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State of Play:

Understanding the Scale of Agriculture Finance from Kenya's Carbon Markets

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Executive Summary

Kenyan officials have put considerable emphasis on voluntary carbon markets (VCM) in recent years, arguing that the country could generate significant revenues for investment in agriculture, among other sectors. At the Africa Carbon Markets Initiative in Sharm-el-Sheikh, President Ruto affirmed Kenya's ambition to produce over 30 million carbon credits annually to fund green jobs and agricultural transformation.[1] The Kenyan government has also undertaken legal and regulatory changes to facilitate carbon markets: for example, the Climate Change Act was amended in 2023 to establish a national carbon registry. The detailed regulations necessary to operationalize and manage that registry are still being finalized, with draft regulations published in mid-2025. Kenya is clearly taking steps to position itself to capture a larger share of the global VCM market.

But how big is this market? Is all of this just cheap talk, or is there real money in VCMs for agriculture finance? In this paper, we carry out an assessment of the value and extent of the current VCM market in Kenya, with a focus on agriculture. VCMs are not used exclusively for agriculture. Indeed, they are often focused more on mitigation in other sectors. But, as described above, carbon credits are often treated as an important funding source for agriculture in Kenya. In addition, Kenya already has a growing presence in voluntary carbon markets (VCMs), particularly in the agricultural sector. But the size of the current market for such agriculture-oriented carbon credits has not been estimated.

In order to estimate the size of this market, we reviewed the two largest VCM registries, Verra and Gold Standard, and identified 46 registered agriculture-related projects, of which 29 (≈63%) are actively issuing verified carbon units (VCUs). A small number of high-value projects, such as large-scale agroforestry initiatives, contribute disproportionately to potential revenue, underscoring the importance of project quality, methodology rigor, and co-benefit verification in determining market value.

Using market prices to estimate the value of the credits produced by projects currently 'able to issue' credits, we estimate that they generate an estimated 5.2 million tCO_2e in verified emissions reductions or removals annually, representing potential revenue between USD 27.2–89.2 million. There are 17 additional projects in the pipeline for these registries with a value of up to 8.3 million tCO_2e per year. This represents potential additional revenue of USD 52.1 million- USD 157.2 million. Altogether, we estimate that the value of current and pipeline revenue potential ranges from USD 79.3 million to USD 246.4 million.

When set against the Ministry of Agriculture's FY 2025/26 budget of USD 369 million, the currently 'able to issue' portfolio alone (USD 27.2 million at the lower bound) could cover nearly 7% of the annual budget. Adding in the full pipeline increases this contribution substantially: the total potential portfolio (USD 79.3 million at the lower bound) represents ~22% of the ministry's budget, while the upper-bound estimate (USD 246.4 million) reaches ~67%. This provides a sense of magnitude, but it is important to understand that these are private resources that complement but do not flow onto government budgets.

How optimistic should we be about the future flows from carbon markets into the agriculture sector in Kenya? Many observers expect carbon markets to flourish, and they may do so. However, they also face important limitations. Revenue is highly sensitive to volatile carbon prices and global demand, which can fluctuate depending on the confidence and net-zero commitments of international buyers. More fundamentally, VCM investment is concentrated almost entirely on mitigation activities, such as soil carbon sequestration, agroforestry, and clean energy. Critical adaptation needs, including irrigation, drought-resistant seeds, and value-chain development, remain largely underfunded. This reveals a core limitation: VCMs are ultimately meant for mitigation activities, those designed to reduce emissions. Much of what Kenya hopes to finance in agriculture is, as it should be, adaptation-related. In some cases, there are mitigation benefits as well, but once again, there are natural constraints on the degree to which carbon markets can finance adaptation.

Recent surveys show that corporate net-zero commitments are softening: for example, only 36% of British firms retained targets in 2025 versus 58% in 2024, and confidence in net-zero feasibility has declined sharply. Major corporates have also left net-zero alliances, signalling erosion in demand.[2] Kenya's carbon strategy depends on buyers maintaining strong climate pledges and confidence in credit integrity. As noted, the value of carbon credits hinges on future market demand, and our estimates cannot fully model that.[3] Within the Voluntary Carbon Market (VCM), this weakening demand is a key risk factor because private-sector purchasing decisions are discretionary and can shift with changing corporate priorities.

However, emerging bilateral carbon market mechanisms under Article 6 of the Paris Agreement may provide an alternative and potentially more stable source of demand. Under these arrangements, countries trade Internationally Transferred Mitigation Outcomes (ITMOs) through government-to-government agreements, supported by legally binding implementation agreements. For instance, countries such as Singapore have established such agreements with partner countries to facilitate the transfer of authorised carbon credits. These mechanisms differ from VCMs because they are anchored in national climate commitments rather than voluntary corporate action, and they may therefore provide a more stable source of demand for carbon credits in some cases, even as private-sector participation fluctuates.[4]

The strategic implication for Kenya is clear: carbon revenues from voluntary markets should be integrated within a broader climate finance framework, rather than treated as a standalone solution. Priorities must include fostering high-integrity projects, ensuring equitable community benefit-sharing, combining VCM income with public and concessional funds, and targeting both mitigation and adaptation objectives. By doing so, Kenya can leverage voluntary carbon markets to supplement traditional funding, deliver tangible benefits for farmers, and strengthen the resilience and sustainability of its agricultural sector.

Abbreviations and acronyms

- ACMI – Africa Carbon Markets Initiative
- ACR – American Carbon Registry
- AFOLU – Agriculture, Forestry, and Other Land Use
- ARR – Afforestation, Reforestation, and Revegetation
- BECCS – Bioenergy with Carbon Capture and Storage
- CAR – Climate Action Reserve
- CCB – Climate, Community & Biodiversity (Standards)
- CCPs – Core Carbon Principles
- CDM – Clean Development Mechanism
- CDR – Carbon Dioxide Removal
- CMAP – Carbon Markets Activation Plan
- CO_2e – Carbon Dioxide Equivalent
- CRTs – Climate Reserve Tonnes
- CSA – Climate-Smart Agriculture
- DAC – Direct Air Capture
- GDP – Gross Domestic Product
- GHG – Greenhouse Gas
- GS – Gold Standard
- IALM – Improved Agricultural Land Management
- ICVCM – Integrity Council for the Voluntary Carbon Market
- IFM – Improved Forest Management
- IoT – Internet of Things
- KACP – Kenya Agricultural Carbon Project
- MECD – Methodology for Metered & Measured Energy Cooking Devices
- MRV – Monitoring, Reporting, and Verification
- OTC – Over-the-Counter
- REDD+ – Reduced Emissions from Deforestation and Forest Degradation
- RVCMC – Regional Voluntary Carbon Market Collaboration
- SALM – Sustainable Agricultural Land Management
- SD VISta – Sustainable Development Verified Impact Standard
- SDG – Sustainable Development Goal
- SOC – Soil Organic Carbon
- TIST – The International Small Group and Tree Planting Program
- VCM – Voluntary Carbon Markets
- VCS – Verified Carbon Standard (Verra)
- VCU – Verified Carbon Unit
- VER – Verified Emission Reduction
- VPA – Verified Project Activity (Gold Standard)

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INTRODUCTION

Carbon markets are increasingly seen as a way to raise revenue for climate interventions in cash-strapped countries. For countries seeking innovative financing generally, as well as those with a specific desire to channel some of their resources into "green" activities, carbon markets present an opportunity to tie available funds to policy priorities. As Kenya advances its climate finance agenda, the potential of voluntary carbon markets (VCMs) to unlock new revenue streams has been much discussed.[5] At the same time, the country is seeking out more funds to invest in agriculture not only to mitigate emissions, but to make the sector more resilient to climate change. Is there an opportunity to leverage voluntary carbon markets further to finance agriculture?

To answer this question, this paper describes the current state of play of such markets in Kenya. First, however, we discuss why Kenya has focused on VCMs rather than compliance markets. We then look at why VCM might be particularly well-suited to agriculture finance, noting some limitations, such as the fact that VCMs largely finance climate mitigation, whereas much of what Kenya needs to finance in agriculture is adaptation. We suggest that relatively little is known about the current state of VCM financing for agriculture, or its potential, and argue that our paper can shed further light on these matters. We proceed to analyze available data on existing markets in subsequent sections of the paper.

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1.1 Why carbon markets?

While both voluntary and compliance markets offer avenues for monetizing emission reductions, this analysis concentrates on VCMs. There are several reasons for this, mainly related to Kenya's own policy stance and recent commitments. This paper assesses Kenya's participation in voluntary carbon markets, with particular attention to agricultural projects, their revenue potential, and the enabling policy environment.

At present, neither global nor national compliance markets are an attractive option for Kenya.No global compliance market currently exists that would enable Kenya to systematically sell mitigation outcomes at scale. Article 6.4 of the Paris Agreement envisions such a market to replace the Clean Development Mechanism under the Kyoto Protocol, but it is not yet fully operationalized. National compliance markets, on the other hand, have spread (tied to emissions trading systems) but remain limited in most low- and middle-income countries, including Kenya, due to the fact that the emissions that needs to be mitigated are lower, as is the availability of institutions and capacity to manage such markets.

Selling Kenyan credits into other national or regional compliance markets is also constrained. Only a small number of national compliance systems currently allow international offsets, notably those in California, South Korea, and Tokyo, and even in these cases offset use is typically limited (for example, South Korea caps offset use at 5% of the market). Major markets such as the European Union, the United Kingdom, and New Zealand do not currently allow offsets at all, reflecting concerns over environmental integrity and historical oversupply associated with international credits under the Clean Development Mechanism. As a result, the scope for Kenyan agricultural and land-use projects to access compliance-market demand is narrow, uncertain, and unlikely to scale in the near term.[6]

By contrast, voluntary carbon markets have greater potential that Kenya has already begun to access. VCMs are more flexible, more lightly regulated and operate relatively freely across borders compared to compliance markets. Kenya's carbon market activity to date has therefore been overwhelmingly oriented toward VCMs, with project developers, investors, and policymakers engaging mainly with voluntary standards for regulating carbon credit quality, such as Verra and Gold Standard. For example, the Kenya Agricultural Carbon Project (KACP)is the first in the world to earn carbon credits under Verra's Verified Carbon Standard(VCS) for soil carbon sequestration. This project, involving 60,000 farmers across 45,000 hectares, implemented Sustainable Agricultural Land Management (SALM) practices that not only sequestered carbon but also increased crop yields by up to 15–20%. The resulting carbon credits provided an additional revenue stream, enhancing farmers' incomes and food security.[7]

In addition, Kenya has taken concrete steps to increase its participation in VCMs, such as joining the African Carbon Markets Initiative (ACMI) and passing regulations to encourage carbon market development. ACMI's work with participating countries, including Kenya, has emphasized the development of project pipelines eligible under voluntary standards.[8] Under ACMI, participating countries, including Kenya, are developing frameworks to expand both the supply of and demand for high-integrity carbon credits, backed by a roadmap of 13 action programs. These programs aim to adapt new project methodologies for calculating avoided or removed carbon that better reflect Africa's development needs (e.g., biodiversity and energy transition activities). ACMI also convenes governments, buyers, financiers, and technical partners to build capacity, enhance regulatory environments, and support project developers and communities in meeting global market standards.[9] The enactment of the Climate Change (Carbon Markets) Regulations, 2024, has established a legal framework to support Kenya's participation in voluntary carbon markets. The establishment of a National Carbon Registry and the formal designation of a Designated National Authority (DNA) are essential for tracking, authorizing, and transparently recording voluntary carbon credits issued under international standards such as Verra and Gold Standard, and for providing the host country approvals increasingly required by voluntary buyers and integrity initiatives.

