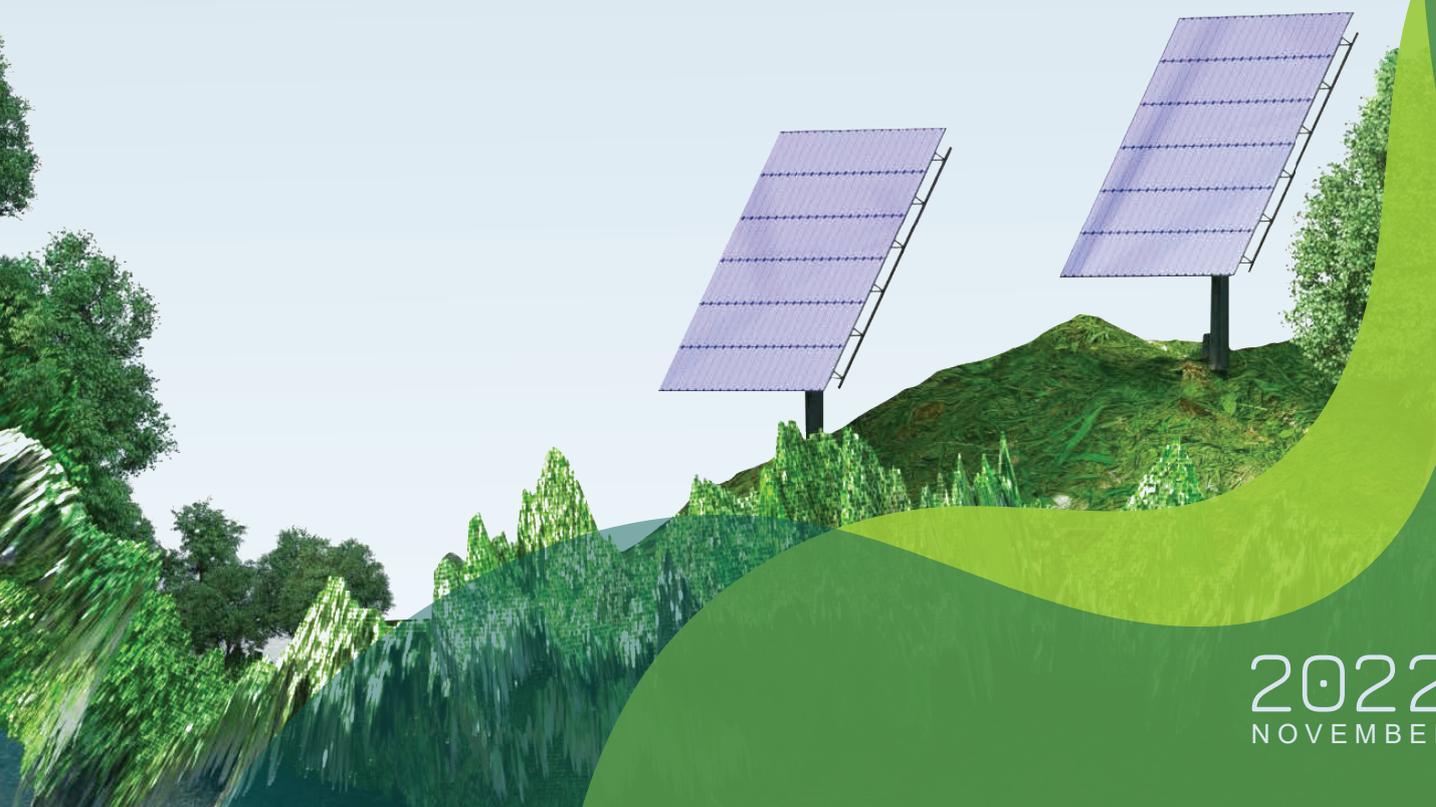


Africa Carbon Markets Initiative (ACMI): Roadmap Report

Harnessing carbon markets for Africa



2022
NOVEMBER

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ACMI has not endorsed any companies, organizations, products or credits included in this report nor has ACMI assessed individual companies or projects.

ACMI is not meant to be a commercial initiative. It aims to build on, supplement and reinforce ongoing efforts towards scaling voluntary carbon markets on the continent, not to compete with any existing initiative.

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Republic of Nigeria*

Iván Duque Márquez

*Former President,
Government of
Colombia*

Annette Nazareth

*Chair, Integrity Council
for the Voluntary
Carbon Market*

Samuel Thevasagayam

*Deputy Director, Bill
& Melinda Gates
Foundation*

Gillian Caldwell

*Chief Climate Officer
and Deputy Assistant
Administrator, USAID*

Bogolo Kenewendo

*Special Advisor, Africa
Director, UN Climate
Change High-Level
Champions*

David Antonioli

CEO, Verra

Sitoyo Lopokoiyit

*Managing Director,
M-PESA Africa*

Ariel Perez

*Managing Partner,
Vertree*

Riham ElGizy

*Director, MENA
Voluntary Carbon
Exchange*

M. Sanjayan

*CEO, Conservation
International*

Damilola Ogunbiyi

*CEO, Sustainable
Energy for All; Special
Representative, the
UN Secretary-General
for Sustainable Energy
for All; Co-Chair,
UN-Energy*

Joseph Nganga

*Vice President Africa,
Global Energy Alliance
for People and Planet
(GEAPP)*



The Global Energy Alliance for People and Planet (GEAPP) is an alliance of philanthropy, entrepreneurs, governments in emerging and developed economies, and technology, policy, and financing partners. Our common mission is to support developing countries' shift to a clean energy, pro-growth model that ensures universal energy access and unlocks a new era of inclusive economic growth, while enabling the global community to meet critical climate goals during the next decade. In doing so, as an Alliance we aim to enable 150 million new jobs, reduce 4 gigatons of future carbon emissions, and expand clean energy access to one billion people. With philanthropic partners, Bezos Earth Fund, IKEA Foundation, and The Rockefeller Foundation, GEAPP works to build the enabling environment, capacity, and market conditions for private sector solutions, catalyse new business models through innovation and entrepreneurship, and deploy high-risk capital to encourage private sector solutions, and assist just transition solutions.

Sustainable Energy for All (SEforALL) is an international organisation that works in partnership with the United Nations and leaders in government, the private sector, financial institutions, civil society, and philanthropies to drive faster action towards the achievement of Sustainable Development Goal 7 (SDG7) – access to affordable, reliable, sustainable and modern energy for all by 2030 – in line with the Paris Agreement on climate. We work to ensure a clean energy transition that leaves no one behind and brings new opportunities for everyone to fulfil their potential.



United Nations Economic Commission for Africa (UNECA) was established by the Economic and Social Council (ECOSOC) of the United Nations (UN) in 1958 as one of the UN's five regional commissions. UNECA's mandate is to promote the economic and social development of its member States, foster intra-regional integration, and promote international cooperation for Africa's development. Made up of 54 member States, and playing a dual role as a regional arm of the UN and as a key component of the African institutional landscape, UNECA is well positioned to make unique contributions to address the continent's development challenges. UNECA's strength derives from its role as the only UN agency mandated to operate at the regional and subregional levels to harness resources and bring them to bear on Africa's priorities.

UN Climate Change High-Level Champions

The UN Climate Change High-Level Champions deliver on their mandate to enhance ambition and strengthen the engagement of non-state actors in supporting Parties, working with the Marrakech Partnership, to deliver the goals of the Paris Agreement. To connect the work of governments with the many voluntary and collaborative actions taken by cities, regions, businesses and investors, nations decided to appoint two High Level Champions, Dr. Mahmoud Mohieldin and Mr. Nigel Topping. They build on the legacy of their predecessors to engage with non-state actors and activate the 'ambition loop' with national governments. Their work is fundamentally designed to encourage a collaborative shift across all of society towards a decarbonised economy so that we can all thrive in a healthy, resilient and zero carbon world.

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Foreword

Climate change presents the continent of Africa with multiple challenges. African countries are particularly exposed to the physical risks arising from the global rise in temperatures. They also face the question of how to manage and finance the economic transformation that will be required to curb greenhouse gas emissions and halt the destruction of nature.

One important answer is the subject of this report — namely the role that voluntary carbon markets could play in Africa’s energy transition and commercialization of its nature assets. Voluntary carbon markets (VCMs) represent a major opportunity to accelerate economic development and simultaneously curb greenhouse gas emissions. But seizing this opportunity will take thoughtful and deliberate action, especially by African stakeholders.

At the COP27 summit in Egypt, we launched a new venture which aims to help shape and harness the potential of carbon markets in Africa. The Africa Carbon Markets Initiative (ACMI) has been formed with the support of a coalition of organisations, including those we represent, focused on clean energy and sustainable development. Its objective is to drive a dramatic increase in the production of African carbon credits while ensuring that carbon credit revenues are transparent, equitable, and create good jobs. Integrity of carbon credits is central to the mission of ACMI, as without integrity increasing demand for credits in the VCMs will pass Africa by.

Global demand in VCMs has grown strongly in the last five years, driven principally by companies buying credits to help meet their climate pledges. Supply and demand of African carbon credits is also increasing, but from a low base, with the result that the continent currently generates only a small proportion of its potential. Boosting supply of credits would enable much-needed sustainable investment in sectors ranging from renewable energy and clean cookstoves, to agriculture and forestry.

ACMI builds on previous efforts such as the *Global impact of war in Ukraine: Energy crisis* published by the UN Global Crisis Response Group on Food, Energy and Finance in August 2022, which calls for carbon markets as a “crucial way of funnelling finance to developing countries”.

This document is intended as a practical guide for how this immense potential could be realised. It sets out an ambition for voluntary carbon markets in Africa and proposes action to help fulfil that ambition. We think it will make inspiring reading for anyone with an interest in ensuring that Africa plays its full part in the quest for net-zero. We invite African leaders and carbon market participants to give it special attention, get behind ACMI’s important mission and share feedback. We would highly appreciate additional perspectives. Please share inputs via the public consultation survey released with this document.

Damilola Ogunbiyi, CEO, Sustainable Energy for All; Special Representative, the UN Secretary-General for Sustainable Energy for All; Co-Chair, UN-Energy



Joseph Nganga, Vice President Africa, Global Energy Alliance for People and Planet



Executive summary

Voluntary carbon markets are growing fast and becoming a crucial decarbonisation tool.

The need for global efforts to curb greenhouse gas emissions is increasing in order to meet goals set by the Paris Agreement. Voluntary carbon markets (VCMs) are starting to play an important role complementing direct decarbonisation efforts. Global companies are increasingly including carbon credits that reflect avoidance of CO₂ equivalent (CO₂e) emissions or removal of CO₂e from the atmosphere in their efforts to reach net zero, while activity is accelerating to create a robust and credible market to generate and trade these credits. Globally, VCMs grew at a compound annual rate of over 30 percent from 2016 to 2021¹ (based on carbon credit retirements).

Africa has huge potential to use VCMs to access climate funding and drive broader development.

This creates an opportunity for Africa to develop carbon projects that could channel international investment to address environmental challenges. Furthermore, Africa could leverage carbon markets to drive development priorities such as expanding energy access, improving health through clean cooking, and creating jobs.

Yet African carbon market activity, while growing, currently falls well short of its potential (22 MtCO₂e retired in 2021²), with just a few countries accounting for the bulk of carbon credits issued to date. This is the context for the formation of the Africa Carbon Markets Initiative (ACMI), with the aim of scaling supply of and demand for African carbon credits.

The 2030 technical potential of Africa-sourced carbon credits is estimated to be up to ~2,400 MtCO₂e³ per annum based on existing, nascent, and innovative methodologies in sectors such as forestry and land use, agriculture, blue carbon, renewable energy, household devices, livestock, waste management, engineered carbon dioxide removals, and more.

ACMI aims to address challenges to growing African carbon markets and achieve 4 core objectives.

To build vibrant and robust voluntary carbon markets in Africa, a number of challenges must be overcome including fragmented projects and carbon generating assets, a dearth of large-scale developers capable of mustering sufficient capital and expertise, and a complex and uncertain regulatory landscape. Meanwhile, intermediation and demand are being held back by concerns about the integrity of some carbon credits and fair distribution of value. These are just a few of the challenges inhibiting voluntary carbon market growth.

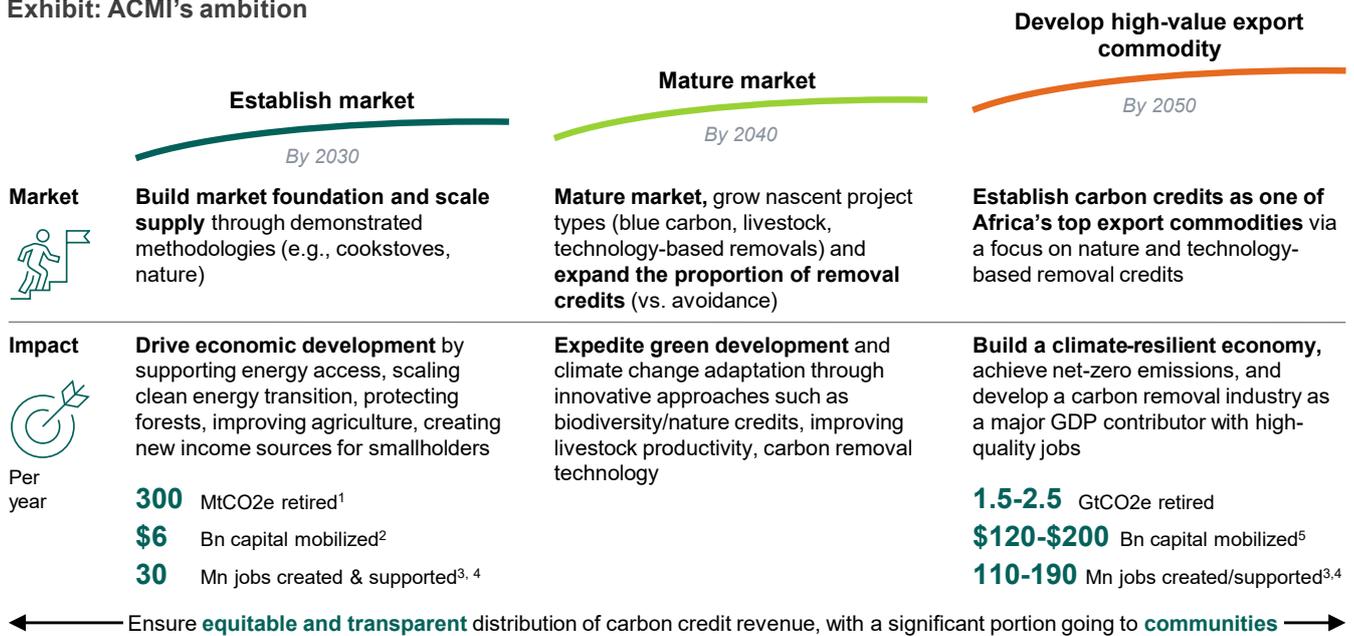
ACMI aims to address these challenges and build the foundations for a thriving voluntary carbon market ecosystem in Africa by 2030. ACMI's ambition includes 4 core objectives:

- Grow African carbon credits retirements ~19-fold from ~16 MtCO₂e retired in 2020 to ~300 MtCO₂e per annum by 2030 and up to 1.5-2.5 GtCO₂e by 2050;
- Create or support 30 million jobs by 2030 and more than 100 million jobs by 2050 through carbon projects development, execution, certification, and monitoring;
- Raise the quality and integrity of African credits to mobilize up to US\$6 billion by 2030 and more than US\$100 billion per annum by 2050;
- Ensure equitable and transparent distribution of carbon credit revenue, with a significant portion of revenue going to local communities.

^{1,2} McKinsey Vivid Economics Carbon Credit Database, drawing on Verra, Gold Standard, ACR, CAR, Plan Vivo (2022)

³ VCS, GS, ACR, CAR, and Plan Vivo registries, UNFCCC, McKinsey Vivid Economics VCM model, World Bank, Ease of doing business, IEA, S&P Global Platts, Enerdata, McKinsey Nature Analytics, CAP-A, Griscom et. al., FAO, Biodiversity Research Institute, IPBES, CGIAR, Global Alliance for Climate Smart Agriculture

Exhibit: ACMI's ambition



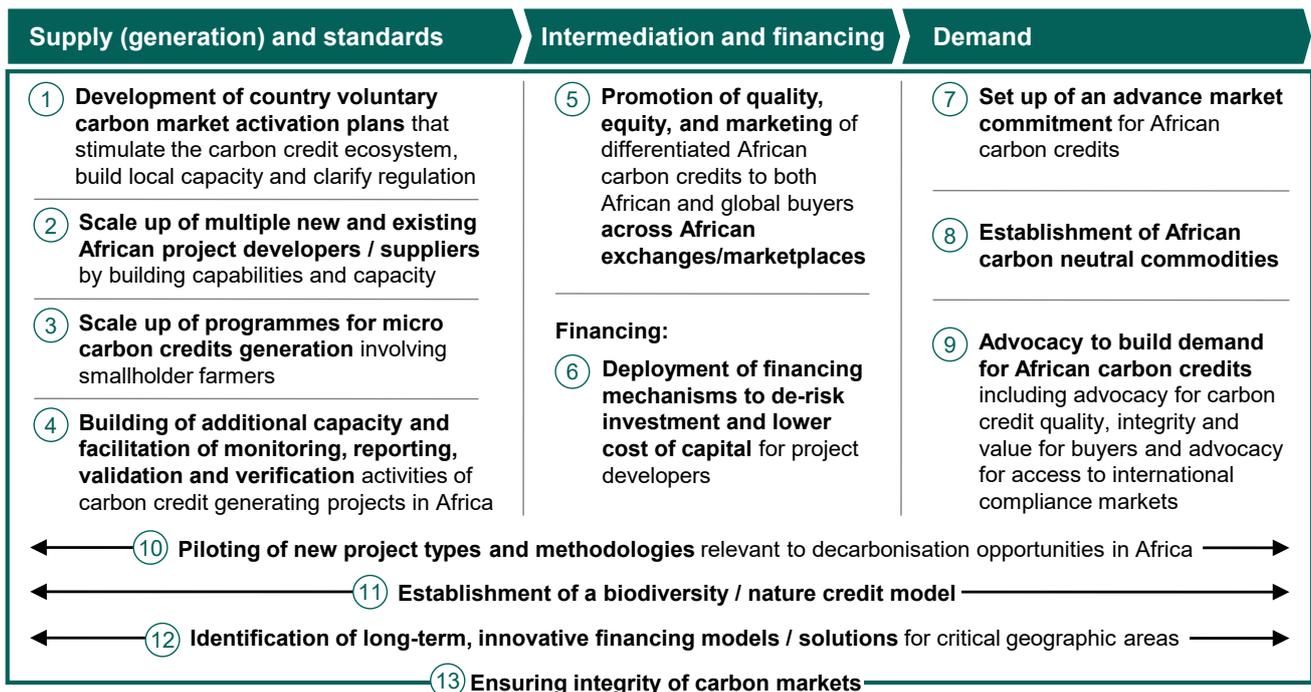
- Assuming Africa's carbon retirement grows by ~19X from ~16 MtCO_{2e} in 2020 (14x from 22MtCO_{2e} in 2021)
- Assuming carbon price of ~\$20/tonne in 2030 based on S&P and World Bank weighted average price
- Includes direct and indirect jobs created and jobs supported (e.g., income increase). Calculated via a bottom-up estimation for NBS job impact leveraging the CAP-A nature-based climate change mitigation model and a top-down estimate of non-NBS jobs based on job multipliers including direct and indirect jobs; Assumed 75% nature-based projects in 2030 and 60% nature-based projects in 2050
- Jobs include not only jobs created but jobs supported via additional income; Nature jobs can include temporary jobs in any given year (esp. for ecosystem restoration pathways e.g., planting trees)
- Assuming carbon price of ~\$80/tonne in 2050 based on Vivid Economics VCM model for an accelerated policy scenario with projected global warming of 1.6 - 1.7 °C (Triangulated against additional sources: Bloomberg estimation of \$47 to \$120/tonne and TSVCM projection of \$150 to \$250 for technology-based solutions, Reuters estimates of at least \$100/tonne to reach net zero by 2050, Vivid Economics VCM model price projection between \$28 - 143)

Source: CAP-A nature-based climate change mitigation model, TSVCM, Bloomberg, Reuters, McKinsey Vivid Economics, McKinsey MGI Economic Research, International Labor Organization (ILO), Global Trade Analysis Project (GTAP)

ACMI's proposed action programmes seek to unlock potential across the VCM value chain.

To achieve these objectives, ACMI has laid out a roadmap of 13 action programmes across the VCM value chain.

Exhibit: 13 action programs could be deployed to address challenges across the VCM value chain in Africa



In supply, ACMI proposes to assist scaling of project developers, develop national enabling ecosystems and build validation and verification capacity on the continent.

To address limited and fragmented project development, there is a need to support governments in drawing up VCM activation plans to set national targets, clarify regulation and create incentives to boost supply. Additionally new project developers must be mobilized and technical assistance reinforced. To help smallholder farmers benefit from VCMs, a dedicated programme focused on addressing the fragmented access to carbon markets can be deployed. There is also a need to better tailor certification processes to local context, reduce barriers to entry and build verification and validation capacity on the continent.

In intermediation, ACMI proposes to support efforts to create a more integrated African carbon market and reduce costs including cost of capital.

There is an opportunity to harmonise trading principles across African exchanges, marketplaces and brokers to drive increased value to Africa and local communities. ACMI proposes to expand financing mechanisms to de-risk investment and reduce cost of capital for project development.

To fuel demand for African credits, ACMI proposes to leverage an advanced market commitment, carbon neutral commodities and advocacy.

An advance market commitment (AMC), where multiple corporations commit to purchase large quantities of carbon credits from Africa, can send a strong demand signal and incentivise project development. ACMI is working with several buyers and project developers to set up a multi-million-dollar advance market commitment to purchase African carbon credits by 2030, build a supply pool to match this demand, and facilitate transactions. Separately ACMI proposes to support efforts to increase

African exports of carbon neutral commodities, and advocate to build demand for African carbon credits by ensuring high integrity buyers and standards organizations understand and account for the unique value of Africa credits, and by advocating for African credits to be more widely integrated into international compliance markets.

Cross-cutting action programmes will pilot new project types and methodologies and explore diversified financing models for nature assets.

Other programmes include piloting new or nascent project types and methodologies such as fossil fuel displacement via distributed renewable energy (DRE) or savannah grasslands fire management. ACMI is also looking to promote new ways of valuing co-benefits of carbon projects and Africa’s natural resources (e.g., through nature credits), thus potentially mobilising additional investment.

Carbon credit integrity is an over-arching and critical area of focus for ACMI.

Integrity is central to the mission of ACMI. There are global concerns on integrity of VCMs, with lingering questions about transparency, equity, and effectiveness. A lack of integrity undermines the purpose of VCMs—to drive climate action—and will inhibit market growth, as buyers will only continue to purchase African credits if the public trusts that the underlying emissions reductions are real, permanent, and additional. Furthermore, there is a need for increased transparency on the share of revenues received by communities. Integrity of VCMs credits is likely to matter more as the market matures and standards are refined. Integrity should thus be prioritised at all stages of the value chain. ACMI will work with leading bodies such as the The Integrity Council for the Voluntary Carbon Market (ICVCM) and the Voluntary Carbon Markets Integrity Initiative to establish transparency and benefits-sharing standards for both sellers and buyers assuring that as VCMs scale in Africa, they scale with the right programs and projects.

Exhibit: The principles of ACMI



1. Validation/verification body – 2. Measurement, Reporting and Verification

Exhibit: Proposed next steps for ACMI post COP 27

● Directly related action programme ○ Indirectly supported action programme

Refine roadmap	Conduct a public consultation to collect comments and refine the proposed roadmap accordingly	All
	Conduct additional deep-dive analysis on selected topics (e.g., guidelines for smallholder farmers agroforestry, market-potential analysis for selected carbon neutral commodities, biodiversity credit pricing and marketing)	All
Pursue support to governments	Support interested governments in the development of VCM activation plans <ul style="list-style-type: none"> • Provide supporting material to help countries understand potential benefits of VCM • Provide a blueprint for the development of national VCM plans and help countries define their ambitions for VCM over the next years • Connect countries with technical assistance providers and funding partners to support implementation of national VCM activation plans 	1
Build African carbon credit projects supply	Conduct active reach out and sensitization activities to mobilize developers to scale up existing or develop new projects, especially focusing on differentiated project types and relevant aggregation mechanisms	2 3 8 10 11
	Support the development of flagship projects / pilots , especially on new/nascent methodologies that are especially relevant for Africa (e.g., agroforestry projects involving smallholder agriculture and community forestry, fossil fuel displacement via DRE, savannah fire management, biodiversity / nature credit)	3 8 10 11
	Collaborate with VVBs and other stakeholders (national/ domestic members of the International Accreditation Forum, universities) to scale-up validation/verification capacity on the continent	4
	Advocate for governments to support project development through reinforced technical assistance to project developers, data-sharing to build Africa data baseline, creation of incentives for local financial institutions to fund carbon projects development, and detail best practices to support specific project types (e.g., agroforestry, carbon-neutral commodities, coal decommissioning – especially by expanding renewable energy capacity)	2 3 6 8 10 11
Mobilize financing and demand	Encourage financial institutions to develop and scale adequate instruments to fund and de-risk carbon credit projects development in Africa, and enable communities' participation (e.g., smallholder farmer finance)	6 12
	Progress an advance market commitment for African carbon credits with African and international corporations	7
	Advocate for African carbon credits quality and value for buyers and for access to international compliance markets	9
	Spread understanding of the different long-term innovative financing options for critical geographic areas , to help governments and communities identify what instruments are most relevant to their situation and to the asset they are trying to protect	12
Collaborate with other key stakeholders to facilitate and support VCM development	Encourage funding partners and technical assistance providers including DFIs, philanthropies, NGOs to reinforce key supporting activities including funding early-stage projects, scale up of blended-finance programs, reinforcing technical assistance to governments and project developers, sharing data to build an Africa data baseline	1 2 3 6 10 11
	Coordinate / support established, recognised global standards and integrity organisations (e.g., ICVCM, VCMI SBTi) to establish transparency and benefits-sharing standards for both sellers and buyers for ACMI-endorsed credits	13
	Encourage standards to adapt methodology requirements and provide more standardized methods for Africa (i.e., performance benchmarks, positive lists)	2 3 8 10 11
	Collaborate with new / existing carbon credit exchanges and marketplaces to establish commitments on common standards supporting suppliers & communities	5
Mobilize other action leaders	Call for organizations to lead and participate in proposed actions / working groups , and support implementation by framing roles, responsibilities and focus areas for the coming year. These actions include: <ul style="list-style-type: none"> • Set up of an accelerator/incubator to support high-potential new/nascent project types • Set up of a technical facilitation programme focused on reducing barriers to entry for carbon credit certification for project developers in Africa • Coalitions to support the development of the first biodiversity/nature credit and to support agroforestry for food security and carbon credits 	All

A lush tropical forest with misty mountains in the background. The foreground is filled with dense green foliage, including palm trees and banana plants. The background shows rolling hills and mountains partially obscured by mist or low clouds, creating a sense of depth and atmosphere.

