A GUIDE TO NAVIGATING CARBON MARKETS: EXPLORING THE POTENTIAL FOR EASTERN AFRICA

Carbon Market Explainer

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

On behalf of

Federal Ministry for Economic Affairs and Climate Action

This publication is offered on behalf of the Federal Ministry for Economics Affairs and Climate Action. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH supports the Federal Ministry for Economic Affairs and Climate Action in the implementation of international cooperation projects

perspectives climate group

PUBLISHED BY:
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
Project: Global Carbon Market Project (GCM) Eastern Africa

AUTHORS:
Hanna-Mari Ahonen, Peris Waweru,
Annika Wallengren, Alicia Schmid,
Stephan Hoch, Carlotta Janne Frey
(Perspectives Climate Group)

DESIGN/LAYOUT:
Designer: Michael Kateregga
Company: Brains and Art Limited

SUPPORTED BY:
German Federal Ministry for Economic Affairs and Climate Action (BMWK)

CONTACTS
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
Registered offices in Bonn and Eschborn, Germany

GIZ OFFICE KAMPALA
Plot 23 Nakasero Road
P.O. Box 1036 Kampala, Uganda
T: +256 414 303901
E-mail: secretariate.giz_uganda@giz.de
Website: www.giz.de

FEBRUARY 2025

CONTENTS

ACKNOWLEDGEMENTS FOR REVIEW AND INPUT

Ritah Rukundo (GCM), Urbans Benywanira (RCC East and Southern Africa), Salome Alweny (GCM), David Baleese Kisakye (GCM, currently GGGI), Andrew Ocama (Eastern Africa Alliance on Carbon Markets and Climate Finance), Bernadette Natukwasa (GCM), Vincent Munguleni (GCM), Solomon Atepo (GCM).

We extend our sincere thanks to all contributors, partners, and stakeholders who provided invaluable insights and expertise throughout the creation of this document.

List of Figures

List of Tables

List of Abbreviations and Acronyms

A6.4ERs	Article 6.4 Emission Reductions
AIJ	Activities Implemented Jointly
BA	Bilateral Agreement
CA	Corresponding Adjustment
CCB	Climate, Community & Biodiversity
CCPs	Core Carbon Principles
CCS	Carbon Capture and Storage
CDM	Clean Development Mechanism
CO2	Carbon Dioxide
COP29	29th Conference of Parties to the UNFCCC
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
DNA	Designated National Authority
ETS	Emission Trading System
EU	European Union
GHG	Greenhouse Gas
GS	Gold Standard
ICVCM	Integrity Council for the Voluntary Carbon Market
II-AMT	International Initiative for Development of Article 6 Methodology Tools
ISO	International Organization for Standardization
ITMO	Internationally Transferred Mitigation Outcome
JI	Joint Implementation
KMFRI	Kenya Marine and Fisheries Research Institute
MCUs	Mitigation Contribution Units
MoU	Memorandum of Understanding
NDC	Nationally Determined Contribution
NGO	Non-Government Organisation
OIMP	Other International Mitigation Purposes
PACM	Paris Agreement Crediting Mechanism
PVCs	Plan Vivo Certificates
SBTi	Science Based Targets initiative
tCO2e	One metric tonne of carbon dioxide equivalent
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
VCM	Voluntary Carbon Market
VCS	Verified Carbon Standard
VVB	Validation and Verification Body

1 OVERVIEW OF CARBON MARKETS

1. Overview of Carbon Markets

Carbon market cooperation can help to achieve the climate goals of the **Paris Agreement.**

Countries can use carbon markets to implement their national climate policies and targets and companies can use carbon markets to meet their obligations or voluntarily support mitigation around the world.

1.1. Cooperating Through Carbon Markets

Carbon markets enable the trading of various types of greenhouse gas (GHG) emission units, each representing one metric tonne of carbon dioxide equivalent (tCO2e). They allow public and private actors to cooperate across national and sectoral boundaries to finance mitigation activities by trading these units. Market-based cooperation can enhance the flexibility and cost-effectiveness of mitigation action, mobilise private sector innovation and resources and enable higher climate ambition. Besides mitigation benefits, many carbon market activities can also generate other sustainable development co-benefits, such as energy access, ecosystem services and job creation among others.

Public and private entities have various options for engaging in carbon market cooperation and they can choose from a range of privately, nationally and/or internationally supervised schemes, which have been evolving for over two decades. The international rulebook for carbon market cooperation has been developed under Article 6 of the Paris Agreement. One of the key outcomes of the 29th session of the Conference of Parties to the United Nations Framework Convention on Climate Change (UNFCCC) held in Baku, Azerbaijan, was the operationalisation of both Articles 6.2 and 6.4 of the Paris Agreement, concluding negotiations that had lasted for almost a decade. The decision on the Paris Agreement Crediting Mechanism (PACM) under Article 6.4 is stringent and enables this mechanism to become a global benchmark for environmental integrity in carbon markets. Coupled with novel approaches to ensure contributions to sustainable development, and to enable robust treatment of grievances, far-reaching reporting provisions set a good basis for trust in Article 6 markets. These markets will thus play a key role to achieve progress toward the goals of the Paris Agreement in a cost-efficient manner.

Carbon markets allow public and private actors to cooperate across national and sectoral boundaries to finance mitigation activities by trading these units.

1.2. Types of Carbon Market Cooperation

Carbon markets are often categorised as international and domestic markets, compliance and voluntary markets.

- **Compliance Carbon Markets** refer to trading of GHG units to comply with (international or domestic) obligations. Examples of international obligations include countries' Nationally Determined Contributions (NDCs) under the Paris Agreement and the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) for airlines. Domestic obligations could include national carbon taxes or cap-and-trade schemes (see next page).

- **The Voluntary Carbon Market (VCM)** caters for actors that want to voluntarily support mitigation action outside their own boundaries and value chains, beyond any mandatory or centralised requirements. Typical VCM buyers are private companies that seek to voluntarily offset the emissions from their operations, flights or products and make carbon neutrality claims.[1]

[1] Note that, from 2021 onwards, most carbon credits will NOT be suitable for voluntary offsetting anymore, since the underlying mitigation outcome may be counted towards the host country NDC. Using such carbon credits for voluntary offsetting would lead to double claiming and potentially misleading claims (which are prohibited by anti-greenwashing/consumer protection laws).

There are two main types of GHG units and carbon market schemes:

Emission allowances issued under **cap-and-trade schemes** (also referred to as emissions trading systems, ETSs) and carbon credits issued by **baseline-and-crediting schemes**. This document focuses on the markets for carbon credits:

- **A cap-and-trade scheme** is a type of carbon market that regulates emissions by setting a limit on the total amount of greenhouse gases that can be emitted. Those who reduce their emissions below their allotted amount can trade or sell their excess allowances to others, creating a market-driven incentive for overall emission reduction.

- **Under baseline-and-crediting schemes,** carbon crediting programmes issue carbon credits for emission reductions or removals (jointly referred to as mitigation outcomes) from eligible activities that meet the programme's criteria. Carbon crediting programmes may be operated by international, bilateral, national or private entities (see Page 6 for examples). Most programmes apply common, internationally established criteria for generating carbon credits, such as additionality, permanence, robust baselines, monitoring, third-party verification and environmental and social safeguards.

Examples of Carbon Crediting Programmes

The Paris Agreement Crediting Mechanism (PACM) is the International Carbon Crediting Programme that was established under the Paris Agreement in 2015 and is expected to be fully operational in 2025.

Verra administers various independent crediting programmes such as the **Verified Carbon Standard (VCS)** as well as the **Climate, Community & Biodiversity (CCB) Standards** which focuses on ensuring that REDD+ activities deliver additional benefits for local communities and biodiversity, beyond carbon sequestration.

The Joint Crediting Mechanism (JCM) is a bilateral crediting programme that is managed between Japan and its partner countries.

