Issuance of Carbon Dioxide Removal Certificates from SAREP

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Current voluntary carbon market

Shift towards removal credits

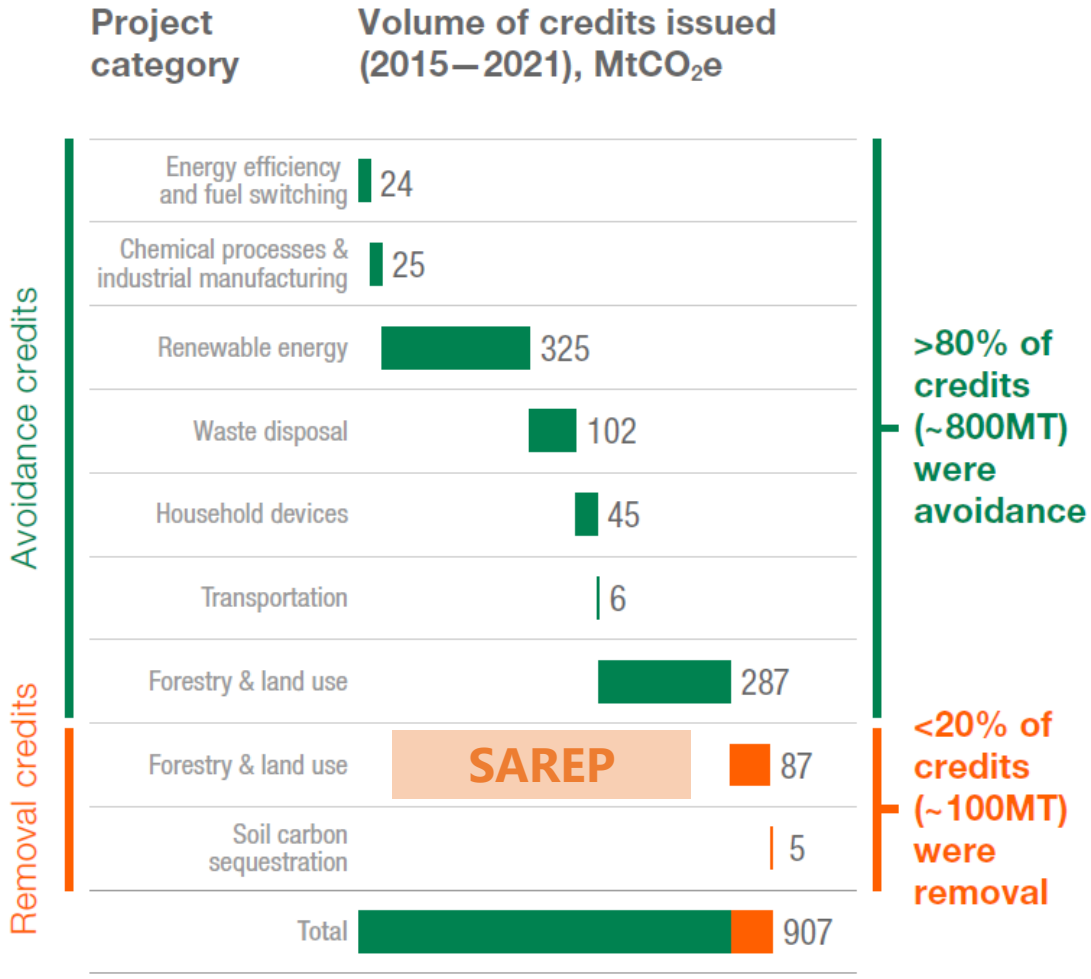
Avoidance vs removal

- **Avoidance credits**: represent the avoidance or reduction of a ton of CO2 that would have been emitted into the atmosphere.
- **Removal credits**: represent drawdown of CO2 from the atmosphere – lower the concentration of carbon in the atmosphere.

