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Argus *Voluntary Carbon Markets*

Market prices, news and analysis

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REDD+ MARKET COMMENTARY

Buyers scoop up Latam v2020 credits

Buying interest in REDD+ CCB credits from Latin America increased over the week, with at least two trades taking place.

Credits with 2020 vintage originating from the Tambopata REDD+ CCB project in Peru changed hands at around \$10.30/t CO2e. The credits had seen bids at \$10/t CO2e and offers at \$11.50/t CO2e last week. The project has been experiencing growing interest, with more buyers seeking credits in recent sessions, according to a trader. But concrete details on recent bids have yet to surface.

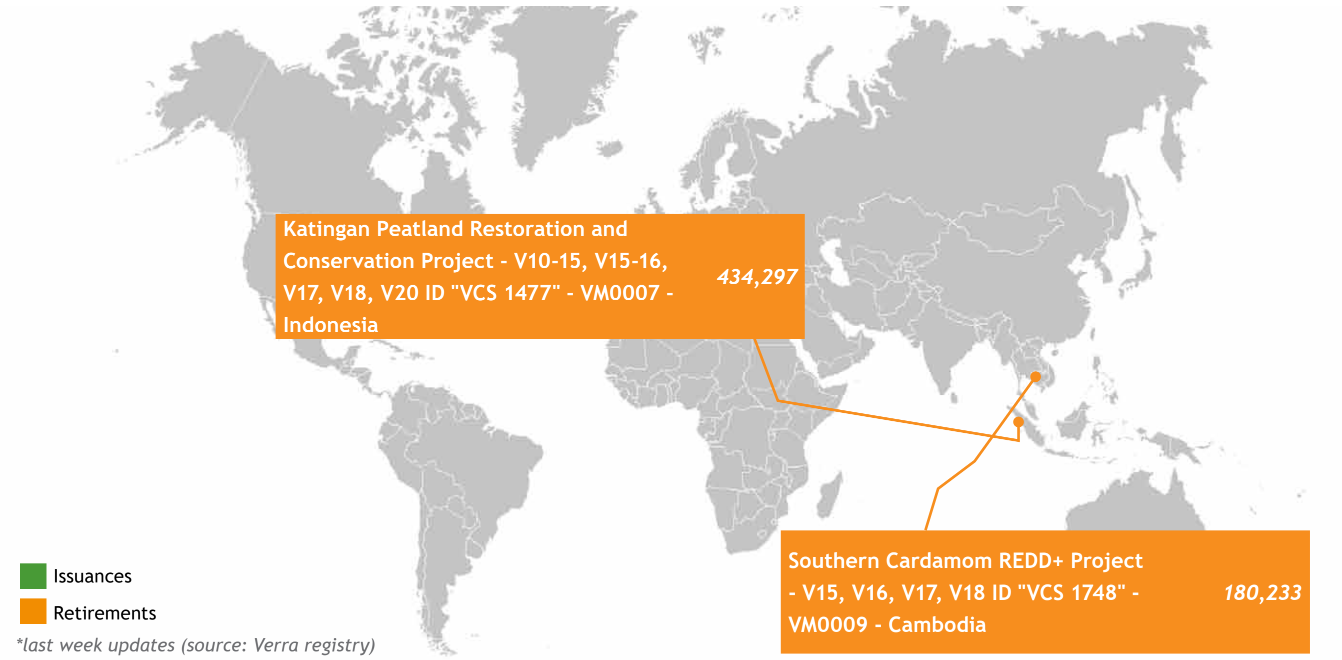
Also in Latin America, credits from a REDD+ CCB project in Brazil with 2020 vintage traded at \$10.40/t CO2e. Offers for 100,000 Brazilian credits with 2019 vintage were seen at around \$9.20/t CO2e. Offers for 740,000 Brazilian credits of 2017 vintage were at \$4.80/t CO2e.

Activity in the other two regions — southeast Asia and Sub-Saharan Africa — remained subdued, with details emerging only for older vintage one deal. An unknown volume of 2017 vintage credits originating from the Keo Seima project in Cambodia traded at around \$4.10/t CO2e.

