





Biochar: Unlocking Carbon Market Potential

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Who we are

South Pole partners with climate action projects and corporate clients worldwide to drive finance towards sustainable practices



Innovative solutions

An award-winning, 16-year history of providing sustainability solutions



Project developer

Largest developer of emission reduction, avoidance and removal projects globally



Diverse expertise

Based in 30 offices, our team of 1300+ sustainability advisors, scientists, and engineers are leading experts in their fields

Our Work on Biochar

Launched NextGen Carbon Dioxide Removal Facility

mobilizing \$300-\$800 million to dramatically scale high quality removals

Biochar credit retailer

Educating our clients and selling biochar carbon credits



Co-lead author of the VCS biochar methodology

together with a consortium of partners

CAR biochar protocol working group member

providing guidance and feedback to CAR and our partners to help develop a new biochar protocol

Building our own portfolio of biochar projects

around the world, using high technology criteria to drive high quality credits

CCS+
initiative

A market leader on technical removals, South Pole is also a founding member of the CCS+ Initiative



Carbon Project Development

What are carbon credits?

CO₂ Equivalence

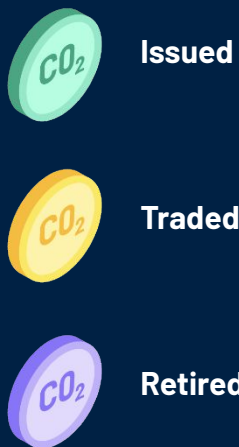
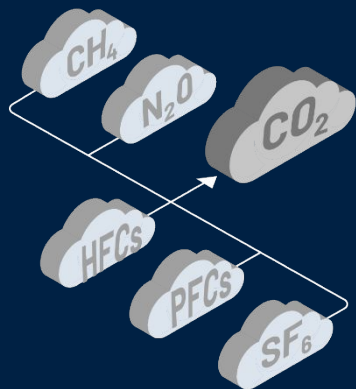


Registry



Tradable > Market

Each credit has unique serial numbers & can only be used once



How many carbon credits per 1 tonne biochar?

High level estimate:

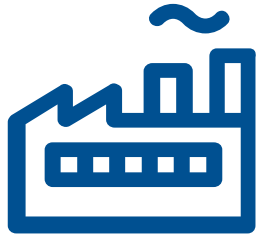
1 tonne biochar contains ~ 3.66 tonnes CO₂e x [40 - 80% fixed carbon] x [85 - 89% permanently stored]=

1.5 - 2.5 tonnes CO₂e per tonne of biochar

Note: This is a rough estimate for carbon technical potential, assuming high technology and high temperature pyrolysis without leakage emissions. Additional calculations and eligibility criteria are necessary for accuracy.



Process and credits (soil application example)



Biochar Producer

The biochar producer converts eligible biomass to biochar



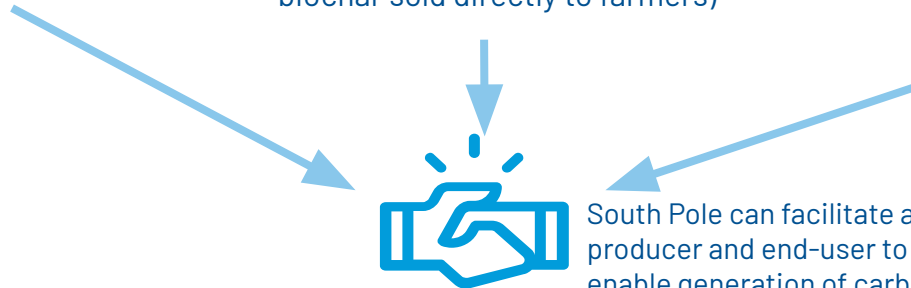
Retailer for Biochar products (optional)

The soil producer mixes biochar with soil to prepare a good which can be sold to farmers (and/or biochar sold directly to farmers)



Farmer

The farmer buys the biochar to apply it to his fields. The farmer is the initial owner of the carbon rights.



South Pole can facilitate a contractual arrangement between producer and end-user to exchange data & information to enable generation of carbon credits

What is required for an activity to qualify as a carbon project?

Integrity principles:

emission reductions must meet the following criteria, upheld by all ICROA-endorsed standards

Real



Proven to have genuinely taken place.