Current voluntary carbon market (VCM)

- Avoidance credits being dominant in the VCM – avoidance alone will not prevent a 1.5°C overshoot!
- Growing corporate preference for removal credits over avoidance credits

Volume and category of credits issued in the voluntary carbon market (VCM)



Source : BCG (2022) The voluntary carbon market: 2022 insights and trends

Type of carbon credits issued from SAREP

Avoidance vs. removal credits

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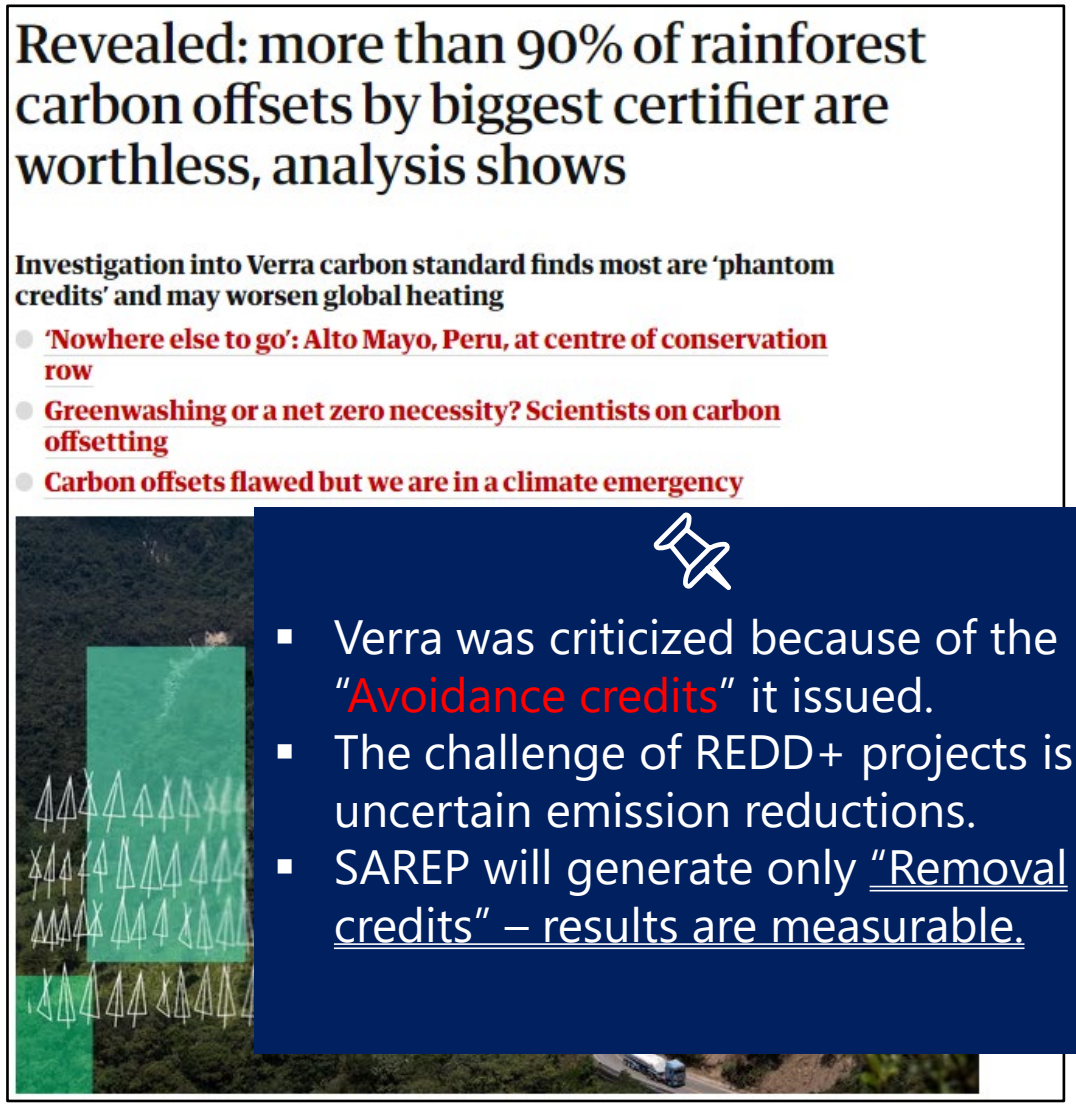

