

Kita

We Insure
Carbon

Buffers & Insurance in the Voluntary Carbon Market

Buffers & Insurance in the Voluntary Carbon Market

— Key Points

1

Buffers were created in the Voluntary Carbon Market (VCM) as an inbuilt insurance mechanism to ensure integrity of a Carbon Standard. Buffers are meant to protect the buyers of carbon credits, primarily against reversal risk.

2

As the VCM evolves, buffers are evolving as well – from existing buffers considering how to incorporate new risk mitigation mechanisms and MRV solutions, to new buffers addressing the challenge of getting to critical scale and building market confidence.

3

New high-durability carbon removal solutions are yet to have buffers which can provide high-durability equivalents, thus creating a challenge when trying to provide comfort to their buyers in terms of managing reversal risk.

4

The insurance industry* exists both as a safety net when things go wrong and to outline paths to scale via proactive risk management. Via working in partnership with Carbon Standards, carbon insurance can support resilience and build trust in the integrity of the buffers.

5

As the VCM evolves, there is potential for insurance and buffers to interlink more deeply. For example, bringing the insurance industry's long history of risk management and portfolio construction to aid with the 'fungibility' challenge of managing reversals with like-for-like carbon credit replacements.

* Please note that in this report we use the term "insurance industry" and "insurer" and "insurance company" as a catch-all, however we are referring to both insurance companies and reinsurance companies.

Buffers & Insurance in the Voluntary Carbon Market

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Buffers & Insurance in the Voluntary Carbon Market

Introduction (01)

Buffers within the Voluntary Carbon Market (VCM) are a frequent conversation topic with sellers and buyers of carbon alike. Commentary ranges from confusion as to the function of a buffer, to frustration as to the level of contribution from project developers, to appreciation for an inbuilt risk management mechanism that is core to the functioning of the VCM.

Managing risk is what the insurance industry does, with experience built over centuries. Overlap between how buffers and insurance function – i.e. risk management tools that take an upfront ‘premium’ to enable protection in the event of a loss – has not gone unnoticed in VCM commentary.

Insurance for the VCM has historically been sparse but, as insurance industry engagement rises, there is potential for collaboration between buffers and insurance to meet the evolving needs of the VCM.

As the carbon insurance specialist, Kita witnesses these conversations firsthand.

Thus, we are delighted to be releasing this report, examining:

1. how existing buffers have been structured to date
2. how the introduction of insurance could support Carbon Standards in their management of buffers
3. nuances of insurance across types of buffers, namely:
 - a. existing buffers for enhancing financial resilience and portfolio management
 - b. new buffers for managing near-term liquidity risk and building market confidence
 - c. high-durability carbon removal solutions without existing buffer support mechanisms, and with ‘like-for-like’ durability replacement supply challenges
4. how the insurance industry could over time collaborate with Carbon Standards to evolve and strengthen buffer mechanisms

Buffers & Insurance in the Voluntary Carbon Market

Introduction (02)



One point to make clear – the intent of this report is not to imply that the insurance industry should be a carbon standard or eradicate such existing standards and/or other risk and quality controls existing within the VCM today.

Instead, we believe the insurance industry's unique risk management expertise can bring a stamp of confidence to enhance existing VCM risk mechanisms.

In this way Kita believes insurance can play a hugely supportive role in enabling VCM buffers to demonstrate integrity, respond quickly as risks evolve, and increase liquidity of high-quality carbon projects to meet buyer and seller demand.

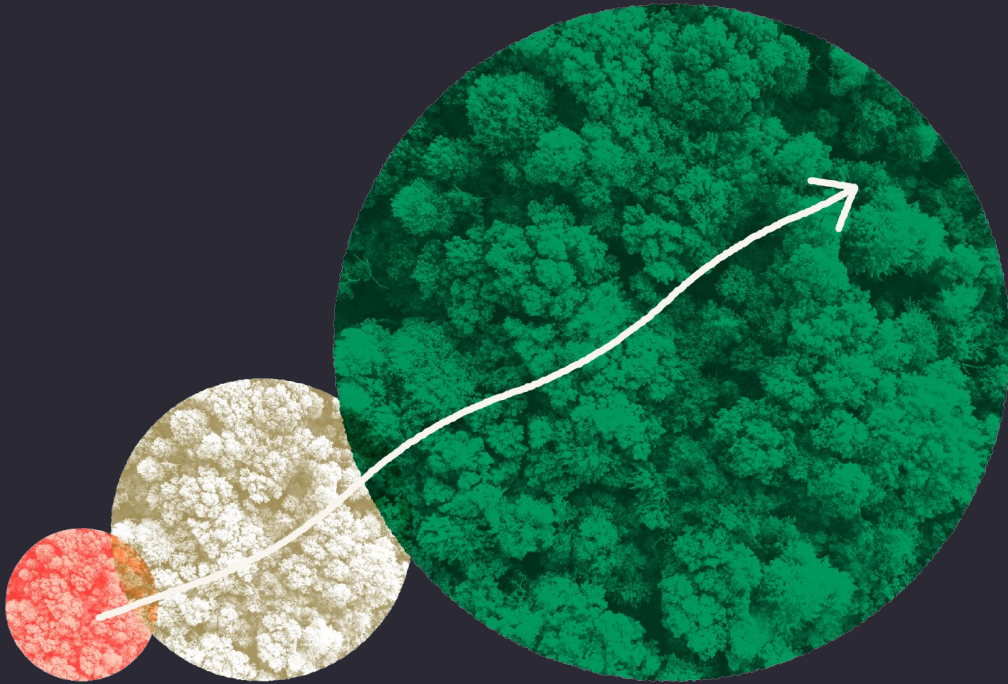
Read on for more details, and please get in touch if you would like to discuss further.

