

## REDD+ MARKET COMMENTARY

### Tambopata V18, V19 trade

Values for REDD+ CCB in Latin America surged, following two recent trades for the Tambopata project in Peru.

The Tambopata project in Peru has experienced growing buying interest in recent sessions, with 250,000 credits with 2018 vintage trading at €7.45/t CO<sub>2</sub>e, or around \$8.15/t CO<sub>2</sub>e. Around 200,000 credits with 2019 vintage from the same Peruvian project also changed hands, at €8.25/t CO<sub>2</sub>e or roughly \$9/t CO<sub>2</sub>e. The 2018-vintage trade compares with \$8/t CO<sub>2</sub>e offers for 200,000 credits with same vintage reported in the first week of the month. Values for fellow Peruvian REDD+ CCB Cordillera Azul were seen lower, with offers for 25,000 credits with 2018 vintage at \$8.50/t CO<sub>2</sub>e.

Project developers were targeting hefty prices for Brazilian REDD+ CCB credits with 2019 vintages. Around 100,000 credits with 2019-vintage from the Hiwi project were offered at \$15/t CO<sub>2</sub>e, with same-vintage credits from the Caapii project at \$14/t CO<sub>2</sub>e. Both projects are expected to issue first credits over the upcoming weeks. Offers for non-CCB Brazilian project Evergreen were at \$5.60/t CO<sub>2</sub>e for 15,000 credits with 2020-21 vintage.

In Sub-Saharan Africa prices declined on the back of recent offers for the Mai Ndombe project. Around 25,000 credits with 2019 vintage were offered at \$7/t CO<sub>2</sub>e.

In Asia, offers for 2018-vintage credits of Keo Seima were at \$7.70/t CO<sub>2</sub>e for 100,000t and \$7.50/t CO<sub>2</sub>e for 50,000t.

## REDD+ CREDIT

REDD issuances	
Fortaleza Ituxi REDD Project - V20, V21 ID "VCS 1654" - VM0015 - Brazil	292,214
Na	Na

REDD retirements	
Chyulu Hills REDD+ Project - V17 ID "VCS 1408" - VM0009 - Kenya	630,000
Manoa REDD+ Project - V18, V19 ID "VCS 1571" - VM0015 - Brazil	187,814



## RENEWABLE ENERGY MARKET COMMENTARY

### Chinese, Indian values decline

Values declined in China and India, while buying and selling interest in Brazilian renewable energy credits picked up.

Market participants were still assessing Chinese renewable energy credits below Indian values for respective technologies, despite a lull in liquidity for the former market. Values for wind credits in China were seen at levels below \$2.5/t CO<sub>2</sub>e for 2020 and 2021 vintages, with 2020-vintage hydro credits falling below the \$2/t CO<sub>2</sub>e mark. Offers were still seen at steady levels, with around 30,000 2017-18 vintage hydro credits shown at \$3/t CO<sub>2</sub>e. But little emerged on potential buying interest at that level.

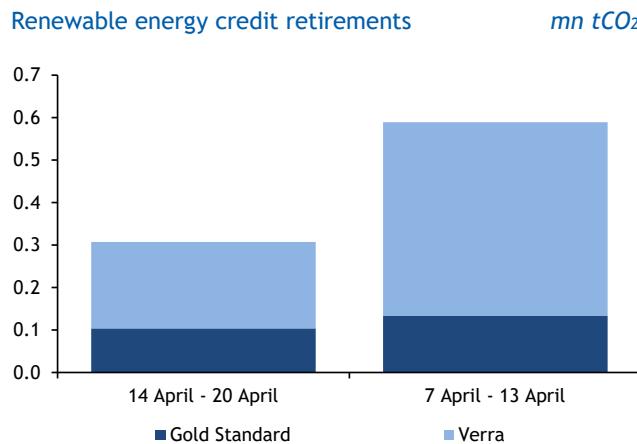
In India, wind credit values were assessed at around \$2.5/t CO<sub>2</sub>e for vintages starting from 2020. On solar, 25,000 credits with 2020 vintage from a Verra project were being offered at \$3.15/t CO<sub>2</sub>e, while 50,000 CORSIA-compliant credits with same vintage from a Gold Standard project were offered at \$4.50/t CO<sub>2</sub>e. On hydro, 2019-21 credits from a Verra project were being offered at \$2.50/t CO<sub>2</sub>e. No information emerged on volumes.

