

Harnessing the Carbon Market for Sustainable Development in Nigeria: Legal Frameworks and Strategic Approaches

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ABSTRACT

Climate change has emerged as a significant challenge facing humanity. Human endeavours and activities such as fossil fuel exploration, gas flaring, urbanization, deforestation intensify global warming and weaken the resilience of carbon sinks. Trading carbon credits in structured markets has evolved as a key strategy to reduce greenhouse gas emissions and mitigate climate change impacts, supported by international and domestic laws. However, trading carbon credits in emerging markets like Nigeria presumes the existence of a robust market, technological infrastructure, and advanced regulations. Nigeria is still progressing towards a carbon trading system, following its commitments under international agreements and the enactment of the Climate Change Act 2021. This paper examines the potential of carbon markets as a mechanism for promoting sustainable development in Nigeria. It delves into the current legal frameworks governing carbon markets within the country, juxtaposing them with international standards and agreements such as the Paris Agreement and the Kyoto Protocol. The paper proposes strategic approaches to enhance the effectiveness of Nigeria's carbon markets, including policy recommendations for strengthening legal frameworks, developing robust market infrastructure, and enhancing capacity building. The paper provides an in-depth analysis of useful contract templates and stress-tests their feasibility within the context of existing Nigerian laws. Through comprehensive analysis and strategic recommendations, this study aims to contribute to the development of a robust carbon credit market in Nigeria, thereby supporting the nation's efforts to meet its climate targets and foster economic growth. The findings underscore the importance of legal, financial, and technological innovations in unlocking the full potential of carbon credits as a tool for environmental sustainability and economic resilience.

Keywords: Climate Change, Carbon sinks, Carbon credit, Carbon market, Greenhouse Gases (GHGs)

INTRODUCTION

It is no longer news that climate change is one of the defining issues of our time and there is a mounting urgency for countries to reduce their emissions and to promote sustainable development initiatives. The global demand, extraction and consumption of energy over the years have impacted our immediate environment causing a spike in global temperatures and other key metrics for global warming and climate change. In recent years fossil fuels, smog, carbon monoxide, particulates, free radicals and toxic chlorofluorocarbons and deforestations have increased significantly mainly due to anthropogenic activities.

As Africa strides boldly into the 21st century, it finds itself

at a critical juncture, where the pursuit of economic development converges with the imperative to grapple with a rapidly changing climate. The African continent is not the primary driver of the global climate crisis, yet it bears a disproportionate burden of its consequences. Increasingly prolonged droughts, erratic rainfall patterns, soaring temperatures, and intensified extreme weather events pose existential threats to food security, water resources, and the livelihoods of countless communities. Coupled with these pressing challenges is the stark reality of insufficient climate finance, limiting the continent's ability to effectively confront the multifaceted climate crisis (Ola Busari, 2022).

The average global temperature is currently over 1.1°C warmer than pre-industrial levels. Most of that warming has occurred since 1975, this is shown in Figure 1. Therefore, limiting climate change would require substantial and sustained reductions in greenhouse gas emissions, which, together with climate adaptation plans, can reduce climate change risks.

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The Paris Agreement and the Nigerian Climate Change Act 2021 recognize the place of carbon trading as one of the means of climate change mitigation. Climate change mitigation through trading carbon credits has emerged as an innovative solution to tackle climate-related crises, and to promote cooperation between governments in addressing carbon emission issues. (Ezeoha Umeodinka, & Nwaeze, 2024).

Carbon markets allow for the trading of carbon credits, which represent the right to emit a specific amount of carbon dioxide (CO₂) or its equivalent in other greenhouse gases (GHGs). They are typically divided into two main types: compliance markets, which are regulated by law and require organizations to meet specific emissions targets, and voluntary markets, where businesses or individuals offset emissions beyond regulatory requirements. Through mechanisms like cap-and-trade systems or carbon offsetting, carbon markets help mitigate climate change by incentivizing reductions and encouraging low-carbon investments.

Carbon markets not only drive emissions reductions but also generate funding for sustainable projects that contribute to economic and social development. By participating in carbon markets, developing countries can attract foreign investment for green projects, create job opportunities in the renewable energy sector, and promote community-based initiatives. In this way, carbon markets

align with Sustainable Development Goals (SDGs) and can support multiple environmental and socio-economic objectives.

Nigeria has made significant strides in climate policy through instruments such as the Climate Change Act of 2021 and the Nationally Determined Contributions (NDCs). These policies establish Nigeria's commitment to reducing GHG emissions by 20% unconditionally and by 45% with international support by 2030. The Climate Change Act further sets the foundation for a net-zero emissions target by 2060. However, the existing framework lacks specific guidelines for implementing a carbon market, creating a gap in Nigeria's climate strategy. These objectives of this paper include the following:

- a. Discuss the concept of carbon markets using a simplified approach
- b. Analyze the different types of carbon markets, their peculiarities and key mechanisms.
- c. Discuss the current national and international policy and legal frameworks around carbon markets.
- d. Present a holistic overview of legal frameworks and holistic approaches to access carbon markets.

The Concept of Carbon Markets

A carbon market is a system where carbon units representing emission reductions are exchanged within a defined framework. These markets assign a monetary value to carbon emissions, creating a financial incentive for organizations and countries to reduce their carbon footprint. Carbon markets are essential for managing greenhouse gas (GHG) emissions, as they allow organizations that reduce their emissions below a set limit to sell their excess allowances or credits to others.

The two main concepts at the core of carbon markets are carbon trading and carbon credits.

1. Carbon Trading: Carbon trading involves the buying and selling of carbon credits or emissions allowances. Companies that exceed their emissions cap or have set voluntary reduction targets may purchase carbon credits from organizations that have surplus reductions. This trading creates a financial incentive to invest in cleaner technology and adopt sustainable practices.