Additional



The sequestration or avoided emissions exceeds all regulatory requirements and what would have occurred in absence of the project

Measurable



The impact must be quantifiable, using recognised monitoring practices and methodologies, against a credible emissions baseline.

Verifiable



An independent, third-party auditor must be able to verify that the emissions reductions have indeed taken place.

Permanent



Sequestration or avoided emissions must have a durability against reversals (i.e. release back to the atmosphere), usually for at least 100 years.

Unique



Only one carbon credit can be associated with a single reduction or removal of 1t CO₂e: no "double counting" between projects or governmental GHG accounts.

VERRA vs. Puro

South Pole offers tailor-made project development following all available standards

VERRA:

- Leading international carbon standard
- First ICROA-endorsed standard
- Strong focus on robust and thorough reporting aligned with ISO 14064:2006
- Annual issuance of VCUs
- Only waste-biomass eligible as feedstock
- Reporting of individual biochar production and application until end-use



CLIMATE
ACTION
RESERVE

- TBD



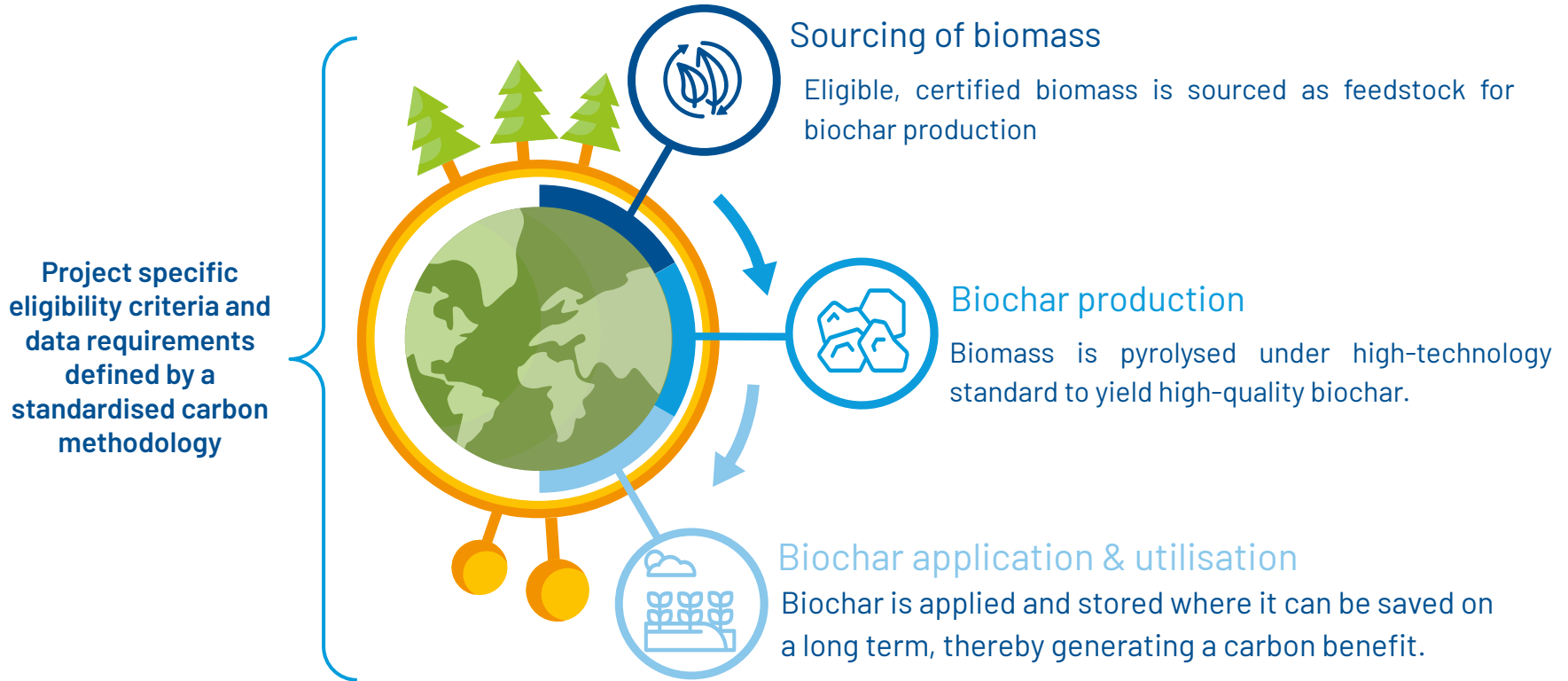
South Pole is committed to
only work with ICROA
endorsed biochar
standards

