Carbon footprint monitoring report prepared for:

Ketrawe - HDS1

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1. Executive Summary

This report presents the outcomes of monitoring Ketrawe polygons in Bolivia using the CarbonSpace tool. CarbonSpace's technology was deployed across 1 polygon, covering a total area of 91.5 hectares. The monitoring period was between the years 2013-2023.

The project leverages CarbonSpace's satellite-based technology to accurately measure the carbon removals and ecosystem sink strength of the HDS1 conservation area. By using the Carbon Space platform, Ketrawe can assess the CO_2 sequestration of their forests and collaborate with Dovu to create business and sell the equivalent carbon credits.

CarbonSpace provides a digital Monitoring, Reporting, and Verification (dMRV) tool that employs artificial intelligence to estimate the net ecosystem exchange (NEE) of CO2 at a field level globally. NEE represents the net exchange of CO2 between the atmosphere and all ecosystem carbon pools during a period of time. The two metrics in this report are:

1. **NEE Total** (tCO2) - an absolute value useful for understanding whole project performance.
2. **NEE Intensity** (tCO2/ha) - a relative value representing the average NEE per hectare over a given project area. NEE Intensity is useful when comparing the hectare-to-hectare performance of project areas of different sizes.

Table 1.1: Overview of the project results (all polygons)

Total NEE in 2023	Intensity in 2023
-1108 tCO2	**-12.1 tCO2/ha**

The CarbonSpace approach has a number of unique advantages making it a source of high-quality and accurate carbon data. The tool is fully remote and utilizes robust machine learning algorithms powered with satellite and ground truth data sources, resulting in lower costs by eliminating on-site visits and manual samplings, reduced audit requirements due to system-level certification and the ability to improve accuracy over time. Corporate carbon accounting benefits from the CarbonSpace approach through the incorporation of primary carbon data, a reduction in uncertainties, and access to a third-party verified tool to back publicly-shared data and claims.

Food companies can utilize NEE data to accurately assess and report on the carbon impacts of their agricultural practices, aligning with standards like the GHG Protocol and ISO14000-s. NEE supports carbon insetting projects by providing baselines and measuring benefits from environmental interventions. Additionally, it helps identify sensitive areas for targeted

sustainability projects, enhancing ecosystem resilience and improving the company's environmental reputation.

The CarbonSpace dMRV platform has third-party system-level verification in accordance with ISO14064-3, conducted by Control Union. CarbonSpace monitoring results do not require additional project-level verification and are eligible for carbon accounting across major standards, including ISO14000-s, the GHG Protocol, SBTi's FLAG Guidance, and various carbon crediting schemes.

2. Introduction

About CarbonSpace

CarbonSpace is a digital Monitoring, Reporting, and Verification (dMRV) tool built on a unique machine learning technology and verified methodology. It combines data from various sources, including satellites and eddy covariance stations, to provide accurate, field-level estimations of carbon emissions and sequestration for any land area around the world. It does so remotely, eliminating the need for on-site visits or manual measurement methods.

CarbonSpace has developed a scalable and cost-effective solution that allows customers to benefit from NEE measurements from an extensive existing global eddy covariance network without the need to build, maintain, or operate their own stations.

With CarbonSpace, customers can track the performance of their supply chains, make corporate carbon claims, and confidently communicate about ecosystem health. CarbonSpace also provides a credible way to disclose land stewardship as part of a corporate social responsibility strategy. Accurate and scalable data empowers customers to make informed decisions, showcase sustainability efforts, and drive positive environmental impact throughout their supply chains.

About Ketrawe

Ketrawe, meaning "fertile land," is dedicated to creating windbreak forests, which offer numerous environmental benefits. They currently manage forests in Bolivia, Chile, and Brazil, sustained by donors worldwide, making Ketrawe's model financially viable.

Dovu serves as the facilitator, enabling project developers to verify and validate their carbon credits using any suitable methodology.