Plan Vivo focuses on community-based projects, particularly in the forestry and land-use sectors, with an emphasis on social and environmental benefits in addition to carbon sequestration.

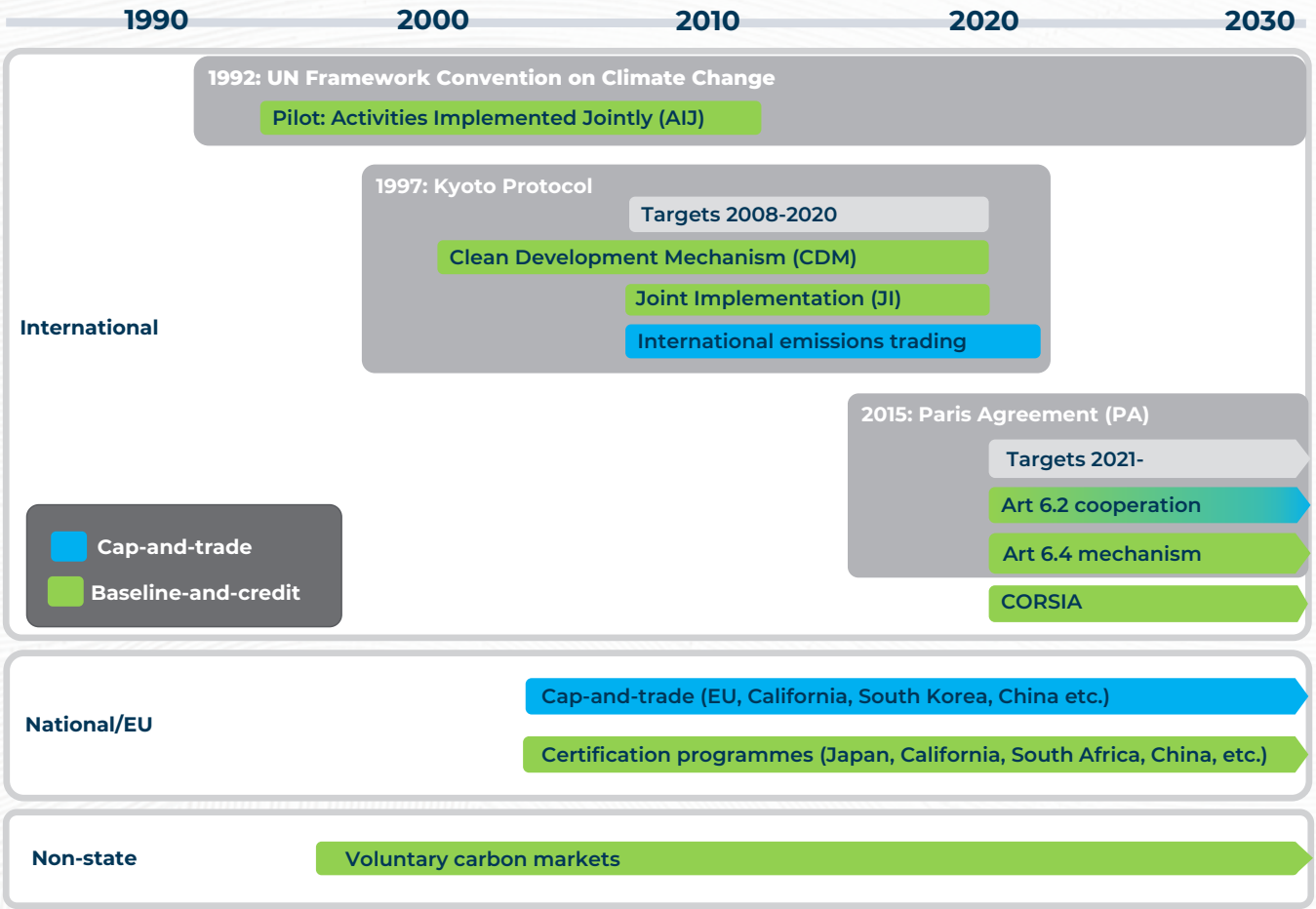
Gold Standard (GS), managed by the Gold Standard Foundation, is an independent (VCM) carbon crediting programme focused on sustainable development projects.

Carbon crediting programmes differ in their requirements for environmental and social safeguards. Some programmes, such as GS, have extensive requirements for all activities integrated into their requirements. Verra offers the option to complement the VCS with complementary standards for **environmental and social aspects,** such as the Sustainable Development Verified Impact Standard and the CCB Standards.

1.3. Evolution of Carbon Markets

Carbon markets emerged in the late 1990s and have been evolving via a learning-by-doing basis ever since to cater for changing needs and circumstances and address identified shortcomings. Carbon markets developed in a context where only around a fifth of global GHG emissions were in countries that had climate targets, most of which were unambitious. Compliance markets were driven by these targets while the VCM focused on context without targets. From 2021 onwards, all countries have targets, triggering a lively debate on whether and how the VCM can contribute to global mitigation efforts in the Paris era. Furthermore, throughout the existence of carbon markets, stakeholders have raised concerns about the environmental and social integrity of carbon credits and their use and questioned the rationale for market-based cooperation.

Figure 1: Evolution of Carbon Markets



Source: Perspectives Climate Group

Kyoto Protocol of 1997

Under the Kyoto Protocol of 1997, developed countries agreed on binding climate targets that could be partly met through international market-based cooperation. International emissions trading enabled countries with emissions above their targets to buy Kyoto allowances from countries that overachieved their targets. Alternatively, developed countries could meet part of their targets by buying carbon credits issued under the Kyoto Protocol's two baseline-and-credit mechanisms – Joint Implementation (JI) for mitigation activities in countries with targets and the Clean Development Mechanism (CDM) for activities in countries without targets, namely developing countries. Following the COP29 decision on Article 6.4 the transition of CDM projects to the new Paris Agreement Crediting Mechanism (PACM) can now be undertaken. Host countries also have the possibility to use credits from CDM projects registered after 2012 towards their targets under the Paris Agreement.

Developed countries agreed on binding climate targets that could be partly met through international market-based cooperation.

In 2015, the Paris Agreement was agreed. It extends climate targets to all countries and provides for market-based cooperation in Article 6.

- **Article 6.2** is a cooperative approach that allows countries to trade mitigation outcomes with one another through bilateral or multilateral agreements. These traded credits are called ITMOs and must be real, verified and additional emission reductions or removals that are not counted towards the host country's NDC. Countries engaging in ITMO cooperation are required to ensure environmental integrity and transparency, apply robust accounting, including to avoid double counting, and promote sustainable development. Participating countries account for the transfers and use of ITMOs through corresponding adjustments in their emissions balances.[2] Find more on corresponding adjustments below.

- **Article 6.4** establishes a baseline-and-credit mechanism, also known as the Paris Agreement Crediting Mechanism (PACM) which is overseen by the Article 6.4 Supervisory Body (SBM). The PACM operationalised at COP29, is the successor to the Kyoto Protocol's Clean Development Mechanism (CDM) and establishes an activity cycle for registering activities that reduce emissions which meet its requirements, aligning with internationally defined standards to ensure environmental integrity. Only activities that have been approved by the host country can be registered under the PACM. Host countries may authorise A6.4ERs as ITMOs in line with the Article 6.2 rules. Article 6.4 Emission Reductions that are not authorised as ITMOs are referred to as "mitigation contribution units" (MCUs) and they may be used, inter alia, for results-based climate finance, domestic mitigation pricing schemes or domestic price-based measures, as well as voluntary mitigation contributions.

[2] Corresponding Adjustments (CA) are required to ensure that emission reductions are not counted twice (once by the country where the reduction occurs and once by the country purchasing the reduction). When an ITMO is transferred, the selling country must make a corresponding adjustment to its GHG inventory to reflect the transfer, ensuring transparency and integrity in the carbon market. Participating Parties must provide specifics on the content of the authorisation for using ITMOs under each cooperative approach.

