CARBON MARKETS IN AFRICA

AN OVERVIEW

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Research direction: Sunita Narain and Avantika Goswami

Author: Trishant Dev

Editor: Souparno Banerjee

Design: Ajit Bajaj

Cover: Ajit Bajaj with AI assistance

Graphics: Tarun Sehgal

Layout: Kirpal Singh

Production: Rakesh Shrivastava and Gundhar Das

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41, Tughlakabad Institutional Area
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Phone: 91-11-40616000
Fax: 91-11-29955879
E-mail: cse@cseindia.org
Website: www.cseindia.org

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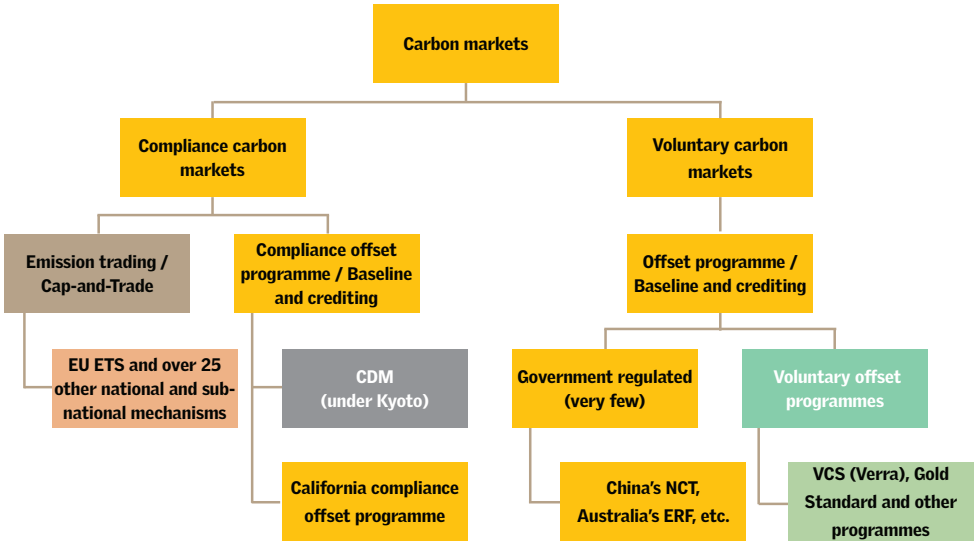
1. WHAT ARE CARBON MARKETS?

Carbon markets are systems that price carbon emissions and create economic incentives for governments and businesses to either reduce their own emissions or pay for reductions made by others. Essentially, buyers—including countries, companies or individuals—purchase certificates that represent financial support for activities that reduce carbon emissions, such as growing trees. These certificates are used by buyers to 'offset' their own emissions. Buyers are matched with sellers who perform the activities that reduce emissions, generating sellable certificates that are quantified based on the amount of emission reduction achieved.

Over the last two decades, these carbon markets have diversified into various kinds and become more complex. However, they can be divided into two main categories: **compliance markets**, where industries participate to meet government emission standards and

Figure 1: Types of carbon markets in existence



Source: CSE

are structured and enforced by legislation, and **voluntary markets**, where participants choose to engage in carbon trading beyond regulatory requirements and the market is largely unregulated. Voluntary carbon markets, in particular, have proliferated with little standardised design or guiding principles, resulting in a fragmented and, often, opaque system.

There is also a new form of market currently under development: markets based on Article 6 of the Paris Agreement. These markets are structured and enforced by the UNFCCC and national governments in some form, but they involve voluntary participation.

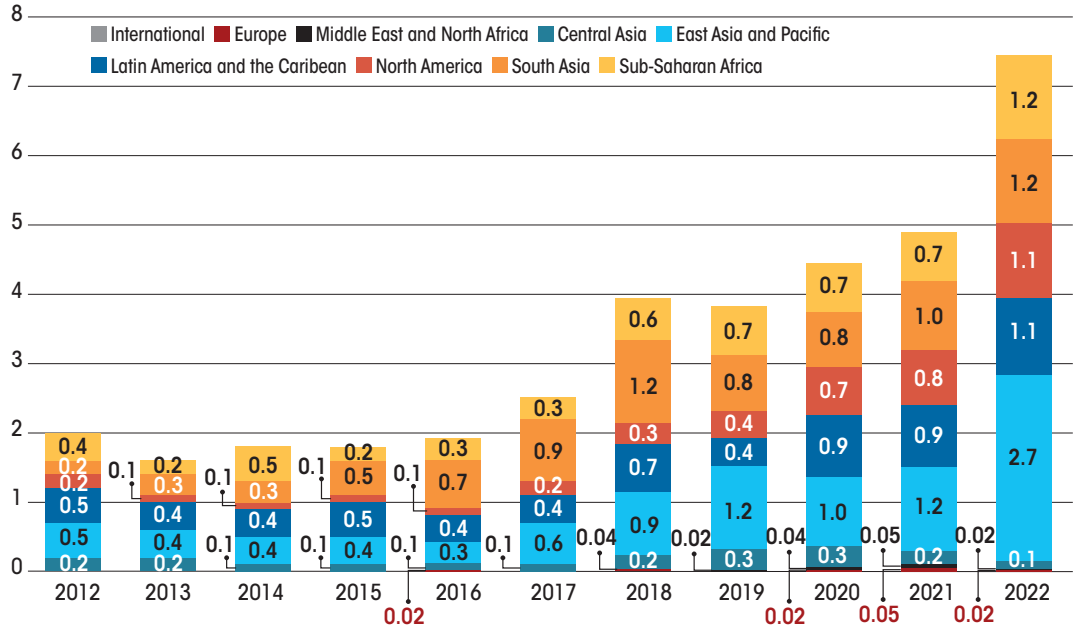
2. CARBON MARKETS IN AFRICA

Like other developing countries, Africa's role in the carbon market began with hosting projects that issued carbon credits traded on the global carbon market. Some of the earliest carbon market projects in Africa emerged in the late 1990s, beginning with forest conservation initiatives in East Africa. One of the first REDD+ projects in the voluntary carbon market was initiated during this period: the Kasigau Corridor REDD+ Project in Kenya.[1] Another notable project in Kenya, the Mikoko Pamoja project,[2] was among the first in the world to issue carbon credits from mangrove conservation.

Despite its early initiatives, Africa historically has had a minimal presence in the carbon market. As of March 2022, the Clean Development Mechanism (CDM), a market established under the Kyoto Protocol and led by the UNFCCC, saw only approximately 3 per cent of its carbon credit projects originating from Africa.[3] This limited involvement was primarily due to insufficient investment in projects such as solar PV and wind energy[4] which were prevalent in other regions like China and India, and limited institutional capacity to host these projects.

As the voluntary carbon market (VCM) developed and businesses started investing more in forestry and community projects, Africa's presence in the carbon market grew too. By 2024, the region was responsible for about one-fifth of the projects listed in top carbon market registries. Investment in these projects also went up, making up nearly 17 per cent of the total investment in voluntary carbon projects.[5]

Graph 1: Investment in carbon credit projects across the five carbon credit registries (Verra, Gold Standard, ACR, CAR and Puro Earth)



Source: Trove Research

In addition to the voluntary carbon market, recent bilateral deals signed by African countries with non-African countries to cooperate on market mechanisms based on Article 6 of the Paris Agreement are leading to new frameworks being put forward by governments in African countries for issuing carbon offsets. These frameworks are intended to supply offsets to partnering countries. In some cases, offsetting activities have already begun.

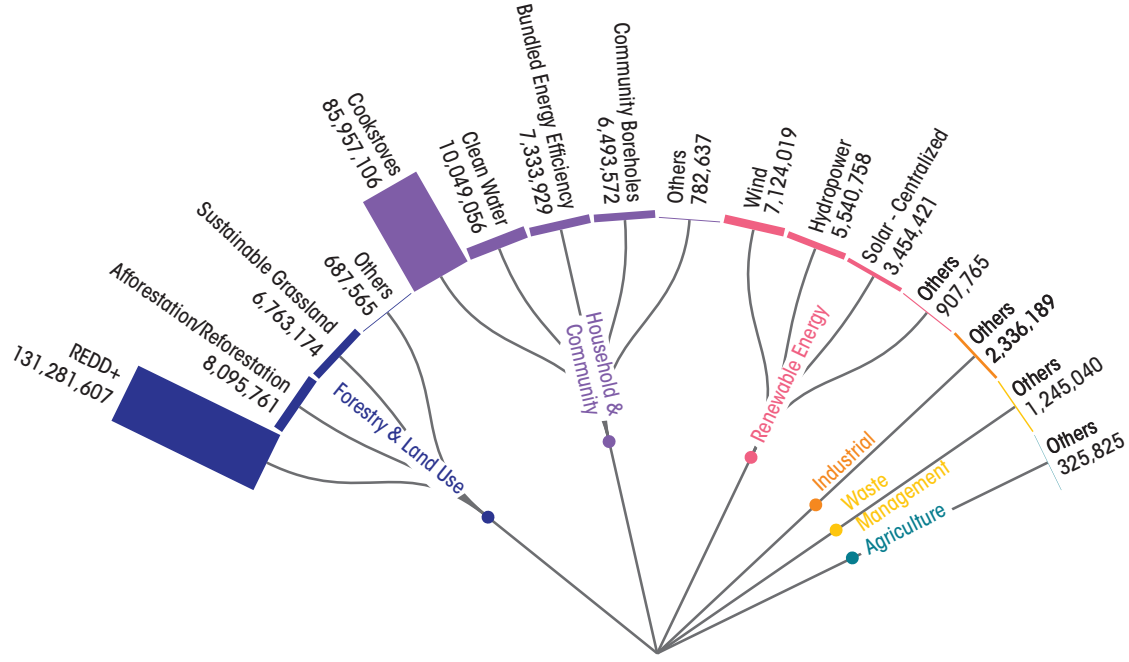
As the carbon offset market diversifies, the ecosystem surrounding it is also developing in Africa. The West African Alliance on Carbon Markets and Climate Finance, an alliance of several West African countries, was formed at COP22 to enhance the engagement of West African nations in market mechanisms, particularly through Article 6 of the Paris Agreement. The African Carbon Market Initiative (ACMI) was launched at COP27, sponsored by the Global Energy Alliance for People and Planet, Sustainable Energy for All, The Rockefeller Foundation, and the UN Economic Commission for Africa, to promote carbon markets in Africa.

