In collaboration
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WORLD ECONOMIC FORUM

The Untapped Potential of Great Green Wall Voluntary Carbon Market Projects: Unlocking Opportunities for Sahelian Communities

WHITE PAPER

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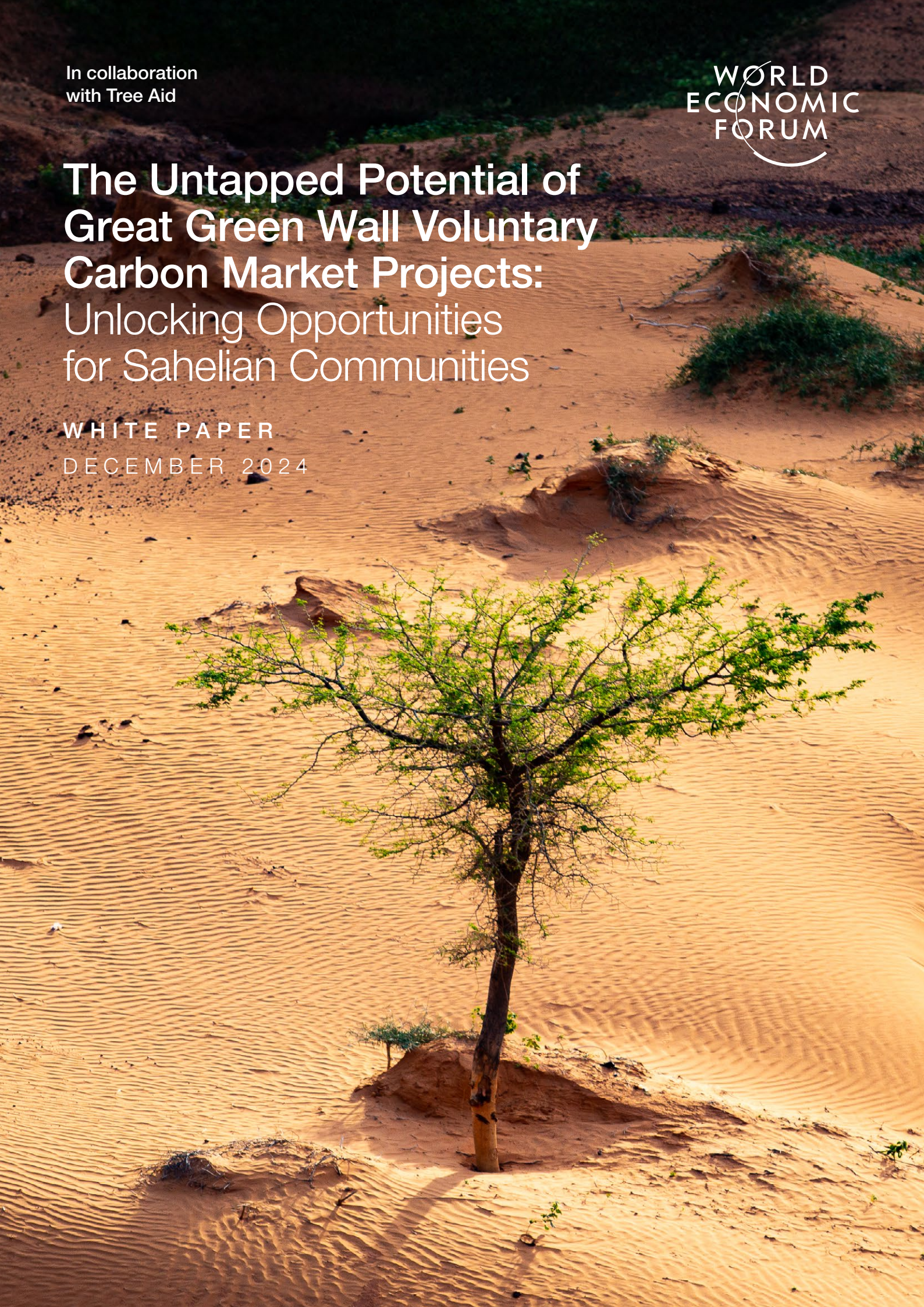


Foreword

Voluntary carbon markets can help channel finance to communities facing escalating impacts of climate change in the Sahel.

Nicole Schwab
Co-Head, Nature Positive Pillar; Member of the Executive Committee; World Economic Forum

The impacts of climate change are increasingly being felt across the globe, but these impacts are not distributed equally. This year, 2024, is predicted to have been hotter than 2023 – the hottest year on record at the time of writing.

On the frontline of climate change and desertification, Sahelian communities are facing escalating challenges, having to adapt to peak temperatures of 45°C during 2024 and with limited access to water and energy.

