



# What do “High Quality” Carbon Credits Signify and How do you Identify Them?

White paper written by [Brendan Player](#) and [McKenzie Zael](#), September 2024

The goal of this white paper is to discuss common criteria for high quality credits and how these parameters can be evaluated.

Here we highlight a few examples of the high-level criteria used to assess the quality of a carbon credit and showcase some of the benefits and challenges associated with different projects.

Carbon credits are frequently marketed as “high quality” to potential investors. What does this mean? The voluntary carbon market (VCM) could significantly help to mitigate climate change. To do so, credits must

- Account for permanence. This means they are functionally permanent within a 100-year timeframe.
- Represent actions that go above and beyond what otherwise would have occurred.
- At a minimum, cause no net harm to nearby communities.

Within the past few years, many articles have highlighted concerns over the VCM and the legitimacy of carbon credits used to offset emissions and meet climate action targets (Greenfield, 2023).

Without rigorous screening criteria, allegations of greenwashing and carbon piracy are some of the potential risks of project investments (McConnell et al., 2024). Despite these obstacles, the demand for high-quality carbon credits has only risen, particularly for hard-to-abate emissions, such as those from Scope 3. Scope 3 emissions are derived from sources within an organization’s supply chain but outside its direct control (Procton, 2024).

These circumstances highlight the need to mitigate for residual emissions to meet net zero goals. Without a regulated global rating system, investors must dig into the details of project documents or rely on third parties to summarize if their investments are subject to greater risk associated with greenwashing. Mounting market concerns have given rise to many rating organizations, guidance documents, and standards intended to help distinguish good and bad quality credits.



## **Credit type 1: Reductions**

Projects that decrease the emissions of an existing process result in reduction credits. Here are a couple of examples: developing renewable energy to decrease grid emissions intensities or using control-release fertilizer to decrease nitrous oxide emissions from agricultural field operations.

These credits help to fund practices that reduce the emissions of existing processes and can be an important incentivization tool for decarbonization. The challenge with these credits is that they are often the most impacted by “double counting”—the process of claiming climate-mitigation benefits more than once. How does that happen? Two organizations—one implementing it and another upstream or downstream of the process—both track and report the emissions reductions in their disclosures.

For example, an agricultural company reducing nitrous oxide emissions may capture these

reductions in their reporting. At the same time, consumers could claim the reduction in the emissions intensities of their products in their Scope 3 emissions. It is easy to double count climate mitigation from reductions, even inadvertently. If using reduction credits, investors must understand all the parties involved in the supply chain of the project developer and if these benefits are being claimed by others within their disclosures.

