

Introduction to carbon markets – AU Business Forum 2023

Context: This Carbon Markets briefing note was developed as background reading material for the Africa Business Forum on February 20th 2023. The Forum is focused on “Making carbon markets work for Africa”. Carbon markets are diverse and complex – and the Forum can spend but little time on setting the context.

This objective of this briefing note is to provide an introduction to carbon markets, their relevance and the key areas of attention from the perspective of the value they can generate for Africa. All sources, referenced in footnotes, are publicly available and understood to be the most up-to-date information on carbon markets in the public domain at the time of writing.

This note was developed by the Climate Action Platform for Africa (CAP-A), a system orchestrator focusing on realising transformative economic growth in Africa through climate action. For questions, comments, or reactions, please contact CAP-A co-founder Carlijn.Nouwen@cap-a.org or CAP-A CEO Jack.Kimani@cap-a.org

What are carbon markets?

Carbon markets trade carbon credits. A **carbon credit** is the confirmation of one tonne of CO₂e¹ emission avoided, reduced or removed from the atmosphere. These credits are bought by individuals, by businesses and other formal organisations, and by countries.

Buyers buy these credits for various reasons in two different contexts. Some of the purchases are done **voluntarily** – this is usually to meet a public commitment to their stakeholders such as a corporate’s journey to net zero. These purchases are done in the so-called **Voluntary Carbon Market (VCM)**.

Other purchases are made in order to meet a **regulatory obligation**. At country-level, such obligations follow from treaties, which are then translated into national law. Following the Paris Agreement, countries each determined a Nationally Determined Contribution (NDC) – and under the rules described in the so-called Article 6.2 of the Paris Agreement, countries can trade carbon credits with each other in order to meet their NDCs. Such Article 6.2 deals are now beginning to take shape. Various governments have also imposed regulatory obligations on economic actors within their jurisdiction, limiting emissions by these actors, with the option for regulated entities to trade emission rights within the system. Such so-called Emission Trading Schemes (ETS) are a key mechanism in carbon pricing schemes (the other being taxation). Globally, there are currently 36 ETS in operation² and another 23 under consideration or in development.³

Why should African decision makers care about carbon markets?

Carbon markets represent a lot of value. If harnessed well, carbon market revenue can help drive economic growth and socio-economic progress across Africa. Currently, Africa only scratches the surface of this potential.

Carbon markets are big and are growing rapidly. In 2022, the total value traded globally amounted to \$ 865 billion in compliance markets⁴, and another ~\$ 2 billion in VCM. Note that, whilst compliance markets are both much bigger and tend to trade at higher prices than VCM, eligibility to compliance markets is not universal: the regulators defining these markets determine which

¹ The “e” refers to “equivalent” – CO₂ is not the only greenhouse gas (GHG) and to allow for like-for-like comparison, all GHG emissions are converted into what the tonnage of CO₂ is that would cause an equivalent greenhouse impact

² <https://icapcarbonaction.com/en/ets> has details on all ETS regulated by law

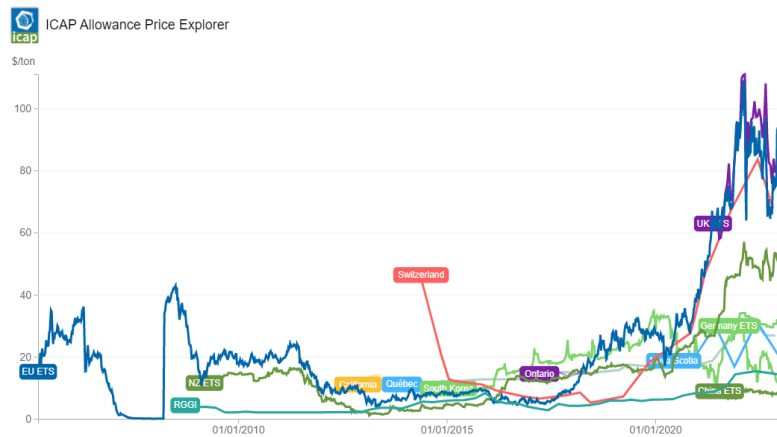
³ https://carbonpricingdashboard.worldbank.org/map_data keeps track of all carbon pricing initiatives, including ETS. This was last updated April 1st 2022, making the ICAP data referenced in the previous footnote more up-to-date.

⁴ See <https://www.refinitiv.com/perspectives/market-insights/global-carbon-market-value-hits-new-record/> and Refinitiv’s associated comprehensive carbon market report

credits are eligible to trade on their markets, and the permitted proportion of foreign credits usually is rather low (see section on priority areas for intervention for African decision makers later in this note). By value, the European Union (EU) ETS is by far the largest compliance market⁵, driving over \$ 751 billion of the \$ 865 billion of market value in 2022 (i.e., 87%). This is a function of the fact that the EU ETS trades 75% of the total global ETS volume and has the second-highest per tonne price (after the newly introduced UK ETS).