2. Carbon Credits: A carbon credit is a token representing the avoidance or removal of greenhouse gas emissions, measured in tonnes of carbon dioxide equivalent (tCO₂e) (Macquarie, 2022). This credit is generated through projects aimed at reducing or eliminating greenhouse gas emissions, such as renewable energy initiatives, afforestation projects, energy efficiency improvements or dedicated carbon sinks in the ocean (blue carbon) and carbon capture technology. By investing in these projects, entities can earn carbon credits, which can be sold on the carbon market or used to offset their own emissions.

3. Emissions Allowances: Emissions allowances are a component of regulated or compliance carbon markets.

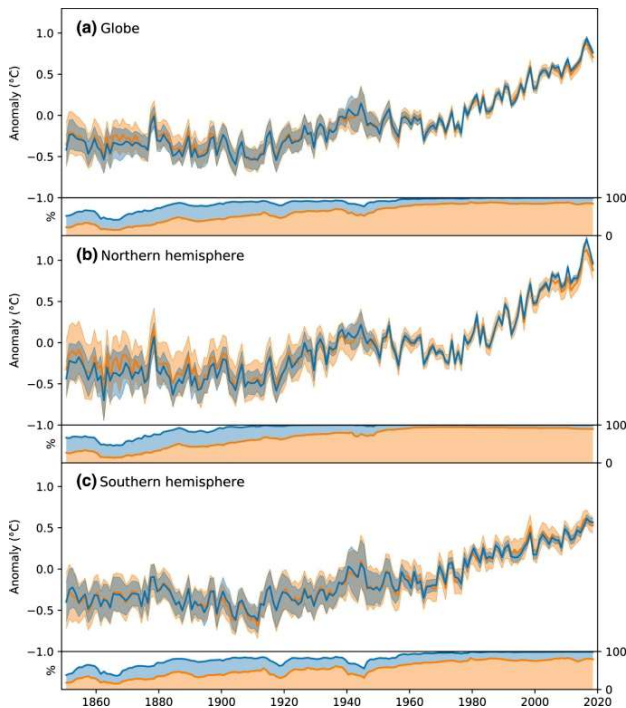


Figure 1: An Updated Assessment of Near-Surface Temperature Change From 1850: The HadCRUT5 Data Set.

Governments set a cap on the total amount of emissions allowed for specific industries or sectors and allocate allowances to companies, representing the permitted amount of emissions for each. Companies that emit less than their allowance can sell their surplus, while companies that exceed it must purchase additional allowances or face penalties.

These mechanisms allow organizations to balance emissions reduction efforts, with financial incentives motivating further investment in low-carbon solutions. In essence, carbon trading and the use of credits and allowances put a price on pollution, which encourages cleaner business practices and supports the transition to a low-carbon economy.

Voluntary vs. Compliance Markets

Carbon markets operate in two main forms: compliance markets and voluntary markets.

1. Compliance Markets: Compliance markets are regulated by governmental or international bodies and are mandatory for entities in certain sectors or countries. These markets are typically part of a larger emissions reduction framework, such as the EU Emissions Trading System (EU ETS) or California's Cap-and-Trade Program. Under these systems, governments set a cap on total allowable emissions within specific sectors (e.g., power generation, heavy industry), and companies must hold sufficient allowances to cover their emissions. Compliance markets are based on a cap-and-trade model, where the cap reduces over time, progressively lowering allowable emissions to meet climate targets. Compliance markets are primarily used in developed economies and are central to achieving national and international emissions reduction commitments under agreements like the Paris Agreement.

2. Voluntary Markets: Voluntary carbon markets (VCM), on the other hand, allow companies, organizations, and even individuals to purchase carbon credits voluntarily to offset their emissions. These markets are not regulated by governments and typically cater to businesses that wish to demonstrate corporate social responsibility, respond to consumer demand for sustainable practices, or commit to "net-zero" or carbon-neutral goals. In voluntary markets, carbon credits are often generated by projects in developing countries, such as reforestation, renewable energy, and methane capture initiatives. Projects must be verified by third-party standards (e.g., Verified Carbon Standard, Gold Standard) to ensure that the credits represent real, measurable, and permanent emissions reductions.

VCMs have witnessed significant growth in recent years, with transaction volumes reaching \$2 billion in 2021, four times the value observed in the previous year. In 2022, the market's value decreased to \$1.3 billion due to the conflict

between Russia and Ukraine. Looking ahead, the forecasts are promising. For example, by 2030, the value of VCMs is estimated to range between \$10 billion and \$40 billion. (Pagog & Savad, 2024)

The Nigerian carbon market is still in its early stages; however, the 2021 Climate Change Act lays a foundation for transitioning to a low-carbon and climate-resilient economy. Current initiatives, such as renewable energy projects, large-scale tree-planting efforts and methane abatement, highlight the market's potential. Nigeria demonstrated its commitment by launching the Nigeria Carbon Market Initiative at COP28 by joining the African Carbon Market Initiative.

As in any market system, there is a supply and demand dynamic at play in VCMs. On the VCM, the supply is generated by CO₂ reduction or sequestration projects. The types of projects are quite diverse, with some major categories including, but not limited to the following:

- Renewable energy projects
- Methane capture and combustion projects
- Energy efficiency projects
- Forestry projects
- Direct air capture and storage or utilization (DAC) projects.

The diversity of participants in the VCMs is characterized by the presence of several actors involved upstream (Carbon Credits, 2022), including:

- **Project developers:** They are involved in the supply side of the market, through the implementation of the aforementioned projects, they generate offset credits which will then sold to customers.
- **Buyers:** These comprises businesses, NGOs, governments, universities, and individuals (involved in the demand side of the market).
- **Retailers:** They purchase offsets in large quantities to bundle them into portfolios and sell them to end buyers, usually for a fee (involved in VCMs as intermediaries).
- **Brokers:** They earn commissions by purchasing credits from traders, with the aim of reselling them to consumers (involved in VCMs as intermediaries).
- **Verifiers:** Generally from organizations, they are responsible for verifying project compliance with predefined objectives.

Key Carbon Trading Mechanisms

Carbon markets are built on mechanisms that incentivize emissions reductions, with two of the primary approaches being cap-and-trade systems and carbon offset projects. Each plays a unique role in managing emissions and helping countries, companies, and individuals meet their environmental targets.