Revealed: more than 90% of rainforest carbon offsets by biggest certifier are worthless, analysis shows

Investigation into Verra carbon standard finds most are 'phantom credits' and may worsen global heating

- 'Nowhere else to go': Alto Mayo, Peru, at centre of conservation row
- Greenwashing or a net zero necessity? Scientists on carbon offsetting
- Carbon offsets flawed but we are in a climate emergency

- Verra was criticized because of the "Avoidance credits" it issued.
- The challenge of REDD+ projects is uncertain emission reductions.
- SAREP will generate only "Removal credits" – results are measurable.

Type of credits issued from SAREP

Carbon credits issuance is planned from:

I. Afforestation (not Reduction of Emissions from Deforestation and forest Degradation- REDD+)
II. Biochar production

Both are carbon removal!

Source: The Guardian (2023, January), https://www.theguardian.com/environment/2023/jan/18/revealed-forest-carbon-offsets-biggest-provider-worthless-verra-aoe

Type of carbon dioxide removal credits

Benefits and challenges of carbon dioxide removals by category

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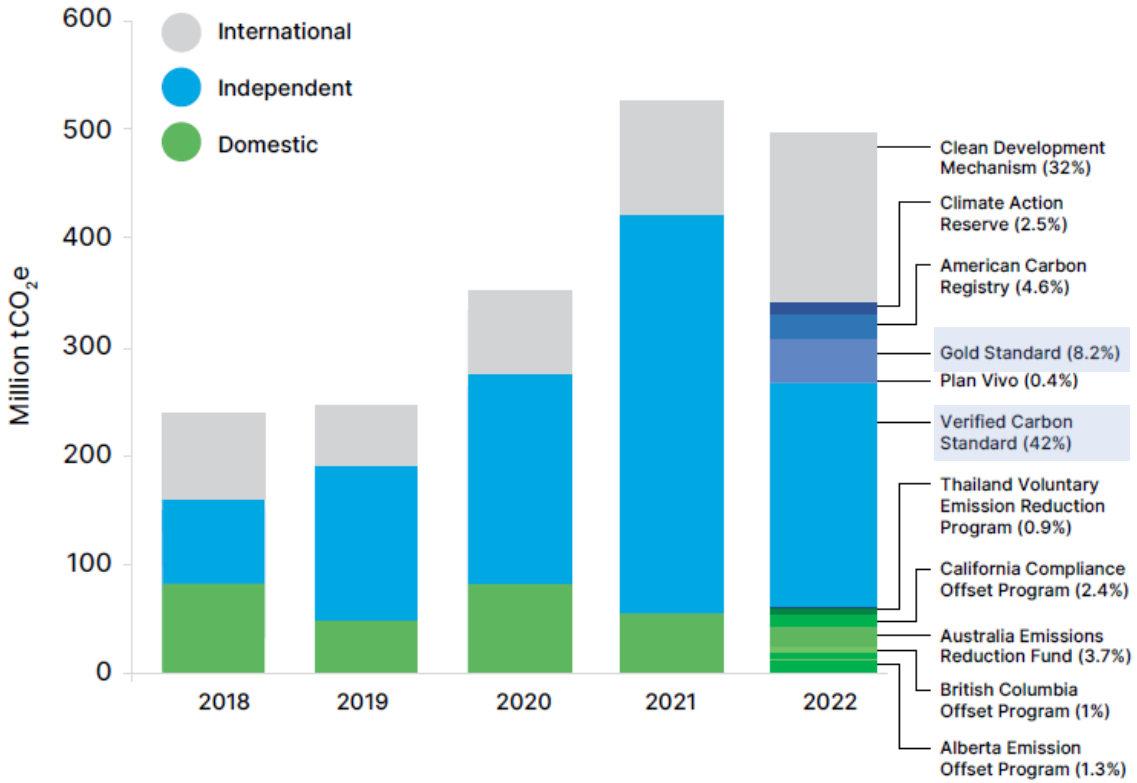
Type of Carbon Removal	Nature-based	Combined	Technology-based
	✔ Afforestation ▪ Reforestation ▪ Soil carbon sequestration	✔ Biochar	▪ Carbon capture and storage ▪ Direct air capture
Benefits	▪ Ready-to-scale ▪ Less expensive ▪ Certified under international carbon standards for use in reporting ▪ Strong co-benefits	▪ Ready-to-scale ▪ Co-benefits	▪ Carbon storage less vulnerable to reversal
Current Challenges	▪ Carbon storage vulnerable to reversal	▪ More costly	▪ Lack of co-benefits ▪ Not proven technologies ▪ More costly ▪ Lack of methodologies and standards

