



CARBONCHIP

Project Booklet
Biocare - Carbonchip
Mobile Biochar Project
Partnership
April 2025



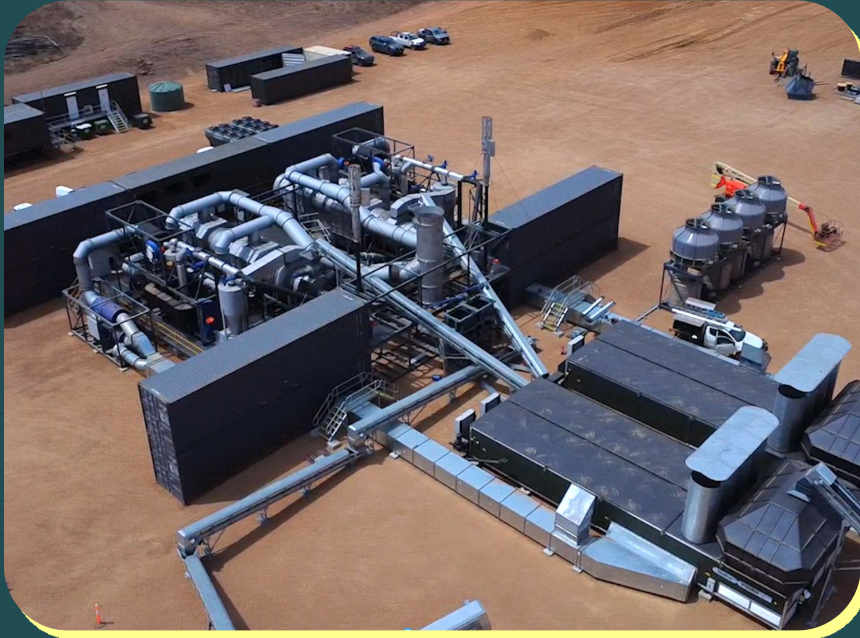
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Our Company

Company summary



Biocare is a world leader in biochar CDR project development, marketing and end-use.

With **15+ contracted biochar projects** across Australia, Asia, the Pacific, Latin America and the USA, we are the trusted partner for agricultural, industrial, and forestry businesses interested in biochar carbon removals.

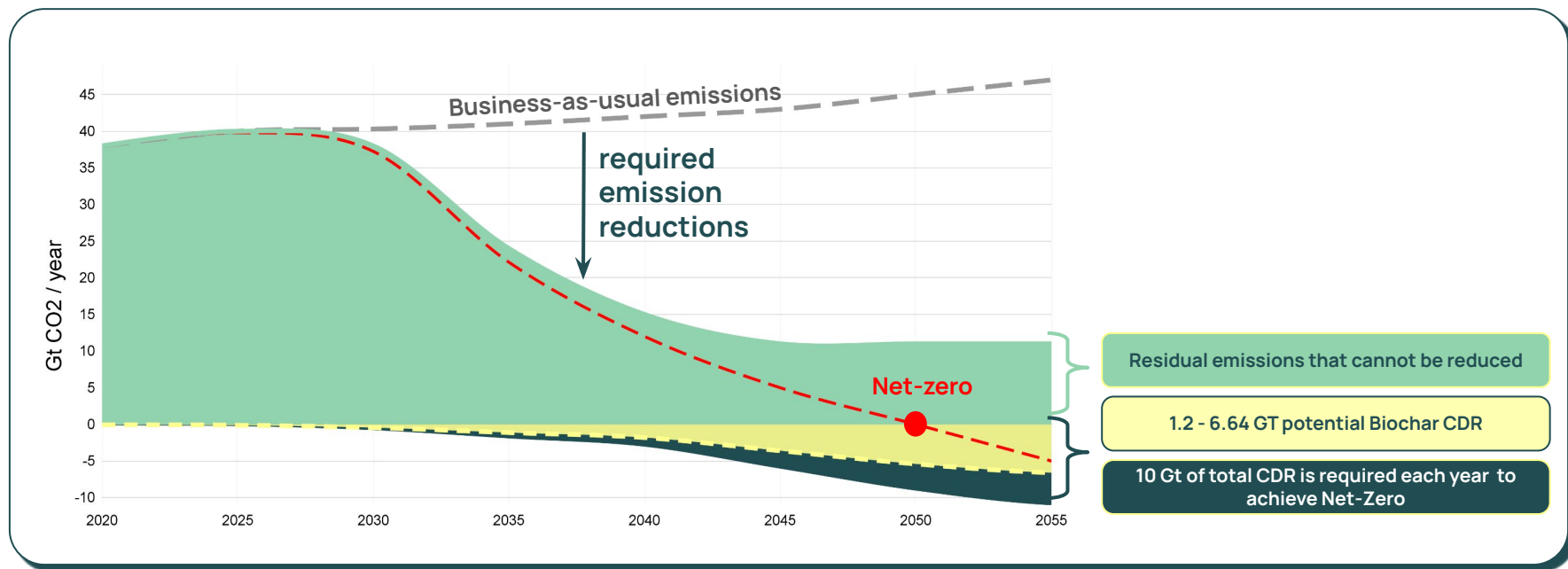
Our team combines expertise in decarbonisation, diffusion of cleantech innovations, agriculture, carbon advisory, pyrolysis engineering, chemistry and biochar end use, as well as project development.

