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CLIMATE ACTIONS: CARBON PRICING ROLES IN PROMOTING ENVIRONMENTAL JUSTICE AND ADDRESSING SOCIAL INEQUALITIES

Adedeji-Adeyemi ADEOLA*
Oso Maryam ADEDOLAPO**

Abstract
Fossil fuel intensive production has played as the mainstream production for finished and semi-finished goods and services across several economies, such as Energy, Oil and Gas, Transportation, Mining, Manufacturing, and more, with an impactful uncontrolled degree of carbon emission. In a bid to achieve the globally embraced sustainable development goal on climate actions, the globe begs for pragmatic efforts to mitigate to the barest minimum, the negative impactful consequences of greenhouse gas (GHG) emissions in the carbon-intensive economy. International bodies, national authorities have begun to adopt instruments like the Paris Agreement, to introduce practical carbon pricing policies to combat the incessant petrification of the climate environment. Adopting a doctrinal methodology, this paper examines the current carbon coping and pricing mechanisms to achieve the global goals on climate change and emission reduction operative across different global climes. More importantly, it examines the objectivity and sustainability of these extant approaches and juxtaposes them with the aid of diverse instruments across continents, to assess any corresponding positivity in the realization of environmental justice and social equalities. This paper finds that though Nigeria has made efforts towards addressing climate change, a legislative and institutional framework dedicated to carbon pricing cannot be overemphasized.

Keywords: Carbon pricing, Climate actions, Carbon tax, Greenhouse gas emissions, SDGs, Environmental justice, Social equality

1. Introduction

Countries and international bodies of different blocs employ Carbon Pricing initiatives as policy tools for setting price signals to regulate, control and guarantee greenhouse gas (GHG) emissions at the standard minimum to actualize the in-depth scope of climate actions, clean energy, environmental health, clean air and sustainable development. The United Nations, on 4th November, 2016, adopted the Paris Agreement in response to Agenda 2030 on sustainable development goal thirteen for the urgency behind combating climate change. The core prospect being to keep global temperature below 2° C above pre-industrial levels and limit temperature increased to 1.5° C[1]. These carbon pricing initiatives have bifurcated primary and secondary purposes. International concerns and agitation have also geared for the shift of the responsibilities of climate change from the general public to core corporate emissions players like manufacturers, miners, oil drilling companies, transportation companies, etc. These core emissions players stand consequently at the receiving end of many of the adopted policies. Most importantly, financial investments are also highly targeted in the concern for the shift to clean technology and energy.[2]

This paper is divided into five parts, Part One already introducing and setting the tone for the discourse. It briefly introduces the lines and strokes of the sustainable development goal on climate

* **Adedeji-Adeyemi ADEOLA,** Lecturer, Department of Jurisprudence and International Law, Faculty of Law, University of Lagos, Akoka, Lagos State, Nigeria, E-mail: aadedeji-adeyemi@unilag.edu.ng Telephone: 08037430675.
** **Oso Maryam ADEDOLAPO**, Law Researcher, University of Lagos, Akoka. Email: osomaryam297@gmail.com

[1] Sustainable Development Goals, 'Climate Actions' <https://www.un.org/sustainabledevelopment/climate-action/#:~:text=Goal%2013%20class%20for%20 urgent, well%20 below%202%20 degrees%20 Celsius. > accessed 11 May, 2025.

[2] United Nations Climate Change, 'About Carbon Pricing' < https://unfccc.int/about-us/regional-collaboration-centres/the-ciaca/about-carbon-pricing#What-does-the-Paris-Agreement-say-on-carbon-pricing > accessed 10 May, 2025.

actions, namely- clean energy, clean air and environment, commendable reduction of emissions by largest corporate emitters, accountability and responsibility for emissions hazards and more. The second part seeks to give a background to carbon hazards and concepts clarification. It further engulfs the largest carbon emission hazards degenerating into climate change and the need for sporadic response municipally and internationally. Rising sea levels, change in weather pattern, global temperature rise, ocean acidification is few extreme indications of climate change. Part Three judiciously discusses carbon pricing as a coping mechanism for climate actions. Setting of price signals, tax liability for emissions and fuel usages, credit system, cap system and existing hybrid approaches will be all examined in response to tackling and regulating emission as a core player in climate change. The gravamen then shifts gradually to exploring the roles of international (multilateral and bilateral) pacts and agreements, resolutions of climate change based- conferences across the globe. The prospect, scope and practicality of these instruments with respect to implementation success of ratified members-state will be all-together sifted in Part Four of this paper. Jurisdictions with municipal instruments adopting carbon pricing mechanisms and their various implementation structures may as well be taken into consideration. And lastly, Part Five proffers recommendations and improvements where need be, to the shortcomings of the different approaches so adopted, and subsequently concludes the paper.