Cap-and-Trade Systems

Cap-and-trade is a market-based mechanism for controlling emissions by setting a cap, or limit, on the total amount of greenhouse gases that can be emitted by regulated industries. This system is widely used in compliance carbon markets and is instrumental in reducing emissions while allowing flexibility for entities within capped industries.

Setting the Cap: In a cap-and-trade system, a government or regulatory authority establishes an overall emissions cap for specific industries or sectors, such as power generation, manufacturing, or transportation. The cap is designed to decrease over time, encouraging progressive reductions in emissions. The cap translates to a fixed number of emissions allowances, each permitting the holder to emit one metric ton of CO₂ or its equivalent in other greenhouse gases.

Distribution of Allowances: These allowances are allocated to companies in the regulated sectors either for free, based on historical emissions levels, or through auctions. Companies that emit less than their allocated allowances can sell or trade their surplus to other companies that exceed their emissions limit. This creates a financial incentive to reduce emissions, as companies that cut emissions can profit from selling their excess allowances.

Trading and Flexibility: Cap-and-trade allows companies the flexibility to find cost-effective ways to reduce emissions. If it is cheaper for a company to buy allowances than to cut emissions, they can choose to do so, while companies that can reduce emissions at a lower cost are incentivized to do so in order to sell their unused allowances. This market-driven flexibility enables emissions reductions in the most economically efficient manner, while the overall cap ensures that total emissions do not exceed the established limit.

Progressive Reduction: Over time, the cap is lowered, reducing the total number of allowances and requiring companies to reduce their emissions or pay higher prices for the increasingly scarce allowances. This tightening of the cap helps drive technological innovation and efficiency, pushing industries toward cleaner energy sources and more sustainable practices.

Cap-and-trade systems are widely adopted, with examples including the European Union Emissions Trading System (EU ETS), California's Cap-and-Trade Program, and China's national emissions trading scheme. These programs have demonstrated that cap-and-trade is an effective tool for gradually reducing emissions across entire sectors, making it a central mechanism in the global fight against climate change.

Carbon Offset Mechanism

Carbon offset projects are initiatives that reduce or remove emissions outside the capped sectors of a cap-and-trade system. These projects generate carbon credits, which can be purchased by entities in both voluntary and compliance carbon markets to offset their emissions. Carbon offset projects are essential to expanding emissions reduction efforts, particularly in sectors and regions not directly covered by cap-and-trade programs.

Carbon offset projects are designed to reduce or sequester emissions through activities that directly or indirectly lower greenhouse gases in the atmosphere. Each ton of CO₂ reduced or removed by the project is verified and can be sold as a carbon credit. Types of projects that generate these credits include:

- **Renewable Energy Projects:** Initiatives such as wind, solar, and hydropower generation replace fossil-fuel-based energy sources, resulting in fewer emissions. Each megawatt-hour of clean energy generated reduces emissions and can be counted as a carbon credit.
- **Afforestation and Reforestation:** Projects that plant trees or restore forests sequester CO₂ from the atmosphere as trees grow. Each ton of CO₂ captured by these projects can be quantified and sold as a carbon credit.
- **Methane Capture:** Methane is a potent greenhouse gas emitted from landfills, agriculture, and industrial activities. Projects that capture and use methane to generate energy or prevent it from entering the atmosphere can earn carbon credits.
- **Energy Efficiency Projects:** By improving energy efficiency in industries, buildings, and transportation, these projects reduce overall energy consumption and emissions, generating credits in the process.

To ensure credibility, carbon offset projects must follow rigorous standards and undergo verification by third-party organizations. Standards like the Verified Carbon Standard (VCS), Gold Standard, and Clean Development Mechanism (CDM) have established criteria for calculating, monitoring, and verifying emissions reductions. These standards ensure that the credits represent real, additional, and measurable emissions reductions, providing buyers with confidence in the environmental benefits of their offsets.

Economic and Social Co-Benefits: Beyond reducing emissions, carbon offset projects often generate additional benefits for local communities, especially in developing countries. Renewable energy projects can provide clean electricity to underserved regions, reforestation projects can prevent soil erosion and improve water quality, and energy efficiency projects can reduce energy costs. These

co-benefits make carbon offsets a compelling choice for companies and individuals looking to make a positive social and environmental impact beyond simple emissions reduction.

In compliance markets, regulated entities can use a certain percentage of carbon offsets to meet their obligations. For instance, under California's cap-and-trade program, companies can offset a portion of their emissions through certified carbon offsets. In voluntary markets, businesses and individuals can purchase carbon credits to achieve carbon neutrality, support sustainable development, and demonstrate climate leadership.

Global Carbon Market Players

Since the conceptualization and codification of carbon market mechanisms through the Kyoto Protocol in 1997 and its adoption in 2005 (UNFCCC 1), different categories and subcategories of carbon markets and mechanisms have spawned on the international, regional and national level, which are often interlinked with one another. We do not attempt to provide an in-depth overview of all existing mechanisms here, as this would far exceed the scope and purpose of this research paper.

The Kyoto Protocol

The Kyoto Protocols' primary aim was to limit countries' Greenhouse Gases (GHGs) emissions by setting global emission caps. The Protocol recognized that the primary burden of responsibility for emissions reductions falls on industrialised countries, considering their disproportionately emission-intensive 150 years of industrialization. Therefore, the global agreement was anchored in the idea of common but differentiated responsibilities (UNFCCC 1).

In practice, this meant that while so-called “developing” or non-industrialized countries were included in the Protocol and its global emission reduction targets, only industrialised countries, identified in Annex-I of the Protocol, were given country specific “assigned amounts” i.e. emission caps, limiting how much they were permitted to emit. These caps and targets are split into two commitment periods, from 2008 – 2012 and from 2013 – 2020.

