systems in place to track and report carbon credit pricing trends?	No unified regional system for tracking pricing trends, making it difficult for participants to gauge market conditions	Advocate for a regional price reporting system that offers continuous, transparent tracking of carbon credit prices and trends to increase market clarity
Efficient Market Infrastructure	Are there existing trading platforms that facilitate secondary market activity?	Few platforms exist – infrastructure is underdeveloped in most ASEAN countries	Explore opportunities to build regional trading platforms or enhance existing ones to facilitate cross-border credit trading and improve market access across ASEAN
	Is ASEAN ready to implement advanced digital tools (e.g., blockchain) to enhance transparency?	Different stages in digital readiness, with some countries more advanced than others in terms of infrastructure and application	Consider regulatory frameworks that encourage investment in technologies to enhance transparency and verification in carbon credit markets
	How efficient are existing systems for the settlement and clearing of carbon credit trades?	● Settlement systems are nascent and not widely available in the region ● Manual processes dominate, reducing market efficiency	Encourage the development of digital, automated settlement and clearing systems to improve transaction efficiency and attract more market participants
Standardisation and Harmonisation	Are carbon credits in ASEAN aligned with international	Lack of unified standards across the region, with	Promote regional standardisation of carbon credits in alignment with

	standards (Verra, Gold Standard)?	some countries aligned and others not	international frameworks to ensure credibility and facilitate cross-border trading
	Are ASEAN countries aligned with Article 6 of the Paris Agreement?	Some ASEAN countries are in the process of aligning with Article 6, including drafting market bilateral agreements under Article 6.2	Support regulatory alignment with Article 6 of the Paris Agreement to ensure that carbon credits are internationally recognised and tradable across borders
	Do verification processes for credits vary across ASEAN?	Verification processes are inconsistent, with each country having different methodologies and quality control measures	Encourage the establishment of a regional verification framework that ensures consistency and reliability of carbon credits across ASEAN countries, including proper certification / registration / oversight of verifiers
Regulatory Support and Market Integrity	Are there clear regulatory frameworks for carbon credit trading across ASEAN?	Regulatory frameworks vary significantly, from nascent to advanced stages	Establish consistent regulations and clear guidelines for carbon trading across the region
	Is there adequate regulatory oversight to prevent fraud and double-counting?	Lack of oversight in most countries, creating risks of fraud and double-counting	Implement strong regulatory oversight mechanisms, possibly with the use of blockchain, to prevent fraud and ensure the integrity of credit ownership and transfers
	Are there specific policies to encourage or regulate participation in carbon markets?	Some countries have nascent policies, but overall, there is a lack of policy initiatives to promote participation in carbon markets	Introduce policies that encourage participation through tax incentives, subsidies, or market-based regulations that mandate offsetting emissions
Flexibility and Accessibility	How accessible is the market to smaller	High barriers to entry for SMEs due to lack of	• Lower barriers to entry by supporting regional platforms that

	corporations and investors?	access to trading platforms and understanding of carbon markets	aggregate demand for smaller participants ● Provide educational resources for SMEs on carbon markets ● Encourage carbon financing scheme development for SMEs / smallholders
	Are there financial instruments (e.g., futures, swaps) available for risk management?	Few financial products available for carbon credits in the region, limiting the ability of corporations to hedge risk or manage price fluctuations	Promote the development of more advanced financial instruments such as carbon futures, swaps, and options to allow for better risk management and flexibility for market participants
	Is the market flexible enough to accommodate both voluntary and compliance-based participants?	Market infrastructure currently favours voluntary markets, with limited focus on compliance-based participants	Encourage the development of systems that cater to both voluntary and compliance-based participants, including mechanisms that allow for regulatory flexibility in carbon trading

7. Next Steps

To establish a **strong foundation** for a vibrant regional carbon market, the following initiatives can be prioritised in the **immediate term**.

Exhibit 39: Potential immediate-term initiatives for establishing a regional carbon market

No.	Purpose	Initiative
1	To increase volume of "high-quality" carbon credits in the market and improve liquidity	Increase awareness on VCMs and associated financials
2		Produce guidance for project developers in ASEAN on developing high quality projects
3		Promote corporate and investor education on the role of carbon credits within structured transition plans and sustainability strategies, including developing targeted guidance on appropriate use of credits for investors, funds, and corporate buyers
4		Advocate for regional initiatives to increase carbon project development (e.g., through public-private partnerships to fund and support development of "high-quality" projects)
5	To provide oversight that ensures the integrity of carbon credits generated and traded	Establish consistent regulations and clear guidelines for carbon credit generation and trading across the region
6	To provide clarity across different jurisdictions and encourage cross-trading	Promote regional standardisation of carbon credits in alignment with international frameworks to ensure credibility and facilitate cross-border trading (e.g., engage with key VCM standards / framework bodies on guidance for projects that are more relevant for ASEAN)