2. Carbon Hazards and Sustainable Development Goal Thirteen

The thirteenth sustainable development goal was adopted alongside other goals by the United Nations General Assembly in 2015 with a core official statement which is to '*Take urgent action to combat climate change and its impacts'.*[3] The preservation of our climate system and pattern being a global and collective goal, is centered on fighting and mitigating the overconcentration of CO_2 and other greenhouse gas released into the atmosphere, gradually depleting the supposed protective ozone layers of our planet. The highlight of carbon emission is the displacement of oxygen which results in the underlying cause behind human and environmental fatality chain like disruption in food access due to extreme weather changes like heatwave, wildfires, heavy rainfall, among others. Thus, efforts taken towards this goal are usually seen as efforts towards environmental sustainability. The etymology of this extant globally acknowledged term, 'Sustainability', can be traced to the concerns of forest conservation raised by a 17th century German mining administrator, Hans Carl Von Carlowitz, who lived between 1645-1714. His concerns, "Sustainable use of the forest" were genuinely connected to the devastating effect of shortage of timbers (deforestation) in the silver mining and metallurgy industry, which eventually led to a number of reforestation projects on "preserving the essence of the land." The term however gained its popularity from usage by the Brundtland Commission in the *Brundtland Report 1987,* spearheaded by the erstwhile Prime Minister of Norway.[4] Consequently, North and Styring, proffered three dimensions or pillars of sustainability; Environment, Economy, and Social.[5] The conservation of the planetas a concept, is strongly built on relevant concerns related to efficient use of material, health and toxicology, land use and biodiversity, energy efficiency and climate protection, economic efficiency, and international cooperation.

Carbon Dioxide (CO_2) is scientifically proven as a "*colourless, odorless, non-flammable gas that naturally occurs in the atmosphere...produced by the body metabolism and is a normal component of exhaled breath. It also results from the burning of fossil fuels and natural sources such as volcanic eruptions."*[6] The annual report from NOAA's Global Monitoring Lab proffered the global atmospheric carbon dioxide was 419.3 *parts per million* as at 2023, setting a new record. In May

[3] United Nations (2017) Resolution adopted by the General Assembly on 6 July 2017, Work of the Statistical Commission pertaining to the 2030 Agenda for Sustainable Development
[4] M North and P Styring, *Carbon Dioxide Utilization: Vol 1* (De Gruyter: Berlin, 2019) p 41.
[5] Ibid.
[6] ´Carbon Dioxide Health Hazard Information Sheet` USDA Food Safety and Inspection Service <https://www.fsis.usda.gov> accessed 10th May, 2025

2023, CO_2 hit 424 *ppm*[7] and 427*ppm* as at 2024[8]. The energy sector remains the largest global emitter of CO_2 as a result of several chemical refining and production processes involved. For illustration purposes, the Iron and Steel making industry is known for its two stages production process. Initially, the iron ore, after extraction, is reduced to metallic iron with coke before being processed further to steel. Another notable supplementary source of CO_2 is the Cement Production industry; highly energy intensive, limestones (calcium carbonate) are calcined to produce calcium oxide with a great deal of emission produced from extreme heat derived from burning fossil fuels as required by the process.[9] Other relevant energy sector-based sources of CO_2 emissions include Production of Hydrogen by steaming Methane, Natural gas production, production of Ethylene Oxide, Paper Pulp Industry, etc. The list above does not exclusively account for the total emission sources globally; other industrially thriving sectors with ostensibly high emission rates include transportation, agriculture, forestry and land use.[10]

However, this is not to say the Earth would survive without carbon. This is as a result of the radiation functionality of the GHG emitted. Greenhouse gas makes up most of the gaseous substance in the atmosphere, and is best known for its absorption of heat radiation from the surface of the Earth. With the continuous carbon dioxide concentration cycle, the total amount of carbon in the atmosphere increases simultaneously regardless of the effort of natural sinking; a process where the Earth cleanses itself by removing carbon from land, and the ocean by absorbing an average of half of the emission released each year. This effort is quite undermined due to the declining emission released daily consequently, the global temperature rises.