Both VCM and compliance markets **more than doubled in value between 2020 and 2022**.⁶ Growth projections vary substantially, with most estimates predicting VCM to reach a \$ 10 - \$ 40 billion size by 2030.⁷ In VCM, a third of the traded volume was related to ‘retiring credits’ (i.e., buying credits to count towards a commitment – which means they will not be sold anymore to anyone else but are fully retired from the market supply); this proportion is a good proxy for the need for newly generated credits to continue meeting the demand.⁸

Though detailed pricing information is sparse, **prices have been on the rise, particularly in compliance markets**. Prices vary a lot – from \$ 2 – 3 per tonne in the most commoditised markets to well over \$ 1,000 per tonne in bespoke forward markets for new innovations. In compliance markets (see figure to the right), after many years of hovering largely around the \$ 20/ tonne mark, prices rose substantially since 2020 and EU and UK ETS prices now are ~ \$ 70 - \$ 110/ tonne.



Africa is punching below its weight in carbon markets: between 2016 and 2021, only 11% of all retired credits in the VCM came from Africa.⁹ This really is a missed opportunity, as many African countries have intrinsic competitive potential to be really cost-competitive locations for carbon credit generation, thanks to the massive untapped renewable energy potential, their youthful, rapidly growing workforce, and available land and relevant natural assets, paired with low levels of existing emissions.

Revenue from selling carbon credits can be an attractive (additional) source of revenue to finance climate-smart interventions. Importantly, many of these interventions not only have a positive climate impact, but have **important socio-economic benefits**: they improve livelihoods, create jobs, spur new economic and industrial activity, or solve pressing issues such as energy poverty, low and declining agricultural yields, and air quality challenges due to cooking fuels and vehicle emissions.

⁵ See https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets_en for more information

⁶ In compliance markets, whilst the overall value increased by 14% from 2021 to 2022, the volume (number of credits traded) decreased by 21%, which shows the increase in credit prices.

⁷ https://www.shell.com/shellenergy/othersolutions/carbonmarketreports/_jcr_content/root/main/section/simple_1854223447/simple/call_to_action/links/item0.stream/1674112112488/ea9cd7629a713c0efa53be567b2d81bcbcd704a7/the-voluntary-carbon-market-2022-insights-and-trends.pdf

⁸ Data on this proportion is not available for compliance markets.

⁹ Source: ACMI roadmap report, https://www.seforall.org/system/files/2022-11/acmi_roadmap_report_2022.pdf Africa's share is growing, but from a very low base. Africa saw 22 MT CO2e retired in VCM in 2021, representing 18% of global VCM retirement volume that year.

The Climate Action Platform for Africa (CAP-A) has analysed¹⁰ that nature-based carbon removal opportunities *alone* can drive \$ 15 billion in annual revenue and generate improved livelihoods and new jobs for over 85 million Africans, at a price of just \$ 50/ tonne. If that price were to go up to \$ 100/ tonne, these can yield \$ 57 billion in annual revenue and support over 140 million Africans. Assuming a price of \$ 80/ tonne in 2050 and adding direct and indirect jobs beyond nature-based solutions alone, ACMI¹¹ estimates that between 110 and 190 million jobs can be created/ supported for Africans by 2050.

Some interventions benefiting from carbon revenue will have carbon credits as the main (or even only) source of revenue, such as engineered carbon removal. In other cases, carbon credits will be but one of several revenue streams. In these, the carbon revenue can help subsidise the prices of climate-smart products and services to drive uptake, such as for electric mobility, clean cooking solutions or renewably-powered agricultural equipment. As such, carbon revenue can make entirely new categories of interventions viable, and help to dramatically expand others.

This potential is being recognised and beginning to be realised, in both focus, agreements and actual interventions under way. A few examples illustrate the range of African activity:

- Kenya's President William Ruto said at COP27¹² "Kenya's next significant export will be carbon credits", is focusing on green growth and has reconfirmed his commitment to green growth in this weekend's proceedings of the Committee of African Heads of State and Government on Climate Change
- Ghana and Switzerland^{13, 14} struck a government-to-government deal to sell carbon credits as so-called ITMOs (Internationally Transferred Mitigation Outcomes) under Paris Agreement Article 6.2 – see detailed explanation later in this note. Switzerland's payment for these ITMOs enables Ghana to transition thousands of rice farmers, jointly covering 80% of its rice production, to climate-smart rice production, reducing methane emissions and increasing farmer income and resilience
- The private company KOKO networks¹⁵ uses carbon revenue to lower the cost of ultra-clean cooking fuel, sold to over 800,000 households through a dense network of 2,000 high-tech Fuel ATMs across 5 cities in Kenya. KOKO now serves over 30% of all homes in Nairobi metro, and 10,000 new household subscribers join its clean fuel and carbon platform each week. This way, KOKO has delivered \$100 million of carbon value directly to Kenyan households in the form of low-cost clean energy in the last 3 years.