Kenya's carbon market regulations also align with international standards, which should increase the appeal of its credits to investors. The regulations' emphasis on environmental integrity, transparency, and benefit-sharing follows evolving global VCM integrity frameworks, including the Integrity Council for the Voluntary Carbon Market (ICVCM) Core Carbon Principles and the Voluntary Carbon Market Integrity Initiative (VCMI) Claims Code. The relevant provisions include requirements for host country authorization of

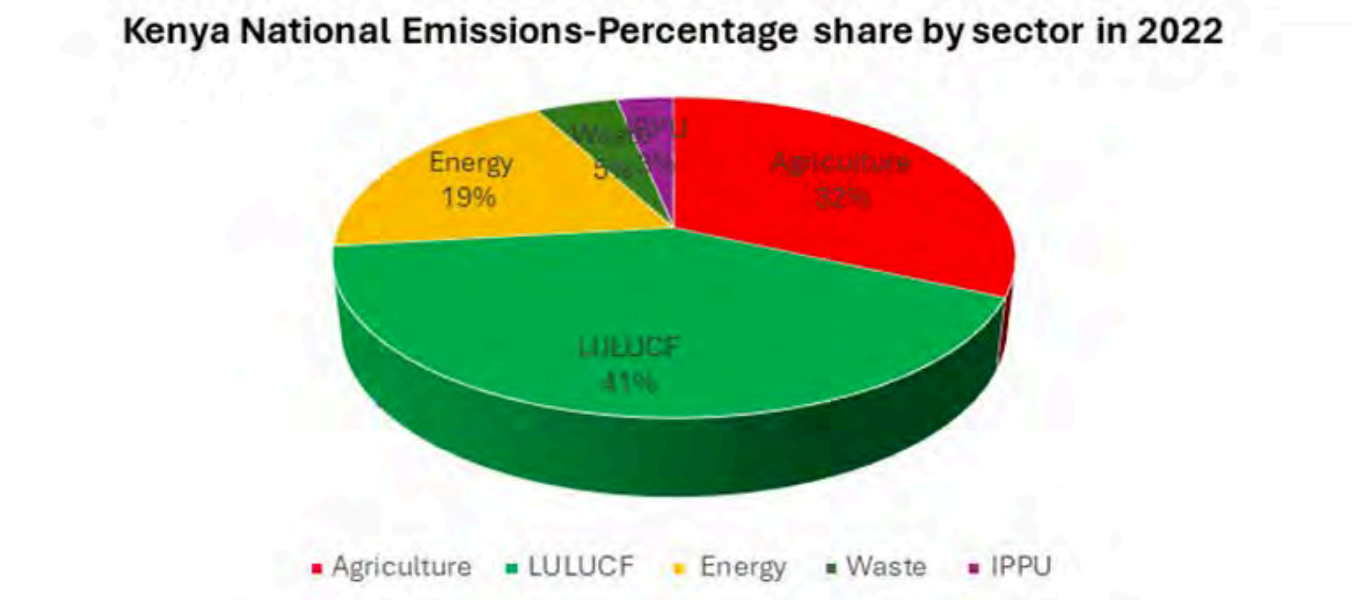
carbon projects, mandatory registration of credits in a National Carbon Registry, independent monitoring, reporting, and verification (MRV), and minimum benefit-sharing thresholds for local communities. For example, in Kenya, The *Climate Change (Carbon Markets) Regulations*, 2024 mandate that land-based projects allocate at least 40% of revenues to local communities, which reflects the ICVCM's principle of community and stakeholder benefits (ensuring that project benefits are fairly distributed) and aligns with VCMI guidance on equitable revenue sharing. Similarly, provisions requiring transparent credit issuance, reporting, and verification in the National Carbon Registry echo the ICVCM's requirements for accurate accounting, monitoring, and reporting, and support VCMI standards for truthful buyer claims. By codifying these elements, Kenya's regulations provide investors with confidence that credits issued domestically adhere to recognized integrity benchmarks.

1.2 VCMs and Ahgriculture

VCMs are not specifically designed to finance agriculture; their purpose is to finance emissions reductions. Buyers are looking for credible ways to offset their own emissions, so projects that can reduce emissions in any sector are generally desirable. Of course, some sectors may be considered more credible than others (meaning promised emission reductions are more likely to occur, and scandal is less likely).

In Kenya, agriculture and forestry are both sources of emissions and carbon sinks, and therefore potentially a rich source of emission reductions. As Kenya is a relatively small emitter in global terms, its industrial emissions are not a major source of potential reductions. On the other hand, AFOLU (combined agriculture, land use change and forestry) is the largest contributor to total emissions in Kenya, with a 73% share. As shown in Figure 1, Kenya's total emissions in 2022 were dominated by Land Use, Land-Use Change and Forestry (LULUCF) (41%), followed by agriculture (32%) and energy (19%), with smaller contributions from waste (5%) and industrial processes/IPPUs (3%). Agriculture emissions are largely from methane and nitrous oxide produced by livestock and crop activities, while energy emissions arise from transport, fossil fuel use, and household cooking fuels. Interventions such as sustainable agricultural practices, reforestation, and clean cooking solutions can reduce emissions and enhance carbon sequestration, in line with Kenya's climate and development objectives.[10] While clean cooking solutions are not strictly agricultural, they are often included in land-use and rural carbon project portfolios because of their indirect links to agriculture, particularly through reducing pressure on forests for fuelwood, improving soil and biomass conservation, and supporting rural household energy systems that are closely tied to agricultural livelihoods.

Figure 1: Kenya's Greenhouse Gas Emissions by Sector, 2022



Kenya's greenhouse gas emissions by sector in 2022. Land Use, Land-Use Change, and Forestry (LULUCF) accounts for 41% of total emissions, agriculture 32%, energy 19%, waste 5%, and industrial processes/IPPUs 3%.

Source: https://unfccc.int/sites/default/files/resource/Kenya%20National%20Inventory%20Document.pdf

This suggests that VCMs may be a vehicle for increasing finance for agriculture reform, with particular opportunities for communities. Kenya remains a heavily agricultural country but continues to under-finance the sector.VCMs potentially provide a tool for enhancing the sector's contribution to the economy, while reducing its climate impact and improving resilience. Practices like agroforestry, improved soil management, and sustainable grazing, all common in Kenya, can be monetized through carbon credit generation under various VCM standards such as Verra's Verified Carbon Standard (VCS) or Gold Standard. In general, VCMs are more accommodating than compliance markets to small-scale, community-based agricultural projects, which are prevalent in Kenya. They offer flexibility in methodologies, project types, and certification standards, and lower entry barriers than compliance markets. They are also generally more inclusive of non-state actors such as NGOs, cooperatives, and farmer groups, making them more accessible for local stakeholders.

While VCMs offer opportunity, they also face significant constraints, not the least of which is plummeting demand in the current environment. After demand spiked in 2021, it has fallen back. This recession in demand started long before the current malaise exacerbated by the Trump administration's vigorous advocacy for fossil fuels and is discussed further below. But shifts in global politics do further reduce incentives for voluntary commitments by the big credit buyers in VCMs, meaning that the future remains highly uncertain for these markets.

Despite growing policy interest, there is limited empirical evidence on the current scale of agricultural participation in voluntary carbon markets in Kenya. We have not found any measure of the magnitude of revenues such participation can realistically generate, and the extent to which these revenues can contribute meaningfully to agricultural finance. This paper addresses this gap by combining project-level evidence with market analysis to provide an assessment of what VCMs deliver for agricultural finance in Kenya.

The rest of this paper assesses the state of play for VCMs in Kenyan agriculture. Section 2 situates voluntary carbon markets within Kenya's Climate-Smart Agriculture (CSA) framework, outlining the theoretical channels through which VCMs can support agricultural mitigation and highlighting their inherent limitations for financing adaptation. Section 3 presents the paper's core empirical contribution, providing a systematic mapping of Kenyan agricultural carbon projects registered under Verra and Gold Standard, estimating current and pipeline credit volumes and associated revenue potential under alternative carbon price scenarios. Section 4 discusses the global demand environment for voluntary carbon credits and assesses how market volatility and integrity concerns affect the scalability and reliability of VCM revenues for Kenya. Finally, Section 5 synthesizes the findings and offers policy recommendations on how Kenya can strategically leverage carbon markets as a complementary financing tool, while avoiding over-reliance on VCMs to address the broader agricultural adaptation and resilience financing gap.

Chapter 2

VCMs for agriculture: opportunities and limitations

Understanding the potential for carbon credits to support Kenya's agriculture sector requires a further examination of Kenyan agricultural policies. Kenya's Climate-Smart Agriculture (CSA) framework (2017–2026), like CSA in general, is anchored on strengthening resilience to climate change and reducing greenhouse gas emissions. However, it is important to remember that voluntary carbon markets (VCMs) are a potential financing source for the sector on the mitigation side. Carbon markets are about packaging emissions reductions into products that can be sold to companies looking to offset their emissions.VCMs therefore have limited value in financing pure climate adaptation, as this does not entail curbing emissions.Adaptation may actually be more important than mitigation for the sector, but it is unlikely to be mainly financed by VCMs.

A comparison of Kenya's CSA policy objectives with the investment patterns of VCM-financed projects points to limits on the current use of VCM in agriculture. Some of these limits reflect the fact that VCMs will only finance certain kinds of activities.Others suggest opportunities that have not been exploited. VCMs currently support agriculture projects in Kenya in the areas of agroforestry, soil carbon, biogas, and cookstoves. Not surprisingly, however, carbon credits address only a subset of CSA priorities that are mitigation focused. While areas like soil carbon and agroforestry are well-supported, critical priorities such as irrigation, drought resilience, livestock and value chain integration remain underfinanced (see Table 1).

Table 1: VCM investment is present in some, but not all areas of Climate Smart Agriculture

CSA Priority Area	VCM Investment Present?	Example Projects	Mitigation Mechanism (Eligible for VCM?)	Reason for Limited VCM Investment
Adaptation & Resilience (water/soil, drought-resistant crops)	Yes – but limited	· Boomitra(Covers ~1,000 farmers, 44,673 acres; sequesters estimated 88,294 tCO_2/year, total removals over 1.7 Mt. Farmers receive ~55% share; at $15–$25 per credit, this could amount to $1.3M–$2.2M/year flowing to farmers.), · KACP (soil fertility). · Biogas programmes improving livelihoods	Yes: Soil organic carbon sequestration via SALM/regenerative agriculture; registered under Verra/VCS	Investment is limited because VCM financing only supports practices that generate measurable carbon sequestration. Many adaptation measures under this priority area, such as drought-tolerant crop varieties and irrigation, do not reduce emissions and therefore receive little VCM funding.
Efficient water management & irrigation	No	—	No: Does not reduce emissions directly; VCM ineligible	VCM investment is absent because irrigation and water management generally do not generate quantifiable mitigation outcomes required for carbon crediting, despite being a key CSA priority.

Soil fertility, agroforestry & integrated systems	Yes	KACP, Boomitra (VM0042); Hongera (VM0047)	Yes: Biomass (tree) and soil-carbon sequestration under VCS/Verra	Although these practices generate measurable carbon sequestration and are eligible under current methodologies, current projects likely capture only a portion of the potential, suggesting significant scope for scaling VCM investment in agroforestry and soil restoration.
Livestock/crop emissions mitigation, low-emission tech	Partial	Biogas, cookstoves, limited livestock inclusion	**Yes (partial): Methane reductions from stoves/biogas; limited livestock methane measures**	**VCM investment exists but remains limited because livestock methane mitigation approaches (e.g., improved feed, manure management) are not yet widely implemented in carbon projects despite potential eligibility.**
Institutional capacity & market access	Limited	Indirect support via income; no formal investments	**No: Does not directly reduce emissions**	**VCM investment is limited because institutional capacity building, farmer aggregation, and value-chain development do not generate emissions reductions, even though they are critical for scaling CSA adoption.**
Seed system development & crop diversification	No	—		VCM investment is absent because seed system development and crop diversification do not produce easily measurable mitigation outcomes, making them largely ineligible for carbon credit financing under current methodologies.

It is important to state clearly that VCMs cannot address several critical national CSA priorities like irrigation infrastructure, drought-resilient seeds, and value-chain development because these do not generate quantifiable emissions reductions. Many of these needs are adaptation-oriented and do not offer direct mitigation returns. Adaptation actions under CSA should be funded through public finance, grants, or results-based subsidies.

To tap the full potential of carbon markets for mitigation, Kenya must expand or develop new carbon methodologies that can capture mitigation co-benefits from CSA actions. For example, investing in livestock methane reduction (a clear emissions target), agroecological irrigation practices, or enhanced soil carbon could become fundable if supported by robust approaches to measuring emissions reductions. Additionally, there is no bright line between mitigation and adaptation; some adaptation activities do generate emissions reductions. Co-financing mechanisms that blend VCM revenue with other public funding and support can redirect carbon finance toward both mitigation-eligible and high-impact adaptation activities. Without this combination of emissions methodology development and public finance, the carbon market will remain a relatively narrow funding channel, unable to support the full spectrum of Kenya's agricultural resilience needs.