Chapter 1

Chapter 1: Why carbon markets matter for Africa

As the Paris Agreement targets set goals to reduce global greenhouse gas emissions, it has become critical for countries and organisations to focus on direct decarbonisation of their activities. To complement these efforts, voluntary carbon markets (VCMs) are also starting to play a significant role. Global companies are increasingly adding carbon credits that reflect avoidance of CO₂ equivalent (CO₂e) emissions or removal of CO₂e from the atmosphere as part of their efforts to reach net zero. In parallel, activity is accelerating to create a high quality and high integrity market to generate and trade these credits. This is complemented by the role voluntary carbon markets can play in broader development goals by creating jobs, expanding energy access, improving livelihoods, and protecting biodiversity.

Globally, VCMs grew at a compound annual rate of over 30 percent from 2016 to 2021⁴ (based on carbon credit retirements⁵). Last year alone saw a 50 percent increase in real demand, and the value of carbon credit retirements is estimated to be over US\$700 million⁶.

Demand for African-origin carbon credits has been growing too — at a compound annual rate of 36 percent between 2016 and 2021. Yet this growth is from a low base, and last year the retirement value of African carbon credits was only \$123 million⁷, well below its potential level. Out of total credits issued worldwide between 2016 and 2021, only about 11 percent stem from African countries, and the bulk of these come from a few large

projects. It is estimated that Africa currently generates only ~2 percent of its maximum annual potential of carbon credits⁸.

“Carbon markets represent a transformational economic and development opportunity for Africa”

All of this represents a transformational economic and development opportunity for Africa. High integrity carbon credit projects could not only reduce emissions and remove CO₂e from the atmosphere, driving on-the-ground climate impact, but they also offer an immense opportunity to drive development priorities such as expanding energy access, improving health through clean cooking, and creating jobs. They are also gaining traction as a crucial way of funnelling finance to developing countries⁹ and have the potential to become a meaningful commodity in their own right. The emergence of carbon credits as a new product allows for the monetization of Africa’s large natural capital endowment, while enhancing it.

This large unrealised potential and the opportunity for diverse development impact is the reason why a group of African leaders, CEOs, carbon market experts and broader climate champions have come together to launch the Africa Carbon Markets Initiative.

Exhibit: Voluntary carbon markets could provide significant development benefits to Africa

 <p>Nature</p>	<p>Forestry and land use: Africa is one of the most biodiverse regions on Earth, hosting a quarter¹ of global biodiversity that could benefit from increased protection and community awareness</p>	 <p>Workers</p>	<p>All: Africa’s working-age population is expected to grow by 450 million people by 2035⁴, and could benefit from new job opportunities across the voluntary carbon market ecosystem</p>
 <p>Farmers</p>	<p>Agriculture & Soil sequestration: Africa’s farmers, including 33 million smallholder farms², could receive direct payments and improved soil and shade cover from planting trees and improving soil management practices</p>	 <p>Pastoralists</p>	<p>Livestock: Africa’s pastoralists, covering over 40% of the continent’s land area⁵, could benefit from direct payments for their role in managing carbon sinks⁶</p>
 <p>City dwellers</p>	<p>Renewable energy: Approximately half of Africa’s population lives in cities³ and could benefit from increased energy access and improved air quality from decommissioning of diesel and other fossil fuel solutions</p>	 <p>Households</p>	<p>Household Devices: ~200 million people⁷ in Africa using charcoal for cooking fuel could see significant health benefits from switching to highly efficient coal stoves, natural gasifier stoves, liquid petroleum gas stoves and renewables stoves such as solar</p>

1. UN report "The state of biodiversity in Africa"

2. IFAD, Invest more in smallholder agriculture

3. World Bank (2022)

4. World Bank publication "Creating Jobs for Africa's Growing Population"

5. African Union 2010 estimates

6. However, because of insecure land rights, pastoralists risk having their rights violated by private sector and government carbon credit developers

7. Rose, Julian; Bensch, Gunther; Munyehirwe, Anicet; Peters, Jörg. "The forgotten coal: Charcoal demand in Sub-Saharan Africa"

^{4,8} McKinsey Vivid Economics Carbon Credit Database, drawing on Verra, Gold Standard, ACR, CAR, Plan Vivo (2022)

⁵ Carbon credit retirement happens when the credit is purchased and removed from the market. In this instance we reference retirements, as they represent the closest proxy to carbon credit purchases

^{6,7} McKinsey Vivid Economics Carbon Credit Database, drawing on Verra, Gold Standard, ACR, CAR, Plan Vivo; Ecosystem marketplace (2022)

⁹ Global impact of war in Ukraine: Energy crisis, UN Global Crisis Response Group on Food, Energy and Finance, August 2022; UN Brief No. 3

What is the Africa Carbon Markets Initiative (ACMI)?

The Africa Carbon Markets Initiative (ACMI) has been launched by a coalition of organisations focused on high integrity climate impact, clean energy, and sustainable development, to accelerate the growth of Africa's voluntary carbon markets. The initiative was launched by the Global Energy Alliance for People and Planet (GEAPP), Sustainable Energy for All (SEforALL) and the United Nations Economic Commission for Africa (UNECA) with support from the UN Climate Change High-Level Champions. It is led by a 13-person steering committee of influential African leaders and carbon market experts.

“ACMI aims to support a significant rise in supply and demand of high integrity carbon credits”

ACMI aims to support African governments, communities, project developers and other stakeholders to significantly scale the supply and demand of high

integrity African carbon credits, to supplement direct decarbonisation and deliver real climate action while creating millions of jobs and supporting energy access, biodiversity, livelihoods and more. For this purpose, ACMI is developing a roadmap of action programs that could be implemented over the coming years, covering every part of the VCM ecosystem including on the ground project developers and communities, buyers, intermediaries, financiers, technical assistance providers, validation/verification bodies, registry agencies and governments.

Integrity is central to the mission of ACMI. Carbon credits' integrity will only matter more as the market matures and standards are refined and should thus be prioritised at all stages of the value chain. ACMI will work with leading bodies such as the The Integrity Council for the Voluntary Carbon Market (ICVCM) and the Voluntary Carbon Markets Integrity Initiative to establish transparency and benefits-sharing standards for both sellers and buyers ensuring that as VCMs scale in Africa, they scale with projects that drive meaningful climate and development impact.

Exhibit: ACMI is led by a 13-persons steering committee of influential leaders with deep carbon markets experience

African governments	 Yemi Osinbajo	Vice President, Federal Republic of Nigeria
Global expertise	 Iván Duque Márquez	Former President, Government of Colombia
	 Annette Nazareth	Chair, Integrity Council for the Voluntary Carbon Market
	 Samuel Thevasagayam	Deputy Director, Bill & Melinda Gates Foundation
	 Gillian Caldwell	Chief Climate Officer and Deputy Assistant Administrator, USAID
	 Bogolo Kenewendo	Special Advisor, Africa Director, UN Climate Change High-Level Champions
Verification / registry agencies	 David Antonioli	CEO, Verra
Suppliers, financiers, intermediaries and buyers	 Sitoyo Lopokoiyit	Managing Director, M-PESA Africa
	 Ariel Perez	Managing Partner, Vertree
	 Riham ElGizy	Director, MENA Voluntary Carbon Exchange
	 M. Sanjayan	CEO, Conservation International
Sponsor partners	 Damilola Ogunbiyi	CEO, Sustainable Energy for All; Special Representative of the UN Secretary-General for Sustainable Energy for All; Co-Chair, UN-Energy
	 Joseph Nganga	Vice President Africa, Global Energy Alliance for People and Planet (GEAPP)

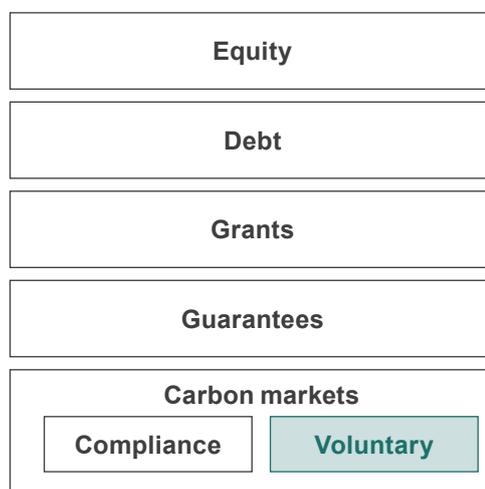
Chapter 2



Chapter 2: Current state of voluntary carbon markets

Definition of voluntary carbon markets (VCMs)

Exhibit: Carbon markets are only one type of climate financing source among others (illustrative)



Carbon credits (sometimes called offsets) are certificates representing one tonne of CO₂e that has either been prevented from being emitted or removed from the atmosphere. Projects need to be independently validated and must meet a set of standards to verify their climate impact (e.g., demonstrate the impact is permanent, demonstrate the impact would not have happened without income from the carbon credit). The certificates generated can be traded and ultimately sold to individuals or corporates who wish to compensate for their emissions by “retiring” carbon credits and make claims towards their climate targets.

There are two types of carbon markets: compliance markets and voluntary markets. In compliance markets, companies and governments must account for their greenhouse gas emissions as required by regulation. There are different types of compliance markets. For example, in a ‘cap-and-trade system’ regulators set a fixed upper limit on total emissions (‘cap’) and auction or distribute allowances. Typically one allowance grants the right to emit one tonne of CO₂e. Under a ‘baseline-and-credit system’ each individual entity is required to reduce emissions at a certain rate. Companies that reduce emissions faster than they are obliged to can earn ‘credits’ which they can sell to entities that do not meet their required obligations. Regulators can also set a tax, a fixed price, on each tonne of CO₂e emitted. Across

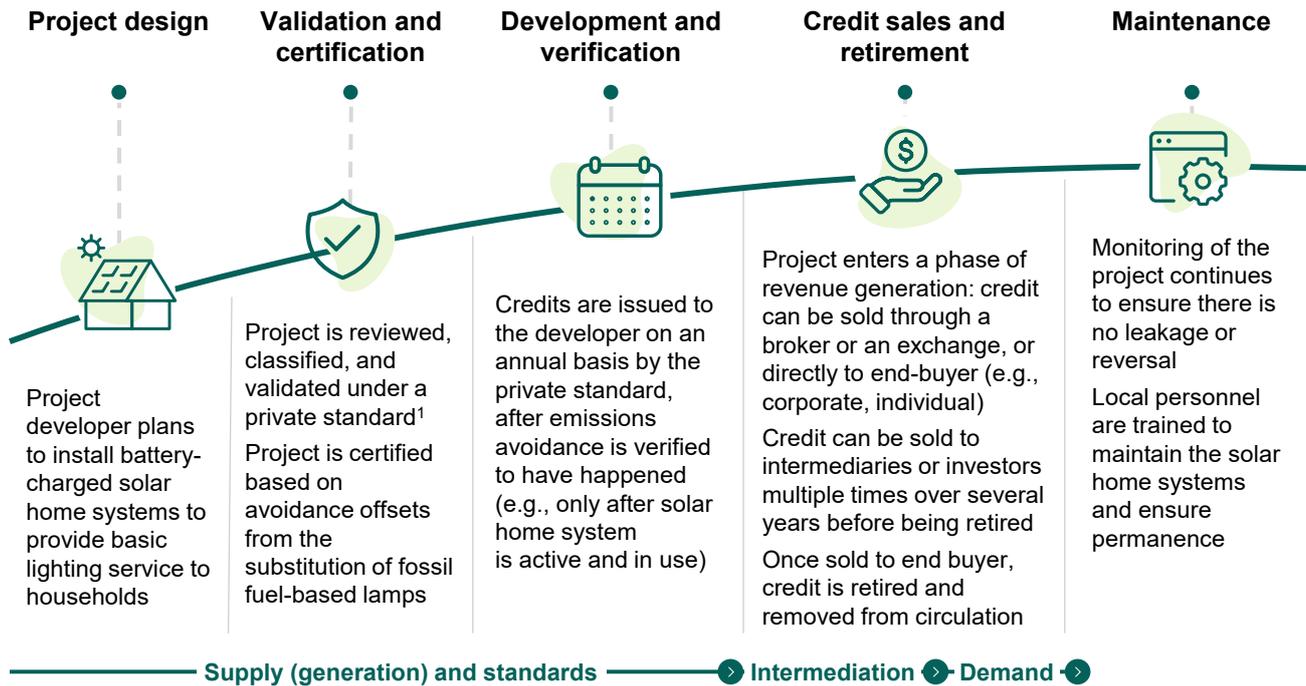
all three systems, there are examples of instances in which voluntary carbon credits can be incorporated. For example, South Korea, California, Quebec, and China allow for a certain portion of voluntary carbon credits to be used to meet compliance obligations (depending on the country, between 4-10 percent of company’s emissions). In Singapore 5 percent of CO₂ tax obligations can be offset using voluntary carbon credits. Finally, the aviation compliance scheme CORSIA mandates the offsetting of growth above 2019/2020 baselines using voluntary carbon credits¹⁰.

In voluntary markets, a project developer sets up a project that avoids certain emissions (e.g., landfill gas treatment and management) or removes CO₂e from the atmosphere (e.g., afforestation or direct air capture). Projects are validated by an independent validation/verification body to meet a set of requirements provided by a standard setter. Once certified, carbon credits are issued to the project, in a quantity that is equivalent to the mitigation impact achieved. The developer then sells the carbon credits to companies, governments, or individuals. These carbon credits can be traded multiple times on secondary markets via intermediaries. A credit exists until it is retired. Retirement occurs when an organisation uses the carbon credit towards its climate target(s), essentially ‘claiming’ the climate impact towards its goals.

¹⁰ The World Bank State and Trends of Carbon Pricing, 2022

Exhibit: Illustration of the lifecycle of a carbon credit in a distributed renewable energy project

Based on Gold Standard-certified project in LDC



1. For renewable energy projects, often only countries on the UN's list for least developed countries can qualify for carbon credit generation.

Note: Based on methodology AM0019 Renewable energy project activities replacing part of the electricity production of one single fossil-fuel-fired power plant that stands alone or supplies electricity to a grid, excluding biomass projects

ACMI is initially focused on VCMs since most African-origin carbon credits are sold on these markets (South Africa being the sole country on the continent to have a compliance market) and since VCMs enable cross-border financing transfers from Global North to Global South and support projects that help Africa achieve its development priorities (e.g., expanding energy access). While initially focused on VCMs, many elements of the ACMI roadmap will touch on compliance markets (e.g., in action programmes 1 and 9).

By using the term voluntary carbon markets (VCMs) throughout this document, we refer to the generation and retirement of carbon credits through voluntary carbon markets.

State of voluntary carbon markets globally

Carbon credits can be generated from a wide range of project types, encompassing forestry and land use, agriculture, blue carbon, renewable energy, household devices, transport, livestock, waste management, industrial gases, and engineered carbon dioxide removal.

Globally, voluntary carbon markets are being shaped by 4 key trends.

Volume growth: Demand for voluntary carbon markets is increasing steadily and expected to grow 15x by 2030¹¹, driven by an increasing number of corporate net zero commitments and increasing availability of point-of-sale offsetting, such as carbon-neutral products, which bundle a physical product with carbon credits to offset the physical product's footprint (especially residual emissions). In the long term, demand will be driven by the need for carbon removals to address residual emissions in hard-to-abate sectors. VCMs are expanding beyond traditional demand centres in Europe and North America, and new markets are developing in Asia, the Middle East, and Latin America.

“Demand for voluntary carbon markets is expected to grow 15x by 2030”

Shift of project types: Voluntary carbon markets are seeing an emergence of new project types and shifting buyer priorities for some project types over others. Newer technology-based removal projects are complementing traditional nature-based methods. For example, Direct Air Carbon Capture and Storage (DACCS) uses chemical processes to capture and separate carbon dioxide directly from the air.

¹¹ Taskforce on Scaling Voluntary Carbon Markets, Final Report, January 2021.

Exhibit: There are 10 significant types of carbon credit projects

● Avoidance offsets ● Removal offsets

Examples of new or nascent opportunities for Africa

Nature-based solutions

Forestry and land use



- Afforestation / Reforestation
- Revegetation (ARR)
- Improved Forest Management (IFM)
- Conservation (REDD+, other)
- Peatlands
- Savannah fire management

Agriculture and soil sequestration



- Cover crops
- Fertilizer / N2O
- Grassland and sustainable land management
- No- and low-till agriculture
- Agroforestry

Blue carbon



- Saltmarsh
- Mangrove
- Seagrass
- Kelp forests
- Bottom-trawled sediments
- Seaweed farms

Renewable energy (incl. energy efficiency)



- Biomass
- Geothermal / Hydro / Solar / Wind
- Energy efficiency
- Waste heat recovery
- Fossil fuel decommissioning
- Distributed renewable energy

Household devices



- Clean cookstoves
- Solar home systems

Transport



- EV charging
- Synthetic fuels

Livestock



- Rotational grazing
- Food additives

Waste management



- Waste management
- Landfill gas (e.g., landfill methane)
- Wastewater treatment

Industry gases (incl. industrial manufacturing)



- N2O from nitric acid and adipic acid plants
- Ozone-depleting substances
- Carbon capture and storage
- Coal mine methane

Engineered Carbon Dioxide Removal (CDR)



- Direct Air Capture (DAC)
- Bio-Energy with CCS (BECCS)
- Biochar

In addition to the emergence of newer project types, there are growing trends amongst carbon credit buyers that favour removal credits (e.g., reforestation, Direct Air Capture) over reduction or avoidance credits (e.g., renewables, REDD+). This is likely driven by confusion around the role avoidance credits can play in a company's decarbonisation journey and a need for guidance clarification from target setting organisations.

Price growth: Carbon credit pricing varies substantially by project type, with nature-based projects currently fetching higher prices than other traditional project types. The average global price per credit across all project types as of 2021 was reported to be \$4.08 by Ecosystem Marketplace¹². Prices are expected to rise. Futures prices quoted in the Chicago Mercantile Exchange, show

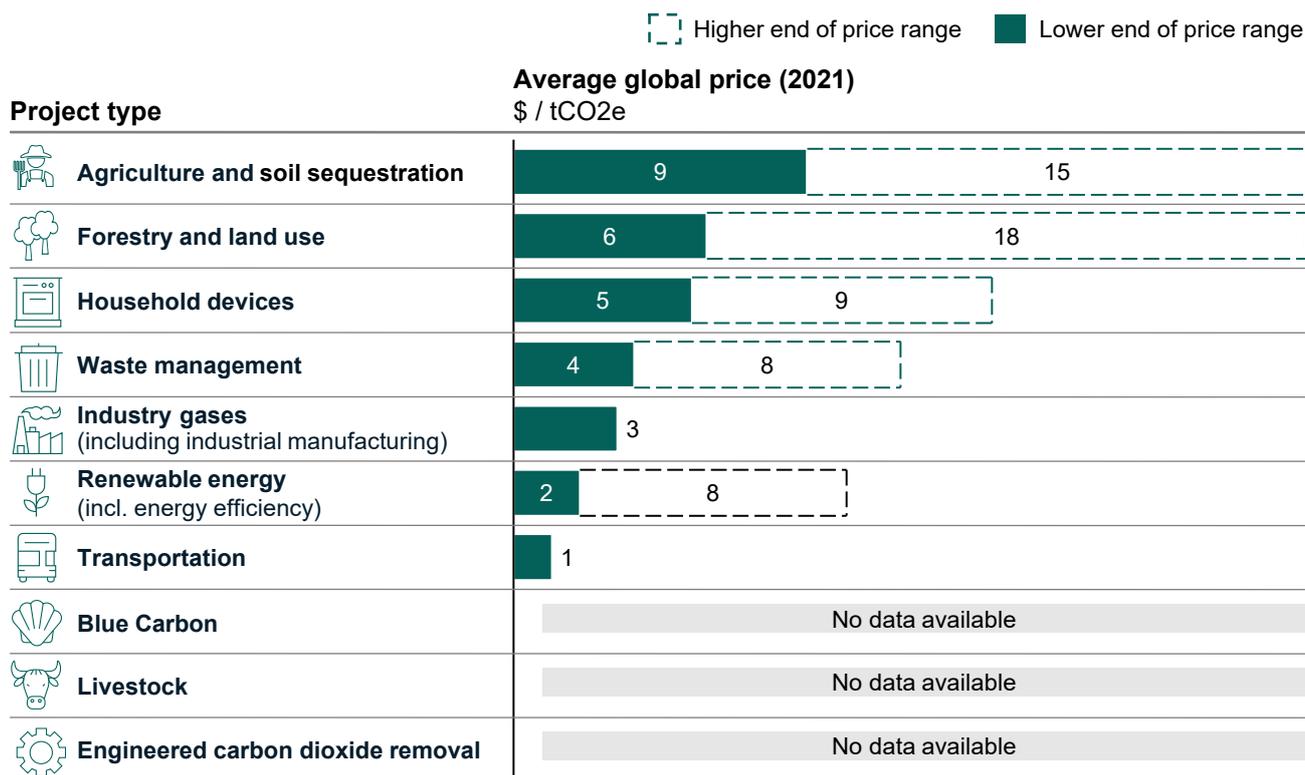
nature-based credits to be worth three times as much in 2025 as today. Additionally, some specific credit types are expected to see significant price increases as buyers prioritise high integrity removal credits. For example, the emerging category of engineered carbon dioxide removal credits – through Direct Air Capture and Storage (DACS), Bio-Energy with Carbon Capture and Storage, or BioChar – are already selling at an average price of ~\$350-400 per tonne¹³.

Increased government activity: A growing number of countries are exploring opportunities to engage with voluntary carbon markets, an area in which many had little to no previous role, whether by issuing jurisdictional credits or by executing bilateral country to country credit sales.

¹² Ecosystem marketplace, State of the Voluntary Carbon Markets 2021 Installment 1. Based on data for January to August 2021

¹³ Average price per tonne for 30 days prior to October 17, 2022.

Exhibit: Prices vary substantially by project type



Source: Price ranges come from Ecosystem Marketplace's and S&P Global Platts, Nori.com, and Indigoag.com

State of voluntary carbon markets in Africa

African voluntary carbon markets are growing, and at a slightly faster pace than global markets (36 percent CAGR¹⁴ from 2016 to 2021 vs. 31 percent for global markets)¹⁵. Despite this, the opportunity to deliver climate finance through carbon markets remains under-realised. Just 5 countries account for ~65 percent of credits issued over the past 5 years (Kenya, Zimbabwe, DRC, Ethiopia, Uganda). There is also something of a mismatch between project activity in different countries and their carbon credit potential: many of the countries with the highest potential have seen low levels of activity. Of the highest-potential countries, which include Madagascar, Angola, Nigeria, Sudan, and Tanzania, only the Democratic Republic of the Congo has announced a significant carbon credit deal.

Data and statistics in this report focus on projects producing voluntary carbon credits via 3rd party standards organisations. The report thus excludes carbon credits produced under the UN's Clean Development Mechanism (CDM), which is being replaced with the Paris Agreement's Article 6.4 mechanism.

Voluntary carbon markets in Africa are fragmented

with a significant number of global players across the value chain. Project developers are few, generally small scale and show limited diversification. About a hundred project developers have been active on the continent over the past 10 years. The market is relatively fragmented (average carbon credit issuance for project developers not in the top 15 was only ~140 ktCO₂e in 2021). Project developers have also been focusing on similar types of projects, with ~97 percent of African carbon credits issued in forestry and land use, renewable energy and household devices (out of the total number of credits issued over 2016-2022), using ~65 different methodologies¹⁵.

There are almost no local validation/verification bodies (VVBs) and almost all credits from Africa are certified by global bodies (~80+ percent from Verra, ~20 percent from Gold Standard, <1 percent from other players¹⁵). Similarly, there have been essentially no active African-based exchanges or marketplaces to date, although multiple initiatives are working on developing such platforms, including a collaboration between AirCarbon and the Nairobi International Financial Center¹⁶, an effort initiated by the Johannesburg Stock Exchange¹⁷, and an announced effort by the Egyptian Government and the Egyptian Stock Exchange¹⁸.

¹⁴ Compound Annual Growth Rate

¹⁵ McKinsey Vivid Economics Carbon Credit Database, drawing on Verra, Gold Standard, ACR, CAR, Plan Vivo, 2022

¹⁶ Businesswire, "Aircarbon Exchange Signs Collaboration Agreement with the Nairobi International Financial Centre and the Nairobi Securities Exchange", 2022.