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“The intended purpose of a buffer pool is to act as a safeguard to ensure the integrity of previously issued credits. In simple terms, the buffer pool can be thought of as similar to an insurance policy that seeks to ensure that each carbon credit will deliver 1 ton of CO₂ emissions removals or avoidance, even if some carbon stocks are unexpectedly lost.”

[Sylvera: “Guide to Carbon Credit Buffer Pool”, Dec 2022](#)

Buffers in the Voluntary Carbon Market

Below we cover key aspects of buffers – what they are; different buffers that exist today; how they function; buffers that allow for insurance; how buffers account for reversals; and pros and cons of buffers as a risk mitigation measure for the VCM.

What is a buffer?

A core tenet of the carbon markets is ‘permanence’ – once carbon* has been removed/avoided/reduced from the atmosphere, the carbon should remain as such for as long as possible.

Different forms of carbon projects have different levels of permanence. For example, nature-based solutions are inherently exposed to natural catastrophes such as fire, which can cause ‘reversal’ and emit carbon back into the atmosphere.

A buffer is a central pool of carbon credits to which each project developer is required to individually contribute, and these credits are not allowed to be sold. Carbon Standards created buffers as an inbuilt insurance mechanism, to ensure integrity of the carbon scheme regarding permanence. Buffers are meant to protect the buyers of carbon credits, primarily against reversal risk.

Which Carbon Standards have buffer mechanisms?

The majority of Carbon Standards have buffer mechanisms in place. Please see descriptions of buffer mechanisms for Verra, Gold Standard, American Carbon Registry, Climate Action Reserve, Plan Vivo and The UK Woodland Carbon Code in the Appendix.

As an example, Verra describes its buffer for AFOLU projects as follows:

“To preserve the environmental integrity of VCUs issued from AFOLU projects, Verra manages a pooled buffer account. Every AFOLU project is required to deposit a risk-adjusted percentage of the emission reductions and removals achieved into the pool which is managed by Verra. If and as reversals occur in any single project in the system, the carbon losses are covered through the cancellation of an equivalent number of buffer credits from the buffer pool.”
verra.org

*We use the term ‘carbon’ colloquially throughout this report. Please note that by ‘carbon’ we mean carbon dioxide equivalent (CO₂e), with 1 carbon credit equating to 1 tonne of CO₂e that has been removed/avoided/reduced from the atmosphere.

How do buffers work?

A — From the Carbon Standard Perspective

Buffers are managed by a Carbon Standard. Carbon Standards have developed risk adjustment mechanisms, to assess carbon projects. Assessments include factors such as project-level risks (e.g., financial viability; project management; length of project); external risks (e.g., regional governance and law; business interruption; community engagement); and natural catastrophe risks (e.g., weather events linked to climate change impacts). Based on this assessment, each carbon project will contribute a predefined amount of carbon credits into the central pool (the ‘buffer’).

This could be a flat percentage or vary per project. For example:

20% flat contribution for Gold Standard and The Woodland Carbon Code.

Non-permanence risk analysis for Verra and American Carbon Registry where the output is a percentage. The percentage is multiplied against the credits issued by the project, with the resulting number entering the buffer pool. Ranges here can be between 10-25%.

Where a risk adjusted basis is used to determine buffer pool contributions, the contributions of a specific project can increase or decrease over time based on specific risks, and mitigation responses to those risks, seen during monitoring periods.

It is important to understand that this means carbon projects cannot sell 100% of their carbon credits.

That said, not every reversal leads to a cancellation of credits from the buffer pool. Project contributions are considered on a net basis during each verification point. If at verification the project's overall removal/avoidance/reduction of carbon makes up for and exceeds the amount of carbon lost during that period, the project has not suffered a net loss/reversal and therefore the buffer is not required.

It is only when there is a net loss, that credits will be cancelled, with the goal of maintaining integrity for the credits that have been sold and/or retired.

Carbon sellers who perform well may also have potential to gain back credits from the buffer (see Carbon Seller section below).

How do buffers work?

B — From the Carbon Buyer Perspective

Buffers are intended to protect carbon buyers against reversal. Given the complexity of different buffer mechanisms across different Carbon Standards, buffers are frequently an area of confusion for buyers, both in terms of exactly how they are protected and whether the buffers can be trusted to cover reversals in the event of an outlier level of loss.

For example, articles about wildfires in California in Summer 2022 depleting the buffer reserves of the California carbon market^{*}, based on analysis from Carbon Plan^{**}, highlighted these concerns. Buyers handle the risk of reversal, and uncertainty or confusion about buffers, in various ways.

One method is overbuying as a form of inbuilt insurance mechanism. For example, if a buyer needs 100 carbon credits, they might buy 120 to be safe.

If they have excess credits, they will often aim to roll over these credits to the following year's retirement. If they receive fewer credits than expected, they may buy additional 'top up' credits to make up the loss.