While the Kyoto Protocol calls for domestic measures as the primary means to achieve the set emissions reduction targets, it also introduced additional means of doing so . These took the form of three market-based mechanisms that bestowed emissions with economic value, making them a tradable asset: the more emissions one reduces, the more economic benefit one reaps. This was intended to engage state and non-state stakeholders and incentivise their investments in emissions reducing and sustainable development practices. The three market-based mechanisms of the Kyoto Protocol are named: (1)

International Emissions Trading; (2) Joint Implementation and (3) the Clean Development Mechanism.

International Emissions Trading and Joint Implementation

The Kyoto Protocol foresaw international emissions trading as a tool for supporting Annex I countries to achieve reductions. Emissions trading is permitted when countries have managed to remain under their emission caps and therefore can sell their excess emissions allowances to countries who have or will likely exceed their permitted emissions allowances.

This aims to incentivize achieving emissions reductions beyond the set targets, and disincentivize exceeding the set targets by introducing monetary consequences for doing so (Kreibich & Hermwille 2017). A second mechanism of the Kyoto Protocol is the Joint Implementation (JI) tool (UNFCCC 3). This allows for an Annex-I country to jointly invest in or co-finance emissions reduction projects in other Annex-I countries.

The emissions reductions attained through this project can be credited to the investing countries' target. The benefit of doing so for the investing country is that it provides a flexible means for attaining their emissions targets, while the host country receives foreign investment and technology transfer. These projects must adhere to the principle of additionality and must provide a reduction of emissions or enhance the removal of emissions (for example through GHG sinks).

Clean Development Mechanism (CDM)

The Clean Development Mechanism has been in operation since 2006, the CDM allows for projects to be implemented in non-Annex-I countries with no determined emissions reductions obligations. The projects' achieved emissions savings are certified as tradable standardized “Certified Emissions Reductions”, or CERs and can be credited to Annex-I countries through their direct participation in a CDM project, or through purchasing CERs from an accredited partner separately, therewith funding the projects without participating in them .

The goal is thus to make emissions reductions cost-effective and attainable for Annex-I countries, while simultaneously assisting non-Annex I countries in achieving sustainable development (Lecocq & Ambrosi 2007). CDM projects aim to induce investments in clean emissions reducing projects in non-Annex-I countries, where they may otherwise have not occurred, and simultaneously allow for “leapfrogging” over fossil fuel dependency through renewable energy technology transfers from the participating, to the host countries.

The regulatory framework of the Kyoto mechanisms is

contained in the Kyoto Protocol, its Reference Manual as well in following Conference of the Parties (COP) agreements. The modalities and procedures for the CDM were detailed in the Marrakesh Accords (UNFCCC 2001). These Accords explain that the CDM must work based on additionality, meaning that Parties are not permitted to comply with their set emission reduction targets exclusively through the Kyoto mechanisms, instead they can only use them in addition to domestic efforts. CDM activities may moreover not divert any official development assistance that would have otherwise been committed. Any CDM projects may only occur with the approval of the host countries' Designated National Authorities.

The CDM is overseen by an Executive Board, which is accountable to the Parties of the Kyoto Protocol (UNFCCC 2001). The legislative text, however, remains vague regarding the percentile distribution of the additionality criteria as the Parties were unable to agree on more precise wording for the regulation. Through a levy on the CERs, the CDM also functions as the main source of finance for the UNFCCC Adaptation Fund, which supports adaptation projects in non-Annex I countries identified as particularly vulnerable to climate change.

The Carbon Market in Nigeria

Nigeria, as one of Africa's largest economies and one of its leading oil and gas producers, plays a unique role in the global carbon market. Given its significant greenhouse gas (GHG) emissions from industries, energy production, agriculture, and land use change, Nigeria has immense potential to benefit from carbon markets by leveraging its renewable resources, land restoration potential, and policy initiatives. However, challenges such as regulatory issues, infrastructure, and market readiness remain.

Nigeria's carbon market is at a relatively nascent stage but is developing rapidly. It includes both the potential for a compliance market and active involvement in the voluntary carbon market through carbon offset projects.

Nigeria is committed to reducing its emissions by 20% unconditionally and up to 45% with international support by 2030, as outlined in its Nationally Determined Contributions (NDCs). This ambitious goal positions Nigeria as an active participant in the global effort to reduce emissions.

Nigeria's Policy Framework for Carbon Credit Trading

Nigeria's commitment to climate action has led to the development of a nascent but increasingly relevant legal framework for carbon credit trading. This framework, while still evolving, seeks to facilitate Nigeria's participation in global carbon markets, enabling the

country to leverage carbon credits as an avenue for sustainable development and economic growth. Key components of Nigeria's legal framework for carbon credit trading are grounded in its environmental policies, recent climate-related legislation, and alignment with international carbon trading mechanisms.

National Climate Change Act, 2021

The National Climate Change Act is a landmark piece of legislation that provides the foundation for Nigeria's climate policies and its ambitions for carbon credit trading. Enacted in 2021, this law established the National Council on Climate Change and set national and sectoral targets for emissions reductions in line with Nigeria's commitment to the Paris Agreement.

- **National Climate Change Council:** This council oversees the country's climate policies and regulates activities related to carbon credits. It coordinates federal, state, and local government actions on climate change and supervises the implementation of projects that generate carbon credits.
- **Climate Change Fund:** The Act also established a Climate Change Fund, which supports projects aimed at emissions reductions and adaptation efforts. Funds are directed towards sustainable development projects, including those that generate carbon credits through reforestation, renewable energy, and waste management.
- **Emissions Reduction Targets:** The Climate Change Act commits Nigeria to emissions reduction targets and provides the regulatory framework that allows companies to meet these targets partially through carbon credits, either generated domestically or purchased from international markets.

Nationally Determined Contributions (NDCs) and Carbon Market Participation

Under the Paris Agreement, Nigeria submitted its Nationally Determined Contributions (NDCs), committing to a 20% reduction in GHG emissions by 2030, which could increase to 45% with international support. This commitment underscores Nigeria's intent to develop a structured approach to carbon credit trading to attract international financing.