¹⁷ MyBroadband, Prior, B., "JSE considers carbon credits trading", 2022

¹⁸ Enterprise: The State of the Nation, "Local carbon credit exchange in the works", 2022

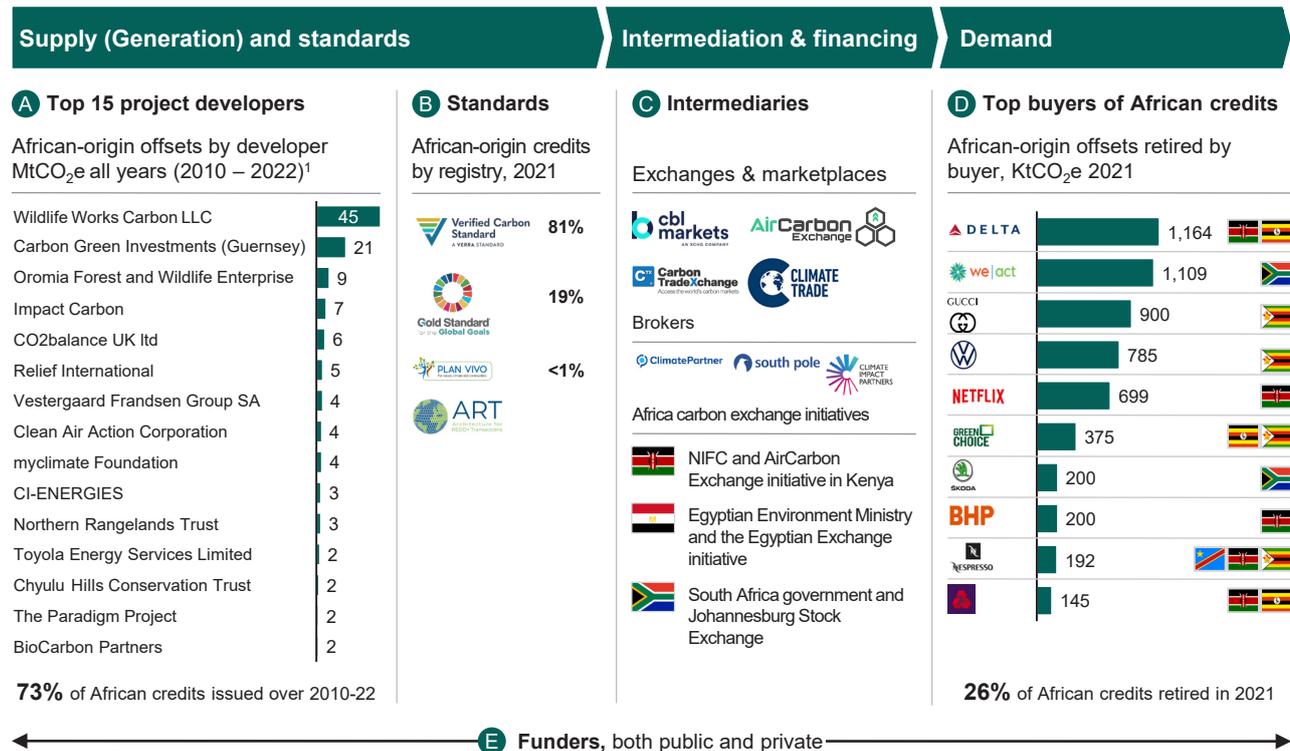
With regards to demand, most demand for African credits is driven by major international companies.

Momentum is building around Africa's voluntary carbon markets, and African governments are increasingly recognising their potential. The space is occupied by national, regional, continental and global initiatives with some efforts focused on specific sectors, others focused

on broader carbon markets and a few focused on overall climate solutions of which carbon markets is just one.

“The opportunity to deliver finance to Africa through carbon markets is under-realised”

Exhibit: Summary of main market players along the carbon credit value chain in Africa

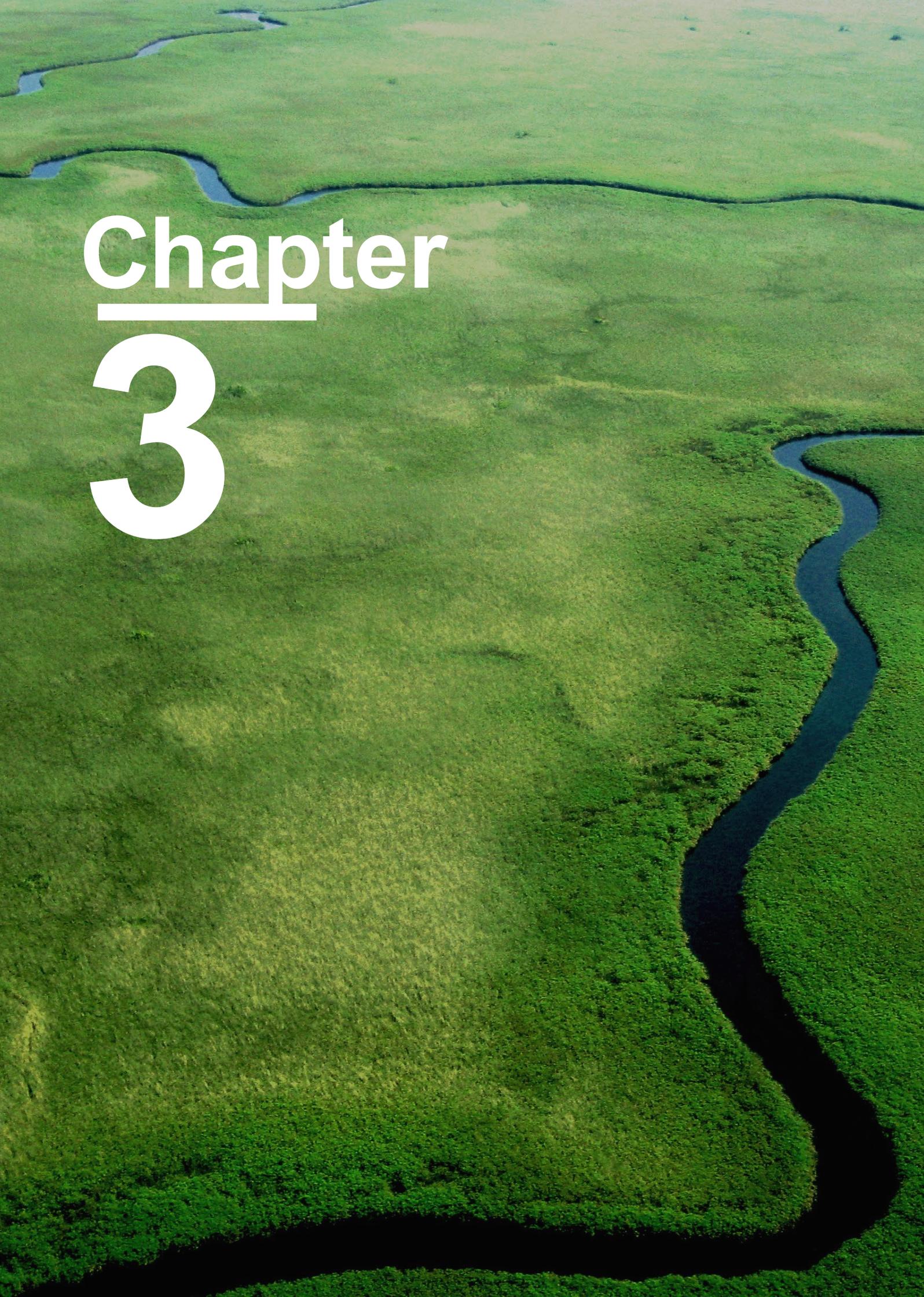


1. First issuance year of African based projects was 2010

Source: Data extracted from VCS, GS, CAR, ACR and Plan Vivo registries; Analysis of news articles and company websites.

Exhibit: Initiatives related to carbon markets and climate change (non-exhaustive)



An aerial photograph of a lush green landscape with a winding river. The river flows from the top left towards the bottom right, curving through the dense vegetation. The text 'Chapter 3' is overlaid on the left side of the image.

Chapter

3

Chapter 3: Obstacles to growth of African carbon markets

Several challenges still need to be overcome for Africa to fulfil its carbon market potential. These challenges spread across each stage of the value chain.

Supply:

Several issues limit carbon credit supply on the continent.

- a. Carbon credit project developers operating in Africa are few, relatively small scale and show limited diversification. About 100 project developers have been active on the continent over the past 10 years, of which 15 have issued ~70 percent of total credits; over 60 percent of project developers have operated just a single project and over 70 percent have been active in only one country¹⁹.
- b. Starting a carbon credit project often requires significant up-front capital. Project developers indicate significant expense is involved in setting up a project and moving it to the point of validation and verification, due in part to the complexity of topic and data, tools and time required. Many projects

also have significant physical requirements (e.g., seedlings for a reforestation project) that can require upfront investment.

- c. Besides capital intensity, new projects may struggle to develop a strong business case. For example, local communities may be faced with high opportunity costs when leveraging land resources (e.g., a community owning forest land may face an opportunity cost between maintaining the forest and replacing it with farmland).
- d. African carbon credit project developers also face regulatory challenges. There is often a complex and uncertain regulatory landscape for carbon credit projects. Regulation can vary from country to country when it comes to critical topics such as land rights and ownership of credits. For example, in some countries, all carbon rights are owned by the state, and private developers need permission to sell credits before reporting transactions. Similarly, many African landowners do not have formal titles to their land and/or rely on informal land tenure customs,

Exhibit: Key challenges must be addressed to scale voluntary carbon markets in Africa

Supply (Generation) and standards	Intermediation and financing	Demand
<p>Project development:</p> <ul style="list-style-type: none"> a Limited number of project developers operating in Africa and low capacity of existing developers (gaps in carbon market expertise, implementation capabilities, local expertise and core business capabilities) b High capital intensity for project development c Low economic viability for many projects due to insufficient carbon credit revenues or high opportunity costs d Complex / unfavourable regulatory landscape (e.g., related to land rights/ concessions, credits ownership, Article 6, split between nationally determined vs. voluntary contributions) e Fragmented ownership of / access to credit generating assets f High degree of local relationships and/or community buy-in required to ensure project success g Distrust of project-based REDD+ opportunities vs. jurisdictional projects h Lower ease of doing business in some areas due to factors such as lack of infrastructure <p>Validation / certification:</p> <ul style="list-style-type: none"> i Methodologies not always relevant for Africa (e.g., limited methodologies related to pastureland or diesel replacement, technology use not designed for Africa) j High cost and long lead times for certification, validation and verification k Insufficient local validation/verification capacity including lack of African-based validation/verification bodies (VVBs) and local expertise 	<ul style="list-style-type: none"> l High reliance on relationships, brokers and traders to bring supply to market m High intermediation costs, reducing revenue share for carbon credits suppliers n No standardized processes for rating/assessing important carbon credit co-benefits (e.g., community impact) o High reliance on continuous cash flow for small project developers (small developers cannot wait for higher prices or delay credit sales) <p>Financing:</p> <ul style="list-style-type: none"> p Limited mechanisms to de-risk and enable investment in project development and supply (e.g., futures contracts, project supply-chain financing, insurance) q High cost of capital for financing 	<ul style="list-style-type: none"> r Concerns on the integrity of certain credit types (e.g., emissions reduction/ avoidance related to fossil fuel transition) s Shifting and confusing demand trends that could impact common African carbon credit types (e.g., confusion around the role of avoidance credit types for high integrity offsets) t Pricing may not accurately reflect the value of Africa carbon credits and their co-benefits (e.g., energy access, biodiversity) u Limited local demand (except for South Africa) across the credit ecosystem (e.g., compliance markets, local voluntary purchasing)

Source: Interviews and surveys with experts

● Significant challenges

¹⁹ McKinsey Vivid Economics Carbon Credit Database, drawing on Verra, Gold Standard, ACR, CAR, Plan Vivo (2022)

making it difficult to prove that a project could protect carbon sinks for the 25+ years often required by standards, as well as the right to sell the resulting carbon credits.

- e. In Africa, assets that have the potential to generate carbon credits are often fragmented. For example, approximately 80 percent of the agricultural land is comprised of smallholder farms of ~2 hectares in size²⁰. This makes it incredibly difficult to deploy large, at-scale carbon projects. This is not only the case for land but also for other credit generating assets such as livestock.
- f. On top of this, many projects require community buy-in or a grassroots approach. For example, deploying a cookstoves project requires working closely with local communities to educate community members about the stove product, distribute and sell stoves. Similarly, project developers have noted the need to ensure that on-the-ground teams speak the local language which can vary within a single country.
- g. Globally, there are signs of increasing distrust towards project-based REDD+ efforts vs. jurisdictional REDD+ efforts (for example the LEAF Coalition that uses the independent TREES standard from ART, or programs under Verra's Jurisdictional and Nested REDD+ or JNR). Global critics indicate that jurisdictional projects may be less at risk of leakage (e.g., given government controls land use) and easier to do at scale. This distrust of project-based approaches could potentially impact Africa's opportunity to protect its full set of natural assets. At the same time though, ACMI recognizes the criticality of ensuring projects are high integrity whether jurisdictional or project based.
- h. African projects also face general challenges due to a lower ease of doing business. Approximately 85 percent of African countries score in the lower half of the Ease of Doing Business Index 2020²¹.
- i. In the design of carbon credit projects, many of the methodologies laid out by standards organizations do not fit the African context. Existing methodologies for proven project types may not be well adapted to measuring and monitoring in Africa where assets can be more fragmented, infrastructure can be a challenge and technology may not be as accessible. On top of this, Africa has decarbonization opportunities and carbon sinks that are not currently well captured by existing methodologies. For example, many of Africa's jurisdictions are high forest low deforestation (HFLD) which may not meet many methodologies. Similarly, Africa has immense

potential to decommission fossil fuels and transition to clean energy, another opportunity not effectively captured by existing methodologies.

- j. Validation and verification of carbon credit projects can have a high cost and require long lead times. Projects in Africa had an average of 2-7 years (varied by project type)²² from start date to first credit issuance, resulting in a significant period of initial investment prior to receiving returns. Once up and running, projects must continually monitor and validate CO₂e emissions reductions or removals. This can be costly as it may rely on expensive technology or techniques that are hard to deploy in an African context.
- k. Verifying a carbon credit project requires collaborating with a third-party validation/verification body (VVB) to adhere to a methodology set out by a standards organization. Africa lacks capacity and capabilities when it comes to VVBs. Very few of the existing players certified by standards such as Gold Standard or Verra have offices in Africa. Additionally, project developers indicate a lack of technical expertise required to verify projects in Africa.

Intermediation and financing:

Challenges are not limited to carbon credit supply.

- l. There is a high reliance on intermediaries who own the relationships to bring African credits to the market, and therefore often extract a significant portion of the value. Without the capabilities, time, and contacts it can be difficult for individual project developers to identify buyers without the support of an intermediary. Project developers say, "relationships are key" to finding buyers and "intermediaries have access to top sustainability executives, even if the mark-up is frustrating."
- m. Intermediaries can charge significant fees, at times taking up to 70 percent of the value of a credit. These fees can vary significantly from less than 5 percent on the lower end (often exchanges) to 10-70 percent on the higher end (often marketplaces, brokers)²³. Because most of the active intermediaries in Africa to date are international players, these high fees and lack of transparency reduce financing coming to Africa and, more importantly, reduce revenues to local communities. Moreover, project developers often indicate difficulty understanding and breaking down required fees due to a lack of transparency with many intermediaries.

²⁰ FAO

²¹ World Bank

²² McKinsey Vivid Economics Carbon Credit Database, drawing on Verra, Gold Standard, ACR, CAR, Plan Vivo, 2022

²³ Based on interviews with carbon market experts (October 2022)

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- n. There is also a lack of standardized processes for assessing carbon credits to account for important co-benefits. Buyers indicate that “you have to do a lot of due diligence on projects to understand social impact.” This can hinder African carbon credits where co-benefits such as energy access and improved livelihoods are a key value driver. While a few international rating agencies such as Sylvera or BeZero do assess carbon credits beyond the criteria set by standard organizations, these can add an additional layer onto intermediation for project developers and there is no global consensus on the validity of these co-benefit ratings.
 - o. When it comes to financing, there are limited active mechanisms in Africa to help de-risk investment into project development and supply (e.g., futures contracts, insurance). There are multiple risks associated with project development including country, counter party, project, physical, and market risks. Many of these risks can be heightened for project development in Africa such as country risk or project risk (e.g., lack of required infrastructure). “Most of the international banks wouldn't even have any country risk or credit risk rating for some African countries,” one project developer noted.
 - p. On top of this, most project developers in Africa do not have the scale to hold credits / delay their sales for higher prices, as they often rely on a continuous cash flow. Comparatively, large intermediaries can better flex with the market, again earning mark-ups that reduce on the ground community earnings.
 - q. Finally, project developers often face a high cost of capital for the financing they do receive, given the multitude of risks (real and perceived by financiers).
 - s. There is some misunderstanding and confusion amongst global buyers regarding the role of avoidance credits, which are particularly relevant for African projects. Buyers may interpret demand focused initiatives and guidance (e.g., Science Based Targets initiative, Oxford Principles for Net-Zero Aligned Carbon Offsetting) to indicate that only removal credits are valid and of high integrity for offsetting. Currently, ~70 percent of Africa's nature-based potential is avoidance based²⁵ and all household devices and energy projects are avoidance based. In total, ~80 percent of the 2,400 MtCO₂e technical potential for Africa in 2030 is estimated to be avoidance-based. These trends could inhibit Africa's ability to capture financing for these types of projects or reduce the financing received.
 - t. Additionally, African credits' pricing may not always reflect credits' value and thus lack transparency for buyers, driven in part by inability to effectively price the co-benefits. While African credits were on average priced above global average in 2021 (\$5.52 vs. \$4.08),²⁶ this value may not fully reflect the immense co-benefits African credits can offer. Carbon credit projects can drive impact in energy access, improving livelihoods, supporting health and wellness, and creating jobs.
 - u. Finally, Africa relies almost entirely on international demand. There are no local demand markets on the continent, except in South Africa. While a few Africa-based companies purchase carbon credits (e.g., Nedbank), most of the largest buyers are international organisations.

Demand:

Finally, demand is also being held back by several growing trends.

- r. There are significant global concerns over the integrity of carbon credits (e.g., greenwashing) – whether from Africa or from other regions. Certain credit types are criticised for being low integrity, either because the underlying emissions reductions are difficult to confirm, likely to be temporary, or would have happened regardless. “The biggest problem with carbon offsetting is that it doesn't really work,” declared one Greenpeace UK article²⁴. There are broader concerns that the existence of voluntary carbon markets acts as a license for companies to continue emitting carbon. These concerns must be accounted for and addressed to ensure that African carbon markets develop with high integrity.

²⁴ Al Ghussain, Alia. “The biggest problem with carbon offsetting is that it doesn't really work,” May 2020; Greenpeace Organization

²⁵ McKinsey Nature Analytics (2022); Griscom et al. Nature Climate Solutions, January 2020

²⁶ Ecosystem marketplace, State of the Voluntary Carbon Markets 2021 Installment 1

Chapter 4



Chapter 4: ACMI's ambition — build foundations for growth to 2030

Opportunities to generate carbon credits in Africa

The technical potential of Africa-sourced carbon credits is substantial — estimated at up to ~2,400 MtCO₂e in 2030, based on existing, nascent, and innovative methodologies which could be worth up to \$50 billion²⁷ or more, if all credits were sold. Capturing just a fraction of this total potential could channel billions of climate financing into Africa, supporting jobs and livelihoods while improving energy access, biodiversity, and health.

“Capturing just a fraction of the potential could channel billions of climate financing into Africa”

Some existing methodologies already have a clear path to project certification or are already active on the continent. They include nature-based solutions such as forestry and land use, and agriculture and soil sequestration projects, projects involving household devices such as cookstoves, renewable energy projects, waste management projects and some livestock projects (although only nature-based solutions and household devices projects have been meaningfully implemented). Out of the maximum technical potential of up to 2,400 MtCO₂e in 2030, ~2,000 MtCO₂e (i.e., 85 percent of the total) could be generated leveraging these existing methodologies.

Exhibit: Leveraging existing methodologies, there is potential to generate close to 2,000 MtCO₂e which could be worth up to \$40+ billion per annum by 2030

Project type ¹	Nature-based solutions ²						Industry gases (incl. industrial manufacturing)	Trans- port
	Forestry and land use ²	Agriculture and soil sequestration ²	Household devices ³	Renewable energy ⁴	Waste management ⁵	Livestock		
Description	Implementation of better forestry practices including natural forest management, trees in cropland, avoided deforestation	Implementation of better agricultural practices including cover crops, extending legume plantations	Deployment of clean cookstoves to replace non-forest product fuels (e.g., Kerosene) & a portion of forest product fuels (e.g., charcoal)	Deployment of solar renewable energy solutions to supply electricity in least developed countries	Deployment of landfill solutions that better manage and utilize landfill gas	Improved manure management		
Relevant countries	DRC, Madagascar, Congo, Angola, Zambia, Nigeria, Cameroon, CAR, Mozambique, Sudan	Sudan, South Africa, Chad, Nigeria, Zambia, Angola, Algeria, Mozambique, Cameroon, Tanzania	Nigeria, DRC, Tanzania, Kenya, Mozambique, Madagascar, Ghana, Cameroon, Sudan, Angola	Sudan, Angola, Tanzania, Guinea, Benin, Mozambique, Zambia, Ethiopia, DRC, Chad	Nigeria, Egypt, DRC, Tanzania, Kenya, South Africa, Sudan, Algeria, Angola, Mozambique	Ethiopia, Chad, Sudan, Tanzania, Kenya, Nigeria, Niger, Uganda, South Sudan, Mali		<i>Estimates to be determined</i>
Technical potential of methodologies (MtCO₂e/y)	1,160	160	200	360	55	40		
Total opportunity⁶ (\$ Bn/y)	~2,000							
	~30-50							

1. Considers existing methodologies with highest potential of carbon credit generation and medium to high feasibility
 2. Africa's total NBS potential of ~1.4 Gt including blue carbon (under nascent methodology), which is based off of the Griscom et.al estimation of ~1.5 Gt and adjusted to better capture the 2030 specific maximum for Africa; Significant share of nature opportunity linked to energy provision. High and Medium economic feasibility only; Countries with the most credits issued in 2020 (e.g., Kenya) are not those with the largest technical potential
 3. Cookstove sized based on CO₂ emissions avoidance of 2.2 tCO₂/year from deploying cookstoves to replace (1) Kerosene, Coal/Lignite, and animal waste for household cooking fuel, and (2) 1/3 of households currently using forest-related fuels like charcoal (to avoid overlap with forest and land use potential, where the estimation assumes 2/3 reduction in deforestation)
 4. Estimates the amount of solar energy required to reach 10% of energy capacity by 2030; Excludes non-LDC and countries with RE technology penetration greater than 3.5% of the total grid installed capacity
 5. Sized based on the potential of landfill-related carbon credits generation (i.e Turkey at 33 tCO₂e credits /000 inhabitants per year) scaled across Africa according to population
 6. Assumes an average carbon credit price in 2030 of \$15-25 per tonne

Sources: VCS, GS, CAR, ACR and Plan Vivo registries, UNFCCC, McKinsey Vivid Economics VCM model, World Bank, IEA, S&P Global Platts, Enerdata, Ease of doing business, McKinsey Nature Analytics, CAP-A, Griscom et. al.

²⁷ McKinsey Vivid Economics Carbon Credit Database, drawing on Verra, Gold Standard, ACR, CAR, Plan Vivo., UNFCCC, World Bank, IEA, S&P Global Platts, Enerdata, McKinsey Nature Analytics, CAP-A, Griscom et al. Nature Climate Solutions, January 2020, FAO, Biodiversity Research Institute, Biodiversity Research Institute, IPBES, CGIAR, Global Alliance for Climate Smart Agriculture

Africa can also explore developing carbon projects based on new or nascent methodologies and innovative products. New or nascent methodologies include projects where there is no clear path to verification and validation such as diesel decommissioning and nature project types such as savannah grasslands fire

management. It also includes project types that exist globally but have not yet been unlocked in Africa such as engineered carbon dioxide removals, blue carbon, and additional livestock opportunities. Africa has a maximum technical potential to produce ~400 MtCO₂e annually in 2030 from new and nascent methodologies.

Exhibit: Implementing additional, new or nascent methodologies could create an additional ~400 MtCO₂e across the continent worth ~\$7+ billion per annum by 2030

	INITIAL PERSPECTIVE					
	Renewable energy (incl. energy efficiency)		Agriculture & soil sequestration	Blue carbon	Livestock	Engineered removals
Methodology	Coal power plant decommissioning ²	Diesel generator retirements ³	Savannah grasslands	Mangrove and seagrass (doesn't include saltmarsh, kelp forests, bottom-trawled sediments, seaweed farms)	Improvement in breeding, feeding, and productivity gains	Multiple engineering removal technologies incl. bioenergy with carbon capture and storage (BECCS), direct air capture with carbon storage (DACCS)
Description	Acceleration of coal plant decommissioning	Retirement of diesel-based gensets	Improved fire management practices to help restore degraded savannas	Accelerate carbon that is stored naturally by marine and coastal ecosystems	Assuming 15% livestock GHG emission reduction from improved breeding, feeding, & productivity gains ⁴	Assuming ~100 Mt engineered removal globally by 2030 and between 10-30% coming from Africa
Relevant countries	South Africa Morocco	Nigeria Ghana South Africa	Zambia Tanzania Mozambique	Guinea Bissau Guinea Nigeria	Ethiopia Chad Sudan	Egypt South Africa
Technical potential of new methodologies (MtCO₂e/y)	20	50	80	75	120	20
Total opportunity¹ (\$Bn/y)	← ~400 →					
	← ~5-9 →					

1. Assumes an average price of \$15 - \$25 per tonne CO₂e in 2030
 2. Cumulatively, potential of coal plant decommissioning amounts to 106 MtCO₂e/y by 2030; assumes acceleration of coal plant decommissioning by 3 years
 3. Assumes retirement of gensets to exceed Nigeria's climate strategy targets (i.e., 20% reduction of emissions in 2030)
 4. Triangulation of 3 data points: GHG reduction from improved breeding between 11-26%, improved feeding between 6 to 27 % and productivity gain up to 70% (estimated based on the difference between the maximum and average GHG emission per Kg of meat produced in African countries)
 5. Approximately 14 per cent (4 million km²) of total Africa land area is protected, including 6 per cent of biodiversity-rich tropical evergreen broadleaf forests.