PRICES

REDD+ CCB prices			*\$/t CO2e*
	23 Feb	16 Feb	Change
Latin America			
REDD+ v2018	7.70	7.70	nc
REDD+ v2019	8.80	9.00	-0.20
REDD+ v2020	10.35	10.75	-0.40
REDD+ v2021	10.60	11.00	-0.40
REDD+ v2022	10.85	11.25	-0.40
Southeast Asia			
REDD+ v2018	8.00	8.00	nc
REDD+ v2019	8.40	8.40	nc
REDD+ v2020	9.20	9.20	nc
REDD+ v2021	9.70	9.70	nc
REDD+ v2022	10.50	10.50	nc
Sub-Saharan Africa			
REDD+ v2018	7.70	7.70	nc
REDD+ v2019	8.20	8.20	nc
REDD+ v2020	9.00	9.00	nc
REDD+ v2021	9.50	9.50	nc
REDD+ v2022	10.30	10.30	nc

REDD+ CREDIT



RENEWABLE ENERGY MARKET COMMENTARY

Indian and Brazilian prices weaken

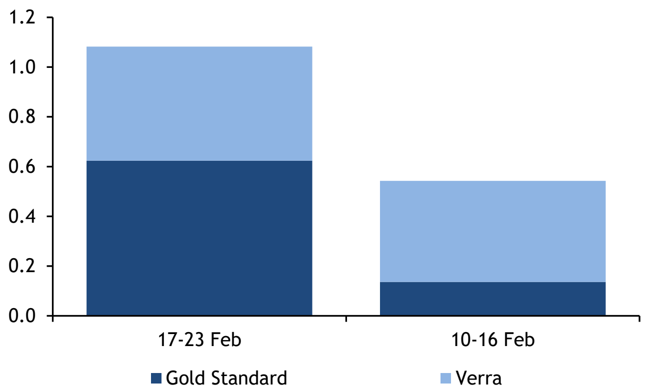
Prices for renewable energy credits fell in Brazil and India, following recent trades.

Market participants considered Brazilian wind prices lower, following a trade for 2018 vintage credits. Around 20,000 Brazilian wind credits for 2018 vintage traded at just over \$4/t CO2e, with traders considering prices for newer vintages at similar levels. Solar credits maintained their premium to wind and hydro, despite a prolongued lull in activity, traders said.

In India, 20,000 solar credits for 2020 vintage changed hands at \$3.20/t CO2e. The credits had been offered at \$3.50/t CO2e earlier this week. An unknown volume of similar vintage solar credits was offered at \$4/t CO2e on Thursday, but little buying interest emerged. Older 2019 vintage solar credits traded at much lower levels, with 80,000t changing hands at \$2.30/t CO2e. Around 50,000 Indian wind credits were offered at \$3.45/t CO2e, with trade levels assessed stable at \$3/t CO2e.

Activity on bids, deals or offers for Chinese renewable energy credits remained scant. Offers for older vintages were just over \$1/t CO2, with 2015 and 2016 vintage hydro credits offered at \$1.10/t CO2e and \$1.45/t CO2e, respectively. Domestic prices for 2021-22 vintages for the three renewable energy technologies were seen at levels similar to India.

Renewable energy credit retirements *mn tCO_2*



PRICES

Renewable energy Brazil prices			*\$/t CO2e*
	23 Feb	16 Feb	Change
Wind			
Wind v2020	4.05	4.20	-0.15
Wind v2021	4.15	4.30	-0.15
Wind v2022	4.30	4.45	-0.15
Solar			
Solar v2020	4.15	4.30	-0.15
Solar v2021	4.25	4.40	-0.15
Solar v2022	4.40	4.60	-0.20
Hydro			
Hydro v2020	3.55	3.70	-0.15
Hydro v2021	3.65	3.90	-0.25
Hydro v2022	3.80	4.10	-0.30

Renewable energy China prices			*\$/t CO2e*
	23 Feb	16 Feb	Change
Wind			
Wind v2020	3.30	3.30	nc
Wind v2021	3.45	3.45	nc
Wind v2022	3.60	3.60	nc
Solar			
Solar v2020	3.90	3.90	nc
Solar v2021	4.00	4.00	nc
Solar v2022	4.20	4.20	nc
Hydro			
Hydro v2020	2.90	2.90	nc
Hydro v2021	3.00	3.00	nc
Hydro v2022	3.20	3.20	nc