We partner with innovative organisations to evaluate and implement projects that upcycles their biomass waste into income streams including biochar and **CDR credits**.

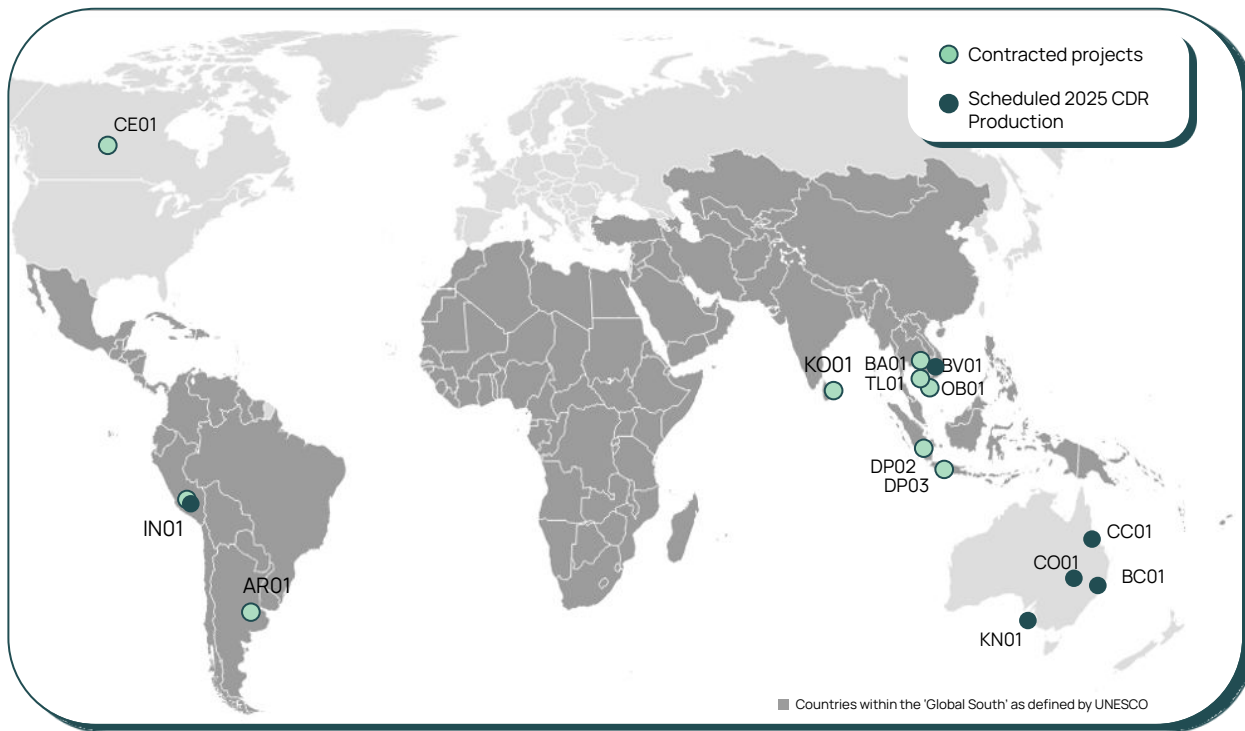
Role of Biochar carbon removal in Net Zero