In Brazil, a buyer was seeking 100,000t of any CORSIA-compliant credits with 2018-20 vintage at \$4.50/t CO<sub>2</sub>e. Meanwhile, offers for 500,000 hydro credits with 2015-20 vintages from a Verra project were reported between \$4/t CO<sub>2</sub>e and \$5/t CO<sub>2</sub>e. Another offer for an undisclosed amount of 2018-vintage hydro credits was seen at \$3/t CO<sub>2</sub>e.

## PRICES

Renewable energy Brazil prices		\$/t CO <sub>2</sub> e		
		20 Apr	13 Apr	Change
Wind				
Wind v2020		4.10	4.10	nc
Wind v2021		4.20	4.20	nc
Wind v2022		4.35	4.35	nc
Solar				
Solar v2020		4.20	4.20	nc
Solar v2021		4.30	4.30	nc
Solar v2022		4.45	4.45	nc
Hydro				
Hydro v2020		2.90	2.90	nc
Hydro v2021		3.35	3.35	nc
Hydro v2022		3.50	3.50	nc

Renewable energy China prices		\$/t CO <sub>2</sub> e		
		20 Apr	13 Apr	Change
Wind				
Wind v2020		2.30	2.60	-0.30
Wind v2021		2.45	2.75	-0.30
Wind v2022		2.60	2.90	-0.30
Solar				
Solar v2020		2.00	2.70	-0.70
Solar v2021		2.10	2.80	-0.70
Solar v2022		2.20	2.90	-0.70
Hydro				
Hydro v2020		1.90	2.20	-0.30
Hydro v2021		2.00	2.30	-0.30
Hydro v2022		2.10	2.50	-0.40



Renewable energy India prices		\$/t CO <sub>2</sub> e		
		20 Apr	13 Apr	Change
Wind				
Wind v2020		2.50	2.90	-0.40
Wind v2021		2.60	3.00	-0.40
Wind v2022		2.75	3.15	-0.40
Solar				
Solar v2020		2.20	2.20	nc
Solar v2021		2.30	2.30	nc
Solar v2022		2.40	2.40	nc
Hydro				
Hydro v2020		2.10	2.10	nc
Hydro v2021		2.20	2.20	nc
Hydro v2022		2.30	2.30	nc

## CLEAN COOKSTOVES MARKET COMMENTARY

### African prices drop

A recent trade for Kenyan cookstove credits has put downward pressure on African values, while market participants assessed Asian values slightly lower on the week.

Around 50,000 credits with 2020 vintage from a Kenyan project traded at \$5/t CO<sub>2</sub>e. The project is the Verra-hosted BioLite Improved Cook stoves Programme, which has requested the conversion of 112,613 CER from the CDM registry to Verra's VCUs, according to Verra. It is unclear whether the project carries any SDGs.

Market participants reckoned Gold Standard-hosted projects with solid SGD numbers could fetch higher values. An offer for an undisclosed amount of 2021-vintage credits from the Gold Standard-hosted Circle Gas LPG Smart Meter Program – featuring five SDGs – was at \$7.90/t CO<sub>2</sub>e, unchanged from a separate offer for 80,000 2021-vintage credits from the same project seen last week.

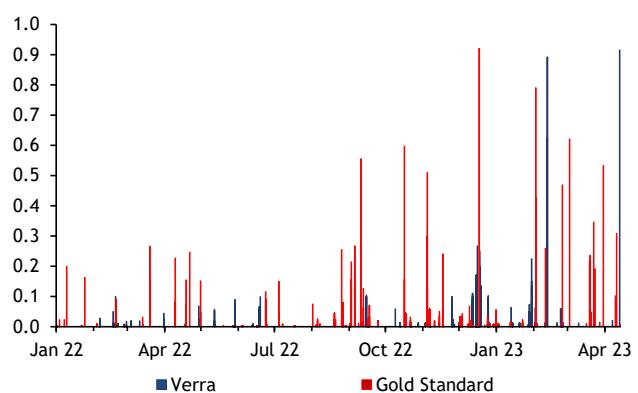
Meanwhile, an offer for an undisclosed amount of 2021-vintage credits from another Gold Standard-hosted Somalian project, also featuring five SDGs, was reported at \$9/t CO<sub>2</sub>e.

In Asia, selling and buying interest remained thin, with some unspecified offers for Indian cookstoves heard at levels between \$5/t CO<sub>2</sub>e and \$6/t CO<sub>2</sub>e, and values assessed only slightly below previous assessments.

Little emerged on Latin American cookstoves, with the latest offer reported last week at \$20.25/t CO<sub>2</sub>e for 10,000 2020-vintage credits from the seven-SDG Qori Q'oncha project in Peru.