Source: South Pole, https://www.southpole.com/sustainability-solutions/carbon-removal-solutions; https://www.southpole.com/blog/technological-carbon-removals-necessary-solutions-for-global-climate-action

Carbon removal credits from internationally recognized certifiers

Standards and methodologies for afforestation and biochar

Global volume of issuances by crediting mechanism type



- Methodology to be applied for afforestation:

Gold Standard (2022) Methodology for afforestation/reforestation (A/R) GHGs emissions reduction & sequestration v.2.0 (or the latest version)

- Methodology to be applied for Biochar:

Verra (2023) VM0044 Methodology for biochar utilization in soil and non-soil application v.1.1 (or the latest version)

Source: World Bank Group (2023) State and Trends of Carbon Pricing 2023

Delivery of high-quality carbon credits

Quality and integrity of carbon credits

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Typical quality criteria

Additionality: Emission reductions/removals from projects should not have occurred without the offset financing activity.

Permanence: Proper assurance has to be made to cover the reversal risk.

Leakage: Emission reductions/removals from projects will not be counter-balanced elsewhere.

Quantification: Projects need to track their emission reductions constantly and prevent double counting.

Baseline: Setting a suitable, conservative baseline against which reductions can be measured.

Co-benefits

- Air quality
- Biodiversity
- Community & employment
- Soil quality
- Water quality

Source : BCG (2022) The voluntary carbon market: 2022 insights and trends

Beyond Gold Standard

SAREP objectives contribute to 11 SDGs

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Certified afforestation projects

GS ID	PROJECT DETAILS	STATUS	SDGS
GS11154	JOil Jatropha plantation in Ghana by JOIL (S) Pte. Ltd.	Certified	
GS10220	Humbo Ethiopia Assisted Natural Regeneration Project by World Vision Australia	Certified	
GS5012	Aprosacao Reforestation Project: community reforestation and agroforestry with small-scale cocoa farmers in Honduras. by Unknown Project Developer	Certified	
GS4221	Vichada Climate Reforestation Project (PAZ) by Forest Finest Colombia	Certified	
GS4210	WithOneSeed Timor Leste Community Forestry Program by xPand Foundation	Certified	
GS3975	Afforestation with Hazelnut Plantations in Western Georgia by Ferrero Trading LUX S.A.	Certified	
GS3381	Reforestation Sierra Piura by Claudia Vasquez	Certified	
GS3343	Afforestation on Degraded Lands in Mountainous Areas of Northern Guangdong, China by FDF	Certified	
GS2990	Kikonda Forest Reserve by Global-woods AG	Certified	
GS2951	ArBolivia- Phase II by The Cochabamba Project	Certified	
GS2940	CO2OL Tropical Mix by ForestFinance GSF	Certified	
GS2913	BaumInvest Reforestation Project by BaumInvest AG	Certified	
GS4708	Sustainable cocoa plantation system (agroforestry) in East Nicaragua by Alfred Ritter GmbH	Certified	
GS5618	EcoMakala Virunga Reforestation project by CO2logic	Certified	

Afforestation projects certified by the Gold Standard contribute to **3-5 SDGs**.