Renewable energy India prices			*\$/t CO2e*
	23 Feb	16 Feb	Change
Wind			
Wind v2020	3.10	4.30	-1.20
Wind v2021	3.20	4.40	-1.20
Wind v2022	3.35	4.60	-1.25
Solar			
Solar v2020	3.20	4.00	-0.80
Solar v2021	3.30	4.10	-0.80
Solar v2022	3.45	4.30	-0.85
Hydro			
Hydro v2020	2.70	2.70	nc
Hydro v2021	2.80	2.80	nc
Hydro v2022	3.00	3.00	nc

CLEAN COOKSTOVES MARKET COMMENTARY

Firm selling interest in Africa

Several offers were seen for African clean cookstove credits, with sellers also placing offers for credits originating in Myanmar.

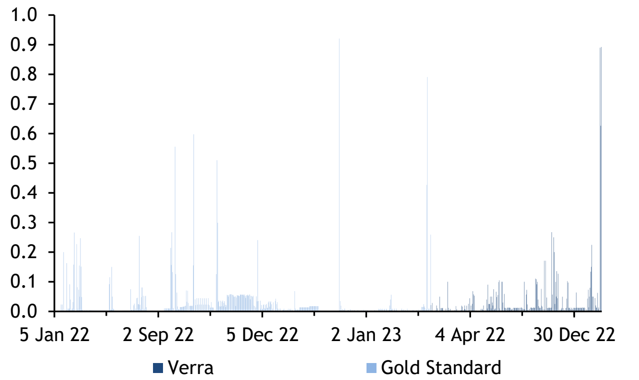
Three offers for Ugandan cookstoves were seen during the week. Sellers were seeking buyers at $10/t CO2e for either 10,000 credits of 2021 vintage and 15,000 credits of 2020-21 vintages, both from projects based in Uganda. Another offer for around 55,000 credits of 2019-20 vintages was at around $7.50/t CO2e. The lower offer level might be justified by the low amount of UN Sustainable Development Goals (SDGs) linked to the project, which is believed to be just two, out of the total 17 listed by the UN. Usually projects in Africa feature around five SDGs or more. Offer of around $8/t CO2e were seen for an unknown volume of 2020 vintage Kenyan credits, while in Somalia sellers were offering 30,000 credits with 2020 vintage at $11.50/t CO2e.

In Asia, offers for 25,000 credits with 2019 vintage were at $8/t CO2, with potential trade levels considered at just below $7/t CO2e.