Reducing emissions is not enough. Scientific bodies like SBTi, Oxford University and IPCC recognize the need for CDR to meet either the 1.5°C or 2°C target. **Current estimates for the needed amount of CDR range from 5–16 Gt CO₂e per year by mid-century.** To reach these levels will require a massive scaling of available engineered removals.



Biocare portfolio



Goal: 500,000 Tonnes of Biochar p.a by 2030



Pipeline:
15+ projects across 6 countries
1.4M CDR (commissioning/production)
+1.9M (in feasibility studies)
+1.7M (pre-feasibility)



Biomass feedstocks
Our projects manage a wide range of biomass waste, including waste husks (almond, rice, coconut) and forestry residues.



At USD c.\$150 CDR price
Biocare's operating projects will generate **~\$25M USD** of annual gross marketable value

Biocare team



Experienced engineers, chemists, agronomists, that hold PhDs across biochar, LCA and ESG quantitative analysis and experienced across project origination, development, finance and carbon markets.



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Analyst



Our Partnerships and Collaborations





Project Summary

Carbonchip Mobile Carboniser #1

QLD, Australia

570
Spot credits
available

CDR Production

+756 p.a.

Biochar Production (t)

+400 p.a.



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Disclaimer: Numbers are best estimates based on forecasts.



Project Overview:

The biochar production project utilises spotted gum waste as feedstock for biochar production, contributing to waste valorisation, carbon sequestration, and soil health improvement.



Partner: Carbonchip Pty Ltd



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Feed stock: Eucalyptus and pine residues



Technology:

The Tigercat 6050 is a mobile pyrolysis unit used in the biochar production process. This technology enables efficient and controlled thermal decomposition of timber waste, converting it into biochar. The unit is designed to minimise emissions, energy consumption, and environmental impacts while maximising the yield and quality of biochar.



H/Corg: 0.17



CDR factor: 1.89



Carbon Registry: Puro.earth - ID: 291133 - [link](#)

Project Video: [link](#)



Status: Operational, Issued credits

Co-Benefits:

Soil Improvement: The main biochar applications is for the use of soil application.





Introduction

Queensland, Australia

The biochar production project, led by Carbonchip, utilises pine and eucalyptus waste as feedstock for biochar production, contributing to waste valorisation, carbon sequestration, and soil health improvement. The project involves collaboration with timber suppliers, technology providers, and end-users.

The biochar production process begins with the collection of forestry residue, specifically logs and branches from a farm located in Queensland, Australia. This timber is gathered and piled at a central location



Introduction - Parties

Queensland, Australia



Biocare Projects Pty Ltd
("Biocare") is responsible for the LCA preparation and registration process, issuance and monetisation of the CDR from the project.



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Carbonchip Pty Ltd
("Carbonchip ") owns and operates the facility and has partnered with Biocare to develop the project. Carbonchip is a privately-owned company focused on environmentally responsible disposal and conversion of timber residue into biochar



Baseline

Queensland, Australia

Forest Residues

Baseline scenario **Forestry Residues decomposition**



The baseline scenario for the waste residue is burning as the dead material poses a fire hazard.

Project scenario **Biochar Production**



The biochar production project, led by Carbonchip, utilises spotted gum and forestry waste as feedstock for biochar production, contributing to waste valorisation, carbon sequestration, and soil health improvement. The project involves collaboration with timber suppliers, technology providers, and end-users.