Another vital functionality of greenhouse gas (GHG) is its reactions to water, which is in itself not infallible. The GHG dissolves easily in the ocean since it easily reacts to water molecules in turning producing 'carbon acid'. Although the dissoluble component offers the ocean some advantages, this process raises the acidity level as a result of a low ocean *pH*. It is reported that the pH of the ocean has dropped from 8.21 to 8.10 since the start of the Industrial Revolution.[11] This phenomenon is now scientifically recognized as 'Ocean Acidification' which unfortunately operates as an active hazard to the aquatic-ecosystem and its habitants due to corrosive and highly acidic waters.

Health complications arising from air and environmental pollution are not left out. Asphyxiation in cases of over concentration of GHG in certain spaces like mining and fossil fuel business locations, cancerous skin infections due to direct solar radiation exposure made easy by the infrared opacity of the atmosphere known as global warming and more vector-borne diseases. Environmental hazards in return have diminishing effects on the health of humans. While ocean acidification naturally creates some chemical imbalance to aquatic creatures resulting in reduction in biological diversity, and changes in geographic distribution of the ecosystem, humans stand at the risk of indirect consequences mostly from consumption. Change in climate patterns is another indirect consequence with technical obstructions to food production and supply chain. Local and mechanical farmers are faced with unpredictable ecological changes with adverse economic impacts on their businesses, supply, production and in fact, storage. Carbon hazards play active roles in determining human settlement. Migration, loss of land, displacement of population due to increases in sea level, natural disasters like earthquakes, volcanic eruption, are but a few ways by which climate change may drastically affect human settlement.

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[7] Dr. Xin Lan, *NOAA/GML* (gml.noaa.gov/ccgg/trends/) and Dr. Ralph Keeling, Scripps Institution of Oceanography (http://scrippsco2.ucsd.edu/)

[8] Obtained from the website of The National Aeronautics and Space Administration (NASA) >>>> https://climate.nasa.gov/vital-signs/carbon-dioxide/?intent=121 accessed on May 11, 2025.

[9] North and Styring (n 4) p.76-74.

[10] ibid.

[11] L Rebecca, 'Climate Change: Atmospheric Carbon Dioxide' (2024) >>>< https://www.climate.gov/news-features/understanding-climate/climate-change-atmospheric-carbon-dioxide#:~:text=Without%20carbon%20dioxide%2C%20Earth's%20natural, causing%20global%20temperature%20to%20rise>. accessed on May 10, 2025.

On 21 March 2023, a magnitude 6.5 earthquake struck Badakhshan in Afghanistan with severe reverse thrust and strike-slip faulting. With a strong disastrous impact, more than 665 houses were destroyed, 80 people were injured while 10 people killed. The tremors were felt as far wide as in Islamabad, Rawalpindi, Lahore, Quetta and Peshawar.[12] According to Matthew, "climate change could cause more earthquakes and volcanic eruptions by increasing the weight of water on the Earth's crust."[13] The increasing escalation of temperature, acceleration of glacial melting, degree of rainfall has also increased the frequency of storms, wildfires, drought, and downpours. It is reported that melting glaciers contribute to rising sea levels and may be behind several coastal hazards like erosion and flooding.[14] These accelerations are reportedly driven largely by human activities. Research of geologists has discovered a relationship between seismic activity and rainfall rates. The frequency of earthquakes is influenced gravely by the annual rainfall cycle monsoon season.[15] Therefore, climate changes determine the intensity of these phenomena.

According to Crampton, "climate change is a problem of the commons".[16] He further enunciated that this undeniable fact underlines the unfortunate factors inhibiting the process of the Paris Agreement. Climate Change call to action is a global goal that necessitates "common reciprocal commitment "from all stakeholders rather than the free-riding attitude of most countries after expressing the initial international consensus at the adoption of The Paris Agreement. This is because without reciprocal commitments, the individual abatement strategies of one country may inhibit the collective reduction goal by increasing the emissions rate in other countries, which is also known as Carbon Leakage. Without further ado, as attractive as the global climate goal may seem, without collective reciprocal commitments to its progress, the sustainability of our planet remains vulnerable.