3. VOLUNTARY CARBON MARKETS IN AFRICA

Although Africa does not have compliance carbon markets, the voluntary carbon market (VCM) has grown significantly on the continent. Key registries of the VCM, such as Verra's VCS and the Gold Standard, which together account for over 95 per cent of Africa's voluntary carbon market projects, reflect this growth. As of March 2024, 1,925 projects across Africa were listed on these two leading voluntary carbon market registries. Of these, 882 projects had been issued carbon credits, totaling approximately 278 million; out of these, 140 million carbon credits had been retired.[6,7]

Most of the carbon credit projects in Africa are concentrated in two main areas: forestry and land use, and community-based projects,

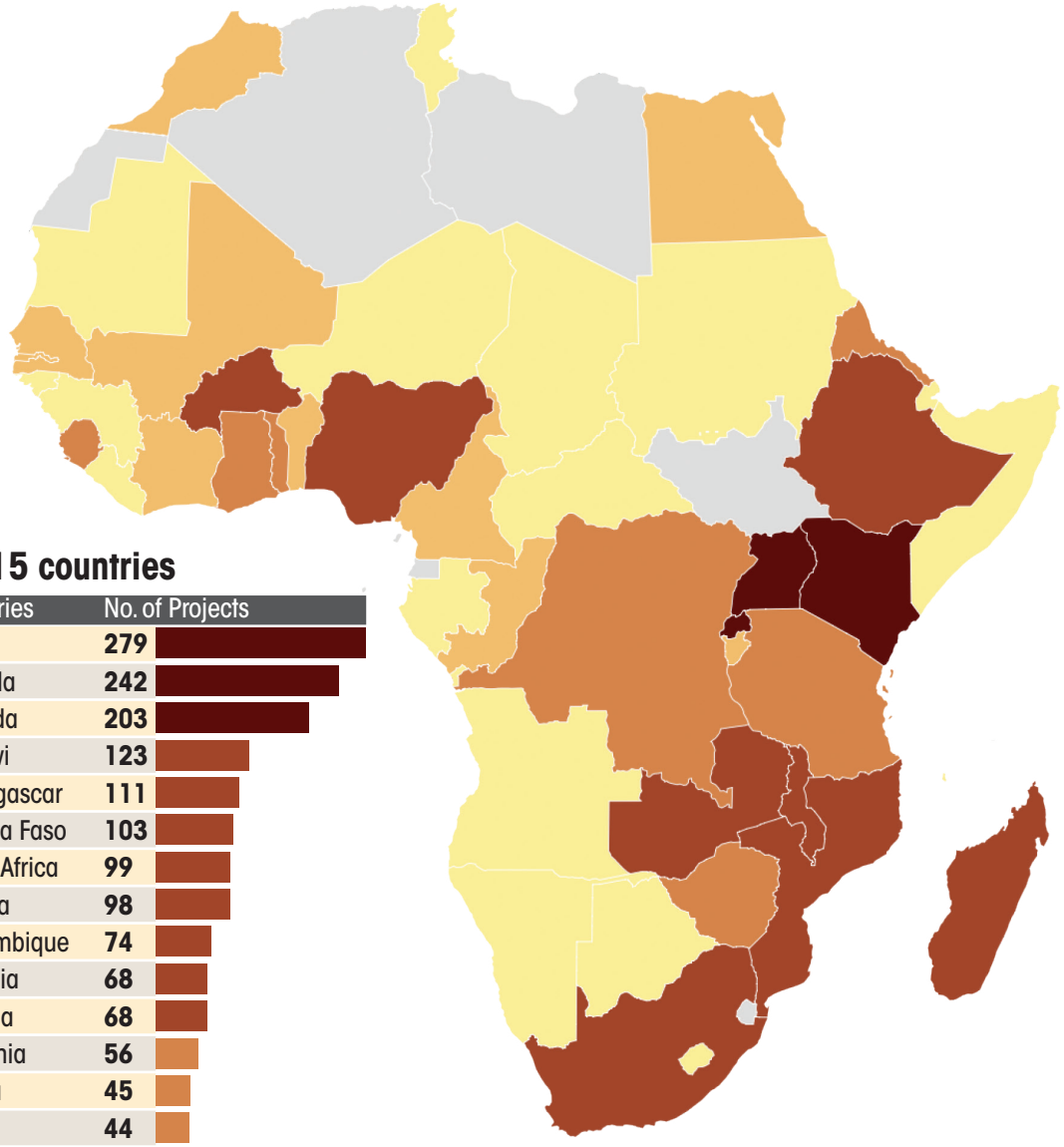
Graph 2: Carbon credits issued to voluntary carbon market projects in Africa



Data source: Berkeley Carbon Trading Project

Map 1: Carbon projects registered or in the pipeline in Africa

< 10 10–26 26–68 68–203 ≥ 203



Top 15 countries

Countries	No. of Projects
Kenya	279
Uganda	242
Rwanda	203
Malawi	123
Madagascar	111
Burkina Faso	103
South Africa	99
Nigeria	98
Mozambique	74
Ethiopia	68
Zambia	68
Tanzania	56
Eritrea	45
DRC*	44
Ghana	35

* Democratic Republic of Congo

Data source: Berkeley Carbon Trading Project

particularly those involving household devices like improved cookstoves. These sectors are the leading carbon credit issuers across the continent. This study aims to explore projects in these two sectors in detail, shedding light on how they work and their relevance for both the community and the climate.

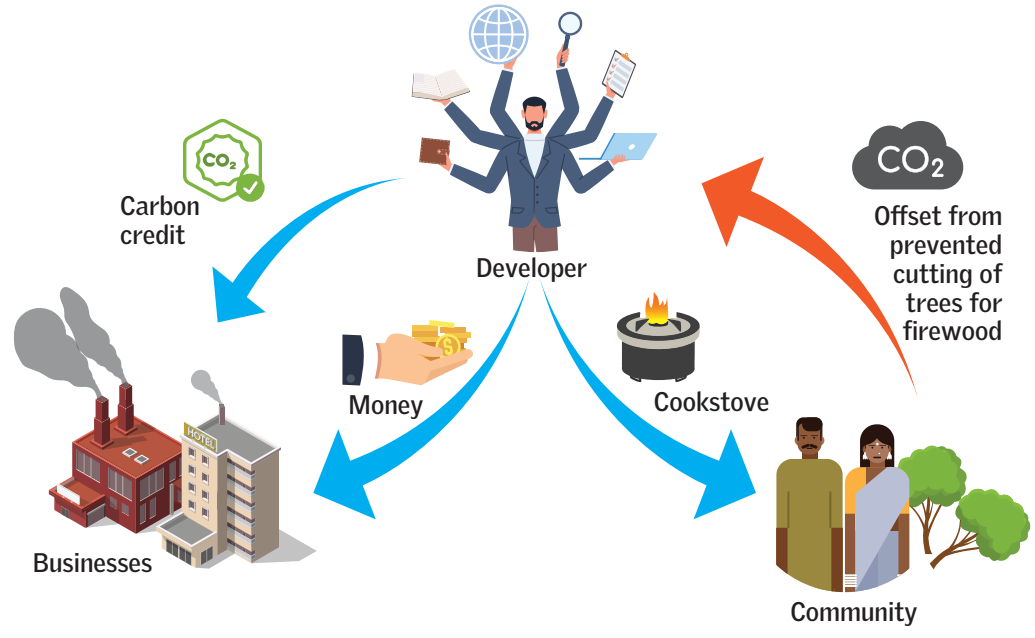
4. COOKSTOVE PROJECTS

CLEAN COOKSTOVE CARBON CREDIT PROJECTS

Clean cookstove projects in the voluntary carbon market (VCM) involve partnerships between carbon credit project developers and manufacturers or distributors of energy-efficient cookstoves. These stoves are provided to communities, often at a subsidised price or sometimes for free. The idea is that these cookstoves use less fuel and produce fewer emissions compared to traditional stoves, reducing the amount of carbon released into the atmosphere.

