American Journal of Social and Humanitarian Research

Vol. 6 Issue 5 | **pp.** 980-991 | **ISSN:** 2690-9626
Available online @ https://globalresearchnetwork.us/index.php/ajshr

Article

A Survey of Carbon Economics through The Abolishment of Local Crude Oil Refineries Owned by Individuals in Emohua Local Government Area of Rivers State

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Abstract: This study explores the interplay between carbon economics and the environmental implications of abolishing individually-owned local crude oil refineries in Emohua Local Government Area of Rivers State, Nigeria. Against the backdrop of Nigeria's carbon-intensive economy and the proliferation of unregulated oil refining activities, this research identifies a critical knowledge gap in understanding localized carbon dynamics and their broader ecological and economic consequences. Utilizing a correlational research design, a stratified sample of 120 male adults from four communities was surveyed using a validated questionnaire. Data were analyzed using Pearson Product-Moment Correlation to assess relationships among the emergence of local refineries, environmental health, and carbon economic variables. The findings reveal a statistically significant, moderate positive correlation between the rise of local refineries and environmental degradation, as well as between carbon economics and both environmental health and the proposed abolition of these refineries. The results underscore the ecological cost of carbon-driven industrial practices and support the urgent need for targeted policy reforms. The study implies that while locally-owned refineries contribute to economic sustenance in oil-producing regions, they simultaneously exacerbate carbon emissions and environmental harm. Therefore, policies aimed at refinery abolition must also address the socioeconomic roots of illegal refining activities, such as unemployment and weak regulatory institutions. This research contributes to the discourse on sustainable environmental management by highlighting the role of localized carbon economies and informing carbon mitigation strategies within the context of Nigeria's energy landscape.

Keywords: Carbon Economy, Local Oil Refineries, Environmental Health, Emohua, Nigeria, Sustainability.

Citation: Briggs V. Uro I. N. and Iyagba P. W. A Survey of Carbon Economics through The Abolishment of Local Crude Oil Refineries Owned by Individuals in Emohua Local Government Area of Rivers State. American Journal of Social and Humanitarian Research 2025, 6(5), 980-991.

Received: 15th Mar 2025
Revised: 29th Apr 2025
Accepted: 01th May 2025
Published: 09th May 2025

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1. Introduction

The global society confronts an unparalleled challenge in the 21st century: the pressing necessity to alleviate the effects of climate change. This arises from the recognition that the Earth's climate is experiencing rapid and unparalleled alterations predominantly caused by human actions, especially the emission of greenhouse gases such as carbon dioxide into the atmosphere. These alterations have presented a significant threat to the planet's ecosystems, meteorological patterns, and increasing sea levels, leading to more

frequent and severe natural disasters, extreme heat events, and disruptions to agriculture, water resources, and coastal communities.

In light of the existential threat posed by unregulated carbon emissions, there is an increasing agreement among governments, organisations, and individuals that prompt and ongoing action is essential to mitigate global warming, protect ecosystems, ensure public health, and establish a sustainable future for subsequent generations.

In this age of environmental awareness, initiatives to diminish carbon emissions and shift towards more sustainable energy sources Sources have become paramount on the global agenda. Regrettably, despite global urgency to alleviate the effects of carbon emissions, Nigeria, due to its substantial reliance on fossil fuels, especially crude oil, has made minimal progress in this area. Environmental psychology, which focusses on the behavioural management of the environment to mitigate or prevent degradation through pro-environmental attitudinal shifts, has not received adequate attention. The illicit oil refining in Nigeria, along with its associated environmental implications and repercussions, has emerged as a significant issue and source of worry for numerous years. This is attributable to several factors: The decrease in oil prices has hindered the operations of legitimate oil companies; the absence of governmental regulation has facilitated the establishment of illegal refineries; and the elevated unemployment rate has compelled some individuals to engage in illegal oil refining as a means of income, among other factors.

