



The Voluntary Carbon Market | 2022–2023

Act now, learn fast and innovate to achieve real and scalable impacts together.

ACRONYMS AND ABBREVIATIONS

ACR	American Carbon Registry
CDR	Carbon dioxide removal
CO2	Carbon dioxide
COP27	2022 United Nations Climate Change Conference
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
GHG	Greenhouse gas
GS	Gold Standard
Gt	Gigatonne
H2NZ	Hydrogen for Net Zero Initiative
ICROA	International Carbon Reduction and Offset Alliance
ICVCM	Integrity Council for the Voluntary Carbon Market
MRV	Monitoring, Reporting and Verification
Mt	Megatonne
NBS	Nature-based Solutions
NDC	Nationally Determined Contribution
REDD+	Reducing emissions from deforestation and forest degradation
SBT	Science-based target
SBTi	Science Based Targets initiative
USD	United States dollar
VCM	Voluntary Carbon Market
VCMi	Voluntary Carbon Markets Integrity Initiative
VCS	Verified Carbon Standard



INTRODUCTION

In today's divided world, one of the few things that most of us can agree on is that we must dramatically increase the speed and scale of climate action to avoid the irreversible effects of climate change. We must find effective ways to finance clean technology, fair transitions, and cut global emissions. Considering the urgency of climate action and government lethargy, the role of the private sector in ramping up climate finance is critical.

Completely emissions-free operations are still a distant prospect, yet the window to avoid devastating climate change is running out. Science tells us that companies must invest in emission reduction activities beyond their direct operations to help urgently slash global emissions. Carbon credits and the voluntary carbon market (VCM) remain one of the most viable, near-term options for companies to keep global warming in check. The VCM is one of the only means to deliver much-needed finance and technical capacity, protect nature

and create significant sustainable development benefits **at scale.**

2021 and 2022 saw a significant rise in capital and new market entrants, and with this came increased attention and media scrutiny, particularly around quality of offsets. Such attention is encouraging and has helped participants to accelerate on-going improvements in best practices, clarity of claims, as well as monitoring, reporting, and verification (MRV) and constant methodology updates.

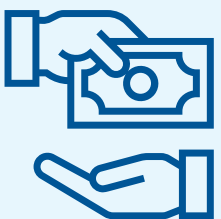
We need to collectively ensure that our efforts have the greatest possible impact and the market delivers on its promises of quality. In the words of South Pole CEO, Renat Heuberger, *“While it may be foolish to predict the future in these turbulent times, our vision to boost market-based instruments to finance climate action has led us thus far... this is what we will continue to be about: **innovating fearlessly, improving consistently, and taking action, now.**”*

Benefits and opportunities of the voluntary carbon market



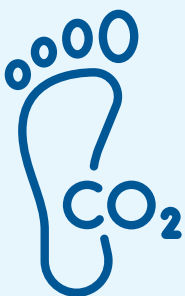
Investment in nature and a just transition at scale.

Even if all companies decarbonised their operations, forest and biodiversity preservation severely lack funding. Carbon credits offer a scalable and measurable way to direct finance into climate projects around the world that have no other way of getting off the ground. Carbon credits are also creating new low-carbon job opportunities and industries.



Ensure companies pay for the damage being created today.

With emissions-free operations still a distant prospect, compensating emissions means companies pay for the damage that they are creating today, while working on the longer-term task of decarbonising their value chain.



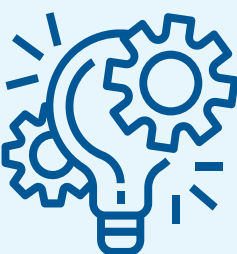
Critical lever to encourage internal reductions.

By buying credits, a company is immediately ‘putting a price on carbon’, which essentially means a company can see how much its emissions are costing. This becomes an immediate incentive to lower emissions or continue to pay for them.



Action today to help achieve global net zero.

A yawning gap persists between governments' climate pledges and the reductions we need. Carbon credits are one of the most viable, near-term options for companies to help close this gap. According to Trove Research, in 2022, the carbon market is estimated to have channelled over USD 1.2 billion, helping to mitigate approximately 161 megatonnes (Mt) of greenhouse gas (GHG) emissions.



Drive innovation.

Projects under the VCM bring new technology, know-how and financing to reach and increase the ambition of a host country's contribution to the Paris Agreement. Many carbon dioxide (CO2) calculation, monitoring and verification methodologies that have been proven and tested on the voluntary markets are now being adopted under emerging compliance markets.

SUMMARY

2022 numbers



Supply (issuances)

≈25%

above five-year average

45.8 million carbon credits

issued in December 2022, the highest monthly issuances on record



Demand (retirements)¹

≈45%

above five-year average

≈3.4%

growth in demand in 2022 compared to 2021
(excluding activity related to crypto)



Pricing

Overall, **prices in 2022 are around 40%** higher than in 2021, however, adjusted downwards at the end of the year²

Community and nature-based solutions (NBS) removal projects have been the most resilient over 2022

¹ Supply and demand insights are proxied respectively by issuances and retirements. They are based on publicly available data from Verra, Gold Standard (GS), American Carbon Registry (ACR) and Climate Action Reserve (CAR). Last observation: 31/12/2022.

² Trove Research. (2023, January). Trove Research Webinar, 2022 VCM in review [Video]. YouTube. Available: <https://www.youtube.com/watch?v=NZePdMVguIM>.

Key developments for a high-integrity carbon market



01

Pushing best practice forward: from methodologies to climate claims.

- Digital MRV pilots are being rolled out and promise to bring significant advancements to the market, from streamlining manual processes for project developers to making on-going and transparent monitoring more easily available to buyers.
- Bodies such as the Science Based Targets initiative (SBTi), the Integrity Council for the Voluntary Carbon Market (ICVCM) and the Voluntary Carbon Markets Integrity Initiative (VCMI) play an important role in shaping the market. All three have made important announcements this year that will impact both quality of supply and effective use of carbon credits.



02

Getting REDD+ right

- Reducing emissions from deforestation and forest degradation (REDD+) is one of the only ways to channel finance **at scale** to communities at the forest frontier and preserve biodiversity, while keeping irrecoverable carbon locked away. Protecting forests is one of the most important ways to deliver rapid emissions reductions at scale.
- Baseline updates, technological advancements and new learnings are built into the architecture underpinning the VCM, so quality requirements can evolve to keep up with best practice.