Project developers then calculate the amount of carbon emissions avoided by using these cleaner stoves and claim carbon offsets for the reduction. These offsets are certified by voluntary carbon offsetting standards and can be sold in the voluntary carbon

Figure 3: Working of a cookstove carbon project



Source: CSE

markets. The revenue generated from selling these offsets helps fund the project and also generates profits for the developers.

Typically, a 'clean cookstove' costs anywhere between US $2-100. Each cookstove is reported to offset between 2-4 tCO_2e per year. Carbon credits are given for a typical period of five to seven years considering the cookstove's life. Keeping in mind these figures, in a five-year lifetime, a cookstove could generate 10-28 carbon credits. Current prices in the market are between US $7-10 per credit for cookstove projects: thus, US $70-280 could be earned per cookstove.

Therefore, the cookstove distribution industry is thriving in the carbon market with lucrative returns for developers and their investors.

INVESTMENT IN CLEAN COOKING

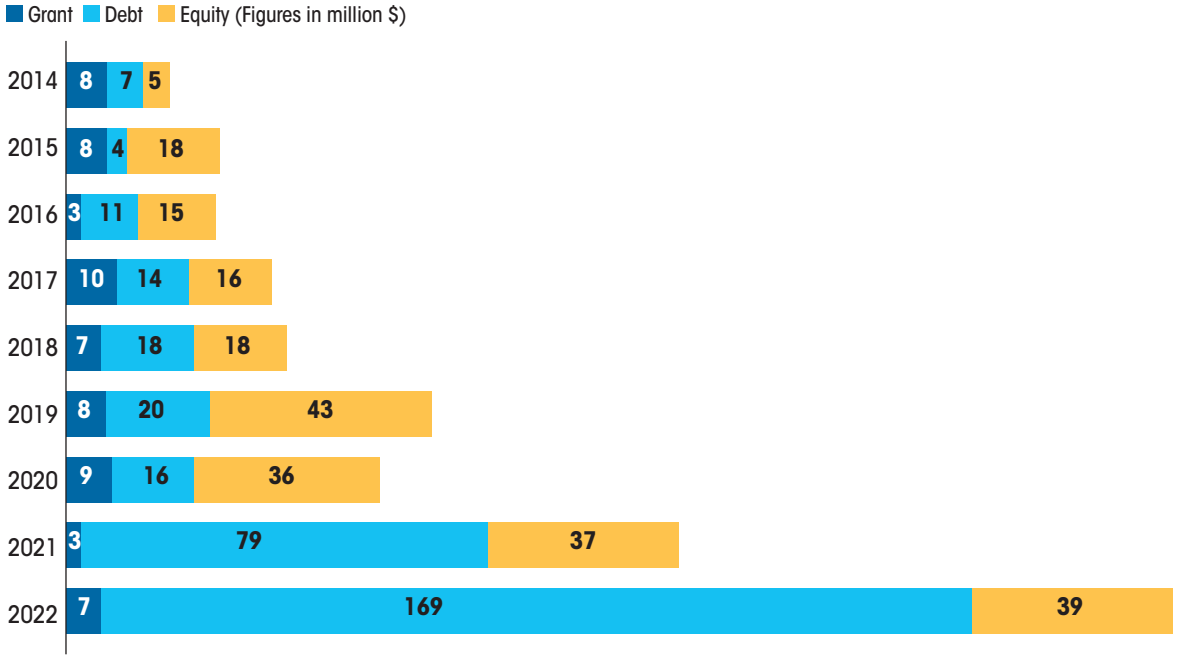
According to the Clean Cooking Alliance,[8] the for-profit clean cooking industry saw an investment of US $215 million in the year 2022. This was 80 per cent higher than the investment in 2021. Ninety seven per cent of this investment was return-seeking capital – equity or debt. In three years (2020-22), two-thirds of the investment went to companies that were involved in the carbon credit business.

Types of projects

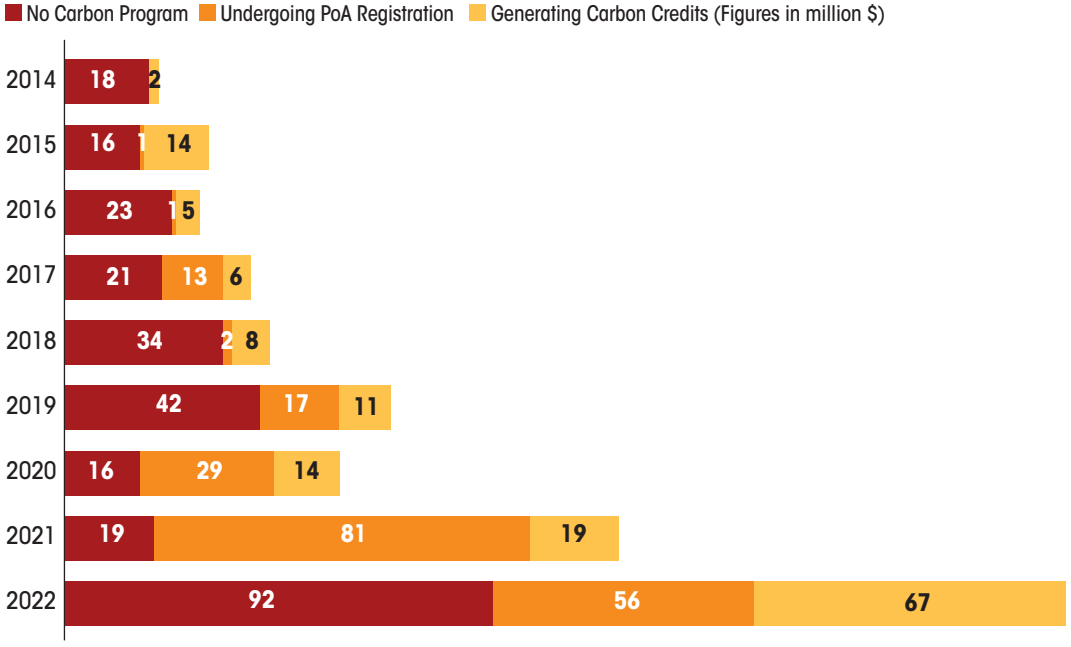
The projects could differ based on the technological solution being used. These could be:

1. **Biomass-based improved cookstoves**: These stoves burn biomass (such as wood, crop residues, dung, or charcoal) more efficiently than traditional open fires or basic stoves, thereby reducing fuel usage and/or lowering smoke and particulate emissions.
2. **Pellet-based stoves**: These stoves burn compressed wood or agricultural pellets, offering an improved alternative to traditional biomass stoves.

Graph 3: Capital raised by clean cookstove developers



Graph 4: Capital raised by clean cooking companies by carbon profile



Data source: Clean Cooking Alliance

3. **Biofuel-based cookstoves**: These devices use liquid or gaseous biofuels—such as ethanol, biodiesel, biogas, or plant oils—as their primary fuel. Biofuels burn more cleanly than solid biomass, emitting fewer pollutants and generally being more efficient than solid fuel cookstoves.
4. **Solar cookstoves**: These stoves use solar energy through reflective surfaces or photovoltaic cells. They are emission-free and rely on renewable energy sources.
5. **LPG cookstoves**: Designed to use liquefied petroleum gas (LPG) as fuel, these stoves provide controlled heat, are efficient, and reduce indoor air pollution compared to solid biomass stoves.
6. **Electric cookstoves**: These stoves use electricity as their heat source, offering precise temperature control and cleaner cooking with no combustion byproducts. They come in various types, including coil, ceramic, and induction models.

Cookstove methodologies

Cookstove projects in the voluntary carbon market utilise certain methodologies (see *Table 1*). These methodologies are designed to support projects that introduce energy-efficient cookstoves or switch from traditional biomass (such as firewood or charcoal) to renewable alternatives. The focus is on enhancing thermal efficiency in cooking, a significant source of household emissions.

In these projects, the baseline scenario is the continued use of traditional, inefficient stoves that burn non-renewable biomass

Table 1: Cookstove methodologies

Standard	Methodology Code	Methodology
VCS	VMR006	Energy Efficiency anf Fuel Swtich Measures in Thermal Applications
CDM	AMS-II.G.	Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass
CDM	AMS-I.E.	Switch from Non-Renewable Biomass for Thermal Applications by the User
GS	TPDDTEC v4.0	Reduced Emissions from Cooking and Heating
GS		Simplified Methodology for Clean and Efficient Cookstoves
GS		Methodology for Metered & Measured Energy Cooking Devices

or fossil fuels. This baseline assumes that without the project, users would continue to cook with the same inefficient methods, leading to high levels of emissions from incomplete combustion and overuse of biomass.