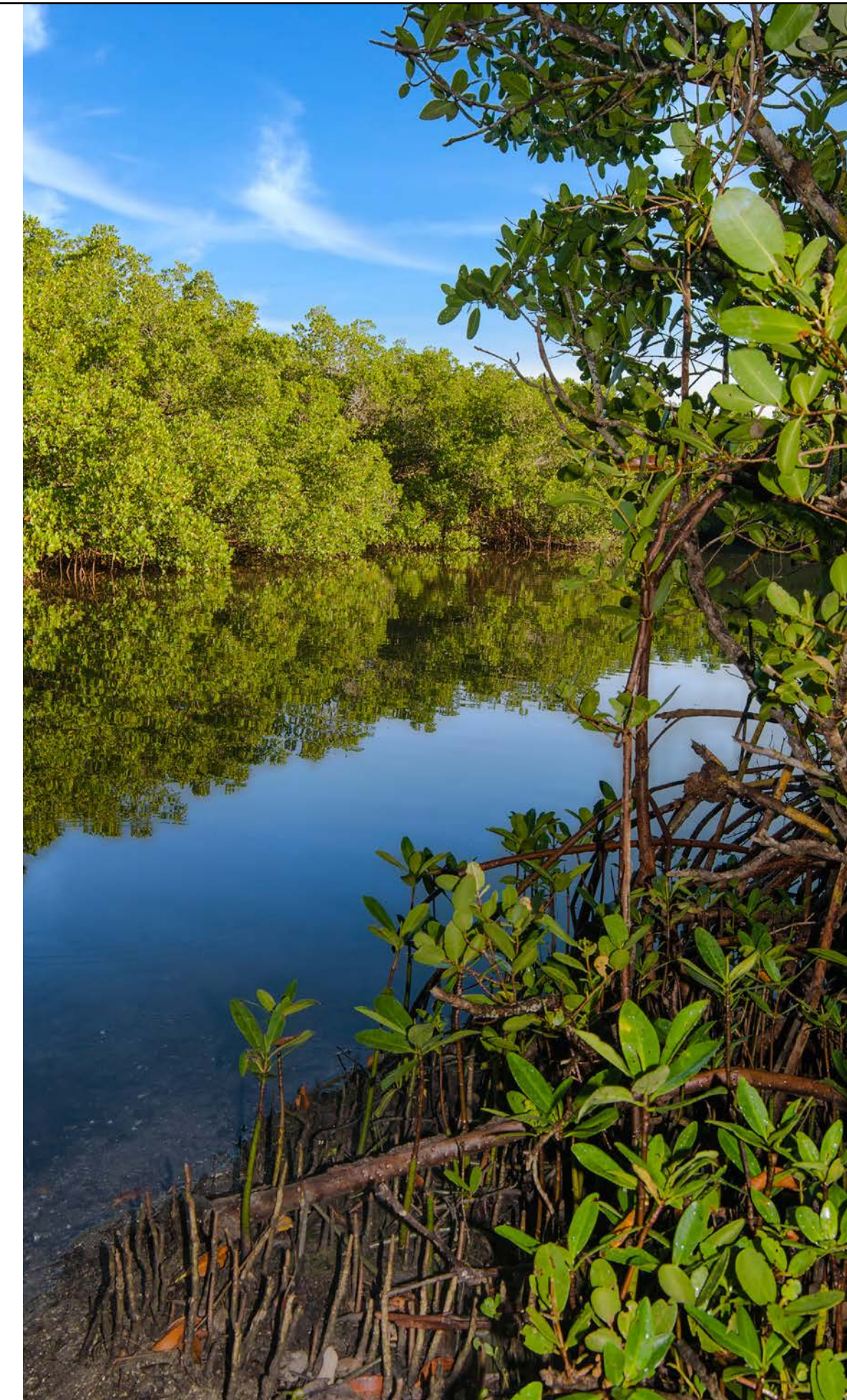
## **Credit type 2: Avoidance**

Avoidance credits are similar to—and often categorized as—reduction credits, but they have their own benefits and challenges. Avoidances rely on emissions that would have occurred rather than those of an existing process. Forest conservation is perhaps the most common example of avoidance credit. In this example, credit is based on the expected future loss of a forested area and the carbon within it, due to either planned or unplanned degradation or harvesting. In this instance, conservation measures are put in place to avoid these losses.

These credits are important to fund critical conservation measures and combat deforestation. However, they are subject to risk because they are based on anticipated future impacts.

Forecasted impacts are difficult to quantify and validate. Conservation-based projects may result in displacing a similar level of impact to a different area, which is difficult to track. For example, some articles claim avoidance projects are conserving forested areas that would have never been lost (McCoy et al., 2024). The recent inclusion of dynamic baselines in methodologies is helping to reduce the risk profile for avoidance credits. How? By tracking the degradation of the surrounding landscape throughout the project lifespan. This has the potential to create a more realistic look at the losses the project avoided.

The concept of avoidance credits is not to be confused with avoided emissions in the context of business’ greenhouse gas (GHG) disclosures. That is a different concept.