03

Tipping point for tech carbon removals

- Technological carbon removals are at a tipping point in 2023. Work is underway to build quality supply, decisive and strong demand signals are needed from companies to deliver high-integrity removals.
- Companies should aim to increase the share of natural and next-generation carbon removal projects they support over time, without forgetting the crucial need to finance projects in the near term which avoid or reduce carbon, such as REDD+, clean cooking solutions and waste-to-energy, transforming sectors and/or protecting existing carbon sinks.



04

Policy and regulation outlook

- Article 6 offers states and non-state actors a way to contribute to and achieve their climate targets and opens the possibility for the VCM to be a source of finance for country's to achieve their climate targets.
- The Paris Agreement does not govern the voluntary market and does not require corresponding adjustments for voluntary action.
- COP27 signed off on the use of carbon credits without a corresponding adjustment for voluntary action, by way of a 'mitigation contribution' towards reduction of emissions in the host country.

MARKET SNAPSHOT

The VCM has experienced significant growth in the past five years, with 252% more retirements since 2017.³ The VCM is expected to have channelled an estimated USD 1.3 billion in investment over 2022, helping to mitigate about 161 Mt of GHG emissions—that’s over three times the annual emissions of Switzerland.⁴ However, following the invasion of Ukraine, the VCM experienced a slowdown in growth in 2022 compared to the momentum built in 2021.

Demand

What happened in 2022?

Demand has been steadily growing in the past five years and we’re seeing a significant share of new buyers entering the market, accounting for 57% of retirements in 2022.⁵ This growing demand is being driven largely by voluntary climate targets rather than compliance, while the share of demand from the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) remains uncertain. 2022 saw a 3.7% decrease in retirements compared to 2021. However, 2021 is considered an exceptional year, and if we take out the activity related to crypto, this figure is turned on its head and the market grows by 3.4% in 2022 compared to 2021.⁶

This picture, framed against the backdrop of turbulent macroeconomic conditions driven by geopolitical conflicts, inflation and rising interest rates, demonstrates a market that is evolving and resilient.

Top sectors of carbon credit buyers globally in 2022⁷



Energy

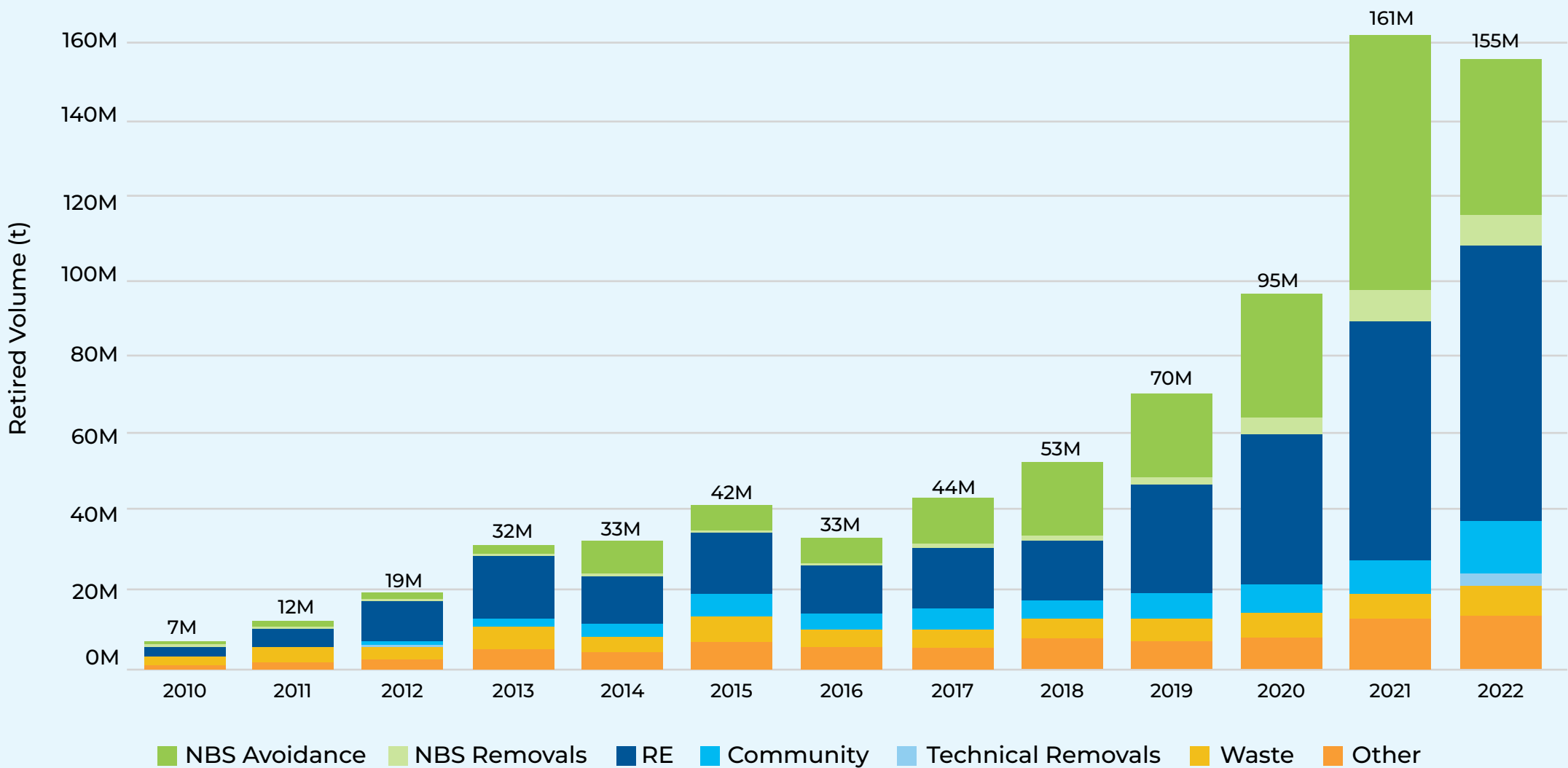


Telecom



Real estate

Retired volume of carbon credits by project type 2010–2022⁸



Source: Verra, Gold Standard, ACR and CAR and author's calculations.
Last observation: 31/12/2022

³ South Pole analysis based on ACR, CAR, GS, and Verra retirement data. Volume of retirements increased from 44 M in 2017 to 155 M in 2022.
⁴ International Energy Agency. (2021), CO2 Emissions from Fuel Combustion 2021 Highlights, 2021. Available: <https://www.iea.org/reports/co2-emissions-from-fuel-combustion-2021-highlights>; Trove Research. (2023, January). Trove Research VCM 2022 in review Webinar [Video]. YouTube. Available: <https://www.youtube.com/watch?v=NZePdMVgqLM>.
⁵ South Pole analysis, 2022 was the first purchase for 57% of detected buyers from 2020–2022 retirements over 1,000 tonnes. Detected buyers cover 39% of retirements.
⁶ Crypto-related activity refers to carbon credits retired for the purpose of becoming tokenised assets on the Toucan Protocol. This activity was prohibited and under review by the main carbon certification standards last year in order to ensure the environmental integrity of the carbon credit is not undermined.
⁷ Based on South Pole analysis of retirements where buyers can be detected, which represents 39% of the total credits retired in 2022.
⁸ Based on South Pole analysis of retirements where buyers can be detected, which represents 39% of the total credits retired in 2022.