Clean cookstoves prices	\$/t CO <sub>2</sub> e		
	20 Apr	13 Apr	Change
Africa			
Clean cookstoves v2019+	5.50	7.75	-2.25
Asia			
Clean cookstoves v2019+	5.20	5.50	-0.30
Latin America			
Clean cookstoves v2019+	9.00	9.00	nc

### Clean Cookstove issuances year to date



## CLEAN COOKSTOVES CREDIT

### Clean cookstoves issuances

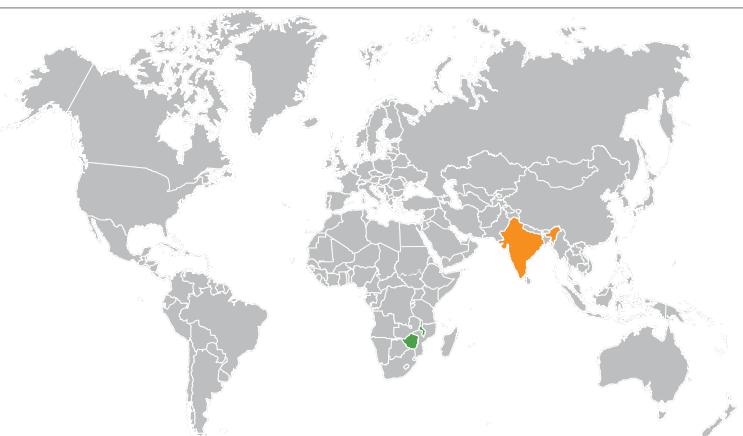
Installation of high efficiency wood burning cookstoves in Malawi - V22 ID "VCS 2342" - VMR0006 - Malawi 915,838

TASC Clean Cooking PoA - VPA 1 (Zambia) - V21, V22 ID "GS 11145" - GS TPDDTEC v3.1 - Zambia 308,801

### Clean cookstoves retirements

Improved cook stoves and sustainable charcoal initiative CPA 1 - V21 ID "GS 10716" - AMS-II.G. Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass - India 43,750

Distribution of energy efficient cookstoves in India-2 - V22 ID "VCS 3158" - VMR0006 - India 30,000



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

## PROJECT SPECIFIC CARBON COMMENTARY

### Values steady on thin activity

Values for 2018+ vintages were stable on the week, as a recent trade for older vintages of Rimba Raya emerged.

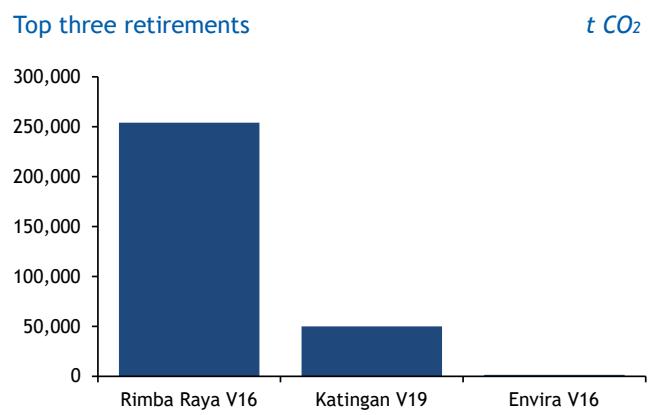
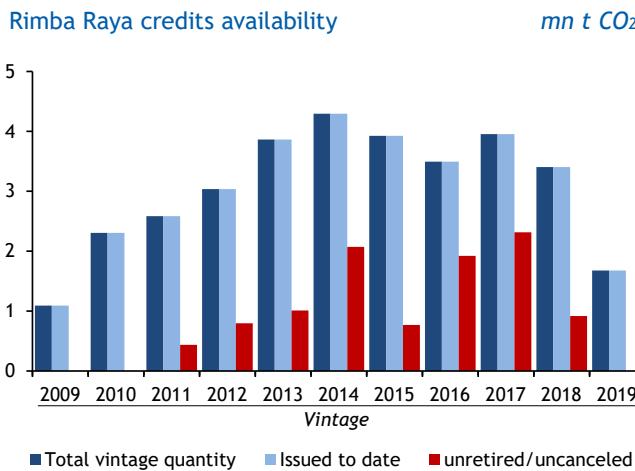
Little more than 5,000 credits with 2017 vintage from the Indonesian 17-SDG Rimba Raya project traded at \$7.20/t CO<sub>2</sub>e in recent sessions. This compares with an offer at \$7.50/t CO<sub>2</sub>e for 50,000 credits with same vintage. Buying and selling interest in the project's newer vintages has faded over the past couple of months, with sparse bids and offers. Last week, 50,000 of the project's 2018-vintage credits had been offered at \$10.60/t CO<sub>2</sub>e.