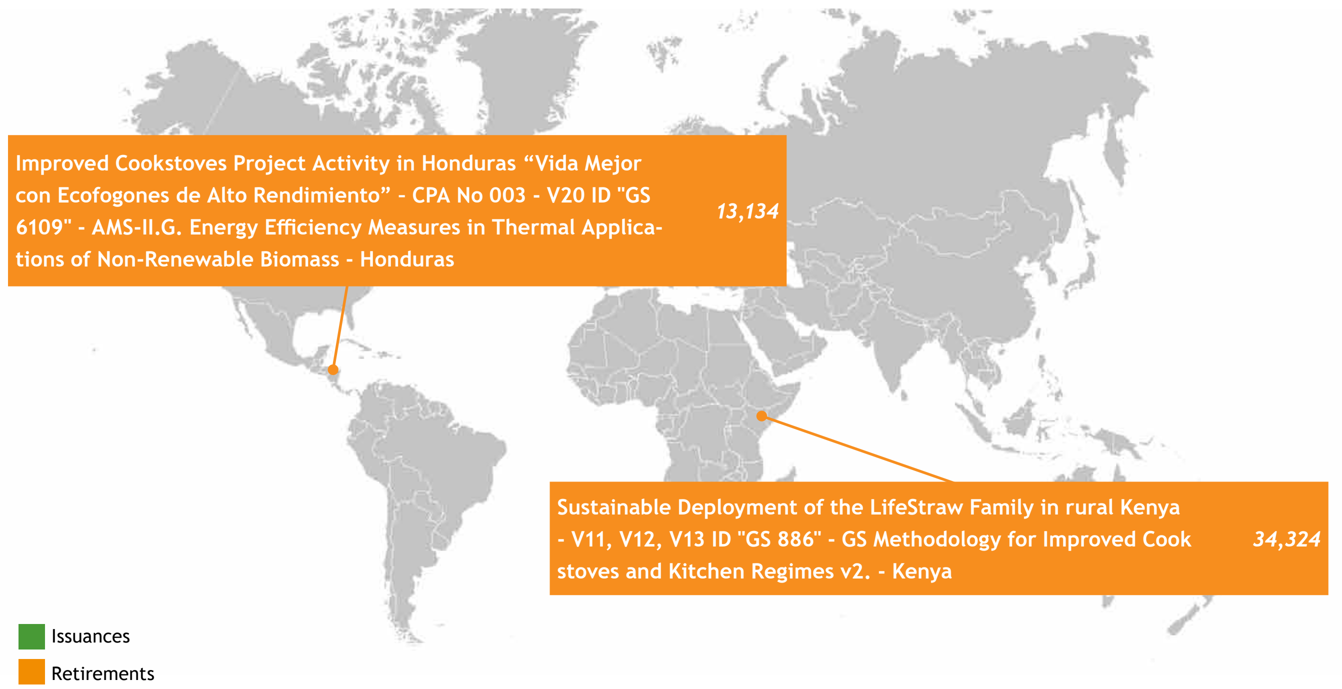
A rare offer for an unknown volume of 2020+ vintage of credits originating from Myanmar was at £23.05/t CO2e. The country is part of the UN list of Least Developed Countries (LDC). Voluntary carbon credits deriving from any of the 46 countries usually command substantial premiums to credits from the rest of the world.

Clean cookstoves prices			$/t CO2e
	23 Feb	16 Feb	Change
Africa			
Clean cookstoves v2019+	8.80	8.50	+0.30
Asia			
Clean cookstoves v2019+	6.90	6.60	+0.30
Latin America			
Clean cookstoves v2019+	12.50	12.50	nc

Clean Cookstove issuances year to date *mn t/CO2e*



CLEAN COOKSTOVES CREDIT



**last week updates (source: Verra & Gold Standard registries)*

PROJECT SPECIFIC CARBON COMMENTARY

Scarce activity on v2019+

Market activity focused on older vintages, with bids, deals and offers reported for mainly 2016-17 credits.

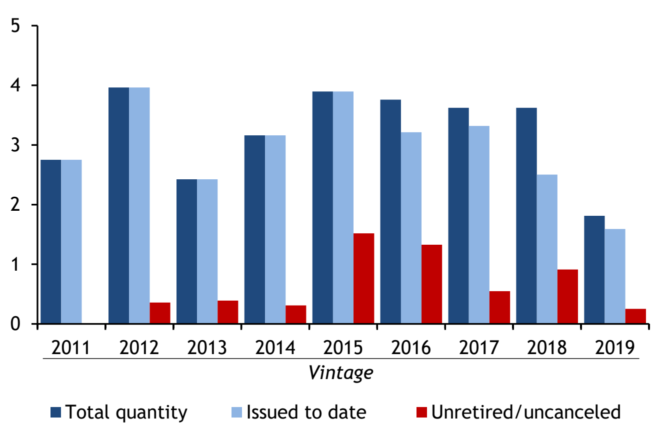
Around 10,000 credits with 2017 vintage of the Katingan project in Indonesia traded at $4.50/t CO2e, with bids for 5,000t of same-vintage credits coming in at the same $4.50/t CO2e level, according to one trader. Meanhwile, 2016 vintage credits of the project were heard trading at $4/t CO2e. Trade levels for the more recent 2019-20 vintages were assessed around $0.10/t CO2e lower on the week. Also in Indonesia, 2018 vintage credits of the 17-SDG project Rimba Raya were last seen offered at $13/t CO2e, with the vintage credits potentially changing hands at levels around $12.5/t CO2e. The spread between the 2018 and 2019 has further widened due to the scarce availability of credits of the latter vintage, which was assessed more than $1/t CO2e higher.

Credits with 2019 vintage of the Cambodian project Southern Cardamom were offered at $10.60/t CO2e, with trade levels unchanged from last week.