3. Verification Statement

The CarbonSpace dMRV platform has been subjected to independent third-party verification by Control Union in accordance with the ISO 14064-3 standard. The verification process encompassed an in-depth assessment of the methodologies, documentation, and procedures implemented in the latest version of the CarbonSpace dMRV platform, both at system and user levels.

The assessment was conducted following a comprehensive framework that included compliance standards, rigorous quality checks, examination of the procedural manual, analysis of historical data, and an assessment of the statements made to clients. The verification framework entailed extensive methodology verification as well as field validation, which is the highest degree of assurance possible.

Monitoring results from the CarbonSpace dMRV platform are processed through a thorough quality management approach and do not require additional verification at the project level. The results are suitable for a wide range of carbon accounting frameworks, including:

- Corporate narrative claims
- Setting carbon emissions and removals baselines and targets
- Carbon accounting and reporting toward major standards such as ISO 14000
- Corporate carbon reporting guidelines such as the GHG Protocol and SBTi

The results also support Life Cycle Assessments (LCAs) and carbon insetting and offsetting projects.

The first assessment for Carbon Space Technology Version 1.0 was conducted from May to August 2023. The latest upgraded system, known as CarbonSpace Technology Version 1.1, was verified in May 2024.

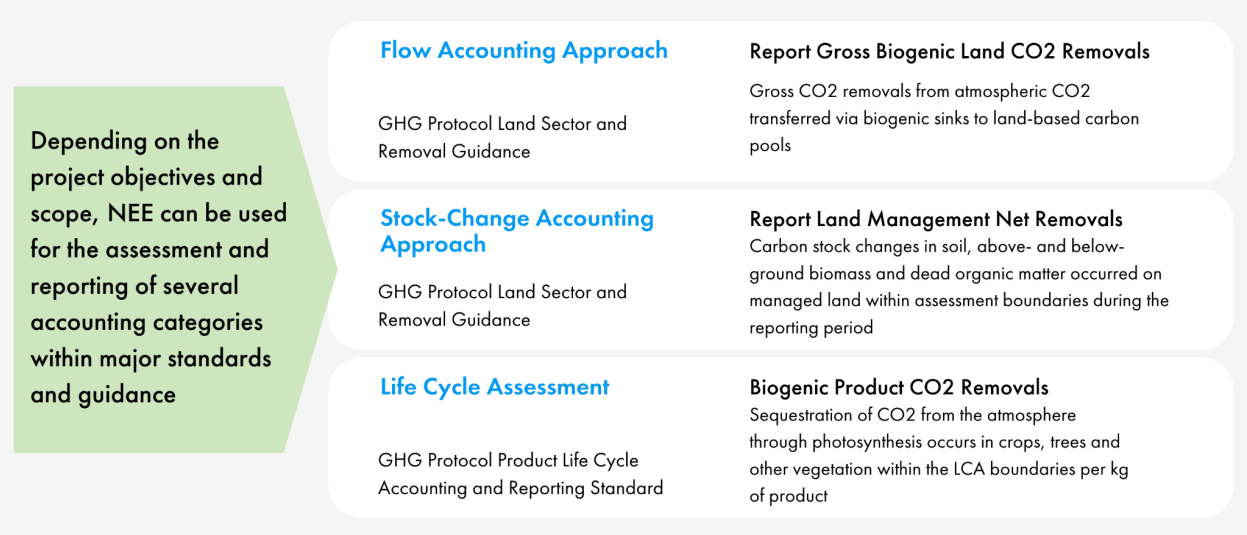
4. NEE in Corporate Carbon Accounting

The CarbonSpace tool can be used to monitor, report, and verify biogenic CO2 emissions and removals in any land system globally, including agricultural systems and nature-based carbon removal projects.

CarbonSpace's dMRV technology provides estimates of land-based NEE, or the net carbon flux corresponding to carbon removals or emissions at the ecosystem level. NEE represents aggregated total carbon stock change in all natural carbon pools.

The NEE results in this report can be used for reporting in several accounting categories within major corporate carbon standards (Figure 3.1).