**Tidal wetland restoration can enhance carbon storage in plants and soils**

## Credit type 3: Removals

Removal credits are based on the capture and storage of carbon through either technology or nature. They are generally viewed as higher-quality credits. Here's a look at a couple of examples.

- **Technology:** It allows for the capture of carbon and injection into geologic formations or wells for long-term storage. This could constitute carbon capture and sequestration from an industrial process or direct air capture from the atmosphere. Other technological removals may be contained within products such as CO<sub>2</sub> injection in concrete.
- **Nature-based:** A nature-based example is afforestation or reforestation, where increasing the amount of forested area captures carbon and stores it in growing plants. These removals can include nearly every natural carbon sink, or a habitat that stores more carbon than it releases.

Technology-based removal credits are typically high volume; they also provide long-term and stable carbon storage. A drawback is that they often require large cost-intensive facilities and are only suitable under certain conditions.

Nature-based removal credits are often lower volume but can be associated with projects that generate a variety of other benefits. One example: tidal marsh restoration. It can increase the quantity of carbon being stored in plants and soils. It can also enhance coastal resilience, provide habitat, improve water quality, and uplift many other ecosystem services.

In contrast to these benefits, nature-based removals are also subject to greater risk of reversal than technology-based removals. Why is this? Because disease outbreaks, fires, storms, and other events can cause carbon stored within the system to be re-emitted to the atmosphere, called a reversal. Thinking about investing in removal credits? Be sure that

- You have a detailed understanding of the impacts of project development
- You have reviewed and understand the project risk analyses
- You know the methods that have been implemented to mitigate these risks



## What is permanence—and why does it matter?

We measure emissions and the credits used to offset them in carbon dioxide equivalent (CO<sub>2</sub>e). This metric represents the climate impact measured on a 100-year time horizon from the emissions being produced or removed. For a credit to be equal to the emissions it is offsetting on a one-to-one ratio, the credit must be functionally permanent within 100 years.

This proves challenging in the case of removal projects where the minimum project lifespan is often 20 to 40 years. Registries, depending on the method used, will typically account for this permanence in two ways:

1. By using a combination of source-specific restrictions. For example, they will not include the credit from a specific aspect of the process if it is not anticipated to be permanent at a 100-year time horizon.
2. Through credit withholding in buffer accounts. These are meant to mitigate for losses both during and after the project has concluded.

However, some crediting mechanisms do not account for permanence on sufficient time horizons, which opens investors to greenwashing.

An option to the standard 100-year requirement is discounting the conversion of CO<sub>2</sub>e to carbon credit yields. This involves issuing a lesser quantity of credit based on the actual permanence of the benefits from a project. Such a process would be an additional deduction to those already required by a registry. This would give value to shorter-term climate mitigation measures without greenwashing. It is not a common practice on the VCM today. Potential investors should be aware of risks associated with permanence and the mitigation measures put in place by programs before purchasing credits.

## What is additionality?

Additionality is best defined as a metric for assessing if activities used to generate carbon credit would have occurred in the absence of crediting. This is to restrict credit generation on the VCM to actions that were voluntary in nature. It helps direct carbon financing to projects that need funding.

