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Mitigation Portfolio Quarterly Review, Q4 2024

Price per mitigation unit	CHF 25.52 per tco EUR 26.80 per tco DKK 200.20 per tco
<i>*unchanged from the prior quarter</i>	<i>*prices published on the Carbon Reserve website.</i>

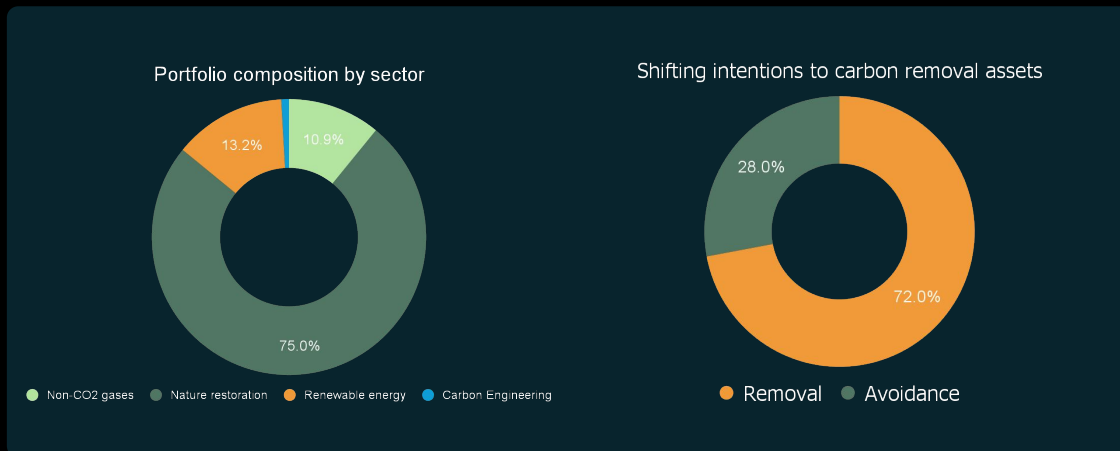
Portfolio objective

The Carbon Reserve Mitigation Portfolio seeks to deliver stable and liquid mitigation value

Gross tonnes held	Nett tonnes held	 Nett tonnes increase 76% from the previous quarter
3 585 tCO₂e as of 31 December 2024	2 535 tCO₂e as of 31 December 2024	

Toco issued	Mitigation value per unit	Buffer
1 858 toco	1 tCO₂e	677 tCO₂e (net tonnes - toco issued)

We focus on portfolio diversification for risk reduction with a shift to carbon removals this quarter



Portfolio developments for the quarter

- Addition of mitigation assets from the project *Carbon Capture in the Forests of Ejido El Brillante ("El Brillante")*. Increased our holdings in nature-based carbon removal to 72%.
- New ratings assigned to portfolio additions to ensure risk-adjusted mitigation value reflected in the overall portfolio holdings.
- Assets on ratings watch were reviewed with rating affirmed.
- First portfolio retirements - 134 tCO₂e (risk adjusted) retired from our renewable energy holdings in anticipation of our toco retirement solution.