Chapter 3

Understanding the current state of voluntary carbon markets in Kenya

This section of the paper considers the current state of play of carbon credits in Kenya, with a focus on agricultural credits. We assess major VCM registries and estimate the value of current credits, using market values to generate a range. We explain our methodology in detail and provide summary information about carbon credit projects.

In summary, we selected two major VCM registries that account for more than ¾ of the market.Each registry requires projects to have a well-described "methodology" for calculating emissions saved or reduced through the project. These methodologies, along with other tags, help registry users to identify projects that are related to specific thematic areas, such as agriculture. We selected all projects from a set of agriculture-related methodologies and then attempted to use market data to estimate their value.The actual price at which a given carbon credit trades is not known, so estimates must be made.

Altogether, we identified 46 projects on the two largest registries, of which 29 are actively issuing or able to issue carbon credits. As summarized in Table 12, we found that "able to issue" projects currently generate an estimated 5.2 million VCUs annually, corresponding to potential revenues ranging from approximately USD 27.2 million under conservative price assumptions to USD 89.2 million under high-price scenarios. Pipeline projects could add a further 8.3 million VCUs per year, implying additional potential revenues of USD 52.1–157.2 million. Taken together, the total potential annual revenue from Kenya's agricultural VCM portfolio is estimated at 13.5 million VCUs, with a value ranging from roughly USD 79.3 million to USD 246.4 million. These figures indicate that while VCMs can mobilize meaningful supplementary finance for agricultural mitigation, revenues remain highly sensitive to carbon prices and project realization, underscoring both the opportunity and the inherent uncertainty of relying on voluntary markets for agricultural finance.

3.1 Justification for Registry Selection: Verra and Gold Standard

To establish a robust and credible baseline, this analysis focuses exclusively on projects registered with Verra (Verified Carbon Standard, VCS) and Gold Standard (GS). This choice is based on three key factors:

- **Market Leadership and Rigor:** Verra and Gold Standard are two of the largest and most reputable carbon standards globally. Their methodologies are rigorous, widely recognized, and trusted by buyers and regulators, ensuring the environmental integrity of issued credits. Verra's VCS Program accounts for over 60% of all credits issued in the VCM, making it the largest registry by volume. Gold Standard is consistently ranked among the top high-integrity standards and is one of the top three global issuers of nature-based and community-focused credits. Compared to smaller registries such as Plan Vivo or niche technology-specific standards, Verra and Gold Standard together represent the majority share of issued, traded, and retired voluntary carbon credits, providing a robust and widely recognized dataset for analysis.

Table 2: Share of VCCs Issued by Major Carbon Offset Standards, as of May 2024

Standard / Registry	Name of Credits	Number of Projects	Share of Projects	Credits Issued	Share of Credits Issued
Verra (VCS)	Verified Carbon Units (VCUs)	4,138	46%	1,290,566,461	63%
Gold Standard (GS)	Verified Emissions Reductions (VERs)	3,308	36%	322,389,039	16%
Climate Action Reserve (CAR)	Climate Reserve Tonnes (CRTs)	904	8%	244,979,604	12%
American Carbon Registry (ACR)	Emission Reduction Tonnes (ERTs)	739	8%	184,741,252	9%

Source: https://giace.org/wp-content/uploads/2025/07/scoping-corruption-in-voluntary-carbon-markets-july-2025_0.pdf

- **Public Data Transparency:** Both registries are fully publicly accessible and searchable, which allows users to verify project information directly. This transparency enables independent checking of project documents, issuance records, and crediting histories, something that is not possible with registries that require paid access or restrict data visibility.
- **Acknowledgment of Limitations:** This study is not a comprehensive review of the VCM. Other registries exist (e.g., Plan Vivo), and some data providers require subscriptions. Additionally, a significant portion of trading occurs outside registries through informal or "black market" credits.[11] Several studies show that a portion of VCM transactions occur through over the counter (OTC) bilateral deals, rather than through public registries. This trading structure creates opacity because credits can be bought, sold, or transferred without appearing in registry-level issuance or retirement records. Academic and policy analyses describe the voluntary market as "unregulated," with a substantial share of transactions taking place outside centralized systems, limiting market visibility. As a result, while Verra and Gold Standard represent the majority of issued, high-integrity credits, their registries still under-represent total global trading volume, underscoring the need for caution when interpreting registry-based datasets. Despite these gaps, Verra and Gold Standard provide a robust baseline of high-quality, verifiable projects. Future research could incorporate additional data sources for a more complete picture.

3.2 Valuing Existing Agricultural and Agroforestry Projects in Kenya

In this section, we explain how projects are classified in the two main registries and describe the principal carbon methodologies in each registry that are related to agriculture.

According to the major registries, "agriculture" encompasses a range of land-based activities, including improved agricultural land management, agroforestry, sustainable crop production, and livestock management. While these projects may not be explicitly tagged under a single "agriculture" category in the registries, they can be identified through associated methodologies and SDG impact labels. In reviewing the registries, we have focused on projects involving sustainable agricultural land management, agroforestry, and related activities.

A final clarification relates to the treatment of clean cookstove projects within the dataset. While clean cookstove projects are included in our dataset, it is important to note that they are not, strictly speaking, agricultural activities. Rather, they fall under household energy and mitigation interventions and are only included here because of their occasional linkage to rural livelihoods and land-use pressures (e.g., reduced fuelwood demand). Their inclusion does not materially affect our overall findings. In Kenya, cookstove and related household energy projects account for a relatively small share of total agricultural and land-use carbon credit volumes and associated revenues in our sample. Moreover, based on our review of current registry data, there appear to be no cookstove projects in the identified pipeline, suggesting limited near-term expansion in this segment within the agriculture-linked VCM space.

With respect to pricing, we apply conservative category-based price ranges (typically \$3–\$5/tCO_2e for cookstoves) to avoid overstating market value. While there are outliers, most notably a project achieving prices of up to \$35/tCO_2e due to high-integrity methodologies and strong co-benefits, these are not treated as representative of the broader market. Our estimates therefore exclude such extreme values to maintain robustness and avoid skewing results upward. However, it is worth noting that if a larger share of cookstove projects were able to consistently command premium prices in this range, the overall revenue potential of the portfolio would increase. Even so, given the relatively small volume of cookstove credits in the current dataset, the aggregate impact on total market value would remain modest unless there were both a significant scale-up in such projects and sustained access to high-value markets.

Table 3: Carbon registries do not have a general agriculture classification…but agriculture projects can be identified through methodologies, labels and SDG impacts

Registry	Relevant Methodologies	Applicable Labels/Standards	SDG Impact Indicators
Verra (VCS)	· VM0042 and VM0047: Improved Agricultural Land Management · VM0044: Biochar Utilization · VM0032: Sustainable Grassland Management · VM0051: Improved Management in Rice Production Systems	· SD VISta (Sustainable Development Verified Impact Standard). · CCB (Climate, Community & Biodiversity) Mitigation · Outcome Labels (e.g., GHG Emission Reductions, Carbon Removals)	Projects can claim contributions to specific SDGs, such as: - · SDG 13: Climate Action- · SDG 15: Life on Land- · SDG 2: Zero Hunger

Gold Standard	· Soil Organic Carbon Framework Methodology · Agriculture Framework Methodology · Soil Organic Carbon Activity Module for Zero Tillage	· (GS VERs) Verified Emission Reductions, for CO_2/CH_4 reductions · Certified SDG Impacts™: aDALYs (averted Disability-Adjusted Life Years, i.e., negative health impacts averted), Water Benefit Certificates, Black Carbon/SLCP statements	Projects must contribute positively to at least three SDGs, including: - · SDG 13: Climate Action- · SDG 15: Life on Land- · SDG 2: Zero Hunger

Verra currently uses two primary methodologies which represent the new generation of more rigorous VCS methodologies relevant to agricultural and agroforestry projects: VM0042 and VM0047. VM0042, the Methodology for Improved Agricultural Land Management (IALM), is designed to quantify greenhouse gas (GHG) emission reductions and soil organic carbon (SOC) removals resulting from practices such as reduced tillage, optimized fertilizer use, improved water management, and enhanced livestock practices. These projects typically focus on cropland and grassland management activities such as pastures used for livestock grazing. To take one example, the Boomitra East Africa Carbon Farming Project employs VM0042 to support nearly 1,000 smallholder farmers across 44,673 acres, implementing regenerative practices. The Lake Victoria Watershed Agroforestry Carbon Project utilizes VM0042 to train farmers in sustainable agroforestry practices.

VM0047, the methodology for Afforestation, Reforestation, and Revegetation (ARR), applies to activities that increase the density of trees or other woody vegetation, including agroforestry practices. For example, the Hongera Reforestation Project applies VM0047 to plant over 10.7 million trees across Kenya. Under Verra's Verified Carbon Standard (VCS) with the Climate, Community and Biodiversity (CCB) Standards, TIST (The International Small Group and Tree Planting Program) has planted over 17 million trees on smallholder farms across approximately 21,750 ha, covering eight community-led projects. It has engaged over 68,000 farmers, and issued more than 400,000 VCUs to date, while delivering livelihood benefits and improved soil conservation.[12]

While VM0042 and VM0047 represent the newest and most rigorous VCS methodologies, many agricultural and agroforestry projects in Kenya were originally developed under earlier Verra or Clean Development Mechanism (CDM) methodologies. These legacy approaches, such as VM0017 (Sustainable Agricultural Land Management) and CDM afforestation methodologies (AR-ACM0003 and AR-AMS0007), were widely used in earlier project cycles but are being replaced as Verra strengthens requirements around additionality, permanence, baseline setting, and measurement, reporting, and verification (MRV). For example, VM0017 (Sustainable Agricultural Land Management), once widely used for soil carbon enhancement, was deactivated on March 31, 2023, and projects using it must transition to VM0042. In the grassland domain, VM0032 (Sustainable Grasslands through adjustment of fire and grazing) remains active, though Verra is currently updating it. Legacy afforestation methods from the Clean Development Mechanism, AR-ACM0003 and AR-AMS0007, were replaced by the updated VM0047 – Afforestation, Reforestation & Revegetation on September 28, 2023, with a grace period extending transitions up to June 30, 2025.

In Kenya, many established projects still operate under these older protocols, while newer soil-carbon and agroforestry initiatives increasingly employ VM0042 and VM0047 for their enhanced methodological rigor and alignment with current international standards. To reflect this evolution, the project table includes an " Updated Project Methodology (if VCS update)" column that notes whether each project employs a legacy methodology or has transitioned to one of these newer standards. Where the "Updated Project Methodology" column is blank, this does not imply missing data but rather indicates that no formal methodology transition has occurred to date. This may be because (i) the original methodology remains active under the VCS, (ii) the project has not yet reached a transition or reassessment point, or (iii) the project is registered under a non-VCS standard (e.g., Gold Standard), for which VCS methodology transitions are not applicable.

Gold Standard offers a suite of methodologies under its Soil Organic Carbon (SOC) Framework, aimed at promoting sustainable agricultural practices that enhance carbon sequestration[13]. This framework includes practices such as zero tillage, cover cropping, managed pastures, and the application of bio stimulants. Gold Standard emphasizes not only the environmental benefits but also the social and economic co-benefits of projects, aligning them with broader Sustainable Development Goals (SDGs). Projects must demonstrate additionality, stakeholder inclusivity, and contribute positively to local communities to be certified under Gold Standard.

While both GS and VCS provide robust frameworks for carbon offset projects, their approaches differ in structure and identification. Until recently, GS put much more emphasis on the co-benefits and associated SDG impacts of projects than Verra. As of January 2023, however, Verra requires all newly registered VCS projects to demonstrate contributions to at least three Sustainable Development Goals (SDGs) by the end of their first monitoring period.[14]

However, the verification of these contributions differs from that of the Gold Standard. Under VCS, auditors confirm that actions leading to sustainable development contributions have taken place, but they do not necessarily verify the exact results achieved. For projects seeking more rigorous assessment and verification of co-benefits, Verra offers complementary standards such as the Sustainable Development Verified Impact Standard (SD VISta) and the Climate, Community & Biodiversity (CCB) Standards. These standards enable projects to quantify, monitor, and verify their impacts on sustainable development and biodiversity, providing additional assurance to stakeholders. Therefore, while VCS projects can and often do deliver co-benefits, the standard emphasizes GHG emission reductions, with the demonstration and verification of co-benefits being optional and dependent on the project's engagement with additional standards like SD VISta or CCB.