Figure 4.1: NEE results for corporate carbon accounting



For more details on the CarbonSpace monitoring approach, see Annex: Scope and Methodology Overview section.

5. Assessment Results

Project Results

Table 5.1: Overview of project details

Location	Bolivia
Number of polygons	1 polygon
Total area	91.5 ha
Land cover	EBF
Monitoring period	01/01/2013 - 31/12/2023

Table 5.2: Overview of project results.

Year	*Total NEE*	*Intensity*
2013	***-1254 tCO2***	***-13.7 tCO2/ha***
2014	***-1259 tCO2***	***-13.8 tCO2/ha***
2015	***-1007 tCO2***	***-11.0 tCO2/ha***
2016	***-1194 tCO2***	***-13.0 tCO2/ha***
2017	***-1131 tCO2***	***-12.4 tCO2/ha***
2018	***-1180 tCO2***	***-12.9 tCO2/ha***
2019	***-1185 tCO2***	***-12.9 tCO2/ha***
2020	***-1048 tCO2***	***-11.4 tCO2/ha***
2021	***-1333 tCO2***	***-14.6 tCO2/ha***
2022	***-1145 tCO2***	***-12.5 tCO2/ha***
2023	***-1108 tCO2***	***-12.1 tCO2/ha***

Figure 5.3: Annual NEE. Ecosystem-level CO2 sequestration, total and intensity.

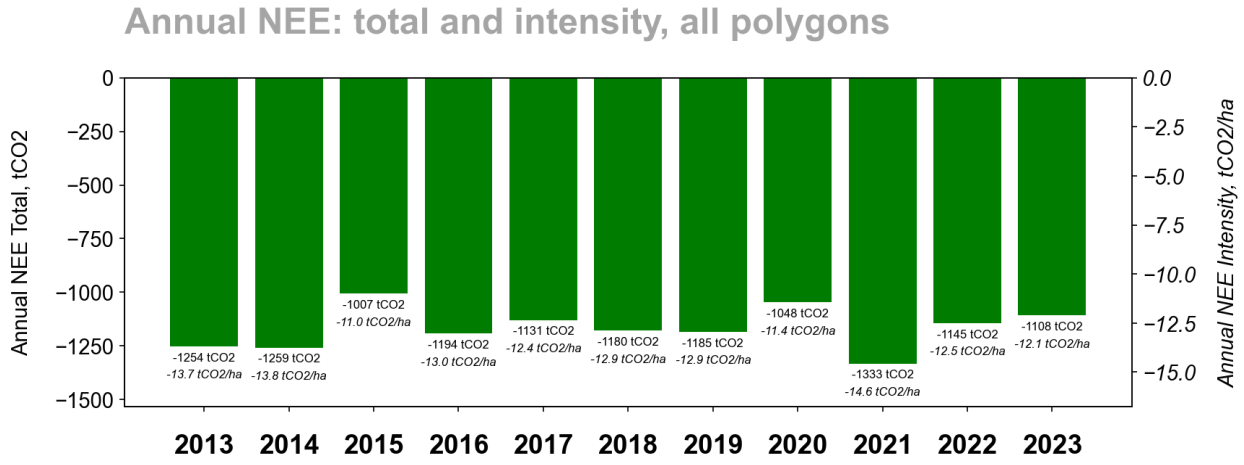
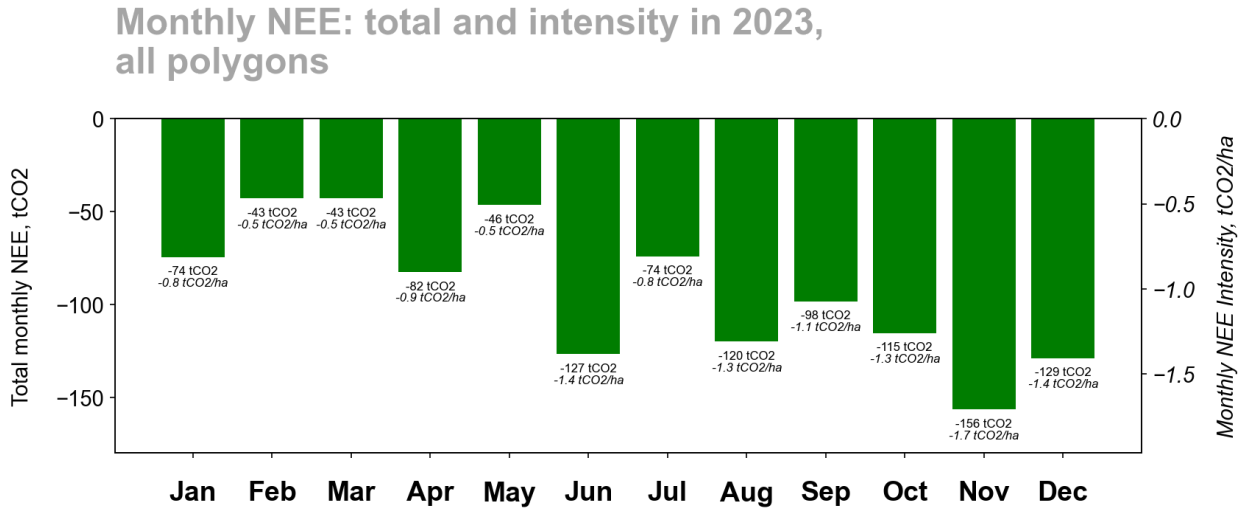