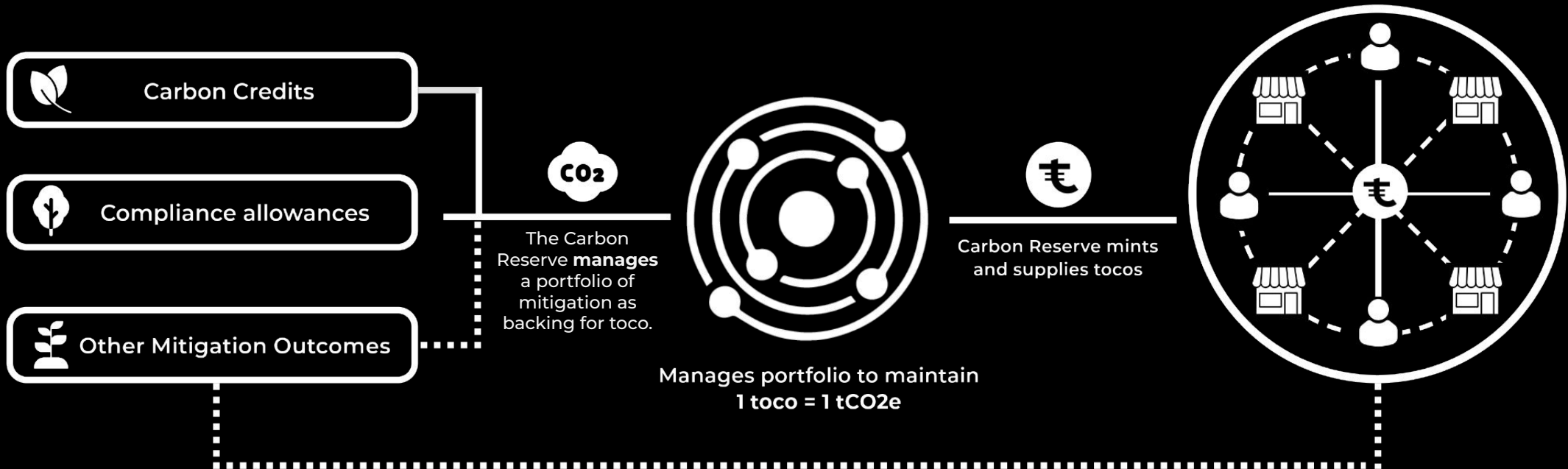


About our unit of mitigation (toco)

The Carbon Reserve issues units of mitigation (called toco) that represents the mitigation value of the portfolio of assets held by the Carbon Reserve. Portfolio assets are valued and risk-rated in line with our [Mitigation Value Assessment Framework](#) before inclusion in the portfolio. Issued units represent the risk-adjusted mitigation value of the portfolio. We aim to maintain unit mitigation value at no less than 1 tCO₂e.

Learn about toco ownership

Learn about our evaluation approach





A note from the Portfolio Manager

Quarterly Portfolio Review

The Carbon Reserve is pleased to share its first quarterly portfolio review, outlining key strategic developments and portfolio performance. Since launching in early 2024, we have worked to establish a diversified mitigation portfolio, ensuring risk management and alignment with long-term objectives.

Portfolio overview

Our policies provide a foundation for achieving risk diversification by pooling mitigation assets. While demonstrating these benefits remains challenging at this early stage, we are confident in our approach.

The initial portfolio, launched in 2024, holds a mitigation value of 1,438 tCO_2e across 2,115 tCO_2e gross assets from the Voluntary Carbon Market, spanning carbon engineering, nature restoration, non-CO2 gases, and renewable energy. This portfolio supports the toco carbon-backed currency in Switzerland and Denmark. Although relatively diversified, 42% of holdings are in Mexico, an overexposure we plan to reduce to meet geographic diversification goals.

Shifting to a carbon removal-dominated portfolio

We are transitioning towards a carbon removal-focused portfolio. Currently, holdings are predominantly nature-based removals, increasing quantification and permanence risks. To mitigate these, we maintain buffer reserves. A key challenge ahead is monitoring the portfolio for potential value losses due to reversals, a complex but essential task.

Strategic approach to mitigation value

The Mitigation Value Framework critically assesses asset mitigation value. We move beyond a binary approach to recognize varied mitigation values across asset types.

Our Mitigation Value Assessment Framework, published for public consultation, continues to evolve, ensuring risk-adjusted evaluation of mitigation impact. The Advisory Board and expert panel help navigate the complexities of asset selection.

Following guidance from the Integrity Council for the Voluntary Carbon Market (ICVCM), we reviewed our renewable energy and non-CO2 gas holdings, reaffirming our commitment to transparency and rigorous asset management.

Operational update: asset custody

To support scalability and security, we have migrated our holdings to the CarbonPlace platform, a bank-grade infrastructure for asset custody, ensuring efficient management of a growing portfolio.

We remain committed to refining our strategy and look forward to sharing further insights in the next quarterly review.



Bianca Janse van Vuuren
Portfolio manager. CA (SA), CFA

Statement from the Chairman of the Board of Trustees



Reflecting on our progress

As we reflect on the achievements of the past year, it is evident that the Carbon Reserve is making significant strides toward becoming the first global issuer of a trusted, risk-adjusted unit of mitigation.