To complement the immediate priorities, the following actions can be explored in parallel to lay the groundwork for an ASEAN carbon market:

- **Prioritise ASEAN-Specific Projects:** Identify and prioritise project types that align with ASEAN's regional needs, such as tropical forests, peatlands, mangroves, micro-hydro, biogas from agricultural waste, and community-based solar microgrid projects.
- **Outline ASEAN "High-Quality" Carbon Projects:** Develop a roadmap to highlight and promote ASEAN-specific "high-quality" carbon projects, providing case studies and examples to support future development.
- **Leverage Existing ASEAN Collaborations:** Identify existing regional collaboration platforms and initiatives (e.g., ACMF frameworks, tools or other ASEAN mechanisms) that can be leveraged for the guidance and processes for primary and secondary VCMs.
- **Monitor COP29[107] (2024 Conference of the Parties of the United Nations Framework Convention on Climate Change) Mechanisms:** Track the development and implementation of the global carbon market mechanisms committed at COP29, with the aim of incorporating these into ASEAN frameworks once operational.

[107] A centralised global carbon programme was given the green light to begin operations during the United Nations climate conference COP29, paving the way for greater cooperation between countries to achieve their climate goals. Once it is up and running, the UN-managed carbon programme will provide countries with a one-stop shop for eligible carbon credits of high environmental integrity standards. The mechanism is expected to be operational earliest in 2026. (Source: The Straits Times)

Appendix A. Carbon Credit Attributes – Best Practice Examples

Exhibit 40: Best practice examples for each key carbon credit attribute defined in "2.4.1. Key Carbon Credit Attributes"

Attribute	Best Practice - Selected Examples
A1 Vintage[108]	**Example:** The **Science Based Targets initiative (SBTi)**[109] recommends that companies purchase carbon credits with recent vintages to align with current climate goals and ensure the relevance of the reductions, ensuring that the offsets are addressing current emissions rather than relying on outdated or less relevant reductions **Rationale:** Older credits may not reflect the urgency or latest standards for emissions reductions, potentially undermining a company's claims
A2 Permanence	**Example:** The **Gold Standard**'s[110] land use and forestry projects require permanence assurances of a minimum 30-year certification period to ensure that carbon sequestration remains effective over time. Projects must include long-term management plans and mechanisms like buffer pools to account for risks such as forest fires **Rationale:** Without ensuring long-term permanence, the carbon reductions could be reversed, invalidating the credit and the buyer's emissions reductions claim
A3 Additionality	**Example:** **Microsoft**[111] requires project developers to determine natural regeneration baseline using the best available science to predict natural seedling establishment and forest growth in the absence of tree planting and demonstrate that reforestation or agroforestry activities are a result of carbon finance or could not occur otherwise (for projects with non-carbon finance streams, such as from expected timber sales or conservation funds) **Rationale:** Without additionality, a project might claim credits for emissions reductions that would have occurred anyway, undermining the credibility of the carbon credits

[108] On a national level, it is important to consider the Paris Agreement guidelines, particularly how they ensure credits used toward a country's Nationally Determined Contributions (NDCs) are properly tracked, with vintages reflecting the year of emissions reductions, to prevent double-counting and ensure alignment with global climate goals.

[109] SBTi

[110] Gold Standard

[111] Microsoft

A4	Ownership and Transferability	**Example:** The **CAR**[112] uses robust tracking and transfer systems through its registry, ensuring that credits are traceable, and ownership is clear. This prevents double counting and ensures that once a credit is sold, the ownership is legally transferred to the buyer **Rationale:** Clear ownership and transferability prevent multiple parties from claiming the same emissions reductions, ensuring that credits are valid and can be confidently traded
A5	Verification and Monitoring	**Example:** The **Gold Standard**[113] and **Verra's VCS**[114] require independent third-party verification to ensure the accuracy of reported emissions reductions. Continuous monitoring ensures that projects deliver on their promised reductions throughout their lifespan **Rationale:** Without rigorous verification and monitoring, the integrity of the carbon reductions cannot be assured, increasing the risk of fraudulent or overstated claims
A6	Project Standards / Certification	**Example: Temasek**[115] purchases carbon credits through CIX, a global marketplace and exchange for high-quality carbon credits. Carbon credits acquired through CIX are verified against global standards such as Verra and Gold Standard and prioritises carbon credits with higher ratings such as AA-rated by Sylvera **Rationale:** Without additionality, a project might claim credits for emissions reductions that would have occurred anyway, undermining the credibility of the carbon credits
A7	Co-benefits	**Example:** The **Gold Standard** integrates co-benefits, such as biodiversity preservation and community development, into its certification process. For example, reforestation projects might also improve local livelihoods by creating jobs or improving water quality **Rationale:** Co-benefits enhance the overall impact of carbon offset projects, making them more attractive to buyers looking to support broader sustainability and social responsibility goals
A8	Type of Offset	**Example: Panasonic**[116] prioritises carbon credits from RE projects, such as solar and wind, to align with its corporate goal of promoting clean energy technologies. Panasonic