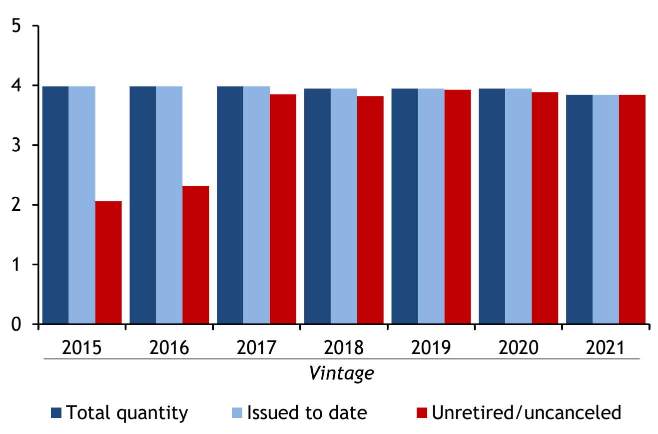
No bids, deals or offers were heard for the Kariba project in Zimbabwe, while offers for the Brazilian project Envira were only reported for older vintages, with 2016 and 2017 credits offered at $3.50/t CO2e and $/t CO2e, respectively.

Project specific prices			$/t CO2e
	23 Feb	16 Feb	Change
Envira (Brazil) VCS 1382			
Envira v2018	9.20	9.20	nc
Envira v2019	9.60	9.60	nc
Envira v2020	10.00	10.00	nc
Envira v2021	10.20	10.20	nc
Envira v2022	11.00	11.00	nc
Kariba (Zimbabwe) VCS 902			
Kariba v2018	5.00	5.00	nc
Kariba v2019	5.50	5.50	nc
Kariba v2020	6.00	6.00	nc
Kariba v2021	6.50	6.50	nc
Kariba v2022	7.00	7.00	nc
Katingan (Indonesia) VCS 1477			
Katingan v2018	8.50	8.50	nc
Katingan v2019	9.15	9.25	-0.10
Katingan v2020	9.25	9.35	-0.10
Katingan v2021	10.40	10.50	-0.10
Katingan v2022	10.90	11.00	-0.10
Rimba Raya (Indonesia) VCS 674			
Rimba Raya v2018	12.50	12.80	-0.30
Rimba Raya v2019	13.70	13.80	-0.10
Rimba Raya v2020	13.90	14.00	-0.10
Rimba Raya v2021	14.40	14.50	-0.10
Rimba Raya v2022	14.90	15.00	-0.10
South Cardamom (Cambodia) VCS 1748			
Southern Cardamom v2018	9.00	9.00	nc
Southern Cardamom v2019	9.40	9.40	nc
Southern Cardamom v2020	11.25	11.25	nc
Southern Cardamom v2021	11.75	11.75	nc
Southern Cardamom v2022	12.25	12.25	nc

Kariba credits availability *mn tCO_2*



Southern Cardamom credits availability *mn tCO_2*



NEWS AND ANALYSIS

Malaysia exchange to support carbon market

Malaysia stock exchange, Bursa Malaysia, has signed a mutual agreement with Malaysian Green Technology and Climate Change Corporation (MGTC) to promote the Voluntary Carbon Market (VCM) ecosystem in Malaysia.

This agreement aims to support the development of Malaysia's VCM by drafting industry handbook and guides, and by hosting knowledge-sharing forums.

The first focus is to develop a national VCM handbook, to help market participants better understand the market and to generate carbon credits using international standards. The second scope will be the creation of a directory of carbon industry service providers, which will include a list of project developers, verification bodies, technical experts and financiers. Bursa Malaysia will organise a Malaysia Carbon Market Forum to enhance technical expertise and knowledge sharing among market participants in the VCM.

Bursa Malaysia launched the Bursa Carbon Exchange in December 2022, with the first auction of voluntary carbon credits expected next month.

By Jing LI

Zipair to offset Narita-Honolulu flight emissions

Japanese airline Zipair Tokyo is aiming to offset emissions from return flights between Tokyo's Narita to Hawaii's Honolulu airports from April by using carbon credits and sustainable aviation fuel (SAF).