Commitment to governance and stability

As the Board, we serve as custodians of the Carbon Reserve Foundation, upholding its principles of stability, trust, and independence. The success of a new market system, as managed by the Carbon Reserve, relies on these fundamental elements. In this spirit, we are actively recruiting new board members to strengthen our governance framework and ensure the Foundation remains well-positioned for the future.

Exploring toco use cases

We are currently testing the "toco as a currency" use case in Europe in partnership with the Carbon is Money movement. This initiative represents a significant step in democratizing climate action, allowing individuals and businesses alike to participate in meaningful carbon mitigation. Another key milestone in our journey has been the launch of the Claim Impact Feature, which allows individuals and businesses to retire their toco in exchange for permanent mitigation. As we continue to explore and test new use cases, we are confident in the Carbon Reserve's ability to manage a mitigation portfolio that upholds the integrity of each issued unit, representing 1 tCO₂e of mitigation.

Risk-rating and portfolio expansion

The credibility of our mitigation efforts hinges on our ability to risk-rate portfolio additions. We firmly believe that not all mitigation actions deliver the same impact, which is why we rigorously value mitigation assets before including them in our portfolio.

The road ahead: scaling with integrity

The path forward presents both challenges and opportunities. As we scale our portfolio, we aim to include Article 6 carbon credits to enhance transparency and traceability; transition to primary market procurement to secure high-integrity assets at an earlier stage and explore compliance market instruments as part of our evolving strategy.

As the Carbon Reserve continues to grow, we remain steadfast in our commitment to innovation, integrity, and impact. Our overarching goal is to create demand for carbon mitigation and unlock meaningful climate action on a global scale.

We look forward to the continued journey ahead and to working alongside our partners to drive the future of carbon mitigation.



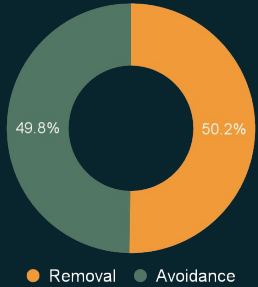
Niel Schoeman

Chairman of the Carbon Reserve

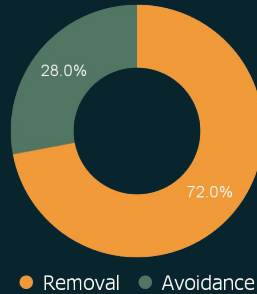
The portfolio at a glance



Q3 2024 composition by type



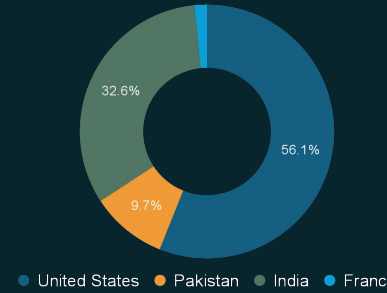
Q4 2024 composition by type



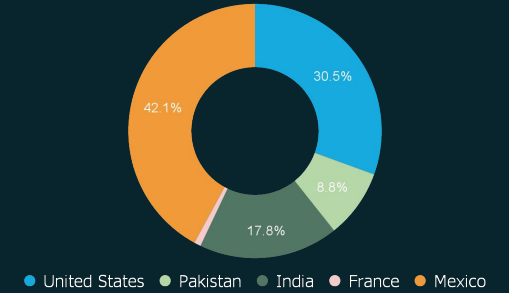
A shift to predominantly removals assets

The portfolio composition has shifted from 50% to 72% carbon removal assets. This shift is aligned with a strategic decision to target a more carbon removal in the portfolio. The removals are predominantly nature-based solutions.