112 Climate Action Reserve
113 Gold Standard
114 Verra
115 Temasek
116 Panasonic

	selects these project types as they directly support their vision of a low-carbon society and their own RE expansion efforts **Rationale:** Buyers can choose specific offset types that align with their broader sustainability goals, such as promoting RE or supporting technological innovation, ensuring that their carbon credit purchases have strategic alignment with their business goals and values

Appendix B. Development Across ASEAN on Carbon Standards

Recent developments across the ASEAN region reflect varying levels of progress[117] in carbon standards and trading, with some member states actively developing guidebooks and handbooks, as outlined in the following table[118] [119] [120] [121] [122].

Exhibit 41: Overview of carbon standards and carbon trading across ASEAN member states

Member States	Description	Linkage to International Standards
Brunei	In the **process of developing a national climate action plan** that may incorporate elements of carbon trading and sustainability	Plans to align with international standards as part of its climate strategy for future carbon market engagement
Cambodia	Some initiatives in carbon offset projects have been undertaken, but there is no comprehensive guidebook as efforts are currently focused on **integrating sustainability into national policies** and fostering community-based projects	Anticipates that future guidance may align with international standards, increasing credibility of carbon offset initiatives as they expand
Indonesia	The **Indonesia Carbon Trading Handbook**, from the Ministry of Environment and Forestry, outlines **compliance** and **monitoring guidelines** for the national carbon trading system, aimed at fostering a transparent trading environment	Framework seeks to incorporate international standards for compliance and monitoring, enhancing credibility, market trustworthiness
Lao PDR	No formal carbon market guides exist, but the country is **developing climate strategies that may include carbon trading** and emissions reduction mechanisms to meet international climate goals	Future efforts may aim to link international standards, enhancing the effectiveness of climate strategies as they take shape

[117] This analysis offers a snapshot of progress across all ten ASEAN member states, but due to the rapidly evolving carbon markets, it is advisable to verify each country for the latest developments

[118] Bursa Malaysia "VCM handbook: Guidance for the voluntary carbon market in Malaysia"

[119] Katadata "Indonesia carbon trading handbook"

[120] SGX Carbon Trading

[121] Climate Impact X (CIX)

[122] Thailand Greenhouse Gas Management Organisation (TGO) "What is T-VER"

Malaysia	Bursa Malaysia has **published a VCM Handbook** detailing guidelines for project registration, verification, and credit issuance in the VCM, providing clarity for project developers and enhancing market integrity	Recommends adherence to international standard VCS, ensuring local practices align with global expectations for credibility
Myanmar	Limited progress on formal carbon market guidelines has been made, existing frameworks are still **developing to align with environmental commitments**, and integrate sustainable practices into national policies	Future alignment with international standards is anticipated as frameworks involve to establish credibility
Philippines	**Established guidelines** under the **Climate Change Act** to promote carbon market mechanisms, while formal guidelines for carbon trading are still in development	Ongoing efforts aim to align with international standards such as the VCS and Gold Standard o enhance future market credibility
Singapore	Have in place initiatives such as the **CIX,** launched in 2021 to facilitate carbon credit transactions, and **CAD Trust** to enhance transparent accounting of carbon markets data	Aims to align with global best practices and standards, including VCS, to enhance integrity and attract global investment
Thailand	The Thai government is **developing a regulatory framework** for carbon markets, including the **T-VER program** which enables projects to generate, and trade verified carbon credits in voluntary and regulated markets	Aims to align with international standards to ensure carbon credit quality
Vietnam	**Draft guidelines** under the **Green Growth Strategy** focus on **carbon trading mechanisms** and sustainable practices vital for climate commitments and economic growth, including the **Vietnam Carbon Market Handbook**	Aims to integrate international best practices into its emerging carbon market framework to boost credibility and effectiveness

Appendix C. Overview of Key Issues Faced by Verra

Verra has faced issues from inflated emissions reduction claims to certification integrity concerns in its carbon credit methodologies.