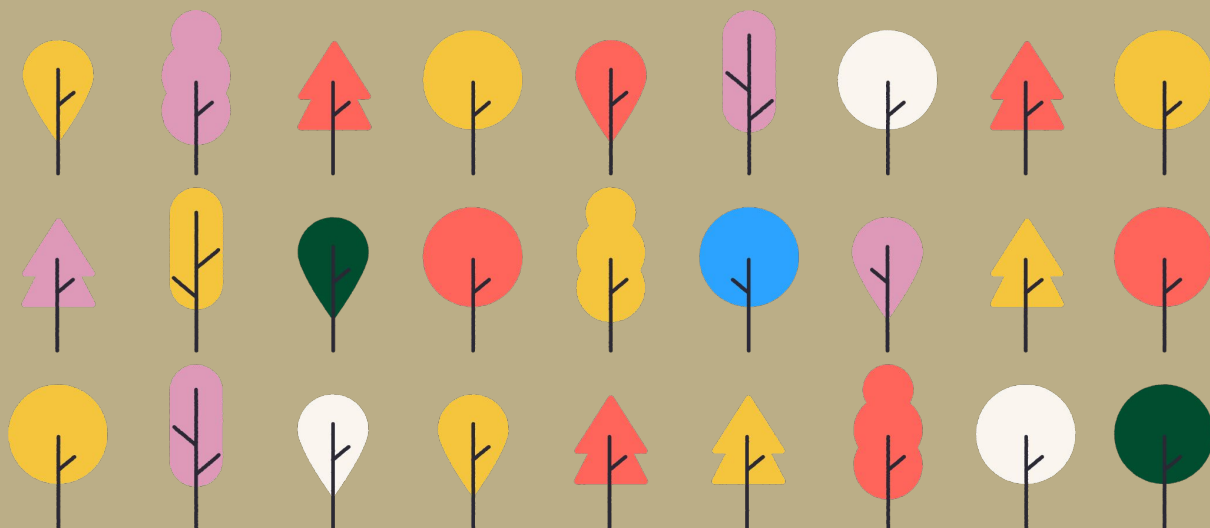
One challenge over-buying brings is locking up excess capital that could otherwise be allocated elsewhere. This is a way in which buying an insurance policy from an insurance company can be a cost-effective option as the insurance policy will likely be less than this form of self-insurance. In addition, via involving a credit-worthy counterparty (the insurance company), there is higher potential for preferable financing terms.

Note that buffers cover ex-post credits - i.e., where the carbon has already been captured. Forward purchases for 'pending' credits are not always covered by Carbon Standard buffers.

To discuss Kita's Carbon Purchase Protection Cover for forward-purchased carbon credits, protecting against delivery risk, please get in touch at info@kita.earth.

^{*}[Wildfires are destroying California's forest carbon credit reserves, study says | Reuters](#)

^{**}[Carbon offsets burning – CarbonPlan](#)



“From a buyer’s perspective, credits retired from the buffer pool on their behalf to compensate for a reversal may also cause concern given the lack of transparency on these credits. For a reversal that exceeds a project’s buffer pool contribution to-date and must draw on additional credits from a Standard Body-wide buffer pool, there is no consideration of the quality of the credits used to compensate.

Furthermore, buyers who are driven by regimes such as CORSIA may want to ensure their credits are from the same vintage or sector, which may not necessarily be the case for most buffer pool reversal protocols.”

BeZero: “Deep diving into buffer pools”

How do buffers work?

C – From the Carbon Seller* Perspective

Carbon sellers are required to place a pre-agreed percentage of their overall carbon credits into the buffer pool that corresponds with their project's selected Carbon Standard. As noted above, the level of this percentage varies per Carbon Standard. Contribution of credits to the buffer pool diminishes potential return for carbon sellers, which can be challenging in a market where margins can already be constrained. This makes the percentage of carbon credits required by a given Carbon Standard a point of potential contention. However, when this percentage is calculated on a risk adjusted basis, there are also strong incentives for effective risk management of the project.

If the carbon seller suffers a reversal, leading to a cancellation of carbon credits in the buffer pool, their liability to 'make good' will depend on various factors:

- Whether the loss was avoidable (e.g. negligence) vs unavoidable (e.g. wildfire).
- The specific rules of the Carbon Standard in question regarding potential responses, including reducing future sales of credits according to level of loss; cancelling unsold credits; purchasing 'replacement credits' from another project; providing financial payment in lieu.

On the more positive side, if a project consistently performs well, some Carbon Standards allow a small percentage of the project's carbon credits to be returned to the project for sale.

Note that for sellers considering forward sales of 'pending' carbon credits, these credits are not always covered by the buffer and thus buyers taking on this risk may have concerns.

To discuss Kita's Carbon Purchase Protection Cover for forward-purchased carbon credits, protecting against delivery risk, please get in touch at info@kita.earth.

*We have used the term "carbon seller" here for ease. However, other terms such as project developer, project proponent, or carbon rights holder might also be used in the VCM.

How do buffers account for reversals?

While buffers have some similarities to insurance, they are not insurance policies and do not 'pay claims'. Instead, as noted previously, a reversal can result in a cancellation of credits from the buffer pool.

We consider an example below:

1 A buyer purchases 10,000 forestry credits.

2 The buyer retires the credits.

3 A wildfire significantly damages 15% of the forestry project. This is a realised reversal risk.

4 The project developer calculates the extent of loss and alerts the Carbon Standard.

5 The Carbon Standard reviews the data and agrees the extent of reversal / appropriate actions.

6 As wildfire is an unavoidable risk and the project wasn't actively issuing credits, credits must be retired from the buffer pool

7 The Carbon Standard cancels an equivalent number of credits lost to the wildfire from the buffer pool.

It is important to note that neither the project developer nor the Carbon Standard is typically required to alert the carbon buyer of a reversal, or the resulting actions taken.

This means the carbon buyer is unlikely to know whether the reversal impacted their purchased credits or which credits were cancelled from the buffer pool.

Please see further details on this in our 'Pros and cons of existing buffers' section below.

Do any Carbon Standards incorporate insurance into their buffers?

American Carbon Registry and Climate Action Reserve both explicitly cover the potential for external insurance products to be incorporated into how buffer contributions are calculated. To the knowledge of the Kita team at the time of writing, insurance products for this purpose have not yet been used at scale.