In order to meet the 1.5° C goal, what does carbon credit demand need to look like in the future?

There is a growing need for companies to set science-based targets (SBTs) in order to mitigate carbon emissions beyond their own value chain. However, **only 13% of companies with SBTs also purchase carbon credits**.⁹ The SBTi has been clear in calling for companies to accelerate action globally alongside decarbonising their own operations and will release new guidance on 'Beyond Value Chain Mitigation' later this year.

It is important that demand is neither dampened by tough macroeconomic conditions nor 'greenhushing', a trend identified in South Pole's 2022 Net Zero report showed many companies do not plan to publicise their sustainability efforts. Instead, companies should focus on weighing up the short-term and long-term financial implications of failing to act on

climate change and use the opportunity of media attention to further understand the market and ensure they are selecting robust projects that meet international standards.

Companies should look to supporting carbon avoidance projects with certified co-benefits, particularly biodiversity, in the short- to medium-term and slowly start increasing the share of removals in their portfolios. This ensures companies are prioritising the protection of nature and financing a just transition to net zero, while also sending a strong demand signal for technical removals. With demand being the most significant challenge to scaling technological carbon removals, more assurance is needed to improve confidence that purchases today will count towards SBTi-aligned net zero targets.

According to a 2023 study conducted by We Mean Business,¹⁰ if the 1,700 largest emitters in the world were to compensate for just 10% of their emissions by investing in nature, it would result in nearly 30 gigatonnes (Gt) of emissions being mitigated and up to USD 1 trillion in climate finance mobilised by 2030.

We cannot ignore that the global economy is reliant on fossil fuels, from powering industry to fuelling the transportation systems that move people and goods across the globe. It will likely take decades to fully transition away from them, decades we do not have. Carbon credits are vital in this transition period, particularly in the years to 2030 when net zero targets are still far off for most companies and our window to present catastrophic climate change remains open.

⁹ SBTi Committed Companies by December 2022.

¹⁰ We Mean Business Coalition. (2022). Guiding principles for corporate climate leadership on the role of nature-based solutions [Report]. Available:<https://www.wemeanbusinesscoalition.org/wp-content/uploads/2022/12/Guiding-principles-for-corporate-climate-leadership-on-the-role-of-nature-based-climate-solutions.pdf>.

Climate action project development – past and future

What happened in 2022?

More carbon credits were issued during the first six months of 2022 than in the full years up to 2018, and **December 2022 became the month with the highest volume of issuances ever on record**. Yet, looking at year-on-year growth, issuances are down. However, as we saw with demand data, 2021 proved to be an extraordinary year with an unexpectedly high number of requests for new projects and issuances which hit the standards by surprise and created a backup of delays in the certification process. For example, Verra experienced an increase of 243% project registrations and 90% more verifications in 2022 compared to 2021.¹³

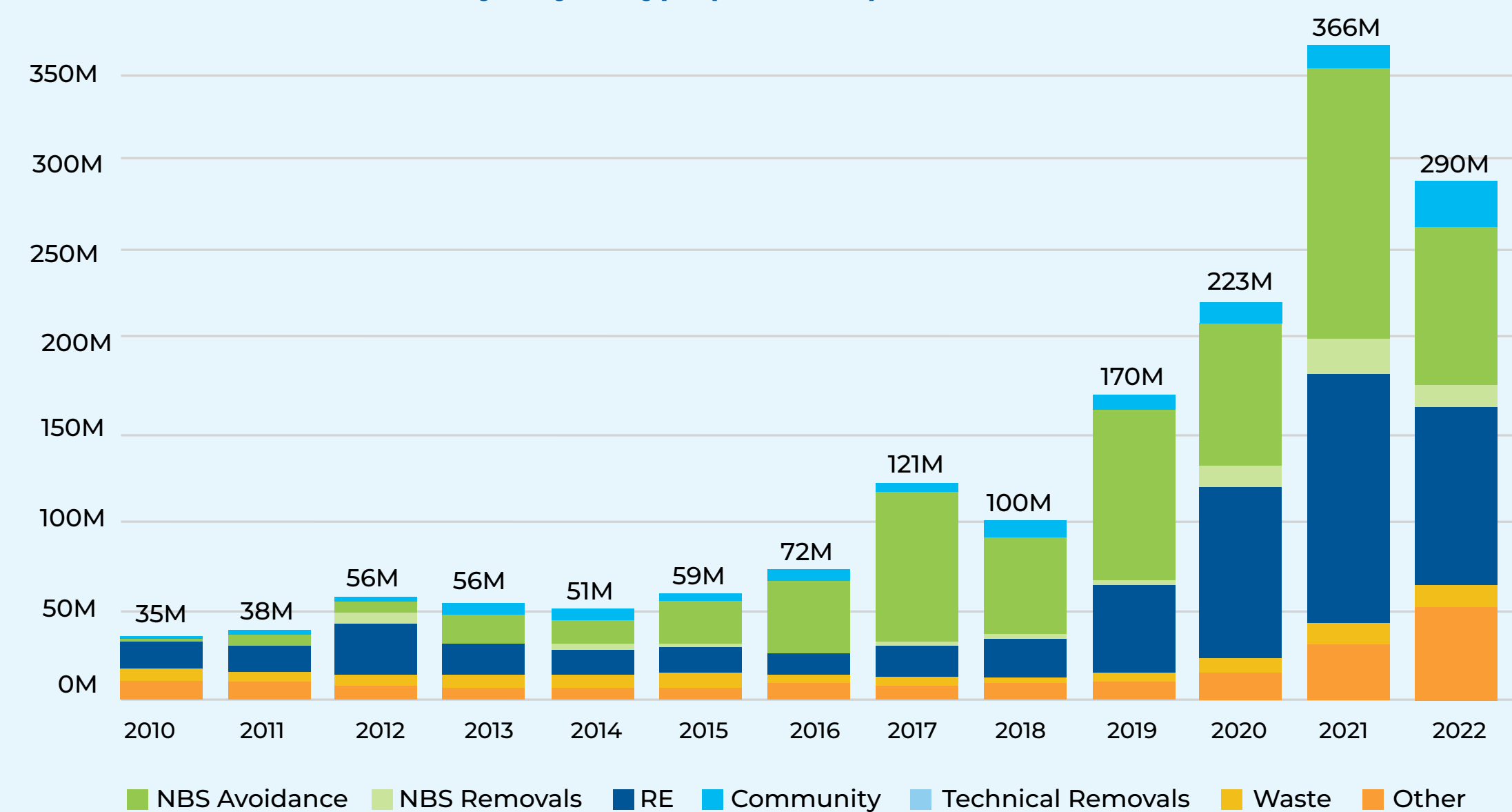
In order to meet the 1.5°C goal, what does the future of pricing need to look like?