- **Alignment with Article 6 of the Paris Agreement:** Article 6 of the Paris Agreement provides the legal basis for international carbon trading by allowing countries to trade emissions reductions with each other. Nigeria's NDCs are structured to enable the country to participate in these mechanisms, generating carbon credits that can be sold to countries or companies looking to meet their own emissions targets.
- **Enabling International Cooperation:** By aligning with international mechanisms, Nigeria positions

itself

to attract investments for carbon reduction projects that qualify as offsets. This approach helps to develop the country's renewable energy sector and improve forestry and land use management.

National Environmental Standards and Regulations Enforcement Agency (NESREA)

The National Environmental Standards and Regulations Enforcement Agency (NESREA) is responsible for enforcing environmental regulations in Nigeria. It plays a critical role in ensuring that carbon offset projects comply with environmental standards, particularly in sectors such as forestry, energy, and agriculture, which have high potential for generating carbon credits.

- **Regulatory Compliance for Offset Projects:**

NESREA enforces compliance with environmental laws, which applies to companies engaged in carbon offset projects. For example, projects involving reforestation or renewable energy must adhere to NESREA's standards, ensuring that credits generated from these projects meet both domestic and international quality standards.

- **Guidelines for Project Validation and Verification:**

NESREA works with both local and international standards bodies to validate and verify carbon offset projects, ensuring transparency and credibility for Nigeria's carbon credits in global markets.

National Gas Flare Commercialization Program (NGFCP)

Gas flaring is a significant source of GHG emissions in Nigeria. The National Gas Flare Commercialization Program (NGFCP) is a government initiative aimed at reducing gas flaring and creating economic value from flared gas. This program has important implications for carbon credit trading:

- **Monetization of Gas Flaring Reductions:** The NGFCP allows oil and gas companies to monetize gas that would otherwise be flared by selling it to third parties or using it for power generation. By reducing flaring, these activities can generate carbon credits, aligning with Nigeria's emissions reduction targets.

- **International Investment Attraction:** The NGFCP is structured to attract international investors who are interested in purchasing carbon credits derived from flare reduction projects. This program supports Nigeria's efforts to tap into the voluntary carbon market and contributes to national sustainability goals.

Carbon Offset Project Certification Standards

For Nigeria's carbon credits to be marketable globally, projects must adhere to recognized certification standards. Several international standards, such as the Verified

Carbon Standard (VCS) and the Gold Standard, are

actively used in Nigeria.

- **Certified Carbon Credits:** Projects that meet these certification standards generate verified carbon credits, which can be sold in both voluntary and compliance markets. Certification provides assurance to buyers that the credits represent genuine emissions reductions and meet rigorous environmental and social standards.

- **Partnership with International Certification Bodies:**

To enhance credibility, Nigeria collaborates with certification bodies like the VCS and Gold Standard, facilitating third-party verification and ensuring that carbon offset projects meet global requirements.

Nigeria's Legal Framework for Carbon Credit Trading

Nigeria's carbon market is growing. The current framework for trading credits draws from the provisions of international laws and treaties. A significant international framework is the United Nations Framework Convention on Climate Change ("UNFCCC"). The UNFCCC encourages state parties to implement mitigatory steps to the rising global temperature levels. The UNFCCC seeks to stabilise GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate (Ezeoha, Umeodinka, & Nwaeze, 2024).

The Kyoto Protocol to the UNFCCC, 1997 ("Protocol") operationalises the UNFCCC. The Protocol sets binding targets for the reduction of GHG emissions for industrialised countries. Each party to the Protocol is required to meet its targets primarily through domestic measures. The Protocol also provided flexible mechanisms for parties to offset their excess emissions by purchasing reductions in GHG emissions achieved by other parties through carbon trading. The emission limit is a cap which countries have accepted as reduction targets. These targets are expressed as a fixed number of Assigned Amount Units ("AAUs"). There are different types of units that may be purchased as offsets for exceeding a capped limit, and the description of each type of unit varies depending on the legal jurisdiction in which it is generated. Each unit is standardised to one (1) carbon credit making them easily exchangeable across borders. The Protocol allows countries that have excess AAUs to sell the excess units to countries that have exceeded their targets (Ezeoha, Umeodinka, & Nwaeze, 2024).

The Paris Agreement 2015 established an international framework geared towards the improvement of sustainability principles for better adaptation to the impacts of climate change. Article 6.2 of the Paris Agreement provides for voluntary cooperation among contracting parties through bilateral or multilateral

agreements for trade in GHG emission reductions or removals with the objective of achieving emission reduction targets. The traded units are referred to as Internationally Transferred Mitigation Outcomes (“ITMO”). Trade-in ITMO allows two contracting states to enter into an agreement whereby one party reduces carbon emissions (in line with its Nationally Determined Contributions (“NDC”)) and, for financial compensation, transfers the credit gained from the reduction to the other party which then counts it towards that party's own NDC targets.

Companies can leverage Internationally Transferred Mitigation Outcomes (ITMOs) to help a country achieve or surpass its Nationally Determined Contributions (NDCs). In such an arrangement, the receiving party views this as an investment in various carbon-reduction initiatives, while the selling party is required to allocate the funds received toward low-carbon projects within its jurisdiction.

Article 6.4 of the Paris Agreement establishes a carbon market managed by a UN-appointed body known as the Article 6.4 Supervisory Body. Project developers aiming to reduce or remove greenhouse gas emissions under the Paris framework must register with this Supervisory Body. Projects are eligible for UN-recognized carbon credits only if they receive approval from both the host country and the Supervisory Body.

The Climate Change Act of 2021 reaffirms Nigeria's dedication to reducing greenhouse gas emissions and safeguarding the environment. This Act created the National Council on Climate Change (referred to as "the Council") and entrusted it with overseeing Nigeria's compliance with its international climate commitments. The Council is authorized to work in partnership with the Federal Ministry of Environment and the Federal Ministry of Trade to establish and implement a carbon emissions trading framework. According to Section 32(c) of the Act, the Council is empowered to create regulations that oversee market-driven mechanisms and tools related to climate change.