1.4. Generating Carbon Credits

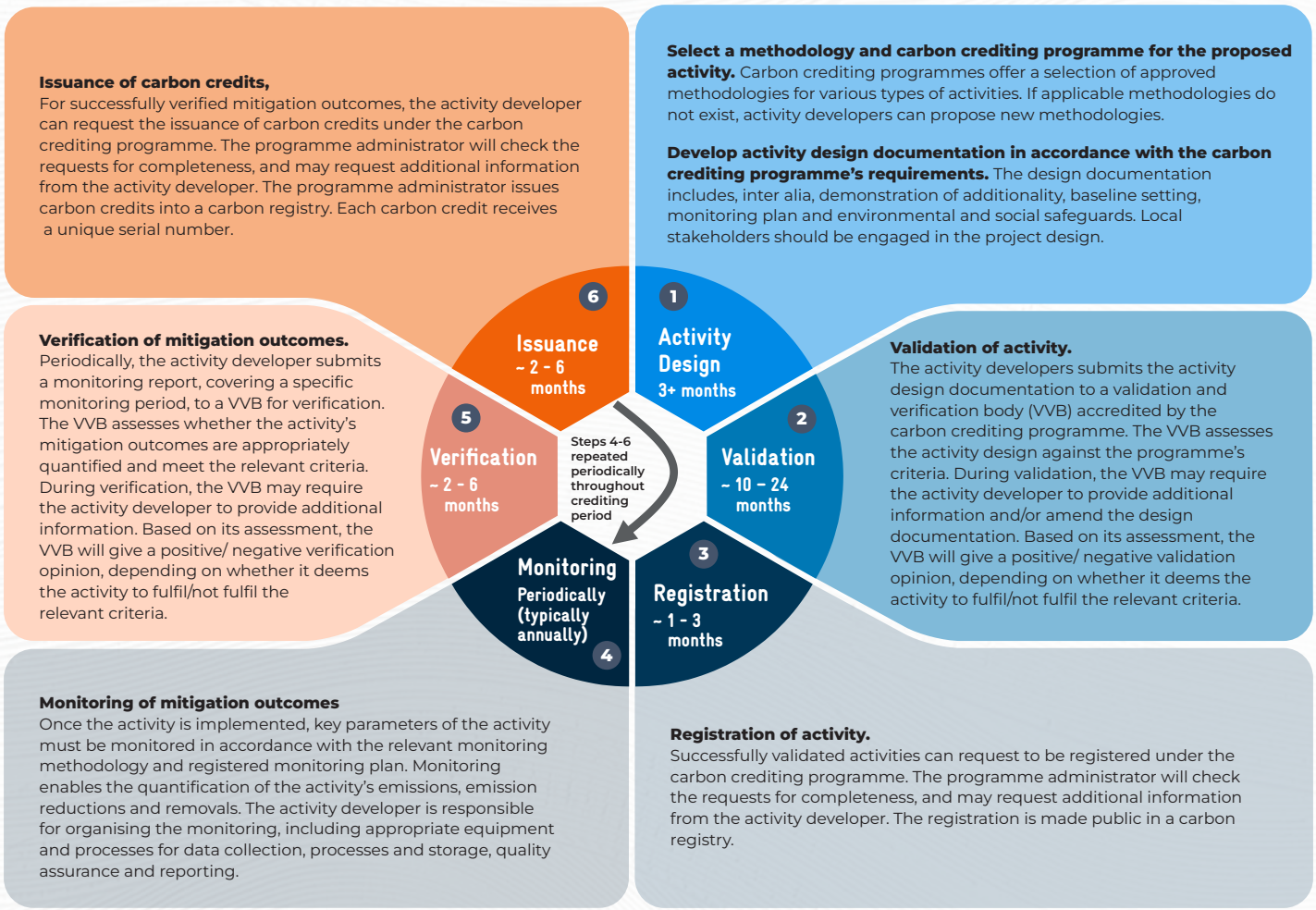
Activity developers who want to generate carbon credits must choose a carbon credit programme that suits their sectoral or methodological approach, and also meet the programme's criteria for the activities and mitigation outcomes. While most carbon crediting programmes apply common integrity criteria, they differ in their detailed requirements and interpretations of these criteria, as well as in geographic and sectoral scope, procedures and governance.

To register the activity, the developer needs to design the activity in line with approved methodologies (e.g. VCS, GS methodologies) and receive a positive validation from an accredited third party (auditor)[3] also known as a validation and verification body (VVB). To generate carbon credits, the developer needs to implement the activity, monitor and report the activity's performance and receive a positive verification from a VVB. Carbon credits are recorded in a carbon registry and the developer can sell them in carbon markets to finance the activity.

Carbon credits generated under private carbon crediting programmes are readily available in the carbon markets while the issuance of carbon credits under the PACM will start in 2025.

Article 6.8 of the Paris Agreement enables Non-market Approaches (NMAs)[4]. These do not generate credits and can cover all aspects of climate change mitigation and adaptation.

Figure 2: Typical Carbon Crediting Cycle[5]



Source: Perspectives Climate Group

[3] Accredited third-party auditors for carbon activities can be found through various carbon crediting programmes and accreditation bodies: UNFCCC PACM Designated Operational Entities, Verra, GS, Plan Vivo, etc.
[4] Article 6.8 provides an avenue for countries to meet their NDCs through non-market cooperation.
[5] During both the validation and verification, an independent auditor is required to carry out an assessment of the project information provided in the design document and monitoring reports respectively. This will, unless under approved circumstances require an on-site field visit to the program.

1.5. Carbon Credit Use

Carbon credit buyers include governments, companies and individuals. They are interested in different types of carbon credits, depending on their needs and preferences. While all carbon credits should represent an additional tonne of emission reductions or removals (mitigation), they differ in terms of other attributes, such as their location, activity type, vintage (year of generation of mitigation outcomes), carbon crediting programme used, sustainable development co-benefits and national authorisation of ITMOs. These attributes determine how the carbon credit can be used, which buyers are interested in them and how much they are willing to pay. In general, carbon credits associated with verified sustainable development co-benefits and/or ITMO authorisation are in higher demand and fetch a price premium.

Countries are typically looking to buy carbon credits generated under Article 6: ITMOs that they can use towards their NDCs and/or MCUs to deliver results-based climate finance to the host country. Companies that want to use carbon credits to comply with their legal obligations, for example under a national ETS or carbon tax, would need to buy carbon credits that meet relevant eligibility criteria, which are set by the regulator[6].

Carbon Credits can be used to support projects that reduce emissions, protect ecosystems and facilitate community development.