In the short term, there are many exciting new issuances expected in 2023 based on pipeline data from Verra, GS and South Pole's own pipeline of projects, especially around community projects with strong co-benefits such as improving health, easing pressure on forests and supporting women.

Most of the near-term supply of nature-based credits will also come from REDD+ or 'avoided deforestation' projects. This is because halting deforestation leads to rapid reductions of emissions, while newly planted trees take years to start sequestering carbon. At the same time, credits generated through improved forest management, blue carbon, or soil carbon are limited by challenges related to additionality, aggregation, or a lack of methodologies to generate emission reductions or removals at scale.

New developments, which are discussed below, are working to overcome these challenges. However, getting the right methodologies in place, starting a project and issuing the first carbon credits can take several years, not least because carbon credits are only issued once the emission reductions have been achieved. This means feasibility studies must be carried out, stakeholders aligned and activities set up, on top meeting any legal requirements and having everything approved and audited by the certification standard.

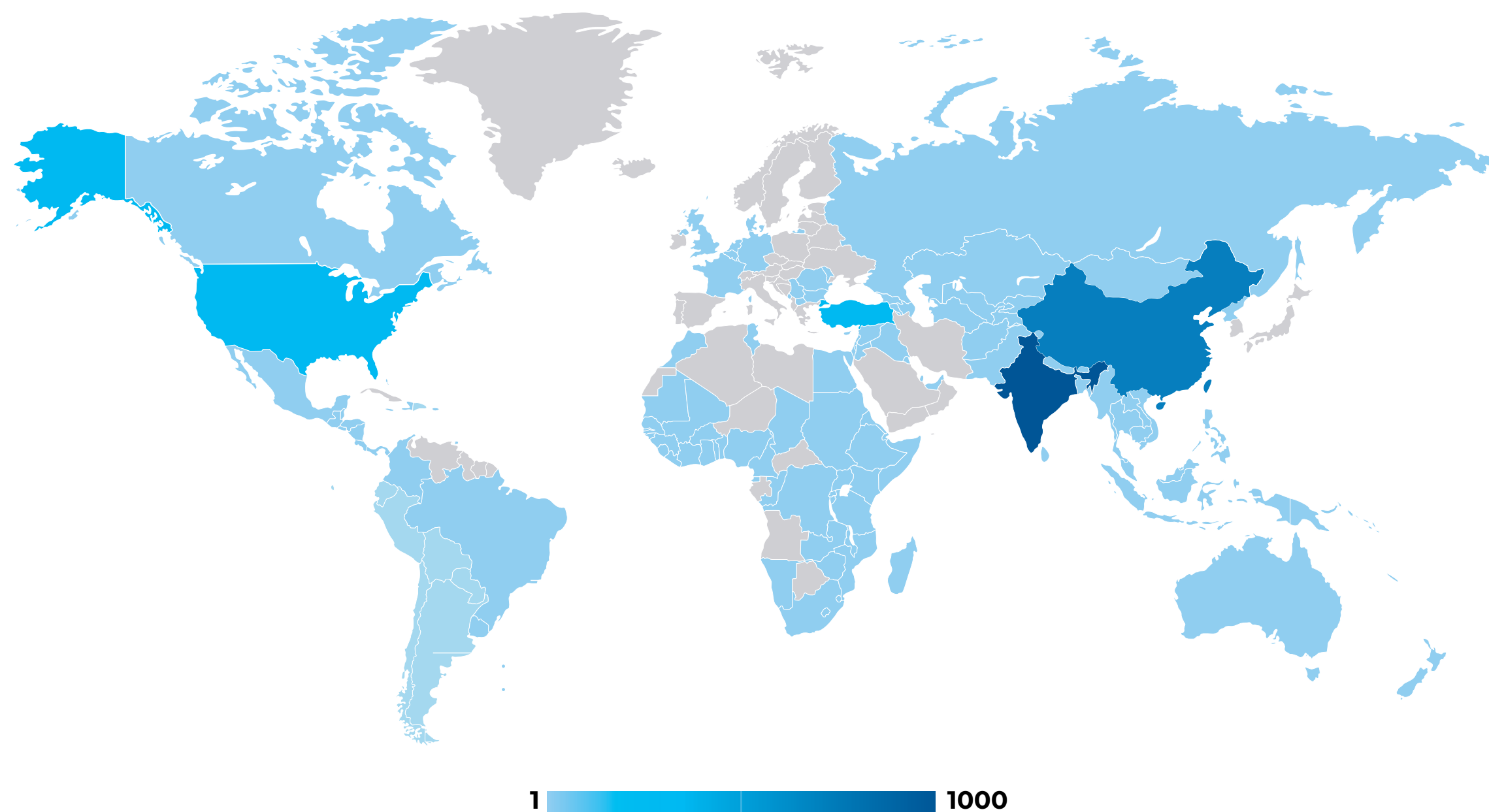
Issuances of carbon credits by Project Type (2010-2022)