In 2023, the Council introduced the Regulatory Guidance on Nigeria's Carbon Market Approach. This guidance emphasizes that Nigeria's carbon market activities must be closely aligned with the country's development goals, Nationally Determined Contributions (NDCs), and its NetZero ambition. Recognizing the essential role of the domestic private sector, the Council encourages businesses to actively participate in decarbonizing their operations. According to the Regulatory Guidance, a “No-Objection” approval is necessary for certifying and transferring carbon credits generated across all industries, adhering to the principles set out in Article 6.2 of the Paris Agreement.

Leveraging Contractual Mechanisms to Utilise Carbon Credit Benefits.

Contractual mechanisms are crucial for maximizing the benefits of carbon credits in both compliance and voluntary carbon markets. These agreements provide a structured approach for entities seeking to either sell or purchase carbon credits, offering financial incentives for reducing greenhouse gas (GHG) emissions. Through well-designed contracts, parties can define the rights, obligations, and financial arrangements associated with carbon credit transactions, ensuring clear compliance with both domestic and international standards.

The framework for contracting to trade carbon credits or to recognise generating credits from contracts is relatively nascent in developing countries. Very little work has been done developing and designing appropriate contracts for carbon credits suitable for emerging economies. The concern has been the effectiveness of monitoring and enforcement of generated carbon credits. There are also important concerns about weak institutional frameworks, such as the enforcement of contracts (Ezeoha, Umeodinka, & Nwaeze, 2024).

Emission Reduction Purchase Agreements (ERPAs)

ERPAs are specialized contracts for the sale and purchase of carbon credits generated by emission reduction projects. These agreements define essential elements such as the project's emissions reduction target, credit transfer terms, and regulatory compliance requirements. ERPAs are widely used by developers and buyers in both compliance and voluntary markets to facilitate carbon credit transactions.

- **Key Components of ERPAs:** A standard ERPA typically includes terms on the quantity of emissions reduced, credit delivery schedules, payment conditions, and responsibilities for project validation and verification. These terms are critical in defining the value of the credits, securing payments, and managing risks.
- **Risk Mitigation:** ERPAs often include clauses for managing risks associated with project performance, regulatory changes, and market price volatility. For example, “take-or-pay” provisions guarantee that the buyer will purchase a specified amount of credits regardless of fluctuations in the market.
- **Benefits:** By creating certainty and predictability for both project developers and buyers, ERPAs encourage investment in carbon reduction projects, especially in developing countries like Nigeria. The contracts serve as a bridge between project developers needing upfront financing and buyers seeking to meet their emissions targets, fostering mutually beneficial arrangements.

Offset Credit Structures and Aggregation Agreements

Offset credits are generated through projects that sequester or prevent emissions, such as afforestation, reforestation, or renewable energy initiatives. Companies often rely on contractual structures to aggregate multiple offset projects, which makes carbon credit generation more efficient, especially for smaller projects.

- **Aggregation of Offset Credits:** Aggregation agreements combine the credits produced by several smaller projects into a single portfolio, making them easier to manage and sell. This approach is particularly useful for small-scale projects that may not be viable on their own but have a cumulative impact when grouped.
- **Revenue Sharing Models:** Contracts governing offset aggregation often include revenue-sharing arrangements, in which each project owner receives a proportionate share of the proceeds from the sale of aggregated credits. This structure ensures fair compensation for each project participant.
- **Benefits of Aggregation:** By lowering transaction costs and enhancing credit liquidity, aggregation agreements make it easier for smaller projects to access carbon markets. This model enables entities like small businesses, local governments, and non-profit organizations to participate in carbon credit markets, expanding the scope of emissions reductions and sustainable projects.

Joint Ventures and Partnerships for Carbon Reduction Projects

Joint ventures (JVs) and partnerships between private sector companies, governments, and development organizations can be highly effective for scaling up carbon reduction projects. Through these contractual arrangements, multiple entities pool resources, expertise, and technologies to implement carbon reduction initiatives.

- **Collaboration for Large-Scale Projects:** In cases where projects require significant capital investment or advanced technologies, JV agreements help distribute financial and operational risks. Each partner contributes specific resources, such as capital, technology, or market access, thereby increasing the project's feasibility.
- **Revenue and Risk Allocation:** JV agreements define the roles, revenue distribution, and risk-sharing arrangements for each partner. For example, one partner may assume responsibility for securing project financing, while another oversees operational management and emissions reduction monitoring.
- **Benefits for Developing Countries:** JVs enable developing countries to attract foreign investment and technical expertise, which are critical for large-scale

emissions reduction projects. For Nigeria, JVs can facilitate projects that align with national climate goals, such as methane capture in oil and gas operations or renewable energy development, providing local benefits such as job creation and technology transfer.

Forward Contracts and Futures Contracts in Carbon Trading

In carbon trading, forward contracts and futures contracts are used to lock in the sale of carbon credits at a predetermined price, providing stability in a fluctuating market. These contracts allow companies to hedge against future price volatility, enhancing the financial predictability of carbon credit sales.

- **Forward Contracts:** A forward contract is a private agreement to buy or sell a specific quantity of carbon credits at an agreed-upon price on a future date. This approach benefits both buyers and sellers by providing price certainty, which is especially useful in planning and budgeting for emissions compliance.
- **Futures Contracts:** Futures are standardized contracts traded on carbon exchanges that obligate the holder to purchase or sell carbon credits at a set price in the future. They are highly liquid, making them a popular option for companies wanting flexibility to buy or sell credits on short notice.
- **Advantages in Risk Management:** Forward and futures contracts help companies mitigate risks associated with carbon market fluctuations, providing stability in revenue forecasting and enabling more predictable investment in emissions reduction projects.

Licensing Agreements for Carbon Offset Technologies

Licensing agreements allow companies to license proprietary technologies, processes, or methodologies that enhance carbon reduction capabilities. For instance, a company may develop technology that improves carbon capture efficiency, which it licenses to third parties involved in carbon reduction projects.