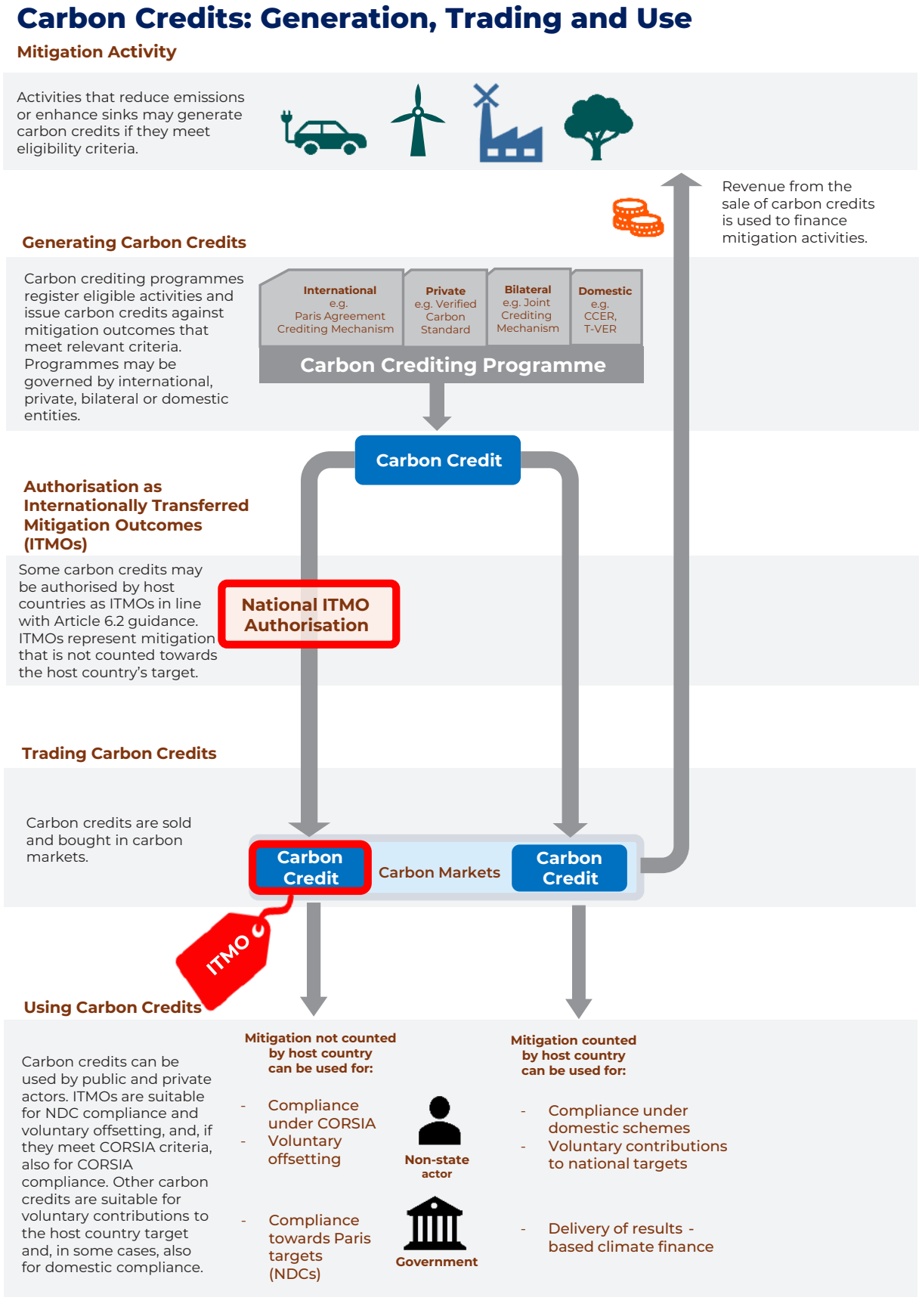
[6] The use of ITMOs is subject to a Corresponding Adjustment (CA) that ensures that transferred ITMOs are attributed to the buyer account and excluded from that of the seller.

Companies may also, as part of their corporate climate strategies, voluntarily buy carbon credits to support mitigation beyond their value chains. In this case, companies have the flexibility to buy various types of carbon credits, based on their preferences.

Many stakeholder-led initiatives and governments provide guidance to companies on setting climate targets, choosing high-quality carbon credits, using them responsibly and reporting about it. For example, the Science-Based Targets initiative (SBTi) and Gold Standard provide guidance for using carbon credits for beyond value chain mitigation. The Voluntary Carbon Market Integrity Initiative (VCMI) requires the use of carbon credits labelled under the Integrity Council for the Voluntary Carbon Market (ICVCM) for making VCMI claims. The SBTi allows only carbon credits based on permanent removals to be used for reaching corporate net zero emissions.

Finally, the Carbon Neutrality Standard of the International Organization for Standardization (ISO) calls for the use of ITMOs to avoid double counting between voluntary carbon neutrality claims and NDCs.

Figure 3: Overview of Carbon Credits: From Activity to End Use



Source: Perspectives Climate Group

1.6. Ensuring Carbon Credit Integrity

Ensuring the environmental and social integrity of carbon market activities is crucial for the market to thrive and truly contribute to global mitigation efforts. For carbon credits, this means ensuring that the underlying mitigation outcomes are **additional** to what would happen without carbon credit revenue, they are robustly quantified against a conservative **baseline** that represents the emissions scenario without the activity, and that they are verified by an independent third party. Any **reversals** (e.g. release of carbon back into the atmosphere due to forest fires or illegal logging) and **leakage** (i.e. increases in emissions outside the activity's boundaries due to the activity) must be fully addressed, and **double counting** and negative environmental and social impacts must be avoided.

Ideally, all carbon credits should meet the same integrity criteria, regardless of the carbon crediting programme used, but in practice, there is a lack of public trust in the ability of carbon crediting programmes to systematically ensure the integrity of all carbon credits. Stakeholders have questioned the additionality of some carbon credits and raised concerns about the overestimation of carbon credits due to inflated baselines, reversals and leakage, as well as negative environmental and social impacts of some carbon credit-generating activities.

All carbon credits should meet the same integrity criteria regardless of the carbon crediting programme used.

There are ongoing efforts to enhance trust in the integrity of carbon credits. Under the Paris Agreement, the PACM aims to serve as the global threshold for high-integrity carbon credits (A6.4ERs) that meet international criteria and apply methodologies approved by the mechanism's Supervisory Body. Following the COP29 decision, this body is tasked to elaborate specific standards for methodologies and removal activities. Compared to other carbon markets, the PACM applies improved approaches, such as setting baselines below business-as-usual and aligning them with the long-term goal of the Paris Agreement, avoiding lock-in of emission-intensive technologies and practices, encouraging ambition over time and using more robust tests to assess whether an activity is additional.

There are also initiatives that assess carbon credit integrity at the level of carbon crediting programmes and activity categories (i.e. specific activity types, methodologies and/or contexts). In the international compliance space, the International Civil Aviation Organisation's Technical Advisory Body has developed criteria for carbon credits that are eligible for compliance under CORSIA and approves carbon crediting programmes that it deems fit to issue qualified carbon credits.

In the voluntary space, the stakeholder-led ICVCM has elaborated Core Carbon Principles (CCPs)[7] for high-integrity carbon credits. These principles build on and add to the CORSIA eligibility criteria, and use an assessment framework that enables carbon credits to be tagged as CCP-approved if they are issued by carbon crediting programmes (e.g. VCS and GS) for CCP-approved activity categories (e.g. waste management). The first CCP-labelled carbon credits entered the voluntary carbon market in June 2024 (ICVCM 2024a). Many carbon crediting programmes, such as the VCS and GS, have adjusted their standards and procedures to align with the CCPs (Verra 2024, Gold Standard 2023). Many carbon credit buyers are expected to favour CCP-labelled carbon credits and pay a price premium for them.

[7] The 10 CCPs are Effective governance, Tracking, Transparency, Robust independent third-party validation and verification, Additionality, Permanence, Robust quantification of emission reductions and removals, No double counting, Sustainable development benefits and safeguards and Contribution to net zero transition (ICVCM 2024b).