Baseline emissions are calculated based on the amount of non-renewable biomass that would have been used in the absence of the project. This involves estimating the average fuel consumption per household using traditional stoves and the associated emission factors for carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). The baseline scenario assumes that all fuel used is non-renewable, and the emissions are calculated using standardised formulas and emission factors. This involves:

1. **Fuel consumption analysis:** Collecting data on the fuel consumption patterns of households using traditional stoves. This can be done through surveys, past records, or by using default values. The amount of non-renewable biomass (e.g., firewood, charcoal) consumed by these traditional stoves is estimated by calculating the average fuel consumption per household over a given period, typically one year.
2. **Emission factor determination:** Baseline emissions are calculated using standard emission factors for CO_2, CH_4, and N_2O associated with the combustion of non-renewable biomass.
3. **Determining non-renewable biomass fraction (fNRB):** The fraction of biomass considered non-renewable is an important parameter. This is typically determined by calculating the fraction based on factors such as deforestation rates, biomass growth, and local biomass availability.

Project emissions are those associated with the use of improved cookstoves. These are generally lower due to increased thermal efficiency and the use of renewable biomass or cleaner fuels. Project emissions are calculated using similar formulas as the baseline, but they reflect reduced fuel consumption and the type of fuel used.

Finally, the net emission reductions are calculated by subtracting the project emissions from the baseline emissions. This difference

Table 2: Top 25 developers of household devices and cookstoves globally in the voluntary carbon market in 2023

Developers	Portfolio focus	Issued credits (in Million)	Projects	YoY growth (Issued / Projects)
C-Quest Capital	Global	16.69	74	354% / 42%
Impact Carbon	Global	15.59	78	26% / 53%
CO_2balance UK Ltd.	Global	10.02	433	29% / 2%
MyClimate Foundation	Global	5.36	17	27% / 0%
Relief International	Country-specific	5.16	1	0% / 0%
Burn Manufacturing Co	Global	5	40	60% / 38%
Vestergaard Frandsen Group SA	Country-specific	4.48	1	0% / 0%
MicroEnergy Credits	Global	3.77	61	+1,343% / 0%
UpEnergy	Global	3.7	81	151% / 11%
Hestian Innovation	Regional	3.43	44	128% / 0%
DelAgua	Global	3.06	9	371% / 13%
Toyola Energy Services Limited	Country-specific	3.05	1	0% / 0%
Value Network Venture Advisory Services (VNV Advisory)	Regional	2.97	29	443% / 4%
Bangladesh Bondhu Foundation	Country-specific	2.95	107	112% / 0%
Envirofit International	Global	2.87	34	4% / 3%
The African Stove Company Limited (TASC)	Global	2.84	8	647% / 33%
Microsol SAS	Global	2.83	10	32% / 0%
Proyecto Mirador	Regional	2.7	5	13% / 67%
South Pole Holding Ag	Global	2.54	75	31% / 0%
KOKO Networks	Country-specific	2.42	2	0% / 0%
Intraco	Regional	2.36	14	+2,215% / +40%
Livelihoods Fund	Global	2.14	7	20% / 40%
Sirreon Technology & Development (Beijing) Co., Ltd.	Country-specific	2.13	11	27% / 38%
GERES	Global	2.01	3	0% / 0%
AERA Group	Global	1.94	12	60% / 20%

Data source: Abatable

represents the amount of GHG emissions avoided due to the project. The methodologies typically include adjustments for potential leakage (e.g., if the use of non-renewable biomass is simply shifted to another area) and for any continued use of traditional stoves alongside the new, efficient ones.

Emission reductions must be monitored and verified over time. This involves regular data collection on fuel consumption, stove usage, and performance. The monitoring data is used to issue carbon credits based on actual, verified emission reductions.

COOKSTOVE CARBON PROJECTS IN AFRICA

Until March 2024, 86 million carbon credits had been issued to 380 cookstove-based carbon credit projects in Africa. The total number of listed projects, including those in the pipeline for registration across VCS and Gold Standard—the two standards that almost entirely represent the cookstove voluntary carbon market (VCM) in Africa—amounted to 832.[9]

Cookstove projects in Ghana, Mali, and Uganda were among the first to be registered under the voluntary registries starting in 2007. Since then, such projects have been undertaken in more than 36 countries across the continent.

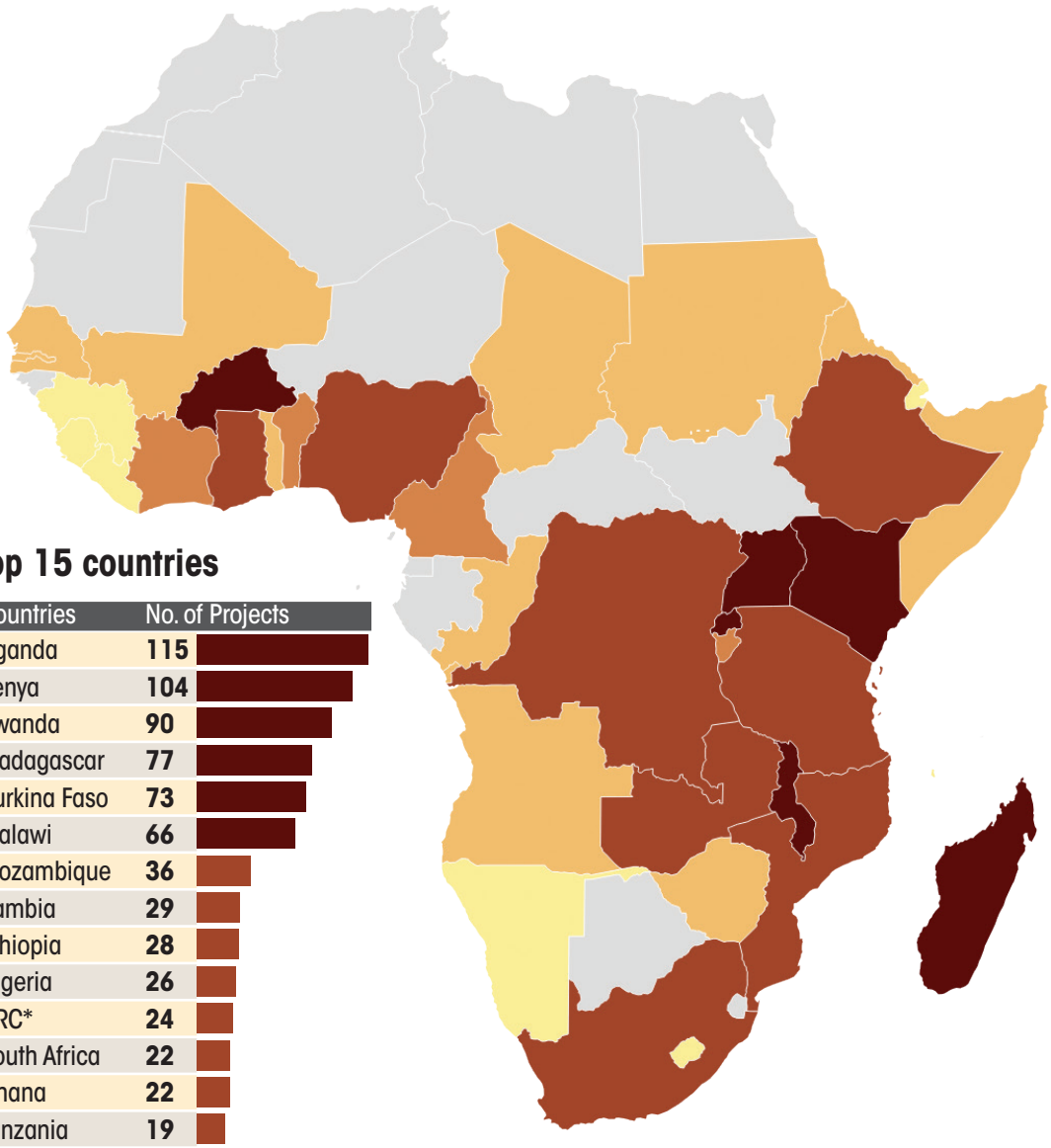
COOKSTOVE PROJECTS: SOME CONCERNS

The DTE-CSE study[10] on cookstove projects in India identified several issues in the design and implementation of these initiatives. First, the study highlighted flaws in the **baseline assumptions** used to estimate greenhouse gas reductions. Many projects assumed that the target population relied primarily on non-renewable biomass, neglecting the fact that many households were already using cleaner sources of cooking. The projects assumed that once the cookstoves were provided to beneficiary households, they would exclusively use them. However, this was far from what was observed on the ground. Village households typically used multiple sources of cooking fuel for cost convenience, and in many cases, the new cookstoves had fallen into disuse or were being used sparingly. This miscalculation inflated the projected carbon savings.