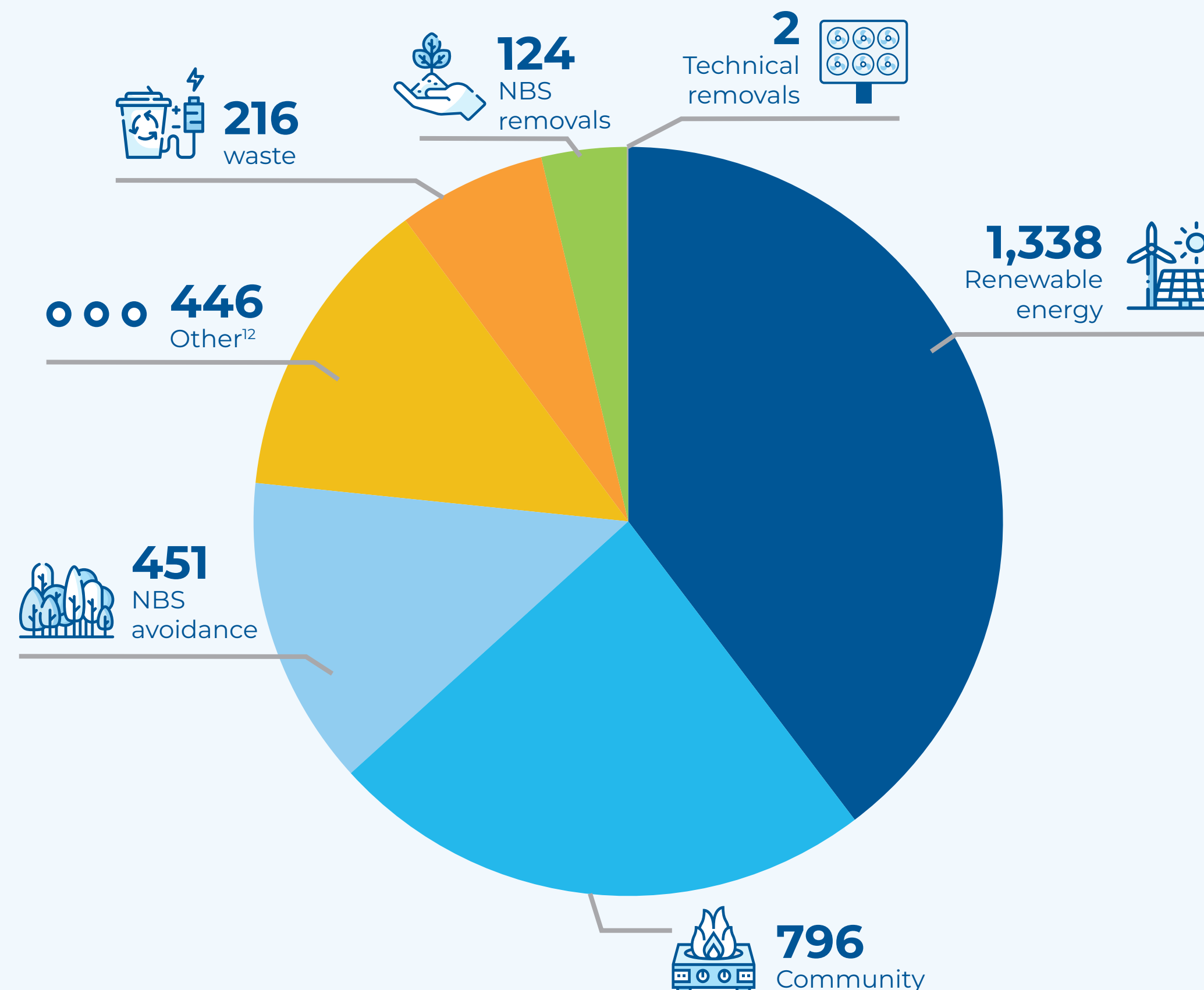
Source: Verra, Gold Standard, ACR and CAR and author's calculations.
Last observation: 31/12/2022

¹³ Verra. (2022). Update on project reviews [Report]. Available: <https://verra.org/update-on-verra-project-reviews/>.

Where in the world are these projects located?



Number of projects per category¹¹

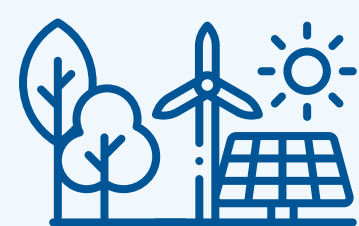


¹¹ Includes projects that have issued credits from ACR, CAR, Verified Carbon Standard (VCS) and GS.

¹² Others include fields where methodology/project type is null, industrial, transport, energy efficiency projects and others

Credit prices of the voluntary carbon market – past and future

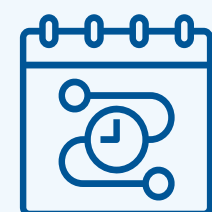
What are the main elements impacting the price of carbon credits?



Project types



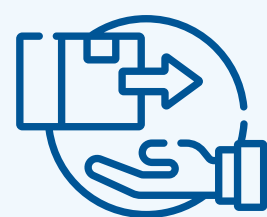
Standards



Vintages



Location



Supply/demand dynamics

What happened in 2022?

Last year saw the average price of different technology types remaining significantly higher than the five-year average. However, prices have adjusted downwards since the invasion of Ukraine as the market strives to establish a new equilibrium.

Prices for community-based projects, such as efficient cookstoves and clean water, have emerged as a more stable and resilient category next to NBS removal credits. This, along with supply and demand trends, suggests that there is a shift in preference towards projects with strong co-benefits beyond cutting carbon emissions.¹⁴

In order to meet the 1.5°C goal, what does the future of pricing need to look like?

Historically, prices have been low due to an excess in supply in relation to demand and credits being able to be created at very low costs.

However, with demand likely to grow, the market maturing, and development towards more expensive project types as “low-hanging fruit” are used up, demand shifts and policies becoming more ambitious, prices should and are expected to rise on average.¹⁵

Rising prices of carbon credits is important for two primary reasons:

1. It raises the penalty companies pay to continue emitting, thereby incentivising companies to more rapidly reduce their own emissions.
2. It drives financing into a greater number of climate action projects which can become increasingly ambitious and innovative because there is a good rate of return.

¹⁴ Bloomberg (2023, January). Carbon Offset Market Could Reach \$1 Trillion With Right Rules [webpage]. Available: <https://about.bnef.com/blog/carbon-offset-market-could-reach-1-trillion-with-right-rules/>

¹⁵ Trove Research. (2023, January). Trove Research VCM 2022 in review Webinar [Video]. YouTube. Available: <https://www.youtube.com/watch?v=NZePdMVguIM>.

KEY DEVELOPMENTS IN 2023

Analysis of the world's leading 2,000 companies by Bain & Company predicts that by 2030, the VCM could potentially reduce and remove up to 2.6 Gt of GHG emissions, which is approximately 13 times larger than the market in 2022.¹⁶

There are a number of developments required for the market to scale and deliver the promised results. As a project developer and retailer of carbon credits, South Pole have spoken to our team around the world to highlight four key areas within the carbon markets where we see, and are pushing for, further innovation and development.