Figure 5.4: Monthly NEE. Ecosystem-level CO2 sequestration on a monthly basis in 2023.



6. Potential Claims

General Claims

We are proud to work with CarbonSpace's digital carbon MRV platform to make our supply chain carbon reporting more comprehensive and accurate so we can pursue our net zero goals.

CarbonSpace enables us to monitor the carbon sequestration and emissions of our plantations. With this reporting, we can understand the true impact of our sourcing activities and work with suppliers to improve or maintain their environmental performance.

- *CarbonSpace's dMRV tool was applied to **1 polygon in Bolivia with a total area of 91.5 ha**. The period of monitoring was **from 2013 to 2023**.*
- *Across all monitored land, Net Ecosystem Exchange (NEE) in 2023 was **-1108 tCO2 (-12.1 tCO2 per ha)**, which corresponds to gross biogenic carbon removal, or net carbon sequestration, from the atmosphere into agricultural products and ecosystem carbon pools.*

Full references are available in the CarbonSpace White Paper.

7. Annex: Scope and Methodology Overview

Project Scope

The CarbonSpace tool can be used to monitor, report, and verify the biogenic carbon removals of any land system globally, including agricultural systems and nature-based carbon removal projects.

CarbonSpace's dMRV technology provides estimates of land NEE, a net carbon flux corresponding to carbon removals or emissions on the ecosystem level. NEE represents aggregated total carbon stock change in all natural carbon pools (Table 7.1).

Table 7.1. Natural carbon pools

Carbon pool	**Included/Excluded**
Aboveground Tree Biomass	Included as a component of NEE
Aboveground Non-Tree Biomass	Included as a component of NEE
Belowground Biomass	Included as a component of NEE
Litter	Included as a component of NEE
Deadwood	Included as a component of NEE
Soil Organic Carbon	Included as a component of NEE
Harvested Biomass and Residues	Included as a component of NEE

NEE can be used for the assessment and reporting of several accounting categories within major carbon standards, including ISO14000-s, GHG Protocol, SBTi's FLAG Guidance, and various carbon crediting schemes (Table 7.2).