Offers for older vintages of fellow Indonesian project Katingan also emerged. An undisclosed amount of the project's 2017-vintage credits were being offered at \$4.70/t CO<sub>2</sub>e. Another offer for an undisclosed amount of 2020-vintage credits was seen at \$9.45/t CO<sub>2</sub>e.

Several offers surfaced for Cambodian Southern Cardamom, although little bidding interest was observed. Around 50,000 credits with 2017 vintage were offered at \$4.55/t CO<sub>2</sub>e. Offers for more recent vintages were reported at much higher levels, with 25,000 credits with 2018 vintage offered at \$8.50/t CO<sub>2</sub>e and an undisclosed amount of 2019-vintage credits offered at slightly higher \$8.90/t CO<sub>2</sub>e.

Only offers for older vintages emerged for Brazilian Envira. An undisclosed amount of 2016-vintage credits were being offered at \$3/t CO<sub>2</sub>e, while 100,000 credits with 2017 vintage were offered at \$4.35/t CO<sub>2</sub>e.

Project specific prices	\$/t CO <sub>2</sub> e		
	20 Apr	13 Apr	Change
Envira (Brazil) VCS 1382			
Envira v2018	7.30	7.30	nc
Envira v2019	8.30	8.30	nc
Envira v2020	9.30	9.30	nc
Envira v2021	9.50	9.50	nc
Envira v2022	10.30	10.30	nc
Kariba (Zimbabwe) VCS 902			
Kariba v2018	4.90	4.90	nc
Kariba v2019	5.40	5.40	nc
Kariba v2020	5.90	5.90	nc
Kariba v2021	6.40	6.40	nc
Kariba v2022	6.90	6.90	nc
Katingan (Indonesia) VCS 1477			
Katingan v2018	7.50	7.50	nc
Katingan v2019	8.55	8.55	nc
Katingan v2020	8.90	8.90	nc
Katingan v2021	9.90	9.90	nc
Katingan v2022	10.90	10.90	nc
Rimba Raya (Indonesia) VCS 674			
Rimba Raya v2018	9.70	9.70	nc
Rimba Raya v2019	10.70	10.70	nc
Rimba Raya v2020	11.20	11.20	nc
Rimba Raya v2021	11.70	11.70	nc
Rimba Raya v2022	12.20	12.20	nc
South Cardamom (Cambodia) VCS 1748			
Southern Cardamom v2018	6.95	6.95	nc
Southern Cardamom v2019	7.95	7.95	nc
Southern Cardamom v2020	9.30	9.30	nc
Southern Cardamom v2021	11.90	11.90	nc
Southern Cardamom v2022	12.40	12.40	nc



## NEWS AND ANALYSIS

### Klimat X closes Sierra Leone carbon bid round

Vancouver-based Klimat X has concluded the initial bidding process for carbon credits derived from its Sierra Leone Rewilding Project.

The bid round comprises carbon credits from the initial 5,000 hectares (ha) of the reforestation project and has seen 16 firms participating, according to the company.

The winner will have the right to pre-purchase credits from the first 5,000 ha and the right of first refusal for the remaining 20,000 ha of the project's first phase. The project's total size is 57,000 ha in the Maforiki Kingdom of Sierra Leone.

Through the pre-purchase the winner will fund the project's capital expenditure "through upfront cash payments that will be repaid through the delivery of validated carbon credits at a pre-agreed price that reflects a premium relative to current average prices", Klimat X said.

The initial 5,000 ha are expected to produce around 1.4mn credits over the 20-year land contract period. Around 400 ha have been planted with native species since last spring, with a further 1,000 ha planned for this summer.

Klimat X expects the agreement with the winner to be finalised within five weeks, with 15 June given as the long closing date. The reforestation project is targeting UN Sustainable Development Goals 1, 2, 5, 8, 13 and 15.

Klimat X is also developing a mangrove restoration and conservation project along the Scarcie Estuary in northern Sierra Leone. The firm has identified 3,000 ha of threatened mangrove for conservation and roughly 7,000 ha of highly degraded mangrove for restoration. Klimat X has yet to provide information or tentative dates for a potential bid round for the mangrove credits.

*By Nicola De Sanctis*

### UK firm Martello issues 32,000 hemp credits

UK-based capital transition firm Martello has issued 32,179 carbon credits deriving from industrial hemp cultivation in Canada.