Within this context, the ambition of the Great Green Wall initiative is critical. However, a financing gap remains and progress is delayed under challenging conditions. 1t.org and Tree Aid have prepared this white paper as a complement to the World Economic Forum's 2022 insight report *The Untapped Potential of Great Green Wall Value Chains: An Action Agenda to Scale Restoration in the Sahel*.[1]

This new report highlights the potential of voluntary carbon markets to facilitate the flow of additional private sector finance, both to help address the financing gap and to accelerate impact on-the-ground for the communities who need it most.

Tom Skirrow
Chief Executive Officer, Tree Aid

The Great Green Wall is an iconic effort to collaboratively tackle regional landscape degradation across 11 Sahelian countries. In order for it to reach the vision of 100 million hectares of restored land and create 10 million green jobs, private sector investment into those landscapes is key.

This paper highlights the growing opportunity to invest in nature-based solutions within the region and achieve valuable commercial, environmental and social returns. Through effective, high-integrity, large-scale voluntary carbon market programming, the degraded lands of the region can be seen as an opportunity rather than a hindrance to that investment.

Central to this opportunity is leveraging the capacities of local land custodians – the Indigenous Peoples and local communities who manage this landscape – to harness and drive forward the potential for restoration. High-quality voluntary carbon market programmes must ensure communities play a central role in the delivery and long-term success of landscape restoration efforts, and foster the potential to drive up local employment and prosperity as envisaged by the goals of the Great Green Wall.

Executive summary

The Great Green Wall initiative to restore 100 million hectares of the Sahara and Sahel is falling behind its 2030 target. Public money has proved insufficient, but the voluntary carbon market could deliver much needed funding.

The Sahel is one of the regions most affected by the climate crisis globally. Extreme heat, land degradation and disrupted weather patterns have inflicted severe damage on a fragile ecosystem and its communities. The African Union-led Great Green Wall for the Sahara and Sahel initiative (GGW), founded in 2007, has set out a grand vision of restoration. The aim is to restore over 100 million hectares of degraded landscapes, through a mosaic of activities focused on forest restoration, regenerative agricultural practices and green job creation.

However, the GGW is falling behind its 2030 target. A reliance on inadequate public funding has failed to deliver the scale of restoration initiatives needed across the region and a new impetus is required to maximize existing opportunities. The extensive land and forest degradation across GGW countries not only provides a major challenge to the region but also a significant opportunity for investment and restoration at scale.

Building on the World Economic Forum's 2022 insight report *The Untapped Potential of Great Green Wall Value Chains: An Action Agenda to Scale Restoration in the Sahel*,[2] this white paper looks at the potential for the GGW to encourage corporate investment through the voluntary carbon market (VCM). It explores VCMs as a viable source of restoration funding and demonstrates the significant investment opportunity which, if handled correctly, could be a "win-win-win" scenario for nature, community and private sector investors. Analysis by Tree Aid suggests an untapped VCM potential of 1.8 billion tonnes of carbon dioxide-equivalent (tCO_2e) across the region, equivalent to a potential carbon asset value of $28 billion at 2023's market price of $15.74, which is predicted to increase significantly.[3]

This report also addresses some of the misconceptions about investment in the region, showcasing examples of existing carbon projects and looking at ways to manage risk. It demonstrates how many of the actual and perceived risks of investing in the region can be mitigated through the innovation and capacity building already underway and shows that investor-ready initiatives do exist across GGW countries.

The report concludes with five key recommendations to develop and support the investment environment:

1. **Strengthen the regulatory framework for voluntary carbon markets in the Sahel**: Regulation gaps at national policy level lead to uncertainty, which inhibits expansion of the carbon market in the Sahel. Governments and international institutions must develop a fully robust policy framework in order to create a thriving market environment.
2. **Mobilize ongoing public funding to strengthen the enabling environment for future carbon investments**: There has already been a great deal of investment in building the capacity of communities to manage their landscapes effectively. New carbon investments can take advantage of this past and ongoing work to align and maximize returns for communities.
3. **Generate new VCM public-private partnerships to de-risk private sector investment**: Given the higher risk profile of the Sahel, additional incentives must be created to encourage private investment. Donor governments and multilateral development banks should look to co-invest in carbon-sequestering restoration work, given the substantial social, economic and environmental benefits created from building a thriving carbon market.
4. **Focus on community-centred approaches to create green jobs**: To ensure the best possible quality, price point and long-term viability of projects and the voluntary carbon market as a whole, VCM stakeholders must ensure that local communities are empowered to lead and implement projects, and benefit from the available returns.
5. **Improve transparency, information-sharing and learning across all stakeholders**: Information gaps remain across the sector. The market can only thrive if these gaps are closed. Investors, community members, national governments and project proponents must maintain a high level of transparency and information-sharing to develop a successful market.