Table 7.2. NEE within major accounting standards

Accounting category	**Definition**	**Standard**	**Applicability**
Gross Biogenic Land CO2 Removals	Gross CO2 removals from atmospheric CO2 transferred via biogenic sinks to land-based carbon pools	→ ISO14064-1, -2 → GHG Protocol Land Sector and Removal Guidance - flow accounting approach	NEE value corresponds to Gross Biogenic Land CO2 Removals

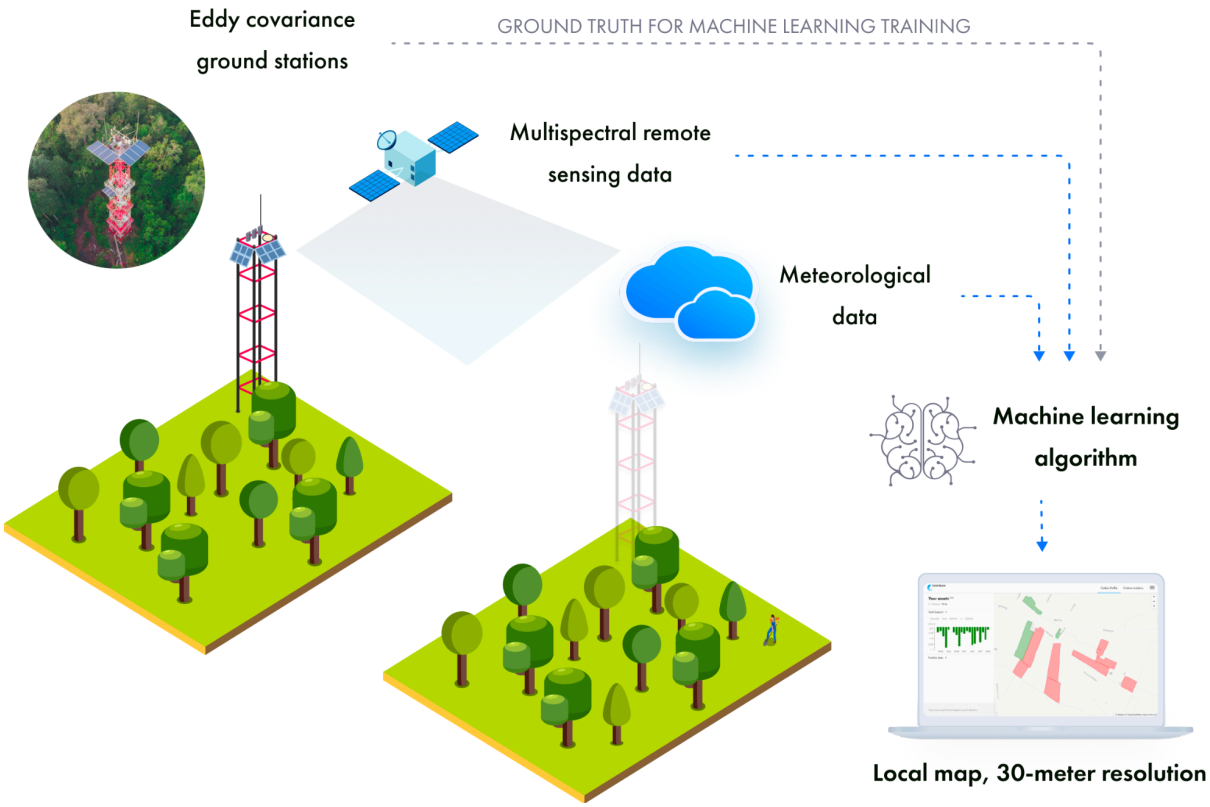
Land Management Net Removals	Net increases to storage in land carbon pools due to ongoing land management practices	→ ISO14064-1, -2 → GHG Protocol Land Sector and Removal Guidance - stock-change accounting approach	NEE minus carbon contained in the harvested biomass corresponds to Land Management Net Removals
Biogenic Product CO2 Removals	Uptake of CO2 by biogenic materials within the boundaries of the LCA	→ ISO14040 / 14044 / 14067 → GHG Protocol Product Life Cycle Accounting and Reporting Standard	NEE per kg of final product corresponds to Biogenic Product CO2 Removals
Removals Into Natural Carbon Pools	Changes in storage in land carbon pools due to land management practices	→ Carbon insetting and offsetting methodologies	NEE value corresponds to Gross Biogenic Land CO2 Removals and could be used for ongoing monitoring and modeling baseline scenario

Technology

CarbonSpace's core technology involves machine learning algorithms trained on multispectral satellite imagery and CO2 flux data from ground stations which estimate CO2 flux based on the eddy covariance method. CarbonSpace has created global models for each land cover type to produce reliable GHG estimates for areas down to 1 ha in size.