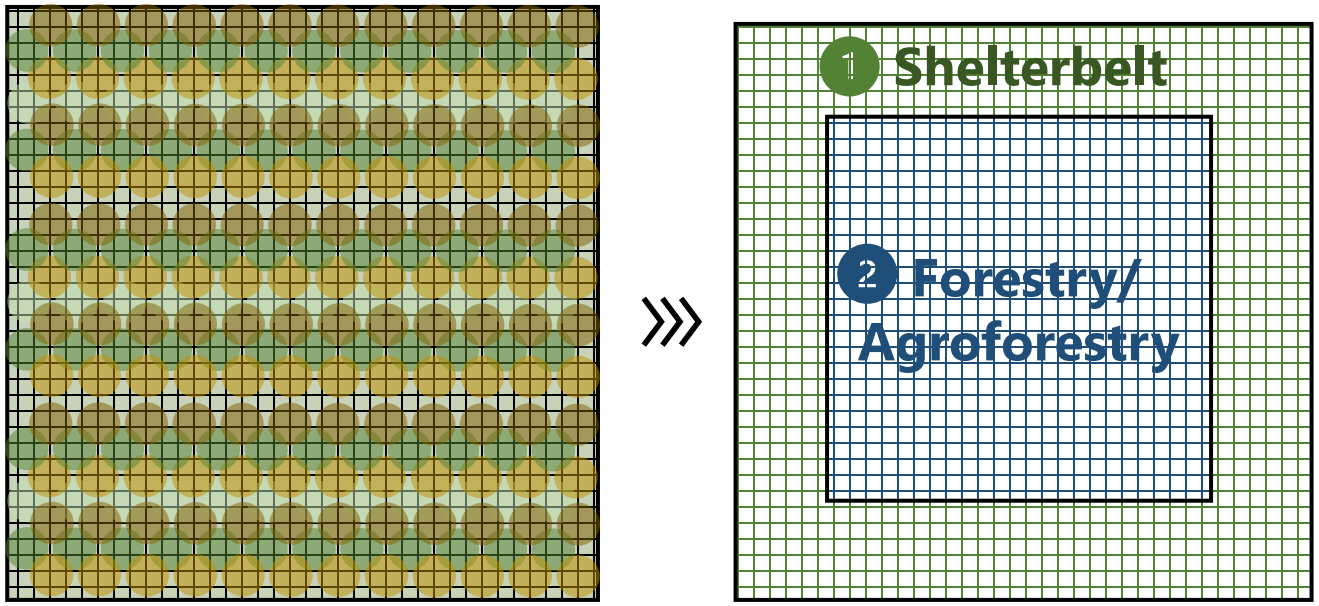
SAREP

11 SDGs linked to the objectives of SAREP

- Store carbon in soil and tree biomass
- Provide jobs and education to African society
- Organize food self-sufficiency for Africa
- Produce green hydrogen for local use and export
- Produce green electricity and fuels for domestic consumption
- Offer technology opportunities and added value to the African continent
- Provide non-fossil carbon for material use
- Provide plant oil substituting diesel and heavy fuel oil

Combined afforestation systems

Planting System of SAREP



1 Shelterbelt
- Conservation forest (no use of timber)

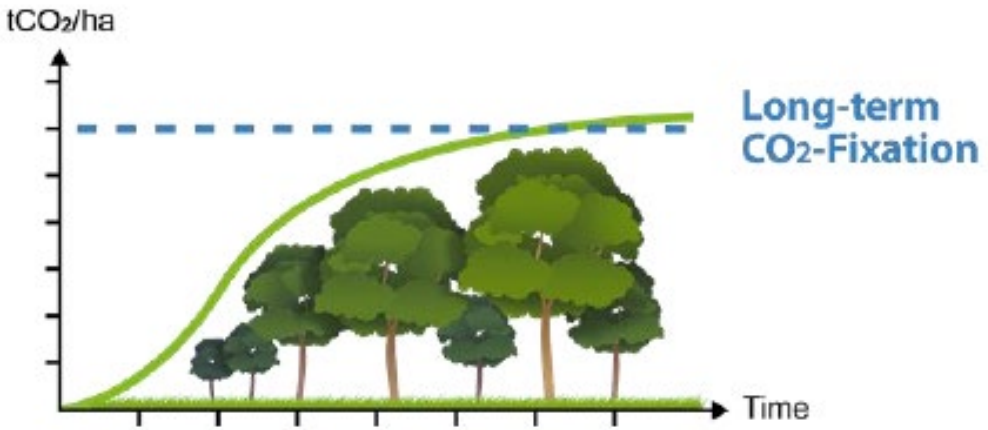
2 Forestry/Agroforestry (fruit tree, Jatropha, etc.)
- Conservation forest (no use of timber)
- Selective harvesting
- Rotation forestry