The initial illicit refineries in Nigeria were established in the 1970s amid the oil boom, resulting in heightened demand for refined petroleum products, prompting individuals to create illegal refineries to satisfy this demand. The issue of illicit oil refining has exacerbated in recent years. It is estimated that more than 5,000 illicit refineries are already operating in the country, emitting millions of tonnes of carbon dioxide annually. Illegal crude oil refining refers to the unregulated and small-scale processing of crude oil. It is frequently conducted in improvised facilities that are ill-equipped to manage the toxic chemicals associated with the refining process. This has resulted in numerous environmental issues, including air pollution, water poisoning, and soil degradation. The emitted air pollutants, including soot, which has persistently affected Nigerian cities like Port Harcourt, have increased the risk of mortality from stroke, heart disease, lung cancer, and respiratory illnesses among the exposed population, as well as contributing to biodiversity loss and economic disruptions. Furthermore, climate change intensifies existing disparities, disproportionately impacting disadvantaged groups and aggravating global issues such as food insecurity, health emergencies, and large-scale migrations. Tackling this urgent issue is both a moral obligation and an economic and social necessity, necessitating coordinated worldwide efforts to adopt sustainable behaviours, mitigate emissions, and adjust to the ongoing changes.

The Rivers State administration in Nigeria has been rigorously enforcing measures against illegal oil refineries for several years. In recent years, the state government intensified its initiatives to combat the activity, aiming to mitigate the environmental and economic harm inflicted by this illicit oil refining. In 2021, the Rivers State administration unveiled a novel method to address illegal oil refining. The plan encompassed enhanced monitoring of identified unlawful refining locations, the augmentation of security personnel at these sites, and the allocation of financial support to individuals who consent to destroy their illicit refineries. The government's initiatives have achieved a degree of success. In 2022, the state government declared the destruction of more than 1,000 illicit oil refinery facilities.

Nonetheless, the issue of illicit oil refining persists as a burden, and the government has consistently endeavoured to resolve it. Reports from the State Government indicate that, in January 2023, in coordination with the Federal Government and other stakeholders, approximately 200 illegal oil refinery plants were dismantled in the state. In

February 2023, the government apprehended more than 100 individuals suspected of participating in illicit oil refinery activities. In March 2023, the government declared a prize of $10,000 for information resulting in the apprehension of individuals engaged in illicit oil refining, aiming to establish a sustainable resolution to this issue. The government's initiatives to suppress illegal oil refining have garnered commendation from environmental organisations and various stakeholders. Nevertheless, several individuals have condemned the government's strategy, contending that it insufficiently tackles the fundamental causes of the issue.

Unemployment and poverty are significant factors that perpetuate oil theft and illegal refining. Approximately one-third of the Nigerian population is unemployed, and a BBC investigation into the illicit oil refinery sector highlighted individuals, including a photographer and a computer science degree, who were engaged in refinery operations due to the lack of alternative employment opportunities. The approach is also associated with enduring discontent among local people regarding transnational oil companies that exploit natural resources for profit without reinvesting in the communities affected by the repercussions. Implementing decisive climate action, both collectively and individually, while addressing the systemic causes of extreme poverty—which can compel individuals to engage in unlawful activities such as oil bunkering—is essential for fostering a future where residents of vulnerable, oil-rich regions can improve their quality of life. For almost twenty years, the efficacy of state-owned refineries in Nigeria has been inadequate, resulting in substantial imports of refined petroleum products (RPPs) into the nation. Regrettably, this development has persistently presented significant hurdles to the Nigerian economy, as demonstrated by the rising number of domestic oil refineries.

The investigation of carbon economics and its complex interplay with local industry and individual enterprises is a vital research domain. Numerous seminal research have investigated the effects of climate change on coastal ecosystems. This study aims to elucidate the correlation between carbon economics and the cessation of local oil refineries in the Emohua Local Government Area of Rivers State.

The Emuoha Local Government Area, located in the oil-abundant region of Rivers State, Nigeria, exemplifies the convergence of economic affluence and environmental issues. This region has historically served as a centre for local crude oil refineries, frequently owned and managed by individuals or small enterprises aiming to use the plentiful natural resources available to them. Although these refineries have significantly contributed to local livelihoods and economic activity, they have also prompted serious concerns regarding their environmental impact, especially with carbon emissions.