Exhibit 42: Summary of key issues faced by Verra[123] [124] [125] [126]


Reuters: "How Verra is vowing to turn over new leaf using AI and more credible methodology for carbon offsets"

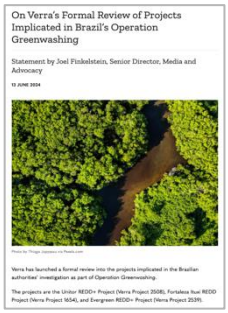
9 NOVEMBER 2023

This article lays out how Verra is working to increase confidence in avoided deforestation credits.

Verra's soon-to-be-released new REDD methodology will include a new approach to setting baseline deforestation levels for projects. The new approach ensures that the data used for project baselines is consistent with deforestation in the jurisdiction where a project is located. The data is being collected using advanced technologies like satellites and remote sensing, to ensure a high degree of accuracy.

Inflated Emissions Reductions Claims

- Verra faces criticisms regarding **inflated claims of emissions reductions**, leading to stakeholder concerns about the effectiveness and **transparency** of its methodologies
- This has prompted calls for **improved standards** to ensure credible carbon accounting


On Verra's Formal Review of Projects Implicated in Brazil's Operation Greenwashing

Statement by Joel Finkelstein, Senior Director, Media and Advocacy

12 JUNE 2024

Verra has launched a formal review into the projects implicated in the Brazilian authorities' investigation as part of Operation Greenwashing.

The projects are the Unitor REDD+ Project (Verra Project 2508), Fortaleza Ituxi REDD Project (Verra Project 1654), and Evergreen REDD+ Project (Verra Project 2539).

Legitimacy of REDD+ Projects

- **Legitimacy of REDD+ projects** have been questioned in light of "Operation Greenwashing" and Zimbabwe's Kariba project, which raises **concerns** about the **effectiveness** of those projects in genuinely reducing emissions
- This has prompted calls for **improved standards** to ensure credible carbon accounting


Verra Issues Clarification to REDD Methodology

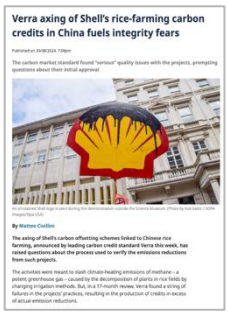
5 AUGUST 2024

Verra has released a "Corrections and Clarifications" document (PDF) applicable to Verified Carbon Standard (VCS) Methodology VM0048 Reducing Emissions from Deforestation and Forest Degradation, v1.0.

The document includes a clarification to align the definition of "forest" with that in the Core Carbon Principles Assessment Framework of the Integrity Council for the Voluntary Carbon Market (ICVCM). The definition of "forest" in section 3.1 of the methodology has been updated to the following: "Forest. In addition to the definition set out in the VCS Program Definitions and the requirements of the VCS Methodology Requirements, for this methodology, 'forest' must include woody vegetation with a canopy cover of at least 10 percent, as used in the relevant country's international reporting to the UNFCCC."

Methodological Ambiguities

- **Ambiguities** in Verra's REDD+ guidelines have led to **inconsistencies in emissions reduction calculations** and **confusion** among stakeholders
- This has underscored the necessity for **clearer methodologies** to enhance project accountability and reliability


Verra axing of Shell's rice-farming carbon credits in China fuels integrity fears

Published on 30/08/2024, 7:00pm

The carbon market standard found "serious" quality issues with the projects, prompting questions about their initial approval

By Matteo Civillini

The axing of Shell's carbon offsetting schemes linked to Chinese rice farming, announced by leading carbon credit standard Verra this week, has raised questions about the process used to verify the emissions reductions from such projects.

The activities were meant to slash climate-heating emissions of methane – a potent greenhouse gas – caused by the decomposition of plants in rice fields by changing irrigation methods. But, in a 17-month review, Verra found a string of failures in the projects' practices, resulting in the production of credits in excess of actual emission reductions.

Certification Integrity Concerns

- Verra's certification of Shell's carbon credits for rice farming in China has faced scrutiny, raising **doubts about the authenticity of emissions reductions**
- This situation emphasises the critical need for **stringent oversight** and **verification in credit issuance**

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123 : Reuters "Verra vows to turn over new leaf using AI and more credible methodology for carbon offsets", Verra "On Verra's Formal Review of Projects Implicated in Brazil's Operation Greenwashing"

124 Verra "Verra Issues Clarification to REDD Methodology"

125 Climate Change News "Verra axing of Shell's rice-farming carbon credits in China fuels integrity fears"

126 Carbon offset firm South Pole cuts ties with Zimbabwe forest project

In response to criticisms, Verra has taken the following measures[127]:

