

CERPA
CENTRE FOR ECONOMIC RESEARCH AND POLICY ANALYSIS

GHANA'S CARBON MARKET

From Emissions to Opportunities


POLICY ANALYSIS

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1. INTRODUCTION

Climate change refers to the long-term shift in weather patterns, occurring in increasingly unusual ways and primarily driven by human activities such as pollution and deforestation (IPCC, 2007). These activities release greenhouse gases (GHGs) into the atmosphere, which act like a blanket around the Earth, trapping heat and causing global warming. The impacts of climate change are non-excludable, affecting all nations regardless of geographic location. However, developing countries often bear the brunt of these effects due to their limited adaptive capacity.

The Paris Agreement represents a landmark achievement in the global response to climate change. As an internationally binding treaty governed by the United Nations Framework Convention on Climate Change (UNFCCC), it unites countries in a collaborative effort to address climate change and adapt to its effects. The core objective of the agreement is to limit the rise in global average temperature, ideally to well below 2°C above pre-industrial levels, and pursue efforts to limit it to 1.5°C.

Under the Paris Agreement, each country is required to submit its Nationally Determined Contributions (NDCs). These comprehensive national climate action plans outline specific commitments to reduce greenhouse gas (GHG) emissions and enhance climate resilience. These NDCs form the basis of each country's contribution to the global climate effort, detailing the mitigation and adaptation strategies they intend to pursue to achieve the goals of the agreement.

Ghana amended its Nationally Determined Contribution (NDC) in 2021, setting a target to reduce greenhouse gas (GHG) emissions by 15% using domestic resources (unconditional actions), equivalent to 24.6 million tonnes of carbon dioxide equivalent ($MtCO_2e$). With international support (conditional actions), Ghana aims to achieve a further 30% reduction, amounting to 39.4 $MtCO_2e$. This brings the total emission reduction target to 64 $MtCO_2e$ by 2030. To achieve these goals, Ghana intends to leverage carbon finance through the carbon market and actively engage the private sector.

2. The Emergence of Carbon Markets

Carbon markets have emerged as critical tools in the global response to climate change, offering a carbon pricing mechanism through which governments and non-state actors can trade greenhouse gas (GHG) emission credits. Countries and corporations can offset their GHG emissions by purchasing carbon credits - emission reductions achieved through various climate mitigation projects. These projects can be nature-based, such as preventing deforestation or promoting carbon sequestration through cover cropping by farmers, or technology-based, such as the use of clean cookstoves and electric vehicles.
The carbon markets play a critical role in the shift to a low-carbon economy. Article 6 of the Paris Agreement enables countries to trade carbon credits for meeting emission reduction targets.

A carbon credit equals one metric ton of carbon dioxide or the equivalent amount of other greenhouse gases, such as methane, nitrous oxide, and fluorinated gases, that have been avoided, reduced, or sequestered.

There are two (2) types of carbon markets. The compliance markets, also known as cap-and-trade or emission trading schemes, and voluntary carbon markets, also known as offsetting schemes. In compliance markets, the government imposes limits on greenhouse gas. Voluntary markets arose due to companies voluntarily committing to reduce their greenhouse gas emissions.

The carbon market incentivises emission reductions and creates financial flows to support sustainable development, especially in developing countries like Ghana.

3. Understanding Ghana's carbon market dynamics

Ghana is strategically leveraging Article 6 of the Paris Agreement by emphasising cooperative approaches within the international carbon market. According to Ghana's 2024 Annual Progress Report on Engagements in International Carbon Markets, the country has established bilateral cooperation with five nations: Switzerland, Sweden, Singapore, South Korea, and Liechtenstein.

3.1. Ghana's Framework.

Ghana has taken proactive steps to establish a national carbon market framework. The Carbon Market Office (CMO), which is part of the Environmental Protection Agency's (EPA) climate change unit, is the official national authority responsible for managing engagement in carbon markets related to climate change. Ghana's framework supports both compliance and voluntary carbon markets, providing clarity on approval processes and the conditions under which mitigation outcomes can be authorised for international transfer.