This study does a thorough examination of carbon economics in the Emuoha Local Government Area, specifically addressing the potential consequences of eliminating locally-owned crude oil refineries. This research seeks to illuminate the complex economic, environmental, and social dynamics of these refineries, highlighting the diverse difficulties and opportunities encountered by the community and the global setting. This study aims to offer a comprehensive perspective on the complex interplay between economic development and environmental sustainability in the Emuoha Local Government Area through a thorough analysis of these variables. It seeks to provide vital insights to local stakeholders and the wider global dialogue regarding the imperative transition to a more sustainable, carbon-aware future. As the globe confronts the problems of climate change, comprehending the local dynamics of carbon economics in locations such as Emuoha is essential for formulating policies and initiatives that can alleviate environmental effect while promoting economic resilience and social welfare.

Research Questions

The following questions will guide the study:

1. Is there any relationship between the emergence of local oil refineries and the attendant impacts on the environment within Emohua Local Government Area of Rivers State?
2. Is there any relationship between carbon economics and the environmental health of Emohua Local Government Area of Rivers State?
3. Is there any relationship between carbon economics and abolition of local oil refineries in Emohua local Government Area of Rivers State?

Hypotheses

1. There is no significant relationship between the emergence of local oil refineries and the attendant impact on the environment within Emohua Local Government Area of Rivers State.
2. There is no significant relationship between carbon economics and environmental health of Emohua Local Government Area of Rivers State.
3. There is no significant relationship between carbon economics and abolition of local oil refineries in Emohua local Government Area of Rivers State.

Literature Review

Carbon Economy

The carbon economy is an economic framework dependent on the combustion of fossil fuels, including coal, oil, and natural gas, for energy production. The combustion emits carbon dioxide and other greenhouse gases into the atmosphere, which entrap heat and contribute to global warming. The influence of the carbon economy on the environment is substantial and extensive. Global warming is presently inducing various alterations to the planet, such as rising sea levels, increased frequency of extreme weather events, and, as noted by Iyagba, unprecedented hurricane winds, typhoons, flooding, tsunami occurrences, volcanic activity, and the melting of glaciers, all of which are dire repercussions of environmental degradation confronting humanity.

These alterations adversely affect ecosystems, human health, and the economy. Ogunsanwo, in this volume, Carbon Emission and Economic Growth in Nigeria, analyses the correlation between carbon emissions and economic growth in Nigeria. He contends that carbon emissions adversely affect economic growth in Nigeria. Coral reefs are deteriorating as a result of climate change. This constitutes a significant decline in biodiversity and poses a risk to the fishing and tourism sectors. The economic ramifications of the carbon economy are considerable. The expenses associated with climate change are currently being experienced globally and are anticipated to escalate in the future. These expenses encompass the damage inflicted by severe weather phenomena, the decline in agricultural output, and the expenditures associated with adaptation and mitigation efforts.

The shift to a low-carbon economy is crucial for safeguarding both the environment and the economy. This transformation necessitates substantial investment in renewable energy, energy efficiency, and further strategies to mitigate greenhouse gas emissions. Hassan observed that there are several advantages to shifting towards a low-carbon economy. The advantages comprise:

Decreased Greenhouse Gas Emissions: This will aid in alleviating climate change and its consequences.

Enhanced Air Quality: This will diminish the incidence of respiratory issues and other health complications attributable to air pollution.

The shift to a low-carbon economy will generate new employment opportunities in renewable energy, energy efficiency, and various other industries.

Economic Growth: A low-carbon economy can exhibit greater resilience to disruptions and generate novel chances for economic advancement.

The shift to a low-carbon economy is a multifaceted challenge that must be confronted to safeguard the environment and the economy for future generations.