3. Carbon Coping Mechanisms

The internationalization of climate concerns has geared several countries, provinces, states, research bodies to proffer diverse carbon control mechanisms and policies for adoption with carbon emission mitigation as the ultimate goal. This global trend is depicted by the unanimous decision to simultaneously adopt the *Paris Agreement* and the launch of the *Carbon Pricing Leadership Coalition* (CPLC) in December 2015 at the COP21 by concerned stakeholders which included 33 national and subnational governments, 162 private sector organizations, 80 strategic partners-universities, NGOs, business organizations, etc.[17] These suggestions are either adopted and implemented with distinct coping frameworks or are operated in a hybrid approach for efficiency. Usually, most carbon coping mechanisms are either price signal oriented or incentive oriented towards emission control. The ultimate targets of these mechanisms are high-carbon emitters, mostly players of the carbon-intensive industry. This thus urges these players to embark on cleaner technology for production processes. Accordingly, the Deep Decarbonization Pathways Project, a research project, in its report, *Roadmap for Rapid Decarbonization (2017),* emphasized on the incorporation of carbon pricing measures by stakeholders as key elements in all policy packages targeting the 2050 emission reduction goal to be consistent with the Paris Agreement.[18] According to the United Nations Climate Change, there are at least three diverse carbon coping mechanisms

[12] National Earthquake Information Centre (21 March 2023) "M 6.6 - 40 km SSE of Jurm, Afghanistan" United States Geographical Survey. Archived accessed May 25, 2025.
[13] B Matthew, 'Climate Change could be triggering more earthquakes and volcanic eruptions' (2023) World Economic Forum retrieved from The Conversation.
[14] Copernicus Climate Change Service (C3S) <https://climate.copernicus.eu/climate-indicators/sea-level> accessed May 25, 2025.
[15] P Bettineli, J P Avouac & Ors, 'Seasonal Variations of Seismicity and Geodetic Strain in the Himalaya induced by Surface Hydrology' (2007) 266 (3-4) *Elsevier Journal*, 336.
[16] P Crampton, D Mackey, A Ockenfels & S Stoft, *Global Carbon Pricing: The Path to Climate Cooperation* (MIT Press, 2017) p18.
[17] T Arimura, *Carbon Pricing in Japan*, 1st ed. (Springer: 2021) P19-20.
[18] ibid.

operable globally depending on different instruments adopted.[19] The nexus of these mechanisms is basically creating a price signal on GHG emissions for regulation and reduction. Responsibilities for damages caused by emission hazards are rather not borne by the general public but core emitters targeting consumption and investment patterns. These carbon pricing/coping mechanisms shall be discussed briefly.

a. Emission Trading System (ETS): known as the *Cap and Trade system.*[20] The regulation and reduction of GHG emissions is controlled by a tradable permit system. This system operates by setting a cap or percentage restrictions or limits on emissions. The total amount of emission produced by an entity defines the size of its cap. These affected entities are expected to hold a certain emission unit or allowance for each tonne of carbon emitted. The implication of the cap and trade system is its weaponry for determining the price of carbon, thereby dictating the equilibrium between the demand and supply of emissions i.e. the balance between the total emission produced and emission unit allowed or allocated to an entity. According to the International Carbon Action Partnership (ICAP), a total of thirty-eight emission trading systems operate around the world with about twenty under development. It is also reported that about 13% of the globe's GHG emission is covered by ETS[21]. A few of the current global ETS rates as at 2025 include; EUR 74.05 in EU[22], USD6.7 in South Korea declining from USD15.6[23], USD 35.21 in the US, California to be precise[24]. In 2021, China fully introduced her ETS as the largest in the world which seeks to cover approximately 40% of the total GHG emissions in the province and to be operated revenue neutral. As at 2024, the country's average secondary auction price was set to USD 13.33.[25] China's carbon market requires companies under the system to deposit emission permits with the government in order to account for the portions of their emission on a periodic basis. The program is effectively implemented by the Ministry of Ecology and Environment covering carbon emissions from power plants from about 2,200 energy produced by 2021 with proposals for expansion to cement and aluminum industry.[26]