Table 4: Comparison of Stakeholder Engagement, Data Requirements, and Monitoring Scope: Gold Standard vs. Verra (VCS)

Aspect	Gold Standard (GS)	Verra (VCS)
Focus	SDGs, sustainable development co-benefits and GHG emissions reductions	GHG emissions reductions, with required reporting on contributions to at least three SDGs
Stakeholder Engagement	Two rounds of consultation (involves local project participants, host communities, local government representatives, and relevant NGOs, conducted twice during project design and validation)	One round of consultation (a single local stakeholder consultation focused on directly affected communities and stakeholders)
Data Requirements	Detailed local data on social/environmental aspects	Primarily GHG data
Monitoring Scope	Broad (social, environmental, economic)	Primarily GHG emissions

3.3 Total Registry Size and Agricultural Project Proportion (Kenya)

We first assessed the overall scale of both registries in Kenya and the proportion of agricultural projects.

- **Verra**: 60 projects in total. Of these, 31 projects (≈52%) fall under the Agriculture, Forestry, and Other Land Use (AFOLU) category.
- **Gold Standard:** 270 projects in total. Of these, 15 projects (≈6%) are agriculture related.
- **Combined Total**: Across both registries, Kenya has 330 projects in total, of which 46 projects (≈14%) are agriculture related.

Since the total population of agriculture projects is relatively small (46 projects), our analysis includes the full population from these two registries, rather than a sample, ensuring comprehensive coverage and accurate insights into the sector.

3.3.1 Detailed Methodology for Project Sampling and Categorization

Verra:

We extracted Kenyan AFOLU projects from the Registry. Using the registry "Project Type" filter we selected all projects under "Agriculture, Forestry and Other Land Use (AFOLU)" and applied the country filter "Kenya." Each project returned by the query was opened and manually inspected. Projects were classified as "**Able to issue credits**" if their registry status was "Registered" and they were within their stated crediting period (registration establishes a crediting window), regardless of whether VCUs had been or are currently being issued.

For each project classified as "Able to issue credits," we checked manually the project's VCS Issuance Document(s) when available; these served as the primary evidence of issuance. Projects not meeting the "Able to issue credits" criteria (e.g., "Registration Requested," "Listed," "On Hold," or registered but crediting period not started or is in the future) were classified as Pipeline.

Gold Standard:

We extracted agriculture-related projects from the Gold Standard Impact Registry, focusing on categories such as afforestation/reforestation, climate-smart agriculture, and other related agriculture activities. In the registry, projects are classified into three categories: Certified, Listed, and In Design. Certified projects were considered "Able to issue credits", provided they were within their crediting period and/or had evidence of credit issuance. Listed and In Design projects were treated as pipeline, although we conducted additional manual checks of certified projects to confirm whether they were actively issuing credits or are within the issuance window. Issuance status was verified through Gold Standard issuance documents linked to each project's page.

Note on Project Statuses in Carbon Standards

In the context of carbon offset projects, various statuses indicate a project's stage in the certification process. Understanding these statuses is crucial for interpreting project data accurately. Below are definitions commonly used by major standards like Verra's Verified Carbon Standard (VCS) and the Gold Standard (GS):

(a) Verra (VCS) Statuses

- **Under Validation**: The project is undergoing assessment by an independent Validation and Verification Body (VVB) to ensure it meets all methodological and standard requirements.
- **Registered**: The project has successfully passed validation and has been officially registered. It is now eligible to generate carbon credits upon verification of emission reductions.
- **Active**: Previously used by Verra. Currently, in Verra's VCS program, a project is considered "**Registered**" when it is operational and issuing verified carbon credits. This replaces the legacy "**Active**" label, which previously indicated projects that had completed verification and were generating tradable credits. The update reflects Verra's revised Registration & Issuance framework, which also introduces additional status categories, such as "late to verify" or denial-related classifications.
- **Under Development**: The project is in the early planning and design phase. Developers are preparing necessary documentation and have not yet submitted the project for validation.

(a) Verra (VCS) Statuses

- **Certified**: The project has completed all necessary validations and verifications, demonstrating that it meets the required standards for emission reductions and sustainable development benefits. This status allows the project to issue certified carbon credits.
- **Design**: The project is in the initial planning phase. Developers are preparing necessary documentation and have not yet submitted the project for validation.
- **Listed**: The project has been submitted for preliminary review and is publicly listed in the registry. This status indicates intent to proceed but does not confirm validation.

These statuses help stakeholders track the progress and credibility of carbon offset projects.

Categorization

We combined the data from the two registries to create a single dataset where projects were classified as:

- **Able to issue credits:** Projects that are Registered (Verra) or Certified (Gold Standard) and **within their crediting period**, meaning they are eligible to issue VCUs. This group includes projects that are actively issuing as well as those yet to issue credits (Table 6).
- **Pipeline**: Projects that are Listed, In Design, Registration Requested, on hold, or under validation, and are **not yet eligible to issue credits** (Table 7).

3.4 Dataset Compilation

After categorization, the dataset of all Kenyan agriculture projects in Verra and Gold Standard comprised:

Table 5: Kenyan Agricultural Carbon Projects by Registry and Credit Issuance Status

Registry	Total Agriculture Projects	Of which: Able to Issue	Of which: Pipeline
Verra	31	18	13
Gold Standard	15	11	4
Total	**46**	**29**	**17**

- **Proportion of able to issue projects:** 29/46 = 63% of agriculture projects are able to issue credits.
- **By registry:** Verra = 58% able to issue, Gold Standard = 73% able to issue.

While this dataset does not capture projects outside these registries or informal/over-the-counter activity, it represents the entire population of agriculture projects within these two major registries, providing a high-quality cross-section of Kenya's registered agricultural carbon credit activity.

The approach, using public registries, manual verification of project status, and clear classification, ensures data integrity. These findings provide a robust snapshot of Kenya's agricultural participation in registered voluntary carbon markets and a solid foundation for further research.

Table 6: Carbon projects "Able to issue" credits

No.	Project Name	Registry & ID	Project Type	Original Project Methodology	Updated Project Methodology (if VCS standard update)	Start Year	Estimated annual potential issuance of VCUs	Status
1	Kenya Agricultural Carbon Project (KACP)	Verra (VCS 1356)	Sustainable Agriculture (CSA)	VM0017 – Adoption of Sustainable Agricultural Land Management (SALM)	VM0042	2009	~60,000	Registered

2	Hongera Reforestation Project	Verra (VCS 3321)	Reforestation & Agroforestry	AR-ACM0003	VM0047	2023	7	registered
3	Komaza Smallholder Farmer Forestry Kenya	Verra (VCS 2623)	Afforestation /Reforestation	AR-AMS0007	VM0047	2017	~286,630	Registered
4	Kasigau Wildlife Corridor REDD+	Verra (VCS 562)	Agriculture Forestry and Other Land Use	VM0009		2011	~251,432	Registered
5	Boomitra Carbon Farming in East Africa	Verra 3774	Agriculture Forestry and Other Land Use (ALM)	VM0042		2019	1,249,417	Registered
6	Western Kenya Soil Carbon Project	Verra 3669	Agriculture Forestry and Other Land Use (ALM)	VM0017	VM0042	2019	179,643	Registered
7	Papariko - Restoration of Degraded Mangrove Areas	Verra 3660	Agriculture Forestry and Other Land Use (ARR; WRC)	AR-AM0014.		2022	30,389	Registered
8	TIST Program in Kenya, VCS-CCB 010	Verra 2338	Agriculture Forestry and Other Land Use (ARR)	AR-AMS0007	VM0047	2015	93,619	Registered
9	Livelihoods Mount Elgon Project	Verra 1944	Agriculture Forestry and Other Land Use (ALM)	VM0017 – Adoption of Sustainable Agricultural Land Management (SALM)	VM0042	2016	53,142	Registered

10	TIST Program in Kenya, VCS 006	Verra 899	Agriculture Forestry and Other Land Use (ARR)	AR-AM0001 – Reforestation and Afforestation of Degraded Land		2004	233,275	Registered
11	TIST Program in Kenya, VCS 005	Verra 737	Agriculture Forestry and Other Land Use (ARR)	AR-AM0001 – Reforestation and Afforestation of Degraded Land		2004	86,694	Registered
12	Chyulu Hills REDD+ Project	Verra 1408	Agriculture Forestry and Other Land Use (REDD)	VM0009		2013	1,100,943	Registered
13	TIST Program in Kenya, VCS 009	Verra 996	Agriculture Forestry and Other Land Use (ARR)	AR-AMS0001 – Reforestation and Afforestation of Degraded Land		2004	88,163	Registered
14	TIST Program in Kenya, VCS 001	Verra 594	Agriculture Forestry and Other Land Use (ARR)	AR-ACM0001 – Reforestation and Afforestation of Degraded Land		2004	14,701	Registered
15	TIST Program in Kenya, VCS 002	Verra 595	Agriculture Forestry and Other Land Use (ARR)	AR-AMS0001 – Reforestation and Afforestation of Degraded Land		2004	13,663	Registered

16	TIST Program in Kenya, VCS 003	Verra 596	Agriculture Forestry and Other Land Use (ARR)	AR-ACM0001 – Reforestation and Afforestation of Degraded Land		2004	14,482	Registered
17	TIST Program in Kenya, VCS 004	Verra 597	Agriculture Forestry and Other Land Use (ARR)	AR-AMS0001 – Reforestation and Afforestation of Degraded Land		2004	13,79	Registered
18	The Kasigau Corridor REDD Project - Phase II The Community Ranches	Verra 612	Agriculture Forestry and Other Land Use (REDD)	VM0009		2010	1,461,479	Registered
19	Safe Water Programme – Kenya – VPA 40	GS11298	Biogas - Electricity	GS Methodology for emission reductions from safe drinking water supply		2021	60000	Gold Standard Certified Project

20	Safe Water Programme – Kenya – VPA 39	GS11297	Biogas - Electricity	GS Methodology for emission reductions from safe drinking water supply		2021	60000	Gold Standard Certified Project
21	Sustainable Agroforestry Based Dairy Value Chain in Mount Elgon Kenya	GS6588	A/R	Smallholder Dairy Methodology: Methodology for GHG Emission Reductions from Smallholder Dairy Production Systems		2018	50618	Gold Standard Certified Project
22	HomeBiogas Programme in Kenya â€“ VPA1	GS12064	Biogas - Heat	GS Baseline and Monitoring Methodology Biodigester v1.		2022	324127	Gold Standard Certified Project
23	Household and commercial biogas plants in Kenya	GS7587	Biogas - Heat	GS TPDDTEC v3.1		2018	56153	Gold Standard Certified Project
24	African Biogas Carbon Programme (ABC) - Kenya - VPA001	GS2750	Biogas - Heat	GS TPDDTEC v 1.		2013	52197	Gold Standard Certified Project

25	Nairobi River Basin Biogas Project	GS939	Biogas - Heat	AMS-I.E. Switch from Non-Renewable Biomass for Thermal Applications by the User		2012	35949	Gold Standard Certified Project
26	Biomass Briquettes in Tea Factories: Chebut Tombe Boito Itumbe Kapkoros & Tegat	GS12188	Biomass, or Liquid Biofuel - Heat	AMS-III.AS. Switch from fossil fuel to biomass in existing manufacturing facilities for non-energy applications		2023	47528	Gold Standard Certified Project
27	CPA-KE-009 KENYA	GS7505	Biomass, or Liquid Biofuel - Heat	AMS-I.E. Switch from Non-Renewable Biomass for Thermal Applications by the User		2017	40363	Gold Standard Certified Project
28	CPA-KE-008 KISUMU	GS7504	Biomass, or Liquid Biofuel - Heat	AMS-I.E. Switch from Non-Renewable Biomass for Thermal Applications by the User		2017	29020	Gold Standard Certified Project
29	CPA-KE-001 KIBERA	GS7498	Biomass, or Liquid Biofuel - Heat	AMS-I.E. Switch from Non-Renewable Biomass for Thermal Applications by the User		2017	32100	Gold Standard Certified Project