Seven Tenets of Carbon Economics

Although 8% of publications in the seven carbon literatures pertain to economic studies, there is presently no dedicated literature on 'carbon economics.' This text proposes seven principles of a novel carbon economics to elucidate the development and functioning of the carbon economy.

1. Carbon economics examines the distribution of excess carbon in the atmosphere in relation to the scarcity of other production variables. This modifies a traditional definition of economics as "the examination of the distribution of limited resources" - capital, labour, and land - "which possess alternative applications." Carbon is allocated through the sequestration of atmospheric carbon and the prevention of terrestrial carbon volatilisation.

The optimal human economy is circular. In an optimal human economy, materials sourced from Resource Capital would circulate inside Human-Made Capital via recycling, rather than being discarded as trash in environmental sinks.

The human economy constitutes an essential component of the biosphere. This adheres to the global ecosystem framework of ecological economics, rather than the environmental economics paradigm that delineates the human economy from the biosphere. Consequently, Figure 1 integrates the global ecosystem and circular economy frameworks.

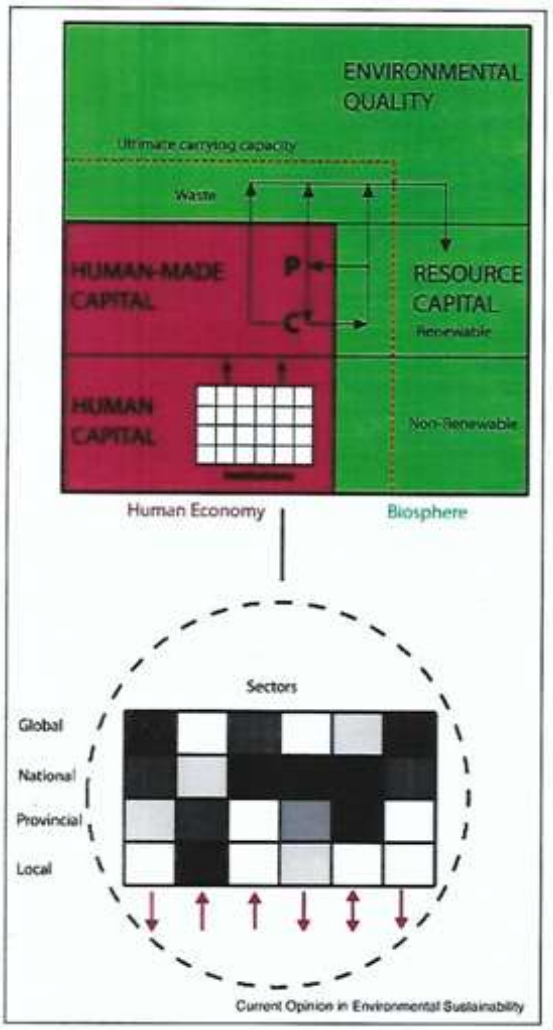

Figure 1. A carbon economy framework that integrates the ecosystem and circular economy frameworks with a new institutionalism framework, illustrating the transfer of materials between the biosphere and the Productive Capital (P) and Consumer Goods

Capital (C) within the human economy as it approaches its ultimate carrying capacity. The institutional matrix (inset) illustrates the variance in institutional density across different scales, corresponding to the scales at which institutions emerge within various economic or policy sectors. Critical Natural Capital refers to the resources that exceed the final carrying capacity.

A sustainable human economy must operate within the biosphere's ultimate carrying capacity. This represents an additional principle of the global ecosystem architecture, wherein surpassing the crucial upper limit results in "remaining Natural Capital replacing Human-Made Capital as the limiting factor." The remaining Natural Capital is termed "Critical Natural Capital," which is vital for human life support, including global environmental cycles such as the carbon cycle and ecosystem services rendered by biodiversity.

The Earth's carbon carrying capacity threshold, shown by atmospheric CO2 levels, may have been exceeded in the 1970s, coinciding with the onset of the current rapid increase in global temperatures. Another assessment indicates that the global carrying capacity, segmented into many "planetary boundaries," has exceeded the criteria for biodiversity and the nitrogen cycle as well.