Introduction: on the frontline of climate change in the Sahel

Progress in achieving sustainable Great Green Wall impacts has been slow since its launch in 2007, but greater carbon project investment in the Sahel could change this.

> **“ The [Great Green Wall] initiative aims to restore 100 million hectares of degraded land and create 10 million green jobs by 2030.**

In the Sahel, communities are on the frontline of the climate crisis. The dryland ecosystems surrounding the Sahel are some of the most vulnerable to climate change in the world, with temperatures rising 1.5 times faster than global averages.[4] Approximately 80% of people in the region depend on agriculture.[5] In 2023, the combined effects of climate change and conflict left 6.3 million people food insecure,[6] with over 150 million people across Africa struggling to meet basic food needs.[7] By 2050, climate shocks could send an additional 13.5 million people into poverty.[8]

The Sahel’s Great Green Wall initiative (GGW) is an ambitious movement. Led by the African Union and launched in 2007, it spans 8,000 kilometres across the Sahel and involves 11 countries: Burkina Faso, Chad, Djibouti, Eritrea, Ethiopia, Mali, Mauritania, Niger, Nigeria, Senegal and Sudan.

The initiative aims to restore 100 million hectares of degraded land and create 10 million green jobs by 2030. In an area where desertification poses one of the most severe risks for population displacement, the GGW is an essential initiative for restoring forests, vegetation, biodiversity and land fertility, while improving food security and climate resilience.[9] However, progress has been slow, with only around 18% of the GGW’s restoration activities completed by the end of 2020, 13 years after its launch.[10]

Carbon finance, driven by private sector investment, could provide a crucial tool to overcome the GGW funding gap by delivering resources directly to local communities at the frontline of the climate crisis. In its 2024 report,[11] the African Carbon Market Initiative stated: “With voluntary carbon credits valued at roughly $2 billion globally and potentially growing 5-50x by 2030, high-integrity carbon markets could provide significant benefits to African people and be a critical source of climate finance for the continent.” However, carbon project investment in the Sahel has been slow to date, partially due to a challenging environmental and political context.

A key recommendation from the World Economic Forum’s *The Untapped Potential of Great Green Wall Value Chains* report[12] was to gain a clearer understanding of the region’s carbon potential. To help unlock investment for GGW countries, this white paper responds to the opportunities and requirements in the region, by providing an analysis of the voluntary carbon market potential of these countries and offering solutions to some of the investment challenges.

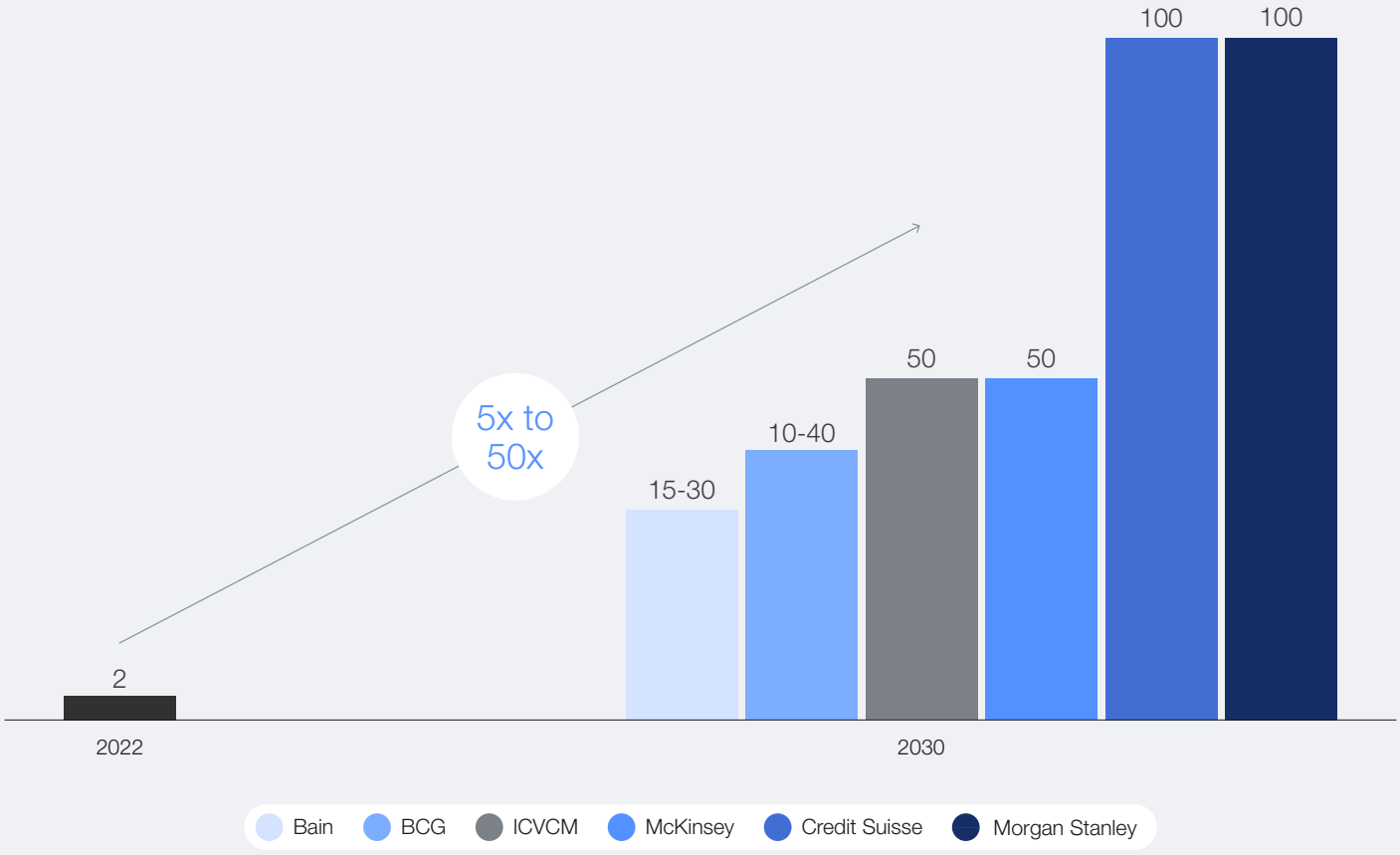
1 Untapped investment opportunities in GGW