3.2. Authorization process

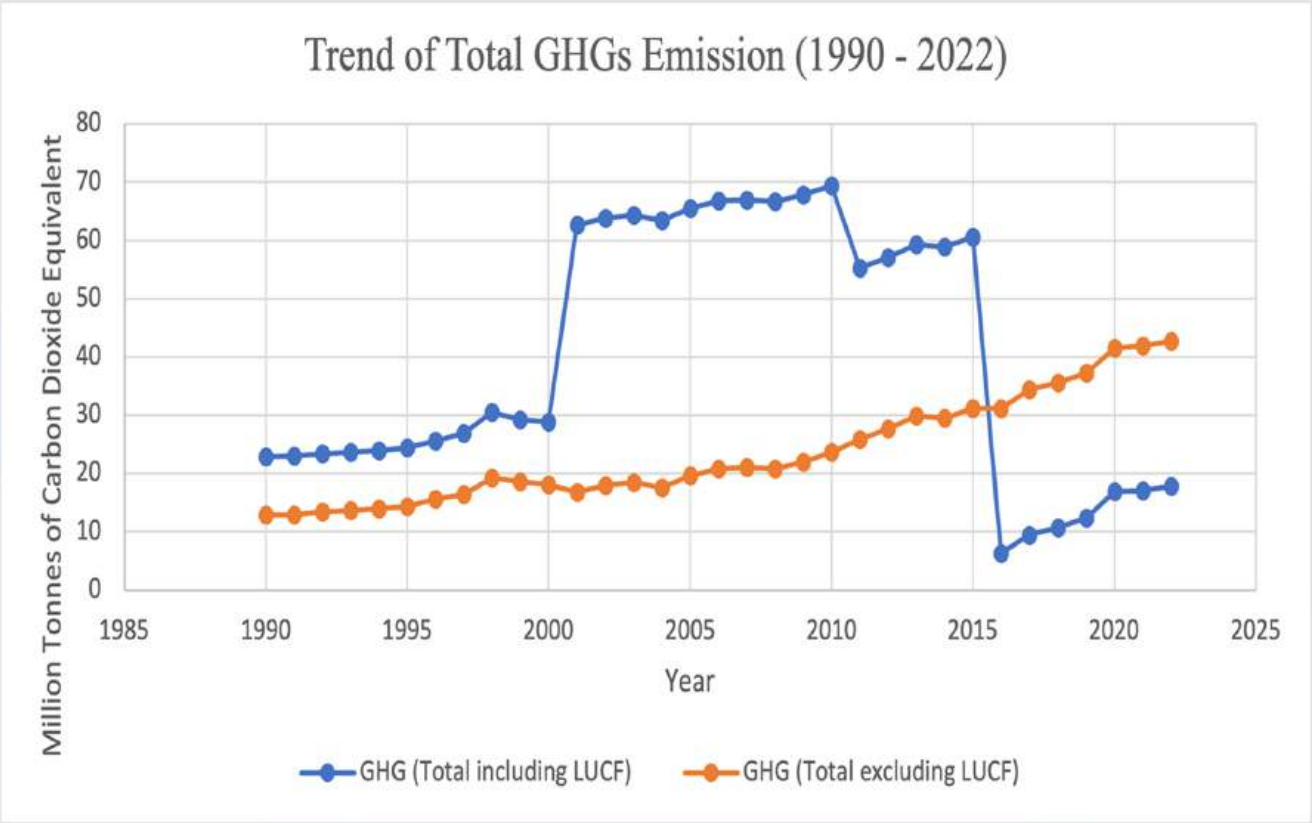
Ghana has implemented a structured authorisation process for carbon market participation. This includes project registration, approval by relevant ministries, and issuance of Letters of Authorization (LoA) for Internationally Transferred Mitigation Outcomes (ITMO) transfers. These authorisations ensure alignment with Ghana's NDCs and sustainable development goals.

3.3. Verification process

The verification of carbon credits in Ghana follows international standards, including independent third-party validation and verification processes. These ensure transparency, accuracy, and credibility in emissions reduction claims. Ghana is building national capacity to ensure effective monitoring, reporting, and verification (MRV) systems to support market integrity.

4. Ghana's GHG emissions.

Figure 1: Trend of total GHG emissions over time



Source: Climate Watch.

Ghana officially joined the international carbon market in 2016. As illustrated in Figure 1, total GHG emissions, including LUCF (Land Use Change and Forestry), experienced a notable decline immediately after 2015, dropping sharply from around 60 $MtCO_2e$ to below 10 $MtCO_2e$ by 2016, and remaining relatively low through 2022. In contrast, total GHG emissions excluding LUCF have shown a steady increase over the same period.

Although the timing indicates a potential connection between Ghana's participation in the carbon market and the decrease in total greenhouse gas emissions (including land use change and forestry), it is crucial to recognise that the significant drop is mainly attributed to shifts in land use and forestry emissions, instead of emissions from other sectors. This distinction underscores the role LUCF plays in Ghana's total emissions profile and highlights the potential impact of carbon market mechanisms and forest-based mitigation strategies.

The reduction in overall greenhouse gas emissions, including those from Land Use Change and Forestry (LUCF), since 2015 can be linked to Ghana's participation in carbon markets, which has facilitated the development of emission reduction initiatives aimed at decreasing GHG emissions in the country. Consequently, if the Ghanaian Government offers adequate assistance to project developers, it will further lower its emissions and enhance the country's carbon finance via the sale of carbon credits.