puro ·
earth

Puro.Earth

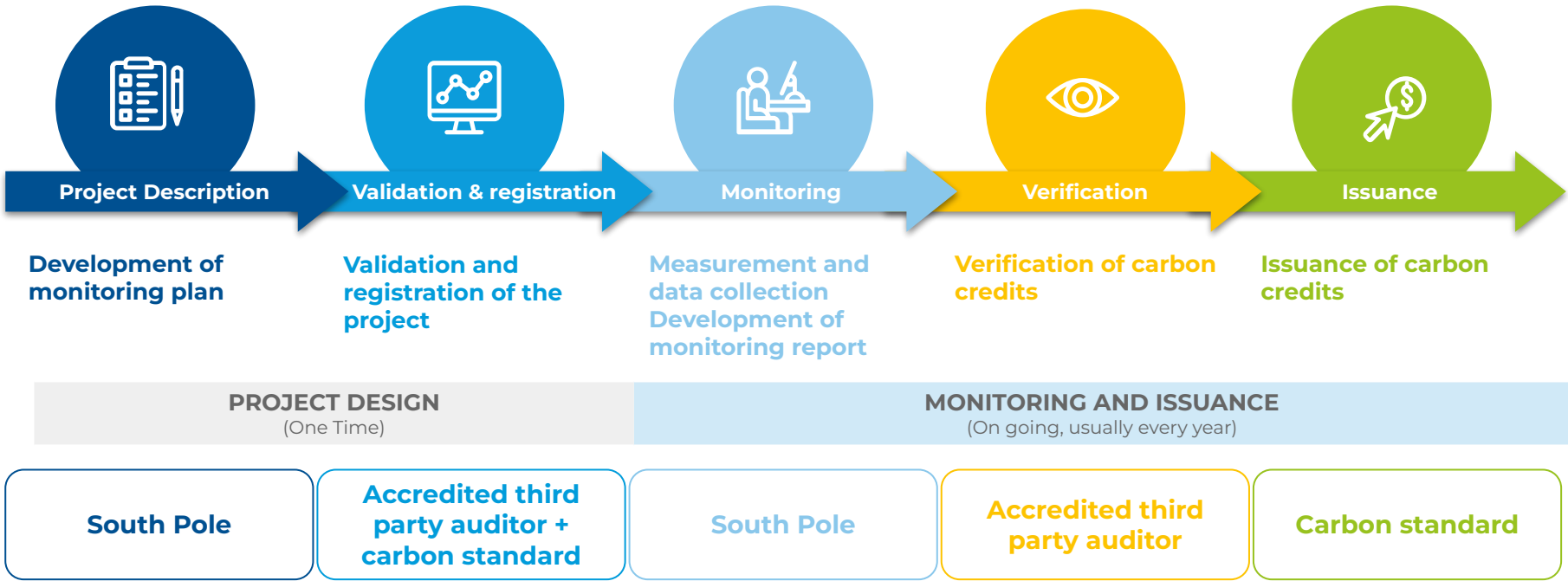
- Innovative and disruptive carbon standard
- Lean reporting requirements
- ICROA endorsement in 2023
- Annual to monthly issuance of CORCs
- Feedstocks have to be sustainably sourced

Main project stages for biochar projects



How to develop a biochar project and generate carbon credits?

The strict process, set up by independent certification standards, that projects must complete to generate carbon credits ensures environmental integrity.



Carbon Project Roles

End Buyer

The company that purchases issued credits to retire

Landowners



The owners of the areas where the biochar is being applied. These are often the most important actors because they are in charge of implementing and maintaining project activities.

These can be the same or different entities depending on the project structure

Project Owner (PO)



Biochar producer/retailer that holds the rights to the carbon assets, or establishes agreements with landowners who transfer the carbon rights to the PO. The PO coordinates implementation and data collection.