New corrective economic institutions are necessary when the human economy exceeds its ultimate carrying capacity. Daly advocated in 1974 that to address overshoot, existing institutions regulating the market economy, such as those pertaining to contracts and property rights, should be augmented with new institutions aimed at stabilising human population, halting resource depletion, and curbing social inequality. Institutions are not organisations; rather, they are recurrent practices, defined as "enduring regularities of human action within contexts governed by rules, norms, shared strategies, and the physical environment." Daly said that governments ought to establish the new institutions, as was customary during that period. Since that time, however, the political landscape has undergone significant transformation, and the examination of institutional change has emerged as a primary research focus across multiple disciplines, including ecological economics.

Daly's concept can be augmented by employing a model, independently established by Williamson and Ostrom, wherein any society consists of numerous tiers of institutions. Williamson posited that the institutions governing the market economy are organised hierarchically, with market resource allocation institutions embedded within governmental contract institutions, which are nested within overarching "rules of the polity" that delineate property rights, and are further embedded in societal norms. To facilitate a smooth transition to a carbon economy, the structure of its institutions must align with that of the institutions regulating the market economy. Ostrom's approach facilitates this due to its greater generality compared to Williamson's. “Operational institutions” — the quotidian practices of individuals that are readily altered — are embedded within the “collective choice institutions” of groups that evolve more gradually, and are delineated by “constitutional choice institutions”, adhering to national and international laws, which change even more slowly and are situated within “meta-constitutional institutions”, such as societal norms, that infrequently undergo transformation.

New institutions for governing the carbon economy can be established at various spatial scales. Rhodes asserts that, after a transformation in meta-constitutional institutions throughout the 1990s, numerous industrialised nations transitioned from the traditional "government style" of governance, where the government directed society, to a novel "governance style," in which society is "self-steering." Contemporary governance entails decentralised, multi-scalar, and networked interactions among all societal groupings; civil society possesses more autonomy, enabling individual people and non-governmental organisations to establish institutions with national and global ramifications.

Institutions regulating the carbon economy are depicted by an institutional matrix, where rows indicate participants from global to local levels, and columns denote various economic or policy sectors. Institutions are formed when norms, rules, and practices are launched and perpetuated across different spatial dimensions and disseminated to other levels. Multiple levels differ from multiple scales, hence actors at any size may be linked to various institutional levels.

This elucidates the second characteristic (diversity) of the carbon economy, as previously mentioned. New operational institutions are established and perpetuated through the recurrent actions of numerous individuals, such as when acquiring carbon offsets for their journey. Collective choice institutions emerge when firms restructure their operations to achieve carbon neutrality. Constitutional choice institutions are established by countries that use market-based procedures and by UN organisations that approve new international accords to address global climate change. These are all shaped by, and reinforce, the emerging worldwide societal standard of carbon neutrality. A multi-tiered institutional framework is currently employed in carbon transition research.

The third characteristic of the carbon economy, spatio-temporal unevenness, arises from a variety of actors establishing distinct institutions across varying sizes, timeframes, and locations. Certain scales possess a complete array of institutions, whilst others lack any. Each cell in the institutional matrix exhibits varying densities of institutions. Disparities can be mitigated by addressing deficiencies in the institutional framework, such as amending the Paris Agreement or the World Trade Organization's international trade regulations, and establishing targeted institutional arrangements, for instance, for energy-intensive renewable energy and energy efficiency to diminish carbon emissions and foster sustainable development.

Globally adopted low-carbon economies are thus suggested as a prelude to the more sophisticated zero-carbon economy. The GeGaLo index evaluates the potential alterations in the geopolitical standings of 156 nations contingent upon a complete global shift to renewable energy sources. Former fossil fuel exporters are anticipated to diminish in influence, whilst the status of former fossil fuel importers and nations abundant in renewable energy resources is projected to enhance.