- **Intellectual Property Rights and Licensing Fees:** Licensing agreements establish terms for intellectual property rights, licensing fees, and usage restrictions. These agreements enable technology developers to monetize their innovations while allowing project developers to apply advanced methods for emissions reductions.
- **Encouraging Innovation:** By incentivizing technology sharing, licensing agreements promote the diffusion of new carbon reduction technologies, which is crucial for scaling up the impact of carbon markets. They also allow smaller players to access cutting-edge technologies that they might not be able to develop independently.
- **Environmental and Financial Gains:** Licensing agreements can have substantial environmental

benefits by broadening access to efficient emissions reduction technologies. This approach allows a more extensive range of projects to achieve measurable carbon reductions, contributing to overall market growth.

Performance-Based Contracts for Carbon Reduction Projects

- Performance-based contracts are agreements in which payment is contingent on the achievement of specific emissions reduction targets. These contracts are increasingly popular in carbon markets as they incentivize high-performance standards and ensure that environmental goals are met.
- **Setting Measurable Targets:** In a performance-based contract, the project developer agrees to meet specific carbon reduction benchmarks. Payment terms are tied to achieving these benchmarks, ensuring that credits issued represent verified emissions reductions.
- **Quality Assurance and Transparency:** Performance-based contracts often require third-party verification to confirm that targets are met, improving transparency and accountability. This contractual mechanism reassures buyers that the credits they purchase are credible and meet recognized standards.
- **Promoting Accountability:** By linking financial rewards to project performance, these contracts align the interests of project developers with emissions reduction goals. This structure supports more reliable carbon credit supply and builds buyer confidence, particularly in voluntary markets.

Carbon credit provisions can be included in dedicated agreements focused solely on trading mitigation outcomes or incorporated as ancillary benefits within broader project agreements aimed at reducing emissions or pollution. In both formats, these agreements define the rights and responsibilities of each party involved. Standardized international templates, such as Emissions Reduction Purchase Agreements (ERPAs), offer guidance on structuring carbon credit transactions between entities. ERPAs play a pivotal role in providing financial incentives that encourage governments, local communities, private enterprises, and other stakeholders to engage in and profit from climate-focused activities. Even at an early stage, an ERPA can be a powerful mechanism for attracting private sector involvement, translating into sustained economic and social advantages for communities where these programs are implemented. The financial commitments embedded in ERPAs help instill investor confidence, drawing additional financing to the project. This, in turn, fosters more significant investments and increased emissions reductions, driving both local development and environmental benefits.

The Global Green Growth Institute's template for a Mitigation Outcome Purchase Agreement (MOPA)

The Global Green Growth Institute's template for a Mitigation Outcome Purchase Agreement (MOPA) offers valuable guidance on structuring cross-border contracts for trading mitigation outcomes. Specifically designed for sovereign nations as contracting parties, MOPA outlines the processes for the sale and purchase of credits or mitigation outcomes resulting from emissions reduction activities.

Conditions precedent may be agreed upon by the parties before certain obligations take effect, such as the seller's proof of ownership of the credits or the completion of due diligence by the buyer. The MOPA clearly defines commitments and roles, including terms for buying and selling, transaction costs, and any optional purchases. To ensure emissions reduction, it details technical requirements, such as Measurement, Reporting, and Verification (MRV) protocols and crediting periods, which may appear within the agreement or as annexures.

The agreement specifies terms on price, volume, delivery arrangements, and timelines for payment, with payments often tied to milestones based on the delivery of credits. Delivery-related costs, including those for issuance and registration, are also covered. The MOPA assigns tax responsibilities to each party in their respective jurisdictions. If the credit volume generated surpasses the contracted amount, the seller may grant the buyer the option to purchase the excess through a "right of first offer." This requires the seller to offer any additional credits to the buyer before engaging with other buyers. Any breach of essential MOPA provisions may be deemed a default, permitting the non-defaulting party to suspend their obligations under the contract until the issue is resolved.

Common force majeure events are provided for in the MOPA. Government actions are an important consideration, such as when a carbon credit registry suspends or revokes the credits; this could impact the performance under the contract. The seller would prefer an expanded scope of force majeure events whereas the buyer would prefer a limited scope of force majeure events. The consequences of force majeure could either terminate the contract or suspend obligations affected for a certain pre-agreed period. The parties may, in that case, agree on amending the agreement, having a termination without liability, or returning advance payments made that were not set off against deliveries. Governing law provisions are important, as they guide the construction of the agreement and indicate the legal regime for resolving disputes. Parties would generally need to consider choosing neutral, stable laws to govern the contract.

The International Emissions Trading Association (IETA) Templates

The International Emissions Trading Association (IETA) has developed a comprehensive set of templates for agreements related to emission reduction and removal transactions. The International Emissions Trading Master Agreement (Master Agreement) provides standardized terms for handling the trade or transfer of emission allowances that are issued, allocated, created, or acknowledged within a regulated trading framework. Under this Master Agreement, both parties are required to maintain holding accounts within a registry established by the relevant trading system. This registry ensures precise tracking and accounting of the issuance, holding, transfer, acquisition, surrender, cancellation, and replacement of emission allowances. Each party's holding account serves as a digital record, reflecting the status of their emission allowances within the system.

The core responsibility defined by the Master Agreement is that, upon receiving payment, the delivering party must transfer the agreed-upon allowances to the receiving party's holding account, in line with the rules of the trading system. The delivering party must maintain enough allowances in its account to fulfill the transaction, ensuring the transfer is processed without complications. Additionally, the delivering party must guarantee that the transferred allowances are free of any third-party claims, liens, security interests, or encumbrances. Any failure to execute or accept the transfer of allowances can constitute a default under the agreement.

Similarly, the IETA Emissions Reduction or Removal Purchase Agreement (IERPA) includes structured clauses for corporate entities engaging in trades of Verified Carbon Credits (VCCs). Under IERPA, the seller undertakes a project aimed at achieving greenhouse gas reductions or removals, which are subsequently verified as VCCs. To fairly allocate the benefits, the seller and associated stakeholders enter a Benefit Sharing Agreement, which governs the distribution of proceeds from the VCCs generated by the project and sold under IERPA. This structure helps ensure that proceeds are equitably shared among those involved in or impacted by the project.