In short, carbon markets are a growing opportunity to attract international sources of investment and revenue to drive inclusive, future-proof economic transformation in Africa – an opportunity that should not be missed.

¹⁰ See <https://capa.earthrise.media/> for an interactive tool allowing the user to see abatement potential in tonnes of carbon and associated revenue potential and job creation opportunities through nature-based solutions across Africa, at different carbon prices

¹¹ See https://www.seforall.org/system/files/2022-11/acmi_roadmap_report_2022.pdf

¹² See <https://ntvkenya.co.ke/news/president-rutos-full-address-on-climate-change-at-cop27/> for the President's full address at COP27

¹³ See <https://www.undp.org/geneva/press-releases/ghana-vanuatu-and-switzerland-launch-worlds-first-projects-under-new-carbon-market-mechanism-set-out-article-62-paris-agreement> and <https://ghana.un.org/en/207341-ghana-authorizes-transfer-mitigation-outcomes-switzerland> for more information

¹⁴ UNDP has developed a very helpful FAQ on Article 6.2 and ITMO deals, which can be found on <https://www.ndcs.undp.org/content/dam/LECB/docs/pubs-tools-facts/undp-ndcsp-faqs-itmo-article6.pdf?download>

¹⁵ See www.kokonetworks.com for more information

What should Africa be careful about when it comes to carbon markets?

Carbon markets are far from perfect – and they will need to evolve and innovate to become an ever-growing part of the solution to the global climate change threat. This innovation needs to focus on creating transparent, high-quality, high-integrity credits which have the right set of incentives for all stakeholders, and channel appropriate benefits to local communities. And this innovation needs to happen fast – the global challenge is too urgent and we need to improve the markets as we deploy them, maintaining momentum and taking care not to lose what’s working.

African stakeholders can contribute in many ways to this evolution. Three levers are particularly urgent and relevant for African stakeholders:

- (1) **Improve eligibility of African credits to global markets**
- (2) **Design the enabling environment such that African countries get ever more attractive as locations for these projects, and**
- (3) **Innovate with integrity to increase the share of value retained in Africa – and deliver on this quickly**

Improve eligibility of African credits to global markets needs to be improved - Buyers will mainly be from outside of Africa, as those are the high-emitters that need credits to tackle their historic, current, and future emissions. But compliance markets have very tight eligibility requirements, often limiting foreign credits to a very low proportion, if allowing them at all. Guidance on net zero targets for businesses tend to force more spending on fully decarbonising hard to abate sectors. These choices are mainly driven by a legitimate desire to incentivise (industrial) emission reduction and to avoid greenwashing. And whilst both of those are valid concerns and objectives, it tends to lead to cost-effective African carbon projects struggling to attract much lower levels of investment. As a result, interventions that can offer the world a high climate-“bang-for-buck” tend to be postponed or not funded at all, driving a globally inefficient capital allocation at a moment of extreme global climate urgency. Striking the right balance between the various objectives whilst allowing investment to flow to high-return interventions, is part of global finance and trading rules and requires sovereign engagement. Getting this right will open up the \$ 865 billion global compliance markets as a source of finance for African credits and will make it possible for African solutions to play a much bigger role in averting a global climate catastrophe.

Design the enabling environment such that African countries get ever more attractive as locations for these projects - Africa has inherent competitiveness for these interventions, but is certainly not the only place where you can do these. It needs to make business sense for all stakeholders, generate enough benefits for the host country and local communities, and create enough regulatory long-term certainty for investors. Countries need to create **clarity, consistency and attractiveness** – and need to make decisions about carbon credit ownership, carbon transfer pricing, various taxes and levies, whether or not to grant a Corresponding Adjustment for sale on compliance markets – along with solution-specific policies and regulations such as land use rights. It is best to develop these decisions **jointly** with all the stakeholders to both create the biggest possible pool of value – and divide that fairly. A key decision in this, is how to deal with so-called Corresponding Adjustments.

Article 6, double-counting and Corresponding Adjustments – what is it and why is it important?

The Paris Agreement created a regulatory framework for countries to trade their climate achievements with each other – also known as Article 6.2 deals. In these, a country can sell a certain number of carbon credits, known as Internationally Transferred Mitigation Outcomes (or ITMOs) to another country. To avoid double-counting when the world takes stock of progress towards Nationally Determined Contributions (NDCs) and global climate goals, the selling country cannot count these ITMOs towards the achievement of their NDC. With the ITMO sale, the selling country transfers that right to the buying country. This is captured by making a Corresponding Adjustment (CA), in which the selling country takes these ITMOs off their NDC ledger.