Untapped investment opportunities in the Great Green Wall could bring positive impacts for people, biodiversity and the climate.

1.1 Sahel voluntary carbon market opportunity

Carbon finance is an essential pathway to unlock private sector investment in GGW countries. However, it is currently under-utilized. Recent years have seen strong global growth in demand and prices for VCM credits, in particular nature-based carbon removal credits,[13] with market demand expected to continue growing strongly (see Figure 1). Globally, while year-on-year prices for overall carbon credits fell in 2023 in response to market criticisms,[14] prices for more highly regarded afforestation, reforestation and revegetation[15] (ARR) projects increased from $12.05 to $15.74.[16] This upward trend speaks to a growing recognition of the importance of high-integrity removal credits.[17] These prices are expected to continue rising, with BloombergNEF predicting that prices for removals-based carbon credits could reach $146 per tonne by 2030 and $172 per tonne by 2050.[18]

FIGURE 1 **Global carbon credit market size projections under different scenarios ($ billions)**



Notes: Projections may differ significantly depending on a number of varied future pathways to decarbonization. BCG = Boston Consulting Group, ICVCM = Integrity Council for the Voluntary Carbon Market

Source: Africa Carbon Markets Initiative.[19]

Image credit: Tree Aid

Only 74 of the 1,395 VCM projects registered in Africa are attributed to nature-based solutions.

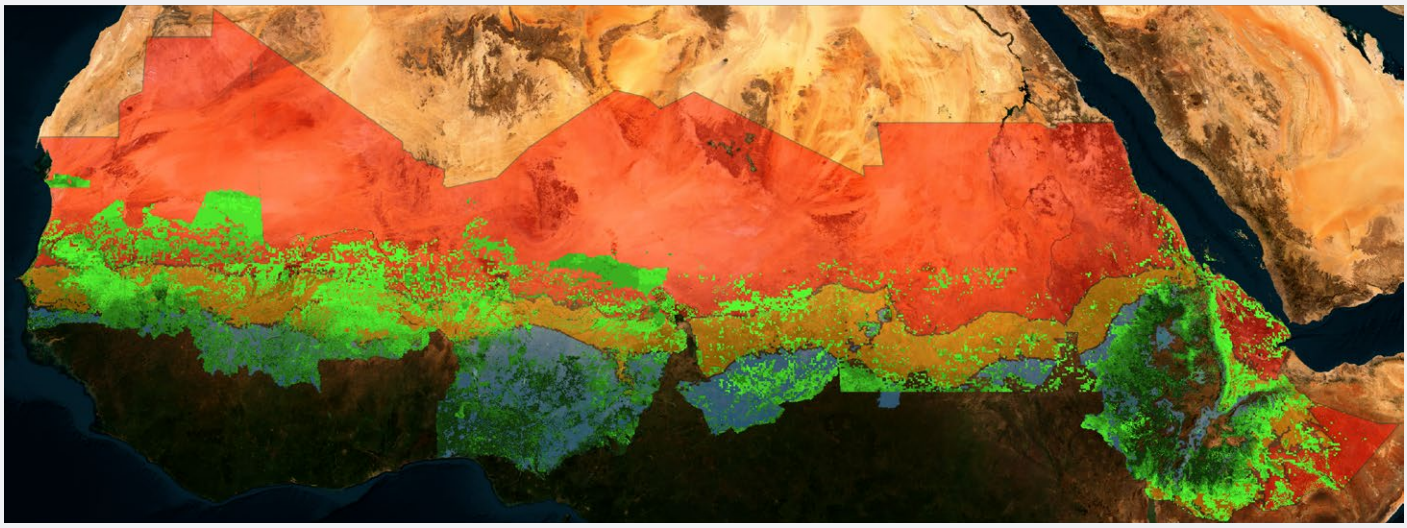
In 2022, Ecosystem Market Place estimated the global transaction value for forestry and land carbon credits at $1.1 billion.[20] There are currently 1,395 registered VCM projects in Africa, but despite the growing demand and price for carbon removal projects, only 74 of these are attributed to nature-based solutions, in particular afforestation, reforestation and revegetation projects, with just 11 of these in GGW countries.[21] Nevertheless, with the growing demand for high-integrity ARR removals credits, there is an opportunity for further voluntary carbon market investment in GGW countries.