5. Ghana's opportunities in the carbon market

Ghana's active participation in international carbon markets presents a unique opportunity to align climate action with sustainable economic growth. By leveraging carbon finance, the country can attract foreign investment, accelerate green development, and unlock substantial financial resources. The following sub-sections outline key areas where Ghana stands to benefit economically, socially, and environmentally from its engagement in carbon trading mechanisms.

- **Increased Foreign Direct Investment (FDI)**

Ghana's readiness for the carbon market makes it an attractive destination for climate-related increased FDI, particularly in sectors such as renewable energy, forestry, and clean cooking technologies. Investors are more likely to fund projects that can generate verifiable emission reductions, providing both environmental and economic returns.

- **Economic Development**

Carbon finance has the potential to foster the creation of green jobs, facilitate the transfer of technology, and support infrastructure development, particularly in sectors such as afforestation, agroforestry, and clean cooking stove projects. According to Ghana's 2024 Annual Progress Report on Engagements in International Carbon Markets, the country expects to create over one million jobs and avoid 2,900 deaths due to improved air quality by 2030 (EPA, 2025). These developments will contribute to reducing unemployment and lowering mortality rates in Ghana. Additionally, Ghana's participation in carbon markets will enhance its global competitiveness in climate-smart investment sectors.

- **Climate Finance to Boost GDP**

The carbon market offers a means to fill financing gaps and mobilise additional resources through the sale of carbon credits, which can significantly boost Ghana's GDP. According to the 2024 Annual Progress Report on Engagements in International Carbon Markets, Ghana has the potential to unlock a minimum of US$9.3 billion by 2030 (EPA, 2025). These funds can be reinvested in climate adaptation, rural development, and environmental restoration projects.

6. Positioning Ghana to derive maximum benefits from the carbon market

To fully harness the economic and environmental opportunities presented by carbon markets, Ghana must go beyond policy commitments and establish a strong implementation framework. This involves creating an enabling environment that supports effective governance, active public participation, private sector investment, and sustainable project development. The following strategic actions outline how Ghana can position itself to maximize the benefits of carbon finance while advancing its climate and development goals.

- **Enhance the efficiency of key institutions**

Strengthening the operational and technical capacities of institutions such as the Environmental Protection Agency (EPA), the Ministry of Energy (MoE), the Ministry of Environment, Science, Technology, and Innovation (MESTI), and the Forestry Commission is crucial. This will ensure the effective implementation of carbon market activities, reduce delays in processes, and improve overall efficiency. Efforts should include digitizing procedures, training personnel, and streamlining bureaucratic systems.

- **Educate the general public on carbon markets**

Raising public awareness through media campaigns, workshops, and educational programs is essential for building local support and participation in carbon market initiatives. An informed populace, including financial institutions, can facilitate smoother project implementation and improve access to credit for project developers. Public education is one of the most effective tools for building grassroots support and enhancing climate resilience.

- **Provide government support to project developers**

The Ghanaian government must provide financial, technical, and policy incentives to stimulate private sector involvement in the carbon market. Streamlined regulatory frameworks and tax incentives can lower the entry barriers for local developers. This initiative will enhance the number of project developers in Ghana and can play a pivotal role in helping the country attain its NDC objectives.

- **Sensitise end users**

Awareness campaigns targeting end-users such as farmers, households, and local communities on the benefits of carbon market-linked products (e.g., improved cookstoves, solar panels) can foster greater acceptance and contribute to the adoption and long-term sustainability of climate projects. This will also support forest preservation and pollution reduction.

- **Promote public-private finance partnerships**

Public-private partnerships are essential in the carbon market space, as climate mitigation and adaptation projects require significant investment and face market uncertainties. These partnerships can mobilise capital, share risk, and foster innovation, ultimately enhancing Ghana's capacity to implement scalable and bankable climate projects.

7. Conclusion

Ghana stands at a pivotal moment in its climate policy trajectory, where strategic engagement in the global carbon market can unlock significant environmental, economic, and social benefits. Through its structured framework, international partnerships, and commitment to Article 6 of the Paris Agreement, Ghana has laid a solid foundation for leveraging carbon finance to meet its ambitious emission reduction targets.

To fully capitalise on these opportunities, however, targeted interventions are required. These include strengthening institutional capacity, increasing public awareness, incentivising private sector participation, and promoting inclusive public-private partnerships. Moreover, aligning carbon market activities with national development goals ensures that climate action translates into tangible gains such as job creation, improved air quality, and rural development.

As the world intensifies its shift toward low-carbon development, Ghana's proactive participation in the carbon market not only enhances its climate resilience but also positions it as a leader among developing countries in mobilising innovative climate finance solutions. The challenge now lies in sustaining momentum, fostering transparency, and ensuring that the carbon market delivers equitable and lasting development outcomes for all Ghanaians.

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About CERPA

The Centre for Economic Research and Policy Analysis (CERPA) is a think tank dedicated to providing independent, data-driven economic research and policy recommendations to foster sustainable economic growth in Ghana and beyond.

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