1. Pushing the boundaries of best-practice: from methodologies to climate claims

Innovation, learnings and developments are happening along the full cycle of carbon credits, from on the ground project development right the way to effective communication of carbon credits by end buyers.

Standards and methodology updates

Standards and methodologies set ever-improving performance standards for the clean revolution and provide infrastructure for the market. They are by design nimble and ready to adapt proactively and reactively as new technologies and learnings come into play. Many are already

preparing to make changes to bolster certain parts of their certification to ensure they can become endorsed by the IC-VCM and receive its Core Carbon Principles label, the first of which are likely to be released in the second half of the year.¹⁷

Over the past year, there have also been more organisations with project ideas—often coupled with access to funding—coming forward with requests to develop new methodologies than in the last five to seven years, particularly relating to carbon removals¹⁸ and circular economy.¹⁹ This means that the VCM will be able to

continue channelling funding into these nascent and innovative technologies, ultimately helping them to scale with integrity and robustness.

When new methodologies are developed, they are created by top experts in the market and based on the best proven science at the point of development. They then go into public consultations, peer review panels and an audit process before they are approved. Further, when there is a notable update, a standard or methodology goes into revisions following the same process.

“On top of this, buyers should remember that each and every project goes through a public comment period for around 30 days, where anyone – regardless whether they are involved in the project or not – can comment. This amount of transparency and stakeholder inclusion is not there in many, if not any, other forms of climate finance”



Chetan Aggarwal,
Manager Sustainable Standards and
Methodologies, South Pole.

¹⁶ World Economic Forum. (2023). The Voluntary Carbon Market 2023 [Report]. Available: <https://www.weforum.org/whitepapers/the-voluntary-carbon-market-climate-finance-at-an-inflection-point>.

¹⁷ ICVCM. (2022). Integrity Council unveils timetable to introduce high-integrity label to voluntary carbon market in Q3. ICVCM. Available: <https://icvcm.org/integrity-council-unveils-timetable-to-introduce-high-integrity-label-to-voluntary-carbon-market-in-q3/>.

¹⁸ South Pole has co-developed the methodology for biochar under VCS (VM0044) and is also developing methodologies for carbon capture and storage (CCS) and carbon capture, utilisation and storage (CCUS) under VCS via the CCS+ Initiative. South Pole is also developing a Soil Organic Carbon Activity Module under the Gold Standard with Gaiago.

¹⁹ South Pole revised the methodology for plastic recycling (PWRM0002) under the Verra Plastic Program of that helps to generate plastic credits for every tonne of additional plastic waste recycled.

The role of carbon certification standards and methodologies in upholding quality

The VCM ecosystem is made up of many different actors, such as project developers, project owners, landowners and independent auditors; industry bodies like the International Carbon Reduction and Offset Alliance (ICROA), the VCMI; and architecture, including certification standards and methodologies. While the VCM is not regulated, these actors underpin the market, create standardisation, uphold robust principles, and ensure real and measurable impacts.

ICROA

ICROA is an industry body designed to uphold responsible corporate climate action through the integrity in the use of carbon credits, ensuring the quality of carbon credit supply and delivering impact to raise ambition. The key principles of the ICROA 'Code of Best Practice' are that carbon credits validated and verified by approved standards must be: real, measurable, permanent, independently verified, additional and unique. ICROA has recently endorsed four more standards, including Plan Vivo and British Columbia offset in 2022, and Puro and Social Carbon in Q1 2023. This provides organisations with more options to support a wider scope of high-quality, certified projects with strong co-benefits.

ICROA approved standards.



Carbon certification standards

Carbon certification standards establish rules, requirements and procedures for all stages of project development, issuance and monitoring. They define components such as start date, crediting period, additionality, Sustainable Development Goals and permanence requirements, as well as managing the public registries of carbon credits. A standard setting organisation, such as Verra, may have different standards; for example, VCS and the Sustainable Development Verified Impact Standard (SD VISta).

Methodologies

Methodologies establish the rules, requirements and procedures for quantifying the GHG emission reductions and/or removals from a specific activity. They can be developed by an independent organisation, such as South Pole, or the standard itself. Regardless of who develops the methodology, they must go through public consultations, peer review panels and an audit process before they are approved. Methodologies are revised as soon as new science or best practice is evidenced.

Digitising the market from the soil up

Current practices for MRV of climate project impacts are time-intensive, lack transparency and are difficult to scale. Digitising these processes has emerged as a powerful means to increase the transparency and accountability of the VCM. Leveraging the latest digital technologies can be a win-win: project developers can save costs and reduce tedious paperwork, and track emissions reduction achieved by a project in real-time, while providing verifiable data to buyers.

South Pole has partnered with Regrow to provide its regenerative farming projects with access to scientific and technological best practices for agricultural monitoring and GHG emissions accounting. However, to plan and deliver successful initiatives, sustainability leaders must create fair and effective incentives; remotely track regenerative practice adoption, for example, changes in tillage; accurately measure results; and report outcomes for verification and crediting.

Regrow leverages remote sensing-based technology and advanced soil modelling—which simulates how soil microbes react to changes in the soil and the resulting GHG effects—and can be applied to crops and practices,

making it highly scalable. It also involves a farmer-first software platform to help projects measure, report and verify the impact of regenerative farming practices with high accuracy. South Pole has also partnered with Carbonfuture to roll out digital MRV in South Pole's regional grouped biochar projects in Europe, the United States, and Africa. This novel approach further reinforces the environmental integrity of activities by providing more detailed, automated tracking of project impacts.²⁰

The effective use of carbon credits on the path to net zero

To truly move the dial on addressing runaway climate change, carbon credits should be used and talked about by corporations according to a clear set of principles that simplify and amplify the right way to do things: grounded in science and building on the work of credible initiatives, such as the SBTi and the VCMI, among many others. The VCMI's updated 'Claims Code of Practice' guidance is expected to be published in the first half of this year and offers companies clarity on demand side-related doubts. The aim is to focus on

when and how companies can use carbon credits in a credible way and for what credible claims they can use them.

In the past year, there has been a marked shift from climate neutral claims to a focus on net zero. This is both a voluntary shift and a regulatory one. France has been one of the most advanced in regulating climate neutral claims, with non-compliance pursued more strictly. Other countries in the European Union and globally are following suit. With the more complex landscape of national climate targets and international standards, the global debate is increasingly highlighting the role of the private sector in financing global climate protection in the context of the global net zero journey.