American Carbon Registry:

“In lieu of making a Buffer Pool Contribution or Reserve Account Contribution, Project Proponents may propose an insurance product for ACR approval as a risk mitigation mechanism.”

ACR Standard V7.0*

Climate Action Reserve: “Currently, insurance must take the form of contributing CRTs to the Buffer Pool administered by the Reserve. In the future, the Reserve anticipates that other insurance instruments may be available to insure against reversals.”**

*[Americancarbonregistry.org](https://americancarbonregistry.org)

**[Climateactionreserve.org](https://climateactionreserve.org)

Common points of confusion on buffers

Buffers protect the buyers of carbon credits. Not the sellers.

Buffers don't "pay claims" in the way an insurance policy does because buffers are not insurance. Buffers protect against net loss of CO2e removals/avoidance/reductions. The carbon buyer is not necessarily informed when a reversal occurs, or when that reversal results in ensuing action with the buffer pool.

Not all buffers are created equal. Different Carbon Standards handle buffers in different ways – from assessing the percentage of carbon credits carbon sellers are required to input, to determining how compensation should be provided in case of reversal. This can mean that buffer pool contributions might not be wholly aligned to the risk profile of a selected carbon project.

When there is a reversal, who pays and how can depend on whether the reversal was from an avoidable (e.g. negligence) or unavoidable (e.g. wildfire) realised risk. Under some Carbon Standards, if a reversal was avoidable the project must reimburse the buffer for all credits cancelled.

Even if there has been an unavoidable reversal, if the loss amount exceeds the project's net buffer contributions to date, buffers may require reimbursement of a predetermined number of credits. For example, under the American Carbon Registry, 'the Project Proponent shall pay a "deductible" of 10% of the Lost Offset Amount' into the buffer.*

If there is a reversal, credits cancelled in the buffer pool do not necessarily come from the same project where the reversal occurred. However, some standards, such as the Climate Action Reserve, do make credits within the buffer pool 'functionally distinct' based on project types and aim to compensate projects with buffer credits which are from similar project types.**

"Pending" credits issued in forward sales are not always covered by the buffers. An example is the UK Woodland Carbon Code. "Pending Issuance Units" are not covered by the buffer until they convert into "Woodland Carbon Units". This means buyers and sellers alike are exposed to both delivery and reversal risk for a significant period.

* [American Carbon Registry Buffer Pool T&Cs](#)

** [Climate Action Reserve Climate Manual](#)

Pros and cons of existing buffers

Buffers are an integral part of the VCM's risk management systems. However, no risk management system is perfect, and a core tenet of risk management is ongoing improvement as new data and solutions come to market. Thus, like any other risk mitigation system, buffers have pros and cons, which are being brought to light as the VCM evolves.

There have not been many instances where the buffers have been drawn upon, which can be seen as both a pro (structured as a last line of defence) and a con (unclear as to their overall effectiveness when faced with a significant unexpected risk).

Pros

Key benefits of buffers relate to:

- Buffers exist to cover a key risk within the VCM – reversal risk leading to the macro risk that carbon finance is not leading to an overall net increase in the amount of carbon being removed/avoided/reduced from the atmosphere.
- Buffers have evolved in their approach to meet emerging market needs, and continue to do so today, with Carbon Standards updating buffer requirements and risk modelling to take into account scientific updates and improving MRV techniques.

Pros and cons of existing buffers (cont.)

Cons

Key concerns about buffers relate to:

Ability to withstand catastrophic loss:

as highlighted above, buffers are untested. This risk is exacerbated for some buffers (such as regional buffers) due to an undiversified nature of carbon credits within the buffer. The length of time between reassessment of risk adjusted contributions can be lengthy, arguably not capturing risk factors as they evolve in real time. With the rising impacts of climate change and the more frequent occurrence of natural disasters, the ability of buffers to withstand catastrophic loss may be increasingly tested.

'Over buffering' leading to reduced liquidity in the market:

via project developer contributions, as well as buyers and sellers holding back 'self buffers' to manage uncertainty risk. "Over-buffering" can also impact carbon projects with high durability.

The 'weakest link' risk:

the strength of the buffer is only as good as the credits within its pool. For example, inflated baselines could mean that losses aren't accounted for in a manner aligned to the true level of loss.

Onus on the project developer:

from high upfront contributions to liabilities to make good on losses. Buffers can contribute to an additional barrier to entry for project developers entering the space.

Lack of fungibility definitions regarding reversals:

in today's VCM, buyers often buy specific projects for their specific attributes – e.g. durability, additionality, co-benefits. Buffers don't always address reversals based on 'like-for-like' criteria, and in some Carbon Standards, project developers are allowed to make good reversals with credits from other projects that might not share these attributes.