The firm is hoping to sell the credits at retail prices of up to £32.50/t CO2e, or just above \$40/t CO2e. This compares with price range roughly between \$5/t CO2e and 12/t CO2e for nature-based REDD+ CCB credits, according to Argus prices.

The pre-project credit production estimate was between 40,000 and 60,000, with actual credit issuances to be defined after the measurement, reporting and verification (MRV) process that is underway.

The credits are generated from a project focusing

on "soil carbon sequestration through growing hemp in a regenerative agricultural system." Regenerative agriculture entails sustainable approaches to agricultural practices to improve soil nourishment, farm biodiversity, water quality and carbon capture.

Martello is looking into other hemp cultivation projects in Europe and the US, along with mixed agriculture, for credits issuances later this year. The UK carbon code of conduct (UKCCC), which started operating this month, has been tasked with validating the project's credits, although the standard has yet to feature a public registry for projects descriptions, credit issuances or retirements.

*By Nicola De Sanctis*

### Drax to fund Beccs via voluntary carbon market

UK utility Drax plans to use voluntary carbon credits to fund its planned bioenergy with carbon capture and storage (Beccs) projects, Drax commercial director Angela Hepworth told delegates at the Argus Biomass 2023 conference in London.

Selling credits into the voluntary carbon market (VCM) is "how we will be able to develop our high integrity carbon removal projects", Hepworth said, although she did not provide detail around the proportion of funding that may be provided via the VCM. In the US, Drax is speaking to people who may purchase credits, which would allow it to invest in Beccs projects there, she added. Drax is considering several Beccs projects in the US. It signed an initial agreement in September last year with London-based carbon market investment firm Respira to supply the voluntary carbon market with up to 2mn CO2 removal (CDR) credits produced from Drax's North American Beccs projects.

"There are no Beccs projects anywhere in the world [currently] at commercial scale", Hepworth said. She noted several pilots, but that "none of them are being developed without some government support". But Hepworth said that she was confident the cost of Beccs will come down as the technology scales up.

Drax has been testing Beccs at its 3.9GW power plant in Selby, North Yorkshire, since 2018, but it temporarily paused plans last month, citing the need for government support. Although the project did not progress to the next stage of the UK government's funding programme for carbon capture developments, Drax and the government are now in bilateral talks. The company "stands ready to progress [its] £2bn investment programme", and deliver its Beccs project by 2030, chief executive Will Gardiner said on 30 March.

The UK government plans to use a dual contracts for

difference (CfD) business model to support Beccs. The model combines a CfD for low-carbon electricity generation and one for carbon captured, but it is not yet finalised. Rules around the sustainability of the biomass used will be covered in the upcoming biomass strategy, expected by the end of June. Beccs is considered carbon-negative under current UK and EU legislation, as sustainable biomass burn is classified as carbon-neutral. Government subsidies for biomass in the UK end in 2027.

Drax is working with Swedish utility Stockholm Exergi – which is testing Beccs at its 130MW KVV8 combined heat and power plant in Stockholm – on a set of common standards for the technology, Hepworth said. The lack of a common, high integrity standard “is a real issue”, she added.

The UN Intergovernmental Panel on Climate Change (IPCC) and the EU have cautioned that, although CDR has a role to play for high-emitting, hard to abate sectors, the first step to reaching climate goals must be to sharply reduce emissions.

By Georgia Gratton

### **Ice to launch WCA carbon futures in June**

The Intercontinental Exchange (Ice) has set a June launch date for its listing of Washington Carbon Allowance (WCA) future contracts.

The exchange said it will list WCA contracts on 5 June, nearly a month after postponing the launch that was originally scheduled for 27 March.

Ice will launch vintage 2023 and 2024 futures for the allowances, which are used for compliance in Washington state's new cap-and-trade program, along with a WCA current auction clearing price contract.

As with Ice's products for the California carbon market, each WCA contract will be for 1,000 allowances.

The Washington cap-and-trade program launched on 1 January and the state held its first auction on 28 February, selling about 6.2mn vintage 2023 WCAs at \$48.50/metric tonne (t).

Argus assessed WCAs for December 2023 at \$68.50/t yesterday and CCAs for the same delivery at \$31.55/t.

WCAs on the secondary market are now well above the program's 2023 cost-containment reserve Tier 1 price of \$51.90/t and slightly higher than the Tier 2 price of \$66.68/t, raising the possibility of more allowances being added to the market following next month's auction.

The Washington program is designed to help the state meet its mandate to cut its greenhouse gas emissions by 45pc by 2035, compared with 1990 levels, and to hit net-zero emissions by 2050. The program covers industrial facilities, power plants, natural gas suppliers and other fuel suppliers

with emissions of at least 25,000 t/yr.