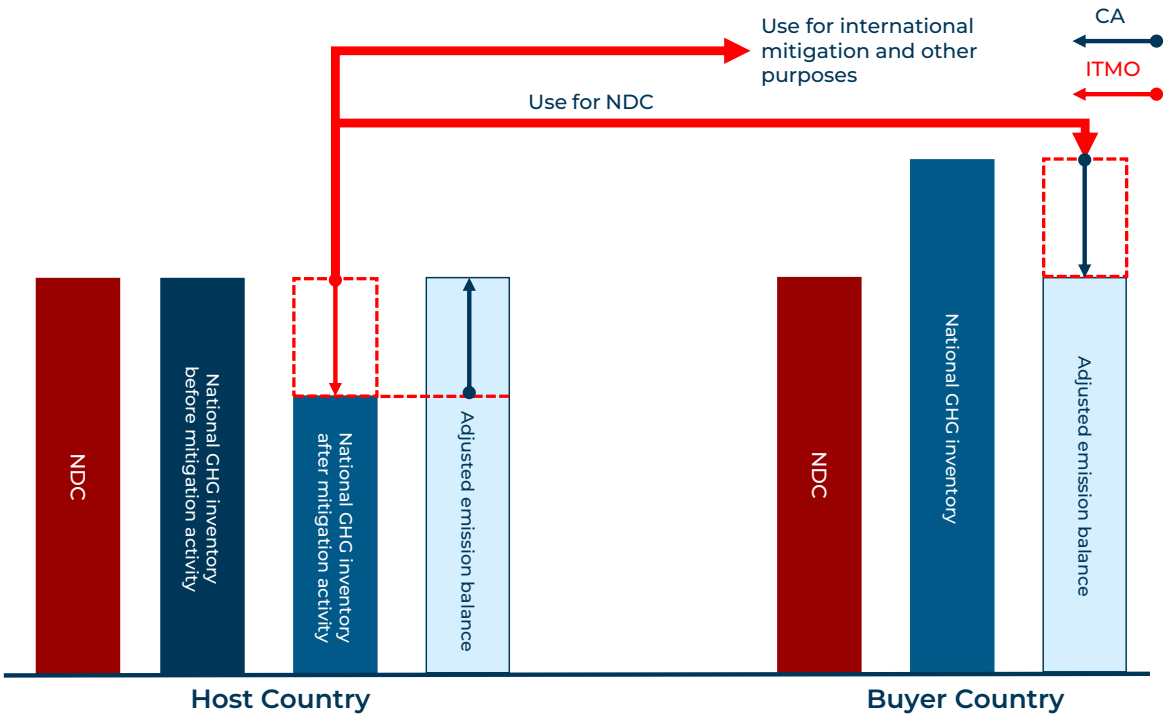
1.7. The Role of Governments in the Implementation of Carbon Markets

Carbon credits can be authorised by host countries as ITMOs for use towards other countries' NDCs, international mitigation purposes (e.g. CORSIA compliance) or other purposes (e.g. voluntary offsetting).

Authorisation commits the host country to fulfil international Article 6.2 requirements for ensuring environmental integrity and transparency, applying robust accounting, including avoiding double counting, and promoting sustainable development. Host countries must have national arrangements for authorising and tracking ITMOs, and they must regularly report ITMO-relevant information to the Paris Agreement. The authorisation and first transfer[8] of ITMOs triggers **corresponding adjustments (CAs)** by the host country in its emissions balance. This means that the host country adjusts its emissions balance (i.e. the balance between the emissions and removals of GHGs and sectors included in the NDC target) upwards by the amount equivalent to the authorised and first-transferred ITMOs. This avoids double counting of the same mitigation outcomes by both the host country and the ITMO buyer. If ITMOs are used towards another country's NDC, that country adjusts its emissions balance downwards at the time of ITMO use. Corresponding adjustments are made in emissions balances which are reported to the Paris Agreement every second year as part of the Biennial Transparency Report.

[8] For mitigation outcomes authorised for use towards NDCs, the first transfer refers to the initial international transfer. In contrast, for mitigation outcomes authorised for other international mitigation purposes (OIMP), the first transfer may involve the authorisation, issuance, use, or cancellation of the mitigation outcome, as specified by the participating Party.

Figure 4: Understanding Corresponding Adjustments



Source: Perspectives Climate Group

A host country CA is applied to all ITMOs authorised and first transferred by a country, while a buyer country CA is required for ITMOs used towards the buyer's NDC. It is important to note that not all mitigation outcomes are fully reflected in national GHG inventories due to differences between activity-level and inventory-level methodologies. Additionally, if a country authorises mitigation that is not captured in its inventory or falls outside the scope of the GHGs or sectors covered by its NDC, CAs could make it more difficult for the host country to achieve its NDC.[9]

Host countries may introduce national criteria for the types of activities that they are willing to authorise as ITMOs, which are occasionally referred to as "positive lists". These could include activities that could not be implemented without international finance and activities that support specific national sustainable development priorities. Buyer countries can also have national criteria for ITMOs. Countries can conclude bilateral Article 6 agreements with partner countries to facilitate Article 6 cooperation.

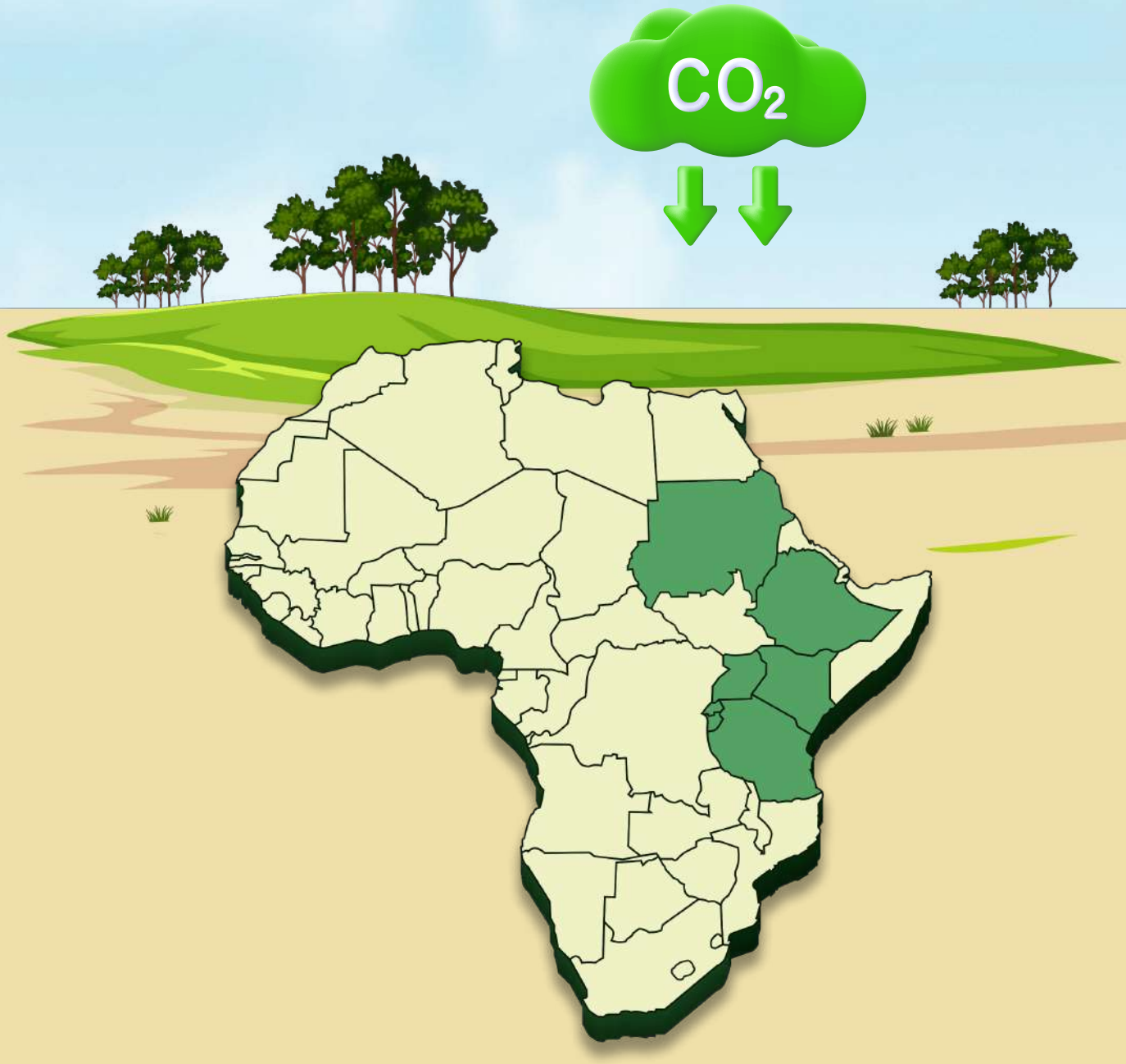
[9] National Registries track and manage carbon credits and emissions units at the Host Party level, ensuring transparency in carbon trading and preventing double-counting of emissions reductions under mechanisms like the Paris Agreement's Article 6. On the other hand, National GHG Inventories provide a comprehensive account of a country's total greenhouse gas emissions and removals across various sectors, such as energy and agriculture. These inventories are used for reporting to international bodies like the UNFCCC, helping countries track their progress toward climate goals and commitments. While registries deal with carbon market data, inventories focus on actual emissions data and national climate performance.