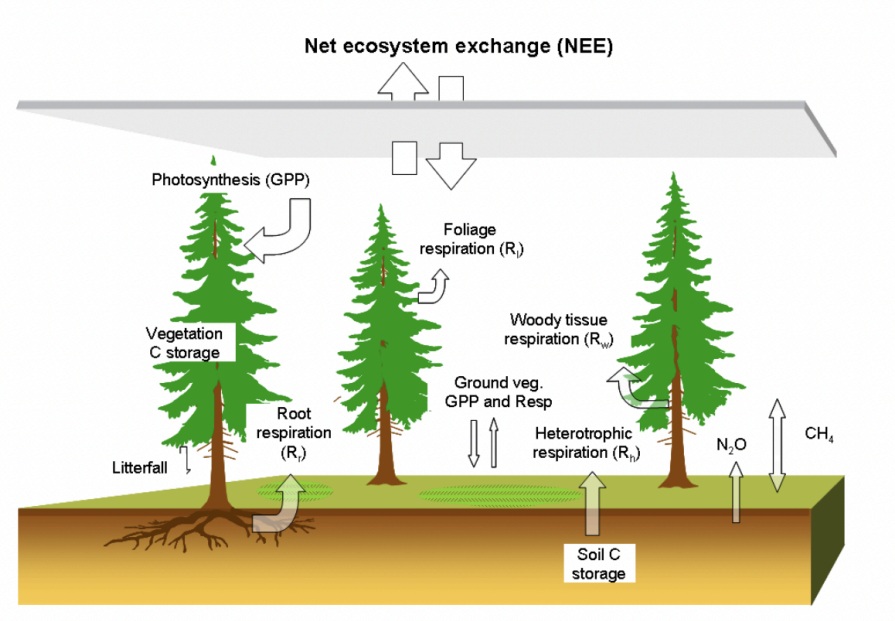
The tool is intended to provide a holistic view of CO2 exchange between the ecosystem and the atmosphere and reduce uncertainties in estimating the carbon benefits of ecosystem restoration projects and sustainable land management practices. This is possible due to the use of a globally distributed network of ground stations that consistently measure carbon fluxes. Tracking carbon fluxes on a monthly basis, CarbonSpace can provide data faster and more consistently than traditional methods, with an added layer of historical context and change. On-site calibration of the model is not required.

Figure 7.3: CarbonSpace technology overview



CarbonSpace provides Net Ecosystem Exchange (NEE) estimates as an output. NEE is a measure of the net exchange of carbon between an ecosystem and the atmosphere and is a primary gauge of ecosystem carbon sink strength. It is the difference between photosynthesis, plants drawing CO2 out of the atmosphere, and respiration, the ecosystem “breathing” and releasing CO2 into the atmosphere. Negative NEE indicates the amount of CO2 that was accumulated in the ecosystem. Positive NEE indicates emission of CO2 into the atmosphere.

Figure 7.4: Carbon fluxes in the ecosystem



NEE is a crucial metric for assessing ecosystem health. It measures the rate at which plants convert solar energy into organic matter, providing essential habitat and resources for other organisms. It also serves as an indicator of biodiversity and environmental disturbance.

Strong NEE values indicate robust primary biomass production, supporting biodiverse and stable ecosystems. The opposite trend can signal ecosystem degradation, highlighting potential threats and emphasizing the need for conservation efforts.

Utilizing NEE as a metric reduces the complexity and uncertainty inherent in the individual measurement of each carbon pool and offers an accurate, holistic perspective on ecosystem carbon fluxes.

In contrast to measuring carbon pools individually, focusing on NEE allows for an efficient and effective assessment of the overall effect of actions on an ecosystem's carbon balance. This enables the effective prioritization of carbon sequestration activities.