Table 7: Pipeline Carbon projects

No.	Project Name	Registry & ID	Project Type	Methodology	Start Year	Estimated Annual VCUs issuance	Status
1	Northern Kenya Rangelands Carbon Project	Verra (VCS 2456)	Rangeland Restoration	VM0032 – Methodology for Improved Grassland Management	2021	~300,000	Validation Phase
2	Kenya Climate Smart Agriculture Program	Verra 5451	Agriculture Forestry and Other Land Use (ALM)	VM0042	2022	37,448	Under validation
3	Entooma Sidai: A Maasai Mara Rangeland Restoration	Verra 4994	Agriculture Forestry and Other Land Use (ALM)	VM0032 – Methodology for Improved Grassland Management	2024	689,731	Under development
4	OYU - Reforesting Kenya for a better tomorrow	Verra 4898	Agriculture Forestry and Other Land Use (ARR)	AR-ACM0003	2021	184,724	Under validation
5	Kajiado Rangelands Carbon Project	Verra 4714	Agriculture Forestry and Other Land Use (ALM)	VM0032 – Methodology for Improved Grassland Management	2023	915,139	Under validation
6	One Mara Carbon Project	Verra 4659	Agriculture Forestry and Other Land Use (ALM)	VM0032 – Methodology for Improved Grassland Management	2020	551,636	Under development

7	Restore Africa: Restoring trees and livelihoods in Kenya	Verra 4481	Agriculture Forestry and Other Land Use (ARR)	Methodology Under Development	2022	44,788	Under development
8	Lake Victoria Watershed Agroforestry Carbon Project	Verra 4408	Agriculture Forestry and Other Land Use (ALM)	VM0042.	2020	596,812	Registration requested
9	Makueni Agroforestry Carbon Project	Verra 4325	Agriculture Forestry and Other Land Use (ALM)	VM0017.	2023	156,267	Registration requested
10	Boomitra Grassland Restoration in East Africa	Verra 3340	Agriculture Forestry and Other Land Use (ALM)	VM0042	2019	707,193	Registration requested
11	Kenya Agricultural Carbon Project	Verra 1225	Agriculture Forestry and Other Land Use (ALM)	VM0017 – Adoption of Sustainable Agricultural Land Management (SALM)	2009	99,004	Late to verify (indicates that it has missed the scheduled submission or verification deadline for its monitoring report and credit issuance. This expanded status, introduced under VCS Process v4.4, enhances transparency by flagging delays even before formal penalties or denial decisions occur)
12	Northern Kenya Grassland Carbon Project	Verra 1468	Agriculture Forestry and Other Land Use (ALM)	VM0032 – Methodology for Improved Grassland Management	2013	1,797, 493	On Hold - see notification letter (indicates a temporary suspension of credit issuance under the Verra VCS, typically due to ongoing methodology revisions, monitoring issues, or pending corrective actions. This status does not imply project cancellation, and crediting may resume once registry requirements are satisfied.

13	KUZA MITI AGROFORESTRY CARBON PROJECT IN KENYA	Verra(5142)	Agriculture Forestry and Other Land Use	VM0047	2023	84,889	Under development (project design approved or listed on registry, but credit issuance has not yet commenced)
14	REGENERATION KENYA (RK) VPA01	GS13006	A/R	Afforestation/ Reforestation GHG Emissions Reduction & Sequestration Methodology	2024	1013167	Listed
15	REGENERATION KENYA (RK)	GS13005	A/R	Afforestation/ Reforestation GHG Emissions Reduction & Sequestration Methodology	2024	1013167	Listed
16	Word Forest Kenya VPA001	GS12797	A/R	Afforestation/ Reforestation GHG Emissions Reduction & Sequestration Methodology	2024	50	Listed
17	Lake Naivasha Basin Reforestation Project	GS6504	A/R	Afforestation/ Reforestation GHG Emissions Reduction & Sequestration Methodology	2020	100000	Gold Standard Certified Design

Source: Verra and Gold Standard registries

Chapter 4

Valuing the VCM market in Kenya

Kenya's agricultural-and-land-use carbon projects sit in a market where prices see-saw from a few dollars to well over \$25 per ton. As in all markets, supply and demand are important drivers of price, but not the only factors. In this section, we:

1. Describe the market and why prices for credits diverge;
2. Apply category-specific price ranges, derived from ACMI and industry sources, to each project type, capturing the significant variation between lower-value activities such as cookstoves ($4–$10/tCO_2e) and premium categories like afforestation/reforestation ($7–$39/tCO_2e) value activities such as cookstoves ($4–$10/tCO_2e) and premium categories like afforestation/reforestation ($7–$39/tCO_2e)
3. Estimate a range for total market value by multiplying each project's estimated annual VCUs by its corresponding category price range, producing lower-bound and upper-bound revenue estimates that reflect both downside risks and premium upside across Kenya's diverse project portfolio.

4.1 VCMs for agriculture: A volatile market

Market prices for carbon credits generally, and Kenyan AFOLU (Agriculture, Forestry, and Other Land Use) credits specifically, are distributed across an unusually broad spectrum because different project types attract very different levels of buyer enthusiasm. During recent market downturns, land-based soil and older forestry credits exchanged hands for token sums (often less than US $1–2 per tonne), underscoring how quickly demand evaporates for methodologies perceived as routine or dated.[15] At the other end of the scale, a Kenyan Gold-Standard cook-stove project secured a record-breaking price: the EcoSafi Kenya clean cookstove project, certified under Gold Standard's MECD (Methodology for Metered & Measured Energy Cooking Devices) methodology, sold credits at prices of up to US $35 per tonne of CO_2, far exceeding Africa's typical pricing range of $4–10/t.[16]

Clearly, there is a premium to be had for more rigorous methodologies, such as those that incorporate digital metering, robust verification, and clear household benefits.[17] Soil-carbon initiatives that adopted first-generation protocols, such as the pioneering Kenya Agricultural Carbon Project, still trade at steep discounts because buyers now prefer more rigorous monitoring and shorter issuance windows (tied to early monitoring periods).[18] Meanwhile, the average spot price for clean-cooking offsets fell sharply last year, mirroring a wider pull-back in demand for credits that lack digital MRV (Monitoring, Reporting, Verification), such as sensors, smart meters, remote sensing, and satellite imagery that provide transparent, auditable records.[19]

Beyond monitoring rigor, verified co-benefits are an increasingly important driver of price differentiation in voluntary carbon markets. Credits associated with demonstrable social and development outcomes, such as improved household health, reduced fuel expenditure, time savings for women, or biodiversity protection, consistently command price premiums, particularly when these impacts are independently verified. For example, clean-cooking projects certified under methodologies that quantify health and livelihood benefits (such as reduced indoor air pollution or time savings from fuel collection) have secured prices well above market averages, while land-use projects validated under complementary standards like Climate, Community & Biodiversity (CCB) or Sustainable Development Verified Impact Standard (SD VISta) tend to attract higher-value buyers. In contrast, projects that do not quantify or verify co-benefits, even when delivering emissions reductions, are increasingly discounted as buyers seek credits that support credible climate claims alongside measurable development impacts.

One contributor to increased premiums for co-benefits has been standardization of measurement. The co-benefit scores used by Sylvera Market Intelligence are an example. These scores range from 2 (low) to 5 (high), reflecting the extent to which a project delivers measurable social, environmental, or development outcomes beyond emissions reductions. These scores are based on independent verification and documented evidence, so credits with higher co-benefit scores tend to command higher market prices. Importantly, this premium is growing over time: for instance, Afforestation, Reforestation, and Revegetation (ARR) projects with a co-benefit score of 4 averaged $19 in December 2024, whereas at the time of writing (January 2026) these credits are trading over $30/$tCO_2e$.[20]

Table 8: Carbon Credit Prices by Verified Co-Benefit Score

Co-Benefit Score	Description / Impact Level	Average Price (USD/tCO_2e)
2	Low measurable social/environmental benefits	$9
3	Moderate measurable benefits	$10.5
4	High measurable benefits	$14.5
5	Very high measurable benefits, multiple verified outcomes	$25

Source: Sylvera Market Intelligence (carbon credit quality ratings and aggregated voluntary carbon market pricing data across project types and registries).https://www.sylvera.com/blog/biodiversity-premiums-co-benefits

As rigor increases and expectations rise, demand is also more sensitive to negative shocks, such as scandals involving credits that cannot back up their claims with genuine emission reductions. Recent studies, such as that in Nature Sustainability (2024), have flagged systematic over-crediting in cookstove projects, and registries are tightening rules, meaning older protocols like VM0017 (Kenya Agricultural Carbon Project) may now incur lower valuations unless upgraded. VCMs rely entirely on the integrity and continued demand of buyers and sellers; without both, revenue generation is not viable.[21] While registries like Verra and Gold Standard have introduced reforms to improve rigor, these challenges could lead to slower-than-expected expansion of VCM financing in Kenya.

Credit vintage also matters to buyers, with older credits sometimes trading at a discount. Recently issued units often change hands at multiples of the values paid for older batches, largely because buyers associate newer vintages with tighter baselines, fresher audits, and fewer reputational hazards[22]. Vintage, like other aspects of markets, is often as much about perception as reality. Some research finds that older credits backed by transparent impact data can rival or outperform newer ones of uncertain quality.[23]

Finally, demand can shift for political and reputational reasons. Amid a backlash against corporate greenwashing, major buyers like Shell and Nestlé are reducing offset pledges due to reputational pressures, so projects must clearly demonstrate credibility, additionality, and permanence, as failure to do so can lead to steep price discounts driven by reputational concerns.There is also political pressure from the Trump administration and other conservative actors on corporates to abandon net-zero pledges. Recently, global demand has softened, as many corporations are scaling back or abandoning net-zero and offset commitments, under pressure from reputation risk, compliance regulations, and internal targets. For example, major buyers in Australia like Fortescue, Telstra, BHP, and Woolworths have publicly withdrawn from offset purchases. This trend predates Trump's second administration, however: overall sales in 2023 plunged from over USD 1.9 billion in 2022 down to approximately USD 723 million.[24,25,26]

This pull-back has rattled markets and driven a flight to "high-integrity" credits, creating a price gap between routine and premium projects. Higher integrity credits are characterized by third-party validation and verification, science-based additionality and permanence, transparent tracking and registry disclosure, avoidance of double-counting, and measurable social and environmental co-benefits in line with ICVCM's (Integrity Council for the Voluntary Carbon Market) Core Carbon Principles. [27,28]

In summary, the price of credits, including Kenyan credits, vary and fluctuate due to a range of factors both technical and political in nature, as well as due to ephemeral factors such as the narrative appeal of specific credits. Like all markets, voluntary carbon markets can boom and bust, and this dynamism creates both opportunity and risk for market participants. Like other markets, too, they often defy straightforward predictions based on past performance.

4.2 Estimating average market prices

As shown in Table 9(below) and the Annex 3 table, carbon credit prices vary significantly across project categories and reflect differences in methodology, quality, and market maturity. Forestry and land-use credits generally command higher prices than agricultural and energy-related credits, reflecting stronger demand for nature-based removals and avoided deforestation projects. Afforestation, Reforestation and Revegetation (ARR) credits represent the highest-value category. REDD+ credits, by contrast, have been on a declining trajectory, reflecting broader VCM market softening, though higher-end transactions in African markets have still reached approximately $13 per ton. Table 9 presents a consolidated range of observed prices across all major voluntary carbon market project categories, drawing directly from transaction data and recent market reports.

Table 9: Carbon Credit Price Range (2021-2024)

Project Category	Price Range (USD/ton CO_2e)
REDD+ (Avoided Deforestation)	**$5 – $13**
Afforestation, Reforestation & Revegetation (ARR)	**$7 – $39**
Improved Forest Management (IFM)	**$8 – $22**
Agricultural Land Management & Soil Carbon Projects	**$6 – $11**
Cookstoves (Household Devices)	**$4 – $10**
Other (e.g., Biogas, Renewable Energy)	**$2 – $15**

Source:Annex 3

As discussed in Section 3, cookstove projects are included in the dataset but treated conservatively in valuation. Although some outliers have achieved prices significantly above standard ranges, our estimates apply typical category prices to avoid overstating market value.

Given the diversity of project types and the observed range of prices, there is no single value that can represent the average price of Kenyan agriculture-related carbon credits. To address this, we multiply the price ranges directly by the estimated VCUs for each project category to obtain upper and lower bound revenue estimates.