Under the IETA Emissions Reduction or Removal Purchase Agreement (IERPA), the commercial terms are carefully negotiated to encompass all relevant details about the projects from which Verified Carbon Credits (VCCs) will be derived. Key elements of these terms include the identification of the carbon standard body responsible for verification, the specific units of VCCs to be traded, and the host country where trading will take place. Additional commercial considerations include the contract duration, quantity of VCCs, unit price, registry accounts of both parties, and specific VCC attributes.

The IERPA outlines the seller's obligation to complete all project documentation required to commission and

register the project with the designated carbon standard body, ensuring these documents meet the required standards. The seller is also responsible for overseeing the project's GHG reduction or removal efforts according to an approved monitoring plan, as well as engaging an independent verifier to produce a report verifying these reductions or removals.

The agreement schedules under the IERPA provide a detailed description of the projects that will generate emission reductions and carbon credits. Typically, project contracts focus on establishing the overall framework for implementation, with GHG reduction as a secondary objective. It is essential for parties to ensure that these agreements include provisions for establishing a subsequent carbon credit trading agreement. The Benefit Sharing Agreement referenced in the IERPA can be incorporated within the contract documentation, clearly indicating the intent to set up a framework for carbon credit trading in the future.

Key Regulatory Approach for Nigeria

The Climate Change Act 2021 mandates collaboration between the Council, the Federal Ministry of Environment, and the Federal Ministry of Trade to create a framework for carbon emission trading. This initiative, which involves stakeholders working to set up the regulatory foundations for trading carbon credits, points to a critical need: a strong regulatory framework for overseeing, registering, approving, monitoring, and trading carbon credits and other market-based climate change instruments.

Currently, Nigeria's closest regulatory approval for carbon credits involves obtaining a "No Objection" clearance from the Council before any trading occurs. To support a structured carbon market, the Council could establish a comprehensive trading infrastructure, including a central body for carbon commodity trading. This entity would act as both a registry for carbon instruments and a trading exchange platform. Such a body could standardize the certification process for Verified Carbon Credits (VCCs), manage emission caps, oversee registered entities' holding accounts, and handle credit transfers and security interests, while also scrutinizing greenwashing practices.

Combining ownership registration and security interests into a single agency would simplify monitoring and reduce the risk of fraud. Creditors would benefit from having one point of reference for verifying ownership and liens on carbon credits, reducing both costs and opportunities for dishonesty. Centralized oversight promotes transparency, minimizes monitoring costs, and lowers transaction expenses, thereby making the carbon market more secure and efficient.

For complex instruments like carbon derivatives and futures, the Council must work alongside the Nigerian

Exchange Limited and the Securities and Exchange Commission to ensure regulatory coherence. With futures contracts, companies committed to net-zero targets can secure carbon credits at set prices, aligning purchases with their emission goals. This option also allows developers and brokers to anticipate carbon credit prices for funding and manage future revenue and supply needs. As Nigeria's carbon market grows, regulators should be ready to respond to evolving market demands with flexible solutions.

To uphold integrity within the market, stringent measures against fraud and greenwashing are essential, with a focus on the quality of emission reductions over the quantity claimed. Adequate government staffing and funding are necessary to administer a well-regulated carbon market.

Incorporating carbon credit structures into projects provides organizations with advantages far greater than any potential downsides. This approach supports sustainability, boosts revenue, and enhances environmental impact, while reducing exposure to future regulatory changes. For companies, trading carbon credits not only ensures long-term stability but also offers a competitive edge, especially in markets increasingly favouring sustainable practices.

CONCLUSION AND RECOMMENDATIONS

• **Adopting Advanced Technologies for MRV:**

- Utilize cutting-edge technologies for precise Monitoring, Reporting, and Verification (MRV) of emissions reductions.
- These tools enable detailed tracking and measurement of greenhouse gas (GHG) emissions, ensuring data accuracy and reliability.

• **Building local Expertise through Capacity Development:**

- Implement capacity-building programs to cultivate local expertise in carbon market management.
- Collaborate with academic institutions, international partners, and offer specialized training to develop essential skills within the workforce.

• **Enhancing International Cooperation:**

- Establish bilateral and multilateral partnerships with nations experienced in carbon markets, like those in the European Union and the United States.
- Leverage these partnerships for technical assistance, knowledge exchange, and capacity-building support to strengthen Nigeria's carbon market infrastructure.

• **Financial Incentives through Carbon Credits:**

- Carbon credits offer financial incentives, encouraging investment in emissions reduction projects.
- Projects that reduce GHG emissions can generate credits, which can then be traded, creating a revenue stream for further environmental initiatives.

• **Developing a Comprehensive Regulatory**

Framework:

- Implement a robust framework that outlines eligibility criteria for projects, MRV procedures, and guidelines for issuing and trading carbon credits.
- Ensure policies uphold environmental integrity, prevent market manipulation, and support fair and transparent participation.

• **Engaging the Private Sector:**

- Engage businesses by promoting awareness of carbon trading opportunities and the responsibilities involved.
- Highlight the potential for revenue generation through carbon credits while emphasizing their role in environmental sustainability.

• **Leveraging Nigeria's Emission Reduction Potential:**

- Nigeria's diverse opportunities in sectors like renewable energy, reforestation, and energy efficiency can drive carbon credit generation.
- These projects support GHG mitigation efforts and position Nigeria as a valuable participant in global emissions reduction.

• **Establishing a Secure Registry System:**

- Create a centralized registry to ensure secure recording, tracking, and management of carbon credits, enhancing market integrity.

• **Incorporating International Carbon Trading Standards:**

- Adopt global carbon trading standards to ensure Nigerian entities can seamlessly engage with international carbon markets.
- Equip companies with contractual and technical expertise to maximize participation in international trading platforms.

• **Economic and Environmental Benefits:**

- Developing a credible carbon trading market aligns Nigeria with global climate goals, enhances environmental sustainability, and creates new economic opportunities.
- By trading verified carbon credits on international platforms, Nigerian entities can generate profits and gain recognition as key players in the global carbon market.

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