To attain low carbon neutrality, it is essential that the implementation of new technologies to reduce the carbon content in low carbon materials is economically viable, while simultaneously enhancing the utilisation of high carbon materials and other methods to optimise the sequestration of CO2 from the atmosphere to the Earth. This necessitates a structural transformation of the market economy towards a new carbon economy that establishes an adequately elevated carbon price. Due to the aforementioned reasons, the phrase 'carbon economy' is favoured over 'low carbon economy.' This section delineates three characteristics of the nascent carbon economy and proposes seven principles of a novel carbon economics to elucidate them [1].

Environmental Impact of Refineries

The refining and petrochemical sectors convert unrefined crude oil and gas into myriad products, including petrol, jet fuel, polymers, pharmaceuticals, lubricants and asphalt. Petroleum-derived products are pervasive, with numerous production pathways including complex technical procedures. These factors hinder the quantification of emissions along the value chain, hence complicating decarbonisation activities within the sector.

Considering the magnitude of emissions in many sectors, inadequate reporting can significantly impede climate initiatives. In 2019, the global refining industry was responsible for 1.4 gigatons (Gt) of CO2e in Scope 1 emissions. (These are emissions generated directly by a corporation, such as those resulting from fuel combustion to operate machinery.) The petrochemical industry released 1.6 gigatons of CO2 equivalent emissions. The refining and petrochemical sectors collectively generate greater emissions

than heavy manufacturing industries such as steel (2.3 Gt), aluminium (0.3 Gt), or cement (1.5 Gt).

What the Data Shows

1. While our modelling corroborates the precision of petrochemical data, we observe that the present reporting in the refining sector is flawed. Our assessment of Scope 1 emissions from Nigerian refineries in 2019 exceeds the self-reported emissions statistics from the industry by 29 percent, particularly highlighting a significant disparity in methane emissions.

   Nigeria accounts for a substantial share of global refining and petrochemical capacity as well as direct emissions, whereas capacity expansion beyond Nigeria raises concerns. Nigeria had 8 percent of global petrochemical capacity and 5 percent of emissions in 2019. This disparity underscores that emissions-intensive fuel sources and feedstocks are predominantly utilised beyond Nigeria, raising concerns given the anticipated significant petrochemical expansion in emerging markets [4], [5].

   By 2050, the future may vary significantly based on the chosen trajectory. According to our projections, cumulative emissions from Nigerian refining and petrochemicals may constitute between 11.6% and 14.2% of the US carbon budget by 2050. The paper examines two scenarios for 2050: a "Global Base Case," which posits that global production patterns and industry trends persist unchanged, and a "Global Low Emissions Case," which predicts that nations fully adhere to their declared climate commitments. In these two scenarios, global refining emissions are projected to be between 0.7 and 1.2 Gt CO2e by 2050. Global petrochemical emissions are projected to decrease by 1.1 to 2.1 gigatons of CO2 equivalent by 2050. The combined Scope 1 emissions from refining and petrochemicals would amount to 1.8 to 3.3 Gt CO2e [6], [7].

   The Intergovernmental Panel on Climate Change asserts that total world emissions must remain below 764 Gt CO2e from 2020 onwards to maintain a 50 percent probability of restricting warming to 1.5°C. The initial tab of the graph indicates that both industries following the Global Low Emissions Case would reduce 22.9 Gt CO2e by 2050, thereby decreasing their share of the global carbon budget from 13 percent to 10 percent. In Nigeria, the Climate Action Tracker indicates that the 1.5°C carbon budget from 2020 to 2050 is 88.7 Gt CO2e. By 2050, cumulative emissions from US refining and petrochemical sectors are projected to vary from 12.6 Gt CO2e in the Base Case to 10.3 Gt CO2e in the Low Emissions Case, indicating a potential reduction of 2.3 Gt CO2e and a decrease in the proportion of the national carbon budget from 14.2 percent to 11.6 percent.

   The third and fourth graph tabs illustrate the anticipated emissions for refining and petrochemicals individually, highlighting the divergent paths of the two sectors. In both scenarios, refining emissions are projected to decline during the forthcoming decades. Conversely, petrochemical emissions are projected to rise substantially in both scenarios until 2030, after which the stringent decarbonisation measures in the Low Emissions Case commence reducing emissions [9],[10].