Second, the study pointed to a **lack of transparency** regarding the ownership of carbon credits. Villagers were often unaware that

Map 2: Cookstove projects registered or in the pipeline in Africa

< 4 4-7 7-19 19-66 ≥ 66



Top 15 countries

Countries	No. of Projects
Uganda	115
Kenya	104
Rwanda	90
Madagascar	77
Burkina Faso	73
Malawi	66
Mozambique	36
Zambia	29
Ethiopia	28
Nigeria	26
DRC*	24
South Africa	22
Ghana	22
Tanzania	19
Burundi	13

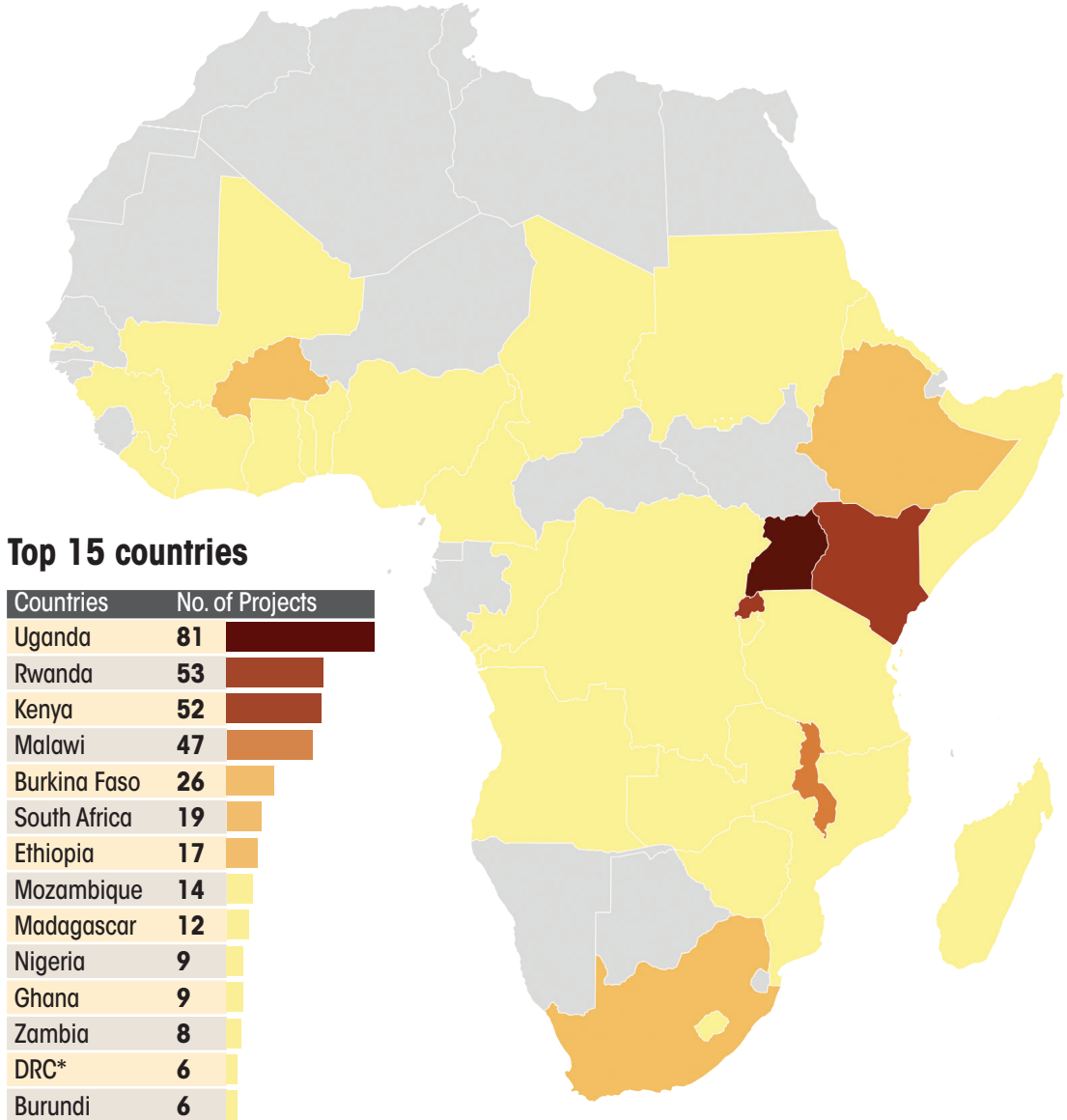
* Democratic Republic of Congo

Data source: Berkeley Carbon Trading Project

they had signed over their carbon rights to project developers. The third issue was that in some cases, **households had even made payments** to receive the cookstoves, unaware that the cookstoves were generating carbon credits for the project developers.

Map 3: Registered cookstove projects in Africa

< 17 | 17–33 | 33–49 | 49–65 | ≥ 65



Top 15 countries

Countries	No. of Projects
Uganda	81
Rwanda	53
Kenya	52
Malawi	47
Burkina Faso	26
South Africa	19
Ethiopia	17
Mozambique	14
Madagascar	12
Nigeria	9
Ghana	9
Zambia	8
DRC*	6
Burundi	6
Tanzania	4

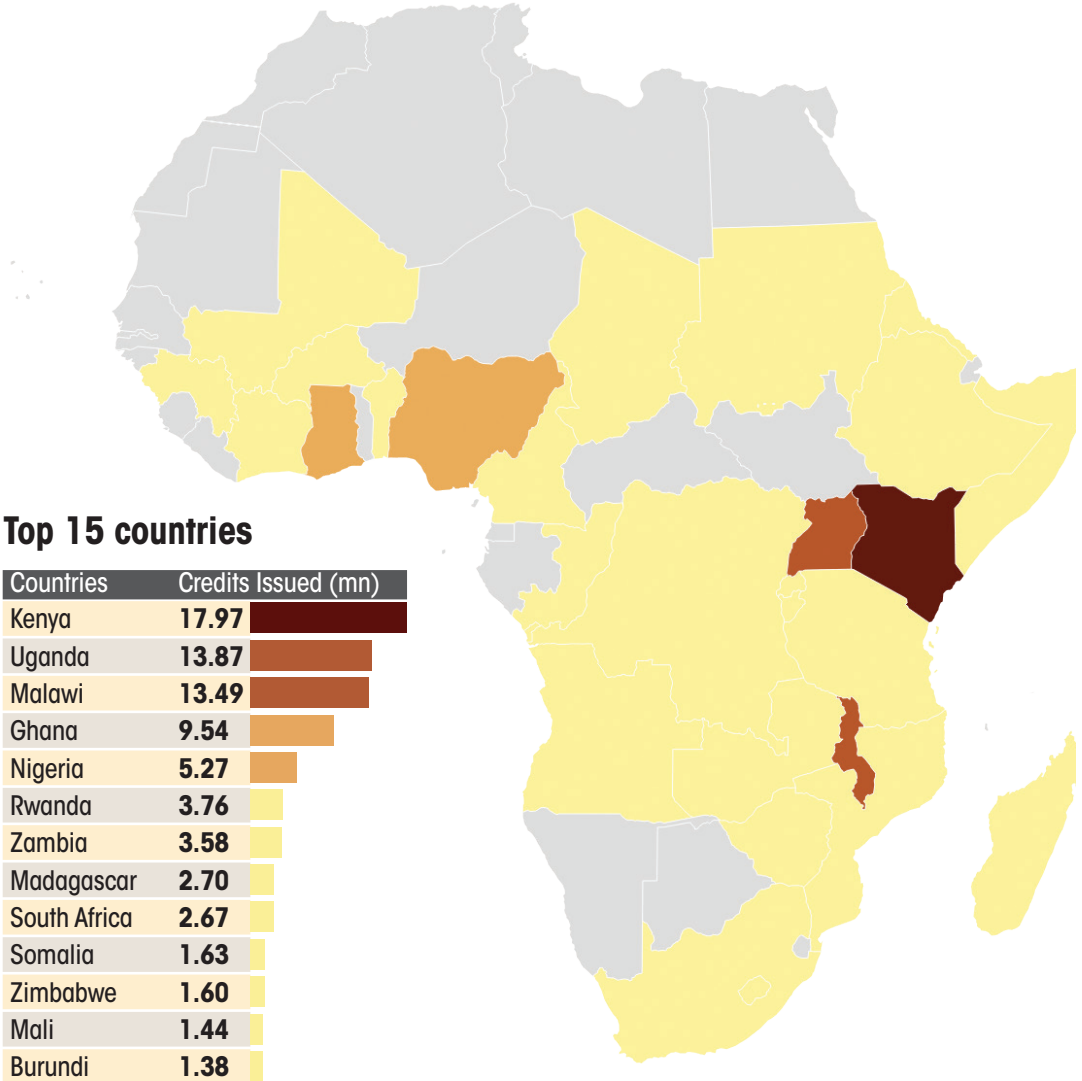
* Democratic Republic of Congo

Data source: Berkeley Carbon Trading Project

The fourth issue involved **inadequate monitoring** and verification. Despite claims of regular surveys, many households reported minimal or no follow-up from the project developers. The study also criticised the **role of third-party validators**, who appeared to

Map 4: Cookstove projects credits issued

< 5 5–10 10–15 ≥ 15 (Figures in million)



Top 15 countries

Countries	Credits Issued (mn)
Kenya	17.97
Uganda	13.87
Malawi	13.49
Ghana	9.54
Nigeria	5.27
Rwanda	3.76
Zambia	3.58
Madagascar	2.70
South Africa	2.67
Somalia	1.63
Zimbabwe	1.60
Mali	1.44
Burundi	1.38
Tanzania	1.17
DRC*	0.84

* Democratic Republic of Congo

Data source: Berkeley Carbon Trading Project

give projects a clean chit despite apparent discrepancies in their field visits.