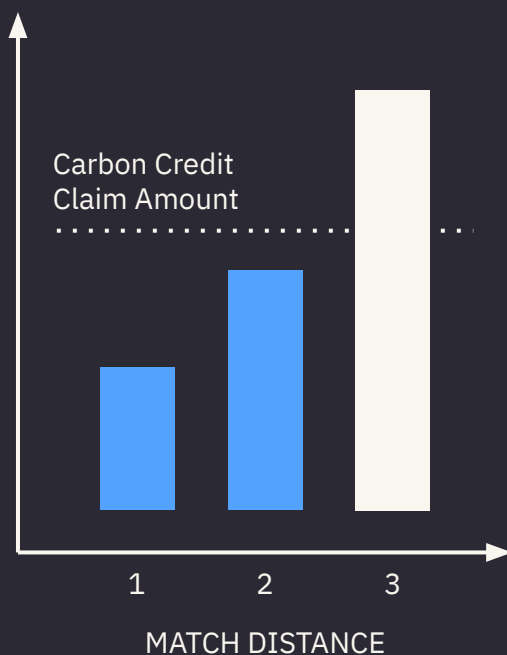
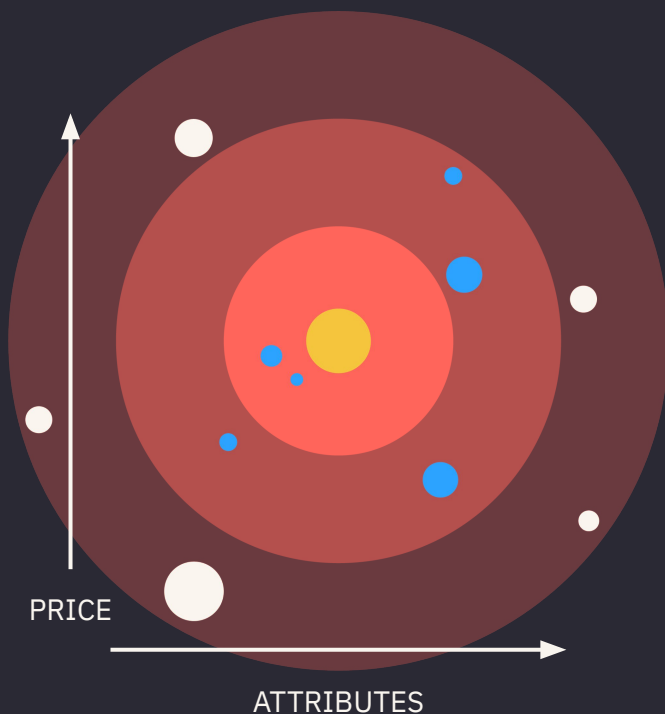
Suitability for future regulation:

carbon credits are not currently regulated financial instruments; they are assets on a balance sheet. To the extent that they become regulated financial instruments in the future, buffers will need to follow financial market regulations regarding management of financial instruments.

Technically, a ton of carbon is a ton of carbon. However, in practice, the value and price of carbon credits is influenced via various factors – additionality, permanence, leakage, co-benefits, alignment to wider corporate ESG strategies and messaging.

Thus, we enter the ‘fungibility dilemma’... what is a ‘like-for-like’ replacement?

To discuss with Kita, please get in touch.



- Lost credits
- Best match
- Available credits

Introducing insurance to support VCM buffers

There are various academic articles from the early 2000s highlighting considerations as to how permanence risk could be managed with insurance in the Clean Development Mechanism of the UNFCCC Kyoto Protocol, including:

- “Replacing carbon lost from forests: an assessment of insurance, reserves, and expiring credits”^{*}
- “Can Permanence Be Insured? Consideration of Some Technical and Practical Issues of Insuring Carbon Credits from Afforestation and Reforestation”^{**}
- “Alternative approaches for addressing non-permanence in carbon projects: an application to afforestation and reforestation under the Clean Development Mechanism”^{***}

In reading these papers from today’s perspective, it is interesting to note that this insurance did not become readily available, leading to the VCM buffers being developed without what could have been a core partner in risk mitigation from the outset.

As the VCM grows, the insurance industry is now taking note. Specialised insurance for the carbon markets (“carbon insurance”) is starting to enter the VCM and could play a role in addressing some of the challenges Carbon Standards face in terms of buffer mechanisms.

Ways in which carbon insurance could provide benefits to Carbon Standards and their buffers include utilising risk management experience honed over years of regulatory supervision to:

- Provide resilience in the face of unexpected loss
- Respond quickly as risks evolve, for example using the industry’s natural catastrophe risk modelling expertise to assess evolving climate change risks on nature-based solutions
- Help centralise costs around risk modelling, data analysis and MRV
- Increase liquidity via providing insurance policies that could feasibly reduce risk-assessed buffer contributions
- Provide a third-party assessment of fungibility between types of credits
- Serve as a financial backstop, helping build confidence with both sellers and buyers of carbon alike

That said, how insurance can be an enabling factor for Carbon Standard buffers varies based on the buffer in question. At Kita, we see three high-level categories here: (a) *existing buffers*; (b) *new buffers*; and (c) *low-supply, high-durability carbon removal solutions*.

^{*} tandfonline.com

^{**} papers.ssrn.com

^{***} researchgate.net

INSURANCE

What

A policy holder takes out an insurance contract with an insurance company to protect against specific risks under agreed terms.

How

Insurers (i) use data to assess a risk for its likelihood and severity; (ii) charge a price (aka premium) to manage that risk; (iii) combine premiums from all policyholders into a central pool; and (iv) pay claims from the central pool to individual policyholders when the risk occurs. Insurers specialise in portfolio management to guarantee the central pool can cover every claim (and they are heavily regulated to ensure no mistakes are made).

Why

Insurance companies specialise in pricing and managing risk, thus shifting an insurmountable risk for one into a manageable risk shared across many.

BUFFER

What

Carbon Standards maintain central buffers of carbon credits to ensure carbon buyers remain whole in the case of reversal.

How

Carbon Standards mandate carbon sellers contribute a 'premium' into the buffer in the form of a pre-agreed percentage of their carbon credits. Depending on the Carbon Standard, this percentage can be a flat fee, or risk-dependent per project. These credits can't be sold. If a project has a reversal – e.g. a forest fire – the buffer serves as a mechanism to ensure the carbon buyer still has a valid carbon credit. How this loss is made good varies per Carbon Standard and per reason for loss (avoidable vs unavoidable).