Zipair Tokyo, a wholly owned subsidiary of Japan's major airline Japan Airlines, plans to replace around 1pc of its annual jet fuel consumption with unspecified SAF to reduce carbon emissions and use carbon credits to offset the remaining emissions for the Narita-Honolulu route.

The company declined to disclose its jet fuel consumption. But there are generally three round-trip flights a week between Narita and Honolulu, it said.

Zipair will buy the necessary credits through Japan's J-Credit scheme in a collaboration with Japanese wood product producer Sumitomo Forestry for flights departing from Japan. J-Credits are the government-certified volume of greenhouse gas (GHG) emissions reduced or removed through energy saving, renewable energy and forest sinks.

The airline will also co-operate with Japanese trading house Sojitz to secure credits certified by the Carbon Offsetting and Reduction Scheme for International Aviation (Crosia) for flights outside of Japan.

Corsia is an emissions-mitigation instrument designed to address the increase in total carbon dioxide (CO2) emissions from aviation, adopted by the International Civil Aviation Organisation (ICAO) in 2016. The offsetting requirements have applied since 1 January 2021. ICAO also agreed the new Corsia baseline from 2024 onwards would be defined as 85pc of 2019 CO2 emissions levels.

Japan is planning to launch a voluntary carbon credit trading scheme among companies that support the government's green transformation (GX) league — a cross-industry collaboration to achieve carbon neutrality — over three fiscal years, from April 2023-March 2026. The voluntary carbon credit market is likely to begin with credits generated by members of the GX, along with credits such as J-Credits and those through the Joint Crediting Mechanism. The Joint Crediting Mechanism is a system set up by Japan to co-operate with developing countries to reduce GHG emissions by evaluating the result of reduction as contribution by both partner countries and Japan.

The Japanese government aims to introduce a fully-fledged carbon credit market from 2026-27, then gradually adopt an auction system for emissions allowances, first of all for the power sector, from 2033-34.

By Motoko Hasegawa

Washington lawmakers advance offsets bill

A Washington state House of Representatives committee advanced legislation today that would enable the state government to more easily sell carbon offset credits from emissions reductions on public lands.

The House Capital Budget committee voted 16-12, along party lines, with all Republicans opposed, to advance the legislation to the House floor. The same bill earned the approval of the House Agriculture and Natural Resources Committee last week, and a similar package in the Senate is pending before that chamber's Ways and Means Committee.

Both pieces of legislation would enable the state Department of Natural Resources to develop "ecosystem service projects" on the nearly 6mn acres of lands and waters it manages and to enter into 125-year leases with interested parties. The agency last year began a program to lease state forests for offset projects, but public lands commissioner Hilary Franz has pushed for more authority to sell credits directly. The current process requires the involvement of third-party intermediaries that cut into potential revenues and limits leases to 99 years.

"Right now, my agency is competing on an uneven playing field," Franz told lawmakers at a Monday hearing.

Possible offset projects include conserving existing state forests, reforesting public lands degraded by wildfires, and preserving so-called "blue carbon" in underwater kelp

NEWS AND ANALYSIS

forests. Carbon credits could go into voluntary and compliance markets, including the state's [new cap-and-trade market](https://direct.argusmedia.com/newsandanalysis/article/2332883) where offsets with direct environmental benefits to the state can count toward a portion of compliance obligations.

The House and Senate proposals are similar, though House lawmakers recently added provisions that would only allow the sale of carbon credits if such efforts do not decrease agricultural production or sustainable timber harvests on state lands. Timber companies have warned that incentivizing forest conservation could hurt the wood products industry and result in fewer funds for government services, since much of the Department of Natural Resources' revenues today come from timber sales.

"Carbon accounting is complex, and more analysis is needed with a diverse group of experts," said Knox Marshall, vice president of resources at the US wood product supplier Murphy, which opposes the House bill despite recent revisions.