Credits sold in the VCM do not need such a CA. Because the buyer will not use the purchase to meet any regulatory requirements, the credits can still count towards the host country's NDC. In fact, international VCM sales allow for the influx of foreign capital to help the host country meet its NDC – the buyer can make this assertion that their purchase helped the host country in this way. It is an integral part of raising the finance for the so-called conditional commitments in the NDCs of emerging and frontier economy countries. This practice does not lead to double-counting, because the buyer's purchase has no impact on any country's NDC – the climate achievement continues to count towards the host country's NDC, where it was realised in the first place.

But if a private project developer wants to sell credits to a non-state actor in a compliance market, such as an ETS, the credit will need to come with a CA. After all, the compliance markets are a tool to realise a country's NDC and the regulatory obligations for the credit buyers that are part of the ETS, are included in that country's NDC.

It is the host country's prerogative to grant a CA. Once that is done, the host country cannot sell that same credit as an ITMO, and cannot count it towards its NDC anymore – so by granting a CA, the host country foregoes these options. With a CA, the credit owner (often a private developer) can sell the credit in a compliance market, where it typically attracts a (much) higher price than in the VCM.

So why would a host country grant a CA to a private developer if it limits the host country's options? A host country would want to do that when it sees enough benefit from the intervention – and when it is clear that the higher price is needed to make the intervention work. Let's take the example where the carbon revenue subsidises the provision of consumer-facing goods and services that serve a pressing need the government cares about (such as renewably-powered small-scale irrigation equipment, electrically-powered mass transit, or clean cooking stoves and fuels). The carbon revenue realised in VCM may not be sufficient to realise enough subsidy value for the product to be cheaper than high-emission equivalents (such as a diesel-powered irrigation pump, diesel public bus or charcoal as cooking fuel). This then requires the host country to contribute financially to solve this challenge. If the business case does not work for the project developer, they may not execute the project at all – leaving the pressing need unaddressed and leaving the host country without the economic activity of the project itself.

In discussions between project developers and the host country, the focus should be on creating a solution that is attractive for all parties, such that the intervention *will* materialise in that country. A wide range of tools shape these incentives, and the discussions should not be limited to a discussion on CA alone – the opportunity to earn corporate income tax will play a role, provided that proper transfer pricing avoids profits are offshored unduly, and clarity will need to be created on the benefits to local communities and access to relevant assets (such as land access).

Innovate with integrity to increase the share of value retained in Africa – and deliver on that quickly. Right now, the many steps involved in creating and trading a trusted carbon credit, lead to high transaction costs and long throughput times. This current market structure has three key disadvantages:

- Smaller projects often cannot afford to monetise their carbon, as they can simply not afford the high fixed costs for registration and measurement, reporting, and verification (MRV) and various actors in the value chain (brokers and project developers if needed) require a minimum scale to get engaged
- The value to local communities is limited, sometimes to as little as 10% of the carbon revenue
- Entire categories of climate benefits are excluded from monetisation altogether because there is no accepted ‘methodology’ to certify those benefits. A key example of this is the fact that current methodologies to generate carbon credits, don’t allow to pay for the effort to keep protecting standing carbon sinks if they are not under imminent threat of destruction

Lots of innovations are needed to increase the value retained in Africa. Many people are worried about quality and integrity and rightly so. Some stakeholders believe innovation should be restricted to avoid integrity challenges. Given the urgency and potential, we assert that is not good enough – we need to **innovate with integrity**. An interesting recent example, has been that of Gabon. Gabon issued sovereign carbon credits¹⁶ linked to the preservation of their natural forest. With an approach that is different to established VCM methodologies for forest/ deforestation credits, Gabon deliberately challenges the limited scope of the current methodologies which focus on reducing deforestation, but have little to offer for countries with high forest cover and low deforestation rates. The jury is out on the market response and next steps, yet the approach itself and the debate it has sparked, highlights the urgency of change.

African stakeholders urgently need to build, strengthen and operationalise Africa’s attractiveness as a location for generating carbon credits, whilst working with others to make carbon markets work better for Africa(ns). Only then can Africa deliver on its full potential as a source of climate-smart solutions, and rise to become a climate action powerhouse.

¹⁶ See <https://www.rainforestcoalition.org/finance-news/why-we-should-welcome-gabons-big-unfccc-redd-issuance/> for a perspective from the Coalition for Rainforest Nations that welcomes this innovation. A Wall-Street Journal article about Gabon’s announcement (<https://www.wsj.com/articles/gabon-targets-a-huge-payday-with-carbon-credits-11668088188>) explains some of the challenges raised about the methodology.