Finally, the study questioned whether these projects genuinely benefited the communities involved. Many villagers found the improved cookstoves **inconvenient or infrequently used**,

undermining the projected environmental benefits. Moreover, the financial benefits derived from carbon credits appeared to disproportionately favor project developers over local communities.

Other studies offer similar insights on such projects. A study conducted by researchers from UC Berkeley echoes these concerns, highlighting the **overestimation** of carbon savings by a factor of 10 in cookstove projects. Exaggerated claims about carbon savings were made based on **unrealistic assumptions of stove usage** and fuel type. Much like in India, the study found that households continued to use traditional stoves alongside the new ones, significantly diluting the expected emissions reductions. Moreover, the supposed health benefits from reduced indoor air pollution were often not realized, as the new stoves did not perform as effectively as advertised.

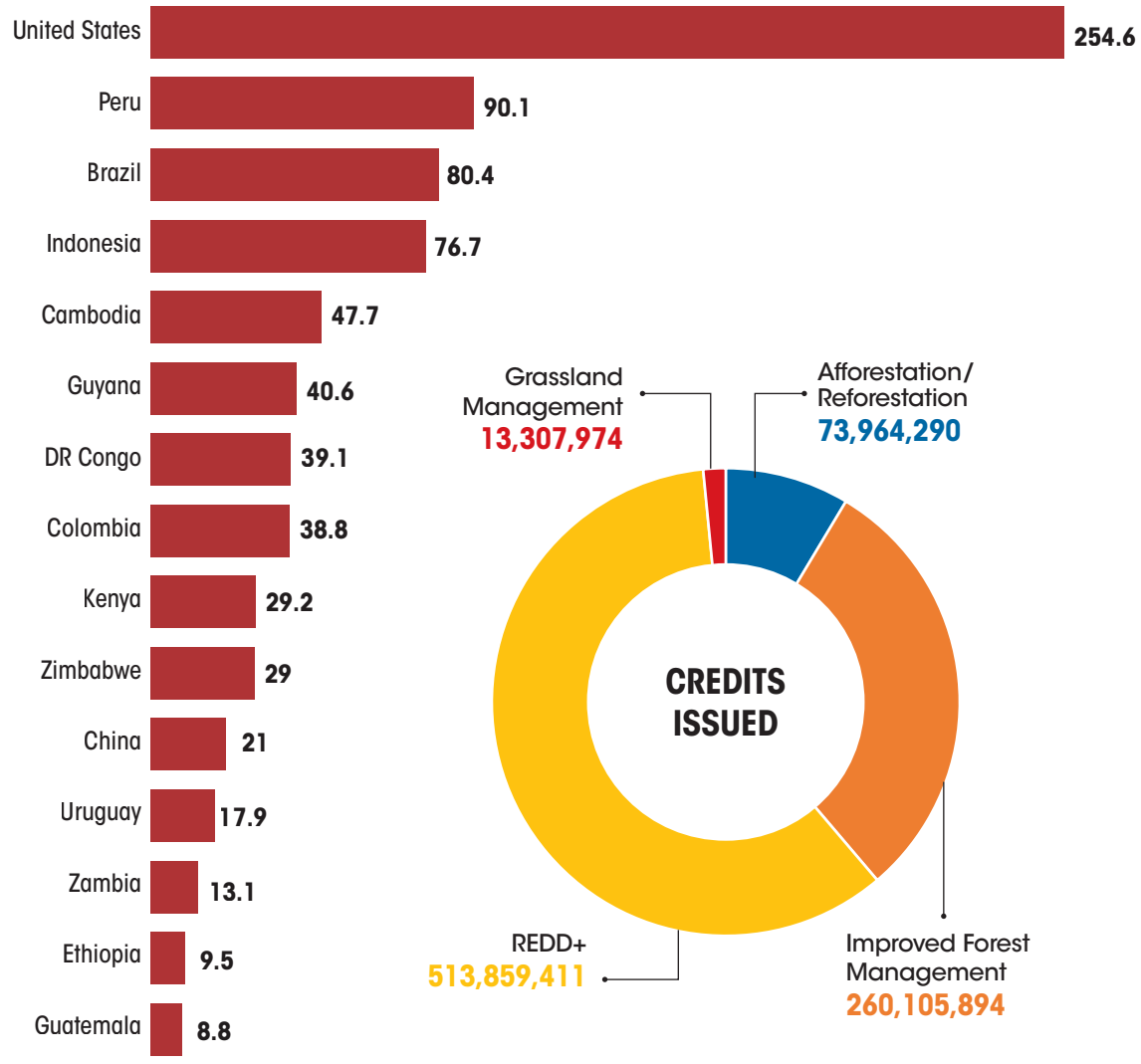
5. FORESTRY AND LAND-USE PROJECTS

Forestry and land use carbon credit projects are designed to sequester carbon dioxide (CO_2) from the atmosphere through changes in land management practices. Forestry and land-. use based projects make up about one-fifth of all projects in the voluntary carbon market. About 40 per cent of the carbon credits issued have gone to these projects. The project-wise break-up is shown in the Graph 5.[11]

Some of the examples of interventions followed or the types of projects are:

1. **Afforestation/reforestation**: These involve planting trees on land that was not previously forested (afforestation) or replanting trees in deforested areas (reforestation).
2. **Avoided deforestation**: These projects aim to prevent deforestation or degradation of existing forests. By protecting forests from being cut down, the project avoids the release of carbon stored in the trees.
3. **Sustainable forest management (SFM)**: This involves managing forest resources in a way that maintains their biodiversity, productivity, and ecological processes while still allowing for timber and other resource extraction. Proper management helps maintain the forest's carbon storage capacity.
4. **Agroforestry**: Integrates trees and shrubs into agricultural landscapes, combining forestry and farming.
5. **Wetland restoration**: Wetlands store large amounts of carbon in their soil and vegetation.
6. **Grassland management**: Such projects enhance carbon sequestration by improving grazing practices, restoring degraded lands, and managing soil health.

Graph 5: Forestry and land-use carbon credit projects by type and credits issued (in million) world-wide (Aug 2024)



Data source: Carbon Plan, CSE

7. **REDD+**: Reducing emissions from deforestation and forest degradation, enhancing forest carbon stock through a variety of interventions.

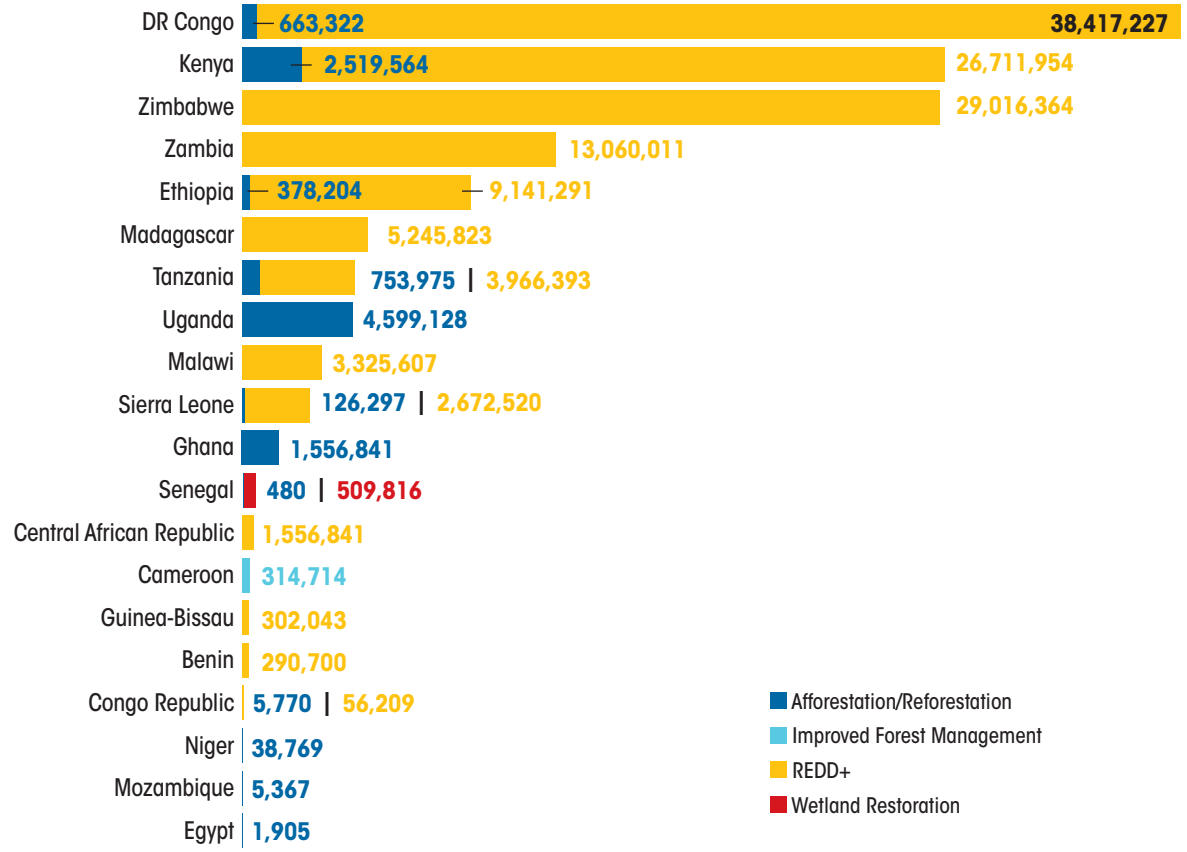
According to the World Bank, the average over-the-counter (OTC) price for forestry and land use carbon credits for both emission