To understand the composition of Kenya's agricultural carbon project portfolio, we calculated each project category's share of the total project population (46 projects across Verra and Gold Standard). This yielded the distribution in Table 10.

Table 10: Voluntary Carbon Market: Project Type Weightings and Price Ranges (2021-2024)

Project Category	Market Share	Price Range (USD/tCO_2e)
Afforestation/Reforestation Projects	**~39%**	$7 – $39
Agricultural Land Management & Soil Carbon Projects	**~ 33%**	$6 – $11
Other (e.g., Biogas, Renewable Energy)	**~ 15%**	$2 – $15
Clean Cookstove Projects	**~ 7%**	$4 – $10
REDD+ (Avoided Deforestation)	**~ 7%**	$5 – $13

Source: Authors compilation

We multiply each project's estimated annual VCUs directly by its category-specific price range. There are a number of advantages of adopting a range, rather than a single price estimate.

- **Data opacity**. Most African credits trade over the counter and prices are disclosed selectively, so published datasets remain partial.[29] A wide band cushions our estimates against hidden lows or highs.
- **Shifting perceptions of quality**. New integrity frameworks, most notably the Core Carbon Principles launched by the Integrity Council in 2023, are rapidly redefining which credits qualify as "high quality". [30]
- **Changing narratives**. Premium sales, like the the Kenyan Eco-Safi cookstove deal, prove that rigorous monitoring, strong co-benefits and credible certification can still command top-end prices even in a bearish cycle.[31]

In Table 11, we present a summary of the estimated value of the current market using the calculated price ranges. We used the formula, Estimated Annual Revenue (KSh) = Estimated Annual VCUs × VCU Price Range (USD) × Exchange Rate (KSh/USD), assuming an exchange rate of 1 USD = 130 KSh. These calculations were undertaken for all individual projects in the dataset (see Annexes for full project-level results). The aggregated summary by project type and status is presented in Table 11, while details of all projects calculations are provided in the Annexes.

The table below summarizes the information in annex 1 and annex 2, showing the revenue potential of able to issue and pipeline projects taken together by category.

Table 11: Detailed Category-Wise Summary of Current and Potential Revenue from VCUs as of March 2025

Category	Status	Estimated Annual VCUs	Lower Bound Revenue (USD)	Upper Bound Revenue (USD)
Agricultural Land Management & Soil Carbon Projects	Able to Issue	1,539,678	9,238,068	16,936,458
	Pipeline	5,935,612	35,613,672	65,291,732
	Subtotal	**7,475,290**	**44,851,740**	**82,228,190**
Afforestation / Reforestation	Able to Issue	928,555	6,499,885	36,213,645
	Pipeline	2,355,896	16,491,272	91,879,944
	Subtotal	**3,284,451**	**22,991,157**	**128,093,589**
Clean Cookstove Projects	Able to Issue	101,483	405,932	1,014,830
	Pipeline	—	—	—
	Subtotal	**101,483**	**405,932**	**1,014,830**
Other (Biogas, Renewable Energy)	Able to Issue	635,954	1,271,908	9,539,310
	Pipeline	—	—	—
	Subtotal	**635,954**	**1,271,908**	**9,539,310**
REDD+ (Avoided Deforestation)	Able to Issue	1,964,343	9,821,715	25,536,459
	Pipeline	—	—	—
	Subtotal	**1,964,343**	**9,821,715**	**25,536,459**
GRAND TOTAL		**13,461,521**	**79,342,452**	**246,412,378**

Table 12: Summary of all VCM projects in Kenya by status as of March 2025

Status	Estimated Annual VCUs	Lower Bound Revenue (USD)	Upper Bound Revenue (USD)
Able to Issue Projects	5,170,013	$27,237,508	$89,240,702
Pipeline Projects	8,291,508	$52,104,944	$157,171,676
TOTAL	13,461,521	$79,342,452	$246,412,378

These figures suggest that if all projects that are already under development were implemented, Kenya has the capacity to deliver over 13.5 million tCO_2e annually from agriculture and land-use projects, with financial returns ranging between USD 79.3M–246.4M/year. It is worth repeating here that the inclusion of cookstove projects does not have a substantial impact on these figures: such projects account for, at most, USD 1 million and there are none in the pipeline.

Kenya's potential carbon-credit earnings are meaningful when set against the scale of its farm economy and the public funds earmarked for the sector. Agriculture remains the country's single largest industry, contributing roughly 22–23 % of total GDP and generating about KSh 3.6 trillion (≈ USD 28 billion) in 2024.[32] Despite that weight, national budget allocations to the ministry of agriculture are modest: Parliament approved KSh 54.6 billion(≈ USD 404 million) for FY 2024/25 and subsequently trimmed the vote to KSh 47.6 billion(≈ USD 369 million) for FY 2025/26 , barely three percent of the total national budget.[33]

In this context, revenue from the able to issue VCM portfolio alone (USD 27.2 million at the lower bound) is equivalent to nearly 7–10% of the ministry's recent annual budgets. Adding in the full potential pipeline increases this contribution substantially: the lower-bound estimate for the total portfolio (USD 79.3 million) represents 21–25% of the ministry's budget, while the upper-bound estimate (USD 246.4 million) reaches 66–70%, roughly two-thirds of the entire agriculture budget.

Of course, these figures are useful mainly to establish scale: VCM revenues do not flow onto the budget and are not a substitute for public investment. They can clearly be an important complement, however, even on the low end of our estimates.

CONCLUSION

Kenya's voluntary carbon market for agriculture is both real and financially significant. Our registry census identifies 46 agriculture-related projects, of which 29 are 'able to issue' projects generating an estimated 5.2 million verified carbon units (VCUs) annually. Using project category-specific specific price ranges, we estimate that this 'able to issue' portfolio represents potential annual revenue of $27.2 million to $89.2 million, while the broader pipeline could expand total output to 13.5 million VCUs, worth $79.3 - 246.4 million annually. In what is a highly volatile market, we suggest that these values could be significantly below or above these figures.

Our analysis provides the first rigorous, data-driven baseline for Kenya's agricultural VCM, confirming that carbon markets already mobilize a meaningful supplementary finance stream. At the same time, it highlights two key constraints: revenue is highly sensitive to volatile carbon prices, and investment is overwhelmingly concentrated on mitigation activities, including soil carbon sequestration, agroforestry, and clean energy. Critically, these funds do not address adaptation priorities, such as irrigation infrastructure, drought-resilient seeds, or value-chain development, which are essential for building agricultural resilience.

The core insight of this study is therefore clear: VCMs can fund a subset of climate-smart practices, but they cannot substitute for comprehensive public investment in adaptation. The strategic imperative for Kenya is to integrate carbon finance within a broader climate-smart agriculture framework, prioritizing high-integrity projects, reliable monitoring, and equitable benefit-sharing. Done correctly, voluntary carbon markets can amplify public resources, deliver tangible farmer benefits, and strengthen resilience, transforming carbon revenue from a speculative income stream into a strategic pillar of Kenya's climate finance architecture.

Chapter 6

Recommendations for advancing carbon markets in Kenya

To fully harness the revenue potential of voluntary carbon markets while managing inherent risks, we recommend that Kenya:

1. **Prioritize high-quality, high-impact projects**

Kenya should focus investment on project categories with verifiable emissions reductions. Agroforestry and improved rice management, for example, offer "high certainty" climate impacts and attract premium buyers. For complex pathways such as soil carbon sequestration, the national registry should enforce rigorous monitoring, reporting, and verification (MRV) protocols to maintain environmental integrity and market confidence. This approach shifts Kenya's carbon portfolio toward high-demand, high-quality credits.

2. **Strengthen domestic regulatory and institutional frameworks**

The draft Climate Change (Carbon Markets) Regulations provide a foundation, but swift finalization is crucial. Alignment with international integrity standards, particularly the Integrity Council's Core Carbon Principles (CCPs), will enhance credibility. The National Carbon Registry should act not only as a ledger but also as a quality gatekeeper, enforcing standardized MRV and transparent reporting. The mandated 40% community revenue share must be operationalized with clear, auditable guidelines to ensure equitable benefit-sharing and foster local ownership of carbon projects.

3. **Bridge carbon finance with broader Climate-Smart Agriculture (CSA) goals**

Carbon credits primarily fund mitigation activities, leaving adaptation needs underfunded. Kenya should adopt a blended finance approach, combining carbon revenue with public funds to support both mitigation and adaptation. For example, income from soil carbon projects could co-finance drip irrigation or drought-resilient seeds for participating farmers. Policymakers should also support the development of methodologies that quantify mitigation co-benefits from adaptation actions, such as emissions reductions from solar-powered irrigation, to expand eligible financing streams.

4. **Cultivate resilient and diversified demand**

To reduce reliance on international buyers and buffer against price volatility, Kenya should stimulate domestic demand by encouraging local corporations to purchase high-integrity credits. Linking voluntary markets to international compliance schemes, such as CORSIA (Carbon Offsetting and Reduction Scheme for International Aviation), can further stabilize demand. Clear rules for "insetting", where companies claim emissions reductions from their value chains, are needed to prevent double-counting.

5. **Apply prudent fiscal and risk management**

Carbon revenues are inherently volatile and should be treated as ancillary, uncertain income in national and county budgets, with planning anchored to conservative price assumptions (e.g., $5–14 per tonne). Risk-mitigation tools, such as forward-contract guarantee facilities, can protect farmers and project developers from market shocks.

By implementing these measures, focusing on quality, institutional strength, finance integration, demand diversification, and risk management, Kenya can transform carbon finance into a limited but vital support to climate-smart agriculture, delivering both revenue and tangible resilience and livelihood benefits for rural communities.

ANNEXES

Annex 1:Estimated Annual Revenue from (Able to issue) Carbon Credit projects

REDD+ (Avoided Deforestation)

		LOWER BOUND		UPPER BOUND	
Project Name	Estimated Annual VCUs	Estimated Annual Revenue (USD)	Estimated Annual Revenue (KSh)	Estimated Annual Revenue (USD)	Estimated Annual Revenue (KSh)
The Kasigau Corridor REDD Project - Phase II The Community Ranches	1,461,479	7,307,395	949,961,350	18,999,227	2,469,899,510
Kasigau Wildlife Corridor REDD+	251,432	1,257,160	163,430,800	3,268,616	424,920,080
Chyulu Hills REDD+ Project	251,432	1,257,160	163,430,800	3,268,616	424,920,080
TOTAL	1,964,343	9,821,715	1,276,822,950	25,536,459	3,319,739,670

Agricultural Land Management & Soil Carbon Projects

		LOWER BOUND		UPPER BOUND	
Project Name	Estimated Annual VCUs	Estimated Annual Revenue (USD)	Estimated Annual Revenue (KSh)	Estimated Annual Revenue (USD)	Estimated Annual Revenue (KSh)
Kenya Agricultural Carbon Project (KACP)	60,000	360,000	46,800,000	660,000	85,800,000
Boomitra Carbon Farming in East Africa	1,249,417	7,496,502	974,545,260	13,743,587	1,786,666,310
Western Kenya Soil Carbon Project	179,643	1,077,858	140,121,540	1,976,073	256,889,490
Sustainable Agroforestry Based Dairy Value Chain in Mount Elgon Kenya	50,618	303,708	39,482,040	556,798	72,383,740
TOTAL	1,539,678	9,238,068	1,200,948,840	16,936,458	2,201,739,540

Clean Cookstove Projects

		LOWER BOUND		UPPER BOUND	
Project Name	Estimated Annual VCUs	Estimated Annual Revenue (USD)	Estimated Annual Revenue (KSh)	Estimated Annual Revenue (USD)	Estimated Annual Revenue (KSh)
CPA-KE-009 KENYA	40,363	161,452	20,988,760	403,630	52,471,900
CPA-KE-008 KISUMU	29,020	116,080	15,090,400	290,200	37,726,000
CPA-KE-001 KIBERA	32,100	128,400	16,692,000	321,000	41,730,000
TOTAL	101,483	405,932	52,771,160	1,014,830	131,927,900