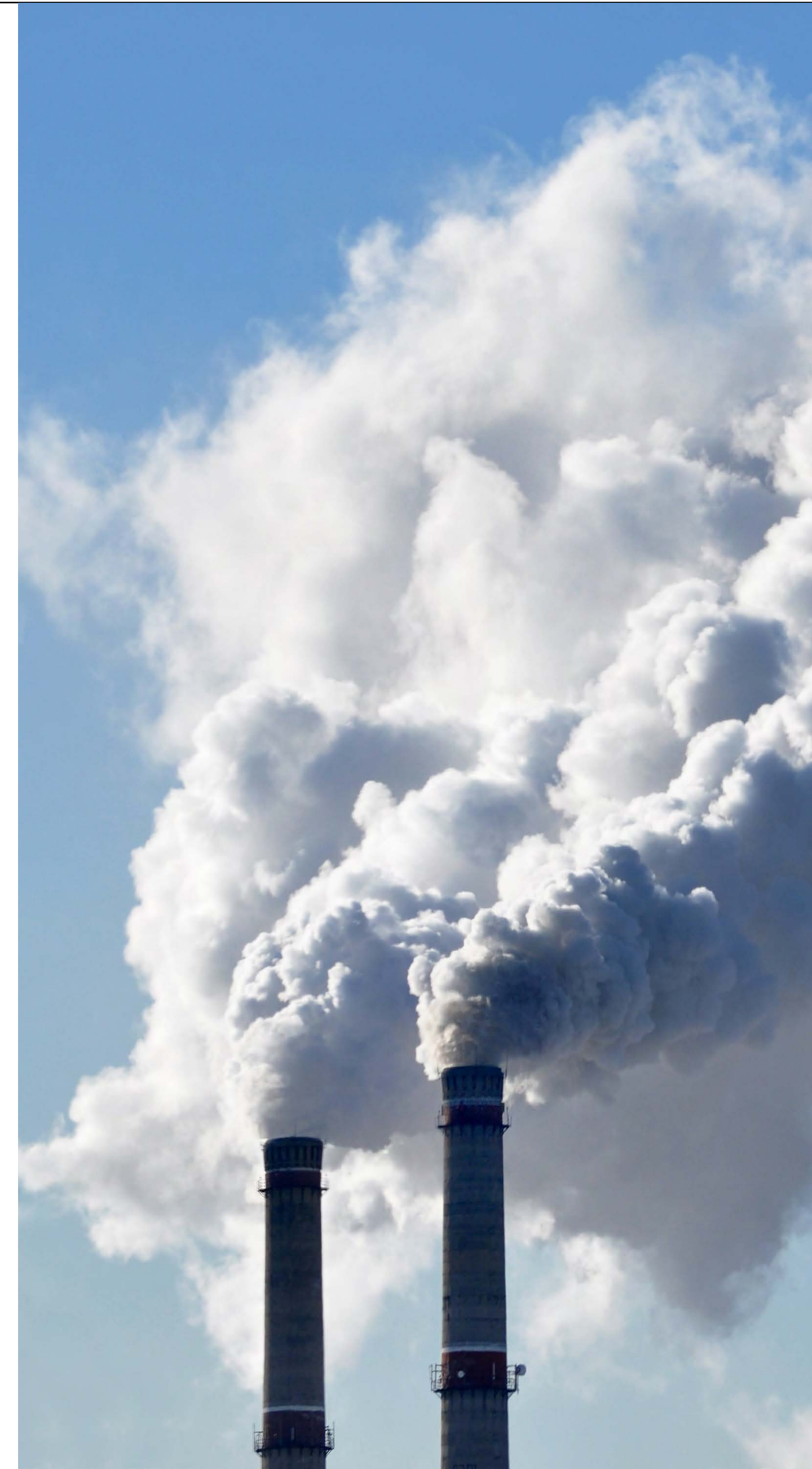
In theory, this expands the extent of global climate action. How so? By providing credit financing to projects that require it while still allowing projects to take place that are a component of regulation or generate sufficient value outside of the VCM. Although certified carbon credits are additional by registry definitions, it is important to understand the basis of these claims to support voluntary climate action and assess credit quality.

## Ex post and ex ante issuance

Ex post—or “after the fact”—is the VCM’s most common type of carbon credit. This indicates the credits are from climate mitigation that has been observed through monitoring. In other words, the credit yield is based on reductions, avoidances, or removals that have been generated to date. Most carbon crediting programs issue credits based on monitored data; they are ex post. and assigned vintages based on the date of issuance.

In contrast, ex-ante issuance— meaning “from before”—represents climate mitigation that is predicted to occur. This type of credit is based on the anticipated benefits of a project. Registries issuing these credits sometimes have programs in place to convert the credits to ex post after monitoring the benefits while other programs operate on a purely ex-ante system.