Sources: FAO, Biodiversity Research Institute, IPBES, CGIAR, Global Alliance for Climate Smart Agriculture

Project example: iRise (carbon project development company)

iRise is a mission-driven business created by Future Earth. In partnership with Community Development Initiative and Imperative, a high-quality carbon offset project development company, iRise has a mission to transform rural Malawi through high-quality integrated climate projects that create lasting sustainable development. These projects include:

1. Access to clean cooking for rural communities, reducing emissions, preventing deforestation, and improving community health
2. Native-species reforestation to sequester carbon and restore biodiversity
3. Agroforestry to restore degraded land, sequester carbon and provide local employment
4. Affordable housing with solar power, waterless toilets, and digital access

These projects create thousands of jobs in rural areas with significant long-term unemployment and provide significant benefits to some of the least advantaged people in Malawi.

Project example: Octavia Carbon (Direct Air Carbon Capture company)

Octavia Carbon is a Kenyan company building machines that filter CO₂ from air using Direct Air Carbon Capture (DACC) technology. One such DACC machine the size of a car has the potential to capture as much carbon as 10 hectares of forest. What is more, CO₂ captured this way can be pumped deep underground, where it turns into rock and locks up carbon for millennia. With 92% renewable grid electricity, available infrastructure for CO₂ injection, and strong co-benefits, Kenya is an ideal epicentre of a global DACC industry.

Project example: Cella Minera Storage (carbon mineralization company)

Cella is an early-stage carbon mineralization company that provides durable storage services to direct air capture (DAC) companies. Cella turns CO₂ into rock by accelerating natural processes, storing it away forever. Cella is deploying carbon storage in new environments that allow them to rapidly scale carbon removal to meet the climate crisis—while simultaneously developing technology to make mineralization the safest, most effective, and cheapest option for permanent carbon storage. Cella is currently exploring initial deployment targets. One of their primary candidates is the Kenyan Rift Valley, where an ideal geologic context meets plentiful renewable energy.

Ambition of the Africa Carbon Markets Initiative (ACMI)

ACMI aims to capture more of Africa's potential in carbon markets by addressing the challenges to voluntary carbon market growth and building the foundations for a thriving voluntary carbon market ecosystem in Africa by 2030. This initiative will focus not only on driving decarbonization activities but also on driving economic development by supporting energy access, scaling the clean energy transition, protecting forests, improving agriculture, and creating new income sources.

“ACMI aims to build the foundations of a thriving voluntary carbon market ecosystem in Africa by 2030”

ACMI's ambition includes 4 core objectives.

- 1. Grow African credit retirements to ~300 MtCO₂e by 2030** — a ~19-fold increase from the ~16 MtCO₂e retired in 2020. This may sound like a tall order, but we believe it is realistic since this is in line with Africa capturing its fair share of the global potential by 2030 and with Africa's current growth trajectory. The Taskforce on Scaling Voluntary Carbon Markets estimates that global markets will grow 15x from 2020 to 2030. Because Africa's potential is underrealized, Africa will capture a growing share of this growing market.
- 2. Create or support ~30 million jobs by 2030** including new direct jobs, jobs that will receive income increases, new indirect jobs, and some

portion of temporary jobs. These jobs will cover all aspects of the value chain including carbon projects development, execution, certification, and monitoring.

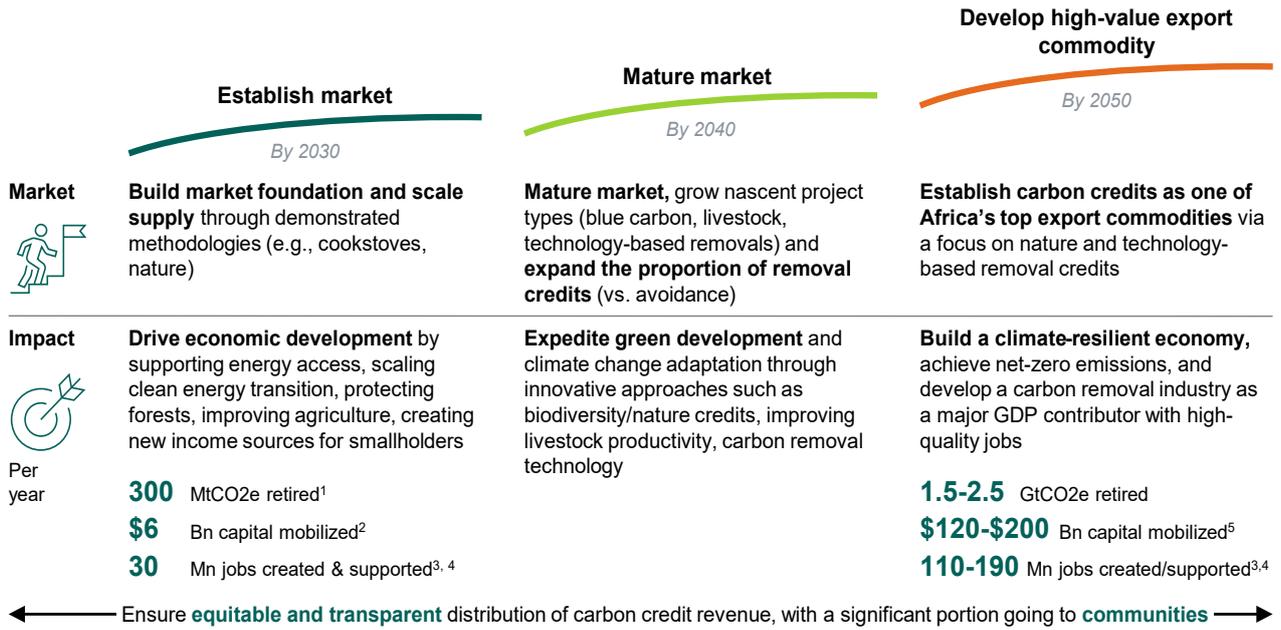
- 3. Raise the quality and integrity of African credits**, increasing prices from ~\$5 per tonne in 2021²⁸ to ~\$20 per tonne and mobilising up to ~\$6 billion in capital from carbon credits by 2030.
- 4. Ensure equitable and transparent distribution of carbon credit revenue**, with a significant portion of the revenue going to local communities. ACMI intends to work with leading bodies to establish transparency and benefits-sharing standards for both buyers and sellers, assuring that the market scales with the correct balance of speed and effectiveness.

Looking beyond 2030, ACMI's long term ambition is to grow Africa's carbon market to 1.5-2.5 GtCO₂e and mobilise ~\$100+ billion per annum by 2050, while ensuring equitable and transparent distribution of carbon credit revenue with a significant portion going to African communities. This would deliver material benefits (e.g., cleaner air) to African people, helping to drive expansion of renewable energy resources for city-dwellers, healthier cooking for households, improved farming and forestry practices, and job opportunities for the growing population.

The rest of this report is devoted to spelling out the concrete actions required to realise this vision.

²⁸ Average price for African credits in 2021, from Ecosystem Marketplace. “Markets in Motion: State of the Voluntary Carbon Markets 2021 Installment 1.” (January to August 2021)

Exhibit: ACMI's ambition



1. Assuming Africa's carbon retirement grows by ~19X from ~16 MtCO₂e in 2020 (14x from 22MtCO₂e in 2021)
2. Assuming carbon price of ~\$20/tonne in 2030 based on S&P and World Bank weighted average price
3. Includes direct and indirect jobs created and jobs supported (e.g., income increase). Calculated via a bottom-up estimation for NBS job impact leveraging the CAP-A nature-based climate change mitigation model and a top-down estimate of non-NBS jobs based on job multipliers including direct and indirect jobs; Assumed 75% nature-based projects in 2030 and 60% nature-based projects in 2050
4. Jobs include not only jobs created but jobs supported via additional income; Nature jobs can include temporary jobs in any given year (esp. for ecosystem restoration pathways e.g., planting trees)
5. Assuming carbon price of ~\$80/tonne in 2050 based on Vivid Economics VCM model for an accelerated policy scenario with projected global warming of 1.6 - 1.7 °C (Triangulated against additional sources: Bloomberg estimation of \$47 to \$120/tonne and TSVM projection of \$150 to \$250 for technology-based solutions, Reuters estimates of at least \$100/tonne to reach net zero by 2050, Vivid Economics VCM model price projection between \$28 - 143)

Source: CAP-A nature-based climate change mitigation model, TSVM, Bloomberg, Reuters, McKinsey Vivid Economics, McKinsey MGI Economic Research, International Labor Organization (ILO), Global Trade Analysis Project (GTAP)

Chapter 5



Chapter 5: Proposed action programmes to support the development of voluntary carbon markets in Africa

Action programme 1: Development of country voluntary carbon market activation plans

Context

A tactical starting point for any country seeking to build a carbon ecosystem is to draw up a plan for developing the market. Colombia and Mexico's recent efforts provide good examples. The Colombian Voluntary Carbon Market Platform (CVCMP)²⁹ was launched in 2016 in cooperation with the Ministry of Environment and Sustainable Development, the Colombian Stock Exchange and with technical support from Fundación Natura, aiming to activate the Colombia carbon market through regulatory framework and supply and demand stimulation. The CVCMP launch was part of an effort by the Colombian government to meet its Nationally Determined Contribution targets by stimulating demand for home-grown carbon credits verified in accordance with recognised carbon standards. Initiatives pursued included the establishment of a working group with State representatives, the definition of a minimum carbon

price through a carbon tax and the creation of a national carbon credit registry.

The government of Mexico created a voluntary carbon credit exchange with assistance of the UN Environment Programme (UNEP) and the UK PACT (MEXICO2). It also implemented capacity building activities including training sessions, market simulations and study tours for project developers. Mexico's VCM retirement volume grew to 620 ktCO₂e (~\$2.5 million) in 2021 from ~30 ktCO₂e in 2011³⁰.

Experiences of Colombia and Mexico demonstrate that focused country-level approaches to VCMs can significantly expand climate projects and highlight the opportunity for African countries to develop such purposeful approaches to activating carbon market ecosystems. To this end, ACMI encourages African countries to develop voluntary carbon market activation plans. Plans would set a country-level ambition, integrate VCMs into broader climate plans, align relevant governance structures, clarify regulation, develop demand incentives, and support the local market ecosystem.

Opportunity

ACMI considers seven areas that need to be addressed in a voluntary carbon market activation plan:

Exhibit: Key potential components for a country voluntary carbon market (VCM) activation plan

Dimension	Description
1 Ambition	<ul style="list-style-type: none"> 1.1. Carbon credit volume targets 1.2. Volume targets by project types and sectors 1.3. Sustainable development targets
2 Integration into climate plans	<ul style="list-style-type: none"> 2.1. Contribution to overall climate and energy transition goals
3 Governance structure	<ul style="list-style-type: none"> 3.1. Role of governmental entities (central and regional) 3.2. Coordination mechanism between governmental units and national entities for carbon market policy 3.3. Integration across sectorial strategies and national strategies 3.4. Ownership of key actions to expand carbon markets at the regional, local, and sectoral levels 3.5. Role of external expertise
4 Regulation	<ul style="list-style-type: none"> 4.1. Carbon market regulatory requirements <ul style="list-style-type: none"> 4.1.1. Carbon credit rights 4.1.2. Registration and/or commercialization of carbon credits 4.1.3. Emissions reporting 4.2. Land regulatory requirements for nature-based projects 4.3. Framework for voluntary carbon markets / Article 6 mechanisms interactions (corresponding adjustments, ITMOs) 4.4. Fiscal policies for carbon credits (e.g., transfer pricing, carbon credit taxation)
5 Demand incentives	<ul style="list-style-type: none"> 5.1. Carbon tax on emissions to create local demand 5.2. Reporting and tracking mechanisms 5.3. Carbon registry
6 Supply ecosystem enablement	<ul style="list-style-type: none"> 6.1. Capability and capacity-building initiatives 6.2. Technical assistance initiatives 6.3. Specific funding lines to support project developers
7 REDD+ jurisdictional projects	<ul style="list-style-type: none"> 7.1. Jurisdictional REDD+ framework on accounting, verification and governance

²⁹ Verra, "Launching Colombia's Voluntary Carbon Market," August 2016

³⁰ Ecosystem Marketplace, "Mexico Retirements from 2011 to 2021", 2022

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- 1. Ambition:** Governments need to define concrete targets to increase their carbon credit volume at national and sectoral levels. Targets will inform actions that need to be pursued to unlock potential in sectors and project types that are most relevant for the country. Quantitative targets for carbon credit retirements should be complemented by sustainable development targets to maximise the societal benefits of carbon market activation efforts. Additionally, defining an ambition can involve establishing a goal for the demarcation of specific protected areas in the country (e.g., demarcation of 30 percent of the country's natural resources).

One example of a setting a country-level ambition is Brazil. Brazil announced in 2021 a series of decrees³¹ establishing a goal to grow the national voluntary carbon market.

- 2. Integration into climate plans:** Carbon markets can contribute towards the pursuit of climate and energy transition goals. A VCM activation plan should clarify the ways in which carbon markets can be leveraged to support climate targets, including the potential for emissions reductions and expansion of clean and reliable electricity. VCMs should be just one way countries finance the reduction of their emissions towards their NDC goals. International financing from carbon markets can be combined with national financing to drive meaningful climate action for African countries.

For example, Colombia revised its NDC with more ambitious targets than the first NDC and committed to strengthening and developing carbon pricing mechanisms to implement NDC targets at both sectoral and territorial levels.

- 3. Governance structure:** Roles and accountability regarding the VCM activation plan need to be clarified at all levels of central and regional government. Actions proposed in the plan should be coordinated centrally at the national level. Additionally, these plans should set out mechanisms to ensure collaboration across other government units (e.g., Ministry of Energy, Ministry of Agriculture). Coordination will ensure existing sectoral strategies integrate into the national carbon market plan. Governments can also explore opportunities to pull in private sector and non-governmental entities (e.g., via an independent advisory unit composed of academics, private-sector players, local community representatives, etc.).

For example, Colombia created a coordination mechanism between the central government, regional governments, ministries, and national agencies – defining how carbon market regulations were to be applied. Additionally, consulting bodies

composed of project developers, experts and academics were created. In 2021, Brazil organised meetings with national and international institutions such as the International Energy Agency to discuss a framework for building carbon markets.

- 4. Regulation:** To foster the growth of voluntary carbon markets, there is a need to clarify regulation to create an enabling environment for VCM development including:

- a. Carbon market rights and commercialization of carbon credits: Guidelines to define the ownership model for carbon credits, including the rights to revenues from commercialization of carbon credits for project developers, investors, local communities, and regional governments
- b. Registration of carbon credits: Adherence to international carbon credit integrity and certification standards for the registration of carbon credits
- c. Emissions reporting: Requirements for mandatory reporting and transparency for actors in the carbon market ecosystem
- d. Land regulatory requirements: Clarification of land use regulation for developers and communities operating in nature-based projects
- e. Fiscal policy: The fiscal regime that is applicable to carbon credit transactions (e.g., exemptions applicable to carbon credit transactions)
- f. Article 6: Clarification of relevant Article 6 accounting requirements, safeguarding against double-counting in carbon credit trading between countries and clarifying VCM activities eligible for corresponding adjustments within the country's jurisdiction

For example, Mexico updated its National Law for Climate Change to establish the basis for a mechanism allowing the commercialization of carbon credits: this (i) established the right to generate carbon credits, (ii) clarified the mechanisms for transactions of carbon credits, (iii) established the requirements for transparency, reporting and verification of CO₂ emissions.

“Having a focused country-level approach can significantly expand climate projects”

³¹ Including decree 11.075. Source: Ecosystem Marketplace

Article 6

One of the major diplomatic achievements of COP 26 was the finalization of Article 6 of the Paris Agreement, the portion of the treaty that deals with trading of emissions reductions. This includes a mechanism for preventing multiple countries from counting the same emissions reduction towards their NDCs. Under the new rules, when one nation sells carbon credits to another, a “corresponding adjustment” must be made to transfer the mitigation outcome from the seller to buyer country. When it comes to corporate use of the voluntary carbon market, Article 6 allows for two paths, credits can either come with or without corresponding adjustments.

A corporate approach without using corresponding adjustments is fully consistent with driving additional climate impact. Given most African countries have made it clear that without international finance their NDCs cannot be met, impact which otherwise would not have taken place is created by providing the needed international climate finance. This approach allows companies to compensate / neutralize their emissions while claiming they are supporting African nations in meeting their NDCs.

We recognize that some companies may request a corresponding adjustment associated to their credits to rather support the NDC of the country they are located in. Other companies may take a view that current NDCs are not ambitious enough and want to ensure their impact goes beyond the host country's existing NDC. Some African countries may choose to meet the needs of this group of companies, by allowing specific project types to generate carbon credits with corresponding adjustments, with an expected premium in price.

5. Demand incentives: Establishing clear and transparent market rules can help encourage both local and international demand for country carbon credits.

- a. **Carbon tax on emissions to create local demand:** Countries can set a carbon tax on emissions for specific sectors (e.g., oil and gas). By enabling the use of eligible carbon credits to comply with carbon tax obligations / requirements, countries can create local demand for carbon credits. Additionally, a local carbon tax can provide a natural price floor for project developers seeking financing.
- b. **Quantification of emissions:** Countries can promote transparency and clear reporting to enable emissions trading and purchases and inspire buyer confidence.

- c. **Carbon registry:** Depending on the maturity of its carbon market, the country may develop a national registry or use existing registries.

For example, Colombia's national carbon tax was introduced in 2016 to set a minimum price for carbon credits. By 2020, the carbon tax and the offset mechanism had generated 42.8 MtCO_{2e} of carbon credits worth COL\$1.42 billion³². Peru developed its own registry, Huella de Carbono Perú, to provide transparent measurement and verification of carbon credits, and to recognise the efforts of public and private organisations in managing their GHG emissions.

- 6. Supply ecosystem enablement:** Countries should identify specific actions to promote the development of capabilities and capacity for project developers and validation/verification bodies, whether locally or in collaboration with regional entities, including training and provision of technical assistance. Additionally, specific funding lines can be established to provide financial support for developers in initial project stages.

For example, in Mexico, the National Institute of Nuclear Research organizes training opportunities and workshops to develop technical capacity for direct carbon capture projects.

- 7. REDD+ jurisdictional programs:** Where relevant, countries can pursue alignment with existing REDD+ standards (e.g., ART's TREES – The REDD+ Environmental Excellence Standard, Verra Jurisdictional and Nested REDD+ standard) to enable jurisdictional REDD+ programs, including guidelines on how to scale up sources of demand, develop monitoring, reporting and verification (MRV) and trade infrastructure, and support compliance with standards organisation requirements (e.g., Forest Reference Emissions Levels [FRELs]; crediting, allocation, and aggregation rules; buffers, deductions, and other assurance mechanisms; and safeguards).

For example, Ghana has established a national REDD+ governance structure, with broad government buy-in and strong multi-stakeholder participation. DRC is at the forefront of Congo Basin countries engaged in the REDD+ process which includes a large jurisdictional REDD+ programme. Additionally, a number of African countries have submitted proposals to the LEAF Coalition, an advance market commitment for jurisdictional REDD+ programs, including Ghana, Nigeria, DRC and Burkina Faso.

³² Ecosystem Marketplace, S&P Global, Terra Global Capital “Colombia's Carbon Market Revolutionizing Rural Development

Proposed actions

To build an enabling environment for carbon markets activity on the continent, ACMI proposes to:

1. **Build a blueprint** for national voluntary carbon market activation plans;
2. **Identify African countries** committed to scaling voluntary carbon markets and:
 - a. Reach out to countries to provide supporting material explaining the importance and potential benefits of developing VCM activation plans;
 - b. Support countries in setting an ambition for voluntary carbon markets based on technical potential, as well as climate and energy transition goals;
 - c. Connect countries with technical assistance providers and funding partners (e.g., philanthropic organisations) to support the implementation of national voluntary carbon market activation plans.

Country deep dive: Nigeria

Nigeria recently passed the Climate Change Act (2021) and the Energy Transition plan (2022) which establish a target to reduce GHG by 47 percent in 2030, relative to base case, achieve carbon neutrality by 2060 and generate 30 GW of energy by 2030 with 30% renewable energy³³.

To progress towards these targets, Nigeria could develop a comprehensive voluntary carbon market activation plan.

For example, Nigeria could set an ambition to grow retirements to a total of 30-40 MtCO₂e by 2030 (corresponding to ~25-30 percent of its maximum annual technical potential of ~130+ Mt CO₂e) and expand from a focus on household devices to other project types including forestry, agriculture, DRE and livestock.

By growing its voluntary carbon credit supply and associated demand, Nigeria could mobilize ~\$0.6-0.8 billion per annum in capital by 2030 considering an average price of \$20 per tonne.

In this example, expanding the carbon market ecosystem in Nigeria could support more than 3 million jobs (e.g., project development and carbon generation monitoring) and economic growth.

Country deep dive: Gabon

Gabon has shared an unconditional commitment to remaining a carbon-neutral country beyond 2050³⁴. With international support, the country pledges to maintain its net carbon absorption of at least 100 million tCO₂e per year beyond 2050. Gabon also plans to issue a large volume of carbon credits.

To build on this momentum, Gabon could add to existing regulation to ensure a comprehensive voluntary carbon market activation plan.

To illustrate the impact voluntary carbon markets could have, Gabon could support retirements of 9-12 MtCO₂e by 2030 by capturing just 20-30% of its maximum annual technical potential of 35-40 Mt CO₂e). While the vast majority of Gabon's potential is related to forestry projects, Gabon could also leverage projects in areas such as blue carbon and household devices.

By growing its voluntary carbon credit supply and associated demand, Gabon could mobilize up to \$250 million per annum in capital by 2030 considering an average price of \$20 per tonne and 12 MtCO₂e.

In this example, expanding the carbon market ecosystem in Gabon could support more than ~3 million jobs (e.g., project development and carbon generation monitoring) and economic growth.

³³ CAT Climate Governance Series, 2022

³⁴ UNDP, "Gabon: NDC Status", July 2022

Country deep dive: Togo

Togo's NDC established an unconditional target to reduce emissions up to 6 Mt CO₂e, 21% below BAU by 2030³⁵.

To progress towards these targets, Togo could develop a comprehensive voluntary carbon market activation plan. Currently there is just one ongoing certified carbon-generating waste management project certified in Togo, which generated 550 tCO₂e in 2021.

To illustrate the impact voluntary carbon markets could have, Togo could grow retirements to a total of 2-3 MtCO₂e by 2030 (corresponding to ~30% of maximum annual technical potential of ~4-10 Mt CO₂e). This would expand projects from waste management to other sectors such as forestry, household devices, renewable energy, and livestock. The corresponding reduction in emissions could cover 40-50 percent of Togo's NDC target.

In this example, Togo's could mobilize up to \$60 million per annum in capital and support more than ~100,000 jobs (e.g., project development and carbon generation monitoring) by 2030.

Country deep dive: Mozambique

Mozambique has shared a commitment to reduce emissions by 40 MtCO₂e until 2025³⁷.

To illustrate the impact voluntary carbon markets could have, Mozambique could produce up to 25 MtCO₂e annually by 2030 by capturing just ~30% of its maximum annual technical potential of ~90 MtCO₂e

Mozambique has high potential in project types including forestry, renewable energy and household devices.

By growing Mozambique's voluntary carbon credit supply and associated demand, Mozambique could mobilize up to \$500 million per annum in capital by 2030 considering an average price of \$20 per tonne for 25 MtCO₂.

Mozambique could also support more than ~500,000 jobs (e.g., project development and carbon generation monitoring) and economic growth

Country deep dive: Malawi

Malawi's NDC established a target to reduce emissions by 12.8-18.1 MtCO₂e below BAU by 2030³⁶.

To progress towards these targets, Malawi could develop a comprehensive voluntary carbon markets activation plan.

In 2021, Malawi supplied 605 ktCO₂ from agriculture, renewable energy and household devices projects.

To illustrate the impact voluntary carbon markets could have, Malawi could grow retirements to a total of 3-5 MtCO₂e by 2030 (corresponding to ~25-35% of maximum annual technical potential of ~15 MtCO₂e) and expand from a focus on agriculture and household devices to include forestry, and waste management projects. The corresponding reduction in emissions could cover up to 30 percent of the NDC target of 18.1 MtCO₂e.

In this example, Malawi's could mobilize up to \$100 million per annum in capital by 2030 (considering an average price of \$20 per tonne) and support more than ~300,000 jobs (e.g., project development and carbon generation monitoring).

Country deep dive: Kenya

Kenya's NDC established a target to reduce emissions by 32% below business-as-usual by 2030, corresponding to 46 MtCO₂e³⁸.

To progress towards these targets, Kenya could develop a comprehensive voluntary carbon market activation plan that builds on the high levels of existing carbon credit activity. From 2016 to 2021, Kenya issued ~26 MtCO₂e, more than any other African country (~20 % of total African credits). 90% of these projects were in the agriculture and household devices sectors.

If Kenya were to capture its 100 percent of its technical potential by 2030, ~30 Mt CO₂e, it could mobilize up to \$600 million per annum in capital by 2030 considering an average price of \$20 per tonne. This would require expand from a focus on agriculture and household devices to include other project types such as forestry and livestock projects.

In this example, expanding the carbon market ecosystem in Kenya could support more than ~600,000 jobs (e.g., project development and carbon generation monitoring) and economic growth.

³⁵ Togo's NDC

³⁶ Malawi's NDC; National Resilience Strategy 2018-2030

³⁷ Mozambique's NDC; Master Plan for Disaster Risk Reduction 2017-2030

³⁸ Kenya's NDC

Action programme 2: Scale up of multiple new and existing African project developers / suppliers

Context and opportunity

As described in Chapter 2, carbon credit project developers operating in Africa are few, relatively small scale and show limited diversification. Overall, there is room for Africa to support the scaling of existing carbon-credit projects developers, as well as the emergence of new issuers, including players that already run successful at-scale projects (e.g., renewable energy projects, cookstoves projects) but are not currently issuing carbon credits. To reach the ~300 MtCO₂e retirement target by 2030, and assuming project developers scale on average to ~3 MtCO₂e per year (i.e., average number of credits issued by top 10 project developers in 2021)³⁹, there could be a need for ~100 project developers to issue such number of credits per year (~2 times the number of issuers in 2021).