1. **Use of Artificial Intelligence (AI):** Verra is leveraging AI (e.g., machine learning algorithms) to enhance monitoring, develop robust assessment methodologies, which aims to increase transparency and engage stakeholders more effectively, ultimately rebuilding trust in its carbon credit systems.
2. **Adopted Proactive Measures:** Verra has evaluated its REDD+ projects for compliance with established standards, engaging stakeholders (e.g. open dialogues, public consultations) and considering the revocation of credits from non-compliant projects to reinforce accountability.
3. **Clarifying REDD+ Methods:** Verra has issued clarifications to improve the overall consistency of its REDD+ methodologies, actively involving stakeholder feedback to refine guidelines and ensure that the criteria used for emissions reductions are transparent and applicable.
4. **Conduct Formal Reviews:** Verra is committed to enhancing transparency through rigorous project assessments, conducting formal reviews via audits and third-party evaluations, and fostering stakeholder engagement to ensure that all projects comply with its stringent standards.

[127] These actions are not exhaustive but represent key initiatives that Verra has adopted and continues to implement to enhance its carbon credit methodologies and restore stakeholder trust

Appendix D. Carbon Offset Standards – Further Details

Exhibit 43: Summary of key requirements of assessed VCM standards

Selected Standards	Gold Standard[128]	Verra's VCS[129] [130]	GCC[131]	Social Carbon Standards[132]
Project Eligibility	Supports **various project types** like RE (e.g., solar power), energy efficiency (e.g., building retrofits), waste management and land use (e.g., reforestation)	Focused primarily on projects that demonstrate **measurable GHG reductions or carbon storage** (e.g., carbon offset projects in forestry or RE initiatives)	Eligible projects include RE-related and energy efficiency, with a **focus on sustainable development** (e.g., an energy efficient cookstove initiative)	Supports projects that **provide social, environmental, and economic benefits,** including RE and forest conservation (e.g., reforestation that creates jobs)
Methodology Requirements	Must meet **sustainability criteria** and **social**, **community benefits** (e.g., a methodology for a solar project must access local community benefits)	Requires approved **methodologies for quantification** (e.g., calculating GHG reductions from a wind farm, which details how reductions are measured over time)	Must demonstrate **additionality** and **co-benefits** (e.g., a hydro project that also improves local water quality), focusing on transparency	Requires showing **both social and environmental benefits** (e.g., a methodology for assessing community health impacts)
Validation and Verification	Involves a comprehensive process with **third-party validation and periodic checks** (e.g., wind energy	Requires **independent third-party validation** to confirm project design before implementation, with annual	Involves **third-party validation** and **regular verification** to ensure compliance with GCC standards (e.g., assessing	Requires **third-party validation**, with a **focus on social impacts** and community benefits (e.g., evaluating a

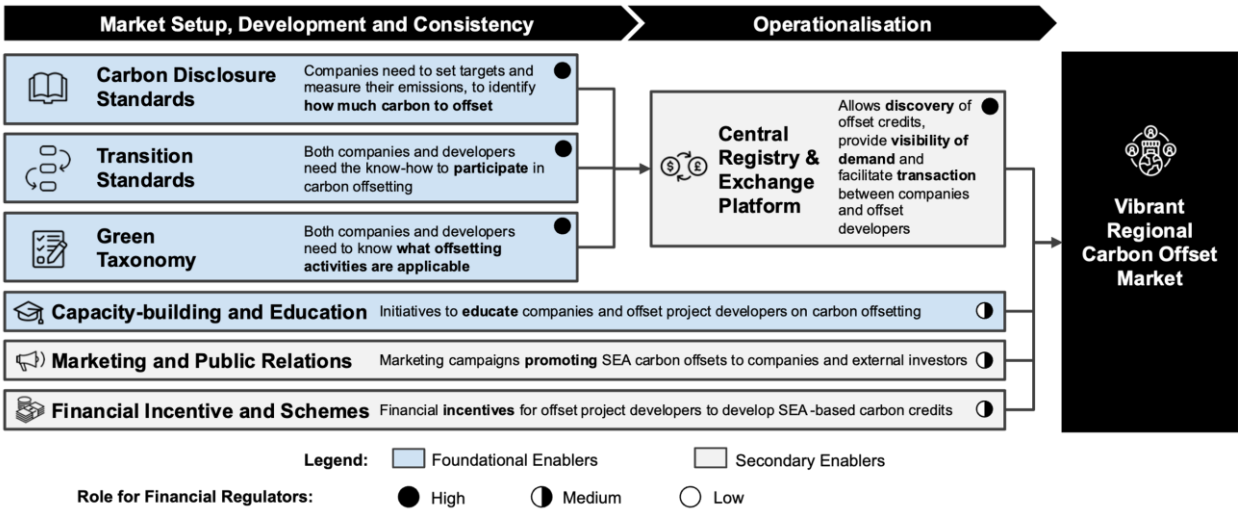
[128] Gold Standard
[129] Verified Carbon Standard
[130] Carbonibus "Verra VCS vs Gold Standard"
[131] Global Carbon Council
[132] Social Carbon