avoidance and emission removal projects was US $10.84 in 2022. In 2023, this average price dropped by 10 per cent.[12]

FORESTRY AND LAND USE PROJECTS IN AFRICA

There are 175 forestry and land use-based projects across Africa in four voluntary carbon market registries—Verified Carbon Standard (VCS), Gold Standard, Architecture for REDD+ Transactions' The REDD+ Environmental Excellence Standard (ART TREES), and American Carbon Registry (ACR)—as of August 2024, of which 55 have issued a total of 144 million carbon credits; 133 million credits from these 144 have been issued by REDD+ projects – mostly in Democratic Republic of Congo, Kenya, Zimbabwe, Zambia and Ethiopia.

Graph 6: Top 15 countries in Africa by credits issued in the forestry and land-use sector



Data: Carbon Plan

BLUE CARBON LAND DEALS

A series of carbon offset agreements signed by a UAE-based company in 2023 garnered significant attention before and during the 28th Conference of Parties (CoP). These deals involved the transfer of carbon rights over vast expanses of land for reforestation, forest restoration, and conservation efforts.[13]

The company, Blue Carbon, is a fully owned subsidiary of Global Carbon Investments, which is owned by Sheikh Ahmed Dalmook Al Maktoum, a member of the Dubai ruling family. In February 2023, a memorandum of understanding (MoU) was signed between the government of Tanzania and Blue Carbon. The agreement aimed to support the government's efforts to conserve and manage eight million hectare (ha) of forest resources, including 56,000 ha of mangroves.

Subsequently, Blue Carbon, and other private entities, signed several similar agreements (see Table).

Country	Partner company	Land area covered
Tanzania	Blue Carbon	8 million hectares (8% of Tanzania's land area)
Tanzania	GreenCop Development PTE, Ltd.	2.4 million hectares
Tanzania	Carbon Tanzania	1.8 million hectares
Zambia	Blue Carbon	8 million hectares (10% of Zambia's land area)
Zambia	China-based timber companies	4 million hectares
Liberia	Blue Carbon	1 million hectares (10% of Liberia's land area)
Zimbabwe	Blue Carbon	7.5 million hectares (20% of Zimbabwe's land area)
Kenya	Blue Carbon	millions of hectares
Nigeria	Blue Carbon	760,000 hectares
Union of Comoros	Blue Carbon	
Papua New Guinea	Blue Carbon	
St. Lucia	Blue Carbon	
Commonwealth of Dominica	Blue Carbon	

FORESTRY PROJECTS IN AFRICA: SOME CONCERNS

One of the largest carbon credit projects registered in Africa was the Kariba REDD+ project in Zimbabwe, reported to have encompassed an area of 747,801 ha. By early 2023, the project, which was registered in 2011, had sold 28.8 million credits to companies like Gucci, Volkswagen, Porsche, Nestlé, Delta Air Lines, and others. In March 2023, Bloomberg investigated the project and found that while the project fetched over €100 million, most of the money had gone to the project developers – South Pole and its partner Carbon Green Investments – rather than to the community undertaking efforts to prevent deforestation. Moreover, the project was found to have vastly overestimated gains and consequently over-issued credits. Verra, the registry where the project was registered, launched an investigation in October 2023, putting the project on hold. South Pole, the Swiss developer, pulled out of the project soon after, and the project was finally withdrawn in mid-2024.[14]

But the case is far from unique and vast irregularities have been uncovered in FOLU projects in Africa and elsewhere – the reported issues are more severe for REDD+ projects that also generally cover vast swathes of land, involving communities, administration and national and international organisations.

In some cases, carbon credit projects have led to the **displacement** of communities, either through **direct eviction** or by **restricting access to lands** they traditionally use. Another issue is the **inequitable distribution of benefits**. Despite being the custodians of the land, communities often receive either a small portion or nothing out of the financial benefits generated by carbon credit projects. This has led to concerns about fair compensation and benefit-sharing. The complexity of carbon markets and the involvement of multiple intermediaries often obscure the flow of funds, making it difficult for local stakeholders to understand how much they should rightfully receive.

The complexity of the market is compounded by the **lack of transparency** in the activities conducted, deals signed, and transactions occurring within these projects. For example, there is a lack of transparency in how Blue Carbon LLC has secured large tracts of land in African countries and how are activities being done, measurements made on the activities and other important details.

Another important aspect is the **environmental integrity** of the projects, especially the difficulty of accurately establishing baselines in forestry and land-use projects. Determining accurate baselines can be difficult due to limited historical data and uncertainties in future projections. There's also the risk of baseline manipulation, where developers set artificially low baselines to inflate reported carbon savings.

6. ARTICLE 6-BASED CARBON PROJECTS IN AFRICA

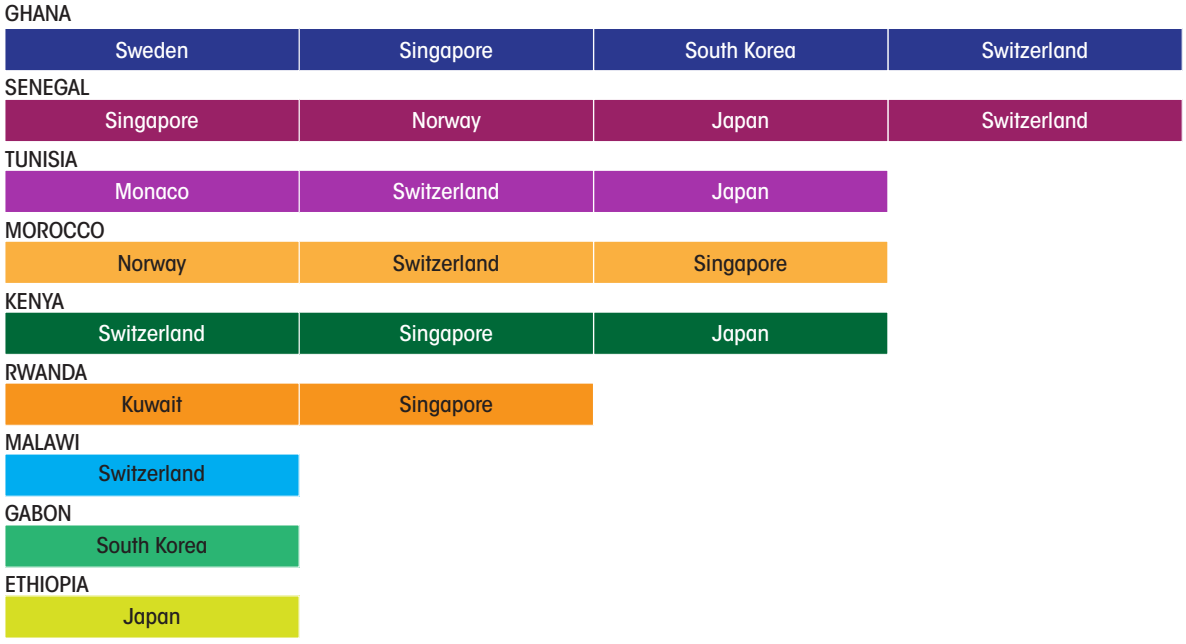
Article 6 of the Paris Agreement provides guidelines for international cooperation to achieve climate targets through carbon markets and non-market approaches. Under Article 6.2, countries can enter into partnerships with other countries and transfer emission reductions, known as Internationally Transferred Mitigation Outcomes (ITMOs), among themselves or to other international mechanisms, such as the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). In this mechanism, one country pays for an emission reduction project in another country in exchange for emission reduction units or carbon offsets (ITMOs), which can then be used by the paying country to meet its own Nationally Determined Contributions (NDCs).