1.2 Carbon sequestration potential

Between 2018 and 2020, the Food and Agriculture Organization of the United Nations (FAO) led a major land-use data collection and analysis study, known as the Africa Open D.E.A.L (data for environment, agriculture and land).[22] Working in collaboration with the African Union Commission, the Pan African Agency of the GGW and national stakeholders, the aim was to identify the carbon sequestration potential of GGW intervention zones, as identified by the United Nations Convention to Combat Desertification (UNCCD), and provide a consistent basis for the Nationally Determined Contributions of countries in the region. The FAO study's analysis of the Sahel zones, comprising 241.3 million hectares (Mha) found the potential net carbon gain[23] to be 0.799 billion tonnes of carbon dioxide-equivalent (tCO_2e) – net of 1.18 billion tonnes lost from soil organic carbon stocks.[24]

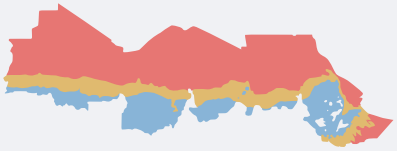
In its own analysis of the potential unrealized carbon across the Great Green Wall,[25] conducted specially for this report, Tree Aid began by looking within the total administrative boundaries of the 11 GGW countries, excluding non-dryland locations as defined by Köppen-Geiger climatic zones[26] (see Figure 2). The analysis identified potential areas of carbon sequestration eligible for the voluntary carbon market (i.e. investible carbon from the private sector perspective). Tree Aid's analysis was restricted to those areas under stable land uses over the past 10 years. This is a key VCM eligibility criterion, as it helps to avoid a perverse incentive that could drive reforestation of land that was deliberately cleared in advance to take advantage of carbon payments.

FIGURE 2 | **Carbon sequestration potential across GGW countries**



Koppen Geiger Climate Zones

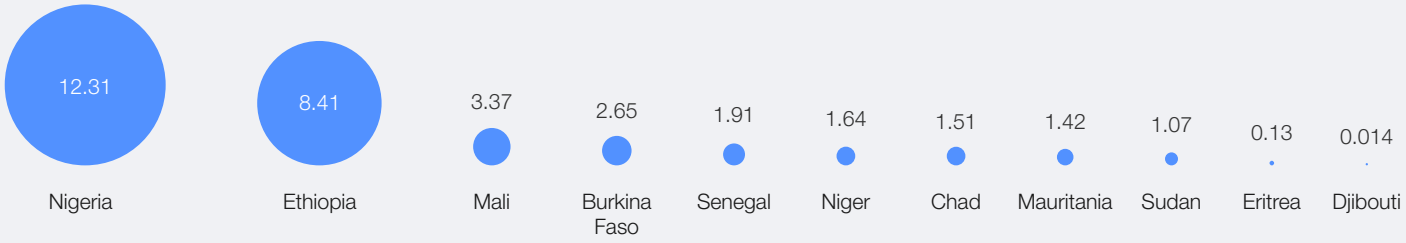
Tropical savannah | Hot arid desert | Hot arid steppe



Unrealised potential carbon storage (t carbon per hectare)

0.1 - 5 | 5 - 15 | 15 - 25 | 25 - 35 | 35 - 45 | 45 - 65 | 65 - 75 | 75 - 85 | 85 - 95 | >95

Carbon sequestration potential across countries of the Great Green Wall (billion tonnes CO_2e)