Why

Buffers are an 'inbuilt insurance mechanism' to ensure integrity of the Carbon Standard. Maintenance of, and trust in, the buffer is key to integrity of the Carbon Standard.

Risk management tools that take an upfront 'premium' to enable repayment in the event of a loss

Existing buffers face challenges around: ongoing risk management; incorporating evolving techniques and data around quantifying and monitoring carbon stores; liquidity and fungibility; and maintaining trust in a fast-evolving market.

Insurance could play a supportive role to existing buffers in three ways, with the aim of managing reversal risk and increasing trust in the integrity of the buffer:

1. Providing a protective wrapper around the buffer to increase financial resilience and a backstop in the case of catastrophic loss. In a market where the buffers have not yet been widely tested, protection from the insurance industry could be a beneficial tool in the instance of a large-scale loss event.

2. As noted above, some Carbon Standards already allow third-party insurance for project developers to enable lower 'premium' payments into the buffer pool. If insurance becomes more widely adopted, it could play a part in increasing market liquidity.

3. To the extent that management of the existing buffers become a financial or regulatory burden on Carbon Standards, insurers could utilise their long-term asset management experience, coupled with risk assessment and claims payment processes, to provide third-party administration of the buffers. Potential benefits here could be wider assessment and collaboration in terms of fungibility of carbon for paying 'insurance claims' from the buffer pools to enable more like-for-like replacements, and cost efficiencies in terms of MRV.

New buffers face a core challenge...how to build market confidence and gain market share, thus achieving the critical mass required to manage near-term liquidity risk and ensure a functioning buffer pool?



Depending on the structuring of the buffer, Kita's flagship insurance product – Carbon Purchase Protection Cover – has potential to help manage this near-term delivery risk and build market confidence by insuring buffers for their own delivery risk - i.e. the risk that they won't hit critical scale and/or could become insolvent in the timeframes required for their carbon stores to grow.

In this way, insurance can be a crucial builder of market trust by providing financial security for buyers and sellers taking a risk on a new buffer, as well as providing financial security for the buffer itself as it builds to scale.

If insurance is built into the buffer from the outset, then project developers likewise could achieve a benefit of risk-adjusted 'premium' contributions that could be managed on an annual basis and incorporate ongoing performance, thus rewarding those project developers who build and maintain higher integrity carbon projects.

Low-supply, high-durability carbon removal solutions

High-durability carbon removal (CDR) solutions face an interesting dilemma. Given the fact that many CDR companies are young and are in the process of scaling up their ability to remove carbon, many buyers purchase forward carbon credits from them, creating a near-term delivery risk and an unquantified future reversal risk.

When things are new, it is human nature to both perceive them as higher risk and to want to put them in frameworks of other more 'known' proxies. Therefore, CDR solutions are frequently asked about how buffers can manage reversal risk.

The challenge here of course is that no buffers exist currently for CDR solutions, and low supply of this market and differences between types of solutions (for example, biochar vs enhanced weathering vs direct air capture) create difficulties. Pioneering Carbon Standards such as [Puro.earth](#) have filled this gap, but a centralised buffer scheme remains elusive.

Insurance for high-durability CDR solutions to manage reversal risk thus becomes an interesting conversation, where insurance at its most basic form can provide a financial safeguard against the unexpected, thus building resilience for CDR companies and providing confidence to CDR buyers that their investment is secure.



“The GHG emission reductions or removals from the mitigation activity shall be permanent or, where there is a risk of reversal, there shall be measures in place to address those risks and compensate reversals.”

The Integrity Council for the Voluntary Carbon Market
“Core Carbon Principles”

Insurance & VCM buffers

Potential evolution



The insurance industry exists both as a safety net when things go wrong and to outline paths to scale via proactive risk management. The insurance industry, and particularly the innovative speciality insurance market at Lloyd's of London (where Kita is a coverholder), has a long history of figuring out the best way to insure new markets – from cyber risk to renewables.

By working in partnership with Carbon Standards, carbon insurance can, in the near-term, support buffers in increasing resilience, enabling optionality in protection against losses, and enhancing trust against quality and reversal concerns.

Moving forward, there are a myriad of ways in which the relationship between buffers and insurance could evolve further, from learning from similar insurance products available, to considering how 'government backed' schemes could operate, to considering insurance portfolio management arrangements.

Analogies to other insurance types

In a standard insurance policy, the insurance client (the 'insured') pays a premium to the insurance company and in return receives a contract outlining how the insurance company will provide compensation after a loss arising from a pre-agreed peril. An insurance company pools these premiums together, and when one insured makes a claim, that claim is paid out of the central pool, in-line with the terms of that insured's specific policy terms. The insured receives their claim payment and, broadly speaking, no further action is needed.

In buffers, this process is different. The payer of the 'premium' is the carbon seller. The beneficiary of the 'insurance' is the carbon buyer. In the instance of a reversal, the carbon seller may have an obligation to make good the loss and replenish the buffer (i.e. pay another premium), depending on the specific Carbon Standard and reasons for the loss (avoidable vs unavoidable).

An analogy is a surety bond, often used in the construction industry. In surety, there is a company doing the work (the 'principle', aka the builder constructing the building) and a company benefiting (the owner/financier of the building). The principle pays the premium to the surety. In the instance of a loss, the surety will pay a claim to the owner/financier and the surety will expect repayment from the principal.

This is just one example of an analogous product well known in the insurance industry. There could be benefit in the insurance industry working in conjunction with Carbon Standards to understand where further overlaps lie.