Carbon crediting programmes can be useful for demonstrating the fulfilment of certain criteria, such as additionality and robust baselines, yet host countries can authorise mitigation outcomes as ITMOs even if they are not assessed and issued as carbon credits under carbon crediting programmes. Host countries are ultimately responsible for ensuring the integrity of ITMOs and are also best positioned to assess nationally specific aspects, such as the alignment of the activity with the NDC and national sustainable development objectives, and the consideration of relevant national policies in additionality testing and baseline setting.

The COP29 established detailed procedures for the authorisation, transfer, and reporting of ITMOs, requiring participating parties to specify authorisation content, define "first transfer," and define under which conditions authorisations can be changed. Additionally, it allowed the Secretariat to enable issuance and transfers of ITMOs even if the international registry formally was used for accounting purposes only. This allows countries to fully rely on the international registry for all tasks related to Article 6.

Governments need to be careful which credits are fit for authorisation.

2 THE POTENTIAL OF CARBON MARKETS FOR EASTERN AFRICA



Carbon markets can offer significant benefits for Eastern Africa by providing critical financial resources and incentives for advancing climate action and sustainable development. To realise this potential, host countries and activity developers need to build their capacity and engage with local stakeholders to identify potential activities and sustainable models for financing and sharing the benefits of these activities. By harmonising carbon market strategies and developing local expertise, stakeholders in the region can drive significant progress toward climate goals, attract private sector investment, and support sustainable growth across various sectors.

2.1. Financing Climate Action in Eastern Africa With High-Integrity Carbon Credits

Carbon credits boost the profitability of additional climate action in Eastern Africa. For the activity developer, revenue from the sale of carbon credits can help to finance activities that generate emission reductions or removals that are not required by law or are commercially viable without additional support. Carbon credit generation can transform otherwise financially unviable activities into profitable ventures by providing an additional revenue stream. This can bridge the financial viability gap, making it possible to deploy clean technologies that would otherwise be too costly. Carbon finance can therefore act as a catalyst and accelerator for the adoption of climate-friendly solutions that can benefit a broad range of stakeholders and support various sustainable development goals.

To realise these benefits, it is important that the activity is designed and implemented consistently with national policies and priorities, the potential environmental and social impacts of the activity are assessed and managed, and benefits are shared equitably. This requires active engagement between the developer, national authorities and local stakeholders throughout activity design and implementation.

Successfully navigating the carbon crediting cycle requires capacity, resources and expertise. Activity developers should consider that carbon credit generation also incurs transaction costs, some of which are due already at the activity design stage, while the carbon credit revenue is commonly paid out only after the activity has been implemented and carbon credits have been issued and delivered to the buyer (results based). The issuances typically start in the second or third year of operation contingent on the activity type and take place annually thereafter or depending on the monitoring cycle period.

Successfully navigating the carbon crediting cycle requires:

Capacity

Resources

Expertise

2.2. Potential for Carbon Crediting in Eastern Africa

Activity developers in the region have numerous opportunities to harness carbon crediting to drive climate action. Developers can choose the scale and scope of their activities according to their capacities, available resources and community needs. However, it is crucial to emphasize that all carbon crediting activities must secure **host party approval** to ensure alignment with national climate targets and regulations:

- Centralised activities involve large-scale, industrial activities such as waste treatment facilities, Carbon Capture and Storage (CCS) activities or hydro-power plants. These activities typically have higher upfront investment costs but can generate significant emission reductions, leading to substantial carbon credit generation.

- Decentralised activities are smaller-scale, community-based activities like the distribution of improved cookstoves, or roof-top solar home systems. These can be coordinated under dedicated programmes of activities designed to scale up the activities over time to cover new target groups, technologies and/or regions, and even multiple countries. Such activities typically target households and have direct positive impacts on local communities, such as improving health and reducing deforestation.

To date, the majority of carbon credits in Eastern Africa have been generated by activities that focus on decentralised household-level solutions such as solar lamps, improved cookstoves, and water purification systems. These activities typically have significant environmental and social benefits, such as cleaner air, health benefits and household income savings. Most of the carbon credits have been registered under the CDM and the Gold Standard, with Verra having the highest issuances (Hoch et al. 2023b).

Looking forward, there is potential to generate carbon credits also from other types of activities in the region. Carbon crediting offers opportunities to finance blue carbon initiatives, which focus on preserving and restoring coastal and marine ecosystems in the region. In the transport sector, carbon credit revenue could also be used to accelerate the rise of e-mobility solutions, such as electric vehicles and bikes. There is also significant mitigation potential in methane capture activities, targeting emissions from landfills and agricultural activities, which could be realised with revenue from carbon credits. In addition to climate benefits, these emerging opportunities have the potential to support broader sustainable development goals in Eastern Africa.

Showcase Activity 1: Mikoko Pamoja

Mikoko Pamoja is a community-led mangrove conservation and restoration activity located in the Gazi Bay area of Kenya's South Coast, and the world's first blue carbon activity. The Mikoko Pamoja activity, involving 1,081 households, is registered under Plan Vivo and has issued 20,095 Plan Vivo Certificates (PVCs) to date (Plan Vivo n.d.).

Registered in 2010, the activity focuses on the conservation and restoration of mangrove forests, which are highly efficient carbon sinks, storing up to 50 times more carbon in their soils compared to tropical forests. The activity covers 117 hectares of existing mangroves and has established an additional 10 hectares of new mangrove forests with the support of the Kenya Marine and Fisheries Research Institute (KMFRI) and WWF-Kenya.

By selling carbon credits, Mikoko Pamoja has generated significant financial benefits for the local communities, amounting to approximately USD 24,000 p.a. These funds have been reinvested into local development activities, including education, healthcare, and alternative livelihoods, thereby enhancing the socio-economic resilience of the Gazi and Makongeni villages. (Mikoko Pamoja n.d.)

2.3. Demand for Carbon Credits from Eastern Africa

Potential buyers of carbon credits from Eastern Africa could include governments and companies. Companies that buy carbon credits for voluntary purposes or corporate responsibility, are interested in the broadest range of different types of carbon credits, while governments are mainly interested in buying carbon credits that are authorised as ITMOs and/or issued under the PACM.

Buyers have their own preferences relating to e.g. activity types, scale of project/ mitigation outcomes, and sustainable development co-benefits. In general, carbon credits associated with verified sustainable development co-benefits, CCP-labels and ITMO authorisation are in higher demand and fetch a price premium. Many potential mitigation activities in Eastern Africa could cater for these preferences.

Initially, the demand for ITMOs was limited, as only a handful of buyers, such as Japan, the Swiss KliK Foundation, and the Swedish Energy Agency, were actively engaging in ITMO cooperation. Over time, new sources of demand for ITMOs are expected to emerge. Interestingly, several former seller countries (e.g., Singapore, Kuwait) are now transitioning into buyers, reflecting a shift in global demand dynamics. The decision of some governments, such as Singapore and South Korea, to allow their companies to use limited amounts of ITMOs towards domestic compliance is driving private sector demand for ITMOs. International airlines are expected to be a significant source of future ITMO demand. In the voluntary carbon market, the ISO Carbon Market Neutrality Standard could drive voluntary ITMO demand among organisations with carbon neutrality goals.

However, strong demand signals from major emitters are still lacking, hindering the scaling of carbon credit markets. Many countries are hesitant to integrate carbon credits into their NDCs due to uncertainties and incomplete regulatory frameworks while many companies hesitate to buy carbon credits for voluntary purposes, in fear of reputational risks and greenwashing accusations.