b. Carbon Tax (CT): Although the first carbon tax was introduced in 1990 in Finland, the EU-ETS 2005 influenced significant increase in carbon pricing mechanisms.[27] Carbon Tax is a market based mechanism for the control of GHG emissions (inclusive of carbon) and is highly encouraged for its cost control and flexibility. According to Burney, the mechanism is simply about the application of taxes and fees on GHG emissions per volume or the inputs that create them.[28] Price signals are set through mandatory imposition of levies for fossil fuel usages across an entire industry.[29] Strictly driven by taxation policies, this mechanism maintains certainty of price signals on carbon. Therefore, it is safe to say it gears the mitigation of emissions. By creating tax liabilities on carbon-intensive production, it gradually shifts production patterns to clean and non-carbon intensive technology. Businesses, investors, and governments are encouraged collectively to produce less emissions. Revenues generated from carbon tax liability clearance are expended to offset hazardous impacts of these emissions on climate change or environmental degradation. The prospect of this coping mechanism is its surface progressive approach, the economic burden

[19] 'United Nations Framework Convention on Climate Change, About Carbon Pricing' <http://unfccc.int> accessed 25 May, 2025.
[20] ibid.
[21] International Carbon Action Partnership (ICAP), *Emissions Trading Worldwide: ICAP Status Report 2025.*
[22] ibid.
[23] International Carbon Action Partnership (ICAP), *Korean Emissions Trading System* (K-EST)*2025.*
[24] International Carbon Action Partnership (ICAP), California's Cap-and-Trade System 2025.
[25] International Carbon Action Partnership (ICAP), China National ETS 2025.
[26] Chris Busoh, 'China's Emissions Trading System Will Be The World's Biggest Climate Policy. Here's What Comes Next.' (Forbes, 2022) <https://www.forbes.com/sites/energyinnovation/2022/04/18/chinas-emissions-trading-system-will-be-the-worlds-biggest-climate-policy-heres-what-comes-next/?sh=41e970c02d59 > accessed 26 May, 2025
[27] Arimura (n 17), p 22.
[28] N Burney, *Carbon Tax and Cap-and-Trade Tools: Market-based Approaches for Controlling Greenhouse Gases (Climate Change and its causes, effects and prediction)* (Nova Science Publishers: New York, 2010) p 2-7.
[29] National Earthquake Information Centre (n 12).

depends on the level of emission. In addition, a higher tax liability correspondingly births higher energy prices, thereby controlling consumption patterns. Summarizing the potential advantages of carbon tax as a coping mechanism, Burney juxtaposed the system with its competitive counter-part, ETS.[30] Although Carbon tax is market-based, it is more economically efficient than ETS which on the other hand is highly quantity control based. For this reason one may say carbon tax envisages volatility of prices and cost uncertainty. In addition, carbon tax operates takes account of practical considerations, and trade-offs application from revenues generated. Although, the burden shouldered by the ultimate consumers is another sphere of the discourse. Research has shown that low-income households tend to consume more energy-intensive goods than the wealthier households.[31] This then raises questions on the inclined regressiveness of carbon taxation and its inequitable tendencies.

In support of her net zero emissions ambitions by 2050, the Singaporean government introduced the *Carbon Pricing (Carbon Tax and Carbon Credits Registry) (Amendment) Regulations 2023* following the amendment of the Carbon Pricing Act originally passed on 1 January 2019.[32] The carbon tax mechanism is efficiently run by stringent measurement, reporting and verification (MRV) framework. The Regulation spells out the rates, thresholds, regulated GHG emissions and sub-sectors, estimation of reckonable GHG emissions. The tax rates are applied to all industrial facilities with "annual direct GHG emissions of at least 25,000 tonnes of carbon dioxide equivalent (tCO_2e)".[33] The carbon tax rate is fixed at $5 per tonne for 2024-2025 to be subsequently raised to $45 per tonne in 2026 and 2027. Sub-sectors affected by the Carbon Pricing Act include manufacturing and manufacturing related services, supply of electricity, gas, steam, air-conditioning, water supply and sewage and waste management. A litany of greenhouse gas asides Carbon dioxide are also covered under the Act, namely- Methane (CH_4), Nitrous oxide (N_2O), Sulphur hexafluoride (SF_6), Nitrogen trifluoride (NF_3), Hydrofluorocarbons (HFCs), and more.[34]