	project undergoes through assessment for compliance)	**verification** for compliance, such as for biogas projects	a solar project for compliance with GCC criteria)	wind farm's benefits to local communities)
Certification Process	Includes **rigorous validation** and **periodic verification** to maintain certification status (e.g., a biomass energy project has to undergo a reassessment every three years)	Follows a **streamlined** certification approach based on **adherence** to approved methodologies	Involves **initial assessment** and **periodic audits** to maintain status (e.g., an annual review for an energy efficiency project)	Includes **initial validation** and **ongoing reviews** (e.g., assessing a community-based conservation project regularly)
Monitoring and Reporting	**Bi-annual or annual monitoring** to assess performance such as reductions and social benefits from a community solar project	**Continuous** monitoring with annual performance reports (e.g. a landfill gas project must continuously track methane capture rates)	**Ongoing monitoring** and **annual reporting** of GHG reductions and co-benefits (e.g. reductions from an improved cookstove project)	**Requires monitoring** social and environmental impacts with **carbon reporting** (e.g. community benefits from a forest conservation project)
Registry System	Uses its **own registry** for tracking carbon credits and project details	Operates a **transparent registry** to prevent double counting	**Operates** a registry to track carbon credits and ensure transparency	**Maintains** a registry to track social impacts and project performance
Sustainable Development Contributions	Must contribute to at **least three UN SDGs,** such as providing clean energy access (SDG 7), promoting decent work (SDG 8), supporting climate action (SDG 13)	Encouraged to demonstrate social and environmental benefits but **not required** to meet UN SDGs, as the focus is **more on carbon reductions**	Must demonstrate **contribution to UN SDGs**, focusing on **community wellbeing** (e.g. an energy project that enhances local livelihoods)	Requires **alignment with UN SDGs,** emphasising **social benefits** and **community impact** (e.g. project on reforestation contributing to clean water

				access and job creation)
Stakeholder Consultations	**Mandatory engagement** with local stakeholders, recording feedback and concerns (e.g., community meetings on hydropower impacts on local fisheries)	Not explicitly required but projects are **encouraged** to consider local stakeholder interests (e.g., a solar farm may inform residents but is not required to gather feedback)	**Requires** stakeholder engagement to **identify community needs** before project initiation (e.g., consultations before a biomass project starts)	**Emphasizes community involvement** throughout the project lifecycle (e.g., involving local populations in planning a conservation initiative)
Impact Assessment	Requires a **thorough assessment** of ESG benefits before approval (e.g., job creation and air quality for a waste-to-energy project)	Focus on carbon quantification with **limited assessment** (e.g., a carbon offset project prioritising GHG reductions over social impacts)	**Comprehensive assessments** required (e.g., evaluating both carbon impacts and community health improvements)	Focuses on **assessing social impacts** (e.g., assessing job creation and local health benefits from a solar project)

Appendix E. Key Enablers[133] for a Vibrant Regional Carbon Market

Exhibit 44: Seven key enablers for the development of a regional carbon market, whereby four are foundational



[133] All foundational enablers also stimulate other green financing activities (e.g., green loans, etc.) and sustainable finance regulatory frameworks (e.g., green bond standards, etc.)

Appendix F. Relevant Stakeholders for a Vibrant Regional Carbon Market[134]

Exhibit 45: Relevant stakeholders to each key enabler identified in "Appendix E. Key Enablers for a Vibrant Regional Carbon Market" (Exhibit 44)

Relevant Stake-holders	Carbon Disclosure Standards	Transition Standards	Green Taxo-nomy	Capacity-Building and Education	Marketing and Public Relations	Financial Incentive and Schemes	Central Registry & Exchange Platform
Financial Regulators	To oversee the development, and enforce adoption of the developed guidelines			To oversee and lead through the education arm	To support the promotion of these efforts where necessary		To oversee and regulate market transactions
Offset Standard Providers	*n/a*	To set the offsetting standards	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*
NGOs / Private Sector	To provide industry input and consultation during the development phase of the enablers			*n/a*	*n/a*	*n/a*	*n/a*
External Advisors	To provide support to develop these enablers based on the direction of capital market regulators and government ministries						
External Verifiers / Validators	To validate the standards that have developed			*n/a*	*n/a*	*n/a*	*n/a*
Ministry of Finance	*n/a*	*n/a*	*n/a*	To support the promotion of these efforts where necessary		To oversee these initiatives	*n/a*
Ministry of Trade	*n/a*	*n/a*	*n/a*	To support the promotion of these efforts	To oversee these initiatives	*n/a*	*n/a*
Ministry of Environ-ment	*n/a*	To enforce the guidelines	*n/a*	To support the promotion of these efforts where necessary			*n/a*