Analogies to centralised insurance structures

VCM buffers carry systemic risk; risk that is exacerbated because one problem could cause losses for multiple parties. An example is the previously mentioned California wildfires depleting the buffer reserves of the California carbon market, based on analysis from Carbon Plan*. Other systemic risks could involve widespread tree disease, or more VCM-specific risks, like baseline readjustments. Systemic risks cause challenges for insurance, regardless of the market. If the risk is too high, private insurers can't handle the cost alone. However, this doesn't mean those risks can't be insured and the insurance industry, alongside government, has developed existing structures to manage this.

For example, government plus private insurance mechanisms exist in the UK and the US, to handle the systemic risks of flooding and terrorism, respectively:

- Flood Re**: Flood Re is a joint initiative between the UK Government and insurers. Its aim is to make the flood cover part of household insurance policies more affordable, focusing on households in high-risk flood areas who might not otherwise be able to access insurance protection.

- Pool Re***: Pool Reinsurance Company Limited was established in 1993 when a series of terrorist attacks in the UK led to (re)insurance companies withdrawing from offering terrorism insurance protection. This left businesses, individuals, and the economy at large, vulnerable to the financial cost of future attacks. Pool Re “corrects market failure by providing its members with an unlimited government guarantee to insure against the potentially catastrophic costs of terrorist acts and gives them the confidence to offer insurance products to businesses.”
- Terrorism Risk Insurance Act****: “The Terrorism Risk Insurance Act (TRIA) created a temporary federal program that provides for a transparent system of shared public and private compensation for certain insured losses resulting from a certified act of terrorism. The Secretary of the Treasury administers the program with the assistance of the Federal Insurance Office.”

In-line with these examples, there could be potential for Carbon Standards and the insurance industry (with potential input from governments) to work together to manage systemic risk and protect integrity of carbon stores for sellers and buyers of carbon alike.

*[Carbon offsets burning – CarbonPlan](#)

**[Flood Re - A flood re-insurance scheme](#)

***[Pool Re - GOV.UK \(www.gov.uk\)](#)

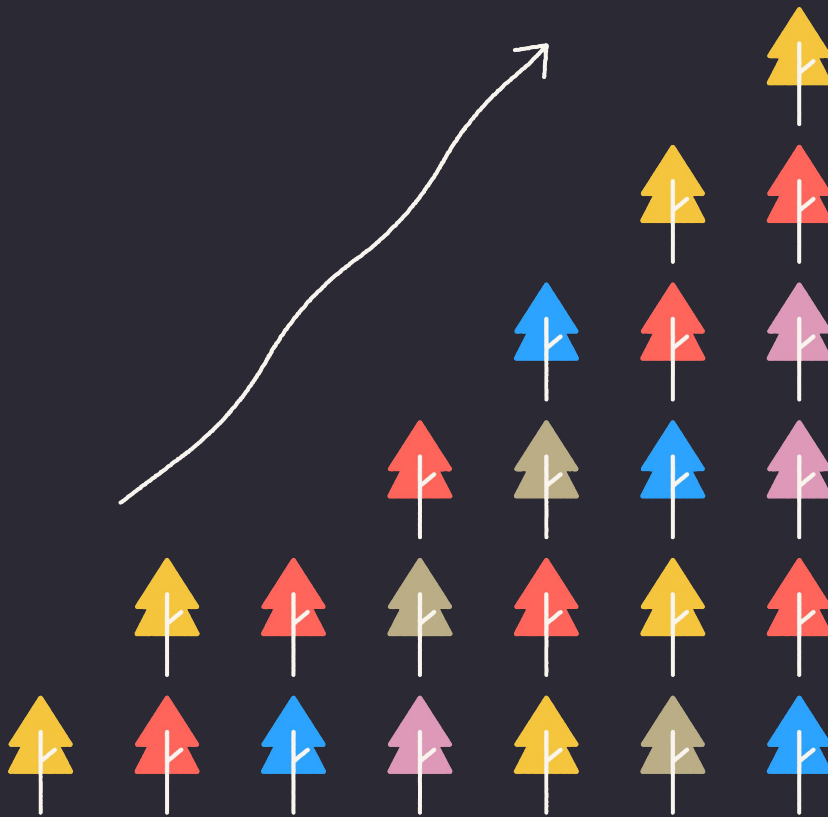
****[terrorism-risk-insurance-program](#)

Insurance companies have three key parts of their business:

1. **Underwriting:** assessing which risks to insure and at what price
2. **Claims:** compensating clients when insured risks occur
3. **Portfolio management:** managing and investing a centralised pool of assets, to generate returns and (importantly) comply with regulations that ensure ability to pay claims.

Portfolio management is a huge part of the insurance industry, and insurance companies are expert in handling this regulated capital to generate investment returns while also ensuring they have the financial stability to pay all insurance claims.

As the insurance industry widens its ability to provide carbon insurance, and as clients wish for claims to be paid in carbon, there is potential for insurance companies to evolve to hold and/or manage carbon assets and help with the previously discussed fungibility challenge.



“In our view, the insurance industry may have a role to play in providing an additional layer of risk modelling and assurance to the VCM, leveraging its experience on insurable risks and technology.”

BeZero: “Deep diving into buffer pools”

Carbon Standards and associated buffers have highly specialised knowledge and risk management experience core to the carbon markets.

The insurance industry is the industry for risk management but has not historically had carbon knowledge.

As the VCM evolves, with increased scrutiny and higher expectations on performance, there is significant potential for a hugely complementary and collaborative approach between Carbon Standards and insurers to:

- enhance the financial resilience of existing buffer schemes;
- enable high-quality new buffer schemes;
- increase market liquidity; and
- build trust.