As regulatory clarity improves, the demand for high-integrity carbon credits is expected to increase. This, in turn, would encourage public and private investments in sustainable practices that support global climate goals. To enhance investment certainty and stimulate carbon credit demand, it is important to align international carbon market cooperation with national policies.

Many countries are hesitant to integrate carbon credits into their NDCs due to uncertainties and incomplete regulatory frameworks.

Carbon credits associated with verified sustainable development co-benefits, CCP-labels and ITMO authorisation are in higher demand and fetch a price premium.

Showcase Activity 2: E-mobility - Ampersand

Ampersand provides solar-powered electric motorcycles and charging stations which benefits local entrepreneurs and communities by offering a cost-effective alternative to fuel-based transport while reducing operational costs and enhancing economic opportunities for local communities.

Based in Kigali Rwanda, the activity contributes to significant emission reductions by replacing traditional, gasoline-powered vehicles with clean energy alternatives. **By avoiding nearly 8,000 tons of emissions, the activity effectively reduces greenhouse gases and improves air quality.**

As of July 2024, Ampersand and other e-mobility companies in the region are yet to be issued with carbon credits. However, they represent a promising and significant segment of emerging activities within carbon markets in Eastern Africa. As the market for carbon credits evolves, the innovative work of these e-mobility firms is expected to play a crucial role in driving forward new carbon finance opportunities. Their contributions are set to enhance the diversity of carbon market activities and support broader climate and social goals as they begin to generate and trade carbon credits.

2.4. Progress on National Carbon Market Readiness in Eastern Africa

Efforts to develop national readiness for Article 6 implementation in Eastern Africa are ongoing. Governments can support effective Article 6 implementation including private sector engagement by establishing clear national strategies and robust frameworks for the generation of carbon credits. Host countries can introduce policy instruments that incentivise private sector investment and involvement in carbon credit-generating activities. These frameworks encompass various aspects, including general provisions for all carbon credit-generating activities implemented in the country as well as specific requirements for project registration, ITMO authorisations and tracking, and bilateral ITMO cooperation. Eastern African countries must make strategic decisions on whether and how they intend to grant ITMO authorisations and whether and to what extent they intend to approve activities under the PACM. Many countries have adopted lists that outline which activities or sectors are eligible ("positive lists") or ineligible ("negative lists") for ITMO authorisation.

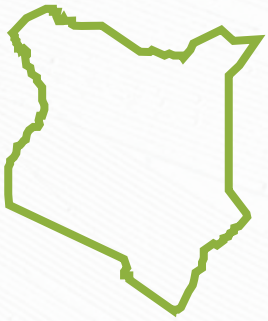
Several countries in the region have already published national frameworks or are in the process of drafting them, with support from various capacity-building actors. At the end of 2023, Rwanda launched a national carbon market framework and granted the first ITMO authorisation to carbon credits from a clean cooking activity. In May 2024, Kenya introduced regulations for carbon markets, including requirements for benefit sharing and a national registry. Meanwhile, Uganda has interim guidelines and is developing subsidiary legislation to operationalise Article 6 activities.

A significant number of Eastern African countries have taken steps by establishing inter-ministerial task forces and designating national authorities responsible for implementing Article 6 cooperation. As of August 2024, Kenya, Burundi, Ethiopia, Rwanda, and Uganda had communicated their Designated National Authorities (DNAs) for approving activities under the PACM (UNEP CCC 2024). Some countries, such as Kenya, are in the process of developing national registries to document and monitor domestic mitigation activities. However, most Eastern African countries do not yet have the required national framework and infrastructure in place for authorising and tracking ITMOs.

A critical topic that has recently gained prominence is how benefits from carbon market activities are shared among stakeholders and host communities. Countries face the difficult task of balancing their interests, such as minimizing the risk of overselling and ensuring adequate revenue, while also keeping investor incentives strong. The distribution of financial gains from carbon market deals is under increasing scrutiny, as countries require a system that allows for equitable sharing of benefits while also aligning with their climate goals.

RWANDA

launched a national carbon market framework and granted the first ITMO authorisation to carbon credits from a clean cooking activity at the end of 2023.



KENYA

introduced regulations for carbon markets, including requirements for benefit sharing and a national registry in May 2024.

Article 6 Cooperation Agreements are Emerging

Kenya and Rwanda are the first Eastern African countries to actively advance bilateral Article 6 cooperation with potential buyer countries (UNEP CCC 2024). As of August 2024, Kenya is working towards signing agreements on Article 6 cooperation with Singapore and Switzerland and Rwanda with Singapore and Kuwait (Republic of Rwanda 2023). Kenya is also cooperating with Japan under the Joint Crediting Mechanism (JCM).

UGANDA
has interim guidelines and is developing subsidiary legislation to operationalise Article 6 activities.

2.5. Capacity Building for Carbon Markets in Eastern Africa

Implementing carbon markets requires significant capacity, and limited resources in host countries pose barriers to the effective participation of key stakeholders. As of August 2024, Article 6 capacity-building efforts were concentrated in Asia and Africa, with Senegal being the target of the highest number of initiatives (Hoch et al. 2023a). Regional capacity-building initiatives and support programs provide technical assistance that considers the specific nature of regional Article 6 readiness needs. Developing an enabling environment by addressing readiness priorities lays the foundation for successful Article 6 implementation by host countries. Capacity building in the VCM across Eastern Africa focuses on enhancing the region's ability to effectively participate in global carbon markets.

Table 1: Overview of Carbon Markets' Capacity Building Actors and their Activities in Eastern Africa

Actor	Selected Workstreams, Initiatives and Activities
United Nations Development Programme	• Article 6.2 course
The World Bank	• Carbon Initiative for Development • Climate Action Data Trust
Eastern African Alliance on Carbon Markets and Climate Finance	• Regional carbon market profiles (Eastern Africa) • Workshops and other engagements
UNFCCC Regional Collaboration Centres	• Capacity building work programme for implementing Article 6 of the Paris Agreement.
GIZ (Global Carbon Market project, NDC Assist project, Article 6 Capacity building project)	• Trainings • Knowledge products and • Carbon market policy frameworks and methodologies development
Africa Carbon Markets Initiative	• 13 Action programs
Climate Finance Accelerator	• Ongoing activities
Climate Finance Innovators	• Eastern Africa Carbon Market Profiles
Global Green Growth Institute	• Developing Carbon Markets based on Article 6 of the Paris Agreement: Challenges and Opportunities • Development of the Article 6 Strategy

Source: GCF 2021; adapted from Hoch et al 2023a

Links to Further Resources

1. **The landscape of Article 6 implementation**
   https://climatefinanceinnovators.com/wp-content/uploads/2024/01/CFI-Guidebook-the-landscape-of-article-6-implementation-2024.pdf;

2. **Study on Carbon Market Opportunities and Technologies**
   https://easternafricaalliance.org/download/full-report-carbon-market-opportunities-and-technologies-study/;

3. **A Carbon Market Guidebook for Kenyan Enterprises**
   https://documents1.worldbank.org/curated/en/099040424053541073/pdf/P1796801e6f92d053187b01916665fc998d.pdf;

4. **VCM Primer**
   https://vcmprimer.org/wp-content/uploads/2023/12/vcm-explained-introductionlr.pdf

5. **Article 6 Explainer**
   https://www.nature.org/content/dam/tnc/nature/en/documents/TNC_Article_6_Explainer.pdf