Afforestation/Reforestation Projects

		LOWER BOUND		UPPER BOUND	
Project Name	Estimated Annual VCUs	Estimated Annual Revenue (USD)	Estimated Annual Revenue (KSh)	Estimated Annual Revenue (USD)	Estimated Annual Revenue (KSh)
Hongera Reforestation Project	7	49	6,370	273	35,490
TIST Program in Kenya, VCS-CCB 010	93,619	655,333	85,193,290	3,651,141	474,648,330
Livelihoods Mount Elgon Project	53,142	371,994	48,359,220	2,072,538	269,429,940
Papariko - Restoration of Degraded Mangrove Areas	30,389	212,723	27,653,990	1,185,171	154,072,230
TIST Program in Kenya, VCS 006	233,275	1,632,925	212,280,250	9,097,725	1,182,704,250
TIST Program in Kenya, VCS 005	86,694	606,858	78,891,540	3,381,066	439,538,580
TIST Program in Kenya, VCS 009	88,163	617,141	80,228,330	3,438,357	446,986,410
TIST Program in Kenya, VCS 001	14,701	102,907	13,377,910	573,339	74,534,070

TIST Program in Kenya, VCS 002	13,663	95,641	12,433,330	532,857	69,271,410
TIST Program in Kenya, VCS 003	14,482	101,374	13,178,620	564,798	73,423,740
TIST Program in Kenya, VCS 004	13,790	96,530	12,548,900	537,810	69,915,300
Komaza Smallholder Farmer Forestry Kenya	286,630	2,006,410	260,833,300	11,178,570	1,453,214,100
TOTAL	928,555	6,499,885	844,985,050	36,213,645	4,707,773,850

Other (e.g., Biogas, Renewable Energy)

		LOWER BOUND		UPPER BOUND	
Project Name	**Estimated Annual VCUs**	**Estimated Annual Revenue (USD)**	**Estimated Annual Revenue (KSh)**	**Estimated Annual Revenue (USD)**	**Estimated Annual Revenue (KSh)**
Safe Water Programme – Kenya – VPA 40	60,000	120,000	15,600,000	900,000	117,000,000
Safe Water Programme – Kenya – VPA 39	60,000	120,000	15,600,000	900,000	117,000,000
HomeBiogas Programme in Kenya â€“ VPA1	324,127	648,254	84,273,020	4,861,905	632,047,650
Household and commercial biogas plants in Kenya	56,153	112,306	14,599,780	842,295	109,498,350

African Biogas Carbon Programme (ABC) - Kenya - VPA001	52,197	104,394	13,571,220	782,955	101,784,150
Nairobi River Basin Biogas Project	35,949	71,898	9,346,740	539,235	70,100,550
Biomass Briquettes in Tea Factories: Chebut Tombe Boito Itumbe Kapkoros & Tegat	47,528	95,056	12,357,280	712,920	92,679,600
TOTAL	635,954	1,271,908	165,348,040	9,539,310	1,240,110,300

Annex 2: Estimated Annual Revenue from Pipeline Projects

Agricultural Land Management & Soil Carbon Projects

		LOWER BOUND		UPPER BOUND	
Project Name	Estimated Annual VCUs	Estimated Annual Revenue (USD)	Estimated Annual Revenue (KSh)	Estimated Annual Revenue (USD)	Estimated Annual Revenue (KSh)
Northern Kenya Rangelands Carbon Project	300,000	1,800,000	234,000,000	3,300,000	429,000,000
Kenya Climate Smart Agriculture Program	37,448	224,688	29,209,440	411,928	53,550,640
Entooma Sidai: A Maasai Mara Rangeland Restoration	689,731	4,138,386	537,990,180	7,587,041	986,315,330
Kajiado Rangelands Carbon Project	915,139	5,490,834	713,808,420	10,066,529	1,308,648,770
One Mara Carbon Project	551,636	3,309,816	430,276,080	6,067,996	788,839,480
Lake Victoria Watershed Agroforestry Carbon Project	596,812	3,580,872	465,513,360	6,564,932	853,441,160
Makueni Agroforestry Carbon Project	156,267	937,602	121,888,260	1,718,937	223,461,810
Boomutra Grassland Restoration in East Africa	707,193	4,243,158	551,610,540	7,779,123	1,011,285,990
Kenya Agricultural Carbon Project	99,004	594,024	77,223,120	1,089,044	141,575,720
Northern Kenya Grassland Carbon Project	1,797,493	10,784,958	1,402,044,540	19,772,423	2,570,414,990
KUZA MITI AGROFORESTRY CARBON PROJECT IN KENYA	84,889	509,334	66,213,420	933,779	121,391,270
TOTAL	5,935,612	35,613,672	4,629,777,360	65,291,732	8,487,925,160

Afforestation/Reforestation Projects

		LOWER BOUND		UPPER BOUND	
Project Name	Estimated Annual VCUs	Estimated Annual Revenue (USD)	Estimated Annual Revenue (KSh)	Estimated Annual Revenue (USD)	Estimated Annual Revenue (KSh)
REGENERATION KENYA (RK) VPA01	1,013,167	7,092,169	921,981,970	39,513,513	5,136,756,690
REGENERATION KENYA (RK)	1,013,167	7,092,169	921,981,970	39,513,513	5,136,756,690
Word Forest Kenya VPA001	50	350	45,500	1,950	253,500
OYU - Reforesting Kenya for a better tomorrow	184,724	1,293,068	168,098,840	7,204,236	936,550,680
Restore Africa: Restoring trees and livelihoods in Kenya	44,788	313,516	40,757,080	1,746,732	227,075,160
Lake Naivasha Basin Reforestation Project	100,000	700,000	91,000,000	3,900,000	507,000,000
TOTAL	2,355,896	16,491,272	2,143,865,360	91,879,944	11,944,392,720

Annex 3: Evidence Base and Justification for Voluntary Carbon Market (VCM) Price Ranges Used in the Analysis

Project Category	Range Used in this analysis (USD/tCO_2e)	Actual Data from source	Source Location (Page / Section / Figure)	Evidence Summary	Source (Link)
REDD+ (Avoided Deforestation)	**$5-$13**	2021: $5.15; 2022: $10.26; 2023 (YTD): $10.84	Ecosystem Marketplace (State of VCM 2023), pp. 13, Table 4. VCM Transaction Volumes, Values, and Prices, by Forestry and Land Use Project Types, 2021-2023 YTD	The range of $5–$13/tCO_2e is anchored directly in observed transaction data across multiple sources and years. Ecosystem Marketplace records REDD+ average prices of $5.15 (2021), $10.26 (2022), and $10.84 (2023 YTD), establishing $5 as a credible lower bound and the $10–$11 band as the central market zone for recent years. The upper bound of $13 is corroborated by two independent sources: the Africa Carbon Markets Initiative (2024) reports a $13 average for African REDD+ credits in 2023, and African Climate Wire similarly cites $13 as a 2024 reference price for African projects. Sylvera's 2023 market review places REDD+ in the $8–$13 range across 2021–2023, consistent with the upward trajectory in the Ecosystem Marketplace data. The most recent Ecosystem Marketplace data (2025 report) shows a modest pullback, with averages of $7.87 (2023) and $6.03 (2024), reflecting broader VCM market softening. The $5–$13 range therefore captures the full observed distribution , from the 2021 floor through the 2022–2024 peak, without extrapolating beyond documented transaction evidence.	https://drive.google.com/file/d/13oWQVqWqQRDmuz2ikvKSMOpueqbobRsV/view?usp=drive_link
		$13 (2023 Average)	Africa Carbon Markets Initiative (2024), pp. 14,		https://drive.google.com/drive/folders/1dPDOPtgL1G1JxRuoxFNguiocjBBnjbAS?usp=drive_link
		$13 (2024)	African Climate Wire: African Carbon Projects Bear the Brunt of Market Dip (2024)		https://africanclimatewire.org/2024/09/african-carbon-projects-bear-the-brunt-of-market-dip/ https://drive.google.com/file/d/1vNoNfFtzfM5oLXqdTLgqUxRavfPefQiK/view?usp=drive_link
		$8 - $13 (2021-2023)	Sylvera; The State of Carbon Credits 2023, pp. 14, Project-specific pricing trends (range visually approximated from chart)		https://drive.google.com/file/d/1bRyPQ6OZKDzw0GejUWoPm455tal1vL1k/view?usp=drive_link
		$6.03(2024 - $7.87 (2023)	Ecosystem Marketplace, PP 14 Table 4. VCM Transaction Volumes, Values, and Prices by Forestry and Land Use Project Types, 2023-2024; State of the Voluntary Carbon Market 2025		https://3298623.fs1.hubspotusercontent-na1.net/hubfs/3298623/SOVCM%202025/Ecosystem%20Marketplace%20State%20of%20the%20Voluntary%20Carbon%20Market%202025.pdf

Afforestation, Reforestation & Revegetation (ARR)	**$7 – $39**	$17.15 - $20.44 (2023-2024)	Ecosystem Marketplace,pp 14 Table 4. VCM Transaction Volumes, Values, and Prices by Forestry and Land Use Project Types, 2023-2024; State of the Voluntary Carbon Market 2025	The range of $7–$39/tCO_2e spans the full documented market for ARR credits, from historical transaction averages to current high-integrity removal pricing. The lower bound of $7 reflects Ecosystem Marketplace's recorded average of $7.97 in 2021, representing the base pricing for early-vintage or lower-quality ARR credits. The mid-range is supported by EM's progression to $11.79 (2022) and $15.60 (2023 YTD), as well as the 2025 EM report showing $17.15 (2024) and $20.44 (2023) for more recent transactions. Sylvera's project-specific data confirms pricing of $7–$23 for individual ARR projects (e.g., VCS 959) and $14–$23 for others (VCS 673). The upper bound of $39 is sourced from Abatable's 2024 analysis, which documents high-integrity ARR removals trading up to $39. This upper end is further supported by ACMI's reported 2023 average of $22 for nature-based carbon removal credits in Africa, and Anaxee's 2025 estimate of $24 for highly-rated credits. The full $7–$39 range therefore reflects the entire documented spectrum, from commodity-grade historical issuances to premium verified removals actively traded in 2024.	https://3298623.fs1.hubspotusercontent-na1.net/hubfs/3298623/SOVCM%202025/Ecosystem%20Marketplace%20State%20of%20the%20Voluntary%20Carbon%20Market%202025.pdf
		$7 to $23 (VCS 959) $14 - $23 (VCS673)	Sylvera; The State of Carbon Credits 2023, pp. 14, Project-specific pricing trends (range visually approximated from chart)		https://drive.google.com/file/d/1bRyPQ6OZKDzw0GejUWoPm455tal1vL1k/view?usp=drive_link
		2021: $7.97; 2022: $11.79; 2023 (YTD): $15.60	Ecosystem Marketplace (State of VCM 2023), pp. 13, Table 4. VCM Transaction Volumes, Values, and Prices, by Forestry and Land Use Project Types, 2021-2023 YTD		https://drive.google.com/file/d/13oWQVqWqQRDmuz2ikvKSMOpueqbobRsV/view?usp=drive_link
		$18 - $39 (2024)	Abatable (2024), ARR pricing insights section Note: Range visually approximated from Abatable's aggregated 2024 headline distribution rather than raw monthly minima. While monthly observations fall below this level, the reported band reflects benchmark pricing derived from Abatable's continuously updated dataset of market trades and quotes.		https://abatable.com/blog/how-did-credit-prices-in-the-vcm-change-in-2024/
		$22 (2023 Average)	*ACMI; 2.2; What are key pricing trends and projections in the VCM, Nature-based carbon removal credits*		https://africacarbonmarkets.org/carbon-markets-africa/#acceluidc6f3ccde2
		$24 (2025)	Anaxee; What Is a Carbon Credit Worth? Understanding the Real Value in 2025; price for credits with "high ratings"		https://blog.anaxee.com/what-is-a-carbon-credit-worth-2025-insights/