Q3 2024 composition by location



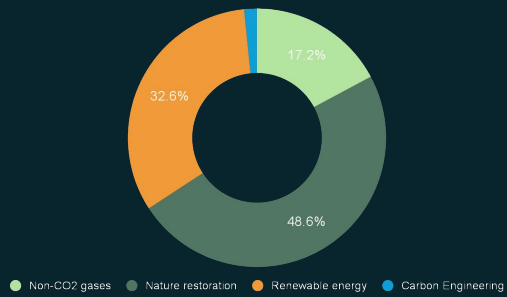
Q4 2024 composition by location



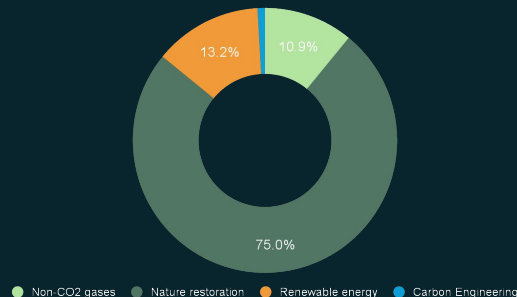
Location diversity maintained

Location diversification is pursued secondary to sector diversification. The recent portfolio addition (El Brillante) increased the exposure to Mexico. Future portfolio expansion will seek to reduce exposure to this location.

Q3 2024 Composition by sector



Q4 2024 Composition by sector



Sector composition reflects shift to nature based removals

Sector diversification remains a key strategy to reduce portfolio risk. The shift to nature based removals increases permanence risk across the portfolio and requires ongoing monitoring.

Holdings detail



Asset name	Industry classification	Purchase date	Type	Rating	Next rating review	Ratings watch	Registry	Vintage	Gross tCO ₂ e at 31 Dec 2024	Net tCO ₂ e at 31 Dec 2024
Afognak Forest Carbon Project	Nature Restoration - Improved Forest Management	Feb 2024	Removal	BBB	Q1 2025		Verra	2022	860	559
Delta Blue Carbon - 1	Nature Restoration - Blue & Coastal Carbon	Feb 2024	Removal	BBB	Q1 2025		Verra	2021	200	140
Sylva Fertilis Biochar	Carbon Engineering - Biochar	Feb 2024	Removal	A	Q1 2025		Puro Earth	2024	30	23
Spartanburg County Landfill Gas Combustion Project	Non-CO2 Gases - Landfill Gas	Feb 2024	Avoidance	A	Q1 2025	Rating affirmed, removed from ratings watch	Verra	2021	325	247
300 MW Wind Power Project by Alfanar Power in Gujarat	Renewable Energy - Wind	Feb 2024	Avoidance	BBB	Q1 2025	Rating affirmed, removed from ratings watch	Gold Standard	2022	500	335
Delta Blue Carbon - 1	Nature Restoration - Blue & Coastal Carbon	Nov 2024	Removal	BBB	Q1 2025		Verra	2022	130	91
Carbon Capture in the Forests of Ejido El Brillante	Nature Restoration - Improved Forest Management	Nov 2024	Removal	BBB	Q4 2025		Climate Action Reserve	2022	1500	1110
Mooh Cooperative Grouped Project, Reduction Of Methane Emissions In The Swiss Dairy Sector	Non-CO2 Gases - Fugitive Emissions	Nov 2024 (committed before year-end, physical delivery after year-end)	Avoidance	A	Q4 2025		Verra	2022	40	30
									<u>3 585 t CO₂e</u>	<u>2 535 tCO₂e</u>

Portfolio retirements



Asset name	Industry classification	Purchase date	Type	Rating	Next rating review	Ratings watch	Registry	Vintage	Gross tCO ₂ e at 31 Dec 2024	Net tCO ₂ e at 31 Dec 2024
300 MW Wind Power Project by Alfanar Power in Gujarat	Renewable Energy - Wind	Feb 2024	Avoidance	BBB	Q1 2025	Rating affirmed, removed from ratings watch	Gold Standard	2022	200	134



How and why we value our portfolio assets



1. Proprietary Rating Framework

The Carbon Reserve uses a proprietary framework to rate and assign mitigation value to portfolio assets.



2. Comprehensive Risk Assessment

Our framework comprehensively assesses risk factors, using a sources of risk approach.



3. Mitigation Ratings

Assigned ratings reflect risk-adjusted mitigation value as tCO₂e, ensuring transparency and credibility.



4. Independent Review & Validation

The Carbon Reserve Advisory Board offers independent review and validation of proposed asset valuations / ratings.



Tocos issued represent risk adjusted mitigation

Units (tocos) issued represent the net, risk-adjusted portfolio value.