The Washington Department of Ecology has started a process to consider linking with the Western Climate Initiative (WCI) carbon market that currently includes the California and Quebec cap-and-trade programs. But the agency does not expect the process to be finished until 2025 or later, should it decide to move ahead with the linkage.

By Tomas Russo

### **EU approves climate, emission laws**

The European Parliament approved four key laws revising the EU emissions trading system (ETS), phasing out free carbon allowances for aviation, incorporating maritime emissions and establishing both a social climate fund and carbon border adjustment mechanism (CBAM). The vote paves the way for formal EU adoption in the coming weeks.

The legislation is part of the EU's Fit for 55 package of measures, which aims to cut the bloc's greenhouse gas (GHG) emissions by at least 55pc by 2030 from 1990 levels. German centre-right EPP lawmaker Peter Liese led negotiations for parliament with EU member states for a deal settling the final legal text for the ETS revisions, which was adopted by a large majority. He said changes to the ETS and the regulation on land use and forestry (LULUCF) increased the expected GHG reduction to 57pc.

The file on ETS revisions contains a raft of changes to the system, including a tighter supply cap, strengthened market oversight, the gradual phase-out of free allowance allocations alongside the phase-in of the CBAM, and the expansion of the scope to include maritime emissions in the existing scheme and set up a new ETS for buildings and road transport.

Addressing parliament, EU commissioner Paolo Gentiloni said the new ETS for buildings and road transport will reduce emissions, while its revenues will fund the social climate fund to help EU states tackle the social effects of the transition. And the CBAM will put a fair carbon price on imported products, preventing the ETS from being undermined by carbon intensive goods produced from outside the EU, Gentiloni added.

The social fund, as well as the second ETS' planned price cap and "emergency" break, create "breathing space", Liese said.

The CBAM will be introduced gradually over the period 2026-34, initially covering aluminium, cement, iron, steel, electricity, fertilizers, ammonia, hydrogen and certain downstream products.

The CBAM agreement between parliament and EU countries obliges the European Commission to consider expanding the mechanism's product scope following a report in 2025.

EU energy commissioner Kadri Simson warned parliament that the "significant" changes from the commission's original July 2021 CBAM proposal have moved away from decentralised administration by EU member states. "There's no margin to finance additional [European] officials," she said.

Dutch Green MEP Bas Eickhout noted the increased ambition in EU emissions cuts, albeit not enough to avoid average global temperatures rising by more than 1.5°C above pre-industrial levels. "But we are increasing our ambitions. Industry is getting a very clear signal, not only for 2030 but even more important for 2040," he said, adding that the €87bn social climate fund is "insufficient".

Parliament's environment committee voted through the legislative acts in February. Following formal adoption by EU ministers, the legislation will be published in the EU official journal.

*By Dafydd ab Iago*

### Article 6.4 methodology starts pilot phase

A project aimed at updating methodologies for carbon credits from the Kyoto Protocol era to conform with Article 6 of the Paris climate agreement is now looking for suitable mitigation activities to take part in its pilot phase.

The II-AMT project, run by Zurich-based Perspectives Climate Research and announced last year, will shortly identify "suitable" pilot activities under Article 6.2 to test the tools it has developed, Perspectives said last week.

The project has developed three main tools for applying relevant Article 6.4 requirements to existing clean development mechanism (CDM) methodologies, addressing the key issues of additionality, baselines, and monitoring, reporting and verification (MRV).

The pilot phase will help gauge the ease of applying the respective tool to the underlying mitigation activity, Perspectives founder Axel Michaelowa and others write in a recent Wuppertal Institute paper. It will also help understand the tool's limitations, any need for sector or activity-specific adjustments, and overall transaction costs.

Article 6.4 is the legal basis for a global carbon market and registry, essentially an ameliorated successor to the CDM, which would be set up and operated by the UN Framework Convention on Climate Change (UNFCCC). Article 6.2 forms the basis for bilateral agreements between countries, which can generate internationally transferred mitigation outcomes (ITMOs).

The UNFCCC is aiming for Article 6.4 to be operational by the end of the year. The Article 6.4 supervisory body is working on several crunch issues, which mainly include methodologies and the role of carbon removals.

The II-AMT project aims to submit the revised Article 6

methodology tools to the Article 6.4 supervisory body for approval and use in Article 6.4 activities.