Challenges

Several challenges are generally underlined as inhibiting development or scale of carbon credit projects on the continent, with variation of intensity by country and project type:

- Lack of regulatory clarity (e.g., regarding claims on carbon revenues);
- Lack of or limited access to sources of financing for projects development – especially early-stage, due to various issues including projects attractiveness (size, sector), local cost of capital, investors' lack of expertise and of historical data regarding carbon projects – limiting project developers' ability to meet high upfront capital requirements and sustain long lead times to return (up to 10 years for projects to generate credits);
- High cost of existing financing given project, country-specific and market-related risks (e.g., legal certainty, land tenure) and lack of financial instruments to mitigate those risks, undermining projects' bankability;
- Complexity of meeting standard organisations' requirements given difficulty of applying technical requirements to the African context, lack of standardised methods for Africa, limited baseline data to measure project value (e.g., initial soil data for soil carbon projects) and lack of capacity and technology to enable consistent monitoring and reporting;
- Lack of validation and verification capabilities on the continent, given limited number of accredited validation/verification bodies (VVBs) who can provide the verification service (e.g., only 2 of the VVBs, listed by Verra, Gold Standards and CDM

have local offices in Africa)⁴⁰;

- Limited capabilities and capacity to develop mitigation projects and support monitoring tasks;
- Lack of clarity on stakeholders' roles and responsibilities (e.g., how to involve local communities and local authorities).

Additional challenges arise based on project type.

- Scaling of nature-based projects often faces complex land-use regulations, and the difficulty of compensating for opportunity costs (e.g., community owning forest land may face an opportunity cost between maintaining the forest vs. replacing it with farmland).
- Household devices projects can be hindered by a lack of local capabilities to introduce and repair devices, and supply-chain infrastructure challenges (e.g., poor access to remote areas, disruptions due to climate conditions).
- Renewable energy projects face a lack of capabilities to navigate complex energy regulations, and of infrastructure support for connections to the grid.

Proposed actions

To foster carbon project development on the continent, ACMI proposes to support several actions.

- 1. Set up an accelerator / incubator to support high-potential new or nascent project types**, especially technology-based projects by providing technical assistance and facilitating access to potential investors and international developers of similar projects.

Potential partners: large international buyers

- 2. Reinforce targeted on-the-ground technical assistance** to support project developers throughout the project life cycle.

Potential partners: technical assistance could be embedded in country planning (*under action programme 1*) or offered through regional initiatives for carbon markets or large pan-African technical assistance providers

- 3. Establish a technical facilitation programme focused on reducing barriers to entry for carbon credit certification for project developers in Africa**, with main objectives to:

- a. Work with standards organisations to provide more standardised methods for Africa (i.e., performance benchmarks and positive lists);
- b. Establish an Africa data baseline, by reinforcing and consolidating data collection efforts across the continent or regionally (in cooperation with

³⁹ McKinsey Vivid Economics Carbon Credit Database, drawing on Verra, Gold Standard, ACR, CAR, Plan Vivo (2022)

⁴⁰ Organization's websites

carbon-credit project developers, governments, and other local stakeholders such as farmer organisations, industrials) and working with standards organisations to incorporate this data;

- c. Facilitate knowledge sharing for the development of adapted tools and methodologies in collaboration with technical solution providers (e.g., satellite imagery to measure biomass);
- d. Create a public-access repository of template project design documents, available tools, and online training materials to help project developers navigate standard requirements;
- e. Create a curriculum (e.g., project development bootcamp), in partnership with universities, for the development of carbon credits, including a frame of reference mapping the role of the different stakeholders in project development and carbon credit revenues sharing (e.g., detailing how to engage with governments and local communities).

Potential partners: nature analytics / geospatial data providers, organizations that can provide data (e.g., international organisations, regional-focused climate groups, local governments), standards organisations, universities and/or technical schools

4. **Actively mobilise new project developers**, by reaching out to potential candidates (e.g., organisations that have developed eligible solutions at scale without deriving any carbon credits from these) and conducting awareness-raising activities (e.g., conferences, workshops).

Challenges in regulation will be addressed through action programme 1, challenges in project monitoring, reporting, validation/verification through action programme 4, and challenges in financing through action programme 6.

Project example: KOKO Networks (climate technology for forest protection)

KOKO Networks is a technology platform that aims to protect tropical forests and transform lives. With 1,600 staff across East Africa & India, KOKO operates renewable fuel utilities that retail clean cooking fuel as a low-cost alternative to deforestation-based charcoal. As of COP 27, KOKO serves over 700,000 households – including over 30 percent of all Nairobi homes – and over 10,000 new homes join its clean fuel and carbon platform each week.

Action programme 3: Scale up of programmes for micro carbon credits generation involving smallholder farmers

Context and opportunity

Although smallholder farmers contribute up to 70 percent of Africa's food supply⁴¹, it is difficult for them to access and benefit from carbon markets, as high upfront certification costs to create carbon credits and project monitoring costs require scale and access to financing/buyers.

Micro-carbon credit supply models can enable smallholders to individually earn income from carbon credit projects by leveraging:

- Aggregation of farmers into larger carbon credit programs to spread costs of certification and project development;
- Technology such as satellite imagery and remote-sensing tools (e.g., to monitor biomass growth by smallholder farmers and issue carbon credits accordingly) to further bring monitoring costs down);
- Local field force to train and onboard farmers and track impact (e.g., Acorn⁴² uses partner field force organisations to enrol farmers as well as to collect real data on sample plots to train AI models and conduct sample checks);
- Digital platforms / marketplaces to connect credits originated by smallholder farmers with international buyers.

Across the world, such models have especially been developed for agroforestry, conservation, and sustainable agriculture projects.

Several standards have developed methodologies to certify agroforestry projects, including Verra, the Gold Standard and Plan Vivo. Plan Vivo's "PM001 Agriculture and Forestry Carbon Benefit Assessment" methodology in particular, indicates a use case for smallholder agriculture and community forestry projects.

In Africa, only a handful of agroforestry carbon credit generation organisations collaborate with smallholders, mainly in East Africa.

"Smallholder-based carbon credit projects represent a meaningful opportunity for Africa"

⁴¹ Agriculture holds great promise for Africa. More than half of the Earth's arable land – roughly 600 million hectares – is in Africa, 2022; IFAD

⁴² FSD Africa and Rabobank ACORN/Rabobank Foundation to fund sustainable farming for African small-scale farmers with loans for carbon credits, July 2022; FSD Africa press release

Exhibit: Examples of micro-carbon credit generation models (non exhaustive)

Project type	Player	Player type	Description	Geography	Aggregation	Tech use	Key figures (scale, revenue)
Conservation		Private for profit (forest project developer)	Online platform where small land-owners can apply to qualify their land for a forest carbon project. A free carbon inventory is carried out by the company's forest technicians to determine the annual payment for the land-owner		✓	⊗	NA
		Private for profit (forest carbon market-place)	Online platform where small land-owners can enroll for free with no acre-minimums for one year-contracts, getting revenues if they delay harvesting. Carbon potential of the land is estimated remotely through an AI model called Basemap		✓	✓	1.8k landowners for 1.6 Mn acres 8\$/acre paid to landowners <i>(As of start of 2022)</i>
Agroforestry		Financial institution	Program supporting smallholder farmers to switch from monoculture to agroforestry, using satellite imagery to monitor biomass for smallholder farmers and issuing carbon removal units when biomass increases	3+ countries in LatAm 4+ countries in Africa	✓	✓	2022: 24k farmers, ~ 24k acres, 80-90% revenue to farmers (min price 20\$/t) Target: 15 Mn farmers, 4 Bn trees, 150+ Mn tCO ₂ e
		Private (e-commerce) & non for profit NGO	Agroforestry and restoration accelerator, boosting the implementation of agroforestry practices by smallholder farmers in Brazil. Carbon removal is quantified and monitored with satellite-based technologies and credits are generated through a platform		✓	✓	Target 2024: 3k farmers and 50k acres
	Xylo	Private for profit (forest carbon market-place)	Market platform that measures and aggregates the carbon offsets of small farmers that have planted a forest and sells them to buyers. The company intends to leverage technology for carbon measurement process in the long run		✓	⊗	NA
		Private for profit (carbon market-place)	Program encouraging small groups of farmers (6-12 farmers) to improve local environment and farms by planting and maintaining trees on unused and/or degraded land. Carbon credits are dual-verified by 3 rd party auditors (live online tracking) and sold to buyers. Small Groups form Clusters (200-400 farmers) and are led by participating farmers.		✓	✓	135k+ farmers, 23 Mn+ trees planted, 9 Mn+ tCO ₂ offset, 70% of profits shared with farmers
		NGO non for profit	Supports smallholders to grow trees on unused/degraded farmland. Managed by central team using VERRA SALM methodology and Gold Standards Cool Farm Tool to quantify GHGs and market potential per farm. Trained community-based extension agents monitor on-farm activity and onboard farmers (revenue sharing model to incentivize agents to onboard more farmers)	19+ countries in Africa	✓	⊗	500k farmers per country, 1Mn ha of land, 10-year participation period, 32 Mn tons carbon credits over 10-years
		NGO non for profit	PUR Project is working with Nestle and TechnoServe to run agroforestry programs in coffee farms. The coffee is grown under the canopy of trees to enhance coffee cultivation and provide a diverse source of income to farmers.	3+ countries in Africa 4+ countries in LatAm 1+ country in South Asia	✓		4.5+ Mn native trees grown in coffee farms since 2014.
		NGO non for profit	Running an agroforestry program and piloting a scheme to give farmers access to carbon credits (e.g., in collaboration with the Rwanda government)	7+ countries in Africa	✓		1 Mn farmers supported across programs, 20 Mn trees distributed in Rwanda in 2021
Sustainable ag practices		Private for profit (chemicals)	Pilot for growers launched in 2020 offering a yearly payment per hectare for climate-smart practices. Bayer's digital Climate FieldView, along with remote-sensing satellite-based data, verify whether the practices have been followed and calculate carbon sequestration		✓	✓	1k+ farmers in pilot phase (2021) 5-6\$/acre/practice adopted ¹ paid to farmers (2022 prices)
		Private for profits (technology)	CIBO has a platform to connect growers directly with buyers. It uses modelling to calculate carbon credits and validates them through satellite imagery and remote-sensing technology.		✓	✓	NA

1. Available only for 2 practices: No-till/Strip-till and Cover crop, and depends on state

Source: Press research, company websites

There is significant potential to scale up carbon credit generation with smallholder farmers. As smallholder farmers work on ~80 percent of Africa's agricultural land⁴³, they could be associated to a similar share of the credit issuance target for agriculture (including cover crops and crop rotation, regenerative grazing management, decreased tillage) and tree planting in cropland by 2030. This total agriculture ambition is

estimated to be ~26 MtCO₂e (assuming agriculture grows to its share of the total ACMI ambition). This means smallholder farmer projects could contribute 21 MtCO₂e⁴⁴ towards ACMI's ambition, which could benefit up to 5 million smallholder farms or 10-15 million jobs⁴⁵. This could be even greater if agriculture projects account for more than their technical share of African carbon credit generation in 2030.

⁴³ FAO

⁴⁴ McKinsey Nature Analytics

⁴⁵ Assuming max. potential of ~2 tCO₂e sequestered per year per hectare through better agriculture practices including agroforestry, regenerative agriculture practices; assuming average farm size of 2 ha and 2-3 jobs supported per farm

Beyond sustainability goals, smallholder farmer-based carbon credit generation projects represent a meaningful opportunity for Africa as they could allow farmers to generate revenue from carbon credits that reflect increased carbon sequestration on their land, while also providing co-benefits such as increased yields and improved food security.

Project example: Acorn (Agroforestry Carbon Removal Units for the Organic Restoration of Nature with smallholder farmers)

Acorn has developed a scalable, Plan Vivo certified methodology to measure and monitor carbon sequestration on individual smallholder plots via remote sensing technology, leading to significant cost reductions in MRV and certification. This allows Acorn to channel 80% of carbon proceeds back to farmers through cash and in-kind benefits. The typical result is a 40 – 80% increase in farmer income due to carbon credit revenues, reduced input spending, and higher crop yields. Carbon markets are a powerful tool to finance the transformation to agroforestry so that smallholders can reap these long-term benefits while enhancing climate resilience and soil quality. Acorn currently supports >25.000 farmers across 10 countries in Latam, Africa and Asia and aims to onboard 10 million farmers onto its platform by 2030.

Project example: The Export Trading Group (ETG)'s African Emerging Farmer Carbon Abatement Program

Building on the vast footprint of ETG in Africa, ETG's African Emerging Farmer Carbon Abatement Program aims to create carbon abatement as a by-product of farming at scale. By combining latest technology, relevant carbon abatement interventions, and ETG's global reach, the program aims to bring cost efficient quality emissions reductions and long-lasting community benefits to some of the world's most vulnerable farming communities. ETG's ambition is to drive this program to scale across the entire continent, improving livelihoods and contributing to the global fight against climate change.

Proposed actions

To support the development of smallholder farmer-based carbon credit generation on the continent, ACMI proposes several actions.

- 1. Create a continent-wide coalition to support agroforestry for food security and carbon credits** through advocacy to financers and regulators, awareness raising, knowledge sharing and technical support for project development, facilitation of partnerships.

Coalition could facilitate the development of different models for community-based carbon credit projects tailored to local context, including mechanisms to ensure that communities benefit from carbon credit revenues, guidelines to favour positive externalities (e.g., type of crops adapted to soils and climate conditions), and adapted validation/verification methodologies and tools.

Potential partners: development partners/DFIs, agriculture input providers and farmer-support NGOs to facilitate access to smallholder farmers and provide inputs and additional field services; agri-food companies to ensure investment in their supply chain by using VCMs/insetting; governments to approve large-scale projects; and carbon-credit project facilitators.

- 2. Encourage partnerships to scale up existing and new programs** between project developers and organisations that have significant access to smallholder farmers.

Partners could provide technical support, high-quality agriculture inputs such as seeds and fertilizers, and/or financing solutions (e.g., cooperatives, NGOs, agri-food companies, agriculture input providers).

- 3. Work with standards to develop adapted methodologies** to certify micro carbon credit projects.

Potential partners: standards organizations, project developer representatives; the coalition could provide technical support.

- 4. Work with financial institutions to develop and scale financial solutions** for smallholder farmers to participate in carbon credit generation (e.g., lending based on credit revenue potential, community-based carbon finance models allowing for joint repayment and thus lowering interest costs for farmers, mobile money schemes to pay unbanked farmers).

Potential partners: financial institutions, (e.g., banks, microfinance institutions, development funds, fintech); the coalition could provide technical support.

- 5. Embed agroforestry as a priority in country planning** (*addressed under action programme 1*).

Action programme 4: Building of additional capacity and facilitation of monitoring, reporting, validation and verification activities of carbon credit generating projects in Africa

Context and opportunity

Carbon emissions reductions or carbon removals only become carbon credits when certified by a standard upon successful verification by a third-party validation/verification body (VVB). Due diligence is necessary to validate carbon credits and determine their quality. Standard setters often require that the impact from a carbon emissions reduction or carbon removal is real, measurable, permanent, additional, independently verified (by a VVB), unique and traceable.

Two main types of bodies play a role within the certification process: standard setters and validation/verification bodies (VVBs). Standard setters include organisations such as Verra (Verified Carbon Standard) or the Gold Standard. These organisations support and accept methodologies for different project types to develop carbon credits. The VVBs are independent third parties which are approved to perform verification and validation. Currently, Verra alone has approved close to 30 validation/verification bodies across 5 continents⁴⁶.

Once a project has been registered under a standard and validated by an independent VVB, project developers must continue to report data on a frequent basis for ongoing monitoring, reporting and verification (MRV).

Challenges

Project developers indicate challenges in validation, verification and monitoring processes including:

- For many African project developers, it is difficult to meet the requirements for existing methodologies. This is because methodologies were often not designed with an African context in mind. For example, African projects often lack the baseline data required for project certification (e.g., historical data going back multiple years) that might be available in other locations.
- There is limited capacity on the continent for validation/verification bodies (VVBs). Of the ~40 VVBs listed as accredited by Verra, Gold Standard – and even when extended to CDM, only 2 have offices on the continent⁴⁷.
- Project developers indicate there is a high cost for validation and verification. This is driven by a few aspects including: travel cost for technical VVB officers, fees charged by VVBs and consultancies that support certification, need for technology/equipment/surveys to collect required data (reinforced by lack of data availability in Africa) and long lead times to get a project certified.

Proposed actions

ACMI proposes to support several actions to help address barriers in validation, verification, and monitoring in the continent.

1. Scale up validation/verification capacity on the continent:

- a. Signal the opportunity, by conducting deeper analysis to estimate staff needs to verify and validate African projects, especially given ACMI's ambition in terms of project development on the continent, to encourage local capability building and recruiting efforts.
- b. Encourage national/domestic members of the International Accreditation Forum (IAF) to build out accreditation programmes for local auditors, in order to set the framework for allowing local auditors to be trained, making sure there is at least one accreditation programme in French and one in Arabic (potentially located in respectively French and Arabic-speaking countries).
- c. Develop and provide dedicated validation and verification curriculum and trainings to build local capabilities, in partnership with universities, technical schools, standard setters and existing VVBs.
- d. Encourage existing accredited VVBs to set up locations on the continent, train and recruit local agents.
- e. Support the creation of new local VVBs by advocating for standard setters to facilitate accreditation processes for Africa.

Potential partners: VVBs, standard setters, universities / technical schools, (national) accreditation bodies that are members of the International Accreditation Forum

2. Review most common standards likely to be used in Africa and work with standard organizations to adapt methodology requirements to the African context and provide more standardised methods for Africa (i.e., performance benchmarks and positive lists) (addressed under action programme 2).

Potential partners: nature analytics / geospatial data providers, standard setters, African project developers

3. Incubate emerging technologies that can facilitate faster and easier verification, monitoring, and reporting (e.g., satellite tools).

Potential partners: analytics / data providers, technology providers

⁴⁶ Organizations' websites

⁴⁷ Rina Services in South Africa and TÜV Nord in Egypt

Action programme 5: Promotion of quality, equity, and marketing of differentiated African carbon credits to both African and global buyers across African exchanges

Context

The voluntary carbon credit intermediation market in Africa is fragmented with a significant number of global players. Many African project developers rely heavily on brokers and traders to bring supply to the market, which can increase intermediation costs, lower price transparency, and reduce revenue share for suppliers and asset owners (including local communities). This could be due to some African project developers' lack of scale or marketing and networking capacity for executing bilateral (bespoke) deals. Also, project developers may not have full awareness of how to navigate the various intermediation channels. Feedback from stakeholders in the market indicates that brokers and traders can take 10 to 70 percent of the carbon credit revenue⁴⁸, reducing Africa's share of important climate financing.

Companies or individuals can buy African carbon credits either directly from a supplier or project developer (primary market) or indirectly through intermediaries (secondary market). Intermediaries can take different forms, from brokers and traders operating through their relationships with buyers (OTC) to carbon credit platforms, including carbon credit marketplaces and carbon credit exchanges. These platforms have varying degrees of commoditisation, barriers to participation, liquidity, and transaction transparency, among other characteristics.

Exchanges convert carbon credits into highly commoditised assets. As a result, they often attract buyers that are not looking for a detailed "story" accompanying a project but instead looking to purchase a commodity. On the other hand, carbon credit

marketplaces are more suitable for project developers seeking the ability to showcase their unique projects to buyers. Consequently, they often attract buyers willing to pay a higher price than on exchanges, to be able to communicate about the project that generates the carbon credits they purchase. Relative to carbon credit exchanges, carbon credit marketplaces generally have fewer barriers to participation (e.g., wide array of assets can be used as collateral for transaction) and are better suited to less commoditised carbon credits, leading to a greater diversity of carbon credit types and buyers valuing the "story" behind a carbon credit.

Opportunity

ACMI could collaborate with existing initiatives on the continent that are attempting to establish a carbon credit exchange or marketplace to harmonize trading principles on African carbon credit quality, integrity, and pricing and to better help retain revenue that might otherwise end up going outside the continent.

Multiple initiatives across Africa are working to establish a carbon market exchange, including:

- The Kenyan government's Nairobi International Financial Centre (NIFC) and AirCarbon Exchange (ACX) are partnering to develop a carbon ecosystem in Kenya. ACX is planning to utilize its existing blockchain-based global platform and establish a presence in Kenya to source transactions and support project developers. NIFC and ACX are currently in talks with different stakeholders and the project is likely to benefit from a new tax incentive for carbon trading under Kenya's Finance Act of 2022⁴⁹.
- The Egyptian government in collaboration with the Egyptian Exchange (Egypt's stock exchange) is in the early stages of developing a carbon credit exchange⁵⁰.

Exhibit: Pros and cons of different intermediation channels

	Exchanges	Marketplace & brokers/ traders	Bilateral
Pros	<ul style="list-style-type: none"> • Higher price transparency • Ease of oversight • Limitation of counterparty risk • Increased market liquidity 	<ul style="list-style-type: none"> • Greater flexibility as contracts can be tailored • Lower barrier to entry • Wider array of assets accepted as collateral for transactions 	<ul style="list-style-type: none"> • Greater flexibility as contracts can be tailored • Lower transaction cost • Ability to choose how credits are used by buyers (trading vs retirement)
Cons	<ul style="list-style-type: none"> • Potential for speculation or market manipulation • Commoditization of carbon credit (standardized contracts only) • Significant collateral requirements 	<ul style="list-style-type: none"> • Lower liquidity • Higher counterparty risk • Lower price transparency • Higher transaction cost • Limited regulatory oversight 	<ul style="list-style-type: none"> • Large scale transaction requirement • Higher counterparty risk • Need for an inhouse marketing and transaction facilitation team • Longer negotiation time

⁴⁸ Interviews with project developers and buyers

⁴⁹ Reuters, Kenya plans to set up emissions trading system, by George Obulutsa, May 2021

⁵⁰ Daily News Egypt, EGX works on launching carbon certificates market soon, by Fatma Salah, Sept. 2022

- The Johannesburg stock exchange piloted a trading system to 120 leaders in business, government, and civil society at a launch event in partnership with Promethium Carbon and the High Commission Prosperity Team in January 2019⁵¹.

Other private initiatives such as Xange and Verst Carbon have also been developing exchange platforms or marketplaces on the continent.

Proposed actions

To help African carbon credit exchanges and marketplaces drive demand for differentiated African carbon credits to both African and global buyers while supporting African suppliers and communities, ACMI proposes the following actions.

- 1. Coordinate and collaborate with new or existing carbon credit exchanges and marketplaces to establish commitments on common standards for the continent.** Standards could include the type of credits sold, transparency on fee levels and structure, quality and integrity expectations and more. For example, ACMI proposes that all exchanges commit to transparency in fee structures and to establishing clear principles around quality and integrity of carbon credits. There are also opportunities to support African exchanges and marketplaces in defining a shared methodology for tracking and reporting critical co-benefits (e.g., the value provided to communities).
- 2. Consult project developers to understand their ability to meet such standards and principles** and share the pros and cons of different selling options to help them make an informed decision on the most appropriate option.

Potential partners: Local carbon credit exchanges, project developers

Project example: Xange.com Ltd (securities exchange)

Xange.com aims to provide a centralized, transparent conduit for enhancing the engagement of developing countries with carbon markets. Xange.com partnered with the UN Development System to bring to market a carbon credit solution under SDG 17 for the African Great Green Wall (8,000 km of trees planted in the African Sahel Region). Xange.com is engaged with tier 1 technology providers to create a platform for Carbon Credit Buyers and Sellers. Compliance, scalability and standardization are key themes in Xange's end-to-end blockchain powered framework.

Project example: Verst Carbon (blockchain-based carbon project aggregator and marketplace)

Inspired by the need to create a robust African-based carbon market for quality Africa-sourced carbon credits, Verst Carbon is a blockchain-based carbon project aggregator and marketplace aimed at increasing participation in climate action for the people on the African continent. They leverage blockchain technology to increase the transparency and integrity of carbon markets. Their platform ensures the proceeds from the sale of carbon credits, that often go to intermediaries and brokers, are funnelled directly to project developers and the community. Additionally, their governance structure enables community participation beyond the buyers and sellers of carbon credits empowering the community to be part of the climate action initiative.

Action programme 6: Deployment of financing mechanisms to de-risk investment and lower cost of capital for project developers

Context

High cost of capital and lack of access to adapted financial mechanisms to provide early-stage capital and to de-risk investments are critical challenges for African carbon project developers.

High cost of capital is mainly due to relatively high risks associated with Africa carbon projects development. There are four common types of risk.

- Country risk is related to political, regulatory, and administrative challenges (cf. 85 percent African countries scoring in lower half and more than half in bottom quartile of Ease of Doing Business Index 2020⁵²) and foreign exchange risk.
- Counter party risk is related to project developers defaulting on their debt obligations, which is especially a concern when project developers cannot provide track records of past repayments.
- Project risk is due to physical risk, potential lack of scale, capabilities, and adapted technologies to drive efficient project development and implementation.
- Market risk is related to the carbon credit market's price variations over time and by project type and quality, and related to the nascent stage of hedging mechanisms. For example, the international framework Basel III, through its Fundamental Review of the Trading Book (FRTB) to be implemented in January 2023, allocates a 60 percent risk weighting to carbon credits. This is one of the highest ratios for

⁵¹ Government of UK, South Africa-ready for carbon trading, Feb. 2015

⁵² The World Bank, Doing Business Index, 2020.

any commodity (e.g., twice as much as crude oil), impairing banks' ability to act as intermediaries and increasing overall transaction costs.

Moreover, there is a lack of access to adapted financial instruments for project developers to access early-stage financing (without a track record of carbon credit issuance) and for investors to de-risk investment and hedge against country, counterparty, project, and market risks. Given this, many project developers rely on philanthropic or NGO support in early stages as they lack access to capital from financial institutions.

“Multiple financing instruments could be mobilised to unlock Africa’s carbon credit supply potential”

Opportunities

Multiple financing instruments could be mobilised to unlock Africa’s carbon credit supply potential.