c. Emission Reduction Funds (ERF): These are taxpayer schemes maintained by governments purchasing credits created by emission reduction projects. Most ERF projects provide economic and environmental benefits, usually to offer support and opportunities for the purpose of carbon emissions mitigation. According to the Australian National Statement on Climate Change and Agriculture, ERF is "a voluntary scheme that incentivizes organizations and individuals to adopt new practices and technologies to reduce their emissions or store carbon."[35] The major opportunities provided by ERF are participation in emission reduction, and capture and storage of carbon (carbon sequestration). This scheme has been adopted by the Australian government through Australian Carbon Credit Units (ACCUs) sold to the government or on a secondary private market to benefit the environment and generate income streams.[36]
d. Hybrid approaches: This simply is the combined elements of any of the above discussed mechanisms. It is believed that the combined efforts of these will provide more promising results towards emission mitigation and regulation, which in turn promises a more sustainable and just environment.

[30] Burney, (n 29) p 9-10.
[31] J Rosenberg, E Toder, and C Lu, 'Distributional Implications of a Carbon Tax' (2018) New York, NY: Columbia | SIPA Center on Global Energy Policy and Washington, DC: Urban-Brookings Tax Policy Center.
[32] National Environment Agency, 'Carbon Tax' < https://www.nea.gov.sg/our-services/climate-change-energy-efficiency/climate-change/carbon-tax > accessed 26 May 2025.
[33] Ibid.
[34] *First Schedule,* Carbon Pricing Act 2018, Singapore Statutes.
[35] 'Emissions Reduction Fund', (Australian Government Department of Agriculture, Fisheries and Forestry) < https://www.agriculture.gov.au/agriculture-land/farm-food-drought/climatechange/mitigation/cfi > accessed on 26th May, 2025.
[36] ibid.

4. Roles of International and Domestic Instruments on Carbon Coping Mechanisms

Several instruments on climate actions had been adopted across different spheres internationally, regionally and even domestically, depending on each member-state's priority and capacity. The first international instrument on climate action was adopted in 1979 by the UNEP Governing Council titled '*The Convention on Long-Range Transboundary Air Pollution'.* The major purpose was to monitor and evaluate the long-range transport of air pollutants. In 1992, the *UN Framework Convention on Climate Change* was adopted as the first global treaty explicitly addressing climate change. The drive behind the agreement is "to limit dangerous human interference with the climate system."[37] The treaty thus functions as an international and collective pact to mitigate the increase and presence of greenhouse gas in the atmosphere. *Article 2* of the Convention further explains the main objective as the "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system." Therefore, the aim is to ensure there are no threats to food production from climate change or to economic development to proceed in a sustainable manner.

The Paris Agreement, also known as the Paris *Climate Accords, is* an international treaty on climate change adopted in 2015 at the United Nations Climate Change Conference near Paris, France. The treaty covers climate change adaptation, finance, and mitigation. The Agreement is driven by the long-term goal to keep the rise in global surface temperature to well below 2°C (3.6° F) above pre-industrial levels. The preferable limit of the increase recommended should only be 1.5°C (2.7°F). It explicitly declares a regime against global warming and may even be said to have envisioned net zero by the middle of the 21st century by suggesting that emissions be cut by roughly 50% by 2030. Member-states are required to determine, plan, and regularly report on their contributions. The Agreement has also successfully received judicial applause in climate litigation thereby strengthening its cause. In an action instituted by Friends of Earth and over 17,000 co-plaintiffs, an order on the basis the Agreement was granted by a court in Hague presided *Judge Larisa Alwin* in 2021 against Royal Dutch Shell compelling the oil giant to cut its global carbon emissions by 45% by the end of 2030 compared with 2019 levels.[38] The unprecedented decision was internationally applauded for its heavy implications for the energy industry and other pollutants. It further enforces a sense of duty of care for emission reduction on suppliers and buyers of carbon-intensive products in line with the Paris Climate Accord, a declaration that public policy and concerns outweighs emitters' commercial interests. Her Lordship remarked that Shell must "at once" reduce its CO_2 output, in addition the ruling would have "far-reaching consequences" and may "curb the potential growth of the Shell group". The decision in all shades of objectivity is a wake up call for all multinationals to play their full part in achieving the sustainable goal on climate change. Donald Pols, director of Milieudefensie, described the ruling as a "monumental victory".[39] Nevertheless, this aspirational agreement may fail to achieve its intended purpose. Crampton described the Paris Agreement as one focused on nonbinding and nonenforceable nationally determined contributions, opposite of reciprocal, common commitment.[40] As identified above, the real problem with the effectiveness of climate coping mechanisms is not the climate *eo ipso*, but the people and their lack of cooperation— Weak individual-country commitments. Hence, he submitted that a redesign of negotiations and policy gol be made to "maximize cooperation and accept that we cannot do better than the best we can do."[41]