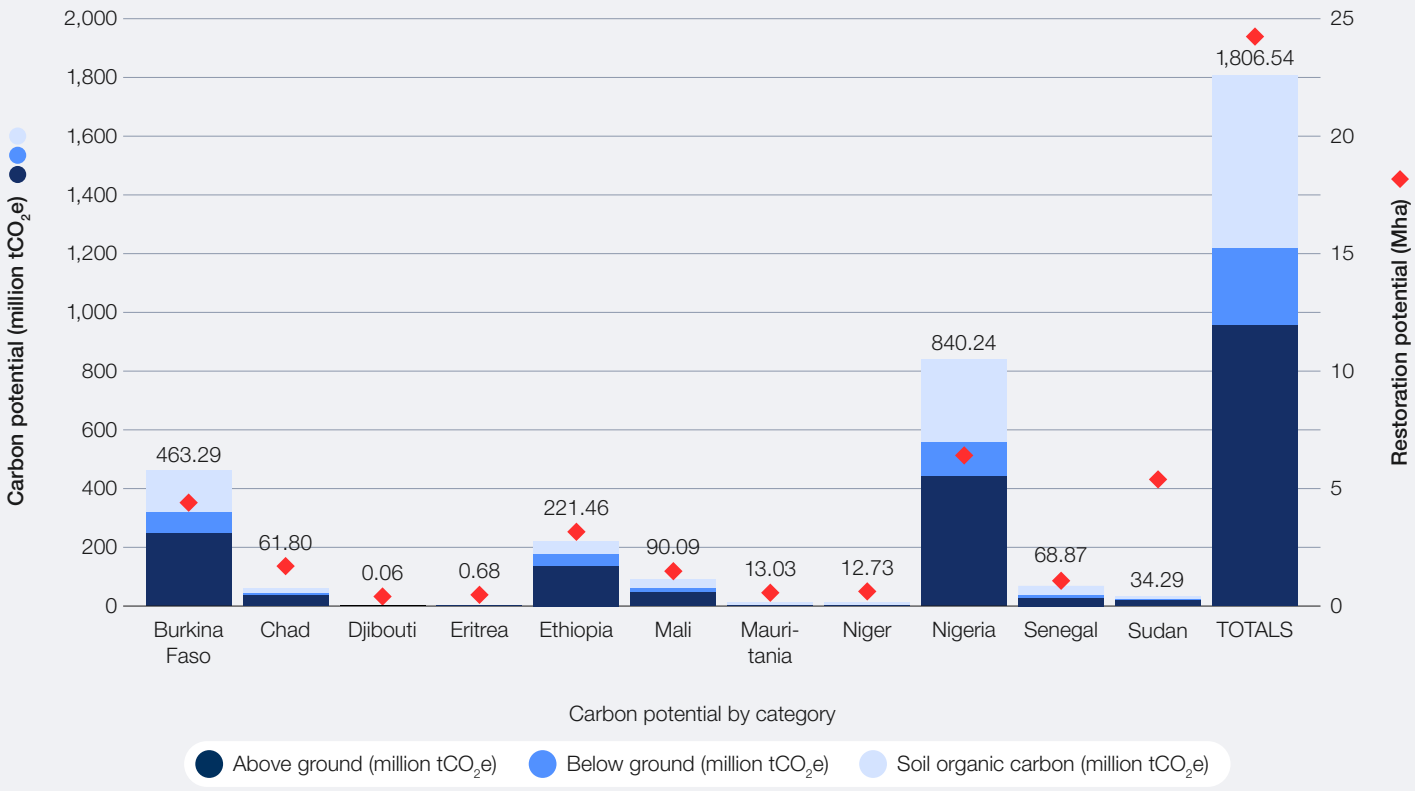
Source: Tree Aid.[28]

24.31 Mha are available in desert, arid and tropical savannah zones of GGW countries for VCM projects - offering an estimated 1.81 billion additional tonnes of CO2e storage.

Based on this analysis, Tree Aid estimates that 24.31 Mha are available in desert, arid and tropical savannah zones of GGW countries for VCM projects such as afforestation, reforestation and revegetation – offering an estimated 1.81 billion additional tonnes of CO_2e storage in forests, cropland and grasslands and by reclaiming bare land. The estimate was further verified through a hectare-by-hectare comparison with potential growth rate data from Tree Aid's voluntary carbon projects, indicating that this figure is a well-supported, conservative estimate. This could result in a carbon asset valued at $28 billion at the 2023 market price of $15.74 for ARR carbon credits, a figure that is predicted to increase significantly over the coming decade.[27]

The potential carbon removal highlighted by Tree Aid encompasses a diverse range of restoration interventions that should be based on current land uses to avoid land conversion. Areas which have high potential in above-ground biomass would benefit from reforestation in community-led voluntary carbon market projects, whereas areas with high potential for soil organic carbon[29] would be better suited to agricultural land management and improved grassland management[30] (see Figure 3).