An ex-post credit is more likely to be real and verifiable. It is, therefore, subject to less risk. Ex ante can provide a quicker return on investment for developers and, in some cases, upfront financing for projects. If choosing to invest in ex-ante issued credits, it is important for investors to understand how projections were developed. It’s also key to include risk language that protects organizations from greenwashing in the event projects don’t achieve the anticipated climate change mitigation.



## What are the co-benefits from carbon credit projects?

Carbon credit projects can also impact nature and communities through their development and operation. Here are some things that can create positive or negative impacts:

- Land ownership and status prior to project implementation
- The surrounding community's reliance on the area and involvement in the project
- Restrictions on access
- Changes to habitat and function

For example, a project that restricts access to an area that the local community relies on for subsistence or cultural practices would have a negative community impact even if carbon credits were generated.

By contrast, a project that improves ecosystem services (clean air, clean water, habitat, etc.) could provide value to a community while also enhancing nature. Benefits might include recreation, education, and tourism. Some registries require that projects show such community benefits. Other registries provide guidance on community engagement and no net harm and instead address community benefits under separate certification programs. Examples include Verra's Climate, Community, and Biodiversity Standard or Sustainable Development Verified Impact Standard.



## A look inside the rating systems

Investors can evaluate carbon projects as a due diligence exercise. Or they can rely on third parties to assess the quality of credits. If relying on these separate rating systems, it is important to understand how quality is being assessed and if it aligns with the concerns of investors and their stakeholders. These programs can focus on the registries and methodologies used to issue credit or the projects and resulting credit.

Registry and methodology rating systems or organizations focus on the programs that issue the credit. The International Carbon Reduction and Offset Alliance (ICROA) is one of those organizations. Since its founding in 2008, ICROA and its Code of Best Practice has been used to endorse registries whose standards align with the goals outlined in the Paris Agreement (ICROA, 2024). It assesses registries to see if they have frameworks in place to support transactions that are real, measurable, permanent, additional, independently verified, and unique. Despite this endorsement, many registries have been accused of allowing “bad projects” to be credited with articles claiming that more rigorous standards are needed (Climate Change Advisory Group, 2024).

The Integrity Council for the Voluntary Carbon Market (ICVCM) and its 10 Core Carbon Principals (CCP) emerged in 2021. It has a similar goal of assessing if registries and their methodologies align with best practices (ICVCM, 2024). The ICVCM differs from ICROA in that its assessment and endorsement is focused on not only the registry but is also specific to the methodologies the registries approve for use. These programs can provide a high-level indication of credit quality based on the registry and methods used by a project. Since these are not specific to each project, additional due diligence should take place prior to investment.

Another example is the Carbon Credit Quality Initiative (CCQI). It provides ratings similar in scope to the ICVCM, though its assessment considers some project-specific context (CCQI, 2022). In addition to considering the registry and project type, the program also considers where projects are implemented. This assessment rates project types rather than specific registered projects. It is based on 7 objectives containing a total of 19 assessment criteria. Using a rating organization such as CCQI can provide investors with the means of assessing the quality of projects based on categorical criteria combinations (registry, method, location, etc.). However, it does not provide assessments specific to individual projects and their credits. This would appear to imply that there is risk associated with mischaracterizing a project’s credits based on categorical context rather than project-specific actions and documentation.

Other rating systems are more specific to individual projects. Some organizations use project-specific data to provide assessments. These types of services can facilitate more informed investments but require direct recurring project developer engagement. Assessment frameworks used by these organizations vary but generally include common quality criteria addressed previously in this document. Using the services of these organizations can provide a more project-specific indication of credit quality. Some of these organizations double as carbon brokers and provide quality ratings for their own portfolio of credits for sale. It is always wise for investors to complete independent due diligence on carbon credits before purchase.