[134] Illustrative roles and responsibilities; dependent on structures and mandates in respective territories

Appendix G. Overview of Key Requirements for Third-Party Verifiers[135] [136]

Exhibit 46: Key requirements that must be met by third-party verifiers to conduct validations and verifications

No.	Requirement	Description
1	Accreditation	Verifiers must be accredited by recognised bodies, such as those adhering to international standards like ISO 14065 (General principles and requirements for bodies validating and verifying environmental information). Accepted international standards for verifiers are dependent on the respective VCM standards.
2	Expertise and Competence	Verifiers should possess expertise relevant to the specific methodologies and technologies being assessed. This includes a deep understanding of the applicable standards (e.g., Gold Standard or CAR) and familiarity with local environmental conditions.
3	Independence	It is crucial that verifiers demonstrate independence from the project developers they assess to avoid conflicts of interest. This independence is regularly verified through checks by the certification body and can be conducted through a mix of annual surveillance audits, re-accreditation audits, and on-going monitoring based on any feedback, complaints, or identified irregularities.
4	Rigorous Verification Process	The verification process typically involves a thorough review of project documentation, site visits, and assessments against the criteria set forth by the respective standard. For instance, the Gold Standard requires verifiers to conduct validations and verifications in accordance with its Principles & Requirements
5	Ongoing Training and Development	Verifiers must engage in continuous professional development to stay updated on evolving methodologies and best practices in carbon accounting. The Gold Standard provides regular training for its approved validation / verification bodies (VVBs).
6	Quality Control Mechanisms	Established standards often include quality control mechanisms, such as oversight audits conducted by the governing bodies of the standards (e.g., Gold Standard Technical Advisory Committee) to ensure that verifiers maintain high-quality practices.
7	Documentation and Transparency	Verifiers are required to maintain comprehensive documentation of their verification processes and findings. This documentation should be accessible for review by

[135] Gold Standard

[136] Climate Action Reserve

		stakeholders, enhancing transparency in the verification process.
8	Reporting Requirements	After completing a verification, verifiers must provide a detailed report outlining their findings, including any non-conformities or areas for improvement identified during the assessment.

Appendix H. Linkage between this Study and Existing ACMF Initiatives

Exhibit 47: Linkage between this VCM study with ACMF's existing initiatives

ACMF Initiative	Link to VCM Study
Taxonomy	● Supports standardisation by aligning carbon credits to taxonomy-eligible projects, promoting credibility and transparency ● Aligns with the taxonomy by identifying criteria and attributes for credible carbon credits linked to sustainable activities (e.g., reforestation, renewable energy) ● Helps guide investments toward impactful projects, ensuring alignment with green objectives and reducing risks of greenwashing
Disclosure	● Promotes transparency by requiring companies to disclose how and why carbon credits are used (e.g., compliance vs voluntary offsetting), and how purchased offsets fit into their transition plans ● Supports alignment with ESG reporting standards ● Builds credibility by encouraging disclosure on carbon credits details such as project origins, verification standards, and double-counting safeguards
Transition	● Supports transition goals by promoting the integration of carbon credits into corporate strategies and sustainability commitments / plans as a supplementary decarbonisation tool ● Highlight co-benefits important to the ASEAN region, such as biodiversity conservation and socio-economic development, e.g. supporting a "just transition"