Project Developer



The company that assumes the costs and responsibility of developing and certifying the project under a relevant methodology and standard. The developer is responsible for preparing all documentation and managing the carbon cycle for the life of the project.

Credit Retailer



The organisation that commercialises the resulting carbon credits on the voluntary carbon market, returning value for the PO and Landowners. The retailer manages credit deliveries and registry administration.

Third-Party Auditor



An organisation which verifies the accuracy and appropriateness of methods and calculations at the verification and validation stages. Also known as Validation and Verification Bodies (VVBs).

Certification Standard

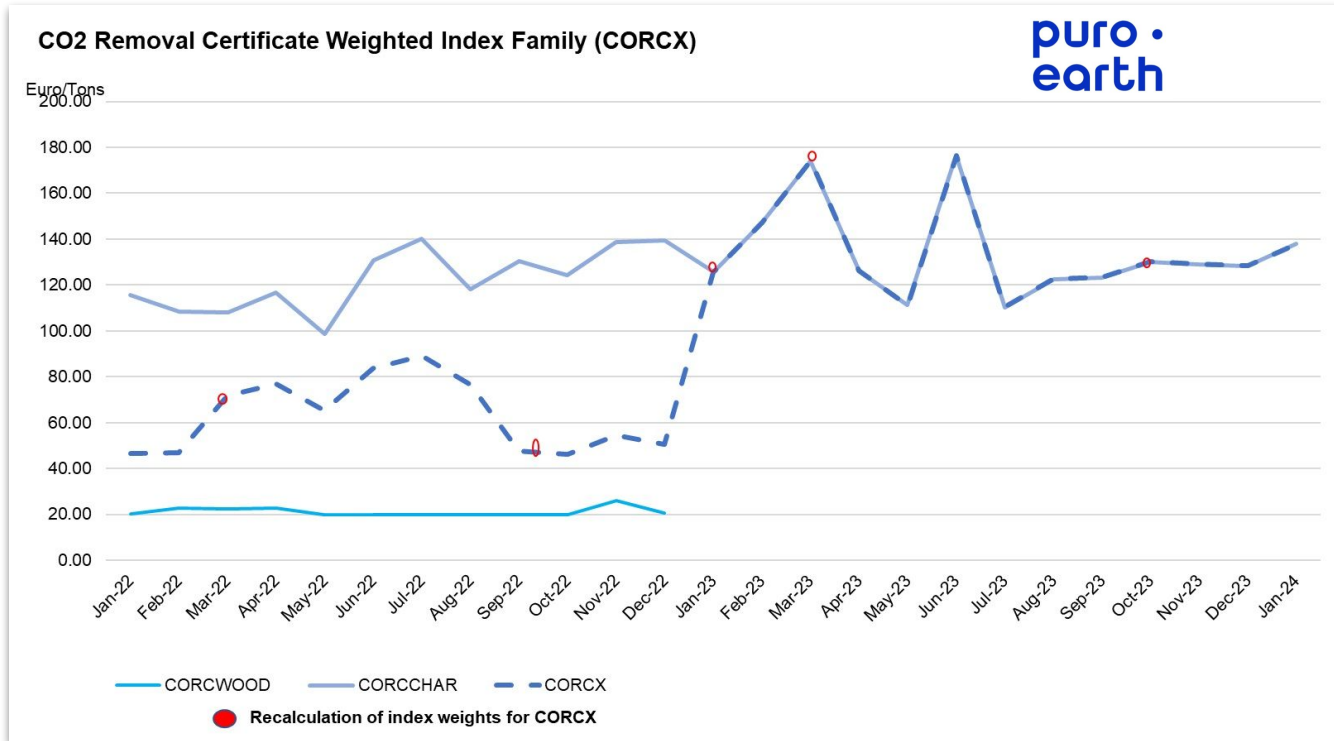


The organisation or label that endorses the project according to strict standards. This organisation typically administers the methodologies and credit registries..