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[37] Article 2.
[38] D Boffey, '*Court orders Royal Dutch Shell to cut carbon emissions by 45% by 2030"* (The Guardian, 2021) < https://www.theguardian.com/business/2021/may/26/court-orders-royal-dutch-shell-to-cut-carbon-emissions-by-45-by-2030 > accessed 26 May, 2025.
[39] ibid.
[40] Arimura, (n 17) p 93-131.
[41] ibid.

4.1 Carbon Pricing in Nigeria: The Road Ahead

In 2021, Nigeria announced her commitment to climate change and emission reduction at COP26 in Glasgow. Earlier that same year, the *Climate Change Act 2021* was passed pursuant to the Paris Agreement while an implementation agency, the *National Council on Climate Change* (NCCC) was established. The agency in a *Regulatory Guidance on Nigeria's Carbon Market Approach* proposes some structural procedures to be undertaken by the agency towards the realization of its climate commitment through "Corresponding Adjustments" to transfer all mitigation outcomes from Nigeria placing them in the ledger of the buying country under Internationally Transferred Mitigation Outcomes (ITMOs) or Other International Mitigation Purposes (OIMP) in cases of private sector.[42] The Nigerian government also looks forward to the introduction of carbon tax in the nearest future in line with the **Act.** The anticipated carbon tax policy is expected to be applied to all public and private entities. Closely associated is a Climate Change Fund created by the Act[43], almost adopting the Emission Reduction Fund mechanism. The policy might as well combine cap-and-trade systems with carbon tax.[44] It is strongly believed that these will forcibly push for a shift to a cleaner energy seeing that Nigeria is an active oil and energy nation with large imaginable emitters. Therefore, a further push for local and foreign investments in clean, renewable and sustainable energy for their low-carbon initiatives. Most importantly, it is believed that the above instruments, local and international, will consequently generate a great predictable revenue, create alternative revenue sources depending on the coping mechanism adopted, and overall promote environmental integrity. Closely tied to these benefits is social equality especially in respect of local and small/medium-scale producers like farmers who are vulnerable and at great disadvantages as against large-scale producers who are also large emitters. Not only will they stand to benefit from credits and emission reduction funds, a better environmental health is reassured.

Another closely relevant statute with an unclear analogy to carbon coping mechanisms, particularly carbon tax is the *Petroleum Industry Act* (PIA) 2021, with its innovative hydro-carbon tax (HCT) on Upstream petroleum profits. However, the core objective of the Act, signed into law by President Muhammadu Buhari in 2021, is to reform the oil and gas landscape of the country. Particularly, to address grievances and to create a more conducive environment. The PIA introduced the HCT to replace the Petroleum Profit Tax which operated under the earlier *Petroleum Profit Tax Act.* Objectively, the HCT, an assessable tax on profits of companies involved in upstream petroleum operations including condensates, crude oil, and natural gas liquids produced from associated gas, is simply a fiscal framework to generate government revenue being a replacement of the PPT. Although there is no direct policy relation between the introduction of the tax and the realization of the country's climate change visions, this writers opine that the Act and HCT still remain vital to this discourse as a result of their overall roles in the Nigerian climate regulatory framework.

The tax rates are fixed upon the terrain or barrel produced per field per month, and to some extent on license held by the oil corporate taxpayer. A tax rate of 30% is imposed on the profit from crude oil for petroleum mining leases in respect to onshore and shallow water areas,[45] and 15% of profits from crude oil for onshore and shallow water and for petroleum prospecting licenses.[46] The policy behind the fiscal tool is strictly maintained on the basis of licensing the business of petroleum operations and maximum generation of revenue from taxes. Hence, a huge lacuna stands between taxing for revenue generation and taxing for emission mitigation, or perhaps a subtle implication