South Pole's new 'Funding Climate Action' label is built on transparency and demonstrates that a company is taking responsibility for its own or its product's emissions and has a clear plan to reduce these emissions over time. It is designed for companies who want a credible way of communicating the climate action they have taken to their audience.



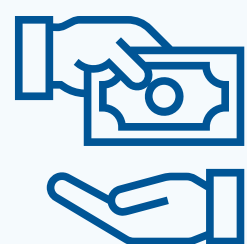
²⁰ South Pole. (2022). South Pole and Carbonfuture partner to scale up biochar projects with digitised monitoring and reporting. South Pole. Available: <https://www.southpole.com/news/south-pole-carbonfuture-biochar-projects-digitised-monitoring-reporting>.



South Pole principles for carbon credit use



Set a science-aligned net zero target, for example with the SBTi, with a clear reduction roadmap and interim targets; and use high-quality GHG removal credits towards the long-term target.



Pay for all remaining GHG emissions today and on the pathway to net zero, by investing in action outside the value chain (i.e. Beyond Value Chain Mitigation)—thereby taking responsibility for current climate impacts and effectively introducing an internal price on carbon.



Use high-quality carbon credits from emission reduction activities which are certified and audited according to reputable international standards, and which create clear and measurable positive sustainable development benefits for the local population in the host country, contributing to a just transition.



Transparently communicate the use of carbon credits as part of broader climate targets and milestones without exaggerating or misleading claims. This means saying exactly what the company is doing to take responsibility for their carbon emissions and how carbon credits are used as part of these efforts. Compensation does not count towards a corporate net zero emissions reduction target, for example, but it finances global efforts to reduce emissions, which is critical.

2. Getting REDD+ right

The importance and opportunity of forest protection

The winding path to 1.5°C will be impossible without protecting and restoring our forests and other natural carbon sinks. Yet, despite years of high-level agreements, policy efforts and industry agreements, forest loss is still accelerating, largely due to global commodities like soy and beef and the simple fact that a forest is still worth more cut down than it is standing.

"South Pole is looking forward to becoming a more active partner in the field. We will be able to offer more support in the implementation of the project and gain better oversight. At the same time, we are investing in building capacity and supporting local talent. At the Muskitia landscape protection project, we've contracted local biologists and forestry experts not only to work with local communities but provide technical assistance."



Jhoanata Bolivar Cardona,
Director, Nature Based
Solutions, South Pole

REDD+ is trying to address the latter point by assigning value to intact forests. In certain locations, projects have a vital role to support communities at the forest frontier, building sustainable economic alternatives, protecting biodiversity and ultimately saving forests.

Continuous improvement by design

The drivers of deforestation are complex and highly contextual to the area. This means that there is no magic formula and solutions put in place to protect the forest are equally complex. As a result, projects are constantly improving and learning.

One element of REDD+ projects gaining the most attention is the development of a reliable baseline, which is the predicted level of deforestation that would occur without the project. When establishing a baseline, project developers model future deforestation rates using methodologies approved by certification standards, such as Verra. A similar area to the project is chosen as a reference, factors such as roads and population increase are built into the model, and satellite imagery is validated with on-site visits. The methodologies have feedback loops so they can be updated thanks to new insights, technological developments, such as drones and 3D imagery, and evolving best practices. However, despite the safeguards, there is always a degree of uncertainty when trying to predict the future.

One of the ways REDD+ methodologies address this is with a self-correcting mechanism to adjust the number of carbon credits issued to match actual deforestation rates over the lifetime of a project. In practice, this means that every six years—recently reduced from 10 years—a project must assess the actual deforestation rate in the reference area against the predicted deforestation rate used in the baseline. If the predicted and actual deforestation rates do not match, meaning too few or too many carbon credits have been generated, the difference is made up. South Pole is currently working on revising the baseline of the Kariba project; this will be one of the first ever REDD+ baseline 'revalidations' under Verra.

Beyond implementing the methodology, project developers, like South Pole, have an important role to play in delivering high-quality projects and ensuring that projects have the impacts they've set out to achieve. The groundwork is key: you need to gather the correct information to design projects that tackle the underlying drivers of deforestation; for example, governance structure, laws, social dynamics and a lack of alternative economic opportunities. Then, once the project activities are agreed by all stakeholders, they need to be implemented and monitored effectively and transparently, with clear feedback loops to gather learnings that can improve the project.



The future of REDD+

From 2025, Verra will require all projects to transition to jurisdictional baselines, which aim to go beyond project-level activities and instead create national deforestation levels against which projects can be measured. This top-down approach is designed to limit the potential discrepancy of project-level assessments; however, it is no silver bullet. Setting up jurisdictional baselines will involve complex policy and technical issues that require significant capacity and expertise. Decisive and clear action is needed to provide developers with the ambition to set up new projects where they're most needed and companies with renewed confidence to support them.

Boots on the ground: ensuring the legitimacy of nature-based projects

Nestled within two of South America's most important eco-regions, the so-called Paramos of the Central Cordillera and the Peruvian Yungas, or 'mountain forests', the Alto Huayabamba project, an initiative of the non-governmental organisation Amazonicos Por la Amazonia (AMPA) and South Pole, works with local communities to protect a vast wildlife corridor.

To issue carbon credits, the project must undergo regular monitoring and auditing. This was most recently conducted by eight of South Pole's technical experts, including forestry scientists and anthropologists, and two independent third-party auditors. These auditors are responsible for ensuring that the standard's, in this case Verra's, emission reduction methodologies are being properly applied; that the activities planned by the project are taking place as intended, effectively conserving over 50,000 hectares of biodiverse forest; and that these impacts go beyond business as usual.

3. Technological carbon removals & hydrogen

Technological removals: ramping up demand and quality of supply

While there is currently a lot of interest and talk around carbon removal projects, the market is hindered by a significant lack of demand, with only nine buyers globally having purchased 10,000 tonnes or more.²² However, this could be set to change. The NextGenCDR Facility, launched at Davos in 2022 by South Pole and Mitsubishi Corporation, alongside five multinational corporations,²³ is planning to procure over one million tonnes of ICROA-certified carbon dioxide removals (CDRs) over the next two years, which would more than double the total amount of CDRs that have been purchased to date.²⁴

On the supply side, early buyers, notably Microsoft, have been influential in setting the quality criteria of projects themselves and getting the market

off the ground. Alongside the need for more government support and an effective risk mitigation mechanism for investors, there is now a need for more standardisation and robustness through ICROA-endorsed standards, to unlock the market and establish trust. At present, there are only three methodologies under ICROA-endorsed standards for technological carbon removals, but the market is developing rapidly to deliver certified and trusted removals at the highest possible quality.²⁵ The CCS+ Initiative is playing a crucial role in creating a suite of methodologies based on carbon capture and storage and supply chain. The recent ICROA endorsement for Puro is a welcome addition to the growing availability of CDR standard bodies and will help accelerate CDR project development standing.