In the absence of dedicated Article 6 methodologies, Article 6 frontrunners such as the Swiss Foundation for Climate Protection and Carbon Offset KliK, the Japanese Joint Crediting Mechanism and the Swedish Energy Agency use CDM methodologies for their pilot activities, either in their entirety or slightly changed.

The UNFCCC secretariat plans to develop by July the necessary interface and registry for CDM projects to transition to Article 6.4. It will be possible for CDM projects to transition to Article 6.4, on the basis of CDM methodologies, until 2025.

The German government is also funding the UNFCCC secretariat's efforts to facilitate the methodology transition process, through the country's International Climate Protection Initiative IKI and its Future of the Carbon Market Foundation.

And Germany's federal environment bureau UBA is overseeing a report, to be published in the late summer, which will analyse the "lessons learned" from the CDM for method development. The researchers commissioned by UBA are already developing two approaches in the context of the Environmental Impact Assessment, the significance of which is far greater under Article 6 than it was under the CDM.

The II-AMT project is financially supported by the Swedish Energy Agency, the Institute for Global Environmental Strategies, Japan's environment ministry and the African Development Bank.

*By Chloe Jardine*

### VCM may jeopardise Art. 6: German minister

"Junk" voluntary carbon market (VCM) credits may jeopardise the "overall social reputation" of new credits under Article 6 of the Paris climate agreement, German junior economy and climate minister Stefan Wenzel has said. But growing awareness of the risk comes at the "right time" as the final rules for the mechanism are drafted.

The recent controversy over forest credits with questionable environmental integrity has helped to put a spotlight on the issue of whether to allow avoided deforestation credits under Article 6 of the Paris deal, as demanded by some countries, Wenzel said in a recent contribution for research institution the Wuppertal Institut. The "increased public awareness around the world" will strengthen the critical attitude of the EU and other negotiators as Article 6.4 methodologies are developed under the auspices of the UN Framework Convention on Climate Change (UNFCCC) this year, Wenzel said.

He stresses that his criticism is not aimed at the VCM in

its entirety, with important market actors such as Gold Standard not supporting the “avoided forestry” project category.

But the issue of how to deal with the VCM “needs to be clarified in the short term”, Wenzel said. The VCM must be brought into line with the goals of the Paris agreement “as a matter of urgency”. This means that on the demand side, companies must first develop an ambitious mitigation strategy for their transition pathway to climate neutrality that is in line with keeping global warming within 1.5°C of pre-industrial levels, in accordance with scientific principles. And on the supply side, credits must be sourced from a high-quality certification system, applying robust methodology.

Carbon credits that do not lead to “reliable” emissions reductions, or that do not come with corresponding adjustments, “have no place in a trustworthy market”, Wenzel said. Public standards for the quality of carbon credits will be needed, along with transparency for buyers.

It is not about regulating the VCM, which would be a “contradiction in terms”, Wenzel said. Rather, it is about “encouraging”, “recommending” and offering technical assistance.

Article 6 sets a UN framework for global carbon trading, with Article 6.4 to provide for a global carbon credit mechanism operated by the UNFCCC, essentially an ameliorated successor to the Kyoto Protocol's clean development mechanism.

Wenzel urges Article 6.4 to be “ready for implementation” following this year's UN Cop 28 climate conference in Dubai in December.

Germany, as an EU member state, does not intend to make use of Article 6 credits. Germany's government nonetheless supports programmes to increase Article 6 readiness in developing countries. The government has also been urging for the application of corresponding adjustments in the VCM.

By Chloe Jardine

### Nordic CDR industry should plan CO2 storage

North European countries must prepare the storage side of their carbon dioxide removal (CDR) activities, as demand for carbon storage from project developers will rise strongly in the decades to come, delegates heard at an industry event in Helsinki, Finland.

Cross-border partnerships and bilateral governmental agreements with countries that have CO2 storage sites will be essential for a country like Finland, which has no storage potential, Alexander Reznichenko, research team lead at the Technical Research Centre of Finland VTT, said at the event. Reznichenko was presenting the results of a CDR study commissioned by the outgoing Finnish government and carried

out by VTT, the Finnish Environment Institut, and Tysky Consulting.

The study commends Sweden, which has little CO2 storage potential but is tackling the issue of bilateral government agreements with storage countries, and also questions whether agreements could be dealt with at EU level.

Speakers at the event agreed with the point, raised by a delegate, that planning is needed given the increasing call for storage expected by 2045 and 2050, with a rising number of commercial bioenergy with carbon capture, utilisation and storage (Beccs) projects in Sweden now looking for storage, and the first phase of Norwegian carbon storage site Northern Lights already full.