[View our framework](#) 



Afognak Forest Carbon

Rating BBB

Removal

Project location: United States of America

Sector: Nature restoration - Improved Forest Management

Current holdings: 559 tCO₂e

Registry: Verra

Project ID: VCS872

The Afognak Forest Carbon Project protects 3,326.5 hectares (8,219.7 acres) of ancient Sitka spruce forests and diverse wildlife on Afognak Island, Alaska, including Roosevelt elk, Kodiak brown bears and bald eagles. Partnering with the Rocky Mountain Elk Foundation and the American Land Conservancy, the project has shifted from timber processing to conservation management, sequestering millions of tonnes of CO₂, preventing deforestation, and restoring degraded areas. This initiative ensures the long-term preservation of this irreplaceable wilderness.

Note from the Portfolio Manager: This project location in Alaska contributes to location diversity and contributes positively to location risk whilst boosting the portfolio holdings of nature-based carbon removal.



Delta Blue Carbon

Rating BBB

Removal

Project location: Pakistan

Sector: Nature restoration - Blue & Coastal Carbon

Current holdings: 140 tCO₂e (2021 vintage) and 91 tCO₂e (2022 vintage)

Registry: Verra

Project ID: VCS 2250

The Delta Blue Carbon -1 project is a 60-year initiative designed to promote climate change mitigation and adaptation, conserve biodiversity, improve livelihoods of local communities, protect coastal areas, and create alternative livelihoods. Spanning 350,000 hectares in the Indus Delta Area of Sindh Province, Pakistan, the project will deliver greenhouse gas removals through afforestation, reforestation, and revegetation of 226,000 hectares of degraded tidal wetlands.

Note from the Portfolio Manager: The Delta Blue project is the world's largest blue carbon project, covering 350 000 hectares of mangrove forests and coastal wetlands. The project highlights the potential of large-scale mitigation action. The BBB rating of this project is largely attributable to inherent permanence risk, compounded by country corruption risk.





Sylva Fertilis, Argentan

Rating A

Removal

Project location: France

Sector: Carbon engineering

Type: Removal

Current holdings: 23 tCO₂e

Registry: Puro Earth

Sylva Fertilis, a leading French forestry consortium, is one of the country's largest biochar suppliers, producing high-quality biochar for retail and wholesale markets. Based in Argentan, Normandy, their facility processes sustainably sourced wood pellets from certified forests near Reims. The company produces two biochar granularities (0-1 mm and >1 mm), with a portion enhanced with mycorrhizal fungi under the Terra Fertilis® brand for soil improvement. With an exceptionally high 95% carbon content, each dry ton of Sylva Fertilis' biochar sequesters 3.4 tonnes of CO₂. A 2023 life cycle assessment by Accend confirmed that 2.74 tonnes of CO₂ are stored per ton of biochar produced. The company recently announced plans to double production capacity, backed by CO₂ Removal Certificate buyers.

Note from the Portfolio Manager: This asset enhances location and registry diversification, marking our only exposure to Puro Earth and one of two European holdings.



Spartanburg County Landfill Gas Combustion

Rating A

Avoidance

Project location: United States of America

Sector: Non-CO₂ gases

Current holdings: 247 tCO₂e

Registry: Verra

Project ID: VCS947

The Spartanburg County Landfill Gas Combustion Project is a pioneering initiative aimed at harnessing methane gas produced from local landfills to generate clean energy. This innovative project captures methane, a potent greenhouse gas, from the Palmetto Landfill, converting it into electricity and heat for the BMW Manufacturing Plant in Spartanburg, South Carolina.

Note from the Portfolio Manager: This asset was subject to a ratings review after recent commentary by the ICVCM on landfill gas methodologies. The Carbon Reserve Advisory Board affirmed the rating.



300 MV Power in Gujarat by Alfanar Power

Rating BBB

Avoidance

Project location: India

Sector: Renewable energy

Type: Avoidance

Current holdings: 335 tCO₂e

Registry: Gold Standard

Project ID: GS7745

The project activity involves installation of Wind Turbine Generators (WTG's) in Laximpar village, Kutch district, Gujarat, India promoted by the Alfanar Power Private Limited. The total installed capacity of this project activity is 301.4 MW from 22 WTGs of 2.3 MW each and 114 WTGs of 2.2 MW each. The entire power generated will be exported to the Indian National Grid.