2. Procedural considerations: The report emphasises that a single petrochemical can be synthesised from many fuels and techniques, each exhibiting distinct emissions intensities. Transitioning to routes with reduced emissions intensity can result in substantial emissions reductions. If half of the ammonia produced from coal were transitioned to a gas feedstock, total ammonia production emissions would decrease by 15 percent [11].
   The freshly launched Oil Climate Index plus Gas (OCI+) web tool by RMI provides industry leaders and policymakers enhanced insight into greenhouse gas emissions across the oil and gas supply chain. This information helps guide production route decisions in the refining and petrochemical sectors.

2. Materials and Methods

The correlational methodology was employed to examine the relationship between carbon economics and the cessation of local oil refineries in the Emohua Local Government Area of Rivers State. The study population consists of all adults in the Emohua Local Government Area of Rivers State, Nigeria, estimated at 267,438 individuals. The sample for this study was obtained using the stratified sampling method. The objective was to guarantee that only persons engaged in local refining and policy development were chosen for the study. Four communities were randomly selected, and 30 male adults aged 35 to 50

from each community were identified. This resulted in a total sample of 120 adults. The data gathering instrument employed was a questionnaire entitled Carbon Economics and Local Refineries Questionnaire (CELRQ). The apparatus comprised three primary components. Section A assessed the demographic variables of the respondents, while Section B consisted of fifteen (15) items designed to gather information on carbon economics. The final section included ten items aimed at evaluating the impact of local refineries and the movement for their abolition. A four-point rating scale consisting of Strongly Agreed (SA), Agreed (A), Disagreed (D), and Strongly Disagreed (SD) was utilised to assess the respondents' level of agreement or disagreement with the questions in the questionnaire. The instrument was validated by two specialists in measurement and evaluation. The instrument's reliability was established using the test-retest approach, yielding a reliability index of 0.78. The collected data were analysed using the Pearson Product Moment Correlation Coefficient (r) to assess the relationship between Carbon Economics and the abolition of local refineries. The hypotheses were evaluated at a significance level of 0.05.

3. Results

Research Question One: Is there any relationship between the emergence of local oil refineries and the attendant impacts on the environment within Emohua Local Government Area of Rivers State?(see table 1)

Table 1: Pearson product-moment correlation coefficient analysis of Emergence of local oil refineries and its impacts on the environment.

		Local refineries	Impacts on the Environment
Local refineries	Pearson Correlation	1	0.670**
	Sig. (2-tailed)		.000
	N	120	120
Impacts on the Environment	Pearson Correlation	0.670**	1
	Sig. (2-tailed)	.000	
	N	120	120

Correlation is significant at the 0.01 level (2-tailed).

The table 1 shows that there is a high positive relationship between Emergence of Local refineries and Its impacts on the environment (r=0.67) and the relationship is significant (p=0.00). This result therefore suggests that there is a moderate positive relationship between emergence of local refineries and its impacts on the environment in Emohua Local Government Area of Rivers State. it therefore suggests that there is a significant relationship between emergence of local refineries and its impacts on the environment in Rivers State. The null hypothesis was therefore rejected.

Research Question Two: Is there any relationship between carbon economics and environmental health of Emohua Local Government Area of Rivers State?(see table 2)

Table 2: Pearson product-moment correlation coefficient Analysis of carbon economics and environmental health of Emohua Local Government Area of Rivers state.

		Carbon Economics	Environmental health
Carbon Economics	Pearson Correlation	1	0.670**
	Sig. (2-tailed)		.000
	N	120	120
Environmental health	Pearson Correlation	0.670**	1
	Sig. (2-tailed)	.000	
	N	120	120

Correlation is significant at the 0.01 level (2-tailed).