FIGURE 3 | **GGW enabling environment for VCM projects – ranked by country and improvement (2023-2024)**



Source: Tree Aid analysis, see Annex 1.

Image credit: Tree Aid

1.3 Enabling environment

A key consideration in project investment is the enabling environment, in both political and policy terms, as well as the direct relationships between project developers, government and community leaders from the national to community level. While direct relationships must be assessed on a case-by-case basis, some broad conclusions can be drawn on the wider environment. Table 1 summarizes the enabling environment for VCM projects in all 11 GGW countries, ranked by country against three criteria: carbon market readiness; investment landscape; and climate, environment and people.

TABLE 1 **GGW countries' VCM potential (in millions of hectares & millions of tonnes of CO_2-equivalent)**

Voluntary Carbon market:	Burkina Faso	Chad	Dji-bouti	Eritrea	Ethiopia	Mali	Mauri-tania	Niger	Nigeria	Senegal	Sudan
Attractiveness index	***	***	***	***	****	***	***	**	****	****	**
Pillar 1: Carbon market readiness	****	**	*	***	*****	***	**	**	*****	***	*
Pillar 2: Investment landscape	**	***	***	***	***	*	***	***	***	****	**
Pillar 3: Climate, environment and people	***	***	***	***	****	***	***	***	*****	****	****
Improvement in attractiveness ranking (2023 to 2024)	***	****	>	>	>	***	**	*	***	>	*

Notes: 1) The table converts Abatable's *VCM Investment Attractiveness Index* rankings of each country out of 100 into a five-star rating. Countries with rankings from 0-19 receive one star; 20-39 receive two stars; 40-59 three stars; 60-79 four stars; and 80-100 five stars. 2) The bottom row refers to progress in national ranking of investment attractiveness over the past year, using the same star system. The > symbol refers to a lack of progress, which could include a backwards movement as other countries become more attractive.

Source: Abatable. (2024). *VCM Investment Attractiveness Index*.[31]

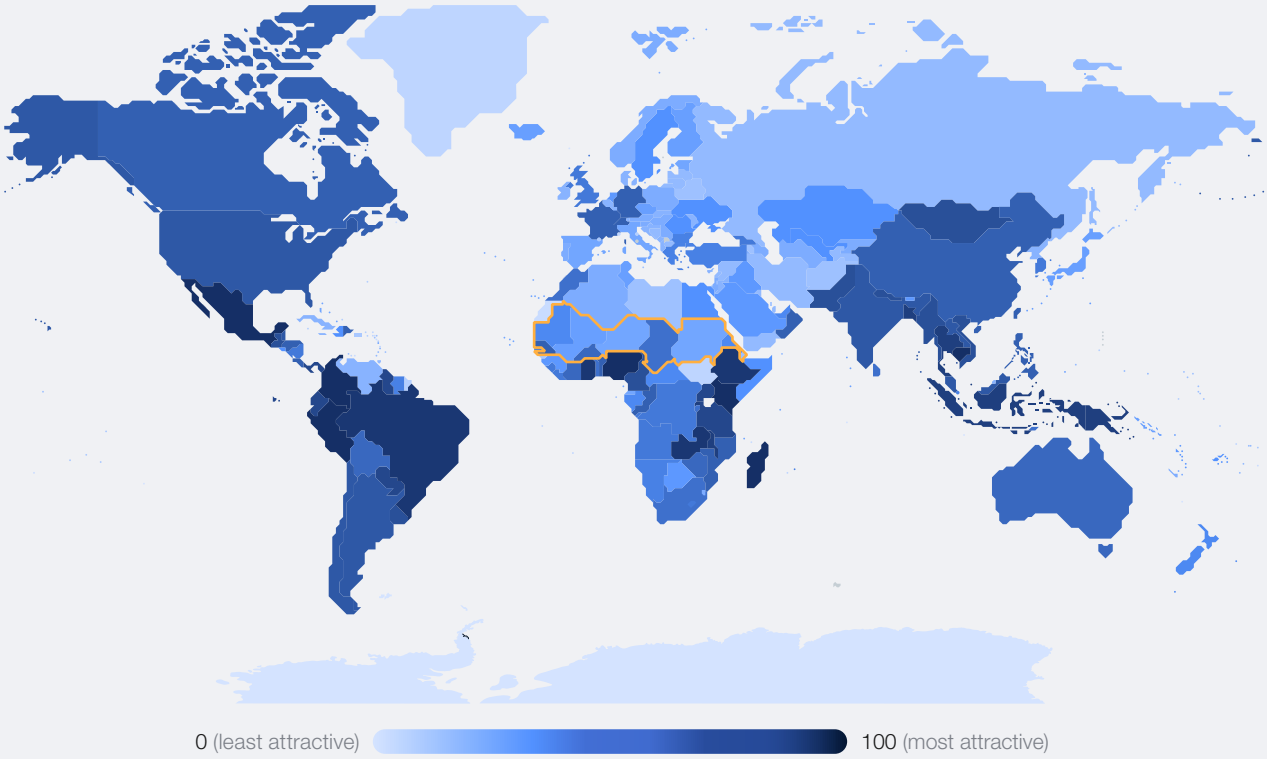
Nigeria and Ethiopia are rated respectively the 7th and 13th most attractive countries globally for VCM investment.