Carbon Markets

Biochar Market History



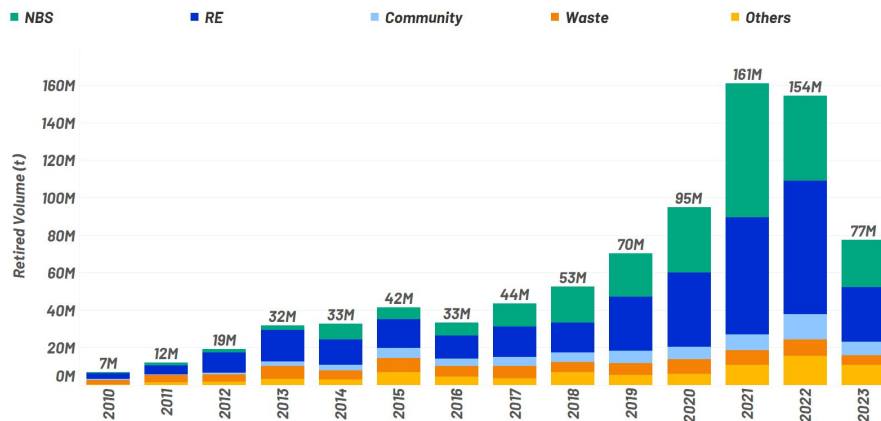
Carbon credits from Biochar projects have a market history of being sold on average in the range of **\$90-170 USD per credit (1 tonne CO₂e)**

Market Demand

Demand proves resilient in light of tough macro-economic conditions with Q1-23 having the **highest** level of retirements on record*

*excluding crypto buyers in 2021-22

Retired Volume of Carbon Credits by Project Type (2010 - 2023)



Source: Verra, Gold Standard, ACR and CAR and authors' calculations.
Last observation: 30/06/2023.



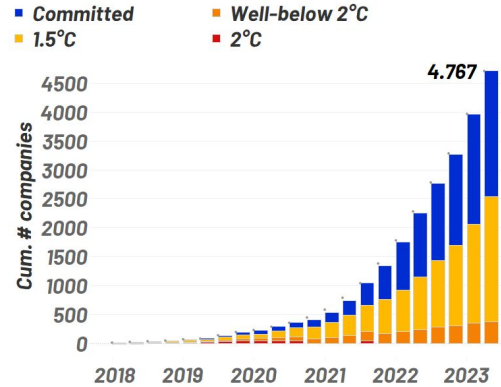
- Demand of carbon credits has grown significantly over the last decade with record levels of retirements in '21 and '22.
- Retirements in the first half of '23 were on par with the levels seen in the first half of '22.
- Given the conditions over the past year- higher prices, macroeconomic trends, no crypto- the market demonstrates resilience and strong signs of growth and maturing.
- From a survey of [medium and large companies](#), **89%** said carbon credits are important to address for annual unabated emissions which organisations are not yet able to eliminate or neutralize.



Claims

Over **45%** of Forbes 2000 companies have a net zero target.

Science Based Targets



Source: SBTi progress database.
 Notes: Color based on the near-term target classification field.
 Last observation: 30/06/2023



- Corporate climate action has accelerated considerably in recent years.
- In the first half of 2023, the exponential growth of the number of companies that have committed or set to commit an SBTi target continued with 4767 by June 2023 (500% increase since June 2021).
- Following a consultation with over 100 companies and market experts, South Pole launched [new funding climate action claim](#) to empower companies to make claims that earn them credit for their actions. 94% of respondents agree on the need for compatibility in corporate claims to support the Paris Agreement

Net zero targets



Forbes 2000 companies with a net zero target has grown by

120% since 2020

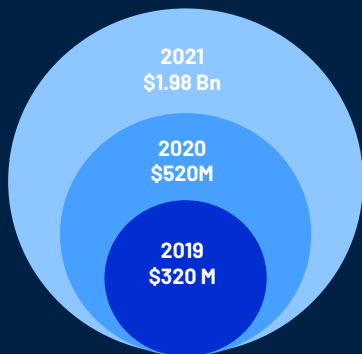
to cover annual revenues of US\$26.4tr.

Source: [Companies with a net zero target from the Forbes 2000 companies. Net Tracker \(23\)](#)

Valuation to date

Since 2019, the valuation of the VCM has grown by

+500%



Sources: [Forest Trends' Ecosystem Marketplace, 2021](#), [The Art of Integrity: State of Voluntary Carbon Markets 2021](#). Washington DC: Forest Trends Association.

Valuation outlook

Depending on best practices, integrity initiatives and policy developments the market valuation could reach \$1tr as early as 2037.



Sources: [BNEF\(23\)](#)

Thank You!

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