- Among funding instruments, blended financing can help reduce the cost of capital by leveraging development finance to lower the investment risk for private (for-profit) capital. For example, the Africa Agriculture and Trade Investment Fund (AATIF), a public-private partnership, has been founded by

development finance institutions to improve Africa's agricultural potential, relying on a blended finance vehicle that invests in agricultural production and businesses along the agricultural supply chain.

- Pre-financing offtake agreement is also an effective mechanism to provide early-stage financing and reduce risk on carbon credit projects by hedging a borrowing/lending facility through a future offtake agreement. Success of such agreements requires transparency and strong cooperation between project developers and offtakers as well as regulatory certainty.
- Several trading and risk-hedging instruments can also be mobilized to further mitigate investment risks, such as futures / options contracts, guarantees and insurances.

Deploying these mechanisms requires collaboration with financial institutions and philanthropic/NGO organizations to develop Africa specific initiatives, support early-stage projects and further deepen global carbon markets (e.g., through availability of derivative markets for hedging).

Exhibit: Set of potential financial instruments to help unlock Africa’s carbon credits supply potential

✔ Potential to address the challenge ⚙️ Indirectly addresses challenge

Instruments (non-exhaustive)	Description	Reduce cost of capital	De-risk investment	Provide early stage funds	Examples
Funding instruments					
Grant	Mechanism to fund early-stage non-commercial activities which are crucial in allowing new projects and technologies to become bankable	✔		✔	ADB's Future Carbon Fund
Equity or debt financing	Enables projects to establish operating performance data by providing funding at different stages of project development	⚙️		✔	DFI concessional loans, VC and PE funding
Green or carbon bonds	Fixed-income instrument issued by a government or private entity designed specifically to support specific climate-related or environmental projects	⚙️			World Bank Green Bond
Pre-financing offtake contract/ agreement	Borrowing/lending facility hedged by a future off take agreement with a buyer who agrees to buy the carbon credit generated by the project for a fixed price		⚙️	✔	
Blended financing	Strategic use of development finance for the mobilization of additional finance towards sustainable development in developing countries	✔			Africa Agriculture and Trade Investment Fund
YieldCos	Entity formed to own operating assets, such as solar or wind power, and to raise funds by issuing shares to investors			✔	Revego Africa Energy Limited
Stock exchanges	Entity that provides relevant market infrastructure and rules to support the listing of designated carbon funds investing in climate mitigation projects				London Stock Exchange's VCM
Trading and risk hedging instruments					
Derivatives	Financial instruments such as futures, index, swaps or options contracts that are based on the values of their underlying assets		✔		ICE NBS carbon credit futures contract
Guarantees and insurance	Instrument used to help overcome a wide range of risks incl. political and counterparty risks, and enhance the creditworthiness of an investment		✔		MIGA political risk insurance
Carbon buffer reserve mechanism	Buffer reserve pool of individual projects, which functions as an insurance mechanism to address the risk of GHG reductions being reversed		✔		World Bank climate warehouse

Financial institutions can play a structuring role in carbon credit projects financing by:

- Supporting carbon credit projects' origination by developing relevant financing instruments, directly providing funds, or acting as subordinate lender, and arranging pre-financing for offtake agreements;
- De-risking projects' performance and execution by developing and providing relevant guarantee instruments;
- Facilitating carbon credits' sales and knowledge sharing.

Philanthropies and NGOs can play a crucial role in financing carbon credit projects on the continent, especially by continuing to provide early-stage financing.

Proposed actions

To de-risk investment and lower cost of capital for project developers, ACMI proposes to support several actions.

1. **Encourage financial institutions to value carbon revenues like other revenue streams and to adjust their risk frameworks** to enable lending and provision of working capital against carbon revenue streams.

2. **Advocate for philanthropies and NGOs to continue supporting** high quality carbon credit projects with significant biodiversity and community focus, especially in early stage.

Potential partners: Philanthropies and NGOs, especially focused on nature-based solutions

3. **Encourage the scale-up of DFI-led blended finance programs** for African carbon credits.

Potential partners: DFIs and other capital providers

4. **Establish a continental working group of financial institutions focused on facilitating the development of adequate financial instruments** to fund and de-risk carbon credit projects development in Africa in the mid-long term.

- Develop and promote tailored made financing solutions for VCMs (e.g., support offtake agreements).
- Promote products enabling market “tradability”, creating market liquidity, providing price transparency and de-risking mechanisms (e.g., guarantees to financiers against borrower default, to project developers against buyer default, to buyer in case of project execution issues, spot and future contracts, insurance mechanisms).

- In the longer term, established products could be evolved to more complex structures, expanding alternatives for different usages of carbon credits such as hedging (index and options contracts).

Potential partners: Financial institutions active on the continent (e.g., banks, PE funds, insurance companies), carbon credit exchanges and marketplace platforms

5. **Integrate financing in country planning**, focusing on incentives and support for local financial institutions to fund carbon projects development. This will require cooperation between governments and local financial institutions, as well as a best practices framework that can be developed by the continental working group.

Addressed under action programme 1

Action programme 7: Set up of an advance market commitment for African carbon credits

Context

To grow the supply of carbon credits on the continent, the demand for credits must grow in tandem. In 2021 there were 22 MtCO_{2e} retired from Africa out of total supply of 39 MtCO_{2e}⁵³. An advance market commitment (AMC), where multiple corporations commit to purchase large quantities of carbon credits from Africa, can send a strong demand signal and incentivise suppliers to develop projects.

Existing AMCs like Frontier, First Movers Coalition (FMC), and Lowering Emissions by Accelerating Forest Finance (LEAF) coalition have already demonstrated impact in catalysing demand for the voluntary carbon market. Frontier is working to accelerate the development of carbon removal technologies, has mobilized \$925 million in advance commitments to purchase permanent carbon removals and already purchased ~2.5 ktCO_{2e} to date⁵⁴. FMC is facilitating decarbonization of the industrial sector and has 50+ member companies that have committed to purchasing a proportion of their input materials from suppliers using zero-carbon solutions, despite the premium cost⁵⁵. Frontier and FMC account for ~90 percent of total commitments to purchase removal credits. Likewise, the LEAF Coalition aims to halt deforestation by financing large-scale tropical forest protection and has mobilized a pledge of +\$1 billion for jurisdictional-scale forest protection⁵⁶.

⁵³ McKinsey Vivid Economics Carbon Credit Database, drawing on Verra, Gold Standard, ACR, CAR, Plan Vivo. (2022)

⁵⁴ Frontier (2022)

⁵⁵ World Economic Forum (2022)

⁵⁶ The LEAF Coalition (2022)

Exhibit: Examples of AMCs in the voluntary carbon market (non-exhaustive)⁵⁷

Examples	Members/entities	Impact
 Frontier	 shopify  Alphabet  McKinsey & Company  Meta  stripe	Frontier mobilized \$925 million in advance market commitment for permanent carbon removals and purchased ~2.5 KtCO ₂ e to date.
 First Movers Coalition	50+ companies including:  NOKIA  DHL  BOEING  DELTA  Mahindra Rise  Microsoft	Frontier and First Movers Coalition account for ~90% of total commitments to purchase removal credits which is 4.5X the total removals purchased to date (~0.8 MtCO ₂ e).
 The LEAF Coalition <small>Lowering Emissions by Accelerating Forest Finance</small>	 NICFI  UK Government  airbnb  BCG  gsk  McKinsey & Company  amazon  BAYER  salesforce  Nestle	The LEAF Coalition mobilized a pledge of +\$1 Bn for jurisdictional-scale forest protection.

Source: Press search

“An advance market commitment can incentivise suppliers to develop projects”

AMCs have been effective in increasing demand for projects based on established methodologies including nature-based solutions like afforestation, reforestation, and conservation (e.g., REDD+), as well as more innovative project types like engineered removals.

An AMC can help boost Africa's voluntary carbon market ecosystem by:

1. Unlocking financing for project developers: Project developers in Africa have indicated that difficulty accessing early-stage capital and the high cost of capital are among the biggest challenges to scaling. AMCs start as none binding commitments; however, over time, buyers could establish legally binding purchase contracts with project developers. These agreements can be for immediate purchase (providing financing on the spot to project developers) or future purchase (providing documentation that project developers can leverage to access traditional financing like bank loans).

“If advance offtake agreements or something like this existed to cover the initial project development phase, this could really boost carbon project development.”

-Project Developer

2. Ensuring sufficient income for credits: Additionally, AMCs can provide support by setting a floor price for the purchase of credits. Project developers have indicated that being able to demonstrate a potential floor price for credit purchases can help increase confidence from financiers and demonstrate project

viability. It can also help ensure sufficient income goes to project developers for the sale of credits. This can, in turn, help increase the income for on the ground communities and implementors.

“Once we knew there could be a floor price for the purchase of our credits, we were able to quickly raise funds to support expansion.” -Project Developer

3. Facilitating connections between buyers and suppliers: African project developers rely on intermediaries with high fees or need to spend heavily on in-house marketing and sales departments to bring their credits to market. Similarly, buyers indicate that there is often a significant amount of work required to identify and vet projects in Africa (e.g., difficulties to validate quality and ensure integrity). AMCs can build a network of project developers and easily connect buyers to relevant suppliers.

“We have been working to figure out a route to market and build a sales team, but we didn't know this before, so we had to rely on brokers or marketing consultants or other intermediaries.” -Project Developer

4. Ensuring a supply of high-quality, high-integrity credits for purchase: Stakeholders have indicated that sourcing quality credits from Africa with transparency on co-benefits to local communities and asset owners is usually challenging. An AMC can set strict guardrails for building supply pools and vet carbon projects to ensure high-quality and high-integrity credits.

“You have to do a lot of due diligence on projects to understand the integrity, quality and social impact. Existing rating systems aren't always accurate.” -Buyer

⁵⁷ Press search

Opportunity

ACMI, together with several buyers, is setting up a multi-million-dollar advance market commitment to purchase African carbon credits between now and 2030. The list of the AMC founding buyers will be announced on ACMI's landing page (SEforAll.org/ACMI). ACMI intends to increase the total commitment size in the coming year. To join the AMC, companies sign a non-binding letter of intent (LOI) to purchase African carbon credits between now and 2030. Companies will be expected to finalize a formal purchase of carbon credits from a project developer within two years of signing the LOI. The terms for the purchase contract are negotiated directly between the buyer and the project developer (including when carbon credits will be delivered).

As part of joining the AMC, companies accept ACMI's buyer integrity principles, including:

- Working towards setting a globally accredited net-zero target (e.g., race to zero, VCMI Claims Code of Practice) and a plan to achieve this target;
- Prioritizing reducing the organisation's own operational (scope 1, 2) and value chain (scope 3) emissions, in line with science-based targets;
- Only use carbon credits simultaneously with direct emissions reduction efforts (e.g., to neutralize residual emissions to reach net-zero, or to compensate emissions during the transition to net zero).

Companies must also be aligned with ACMI's ambition to grow the voluntary carbon market in Africa and ensure transparent and fair revenue sharing with communities. ACMI will also encourage buyers to adopt more ambitious net-zero targets (e.g., VCMI's provisional Claims Code of Practice that requires aggressive emissions reduction to net zero before 2050). However, ACMI will not conduct diligences or vet buyers' net-zero commitments. These principles will continue to be reviewed and revised over the coming years.

Proposed actions

To launch a successful AMC, ACMI proposes to execute three main activities over the coming years.

1. **Convene buyers:** ACMI is engaging with additional buyers to garner more commitments and increase total commitment size. ACMI plans to assess the interest of buyers, especially in terms of project types, quality, and integrity requirements, to develop deeper market insights and shape the AMC's operating model. ACMI aims to engage with a variety of buyers from buyers with an African footprint, to significant global or African carbon credit purchasers, to buyers with especially strong net zero targets.

2. **Build a supply pool:** ACMI is engaging with project developers on the continent to build a continuous supply of credits. ACMI intends to launch annual RFPs to solicit proposals from African project developers and then vet proposals based on specific criteria. Certified credits in the supply pool will be expected to meet a set of requirements including having been verified by a reputable third-party validation/verification body and meeting ACMI's ambition of fair and transparent revenue sharing with local communities and asset owners. The AMC intends to prioritize the purchase of recent vintages over older vintages to drive new climate impact. Furthermore, ACMI aims to adopt the Integrity Council for Voluntary Carbon Market (ICVCM)'s Core Carbon Principles (CCPs) (once finalized and reviewed) to set standards for high-quality, high-integrity carbon credits.

The AMC supply pool will include projects from existing methodologies and innovative products across all project types. Africa has huge untapped potential to generate more credits from existing methodologies including nature-based solutions, renewable energy projects (e.g., Geothermal / Hydro / Solar / Wind), cookstove projects, and more. The AMC also looks to facilitate purchases of carbon credits based on new methodologies and innovative projects. By focusing on innovative projects such as diesel decommissioning or biodiversity credits, the AMC will send a strong demand signal for products that don't yet have a market.

3. **Facilitate transactions:** ACMI proposes to develop a mechanism (e.g., auctions) to match buyers and suppliers based on preferences (e.g., project type). ACMI also plans to work with key stakeholders to inspire trust and confidence in the market, by ensuring credible listing of projects on global registries to avoid fraud and double counting, developing mechanisms to avoid mis-channelling of financial flows and minimise transaction risks (e.g., buffer pool, escrow, blockchain-based smart contract tools), and developing best practices for arranging pre-financing purchase contracts to unlock financing for project developers.

ACMI, in collaboration with the AMC founding buyers, will develop the detailed activities and resources required to run day-to-day AMC operations.

Action programme 8: Establishment of African carbon neutral commodities

Context and opportunity

Carbon neutral commodities are products whose scope 1 and 2, and potentially scope 3 CO₂e emissions have been fully eliminated or compensated for (in case of residual emissions, by bundling sales with carbon credits).

The global carbon neutral commodities market has been and is expected to continue growing, as B2B customers are increasingly seeking to decarbonise their value chains and align with changing customer preferences. Global examples show that carbon neutral and more largely 'green commodities'⁵⁸ can attract a price premium compared to 'grey' ones. For example, in the plastics market, recycled polyethylene terephthalate (PET) has reached an average price premium of \$300 per tonne over virgin PET⁵⁹.

Africa has also seen development of carbon neutral commodities projects, such as Cotton made in Africa (CmiA)'s Carbon Neutral Initiative, supported by the Aid by Trade Foundation in partnership with Atmosfair, aiming to steadily reduce the greenhouse gas emissions caused by cotton cultivation and ginning while also

compensating for residual emissions that cannot be avoided⁶⁰. Yet there are still few of these efforts. There is an opportunity for Africa to create carbon-neutral commodities to build demand for its voluntary carbon markets and add a premium to the continent's exports. High potential commodities to focus on could be identified based on export value, carbon intensity of production, emissions reduction potential, and existing demand for greener products.

For illustration, cocoa, coffee, tea, copper, iron, steel, and gold might be good candidates to develop carbon neutral commodities projects in Africa, based on their weight in exports, emissions reduction potential, and existing programs. Copper, cocoa, and iron and steel rank amongst top 10 African exports in US dollar values in 2021⁶¹. In terms of existing methodologies and potential to reduce emissions, tea, coffee, and copper are the object of carbon neutral commodity projects globally (e.g., Dilmah's carbon neutral tea, monteCCer's carbon neutral arabica coffee, and BHP and Southwire carbon neutral copper cathodes)⁶², which could be replicated for Africa. Finally, gold has been highlighted as its production involves multiple energy-intensive processes such as ore mining, crushing, milling, and refining, resulting in significant CO₂e intensity⁶³. To illustrate the potential for carbon neutral commodities, these six commodities could together create demand for

Exhibit: Estimated potential from selected carbon neutral commodities (illustrative)

	Example carbon neutral commodities	Estimated volume exported, '000 tonnes 2021 ¹	Estimated carbon intensity, tCO ₂ e/tonne	Carbon credits required to offset all commodity emissions, MtCO ₂ e ²	Potential value for these credits, \$ Mn ³
Agricultural commodities 	Tea	700	2.8 ⁴	2	11
	Coffee	1,400	2.8 ⁵	4	22
	Cocoa	4,000	1.5 ⁶	6	33
Metals commodities 	Copper concentrate	2,500	2.5 ⁷	6	33
	Iron and steel	70,000	1.9 ⁸	135	743
	Gold	0.6	25,600 ⁹	15	83
Total				~168	~925

1. Based on estimated \$ value of Africa exports per product (Trademap 2021, UN Comtrade) divided by an estimated price per tonne (based on press search)
2. Assuming 100% CO₂e emissions curbed through decarbonation efforts, and potential offsetting of residual emissions
3. Assuming \$5.5 per carbon credit, based on average price for African credits in 2021, from Ecosystem Marketplace
4. Source: ETHOS Research, "Climate Change the Tea Sector in Kenya: Impact Assessment and Policy Action National Multi-Stakeholder Workshop", April 2013
5. Source: Maina, J., Gareth, K., Mutwiwa, U., & Githiru, M., "Evaluation of Greenhouse Gas Emissions along the Small-Holder Coffee Supply Chain in Kenya", 2016
6. Source: Vervuurt, W., Slingerland, M., Pronk, A., & Van Bussel, L. "Modelling greenhouse gas emissions of cacao production in the Republic of Côte d'Ivoire", 2020
7. Source: Desai, P. "Metals recycling to be a key plank for cutting emissions", July 2021
8. Source: Hoffman, C., Van Hoer, M., & Zeumer, B. "Decarbonization challenge for steel", June 2020
9. Gold production involves multiple energy intensive processes including ore mining, crushing, milling and refining. Source: McKinsey Catalyst Zero, July 2022

⁵⁸ Green commodities may not be carbon neutral but are produced in an eco-friendly way with lower emissions

⁵⁹ Cramer, D., Smeets, B., Van Hoey, M., & Wiebes, E., The new imperative for green commodities, August 2022.

⁶⁰ Cotton made in Africa, CmiA Carbon Neutral: A New Initiative by the Aid by Trade Foundation for CO₂-Neutral Cotton, 2021

⁶¹ Africa Exports 2021; UN Comtrade (2021).

⁶² Companies' websites

⁶³ Gold production involves multiple energy intensive processes incl. ore mining, crushing, milling, and refining. Open pit mining is common in Africa as it is preferred in areas with lower grade ores. The World Bank and World Gold Council classify a high-quality underground mine as having a gold ore density between 8 and 10g/t, while a low-quality underground mine has a gold ore density of between 1 to 4g per tonne. In Africa, for example, Namibian gold ore averages 1.4g per tonne

up to ~170 Mt CO₂e, assuming 100 percent of emissions was curbed through decarbonization efforts or offset (for residual emissions).

Identification of the most relevant commodities to develop carbon neutral projects would require more in-depth analysis, especially in terms of feasibility to reduce direct CO₂e emissions. To ensure high integrity, commodities producers should indeed create carbon neutral commodities that lean first on the reduction of direct emissions before leveraging carbon credits to offset residual emissions.

Moreover, decarbonisation efforts could be combined with projects that involve more processing in Africa. For example, a recent BloombergNEF study has showed that the Democratic Republic of the Congo could leverage its abundant cobalt resources and hydroelectric power to become a low-cost and low-emissions producer of lithium-ion battery cathode precursor materials⁶⁴.

Proposed actions

ACMI proposes several actions to foster development and growth of African carbon neutral commodities.

1. **Conduct preliminary market-potential analysis** to help commodity suppliers understand the value of developing carbon-neutral commodities.

Potential partners: large commodity exporters on the continent, international buyers

2. **Showcase international and continental examples** of successful carbon neutral commodities projects and how they could be scalable / transferable to Africa.

Potential partners: international and continental project developers

3. **Work with standards organisations to ensure standards are applicable to Africa's key commodities**, promoting integrity, legitimacy, and adoption of standards.

Potential partners: Standards organisations

4. **Support the development of 2-3 flagship projects or pilots** focused on high potential carbon neutral commodities.

Potential partners: large commodity exporters on the continent, buyers ready to commit to purchase these carbon-neutral commodities

5. **Integrate carbon neutral commodities in country planning**, encouraging countries to identify and support a set of high-potential projects (*can be addressed under action programme 1*).

Action programme 9: Advocacy to build demand for African carbon credits

ACMI aims to build demand for African credits by ensuring that buyers and high integrity standards organizations understand and account for the unique value of African credits and by advocating for African credits to be more widely integrated into international compliance markets.

“Higher credit quality will help to build public and corporate confidence in carbon markets”

Advocacy for carbon credit quality, integrity and value for buyers – Context and opportunity

Carbon credits' quality and integrity is critical to ensure credits are legitimately contributing to achieving Paris Agreement goals. Higher credit quality will also help to build public and corporate confidence in carbon markets, increasing demand and growing market size.

Ever since the Kyoto protocol entered into force in 2005, marking the beginning of carbon trading, various organizations have sought to standardize and evaluate carbon credits. These include:

- Standards, like the Gold Standard (which launched for voluntary projects in 2006) or the Verified Carbon Standard (2007);
- Meta-standards, like the International Carbon Reduction & Offset Alliance (ICROA), which assesses standards (2008); or the recently launched Integrity Council for the Voluntary Carbon Markets (ICVCM), which sets benchmarks for quality credit types;
- Claims guidance providers, like the Voluntary Carbon Market Integrity (VCMI) Initiative, which provides guidance to organisations on the legitimate use of carbon credits and awards gold, silver, and bronze accreditations. Their guidelines require that organisations set a science-based net-zero target and reduce or mitigate emissions where possible before purchasing credits.

The number of organisations and principles in the space reflects the fact that norms around carbon credits are evolving rapidly. Several potential buyers have told ACMI that they're waiting to purchase carbon credits until there is more agreement on best practices.

It's crucial that standards evolve in a way that works for carbon markets in Africa. For example, many African countries are endowed with vast carbon sinks. Preventing the degradation of these areas could result in carbon credits to meet globally growing demand while avoiding the release of enormous amounts of carbon.

⁶⁴ BloombergNEF, "Producing Battery Materials in The DRC Could Lower Supply-Chain Emissions and Add Value to The Country's Cobalt", Nov. 2021

Standards need to rigorously maintain integrity without setting requirements that functionally make critical credit types, such as avoided deforestation, impossible to certify. Changing standards are also reflected in buyer preferences, such as the increasing preference for carbon removal credits over carbon avoidance credits and a growing momentum around innovative carbon removal technologies. This could negatively impact African credits where there is significant potential in avoidance credits and a need to protect forests and other large carbon sinks. There is a need to advocate for the value of high quality, high integrity avoided emissions credits from Africa.

Offsetting best practices should set a high bar for integrity while recognising the substantial climate benefits Africa is providing to the world, including through its natural carbon sinks and by pursuing a low carbon development pathway. The lack of climate finance flowing to Africa, and developing countries more broadly, is acknowledged by both developed and developing countries as a glaring climate injustice. It is crucial for the success of global climate action that carbon markets help to correct this imbalance rather than reinforce it.

ACMI will look to coordinate with and support recognized global initiatives (e.g., ICVCM, VCMI, SBTi) while ensuring these efforts adequately capture integrity and quality for African projects.

Advocacy for carbon credit quality and value for buyers – Proposed actions

Building understanding around the value of African credits will require outreach across the carbon markets ecosystem. ACMI thus proposes to:

- 1. Conduct roundtables and structured discussions with carbon market experts, international and local exchanges, and global buyers, to raise awareness of African credit types and understand current barriers that limit demand.** These roundtables should happen on a recurring basis and should take place on the continent, in different African countries. Currently, many of international climate-focused roundtables, discussions or conferences take place outside Africa.
- 2. Engage with global standards organisations to ensure that emerging guidelines on integrity appropriately value African credits** and support the development of African voluntary markets.

Advocacy for access to international compliance markets – Context and opportunity

Opening international compliance markets to African project developers and fostering bilateral country to country purchases can significantly scale demand for African credits. Currently, only a few compliance markets accept carbon credits generated outside of their jurisdiction including from Africa. South Korea's Emissions Trading System (ETS) allows up to 5 percent of obligations to be covered with carbon credits from domestic projects or from CDM projects where Korean companies participate. In California and Quebec's ETS, emitters can offset a small portion of their cap-and-trade obligations, and offsets can come from approved sector-based crediting programs⁶⁵. Carbon Offsetting and Reduction Scheme for International Aviation (CORSA) accepts the use of credits verified by Gold Standard, Verra, and several other standards to fulfil member airlines' carbon neutral growth commitments⁶⁶. Yet more than 50 other carbon pricing instruments operating today do not accept carbon credits. Furthermore, Africa has no local compliance markets, except in South Africa. South Africa's carbon tax was introduced in 2019 and as of 2022, the tax rate was R144 (~US\$8-9 per tonne)⁶⁷. Up to 10 percent of carbon tax obligations may be covered with carbon credits from domestic projects that follow CDM, Verra, or Gold Standard methodologies.

Africa also hasn't fully explored bilateral country deals to create additional demand for its carbon credits. In 2021, Switzerland signed a climate change mitigation agreement under the Paris Agreement with Senegal and Ghana⁶⁸. The deal includes the transfer of mitigation outcomes to Switzerland to help it meet its national target under the Paris Agreement in return for Switzerland's support for implementing climate change mitigation projects in West African countries. Such bilateral deals can help other African countries strengthen their climate financing and VCM.

Opening access for African suppliers to sell into the global compliance markets can significantly boost demand for African credits. For example, in 2021 alone, the EU ETS traded more than 1,300 MtCO₂e emission units⁶⁹—enabling access to even a tiny portion of this market could create a vast opportunity for project developers across Africa. Furthermore, compliance markets often have floor prices that can help mitigate the price fluctuations in the voluntary carbon market, increase market confidence and unlock more financing.