Spotlight on green hydrogen: how carbon markets can drive innovation in clean technologies

Hydrogen created from renewable energy sources, often called green or low-carbon hydrogen, is hailed as a solution to the decarbonisation of hard-to-abate sectors, such as shipping, heavy industry and agriculture. However, low-carbon hydrogen is currently more expensive than fossil-fuel-based alternatives and its supply is limited. To narrow this finance gap and scale production, South Pole has launched the Hydrogen for Net Zero initiative (H2NZ).²⁶

Together with hydrogen industry leaders, the initiative will start to develop the first methodologies that enable carbon credits to be generated from selected renewable hydrogen and ammonia technologies and projects. The H2NZ initiative is focusing on technologies where hydrogen and its derivatives will play a decisive role in reducing emissions and projects that address climate change, energy access and food security.

By channelling finance from international carbon markets, the initiative aims to make investments in renewable hydrogen projects more economically viable and scalable, thereby narrowing the hydrogen finance gap and unlocking the power of low-carbon hydrogen across the globe.

²³ South Pole. (2022, 15 February). Demand, not supply, is the problem with unlocking and scaling carbon removals. South Pole. Available: <https://www.southpole.com/news/demand-not-supply-is-the-problem-with-unlocking-and-scaling-carbon-removals>.

²² BCG, LGT, Mitsui Shipping, Swiss Re and UBS

²⁴ South Pole. 2022. The Future of Carbon Removals: Launch of the NextGen CDR Facility [YouTube]. Available: <https://www.youtube.com/watch?v=Bg8AuimNwGg>.

²⁵ VM43 – Concrete mineralisation, VM44 – Biochar, GS – Mineralisation.

²⁶ South Pole. (n.d.) Hydrogen for Net Zero Initiative: Unlocking the power of low-carbon hydrogen. South Pole. Available: <https://www.southpole.com/hydrogen-for-net-zero-initiative>.

4. Regulation and policy outlook and updates

Under the Paris Agreement, countries set climate targets called Nationally Determined Contributions (NDCs). As pressure ramps up to start making progress towards their NDCs, countries are exploring ways to leverage carbon markets to help them achieve their climate targets. Developed nations are facing a significant challenge in meeting their climate targets due to the high costs involved. On the other side of the coin, less economically developed countries are struggling to finance their targets. Article 6 of the Paris Agreement introduced the possibility for countries—and private companies—to

finance activities in developing countries, providing a more cost-effective means to achieve their goals.

Countries like Switzerland and Singapore are leading from the buyers' side, contracting with a range of companies. Ghana, Colombia, Thailand are ahead of the curve on the supply side. Particularly in Thailand, South Pole is helping to deliver one of the world's first Paris Agreement Article 6.2 transactions between the government of Thailand and the government of

Switzerland with the “Bangkok e-bus programme.”²⁷ However, the approach from countries remains fragmented and varies by project type, especially when there is land ownership involved, for example, in NBS projects.

One notable initiative that deserves attention is the Climate Warehouse, launched by the World Bank. This platform aims to operationalise Article 6 of the Paris Agreement by helping countries leverage carbon markets and carbon pricing to unlock the financing required to achieve their climate targets. In December last year, they launched The Climate Action Data Trust (CAD Trust), which seeks to bring transparency to the carbon credits market and improve access to climate finance for countries that urgently need it. This huge undertaking over the past three years involved 30 organisations, 11 national governments, and over 50 testing sessions. It aims to integrate all carbon credit projects' data in one place using distributed ledger technology and make it freely available to the public.²⁸

Countries clarify use of carbon markets to reach national climate targets at COP27²⁹

In November 2022, COP27 took place in Sharm El-Sheikh, an important milestone in global efforts to address climate change. One of the critical issues discussed were corresponding adjustments.

Corresponding adjustments refer to a part of Article 6 which allows countries to use emissions reductions achieved through cooperation with other countries to meet their own emission reduction targets. Ultimately, Article 6 is designed to enable sectors and countries to reach net zero emissions.

One significant agreement was on the creation of ‘mitigation contribution units’, **Article 6.4 carbon credits issued without corresponding adjustments**, which companies and other non-state actors can use to meet their commitments while at the same time contributing towards the host country's progress towards meeting its NDC. **This development brings the compliance market closer to the VCM and opens the possibility for the VCM to be a source of finance for a country's NDC.**

²⁷ World Business Council for Sustainable Development. (2022). South Pole's SHIFT Asia platform wins award for pioneering partnerships to accelerate climate action. Available: <https://www.wbcsd.org/Overview/News-Insights/Member-spotlight/South-Pole-s-SHIFT-Asia-platform-wins-award-for-pioneering-partnerships-to-accelerate-climate-action>.

²⁸ The World Bank. (2022). Carbon Credits Climate Action Data Trust Launched [Report]. Available: https://ik.imagekit.io/mtozw1gojis/world-bank/21_Carbon_Credits_Climate_Action_Data_Trust_Launched_d3334da1e5_lfEmYX6lX.pdf.

²⁹ United Nations Framework Convention on Climate Change (UNFCCC). (n.d.) COP27. Available: <https://unfccc.int/cop27/auv>.

CONCLUSION

The urgency of tackling the climate crisis has never been clearer. If emissions remain at current levels, the remaining carbon budget keeping warming below 1.5 °C will be gone in nine years. The VCM has demonstrated that it can be a powerful solution in the climate action toolbox, helping us to innovate and accelerate from where we are today to where we need to be.

Collaborative, courageous, and candid conversations between project owners, project partners, developers, standards, rating agencies, buyers, and the media are essential to ensuring that the market keeps raising ambition and delivering on its promises. In these conversations, let's not forget that what is viewed as cutting edge today may not be so in the future—continuous improvement is in the DNA of market-based approaches. This report highlighted how actors throughout all parts of the market are using built-in mechanisms to quickly develop, iterate and improve the market as it was designed to be.

As we navigate this rapidly evolving landscape, it is critical for countries to pursue more ambitious climate policies, particularly in the years until 2030. It is **equally important** for companies to step up their efforts to decarbonise, while also continuing to support high-quality, third-party-verified climate action projects outside their value chain.

When each fraction of a degree makes a difference, every action must count.

**Want to discuss these developments
in more detail?**