## What is the path forward?

Rating systems vary in how they distinguish credit quality. But high-quality carbon credits generally represent benefits from climate mitigation that are “measured, reported, verified, and correctly accounted for.” They also yield “results that are demonstrably additional to what would otherwise have occurred, have low risk of reversal, and avoid negative impacts on people and the environment” (Axelsson et al., 2024). Investment in these benefits allow organizations to offset their residual emissions in a scientifically valid and environmentally and socially conscious way.

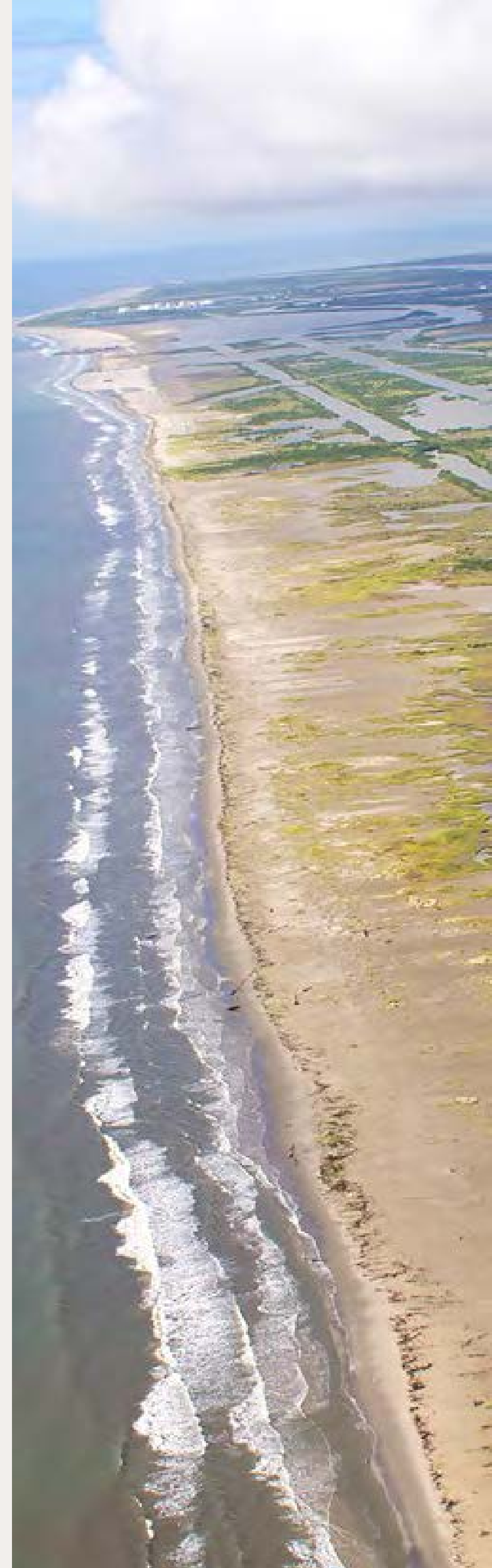
Carbon credit investors looking to rely in part on third parties for due diligence can use programs whose assessment criteria vary in detail from the registry and method levels to the project and credit-specific levels. In all cases, it is important to understand the benefits and risks of different types of credits and the criteria (e.g., additionality, permanence, co-benefits) that can influence

their quality. These organizations and programs provide useful information for assessing credit quality. It’s still a good idea to seek out independent due diligence before purchasing carbon credits.

The final option for acquiring high-quality credit is direct project development. This can take place either within or outside an investor’s land portfolio. This allows for greater control and transparency over the projects and helps to secure credit supply and quality. Through direct project investments, developers can insulate themselves from supply limitations, rising credit prices, and other factors of concern. This process requires finding opportunities and prioritizing investments, before engaging in design, implementation, registering, monitoring, and crediting.