⁶⁵ The World Bank, "State and Trends of Carbon Pricing 2022", May 2022

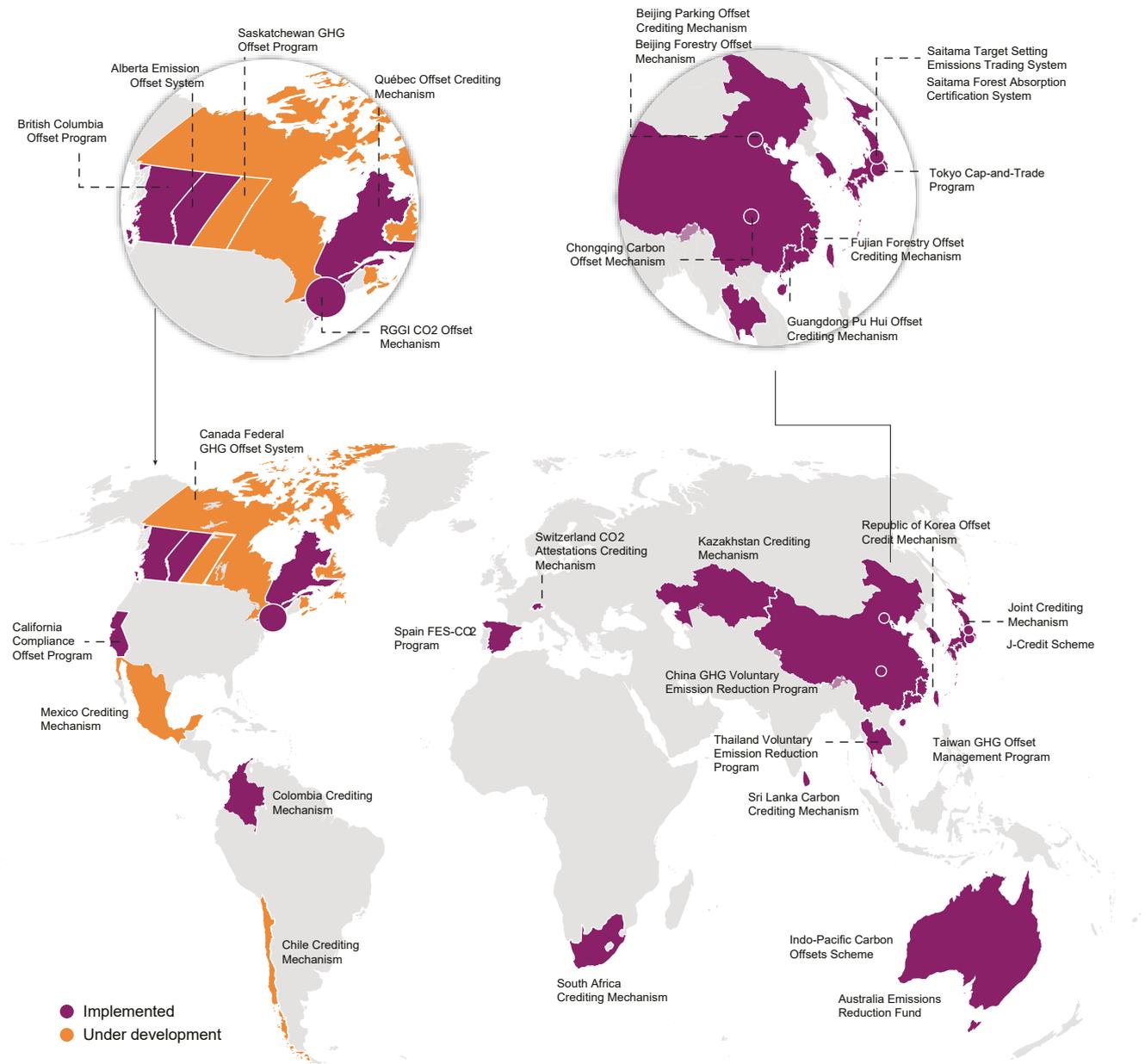
⁶⁶ International Civil Aviation Organization, CORSIA Eligible Emissions Units, Nov. 2020

⁶⁷ National Treasury, Republic of South Africa, Budget 2022 Speech

⁶⁸ Foundation for Climate Protection and Carbon Offset KliiK, "West Africa strengthens international cooperation for climate change mitigation", July 2021

⁶⁹ European Environmental Agency (2022)

Exhibit: Overview of compliance markets that allow carbon credits



Source: The World Bank, "State and Trends of Carbon Pricing 2022", May 2022

Advocacy for access to international compliance markets – Proposed actions

ACMI proposes several actions to advocate for access to international compliance markets.

- 1. Advocate and engage directly with decision-makers to build lasting, global demand for African credits by opening access to international compliance markets.** Advocacy is also important to raise awareness and ensure Africa unlocks the full potential of bilateral deals and Global South-North collaboration on climate change mitigation under the Paris Agreement.
- 2. Convene experts to establish best practices for how compliance markets can, with high integrity, incorporate international carbon credits.** Giving regulators more comfort in how to ensure international carbon credits are high quality would eliminate a major barrier to market integration.
- 3. Create transparency and awareness among African project developers on the requirements of the different compliance markets,** for them to be able to design projects accordingly.

Action programme 10: Piloting of new project types and methodologies relevant to decarbonisation opportunities in Africa

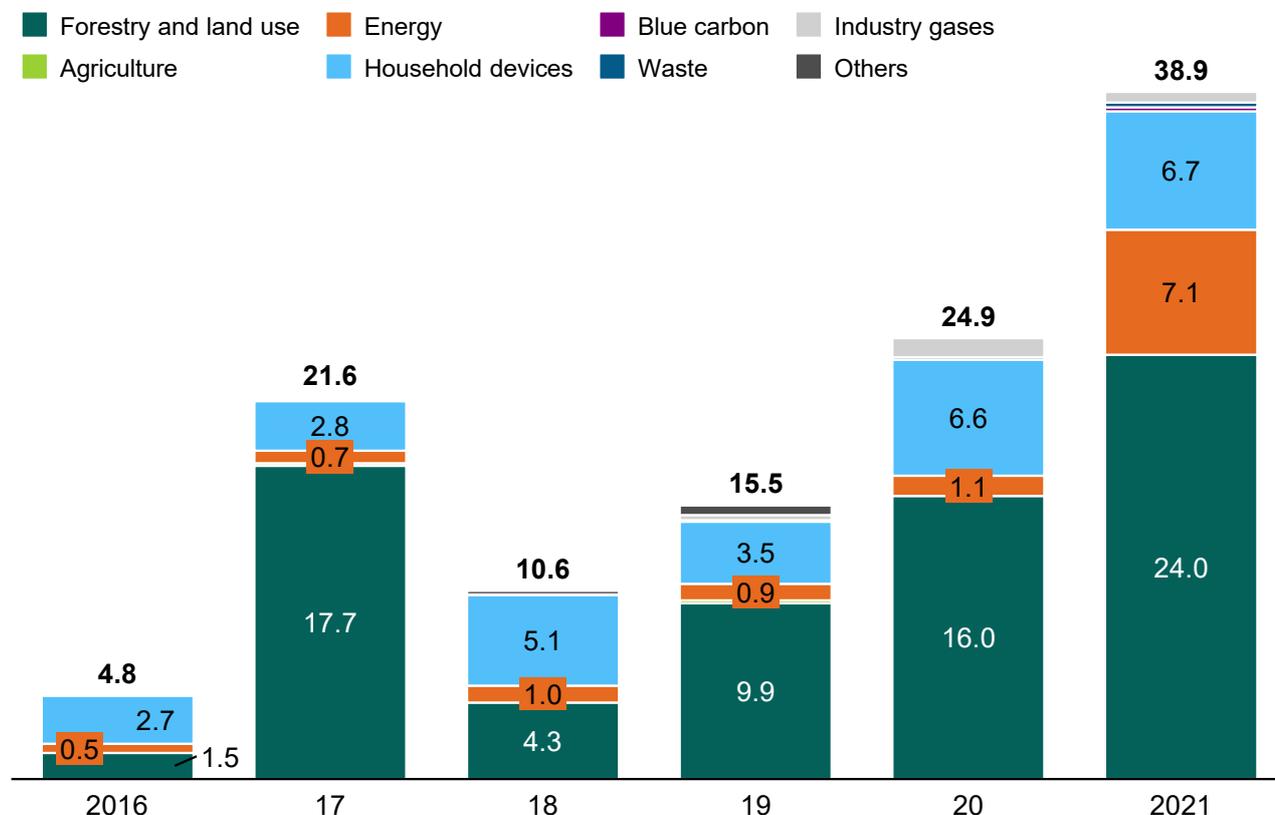
Context

As previously mentioned, carbon credit projects in Africa have been mainly focused on forestry and land use, renewable energy and household devices (more than 95 percent of credits issued over 2016-2022⁷⁰). Although there is a significant potential to further scale and develop these types of projects, they don't account for the full potential for carbon credit generation on the continent.

To better capture specific decarbonisation opportunities on the continent, new types of projects could be developed across multiple sectors (e.g., renewable energy, waste management, engineered carbon dioxide removals, transport, agriculture and soil sequestration, livestock, blue carbon), as well as methodologies that are better adapted to the local context.

In particular, fossil fuel displacement via distributed renewable energy (DRE), coal decommissioning and savannah grasslands fire management projects are good examples of Africa's specific decarbonisation opportunities.

Exhibit: Africa total credit issuances by project type, by year, MtCO₂e



Source: Vivid Economics carbon credit database including data from Verra, Gold Standard, and Plan Vivo registries

⁷⁰ McKinsey Vivid Economics Carbon Credit Database, drawing on Verra, Gold Standard, ACR, CAR, Plan Vivo. (2022)

Exhibit: Potential diversified projects types and methodologies for Africa (non exhaustive)

Methodologies	Opportunity space	Additionality	Permanence	Leakage prevention	Co-benefits
Fossil fuel displacement through distributed renewable energy (DRE)	Promote off-grid technologies to reduce carbon emissions from fossil fuel power sources	⚠️ Depending on the country, off-grid systems may already be deployed (or planned for deployment) as part of efforts to extend electricity access	n/a, no storage	✅ No leakage expected	Improved access to electricity, health benefits and energy transition support
Coal decommissioning	Accelerate coal decommissioning efforts	⚠️ Accelerating plans to decommission emission intensive coal power could be enabled via carbon credit revenue; May depend on current limiting factors for accelerated decommissioning	n/a, no storage	⚠️ Dependent on energy sources selected to substitute coal power plants	Energy transition support and associated health benefits Need to consider income and job implications due to accelerated decommissioning
Savannah grasslands fire management	Implement fire management for savannah landscapes	✅ Carbon credit revenue would be the sole financial incentive for better savannah grassland fire management practices	⚠️ Better fire management practices may be reversed and saved CO2 emitted to the atmosphere (e.g., by fire)	✅ No leakage expected	Employment opportunities (esp. for local communities) and biodiversity protection

Opportunity and proposed actions to encourage fossil fuel displacement via distributed renewable energy (DRE) projects

In Western Africa, petrol and diesel generators provide up to the equivalent of 40 percent of grid capacity. These generators are expensive, inefficient and produce significant CO2 emissions (e.g., up to 30 percent of CO2 emissions in Nigeria)⁷¹.

Carbon revenues can finance projects to expand distributed renewable energy solutions to displace fossil fuel generators at the point of use for households and businesses, as well as expand access to clean and reliable electricity. For example, in Nigeria alone there is an estimated annual maximum technical potential of ~20 Mt CO2e from the displacement of fossil fuel generators.

There is no meaningful precedent for DRE-related carbon revenues in Africa. This is largely driven by a lack of awareness and lack of clarity on pathways to certify DRE projects for carbon credit generation.

ACMI proposes to expand opportunities to obtain carbon credits for the displacement of fossil fuels and deployment of DRE solutions through three main actions.

1. Work with standards organisations to clarify certification pathways for DRE projects:

Standards organisations have different requirements for renewable energy projects, including countries and types of projects eligible for certification. There is a need to clarify existing methodologies that provide a pathway to certify and register DRE projects. Moreover, should it be required, standards organisations could collaborate with on-the-ground DRE project developers to develop new, fit-for-purpose methodologies that better reflect the realities of DRE deployment and fossil fuel decommissioning in Africa.

Potential partners: standards organizations, ~1-2 pilot project developers

2. Call for project developers to pilot a new methodology: Once a pathway to validation/verification is identified in collaboration with standards organisations, there is a need to pilot the mechanism with 1-2 existing on-the-ground project developers.

Potential partners: ~1-2 pilot project developers

3. Set up aggregation mechanisms for small-scale developers to achieve the scale of emissions avoidance required for credit issuance: Historically, DRE deployment has been pursued at small scale

⁷¹ International Finance Corporation, The Dirty Footprint of the Broken Grid, 2019

(e.g., deployment one household at a time) which limits project developers' ability to generate carbon credits. Some existing business models (e.g., project finance through special purpose vehicles) or support models (e.g., grant mechanisms through donor support) could potentially be utilized to aggregate projects to a larger scale.

Potential partners: funder organisations, energy-related aggregation mechanisms already in operation (e.g., aggregation of financing), project developers

- 4. Support the development of automated monitoring capabilities:** Certification of carbon credit-generating projects can involve time-consuming manual reporting and auditing if the project developer does not have data capabilities to track usage of DRE systems. Automated monitoring capabilities could be developed to enable project developers to continuously validate impact in a cost-effective way. Monitoring processes should be developed in collaboration with international standards and integrity bodies to ensure high integrity of DRE carbon credits.

Potential partners: funder organisations, large-scale energy focused NGOs, technical assistance providers, project developers, international standards organisations, integrity bodies

Project example: SunCulture (off-grid solar technology-based irrigation and power provider)

Climate change and unpredictable rainfall results in limited access to water and lower yields for African smallholder farmers who must resort to cheap fuel pumps, thus perpetuating climate change further. SunCulture breaks the current vicious circle by introducing solar irrigation. The purchase of carbon credits helps to enable this by lowering the cost of solar irrigation to a price below existing diesel and petrol water pumps. The accompanying co-benefits of the project touch on 13 Sustainable Development Goals (SDGs).

Opportunity and proposed actions to develop coal decommissioning projects in Africa

Accelerated coal decommissioning in Africa (particularly South Africa) could potentially benefit from carbon credit revenues (or other innovative products), as thermal generation capacity is replaced with renewable energy generating projects in the region (e.g., leverage hydroelectric power plants in Mozambique). South Africa's electricity capacity is primarily coal-based (~80 percent). South Africa is the 14th largest CO₂ emitter in the world (452 Mt CO₂ in 2020), responsible for 1.3 percent of total emissions, and the power sector accounts for ~45 percent of South Africa's emissions⁷².

In September 2021, the Government of South Africa submitted its updated Nationally Determined Contribution (NDC) which aims to reduce all greenhouse gas emissions to 366-436 MtCO₂e per annum⁷³. For South Africa to meet emissions reductions goals, the Government would likely need to retire plants earlier than the timeline established in its 2019 power sector blueprint, the Integrated Resource Plan (IRP). Carbon credits could potentially be utilized to finance large-scale emissions avoidance projects that expand access to clean and reliable electricity through early decommissioning of coal power stations.

ACMI proposes to assess the development of a pathway for carbon credit revenues (or other innovative products) for coal decommissioning, through three actions.

- 1. Convene working groups** that have been focusing on this topic to join efforts in assessing the most appropriate way to address coal decommissioning (i.e., carbon credits or alternatives) and conduct a detailed assessment of the financial and non-financial additionality of a coal decommissioning project.

Potential partners: Experts, coal plant operators, renewable energy project developers

- 2. Potentially identify a pilot project** and collaborate with standards organisations to develop a dedicated methodology for coal decommissioning

Potential partners: standards organisations, ~1-2 pilot project developers

- 3. Encourage expansion of renewable energy capacity** to enable accelerated coal decommissioning (whether locally or in neighbouring countries).

Potential partners: national entities (e.g., ministries of energy), renewable energy project developers

⁷² CSIR "Setting up for 2020s", Conference Publication, Wright Jarrad G, Calitz Joanne R, 2020; Eskom, Annual Reports, 2021; Enerdata Global Energy and CO₂ Database, consulted in December 2021

⁷³ South Africa's Revised NDC, 2021

Opportunity and proposed actions to develop savannah fire management projects in Africa

Savannah fire management is based on the observation that fires in the early dry season burn cooler and emit relatively fewer emissions than late dry season fires. Thus, by shifting fire regimes to earlier in the dry season, there is an opportunity to lower carbon emissions and thus generate carbon revenue, especially towards the financing of protected areas. Moreover, improved fire management can reinforce ecosystem resilience and reduce threats to biodiversity.

Australia is the only country to have issued savannah fire management carbon credits so far, with ~10 MtCO₂e of emissions avoided since 2013 across approximately one hundred projects. Australia has defined requirements for savannah burning projects: project areas must fall in government mapped high rainfall areas (>600mm per annum) and include specified fuel types; annual project management plans must be prepared before burning; projects should use a specific tool to calculate emissions abatement of long-lived greenhouse gases including methane and nitrous oxide (SavBAT 3, Savannah Burning Abatement Tool developed by the Emissions Reduction Fund); and projects must apply for Australian Carbon Credit Units via the ERF client portal⁷⁴. Australian projects are driven by several organisations including ALFA NT (Arnhem Land Fire Abatement Northern Territory), an organisation created by Aboriginal landowners to support their engagement in the carbon industry⁷⁵.

Some of the countries with the greatest carbon abatement potential through savannah fire management worldwide are in Africa: Zambia, Tanzania, Mozambique, Central African Republic, Angola, Botswana, DRC, Zimbabwe, South Sudan, and Namibia. Together these countries have a potential of ~80 MtCO₂e per annum (50 percent of the global abatement potential estimated to range between 150 and 180 MtCO₂e per annum⁷⁶).

To capture this potential for Africa, ACMI proposes several actions.

1. **Clarify existing methodologies or develop a new methodology with a standards organisation** to certify savannah fire management projects in Africa and launch an associated pilot project.

Potential partners: standards organisations, ~1-2 pilot project developers

2. **Create a working group to support the development of carbon projects** through savannah fire management by advocating with international organisations for the need to invest, establishing guidelines on best practices, providing

technical support to local project developers, and incubating early-stage projects (*in collaboration with action programme 2*).

Potential partners: experts (e.g., Australian project-developers), accelerator / incubator to support high-potential nascent project types (*cf. action programme 2*).

Beyond these 3 examples, other opportunities need to be explored (e.g., livestock methane reduction).

Action programme 11: Establishment of a biodiversity / nature credit model

Context

VCMs can be an effective mechanism to support equitable economic development and enable Africa's large natural capital endowment and its associated global climate benefits to be sustainably monetised by communities without depleting it. However, carbon absorption and storage is but one of many ecosystem services that nature provides, other benefits range from filtering freshwater, pollinating crops, to harbouring biodiversity that may yield future scientific discoveries and pharmacological advances.

With nature degraded and under threat in many places, conservation and restoration efforts are now more critical than ever. Increased and sustained funding of such efforts is necessary, especially in developing economies. Given the biodiversity hotspots present in African countries, and the global biodiversity crisis, investments in conservation work that protects and restores nature need to be prioritized as a complementary solution to carbon credits.

VCMs offer funding for some conservation and restoration efforts that qualify as Natural Capital Solutions, such as REDD+ projects (Reducing Emissions from Deforestation and forest Degradation, including conservation, sustainable management of forests and enhancement of forest carbon stocks). However, many critically important nature conservation efforts do not easily, or at all, qualify for VCMs funding. For example, there are limited pathways (e.g., ART TREES 2.0 is one of only a few options) for carbon credit production for forests in high forest cover, low deforestation rate countries. These forests could be better monetized by layering other mechanisms on top of carbon credits. Other ecosystems, such as coral reefs may not currently provide any carbon benefits yet provide essential ecosystem services and require support.

The lack of adequate global funding support for valuable conservation poses a risk especially for countries looking to accelerate economic growth, where conservation may be perceived to be an obstacle to such growth. Nature

⁷⁴ Australian Government ERF

⁷⁵ ALFA NT

⁷⁶ McKinsey Nature Analytics/ACRE, 2022

protection is key, but conservation must be balanced with human needs. Rewarding and financing ecosystem protection is critical to enable continued conservation alongside sustainable economic development.

Conservation projects and other stakeholders around the world have been innovating in different ways to overcome this challenge and ensure fair reward for both the carbon benefits and the biodiversity benefits provided by protecting natural capital. Simultaneously, corporates are beginning to recognize the importance of a nature-positive footprint, in addition to climate targets. They are eager to make global commitments but have no transparent mechanism to help them evaluate and act on these commitments.

Building on existing efforts, a new system to quantify nature contributions, in the same way that carbon credits have enabled VCMs, could unlock financing for high-quality nature conservation efforts implemented by local communities and countries across Africa and the world.

Such a standard, a definition of a biodiversity/nature credit, would help high-quality conservation projects monetise their contributions to global nature targets. These credits could provide corporates with a verified channel to invest in nature and implement nature positive goals in conjunction with emissions reductions targets. Creating a readily accessible and easy-to-understand credit can appeal to new actors and increase the volume and accountability of funding for nature conservation. This would support additional income potential for existing carbon and non-carbon conservation projects and enable equitable economic development for the communities involved.

Challenges

Nature conservation in Africa faces several critical challenges.

- Some good conservation projects are not rewarded as they cannot prove additionality: impactful ecosystem protection projects are often excluded from carbon credit financing due to low-deforestation rates in their countries and lack of evidence of additionality.
- Unequal burden placed on local communities: individual communities are facing a choice between continued protection of nature with limited economic benefit or leaving the conservation space in search of better financial opportunity; this trade-off between conservation and economic development needs to be addressed.
- Lack of recognition of the global public service to nature by African nations: many countries are protecting nature that benefits not only the local, but the global community, often at the expense of their own economic development.
- Limited funding options for critical ecosystems: governments currently funding the protection of critical ecosystems receive little to no external funding for this; without additional revenue sources, these ecosystems risk being sold as resources to companies and other developers, resulting in further biodiversity loss.
- Volatile funding of nature protection for many national parks: the dependence of national parks on ecotourism to cover their operation and conservation costs (such as anti-poaching patrols) risks loss of funding for critical conservation work when travel limitations prevent tourism.

Opportunity

A biodiversity/nature credit could be developed as a finance mechanism to bridge the gap between conservation projects, carbon credits and corporates. High-quality projects could monetize their contributions towards global nature targets by selling “credits” for their work, whether bundled with carbon credits or sold as a standalone product. Corporates could then purchase these “credits” as a tool to invest in meeting nature and biodiversity targets. By verifying credits with a third party, credits are guaranteed to be the result of effective and equitable conservation work. This ensures corporates have a reliable mechanism for their funding.

Core elements are needed within the biodiversity/nature credit to ensure the needs of Africa are met.

- Credits need to ensure inclusion of Indigenous Peoples and Local Communities in conservation work. Economic benefits from conservation work, including part of the funding from credits' sales need to be channelled back into these communities to ensure operations are equitable and just.
- Credits should be applicable across ecosystems. Africa has diverse ecosystems from tropical rainforests, to savannahs, to critical marine coastlines that require protection. Conservation work across geographies and ecosystems should qualify for biodiversity/nature credits.
- Funding should go directly to the on-the-ground teams protecting nature. While a small portion of the funds from the sale of the credits would go towards funding the system, the majority (80-90 percent) of proceeds from the sale need to go directly to the teams doing the work.
- Projects should not have to follow all the same requirements seen in the voluntary carbon markets. Additionality should be defined differently for nature credits, given that they are not used as carbon offsets. The aim needs to be rewarding good conservation work whether standalone or in conjunction with carbon credits. Nature-positive countries should qualify as easily as countries engaging in restoration and re-wilding projects.

- A methodology validated by leading experts in Africa needs to be followed before projects can receive accreditation. Corporate buyers want to know that they are directly funding good conservation work, thus a process is required to check that the projects are protecting and/or restoring nature holistically and with a net-positive impact.
- Over time verification capacity for accreditation should be developed and provided locally at country level – ensuring jobs and skills development.
- Collaboration should be central. The biodiversity/nature credit should focus on collaboration with scientists, governments, funders, and Indigenous Peoples and Local Communities. While this is central within the operating model, this should extend to the development of the credit to ensure all voices are equally heard.

Proposed actions

ACMI believes several actions could help develop a biodiversity/nature credit.

1. **Set up a consortium of players** including conservationists, standard setters, and nature analytics organisations to develop the first biodiversity/nature credit.
2. **Define and pilot a methodology** for verifying conservation efforts: identifying a few pilot projects in different ecosystems (e.g., savannah grasslands vs. rainforest), countries and regions will provide the basis to test and evolve a relevant methodology.
3. **Conduct interviews and focus groups with potential corporate buyers** to validate credit pricing and marketing.
4. **Launch the first biodiversity/nature credit.**

Action programme 12: Identification of long-term, innovative financing models for critical geographic areas

Context and opportunity

In conjunction with carbon credits, Africa may need to leverage a larger set of innovative financing solutions or products to secure long-term financing for critical geographic areas (e.g., Congo basin, coral reef, mangroves). Conservation areas do not always qualify for carbon credits as they may not contain significant carbon absorption or stocks or fail to meet additional requirements. Given this, there is a need for alternative financing mechanisms to complement carbon credits. These financing mechanisms can be bundled with carbon credits for certain geographies to monetise not only the reduction in carbon emissions (especially

avoided deforestation) but also general conservation benefits. Products can also be used in conjunction with carbon credits (e.g., if one portion of a project is eligible for carbon credits but the remaining portion may be better suited by an alternative product). Finally, these products can stand alone. For example, if conserved land stops generating carbon credits, it could be transitioned to use an alternative financing instrument.

A wide array of financing instruments for nature protection beyond carbon credits exist today and can be broken down into 4 archetypes:

- Grant-based instruments include government budget allocations, philanthropic grants, Official Development Assistance (ODA), including results-based ODA and Project Finance for Permanence (PFP), crowdfunding, and debt-for-nature-swaps. These instruments focus primarily on the ecological impact of their donations and require a minimum level of governance to report on the results. Conservation finance is still dominated by grants-based instruments, mainly through government budgets and ODA (for developing countries). Philanthropy and NGOs also play a critical role in funding protected areas. There are strong trends towards results-based financing and use of public funding to leverage private finance.
- Investment-based instruments include blended finance, bonds, including impact bonds and bonds linked to specific ecosystems, and Public Private Partnerships (PPP). These instruments are designed to channel public capital or private capital (or a combination of both) toward projects with potential to generate both financial returns and positive social or environmental impacts. They require strong ability to monitor impact and report on use of funds. Most of them are still underrepresented in nature protection finance and need to be proven at scale.
- Ecosystem value-based instruments include sustainable use fees, payment for ecosystem services (PES) and insurance premium discounts. These instruments are based on the monetisation of sustainable ecosystem value while targeting self-sustaining returns. For example, ecotourism-derived fees are a critical source of income for many projects yet decreased dramatically during periods affected by travel restrictions. Levies and other PES mechanisms can work well at a local level but remain to be proven at a global scale.
- Compensation-based instruments include eco-taxes, extractive fees, royalties and permits, as well as regulatory offset schemes for ecosystem impacts. These instruments enable voluntary or compulsory compensation for actual or potential negative environmental impacts. They are often used to complement other funding sources.