* 1 CDR credit represents 1tCO₂ net removal.



Additionality

Queensland, Australia

The decision to develop the Carbonchip project follows comprehensive technical and financial assessments. Without the potential revenue from CDRs, this biochar project would not be economically viable.

The following was considered when assessing the additionality of the project:

Common Practice and Technology Diffusion



The project is the first of its kind. The use of mobile pyrolysis technology and biochar is not yet widespread in the region and so promoting its diffusion further reinforces the adoption of carbon removal technologies



Laws & Regulations



The project is not mandated by law, meaning its implementation is a proactive measure for advancing environmental sustainability.



Project Finance



To assess the financial additionality, the CDM Methodological Tool 27 of the UNFCCC Clean Development Mechanism "Investment Analysis" was used.

We conclude with a determination that this project is additional based on a financial assessment; without carbon finance this project would not have proceeded because it does not meet a reasonable threshold for making an investment decision.





Technology Summary- TIGERCAT 6050

Queensland, Australia

- Open top mobile autothermal reactor that utilises biomass inputs to generate the necessary energy for the pyrolysis reaction.
- Capable of performing pyrolysis in situ and can be moved from site to site on a trailer. The Carbonator has tracks which means it can move short distances.
- To minimize fugitive emissions, the Carbonator uses “air curtain” technology, using fans to create a draft that recirculates the pyrolysis gases in the pyrolysis chamber to achieve secondary combustion.



Pyrolysis Process



- The Carbonator is equipped with replaceable thermo-ceramic panels rated to 1,650°C (3,000°F).
- The operating conditions of the pyrolysis process are dependent on the frequency of loading and the amount of biomass fed into the machine. Loading biomass can influence the operating temperature and the thermal momentum in the chamber. Given this is a manual process, the efficiency of operation is dependent on the operator and procedures.
- The biochar yield from the Carbonator is relatively low; 10-15% compared to some of our engineered plants which is 25-35%.





Life Cycle Assessment

Queensland, Australia

Key Numbers

Tonnes of feedstock	6,130
Tonnes of dry biochar	442.37
H:C _{org} molar ratio	0.17
Organic carbon content	83.6%
E stored (ton CO ₂)	1,181
E biomass + E production +E use (ton CO ₂)	345
CDRs per tonne of dry biochar	1.89
CDRs	835

For further details and due diligence, additional information on the Life Cycle Assessment (LCA) can be provided upon request. This study follows the ISO 14040/14044 (2006a,b) guidelines for life cycle assessment (LCA)

The analysed period for this LCA was from 12/10/2021 to 20/12/2023. The LCA aims to assess carbon emissions performance of the biochar production system, encompassing the TIGERCAT 6050 mobile pyrolysis unit, biochar processing, and biochar transport, distribution, and applications.

The Life Cycle Assessment (LCA) study shows an estimate of 1.89 CDRs per tonne of biochar produced and applied to a soil matrix.

This CDR factor is based on a H:C_{org} molar ratio of a biochar produced from forest residues, the soil temperature in Queensland and life cycle project emissions.



Co-benefits

Queensland, Australia

Beyond carbon removal, biochar has many **environmental, social and economic benefits.**

- **Community Impact:** Local job creation and biochar workshops empower the community.
- **Soil Benefits:** Enhances soil health, boosts crop yields, and reduces fertilizer needs.
- **Fire Risk Reduction:** Utilizes forest residues, reducing fire hazards through sustainable management.



We are committed to implementing a framework for identifying key performance indicators. Our dedication extends to the continuous measurement and reporting of these indicators to ensure ongoing progress and impact assessment.

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 **Biocare**





Please reach out with any questions



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Acknowledgement of Country

In the spirit of reconciliation Biocare acknowledges the Traditional Custodians of country throughout Australia and their connections to land, sea and community.

We pay our respect to their Elders past and present and extend that respect to all Aboriginal and Torres Strait Islander peoples today.