## Citations

- ACR. (2024). Validation and Verification. American Carbon Registry (ACR) at Winrock International. <https://acrcarbon.org/acr-program/validation-and-verification/>
- Axelsson, K., A. Wagner, I. Johnstone, M. Allen, B. Caldecott, N. Eyre, S. Fankhauser, T. Hale, C. Hepburn, C. Hickey, R. Khosla, S. Lezak, E. Larson, Y. Malhi, N. Seddon, A. Smith, S. Smith. (2024, February). Oxford Principles for Net Zero Aligned Carbon Offsetting (revised 2024). Oxford: Smith School of Enterprise and the Environment, University of Oxford. <https://www.smithschool.ox.ac.uk/sites/default/files/2024-02/Oxford-Principles-for-Net-Zero-Aligned-Carbon-Offsetting-revised-2024.pdf>
- CAR. (2024). Verification Body Requirements. Climate Action Reserve (CAR). <https://www.climateactionreserve.org/how/verification/how-to-become-a-verifier/>
- CCQI. (2022, May 31). Methodology for assessing the quality of carbon credits. Carbon Credit Quality Initiative. [https://carboncreditquality.org/resources\\_methodology.html](https://carboncreditquality.org/resources_methodology.html)
- Climate Crisis Advisory Group (CCAG). (2024, June 26). Climate Crisis Advisory Group calls for robust scientific standards and transparency to unlock potential of the voluntary carbon market. CCAG. <https://www.ccag.earth/news/ccag-calls-for-robust-scientific-standards-transparency-to-unlock-potential-of-the-voluntary-carbon-market>
- Gold Standard. (2021, January 14). Validation/ Verification Body Requirements. Gold Standard for the Global Goals. [https://globalgoals.goldstandard.org/standards/109\\_V2.0\\_PAR\\_Validation-Verification-Body-Requirements.pdf](https://globalgoals.goldstandard.org/standards/109_V2.0_PAR_Validation-Verification-Body-Requirements.pdf)
- Greenfield, P. (2023, January 18). Revealed: more than 90% of rainforest carbon offsets by biggest certifier are worthless, analysis shows. The Guardian. <https://www.theguardian.com/environment/2023/jan/18/revealed-forest-carbon-offsets-biggest-provider-worthless-verra-aoe>
- ICVCM. (2024, May 16). Core Carbon Principles Assessment Framework and Assessment Procedure. Integrity Council for the Voluntary Carbon Market. <https://icvcm.org/assessment-framework/>
- ICROA. (2024, February). ICROA Code of Best Practice version 2.5. International Carbon Reduction and Offset Alliance. [https://icroa.org/wp-content/uploads/2024/02/ICROA\\_Code\\_Best\\_Practice\\_v2.5.pdf](https://icroa.org/wp-content/uploads/2024/02/ICROA_Code_Best_Practice_v2.5.pdf)
- McConnell, C., N. Maina, and S. Woolfrey. (2024, May 15). Carbon Offset Deals and the Risks of “Green Grabbing”. International Institute for Sustainable Development. <https://www.iisd.org/articles/insight/carbon-offset-deals-risks-green-grabbing>
- McCoy, T., J. Ledur, and M. Dias. (2024, July 24). How ‘carbon cowboys’ are cashing in on protected Amazon forest. The Washington Post. <https://www.washingtonpost.com/world/interactive/2024/brazil-amazon-carbon-credit-offsets/>
- Procton, A. (2024). State of the Voluntary Carbon Market 2024: On the Path to Maturity. Ecosystem Marketplace. <https://www.forest-trends.org/publications/state-of-the-voluntary-carbon-market-2024/>
- Verra. (2024). Validation and Verification: For the VCS Program. Verra. <https://verra.org/validation-verification/#for-the-vcs-program>



## Additional Resources

[Nature-based Solutions](#)

[Nature-based Carbon Solutions](#)

[Climate Solutions](#)

[ESG Advisory Services](#)