Some of these financing instruments have been deployed at scale to protect critical geographic areas in the long run. For example, the Seychelles was left with substantial debts following the 2008 financial crisis, creating significant barriers for investments in its marine and coastal assets. In 2015, the Seychelles pursued an ambitious plan to finance sustainable development of

the Blue Economy, through converting \$21.6 million of national debt via the world's first Blue Economy debt for nature swap, mobilising capital for marine conservation⁷⁷.

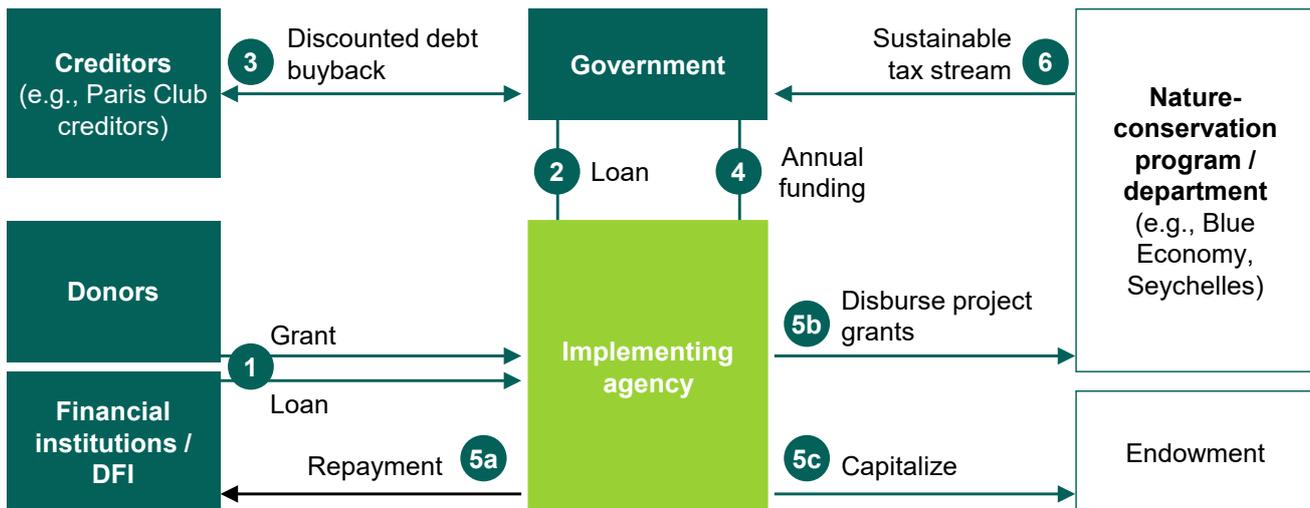
Exhibit: Overview of nature financing instruments, beyond carbon credits (non exhaustive)

Type of funding	Financing instrument	Description	Noteworthy examples
Grant-based	Domestic government budget allocations	Direct budgetary provisions for nature protection by domestic governments	
	Philanthropic grants	Charitable grants provided by NGOs or wealthy individuals	
	ODA, incl. climate finance	Government aid programs and climate finance targeted at nature protection	
	Results-based ODA	Form of ODA where results are defined in advance and subject to an independent verification process and funding is only released upon the achievement of these results	GCF provided \$100M to Indonesia REDD+ program
	Project Finance for Permanence (PFP)	Project financing approach in which sources of financing are contingent on other critical elements of the project being in place, only released simultaneously at closing of deal	\$140M PFP deal to protect 167,000 km2 of Peruvian Amazon in 2019
	Crowdfunding	Raising typically small individual amounts of money, either donations or investments, from a large number of people via online platforms	Numerous crowdfunding campaigns to protect endangered species
Investment-based	Debt for nature swap	Instrument that reduces or restructures a developing country's debt in exchange for commitments to protect nature, often facilitated by NGOs	Seychelles debt for nature swap in 2015 resulted in \$1.4M of debt relief and \$5M in donor grants
	Blended finance funds	Combining capital from investors with different risk/return profiles in a single fund to increase investment in sustainable development	Investment of the Urapi Sustainable Land Use Fund into the Sierra Nevada Project, Colombia in 2020
	Bonds and loans	Debt instrument for projects that yield environmental benefits as well as cashflows to repay capital and interest. Can include sovereign, project and corporate bonds	Seychelles government raised \$15M through blue bonds in 2018
Ecosystem value-based	Public Private Partnership (PPP)	Contract between a government and a private party given some level of conservation management responsibility, in which remuneration is typically linked to performance	PPP partnership in 2017 in Mozambique, concession to African Parks to manage Bazaruto Archipelago National Park
	Levy on sustainable use	Collection of levy from those who affect the environment by the means of nature use	
	Payment for ecosystem services (PES)	System that enables financial compensation for undertaking actions that ensures or increases the provision of ecosystem services to beneficiaries	Great Barrier Reef Credit Scheme established in 2020
Compensation-based	Insurance premium discount	Arrangement to monetize the value that natural ecosystems provide in terms of reducing the risk of insured losses (e.g., coastal property storm damage)	AXA XL assessment of flood-risk reduction by restoration & protection of mangroves across the Caribbean
	Eco-taxes	Ecological taxes levied on activities that are considered harmful to the natural environment	
	Extractive fees, royalties, permits	Fees, royalties and permits targeted directly at users both commercial and private users of nature	
	Regulatory offset schemes	Financing protection & restoration of ecosystems via mandatory or voluntary compensation of non-point pollution or nearby ecosystem damage	BIOFUND biodiversity offset scheme in Mozambique

Sources: WWF and ASL, Securing Sustainable Financing for Conservation areas; Biofund; The Commonwealth, Case Study: Innovative Financing – Debt for Conservation Swap, Seychelles' Conservation and Climate Adaptation Trust and the Blue Bonds Plan, Seychelles (on-going); Press search

⁷⁷ The Commonwealth, Case Study: Innovative Financing – Debt for Conservation Swap, Seychelles' Conservation and Climate Adaptation Trust and the Blue Bonds Plan, Seychelles (on-going)

Figure 1: Illustrative debt for nature swap structure



Source: Press search, reports: Convergence; TNC

Proposed actions

All these mechanisms have different potential and implications. Some of these mechanisms have a high potential to attract additional funding, such as PFP, green and blue bonds and PPP. These instruments have been designed to mobilise funding from various sources, which require an intermediary or a lead operating partner to manage the negotiation process and the financial structuring (e.g., blended finance funds). Other instruments such as PES and eco-taxes require regulatory interventions to establish the basis of the financing scheme.

ACMI proposes to work with countries, project developers and potential funding partners (e.g., funds, conservation agencies, financial institutions, corporates) to:

1. **Raise awareness and spread understanding** of the different existing mechanisms and their implications, to help governments and communities identify what instruments are the most relevant to their situation and to the asset they are trying to protect;
2. **Identify 3-4 key geographic areas on the continent that are eligible for new projects leveraging alternative financing mechanisms and support the launch** of such projects.

Action programme 13: Ensuring integrity of carbon markets

Integrity is essential to ensuring that voluntary carbon markets drive real climate action and achieve meaningful scale. The market will only continue to grow if the public trusts that carbon credits are genuinely contributing to emissions reductions. Building a high integrity carbon market requires building integrity into each stage of the value chain.

“Carbon standards play a critical role setting the rules to assess integrity of carbon credits”

Integrity in supply

High integrity credits begin with high integrity suppliers. The evaluation of carbon projects requires accurate, transparent reporting by developers. Suppliers should be transparent not just in their technical reporting during project verification, but also in the information they provide to buyers and the public about the social benefits a project provides, including the portion of project revenues that benefit local communities.

Carbon standards play a critical role setting the rules to assess integrity of carbon credits, and over the past few decades, standards organisations have slowly improved their rigor. The ICVCM’s Core Carbon Principles (CCPs), currently in draft form, have the potential to push standards to a new level of rigor and could significantly raise the bar for what is acceptable as a carbon credit. The draft CCPs include ten principles, such as additionality, programme governance, and robust quantification of emissions reductions, as well

as an assessment framework for evaluating a crediting programme against the principles. For example, the framework lists eight criteria for evaluating additionality, including financial attractiveness, legal requirements, and expectation of carbon credits⁷⁸.

Integrity in intermediation

Carbon credit exchanges and brokers also have a role to play in integrity by setting standards for the quality of credits traded and the information sellers are required to provide. ACMI proposes that exchanges and brokers support integrity by adhering to a few core principles such as (1) requiring transparency around carbon credit revenues and the portion that benefits local communities; (2) requiring disclosure of the data that purchasers need to make an informed decision on integrity, including compliance with the ICVCM guidelines; (3) setting minimum integrity guidelines for traded credits.

Integrity in demand

Buyers have several critical roles to play in upholding the integrity of voluntary carbon markets. First, buyers' demands will strongly influence the kind and quality of credits produced. However, buyers also need to recognise that higher integrity credits will cost more. Indeed, almost by definition, credits are only likely to be truly additional if the price is sufficiently high—otherwise

it's unlikely that carbon credit revenue was instrumental in a project's success.

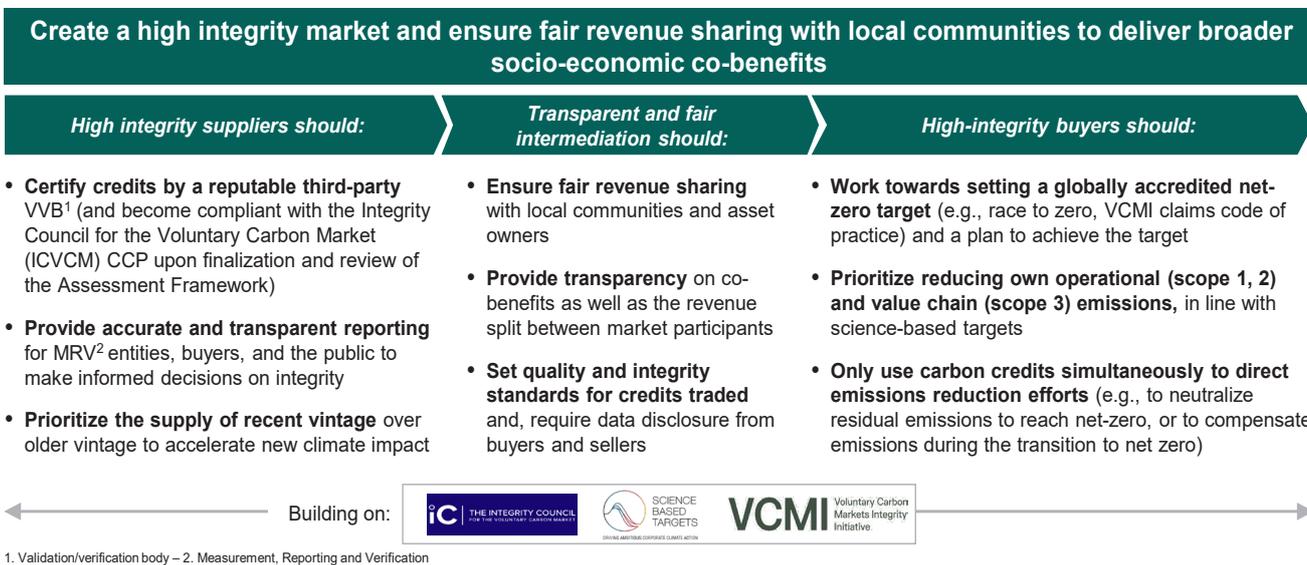
Another element of integrity is how credits are used. This begins with setting a credible goal for emissions reductions, ideally with a net-zero, science-based target, and reporting publicly on progress.

In addition, companies should use carbon credits as a supplement—not an alternative—to reducing emissions from their operations and value chain. Credits should primarily be used to neutralise residual emissions to reach net-zero, or as a temporary solution during the transition to net-zero.

Proposed actions

ACMI aims to coordinate with, and support established, recognised global standards and integrity organisations—such as the ICVCM, VCMI SBTi—and to implement these standards in its programmes. ACMI will also push carbon standards to ensure that, as the bar for integrity increases, their methodologies accurately account for the unique aspects of African credits. ACMI is committed to building a high-integrity voluntary carbon market and will build integrity concerns into all thirteen action programmes.

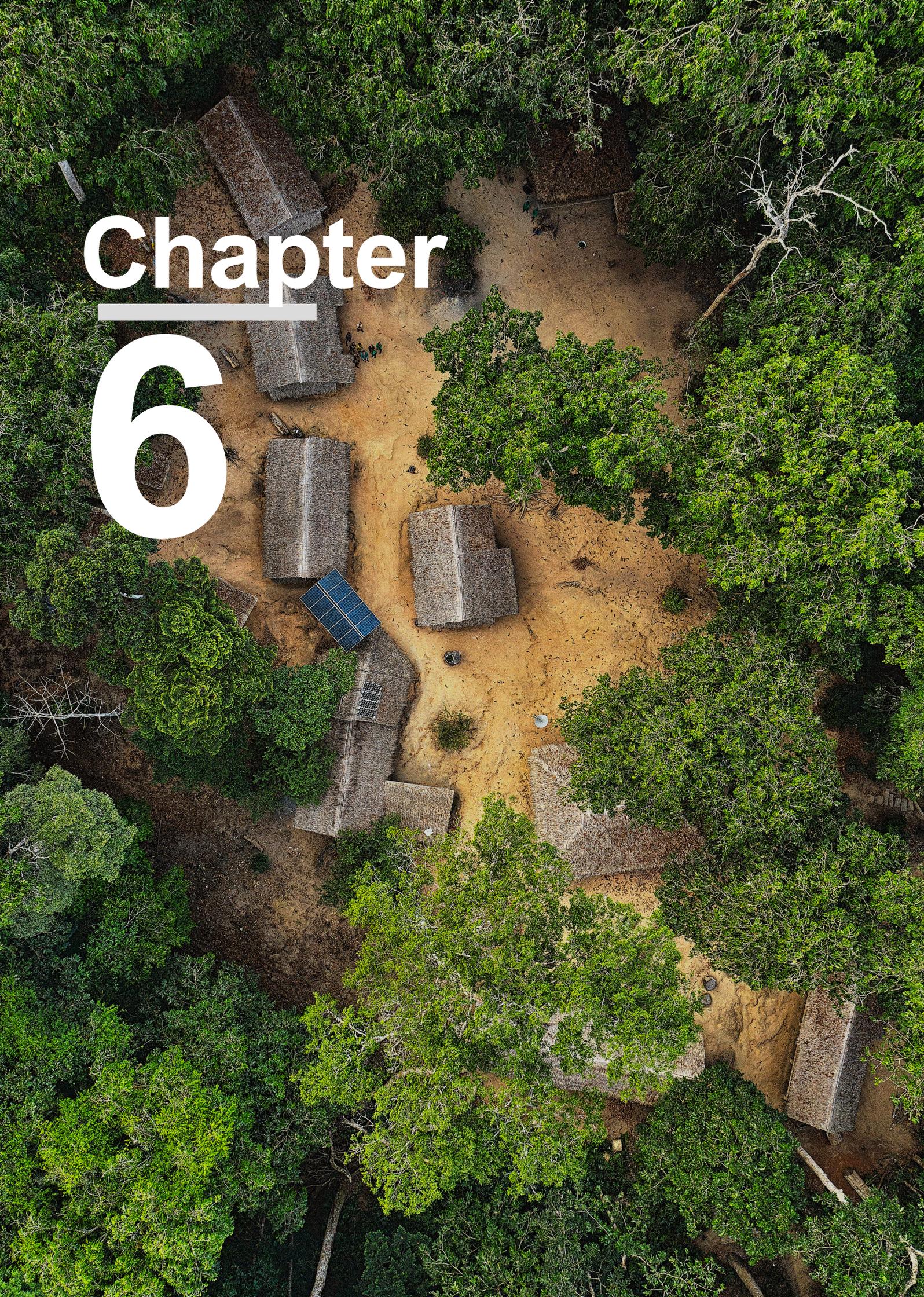
Exhibit: The Principles of ACMI



⁷⁸ Integrity Council for the Voluntary Carbon Market CCP publication

Chapter

6



Chapter 6: Next steps for ACMI over the next 24+ months

To summarise, ACMI has identified a set of action programmes to help unlock the potential of voluntary carbon credits in Africa. These include the mobilisation of supply and demand through active outreach and technical assistance activities for project developers, boosting available financing mechanisms, promoting quality and integrity via intermediaries, convening African and international corporations to develop an advance market commitment for African carbon credits, adapting methodologies to better fit an African context, advocating for increased global demand for African carbon credits and other products (e.g., biodiversity/nature credit), and ensuring integrity along the end to end value chain. Furthermore, ACMI proposes to collaborate with African governments to build an enabling environment for carbon credit production. There is also a need to mobilise key stakeholders such as funding partners, technical assistance providers, financial institutions, standard providers, VVBs and carbon credit exchanges and marketplaces to promote the development of VCMs in Africa.

Over the next 24+ months, ACMI will focus on refining these action programmes and establishing a more detailed plan to progress towards its ambition to grow African credit retirements to ~300 MtCO₂e by 2030 while ensuring equitable and transparent distribution of revenue, supporting jobs, and raising the quality and integrity of African carbon credits.

ACMI will also call for partners to endorse and support the proposed actions, and to lead specific programmes (e.g., technical facilitation programme focused on reducing barriers to entry for carbon credit certification for project developers in Africa, accelerator to support high-potential nascent project types, continent-wide coalition to support agroforestry).

Through this roadmap, ACMI aims to drive the development of a vibrant and robust voluntary carbon market in Africa over the next decades, with the ambition to significantly grow African carbon credits retirements to ~300 MtCO₂e by 2030, create millions of jobs, ensure the quality and integrity of African carbon credits and provide equitable and transparent distribution of revenues with a significant portion going to local communities. ACMI aims to inspire a broad mobilization of stakeholders across the continent and overseas, to achieve collaboration and synergies towards an ambitious and impactful common goal.

Exhibit: Proposed next steps for ACMI post COP 27

● Directly related action programme ○ Indirectly supported action programme

Refine roadmap	Conduct a public consultation to collect comments and refine the proposed roadmap accordingly	All
	Conduct additional deep-dive analysis on selected topics (e.g., guidelines for smallholder farmers agroforestry, market-potential analysis for selected carbon neutral commodities, biodiversity credit pricing and marketing)	All
Pursue support to governments	<p>Support interested governments in the development of VCM activation plans</p> <ul style="list-style-type: none"> • Provide supporting material to help countries understand potential benefits of VCM • Provide a blueprint for the development of national VCM plans and help countries define their ambitions for VCM over the next years • Connect countries with technical assistance providers and funding partners to support implementation of national VCM activation plans 	1
Build African carbon credit projects supply	Conduct active reach out and sensitization activities to mobilize developers to scale up existing or develop new projects, especially focusing on differentiated project types and relevant aggregation mechanisms	2 3 8 10 11
	Support the development of flagship projects / pilots , especially on new/nascent methodologies that are especially relevant for Africa (e.g., agroforestry projects involving smallholder agriculture and community forestry, fossil fuel displacement via DRE, savannah fire management, biodiversity / nature credit)	3 8 10 11
	Collaborate with VVBs and other stakeholders (national/ domestic members of the International Accreditation Forum, universities) to scale-up validation/verification capacity on the continent	4
	Advocate for governments to support project development through reinforced technical assistance to project developers, data-sharing to build Africa data baseline, creation of incentives for local financial institutions to fund carbon projects development, and detail best practices to support specific project types (e.g., agroforestry, carbon-neutral commodities, coal decommissioning – especially by expanding renewable energy capacity)	2 3 6 8 10 11
Mobilize financing and demand	Encourage financial institutions to develop and scale adequate instruments to fund and de-risk carbon credit projects development in Africa, and enable communities' participation (e.g., smallholder farmer finance)	6 12
	Progress an advance market commitment for African carbon credits with African and international corporations	7
	Advocate for African carbon credits quality and value for buyers and for access to international compliance markets	9
	Spread understanding of the different long-term innovative financing options for critical geographic areas , to help governments and communities identify what instruments are most relevant to their situation and to the asset they are trying to protect	12
Collaborate with other key stakeholders to facilitate and support VCM development	Encourage funding partners and technical assistance providers including DFIs, philanthropies, NGOs to reinforce key supporting activities including funding early-stage projects, scale up of blended-finance programs, reinforcing technical assistance to governments and project developers, sharing data to build an Africa data baseline	1 2 3 6 10 11
	Coordinate / support established, recognised global standards and integrity organisations (e.g., ICVCM, VCMI SBTi) to establish transparency and benefits-sharing standards for both sellers and buyers for ACMI-endorsed credits	13
	Encourage standards to adapt methodology requirements and provide more standardized methods for Africa (i.e., performance benchmarks, positive lists)	2 3 8 10 11
	Collaborate with new / existing carbon credit exchanges and marketplaces to establish commitments on common standards supporting suppliers & communities	5
Mobilize other action leaders	Call for organizations to lead and participate in proposed actions / working groups , and support implementation by framing roles, responsibilities and focus areas for the coming year. These actions include: <ul style="list-style-type: none"> • Set up of an accelerator/incubator to support high-potential new/nascent project types • Set up of a technical facilitation programme focused on reducing barriers to entry for carbon credit certification for project developers in Africa • Coalitions to support the development of the first biodiversity/nature credit and to support agroforestry for food security and carbon credits 	All

Glossary

Carbon credit terminology

Additional: Requirement in the design of carbon credit methodologies. Describes projects whose impacts, including emissions reductions, would not otherwise occur without carbon credit revenue.

Avoidance: Along with removal, one of the two major types of carbon credits. Avoidance projects prevent the release of greenhouse gases that would otherwise be emitted, such as by preventing deforestation in an area with a high rate of logging.

Leakage: Risk to manage in the design of carbon credit methodologies. Describes situations when the direct impact of a carbon reduction activity is offset by its indirect impacts. For example, protecting a forest from logging could lead to an increase in logging in surrounding forests, negating the intended effect.

Nature based solutions (NBS): Projects that use natural landscapes to mitigate climate change, often while providing biodiversity co-benefits. Includes forestry, agriculture, and blue carbon projects.

Permanence: Requirement in the design of carbon credit methodologies. Describes whether greenhouse gas abatement will be undone over the medium- to long-term. Carbon dioxide has a half-life of over 100 years, so projects that secure emissions for only a few decades may not be appropriate as carbon offsets.

Reducing emissions from deforestation and forest degradation (REDD+): Framework for emissions-limitation programs focused on preventing deforestation that was negotiated under the United Nations Framework Convention of Climate Change (UNFCCC). REDD+ credits are not allowed in the Clean Development Mechanism but are common in the voluntary carbon markets.

Removal: Along with avoidance, one of the two major types of carbon credits. Removal projects aim to adsorb additional CO₂ back from the atmosphere to reduce greenhouse effect potential. For example, photosynthesis, as well as engineered methods such as direct air capture and accelerated mineral weathering can be used to absorb carbon from the atmosphere.

tCO₂e: tonne of CO₂ equivalent. Standardised unit for greenhouse gases that expresses all emissions in terms of the amount of CO₂ with equivalent global warming potential.

Vintage: The year the emissions avoidance or removal that underlies a carbon credit took place. May be different than the year of issuance.

Carbon regulation terminology

Carbon pricing (incl. carbon tax): A legal instrument that ties the external costs of greenhouse gas emissions to the sources of pollution. Usually implemented as a carbon tax—a flat tax paid per tonne of carbon emitted—or as an emissions trading system (ETS).

Emissions trading system (ETS): There are different types of ETS. In a “cap-and-trade system” regulators set a fixed upper limit on total emissions (‘cap’) and auction or distribute allowances (typically one allowance grants the right to emit one tonne of CO₂e). Under a “baseline-and-credit system” each individual entity is required to reduce emissions at a certain rate. Companies that reduce emissions faster than they are obliged to can earn ‘credits’ which they can sell to entities which do not meet their required obligations.

Climate diplomacy terminology

Clean Development Mechanism (CDM): Framework developed under the Kyoto protocol for countries with

emissions targets to finance emissions-reductions projects in developing countries in exchange for certified emission reduction (CER) credits, which count towards meeting Kyoto targets. The CDM includes a wide variety of project types, including fuel switching, afforestation, and methane reduction, but notably does not include avoided deforestation.

Kyoto Protocol: International treaty adopted in 1997 that aimed to reduce the emission of GHGs and prevent global warming. The treaty committed industrialized countries and “economies in transition” to GHG reductions, established a GHG monitoring and review system, and created a set of “market-based mechanisms”, including the CDM, that allow for emissions trading.

Nationally Determined Contribution (NDC): A national plan to reduce emissions and adapt to climate change. Parties under the Paris Agreement are required to submit an NDC every five years.

Paris Agreement: Landmark 2015 international treaty on climate change. Article 6 of the Paris Agreement covers voluntary international cooperation, including carbon trading. Additional details on the implementation of Article 6 were agreed to at COP26 in Glasgow.

Other

Congo Basin: Basin of the Congo River in central Africa, an area spanning parts of ten countries. Includes the world’s second largest rainforest, a major carbon sink.

Least developed country: UN classification for countries with per-capita income below \$1,222 and low scores on human development and vulnerability indicators.

High forest low deforestation (HFLD): Applies to countries or jurisdictions that have very extensive, ecologically intact forests and low past rates of deforestation.



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Harnessing carbon markets for Africa
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