If we think about buffers in the vein of portfolio management, insurance can provide:

- A creditworthy financial wrapper;
- A smoothing strategy to help manage downside risk of unexpected failure (where actual losses are higher than those modelled);
- Confidence that investors (i.e. carbon buyers) will receive expected returns; and
- Certainty of contractual expectation for underlying asset owners (i.e. carbon sellers).

Kita aims to work as a bridge between the carbon markets and the insurance industry to help raise knowledge on both sides and build partnerships that can strengthen our society's ability to remove carbon from the atmosphere at scale and at speed to fight the climate crisis.

If the contents of this report are of interest, please don't hesitate to get in touch.

Carbon Standards' buffer mechanisms.

The majority of Carbon Standards have buffer mechanisms in place. Please see summarised, high-level descriptions of buffer mechanisms for Verra, Gold Standard, American Carbon Registry, Climate Action Reserve, Plan Vivo and The UK Woodland Carbon Code below:

Verra

"To preserve the environmental integrity of VCU's issued from AFOLU projects, Verra manages a pooled buffer account. Every AFOLU project is required to deposit a risk-adjusted percentage of the emission reductions and removals achieved into the pool which is managed by Verra. If and as reversals occur in any single project in the system, the carbon losses are covered through the cancellation of an equivalent number of buffer credits from the buffer pool." *

Verra also has a buffer for Geological Carbon Storage projects:

"To determine the number of buffer credits that shall be deposited in the GCS pooled buffer account, the overall risk rating shall be converted to a percentage (e.g., an overall risk rating of 3 converts to 3 percent). This percentage shall be multiplied by the tonnes of injected CO₂" **

Gold Standard

"For projects applying the Land Use and Forests Requirements, 20% of the issued PERs and GSVERs shall be transferred into the Gold Standard Buffer. Contribution to the buffer is not required for projects that issue GSVERs for permanent GHGs reductions and/or avoidance (e.g. methane avoidance in rice cultivation) i.e., involves no risk of GHGs reversal." ***

*verra.org

**verra.org

***globalgoals.goldstandard.org

****americancarbonregistry.org

*****americancarbonregistry.org

American Carbon Registry

"Generally, the project contributes to the Buffer Pool account the number of offsets as determined by the project-specific risk assessment in order to replace unforeseen losses. ACR has sole management and operational control over the offsets in the Buffer Pool."

"For geologic sequestration projects, Project Proponents must contribute 10% of the project's offset credits to a Reserve Account, managed by ACR, from which credits will be retired in the event of a reversal during the Project Term."

"In lieu of making a Buffer Pool Contribution or Reserve Account Contribution, Project Proponents may propose an insurance product for ACR approval as a risk mitigation mechanism."

ACR Standard V7.0 ****

For AFOLU carbon projects:

"For AFOLU projects that have risk of Reversal, Project Proponent shall conduct a risk assessment addressing both general and project-specific risk factors using the ACR Tool for Risk Analysis and Buffer Determination. The output of the tool is an overall risk rating percentage for the project, translating into a number of offsets that will be deposited in the ACR Buffer Pool Account to mitigate the risk of reversals at the time of each issuance, the Minimum Buffer Percentage." *****

Climate Action Reserve

“Buffer pool contributions are established by each protocol, in accordance with the best available literature.”*

US Forest protocol example:

“The maintenance of a Buffer Pool to provide insurance against reversals of GHG reductions and removals due to unavoidable causes (including natural disturbances such as fires, pest infestations, or disease outbreaks).”

“All Forest Projects must contribute a percentage of CRTs to the Buffer Pool any time they are issued CRTs for verified GHG reductions and removals. Each Forest Project’s contribution is determined by a project-specific risk rating.”

“Currently, insurance must take the form of contributing CRTs to the Buffer Pool administered by the Reserve. In the future, the Reserve anticipates that other insurance instruments may be available to insure against reversals.”**

Plan Vivo

“Plan Vivo projects must issue a proportion of climate benefits in a risk buffer, which will remain unsold and guarantees the integrity of a Plan Vivo project in the face of risks to permanence or potential reversals of emission reductions. The risk buffer of each project is proportional to the level of risk that the project is exposed to.

The Plan Vivo Standard does not require a specific approach to determining a risk buffer. It is strongly recommended, however, that all projects provide a description of the risk of reversals in their project area associated with specific risk factors across five categories – Social, Economic, Environmental, Technical and Administration

The minimum risk buffer for Plan Vivo projects is 10%, and in most cases the risk buffer will be 20% or higher.”***

UK Woodland Carbon Code

“The WCC buffer safeguards the investment made by carbon buyers and maintains and protects the integrity of verified Woodland Carbon Units (WCUs). Thus WCUs issued for a project are permanent and would never have to be cancelled or ‘paid back’ should that project subsequently fail; we will ensure there are always sufficient units in the pooled buffer to cover any unanticipated losses from individual project failures. For avoidance of doubt the following would not be covered and losses would be borne by the project: Pending Issuance Units (PIUs); Sequestered carbon which is not yet verified.”****

*climateactionreserve.org

**climateactionreserve.org

***planvivo.org

****woodlandcarboncode.org.uk


Kita – we insure carbon.

As the carbon insurance specialist, Kita develops bespoke carbon insurance products that safeguard the quality and performance of carbon transactions. By reducing risk, carbon insurance channels investment towards high quality carbon projects, enabling them to scale at the pace needed to address the climate crisis.

Kita is a coverholder at Lloyd's of London, the world's specialist insurance and reinsurance market, underwritten by Chaucer Group, Munich Re Innovation Syndicate and RenaissanceRe.

Kita's flagship product is [Carbon Purchase Protection Cover](#), protecting buyers of forward-purchased carbon removal credits against under-delivery.



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Kita

We Insure
Carbon