Note from the Portfolio Manager: This asset was subject to a ratings review after a recent decision by the ICVCM on renewable energy methodologies. The Carbon Reserve Advisory Board affirmed the rating.



Carbon Capture in the Forests of Ejido El Brillante

Rating BBB ⓘ

Removal

Project location: Mexico

Sector: Nature restoration

Type: Removal

Current holdings: 1 110 tCO₂e

Registry: Climate Action Reserve

Project ID: CAR 1574

The project aims to enhance carbon sequestration through improved forest management (IFM) practices, ensuring sustainable forest use while contributing to climate change mitigation. The objectives include increasing forest carbon stocks, maintaining biodiversity, and promoting social and economic benefits for the local community. The project is located in Ejido El Brillante, Pueblo Nuevo, Durango, Mexico, covering 9 366 hectares, with an active project area of 8 918 hectares.

Note from the Portfolio Manager: This is our first inclusion of Climate Action Reserve (CAR) validated assets.

New rating: Carbon Capture in the Forests of Ejido El Brillante, Municipality of Pueblo Nuevo, State of Durango, Mexico.

Overview: The project aims to enhance carbon sequestration through improved forest management (IFM) practices, ensuring sustainable forest use while contributing to climate change mitigation. The objectives include increasing forest carbon stocks, maintaining biodiversity, and promoting social and economic benefits for the local community. The project is located in Ejido El Brillante, Pueblo Nuevo, Durango, Mexico, covering 9 366 hectares, with an active project area of 8 918 hectares.

Type of carbon mitigation asset	Voluntary carbon market credit, ex-post carbon removal credit
Sector classification	Nature-based solutions, Improved Forest Management (AFOLU)
Identifier	CAR 1574
Location	Durango, Mexico
Carbon crediting body	Climate Action Reserve
Methodology	Mexico Forest Protocol V3.
Vintage reviewed	2022

View complete rating scale [here](#).

This carbon mitigation asset has a mitigation value rating of

BBB Indicates a moderate probability of achieving 1 tCO₂e mitigation



Ratings date: 15 Oct 2024

Ratings review: Oct 2025

Ratings commentary:

The Ejido El Brillante Project receives a balanced rating, reflecting both strengths and risks. It follows a robust, widely used, and continuously improved CAR methodology, aligning well with net-zero goals and demonstrating a strong environmental track record. The project developer, SyCAF, brings credibility through its expertise in carbon forestry under CAR. Additionally, CAR's ICROA endorsement, CORSIA eligibility, and CCP eligibility enhance its standing. However, the project's mitigation action faces high quantification and reversal risks, further compounded by a weak enabling environment in the country.



MooH Cooperative Grouped Project, Reduction Of Methane Emissions In The Swiss Dairy Sector

Rating A ⓘ

Avoidance

Project location: Switzerland

Sector: Non CO2 gases

Type: Avoidance

Current holdings: 30 tCO₂e

Registry: Verra

Project ID: 2751

The MOOH project aims to reduce methane emissions from Swiss dairy farms by incorporating Agolin®, a natural feed additive, into the cows' diet. Methane, a greenhouse gas released during enteric fermentation in ruminant animals like cows, contributes significantly to global emissions—approximately 3%—and forms a notable part of Switzerland's emissions profile. By adding Agolin® to the feed regimen, participating farmers decrease methane emissions while simultaneously boosting milk yield through improved nutrient digestion and energy conversion.

“Though small in scale, the Carbon Reserve’s support brings crucial visibility to the MOOH project, championing innovation in methane reduction and sustainable agriculture.”

— **Benigna von Ballmoos, MOOH Cooperative**

New rating: MOOH Cooperative grouped project, reduction of methane emissions in the Swiss dairy sector

Overview: The MOOH project focuses on reducing methane emissions produced by dairy cows through the application of specialized feed additives. These additives work by altering the fermentation process in the cow's stomach, thereby decreasing the amount of methane produced during digestion. By improving livestock productivity and reducing methane output, the project aims to enhance the sustainability of dairy farming while contributing to climate change mitigation efforts.