Accounting CO2 fixation potentials for different afforestation systems – Gold Standard

Accounting method for

I. Conservation forest and

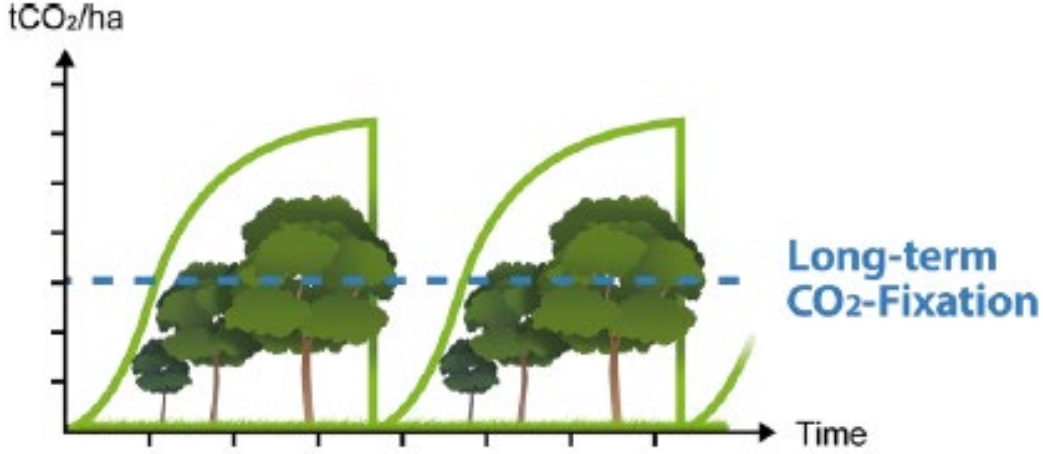
II. Selective harvesting



Long-term CO2 fixation is determined by the "tree biomass" of project area in the year the crediting period ends

Accounting method for

III. Rotation forestry



Long-term CO2 fixation is determined by the average "tree biomass" of project area during the planting start and the end of crediting period

Source: Gold Standard (2022) Methodology for afforestation/reforestation (A/R) GHGs emissions reduction & sequestration v.2.0

Afforestation systems with different products

Carbon credits and products from three different afforestation systems

Afforestation system	Certificate - Gold Standard	Certificate - Verra	Product example
I. Conservation forest (no use of timber)	**Afforestation**: Carbon is sequestered by standing tree biomass (below and aboveground). Forests are managed without any intention of tree cutting. CO2 L	**Biochar production**: Carbon is sequestered by producing biochar from pruned wood. CO2 XS	▪ Crops ▪ Biochar ▪ Biomass for energy
II. Selective harvesting	**Afforestation**: Carbon is sequestered by standing tree biomass (below and aboveground). Selective harvesting is done through continuous harvest of single/groups of trees by maintaining forest in the area CO2 L	**Biochar production**: Carbon is sequestered by producing biochar from pruned wood. CO2 S-M	▪ Biochar ▪ Biomass for energy
III. Rotation forestry	**Afforestation**: Carbon is sequestered by standing tree biomass (below and aboveground). CO2 M	**Biochar production**: Carbon is sequestered by producing biochar from pruned wood. CO2 S-M	▪ Biochar ▪ Commercial wood ▪ Biomass for energy

CO2 Size of the CO2 fixation potential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Vielen Dank für Ihre Aufmerksamkeit

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