Table 2 shows that there is a high positive relationship between Carbon Economics and Environmental health (r=0.67) and the relationship is significant (p=O.OO). This result therefore suggests that there is a moderate positive relationship between Carbon Economics and Environmental health in Emohua Local Government Area of Rivers State. Since the associated p-value was lesser than 0.05, it therefore suggests that there is a significant relationship between democratic leadership style and Environmental health in Rivers State. The null hypothesis was therefore rejected.

Research Question Three: Is there any relationship between carbon economics and the abolition of local oil refineries in the Emohua Local Government Area of Rivers State?(see table 3)

Table 3: Pearson product-moment correlation coefficient Analysis of carbon economics and abolition of local oil refineries

		Carbon Economics	Abolition of Local refineries
Carbon Economics	Pearson Correlation	1	0.670**
	Sig. (2-tailed)		.000
	N	120	120
Abolition of Local refineries	Pearson Correlation	0.670**	1
	Sig. (2-tailed)	.000	
	N	120	120

Correlation is significant at the 0.01 level (2-tailed).

The result in table 3 shows that there is a high positive relationship between Carbon Economics and Abolition of Local refmeries (r=0.67) and the relationship is significant (pO.OO). This result therefore suggests that there is a moderate positive relationship between Carbon Economics and the Abolition of Local refineries in Emohua Local Government Area of Rivers State [12]. Since the associated p-value was lesser than 0.05, it therefore suggests that there is a significant relationship between Carbon Economics and Abolition of Local refineries in Rivers State. The null hypothesis was therefore rejected.

4. Discussion

The initial hypothesis indicated a moderate positive correlation between the establishment of local refineries and their environmental implications in the Emohua Local Government Area of Rivers State. This conclusion contradicts Ezekwe's assertion that the emergence of local refineries is economically viable and does not harm the environment. Numerous justifications might be proposed for this discrepancy in research results concerning the aforementioned variables. In Sunmola. The emergence of local refineries is not environmentally sustainable, resulting in numerous adverse effects on the ecosystem. In the tested community, grievances regarding soot are linked to the establishment of local refineries. Sunmola also asserted that health issues stem from the operations of local refineries. This may have contributed to the association between the emergence of local refineries and their environmental repercussions. The first study question has been addressed, demonstrating a correlation between the growth of local refineries and their environmental implications in the Emohua Local Government Area of Rivers State.

The second hypothesis indicated a moderate positive correlation between Carbon Economics and Environmental Health in the Emohua Local Government Area of Rivers State [14]. This finding aligns with Hassan's observation that reliance solely on carbon-centric industrialisation significantly contributes to climate change; he further noted that carbon emissions are detrimental to the environment. This finding aligns with Adeyemi's observation that the global economy is carbon-intensive, hence adversely affecting the environment. This conclusion corroborates Anyanwu's assertion that the recent global developments necessitate urgent attention to carbon control, since its influence on mitigating environmental pollution is significant. It is evident that a relationship exists between Carbon Economics and Environmental Health in the Emohua Local Government Area of Rivers State. Consequently, the second study question has been addressed, demonstrating a correlation between Carbon Economics and Environmental Health in the Emohua Local Government Area of Rivers State.

The third hypothesis indicated a moderate positive correlation between Carbon Economics and the cessation of local refineries in the Emohua Local Government Area of Rivers State. This finding aligns with other prior studies on this topic. Prominent among them is Sunmola's assertion that among several frameworks that may be used to protect our environment is the elimination of local refineries [16]. Secondly, Adekola's research indicates that minimising carbon emissions is a primary objective of a low-carbon economy, which will therefore enhance environmental integrity. While the aforementioned works advocate for the removal of local refineries, there are frameworks that propose a reduction of their operations. Consequently, research question three has been addressed, demonstrating a correlation between Carbon Economics and the abolition of local refineries.

5. Conclusion

Based on the findings of this study and other relevant literatures that were reviewed, it is obvious that Nigeria economy is a carbon economy. The emergence of local refineries is inevitable because it's a response to the carbon economy demand. For this present study it was observed that political will to abolish local refineries especially those illegally set up will enhance the quality of the environment, Also, good reasons have been advanced for these findings.

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