Type of carbon mitigation asset	Voluntary carbon market credit, ex-post carbon removal credit
Sector classification	Non-CO2 gasses
Identifier	2751
Location	Switzerland
Carbon crediting body	Verra, VCS
Methodology	VM0041 Ver2.0 'Methodology for the Reduction of Enteric Methane Emission from Ruminants through the Use of Feed Ingredients'
Vintage reviewed	2022

This mitigation value assessment was prepared by the Carbon Reserve in line with its Mitigation Value Assessment Framework (July 2024) and approved by the Carbon Reserve Advisory Board.

View complete rating scale [here](#).

This carbon mitigation asset has a mitigation value rating of

A

Indicates a moderately high probability of achieving 1tCO₂e mitigation



Ratings date: 15 Oct 2024

Ratings review: Oct 2025

Ratings commentary:

The Carbon Reserve's maiden rating of this asset reflects a moderate likelihood of achieving 1tCO₂e mitigation. Strengths include low country risk (Switzerland) and Verified Carbon Standard accreditation (CCP-eligible). However, the methodology has few approved projects on Verra, making it less "tried and tested." Nature-based solutions, such as methane reduction via feed additives, also face high quantification risk. The next review in October 2025 will reassess improvements and performance.

Glossary of terms



tCO₂e (Tonnes of Carbon Dioxide Equivalent)

A standard unit for measuring carbon footprints, which expresses the impact of greenhouse gases (GHGs) in terms of the equivalent amount of CO₂ that would have the same global warming potential.

Carbon Removal

The process of extracting CO₂ from the atmosphere and storing it in a way that prevents its re-release, such as through afforestation, reforestation, or biochar.

Carbon Avoidance

Actions or technologies that prevent greenhouse gases from being emitted into the atmosphere, such as renewable energy projects or methane capture.

Permanence Risk

The risk that carbon stored in natural or technical reservoirs will be re-released into the atmosphere, reducing the effectiveness of carbon removal efforts.

Quantification Risk

The risk of inaccurately measuring the amount of greenhouse gas emissions avoided or removed by a project, often due to methodological or data limitations.

Nature-Based Solutions

Mitigation projects that leverage natural processes, such as forest restoration, wetland conservation, or soil management, to remove CO₂ or prevent its release.

Carbon Market

A market that allows the trading of carbon credits, which represent a reduction or removal of one tonne of CO₂ or equivalent greenhouse gas emissions.

Voluntary Carbon Market (VCM)

A market where individuals, companies, or governments voluntarily buy carbon credits to offset their emissions rather than as a compliance requirement.

Integrity Council for the Voluntary Carbon Market (ICVCM)

A global initiative aimed at establishing standards and best practices for the voluntary carbon market to enhance its integrity and impact.

Mitigation Value

The value of a carbon asset based on its ability to reduce or remove greenhouse gases, often

Glossary of terms



Mitigation Value Assessment Framework

A proprietary framework used to evaluate the quality, risks, and impact of carbon assets within a portfolio, ensuring robust decision-making.

Project Developer

An organization or entity responsible for implementing and managing carbon mitigation projects, including their design, execution, and monitoring.

Registry

An official database that tracks carbon credits to ensure their legitimacy and transparency, such as Verra, Gold Standard, or the Climate Action Reserve.

Vintage

The year in which a carbon credit is generated, typically based on the year emissions reductions or removals occurred.

Blue Carbon

Carbon captured and stored in coastal ecosystems, such as mangroves, seagrasses, and tidal marshes, which are valuable for their ability to sequester CO₂.

Carbon Backed Currency (Toco)

A currency tied to carbon credits, where each unit represents a defined quantity of CO₂ mitigated, ensuring the currency is backed by tangible environmental action.

Reversal Risk

The risk that stored carbon may be released back into the atmosphere due to factors like land-use changes, natural disasters, or poor management.

Afforestation, Reforestation, and Revegetation (ARR)

The process of planting trees or restoring vegetation to degraded or deforested areas to increase carbon sequestration.

CCP-Eligible

Refers to carbon credits that meet the Core Carbon Principles (CCP), a set of best practices and standards for high-quality carbon credits.

Art 6 Carbon Credits

Carbon credits aligned with Article 6 of the Paris Agreement, which enables countries to cooperate on meeting climate goals through international carbon markets.



About the Carbon Reserve 

The Carbon Reserve, a Swiss non-profit Foundation