Interest in CDR activities is on the rise in Nordic countries, thanks to growing incentives from domestic policies and high EU emissions trading system prices.

In the Nordics, bio-based carbon is the best option for CDR, particularly in Finland, where point source emissions are largely biogenic because of the country's dominant pulp and paper industry, which emitted over 24mn t of CO2 equivalent (CO2e) in 2020. Bio-based emissions are considered carbon neutral, so capturing and storing or using the carbon leads to negative emissions. This is a “very good starting point” that other EU countries “do not necessarily have”, Reznichenko noted.

The study shows that Finland is lagging other countries on CDR support policies, pointing to the legal mandate for carbon capture in Norway, planned negative emissions auctions in Sweden, Swedish and Dutch negative emissions targets, and dedicated funding programmes for research and pilot projects in Sweden, Denmark, the UK and other countries.

The Finnish industry has so far focused more on carbon capture and utilisation, such as producing green fuels, which typically only store carbon for about one year.

Study co-author Oras Tynkkinen, who spoke at the event as a senior consultant for Tysky Consulting and has since been elected a Green party member of the Finnish parliament, voiced his hope that under a new government a financial case will emerge for large-scale and long-term Beccs investments.

Sweden's planned reverse auctions and its Industrial Leap Programme will provide initial incentives for Beccs, Swedish Royal Institute for Technology KTH researcher Malin Pehrs told delegates. The first reverse auctions will be carried out by the Swedish Energy Agency this year, pending state-aid approval from the European Commission. A time delay of about three years is expected from the first auction until the carbon is captured.

Pehrs pointed to the agency's recent suggestion that ac-

tors receiving state support should be allowed to sell carbon credits to the voluntary carbon market (VCM). Because negative emissions from Beccs will be counted towards Swedish climate goals, regardless of the financing source, VCM actors would need to make contribution claims to avoid double-claiming, Pehrs said. This implies that Sweden aims to receive international finance from the VCM to achieve national climate goals, she said.

Finland's outgoing government set a carbon neutrality target of 2035. Sweden plans to reach carbon neutrality by 2045. And Denmark's new government, in office since December, has pledged a reduction target of 110pc by 2050, or 8mn t CO<sub>2</sub>e of net negative emissions by 2050, which is yet to be legally enshrined.

By Chloe Jardine

### EU MEPs show support for CDR

Carbon removals (CDR) from forests, agricultural practices or technology "must play a growing role in achieving climate neutrality in the EU" but the bloc must not rely too heavily on future CO<sub>2</sub> removals to hit its goals, members of the European Parliament (MEPs) agreed in a resolution on sustainable carbon cycles.

The resolution also recognised that the EU "must always prioritise swift and predictable emission reductions". A proposed monitoring, reporting and verification framework should be used to incentivise carbon removals, MEPs agreed. The resolution was adopted with 323 votes in favour, 257 against and 59 abstentions.

Technologies like direct air capture (DAC) that are combined with permanent storage and are "scientifically proven and environmentally safe" can also play a role in the EU reaching its net zero target, the resolution stated. Other solutions based on carbon capture and storage (CCS) or carbon capture and usage can also contribute, the MEPs said, but they called on the European Commission "to establish a system to trace captured CO<sub>2</sub>, distinguishing between carbon capture on site and from the atmosphere in order to avoid double counting".

The commission proposed in November last year a draft regulation which set out a framework for CDR certification. It included DAC and bioenergy with carbon capture and storage, but excluded CCS.

Environmental organisations and academics have warned on some carbon removal technology, arguing that it has not been proven at scale and is very expensive. "There is no benefit whatsoever for DAC," professor of civil and environmental engineering at Stanford University Mark Jacobson told delegates at the *Financial Times*' Climate Capital Live conference last month. "All it does is allow the fossil fuel

industry to persist. It is complete greenwashing," he added.

CDR will be required for the world to reach net negative emissions, the UN Intergovernmental Panel on Climate Change (IPCC) found in its latest synthesis report. But it cautioned that "reaching net zero GHG emissions primarily requires deep reductions" in emissions of greenhouse gases such as CO<sub>2</sub> and methane. This would avoid "feasibility and sustainability concerns, and social and environmental risks associated with CDR deployment at large scales", the IPCC added.

Oil and gas producing countries Saudi Arabia and the UAE – the latter the host of the UN Cop 28 climate summit later this year – are proponents of CDR. Global CCS capacity must grow by a factor of 30 to reach net zero goals, president-designate of Cop 28 Sultan al-Jaber said last month.

By Georgia Gratton

## 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 CO<sub>2</sub> 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 CO<sub>2</sub> 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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