References

1. Ecosystem Marketplace (2024): State of the Voluntary Carbon Market 2024, https://www.ecosystemmarketplace.com/publications/2024-state-of-the-voluntary-carbon-markets-sovcm/ (accessed August 12, 2024)
2. Gold Standard (2024): Gold Standard Submits for Programme-Level Assessment by ICVCM, Champions Alignment with the Paris Agreement, October 12, 2023, https://www.goldstandard.org/news/gold-standard-submits-for-programme-level-assessme (accessed August 12, 2024)
3. Gold Standard (2023): Beyond National Commitments: Rwanda, atmosfair and Gold Standard Launch First Carbon Credit Aligned with Paris Article 6, November 15, 2023, https://www.goldstandard.org/news/beyond-national-commitments-rwanda-first-carbon-credit-aligned-with-paris-article-6 (accessed August 8, 2024)
4. Hoch, Stephan; Waweru, Peris; Samaniego, Ximena; Holly Thomas, Figueroa; Tekie, Bruk; Michaelowa, Axel; Greiner, Sandra; Maggiore, Marco Della; Omuko-Jung, Lydia; Kovács, Anna; Rodezno Ayestas, María José; Schuck, Mauriz (2023a): The Landscape of Article 6 Implementation, Climate Finance Innovators, BMWK, Germany
5. Hoch, Stephan; Waweru, Peris; Cowman, Tim; Owino, Tom; Imbugwa, Diana (2023b): Regional Carbon Market Profile, Eastern Africa Alliance on Carbon Markets and Climate Finance, IKI and BMWK, Germany
6. ICVCM (2024a): Integrity Council announces first high-integrity CCP-labelled carbon credits, as assessments continue, The Integrity Council for the Voluntary Carbon Market, June 6 2024, https://icvcm.org/integrity-council-announces-first-high-integrity-ccp-labelled-carbon-credits-as-assessments-continue/ (accessed August 12, 2024)
7. ICVCM (2024b): The Core Carbon Principles Building integrity and transparency in the voluntary carbon market, The Integrity Council for the Voluntary Carbon Market, https://icvcm.org/core-carbon-principles/ (accessed August 8, 2024)
8. UNDP (2022): Ghana, Vanuatu, and Switzerland launch world's first activities under new carbon market mechanism set out in Article 6.2 of the Paris Agreement, November 12, 2022, https://www.undp.org/geneva/press-releases/ghana-vanuatu-and-switzerland-launch-worlds-first-activities-under-new-carbon-market-mechanism-set-out-article-62-paris-agreement (accessed August 7, 2024)
9. UNEP CCC (2024): Article 6 Pipeline, August 2, 2024, https://unepccc.org/article-6-pipeline/ (accessed August 7, 2024)
10. UNFCCC (2018): Achievements of the Clean Development Mechanism Harnessing Incentive for Climate Action 2001 -2018, UNFCCC secretariat, Bonn

11. Republic of Rwanda (2023): Rwanda launches Carbon Market Framework to advance Climate Action for a Sustainable Future, https://www.rema.gov.rw/info/details?tx_news_pi1%5Baction%5D=detail&tx_news_pi1%5Bcontroller%5D=News&tx_news_pi1%5Bnews%5D=782&cHash=ee553ec77065747a392741a5e81d56c5(accessed August 7, 2024)
12. Mikoko Pamoja (n.d.): Mikoko Pamoja – Kenya, https://www.planvivo.org/mikoko-pamoja (accessed August 12, 2024)
13. Plan Vivo (n.d.): Plan Vivo, https://www.planvivo.org/ (accessed August 7, 2024)
14. Verra (2024): On Today's ICVCM Approval of Verra's Landmark Verified Carbon Standard Program, Statement, May 2, 2024, https://verra.org/on-todays-icvcm-approval-of-verras-landmark-verified-carbon-standard-program/ (accessed August 7, 2024)
15. Verra (2023): Verra Announces First Application of Article 6 Authorized Labels to VCUs from a Cookstove Activity in Rwanda, December 7 2023, https://verra.org/program-notice/verra-announces-first-issuance-of-article-6-authorized-labels-for-cookstove-activitie-in-rwanda/ (accessed August 7, 2024)

Glossary

- **Additionality** means that, at the time of the decision to implement a mitigation activity, the mitigation outcomes of that activity would not have occurred in the absence of the incentives created by the carbon credit revenues.

- A **Baseline** is a hypothetical scenario for GHG emissions and/or removals that could plausibly occur in the absence of the incentives created by the carbon credit revenues, considering relevant national laws, regulations and policies. Carbon credits are quantified relative to the baseline scenario.

- A **Baseline-and-Credit Scheme** refers to a market-based approach for issuing carbon credits against a baseline. Programmes that issue carbon credits using the baseline-and-credit approach are referred to as carbon crediting programmes.

- **Bilateral Article 6 Agreement** refers to a legal agreement between two countries to cooperate on the implementation of Article 6.

- **Capacity Building** refers to the process of developing and strengthening the skills, abilities, resources, and institutions that countries and non-state actors need to effectively participate in and benefit from carbon market mechanisms.

- A **Cap-and-Trade Scheme** is a market-based approach in which a regulator sets a cap for total emissions covered by the scheme and issues emissions allowances against this cap. Entities covered by the scheme can buy and sell these allowances in carbon markets, and they are required to cover their emissions with an equivalent amount of allowances. Cap-and-trade schemes are also referred to as emissions trading systems.

- A **Carbon Credit** is a tradable unit issued by a carbon crediting programme that represents one tonne of carbon dioxide equivalent (CO_2e) of real, additional and verified GHG emission reductions or removals.

- A **Carbon Crediting Programme** is a programme that issues carbon credits in line with the baseline-and-credit approach. Carbon credit programmes assess mitigation activities and mitigation outcomes against the programme's criteria (e.g. on additionality, baselines, monitoring, reporting and verification).

- A **Carbon Registry** is a platform for recording carbon credits and tracking their transactions.

- **Compliance Markets** refer to the trading of emission allowances and carbon credits for the purpose of using them for compliance with international or national obligations, for example towards NDCs under the Paris Agreement or to comply under domestic cap-and-trade or carbon tax schemes.

- A **Corresponding Adjustment** refers to an adjustment in the national emissions balances by host countries that have authorised and first-transferred ITMOs and countries that use ITMOs towards their NDC, to avoid double counting of the underlying mitigation outcomes between the host country and the ITMO user. Corresponding adjustments are reported as part of countries' Biennial Transparency Reports under the Paris Agreement.

- **Double Counting** occurs when the same mitigation outcome is counted more than once. This issue can arise through double issuance (issuing more than one carbon credit for the same mitigation outcome), double use (using the same carbon credit more than once), or double claiming (claiming the same mitigation outcome by more than one entity).

- An **Emission Allowance** is a GHG unit issued under a cap-and-trade scheme that represents one tCO2e.

- **Environmental and Social Safeguards** are measures and policies put in place to ensure that activities are carried out in a way that minimizes harm to the environment and affected communities.

- **Host Country Readiness** refers to a nation's preparedness to engage in carbon market activities, particularly under the Paris Agreement's Article 6. This includes having the necessary legal frameworks, institutional capacity, and technical infrastructure to accurately account for emission reductions, transfer mitigation outcomes, and ensure environmental integrity.

- An **Internationally Transferred Mitigation Outcome (ITMO)** is a real, verified and additional emission reduction or removal that is authorised by the host country under Article 6.2 of the Paris Agreement.

- **Leakage** refers to unintended increases in emissions outside the mitigation activity's boundaries that occur due to the activity.

- A **mitigation Outcome** refers to the reduction in GHG emissions and enhancement of removals from GHG from the atmosphere.

- **Nationally Determined Contribution (NDC)** refers to the climate action plans submitted by countries that are party to the Paris Agreement.

- **Offsetting** refers to counterbalancing emissions caused by an entity with an equivalent amount of mitigation outcomes generated elsewhere.

- A **Reversal** refers to the release of GHGs back into the atmosphere after they have been removed or reduced through a mitigation activity.

- **Voluntary Carbon Market** refers to the trading of carbon credits (and allowance) intended for voluntary use.


PROTECT
OUR
FUTURE
SAVE
THE
PLANET

A GUIDE TO NAVIGATING CARBON MARKETS: EXPLORING THE POTENTIAL FOR EASTERN AFRICA

Carbon Market Explainer

FEBRUARY 2025