Improved Forest Management (IFM)	**$8 – $22**	2021: $8.14; 2022: $14.77; 2023 (YTD): $12.34	Ecosystem Marketplace (State of VCM 2023), pp. 13, Table 4. VCM Transaction Volumes, Values, and Prices, by Forestry and Land Use Project Types, 2021-2023 YTD	The range of $8–$22/tCO_2e encompasses the full observed distribution of IFM credit prices across available data sources and years. The lower bound of $8 corresponds to Ecosystem Marketplace's recorded 2021 average of $8.14, establishing the floor for this project type during the earlier, lower-liquidity phase of the VCM. Prices rose to $14.77 in 2022 before moderating to $12.34 in 2023 YTD, with the 2025 EM report recording $16.20 (2023) and $14.97 (2024) indicating a stable central trading range in the $12–$16 zone. Sylvera's project-level analysis places IFM in the $13–$18 band for 2021–2023, consistent with the EM trajectory. The upper bound of $22 is drawn from Abatable's 2024 data, which documents IFM credits trading up to $22 for high-quality, high-additionality projects. Together, these sources establish $8–$22 as a well-evidenced range that captures both the historical base pricing and the premium end of the current market.	https://drive.google.com/file/d/13oWQVqWqQRDmuz2ikvKSMOpueqbobRsV/view?usp=drive_link
		$13 - $18 (2021-2023)	Sylvera; The State of Carbon Credits 2023, pp. 13, Project-specific pricing trends		https://drive.google.com/file/d/1bRyPQ6OZKDzw0GejUWoPm455tal1vL1k/view?usp=drive_link
		$12 - $22 (2024)	Abatable (2024), IFM pricing insights section (range visually approximated from chart)		https://abatable.com/blog/how-did-credit-prices-in-the-vcm-change-in-2024/
		$14.972024) - $16.2(2023)	Ecosystem Marketplace, pp 14 Table 4. VCM Transaction Volumes, Values, and Prices by Forestry and Land Use Project Types, 2023-2024; State of the Voluntary Carbon Market 2025		https://3298623.fs1.hubspotusercontent-na1.net/hubfs/3298623/SOVCM%202025/Ecosystem%20Marketplace%20State%20of%20the%20Voluntary%20Carbon%20Market%202025.pdf

Agricultural Land Management & Soil Carbon Projects	**$6 – $11**	$6.51 - $7.66 (2023-2024)	Ecosystem Marketplace, pp 14 Table 3. VCM Transaction Volumes, Values, and Prices by Project Category, 2023-2024; State of the Voluntary Carbon Market 2025	The range of $6–$11/tCO_2e is grounded in the observed trajectory of agricultural carbon credit prices, which have exhibited significant volatility over the 2021–2024 period. Ecosystem Marketplace data shows prices peaked at $9.65 (2021) and $11.02 (2022) before falling sharply to $6.43 in 2023 YTD , a decline of approximately 42% from the 2022 high, reflecting broader VCM market repricing and heightened scrutiny of agricultural methodologies. The most recent EM data (2025 report) records averages of $6.51 (2023) and $7.66 (2024), confirming that the post-correction market has stabilised in the $6–$8 zone. The upper bound of $11 reflects the documented 2022 peak, which remains a realistic ceiling for higher-quality methodologies with strong verification and remote sensing components, while the lower bound of $6 anchors to the current post-correction floor. This range therefore spans the realistic trading envelope based entirely on observed transaction data, without reverting to pre-correction pricing as a guide.	https://3298623.fs1.hubspotusercontent-na1.net/hubfs/3298623/SOVCM%202025/Ecosystem%20Marketplace%20State%20of%20the%20Voluntary%20Carbon%20Market%202025.pdf
		2021: $9.65; 2022: $11.02; 2023 (YTD): $6.43	Ecosystem Marketplace (State of VCM 2023), pp. 13, Table 3. VCM Transaction Volumes, Values, and Prices, by Project Category, 2021-2023 YTD		https://drive.google.com/file/d/13oWQVqWqQRDmuz2ikvKSMOpueqbobRsV/view?usp=drive_link

Cookstoves	**$4 – $10**	2021: $5.36; 2022: $8.55; 2023 (YTD): $7.33	Ecosystem Marketplace (State of VCM 2023), pp. 13, Table 3. VCM Transaction Volumes, Values, and Prices, by Project Category, 2021-2023 YTD	The range of $4–$10/tCO_2e is directly grounded in the observed market distribution documented by Qcintel (2023), which records a price range of $4.60–$10.45 for cookstove credits, one of the most specific market-wide pricing estimates available for this category. This range aligns with the general level of Ecosystem Marketplace transaction averages, which record $5.36 (2021), $8.55 (2022), and $7.33 (2023 YTD), with the 2025 EM report showing $7.71 (2023) and $7.30 (2024). Taken together, these data points confirm that the market consistently trades between roughly $5 and $9 on average, with the Qcintel distribution extending the lower tail to ~$4.60 for discounted or lower-quality credits and the upper tail to ~$10.45 for premium projects with robust co-benefit documentation. The updated range of $4–$10 therefore reflects the full documented price distribution across cookstove credit quality tiers, from the floor set by legacy or scrutinised issuances to the ceiling supported by verified, high-additionality projects.	https://drive.google.com/file/d/13oWQVqWqQRDmuz2ikvKSMOpueqbobRsV/view?usp=drive_link
		$4.60 – $10.45 (2023)	Quantum 2023; EDITORIAL: We know the VCM is in need of reform, but what about processes that feed into the market?		https://www.qcintel.com/carbon/article/editorial-we-know-the-vcm-is-in-need-of-reform-but-what-about-processes-that-feed-into-the-market-18047.html
		$7.30(2024) - $7.71(2023)	Ecosystem Marketplace, pp 14 Table 3. VCM Transaction Volumes, Values, and Prices by Project Category, 2023-2024; State of the Voluntary Carbon Market 2025		https://3298623.fs1.hubspotusercontent-na1.net/hubfs/3298623/SOVCM%202025/Ecosystem%20Marketplace%20State%20of%20the%20Voluntary%20Carbon%20Market%202025.pdf

Other (e.g., Biogas, Renewable Energy)	**$2 – $15**	$5 – $15	Down To Earth (2023); Bio-CNG projects as carbon credit generators	The range of $2–$15/tCO_2e reflects the full documented price distribution across the heterogeneous "Other Energy" category, spanning commodity-grade renewable energy credits at the lower end through to premium biogas and distributed energy projects at the upper end. The floor of $2 is anchored directly in Ecosystem Marketplace transaction data, which records average prices of $2.16 (2021) for the broader "Other Energy" category, with more recent EM data showing $2.67 (2024) and $3.92 (2023), confirming that mainstream grid-connected renewable energy credits consistently trade in the $2–$4 range. The upper bound of $15 reflects the premium commanded by biogas and bio-CNG projects specifically: Down To Earth (2023) documents carbon revenues of $5–$15 for bio-CNG projects, providing direct transactional evidence for the ceiling. This is further supported by Thapa et al. (2021), which estimates willingness-to-pay for domestic biogas carbon revenues at $7–$16 in the Nepal market, approaching but not exceeding the $15 ceiling applied here to avoid including speculative estimates beyond documented transaction prices. The $2–$15 range therefore captures the entire observed spectrum within this category, from the commodity renewable energy floor established by Ecosystem Marketplace averages to the verified premium of high-additionality biogas projects.	https://www.downtoearth.org.in/energy/bio-cng-projects-as-carbon-credit-generators-90386?utm_campaign=Climate%20Change%20Weekly-20230707&utm_medium=Email&utm_source=Mailer
		2021: $2.16; 2022: $4.16; 2023 (YTD): $3.97	Ecosystem Marketplace (State of VCM 2023), pp. 13, Table 3. VCM Transaction Volumes, Values, and Prices, by Project Category, 2021-2023 YTD		https://drive.google.com/file/d/13oWQVqWqQRDmuz2ikvKSMOpueqbobRsV/view?usp=drive_link
		$7 – $16 / $10 – $20	Thapa, S., Morrison, M., & Parton, K. A. (2021). Willingness to pay for domestic biogas plants and distributing carbon revenues to influence their purchase: A case study in Nepal		https://www.sciencedirect.com/science/article/abs/pii/S0301421521003918?fr=RR-2&ref=pdf_download&rr=9c1559d899e2fd00
		$2.67(2024) - $3.92 (2023)	Ecosystem Marketplace, pp 14 Table 3. VCM Transaction Volumes, Values, and Prices by Project Category, 2023-2024; State of the Voluntary Carbon Market 2025		https://3298623.fs1.hubspotusercontent-na1.net/hubfs/3298623/SOVCM%202025/Ecosystem%20Marketplace%20State%20of%20the%20Voluntary%20Carbon%20Market%202025.pdf

Annex 4: Glossary of Key Terms

Term	Definition
Carbon Market	A broad system where carbon credits are bought and sold. Carbon markets fall into two main types: (1) Compliance markets (legally mandated, e.g., under the Paris Agreement or national ETS), and (2) Voluntary markets (VCMs) (driven by corporate pledges, not laws). This paper focuses on VCMs because Kenya currently has greater access there.
Carbon Credit (VCU / VER)	A tradable certificate representing one metric ton of carbon dioxide equivalent (tCO_2e) either reduced from or removed from the atmosphere. VCU = Verified Carbon Unit (Verra). VER = Verified Emission Reduction (Gold Standard).
Voluntary Carbon Market (VCM)	A market where companies, governments, or individuals voluntarily buy carbon credits to offset their emissions. Unlike compliance markets (e.g., EU ETS), no law forces them to participate.
Compliance Market	A legally mandatory carbon market, typically tied to an emissions trading system (ETS) or international agreement (e.g., Kyoto Protocol, Article 6 of the Paris Agreement). Kenya currently does not participate in these as a seller.
tCO_2e (Metric tons of carbon dioxide equivalent)	The standard unit for measuring greenhouse gas emissions. It converts different gases (methane, nitrous oxide) into the equivalent amount of CO_2 based on their global warming potential.
AFOLU (Agriculture, Forestry, and Other Land Use)	A category used by carbon registries to group projects related to farming, trees, soil, and land management.
ARR (Afforestation, Reforestation, Revegetation)	A project type that plants trees or restores woody vegetation on land that was previously not forested (afforestation) or was degraded (reforestation/revegetation). These are removal credits.
REDD+ (Reduced Emissions from Deforestation and Forest Degradation)	A project type that prevents deforestation or forest degradation. These are avoidance credits (emissions that would have happened are stopped).
IALM / SALM (Improved / Sustainable Agricultural Land Management)	Farming practices that increase soil organic carbon (SOC), such as reduced tillage, cover cropping, agroforestry, and optimized fertilizer use. These generate soil carbon credits.

Additionality	A core requirement for any carbon credit. The project must prove that the emissions reduction or removal would not have happened without the revenue from carbon credits.
MRV (Monitoring, Reporting, Verification)	The three-step process for ensuring a carbon credit is real: (1) Monitoring the project's performance, (2) Reporting the data, (3) Verification by an independent third party.
VCU Issuance	The formal process by which a registry (e.g., Verra) approves and issues tradable carbon credits to a project after successful verification. A project that is "able to issue" has met all requirements.
Pipeline Project	A carbon project that has been listed or submitted to a registry but has not yet been fully registered or verified. These projects cannot issue credits until they reach "Registered" or "Certified" status.
Co-Benefit	A positive social or environmental outcome from a carbon project that goes beyond emissions reduction, such as improved air quality, biodiversity protection, job creation, or women's economic empowerment. Verified co-benefits command higher prices.
Core Carbon Principles (CCPs)	A global benchmark for high-integrity carbon credits, set by the Integrity Council for the Voluntary Carbon Market (ICVCM). Credits that meet CCPs are considered premium quality.
Article 6 (Paris Agreement)	The section of the Paris Agreement that allows countries to trade Internationally Transferred Mitigation Outcomes (ITMOs) through government-to-government agreements. Unlike VCMs, these are compliance-linked and potentially more stable.
ITMO (Internationally Transferred Mitigation Outcome)	A carbon credit authorised by one country and sold to another country to count toward the buyer's national climate target (Nationally Determined Contribution, NDC). This is the unit of trade under Article 6.
Crediting Period	The finite window of time (typically 5–10 years for agriculture/forestry projects) during which a registered project can generate and issue carbon credits. After this period, the project must be reassessed or renewed.
Vintage	The year in which a carbon credit was generated (i.e., the year the emissions reduction or removal actually occurred). Older vintages often trade at a discount unless backed by transparent data.
Over-the-Counter (OTC)	A private, bilateral transaction between a buyer and seller of carbon credits that does not occur on a public exchange or registry. A significant portion of VCM trading is OTC, creating price opacity.
Black Market Credit	An informal or unregistered carbon credit that is bought/sold without appearing on any major registry (Verra, Gold Standard). These credits lack independent verification and are excluded from this analysis.

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