Glossary

Term	Definition
Credibility	Credibility in carbon markets is the confidence stakeholders have in the accuracy and reliability of carbon credits, based on transparent processes, robust verification, and adherence to established standards.
Double Counting	Double counting refers to the practice of counting the same emission reductions more than once, which undermines the integrity of carbon offset projects and market transactions. This can occur when multiple parties claim the same reduction or when credits are sold more than once.
Geographical Jurisdiction	Refers to the region where a carbon offset project is located and its emission reductions are credited, impacting the validity and acceptance of the credits based on local regulations. For instance, some carbon markets only recognise credits from certain regions to ensure alignment with regional climate goals and policies.
Integrity	In carbon markets, integrity refers to the adherence to rigorous standards and ethical practices in the creation and management of carbon credits. It ensures that credits genuinely represent real, additional, and verifiable emission reductions.
Internationally Transferred Mitigation Outcomes (ITMOs)	Carbon credits or emissions reductions that one country can transfer to another under the Paris Agreement's framework. They allow countries to use these credits to meet their climate targets, often through cross-border transactions.
Market-Based Mechanisms	In the context of climate policy, these are tools that use market principles to reduce greenhouse gas (GHG) emissions efficiently. Examples include cap-and-trade systems (e.g. The European Union Emissions Trading System [EU ETS]), carbon offsets (e.g. buying credits from a wind farm project) and carbon pricing (e.g. a carbon tax implemented in British Columbia, Canada).
Methodology	Specific, approved procedures and rules used to calculate and verify the amount of carbon emissions reduced or removed by a project. It provides a systematic approach to ensure accurate and credible measurement of emission reductions.
Monitoring	Refers to the tracking and measuring of a project's performance to ensure it meets emission reduction targets and adheres to standards.
Ownership	Refers to the legal rights to carbon credits, including their creation, transfer, and retirement, ensuring that credits are properly allocated and used.
Permanence	Permanence refers to the fact that the GHG emission reductions or removals from the mitigation activity shall not be reversible or, where there is a risk of reversal, there shall be measures in place to address those risks and compensate reversals.
Primary Market	Refers to the market where carbon credits are initially issued and sold directly by project developers to buyers. It involves the creation

	and first sale of credits, typically through direct transactions or auctions.
Purchase and Retire	Refers to the process in the VCM whereby a company buys carbon credits and then permanently removes them from circulation, ensuring they cannot be reused. This process determines the level of claims by showing how committed a company is to offsetting its remaining emissions after making progress on internal decarbonisation efforts. Under the VCMI Claims Code of Practice, a company can claim offsets equal to the carbon credits it has purchased and retired (e.g. if a company retires 1,000 credits in 2024, it can claim those 1,000 offsets for that year. Claims are limited to the credits retired within the specified period.
Retired	According to the IETA VCM Guidelines, 'retired' refers to the process of permanently removing carbon credits from circulation, so they can no longer be used for offsetting or trading. Once a credit is retired, it is effectively deactivated and cannot be reused, ensuring that the emission reductions it represents are counted only once. This process guarantees that the carbon offsets are truly contributing to the claimed environmental benefits.
Secondary Market	Refers to the trading of carbon credits after their initial issuance. Credits bought in the primary market can be resold or traded among various parties, often through exchanges or brokers.
Supporting the Transition	Refers to the actions and support aimed at accelerating the shift to low-carbon economies, including financial and technical aid for adopting clean technologies and achieving climate goals.
Transferability	Ability to buy, sell, or trade carbon credits between entities. It ensures that credits can be exchanged or moved from one account to another, maintaining their validity throughout the transaction.
Vintage	Refers to the specific year or period during which the carbon reductions were achieved or verified. It indicates the time frame when the emission reductions occurred and impacts the credit's relevance and validity.

Abbreviations

ACMF	ASEAN Capital Markets Forum
AFOLU	Agriculture, Forestry and Other Land Use
AI	Artificial Intelligence
ASEAN	Association of Southeast Asian Nations
BCX	Bursa Carbon Exchange
CAD Trust	Climate Action Data Trust
CAR	Climate Action Reserve
CARB	California Air Resources Board
CCP	VCMI's Claims Code of Practice
CCPs	ICVCM's Core Carbon Principles
CIX	Climate Impact X
COP29	2024 Conference of the Parties of the United Nations Framework Convention on Climate Change OR 2024 United Nations Climate Change Conference
CO_2	Carbon dioxide
ESG	Environment, Social and Governance
ETS	Emissions Trading Systems
EU	European Union
FPIC	Free, Prior, and Informed Consent
FSC™	Forest Stewardship Council
GCC	Global Carbon Council
GHG	Greenhouse gas
GIS	Geographic Information System
ICCs	International Carbon Credits
ICVCM	Integrity Council for the Voluntary Carbon Market
IETA	International Emissions Trading Association
IFM	Improved Forest Management
IFRS	International Financial Reporting Standards
IOSCO	International Organisation of Securities Commissions
ISO	International Organization for Standardization
ITMOs	Internationally Transferred Mitigation Outcomes
MAFF	Ministry of Agriculture, Forestry, and Fisheries
NDCs	Nationally Determined Contributions

NGOs	Non-Governmental Organisations
NZUs	New Zealand Units
RE	Renewable energy
REDD+	Reducing Emissions from Deforestation and Forest Degradation
SBTi	Science Based Targets initiative
T-VER (Program)	Thailand Voluntary Emission Reduction (Program)
UN SDGs	United Nations Sustainable Development Goals
VCM	Voluntary carbon market
VCMI	Voluntary Carbon Markets Integrity
VCS	Verra's Verified Carbon Standard
VVBs	Validation / Verification Bodies

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