Figure 4 gives an overview of worldwide VCM attractiveness ratings. It is notable that a number of middle-income GGW countries are among the most attractive globally for VCM investment, with Nigeria rated 7th and Ethiopia 13th. Many GGW countries are also among those showing most improvement in terms of attractiveness.

However, it should be noted that a strong project-enabling environment does not automatically result in best practice or high-integrity carbon projects. For example, strong government policies may enable project development on public land while reducing access to carbon finance on community land. Carbon projects on public land may also be favoured by some investors, as they avoid some of the risks related to changing individual or community land-use practices and potentially long or expensive free, prior and informed consent (FPIC) processes. As a result, such an approach may prevent local communities directly benefiting from carbon funding.

FIGURE 4 | **Global rating of VCM attractiveness, by country (2024)**

VCM Index score (Global Review)



Source: Abatable

BOX 1 | **Community voices from Burkina Faso**

Ensuring a community-led and community-centred approach will always be essential to maintain high integrity and reduce overall risks, such as those relating to permanence. Engaging with communities, gaining their free, prior and informed consent (FPIC) and ensuring that project benefits are equally shared are principles highlighted by the Integrity Council for the Voluntary Carbon Market as well as the United Nations.[32]

Tree Aid interviewed community members on its project sites in Burkina Faso to discuss their views of carbon:

Awa Convolbo, 37, leads a women's cooperative union producing and selling high-quality, organic shea butter. For Awa, the work goes beyond business; it's about securing a healthier, more sustainable future for her family and for her community. She believes understanding the power of trees in carbon sequestration is key to this vision:

"With carbon, the understanding that we have is that trees capture the air that is not good and release the air that is good," she said. "And when you look at that, it helps human beings, it makes them feel better...If the trees take the bad air and give us the good air, our life expectancy is going to get longer; we will be able to live a little longer."

Saidou Zoungrana, 40, a farmer and president of the Vohoko East Forest cooperative, plays a key role in uniting his community around Tree Aid's Tond Tenga project, recognizing its vital impact on their livelihoods and survival:

"Our standard of living has improved significantly thanks to Tond Tenga, especially the money we earn from tree planting and seedling protection activities," he said. "This money is reinvested in income-generating activities such as raising small ruminants, producing seedlings, growing legumes in our nutritious gardens and processing our forest products."

Saidou welcomes the wider environmental benefits that the project is trying to deliver:

"Our forest areas will produce more, degraded lands will be restored, we will see more diverse trees on our land, the forest will regain its former glory. More trees, more carbon, more income."

Mahamdi Nikiema, 40, has been a farmer in Burkina Faso for most of his life. For Mahamdi, the impact of the Tond Tenga project is already noticeable:

"The activities we carry out in the forest have brought in money that has been used to buy animals, food, pay school fees, pay for health care and other family expenses."

Mahamdi is also planning for the future income that the community will receive from carbon credits:

"The money that will come from looking after our trees will be used to finance income-generating activities that can benefit many."

Conclusion

High-integrity carbon projects can deliver a return to both companies and communities.

Investing in voluntary carbon market projects in the Sahel and GGW countries could provide multiple benefits for companies aiming to reach net zero while supporting high-integrity carbon projects. By prioritizing community-led initiatives, these projects enhance reputational and market value for investors while supporting longer-term adaptation efforts. Carbon projects in the Sahel can deliver more than financial returns by integrating social and environmental benefits, creating a full spectrum of positive impacts that extend far beyond carbon sequestration.

For local communities, carbon credits provide an opportunity to support long-term sustainable land management practices. Nevertheless, given the residual risks of voluntary carbon project development, it is important that high-integrity projects are designed to focus on livelihoods and food security benefits to ensure value to communities that goes beyond carbon payments alone.

For the private sector, investing in GGW-related carbon credits is more than a climate commitment; it is a strategic opportunity. By investing in socially and environmentally responsible projects, companies can generate high-quality carbon credits that align with their net-zero targets and enhance their reputation. These investments support sustainable development and a sustainable future while delivering a return to both companies and communities.