[42] Regulatory Guidance on Nigeria's Carbon Market Approach, National Council on Climate Change.
[43] *Section 6* of the Climate Change Act 2021.
[44] S Sulaimon, O Chukwuani, and G Bonfire, 'Putting a Price on Pollution: Can Carbon Taxation Drive Sustainable Development in Nigeria?' (TEMPLARS, 15, May, 2023) < http://www.templars-law.com > accessed 26 May, 2025.
[45] Section 267(a*)* Petroleum Industry Act 2021; "The chargeable tax for any accounting period of a company shall be a percentage of the chargeable profit for that period aggregated and it shall be—
(a) 30% of the profit from crude oil for petroleum mining leases selected under section 93 (6)(b) and (7)(b) of this Act with respect to onshore and shallow water areas; and…"
[46] Section 267(b) Petroleum Industry Act 2021; "(b) 15% of profit from crude oil for onshore and shallow water and for petroleum prospecting licences selected under section 93 (6) (a) and (7) (a) of this Act."

will be along the lines of revenue maximization and climate change regulation. A reasonable man would have hoped for this inference seeing as gas flaring, a form of carbon emission which is another relatively close consequence of operating petroleum activities involving crude oil and natural gas, is inevitable in Nigeria.

These writers beg to differ in some respect that there exist some incidences of climate actions implications in the Act. Section 104 (1) of the Act criminalizes the flaring or venting of natural gas by any licensee, lessee or marginal field operator with few exemptions including cases of emergency, exemptions granted by Commission, and as an acceptable safety practice under established regulations.[47] One would agree that these are passive strategies to greenhouse gas emission mitigation, although the approach employed is not directly related to the earlier discussed active carbon coping mechanisms. In the same vein, Section 102 and 103 of the same Act speak to the effect of upstream activities of licensees or lessees on environmental management. The former provisions require a submission of an environmental management plan in respect of upstream projects for impact assessment and approval by the Commission.[48] Section 103 in response imposes as a condition to the grant of a lease or license, the payment of a prescribed financial contribution to an environmental remediation fund to manage negative environmental impacts.[49]

Having examined the carbon pricing related statutes, it is important to state that the need for a well drafted and comprehensive Carbon Market framework cannot be over emphasized. Corollary to this is the mechanism for its implementation.

5. Conclusion and Recommendations

Having explored the notable carbon coping legal instruments and mechanisms working across the diverse corners of the world with a keen focus on the Nigerian government's legislative and administrative attitude towards climate actions specifically carbon emission mitigation and control, it is unfortunate to say that the passive attitude will achieve little to no achievement of the '*Net-Zero'* emission vision of the country set to be achieved by 2060 as announced at the COP26 climate summit in 2021. In addition, although some inferences were drawn from the extant statutes, Nigeria is yet to expressly adopt clear-cut coping mechanisms to project her genuine reciprocal commitment to climate actions obligations under relevant international treaties which have been ratified by her laws. The present challenges revolve around fiscal risks, high level of unawareness amongst the populace, institutional fragmentation, and financing but these are surmountable. Thereon, it is highly recommended that the country takes active steps by adopting one or a mix of the explained coping mechanisms. The Hydro-carbon tax is not left out of the recommendations conversation as well. The tax appears far from the vision of the thirteenth sustainable development goal, as it appears heavily capitalized on revenue generation from crude oil profits with no express attention paid to global climate action calls. These writers believe that although revenue generation is quite crucial to the running of the business of any country, nonetheless certain socio-environmental factors must be put in place and in fact above other considerations for the security of lives (humans, animals and plants). Objectively, these factors will reassure the efficacy and growth of other sectors of the country's affairs. Thus, the neglect of one is an inevitable detriment to the others. A phased approach in regulating the carbon market is a step towards the right direction.

[47] Section 104(1)(a), (b), and (c) Petroleum Industry Act 2021.

[48] ibid, section 102 (1); "A licensee or lessee who engages in upstream and midstream petroleum operations shall within— (a) one year of the effective date, or (b) six months after the grant of the applicable licence or lease, submit for approval an environmental management plan in respect of projects which require environmental impact assessment to the Commission or Authority, as the case may be."

[49] "As a condition for the grant of a licence or lease and prior to the approval of the environmental management plan by the Commission or Authority, a licensee or lessee shall pay a prescribed financial contribution to an environmental remediation fund established by the Commission or Authority, as the case may be, for the rehabilitation or management of negative environmental impacts with respect to the licence or lease."