Article 6.4 establishes a centralised mechanism run by the UNFCCC to certify projects that issue emission reduction units that can be traded internationally, similar to the Clean Development Mechanism under the Kyoto Protocol, but with new rules.

While the finalisation of the framework for both Article 6.2 and 6.4 is ongoing in the UNFCCC COP process, several governments and private entities have started working on their own models, infrastructure, and projects to support the issuance and transaction of Article 6-based credits.

Until May 2024, at least nine African countries had signed 22 bilateral agreements or MoUs with other countries to host projects based on Article 6.2 and supply ITMOs (emission reduction units) to partnering countries.[15]

Graph 7: Bilateral engagement on Article 6.2 between countries



Data source: UNEP Copenhagen Climate Centre

GHANA'S PROJECTS WITH SWITZERLAND

Ghana has signed Article 6.2-based bilateral agreements with Singapore, Switzerland, Sweden and South Korea. Ghana has designated the Ministry of Environment, Science, Technology, and Innovation (MESTI) as the authority to sanction the use of ITMOs. Ghana's government has also published a Framework on International Carbon Markets and Non-Market Approaches. This framework specifies eligible mitigation activities, integrity requirements, the authorization process, the functioning of the registry and other important aspects of hosting projects. To record the transaction, Ghana has also created the Ghana Carbon Registry. All voluntary carbon market (VCM) projects are required to obtain formal recognition under this framework.

Ghana submitted an 'initial report' to the UNFCCC for a cooperative approach for activities between Switzerland and Ghana in September 2023. The cooperative approach here was the adoption of Alternate Wetting and Drying (AWD) for rice cultivation. The report declared that farmers are compensated financially for

Table 3: Projects in Ghana

Project Type	Project
Cookstove	Transformative Cookstove Activity in Rural Ghana
Agriculture	Promotion of climate-smart Agriculture Practices for Sustainable Rice Cultivation
Methane avoidance	Integrated waste recycling and composting for methane reduction in Ghana
HFCs	Green AC market transformation programme
Renewable Energy	Ghana's Transitional National Clean Energy Access Program
Cookstove	Pathways to fully electric cooking in Ghana
Transport	Electric bicycle manufacturing and distribution for gig economy workers and commuters

Source: UNEP Copenhagen Climate Centre

adopting the AWD practice. An initial report was also submitted by Switzerland in June 2023, providing information on the activity.[16]

Subsequently, more approaches or projects have been made a part of this arrangement (*see Table 3*).

One such mitigation activity is the implementation of Improved Cookstoves (ICS) in Ghana. The project, named 'Transformative Cookstove Activity in Rural Ghana,' involves replacing cookstoves that rely solely on firewood and charcoal with fuel-efficient alternatives.

The project targets smallholder farmers in rural Ghana, aiming to distribute 180,000 improved cookstoves in three phases. Initiated on April 1, 2023, beneficiaries can purchase these cookstoves either outright at a subsidized rate, in installments, or through microfinance institutions like Village Loans and Savings Association Funds (VLSA) and Technological Transfer Agreements Funds (TTA). ACT Commodities and Envirofit, two private entities, are the project developers and implementers.

The Klik Foundation, also known as The Foundation for Climate Protection and Carbon Offset Klik, is an organisation operating under the Swiss CO_2 Act. It supports such projects in countries with which the Swiss Government has signed bilateral climate agreements. Host countries enter into Mitigation Outcome

Purchase Agreements (MOPA) with the Klik Foundation to provide emission reduction units (ITMOs) in exchange for financing from the foundation.

OTHER COUNTRIES' PROJECTS WITH SWITZERLAND

A few other projects are in the pipeline in other countries (see *Table 4*). It remains to be seen how Article 6-based projects differ from carbon credit projects in the voluntary market in terms of framework, process, methodologies, and other requirements, and how they address concerns prevalent in the voluntary market. Since the Article 6.2 framework provides flexibility for countries to bilaterally agree on their own models of engagement, ensuring that the activities are transparent and well-governed becomes important.

The Malawi Dairy Biogas Programme in partnership with the Klik Foundation will install 10,000 systems in the country. Sistema.bio and EcoGen are two private entities working on identifying the farmers, install the systems, and provide after-sales services. The project will issue around 500,000 carbon credits until the end of 2030, the cutoff date at which KliK Foundation has agreed to buy credits.[17]

Table 4: Projects in other countries

Host Country	Project Type	Project
Senegal	Renewable Energy	Battery Energy Storage and Renewable Energy Programme
Senegal	Clean Transport	EcoCar Solaire
Senegal	Methane avoidance	Dissemination of Domestic Biogas Digesters in Senegal's Rural and Peri-urban Areas
Senegal	Landfill gas	Sustainable Waste Management Program in Senegal
Morocco	Industrial Emission	Energy Efficiency Fund in Morocco
Morocco	Renewable Energy	Solar Rooftop 500
Malawi	Cookstove	Cookstove and Sustainable Biomass Programme
Malawi	Methane avoidance	Malawi Dairy Biogas Programme

Source: UNEP Copenhagen Climate Centre

7. REGULATORY INTERVENTIONS BY GOVERNMENTS IN AFRICA

In recent years, several African nations have introduced carbon market regulations. For example, Kenya's Climate Change (Amendment) Act of 2023 established a National Carbon Registry and mandates environmental impact assessments for carbon projects. A portion of the earnings is allocated to local communities—40 per cent of credit earnings from land-based projects and 25 per cent from non-land-based projects must go to local communities.

Ghana has introduced a detailed framework for participation in Article 6-based market mechanisms and launched the Ghana Carbon Registry to track emissions reductions. South Africa's Johannesburg Stock Exchange has also launched a voluntary carbon market to facilitate the local trade of carbon credits. Other countries, including Senegal, Zambia, Mozambique, and Tanzania, are working on similar regulations for carbon markets.[18]

In May 2023, the Government of Zimbabwe declared all voluntary carbon credit schemes 'null and void,' causing significant concern among project developers. The government announced that it would take 50 per cent of the revenue from these projects, with 20 per cent allocated to communities. This policy was considered too stringent for the market, and in August 2023, the government revised its stance. The new policy allows project developers to retain 70 per cent of the project proceeds, with the government imposing a 30 per cent environmental levy. However, if local communities are affected, project developers must allocate a

quarter of their share to the communities. More recently, a proposed bill to regulate Zimbabwe's carbon credit market requires developers to allocate 25 per cent of their 70 per cent share of carbon proceeds to the communities where the projects are located.

A few country-specific regulations in place or under development are described in Table 5.

Table 5: Country-specific provisions to regulate carbon market trade in Africa[19]

Country	Regulation	Updates
Zimbabwe	Carbon Credits Trading (General) Regulations, 2023	Regulates carbon credit trading with provisions for institutional arrangements, application, and registration. 70% of proceeds go to the project developer, 30% as environmental levy. A proposed law mandates 25% of the proponent's share to go to local communities.
Ghana	Article 6 Cooperative Approach Framework, 2022	Provides guidelines for Article 6.2 cooperation in carbon markets and operational details for voluntary markets under Article 6.4 of the Paris Agreement.
Kenya	The Climate Change (Carbon Markets) Regulations, 2023	Defines Kenya's participation in both compliance and voluntary carbon markets. Mandates environmental impact assessments and community benefit agreements. Public land projects must allocate 40% of earnings to communities, while private land projects have no such requirement.
Rwanda	National Carbon Market Framework	Establishes the structure for participation in carbon markets under Article 6. Specifics on the share of proceeds are pending.
South Africa	Carbon Offset Regulations (Carbon Tax Act 2019)	Allows large emitters to offset carbon taxes with credits. Specifies eligibility, project processes, and introduces the Carbon Offset Administration System (COAS) to facilitate trading.
Tanzania	Environmental Management (Control and Management of Trading) Regulations, 2022	Outlines the legal framework for carbon trading. Managing authority retains 61% of revenues, while the proponent retains 31%.
Uganda	National Climate Change Act, 2021	Covers Uganda's involvement in carbon markets under Article 6, including voluntary and non-market mechanisms.
Zambia	Forest Carbon Stock Management Regulations, 2021	Regulates forest carbon projects with requirements for eligibility, approval, and benefit-sharing mechanisms.

Source: Gold Standard

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Historically, Africa had a limited presence in the global carbon market—only 3 per cent of CDM's carbon credit projects originated from Africa as of 2022. But with the growth in voluntary carbon markets, the region is seeing a surge. In 2024, one-fifth of the projects listed in top carbon market registries have been coming from Africa, with the bulk of them focused on two main areas: forestry and land use, and community-based projects, particularly those involving household devices like improved cookstoves. This briefing paper offers a quick bird's eye view of this emerging carbon market in the continent.

Centre for Science and Environment
41, Tughlakabad Institutional Area, New Delhi 110 062
Phone: 91-11-40616000 Fax: 91-11-29955879
E-mail: cse@cseindia.org Website: www.cseindia.org