Other state and local governments, including Alaska, have taken steps recently to cash in on fast-growing demand for carbon offsets. Franz has noted too that King County, Washington's most populous county, has already sold carbon credits from forest preservation efforts.
By Cole Martin

Voluntary Carbon Market Glossary

- ACR — American Carbon Registry.
- Additionality — projects must demonstrate that the emission reductions would not be achieved in the absence of revenue from the sale of carbon credits.
- Afforestation — planting of new plants/trees/forests on land that has not previously hosted forests.
- ARR — Afforestation, Reforestation, and Revegetation
- Article 6 — of the Paris climate agreement allows countries to voluntarily co-operate with each other to achieve emission reduction targets set out in their NDCs.
- Avoidance/Reduction — credits that are generated by projects that reduce greenhouse gas emissions by using nature-based or technology-based methods.
- Blue Carbon — carbon captured by living organisms, such as mangroves, in coastal and marine areas.
- CAR — Climate Action Reserve.
- Carbon capture and storage (CCS) — process to separate CO2 from industrial and energy sources, transport to storage and long-term isolation.
- Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) — market-based initiative to reduce emissions from international aviation.
- CCB standards — Climate, Community, and Biodiversity standard. Apply to projects that simultaneously tackle climate change, support local communities and biodiversity.
- CDR — carbon dioxide removal.
- Certified Emission Reduction (CER) — emission reduction certificate generated by CDM projects.
- Clean Development Mechanism (CDM) — Kyoto protocol's article 12 mechanism to allow investors in developed countries to fund GHG reduction/removal projects in developing countries to receive CERs.
- Conference of the Parties (COP) — annual conference of the parties to the UN Framework Convention on Climate Change.
- Core Carbon Principles (CCPs) + Assessment Framework (AF) — threshold standards (CCPs) and guidance (AF) set by the ICVCM to promote high-quality carbon credits.
- Corresponding adjustment — a tool to ensure carbon offsets are not double-counted by two different countries towards their NDCs.
- Direct Air Carbon Capture and Storage (DACC+S) — process to extract CO2 from the atmosphere and permanently store it in geological formations.
- ETS — emissions trading system; EU ETS — European emissions trading system.
- European Union Allowance (EUA) — Europe's emission allowances which are tradable under the EU ETS. Entitles the holder to emit one tonne of carbon-equivalent GHG.
- GHG — greenhouse gas.
- GS — Gold Standard.
- Integrity Council for the Voluntary Carbon Market (ICVCM) — a multi-stakeholder initiative to set and enforce standards of ethics, sustainability and transparency.
- LDC(s) — least developed country(ies) as classified by the United Nations.
- Nationally Determined Contribution (NDC) — a climate action plan to cut emissions and adapt to climate impacts. The Paris agreement (art 4.2) requires each party to submit and maintain NDCs.
- Nature-based carbon credit — generated through activities not requiring the use of technologies to protect, restore or manage natural and semi-natural ecosystems.
- Permanence — projects must demonstrate that reduced or removed GHG emissions or, if at risk of reversal, that any reversals should be fully compensated.
- Reducing Emissions from Deforestation and Forest Degradation (REDD+) — projects aimed at mitigating emissions resulting from deforestation and forest degradation. The "+" stands for additional nature conservation benefits.
- Removal — credits generated from projects that remove GHG emissions already released into the atmosphere by using nature-based or technology-based methods.
- Reforestation — restoration of existing forests through the plantation of trees on areas where the number of trees has been decreasing.
- Scope 1,2 & 3 Emissions — Scopes are a way of categorising and measuring a company's greenhouse gas emissions, from its own operations as well as the wider value chain through its suppliers and/or customers.
- Scope 1 — direct emissions from sources owned or controlled by the organisation, such as a fleet of vehicles.
- Scope 2 — indirect emissions from the production of electricity purchased/consumed by the company.
- Scope 3 — any other indirect emissions not produced by the company itself or as a result of activities from assets owned or controlled by it.
- Sustainable Development Goals (SDG) — UN's 17 goals to end poverty, reduce inequality and tackle climate change.
- Technology-based carbon credit — generated by the reduction or removal of emissions through the use of technologies such as renewable energies or DAC+S.
- Verified Carbon Unit (VCU) — a credit verified by the Verified Carbon Standard or Verra.
- Verra — Verified Carbon Standard.
- Vintage — year of emissions reduction that carbon credits apply to.
- VCM — Voluntary Carbon Market.
- VER — Voluntary Emissions Reduction.

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