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ENVIRONMENTAL DEGRADATION AND SOCIO-ECONOMIC DEVELOPMENT OF NIGER DELTA REGION: A CASE OF AKWA IBOM. STATE

By

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Abstract

The study was carried out to determine the impact of environmental degradation on the socio-economic development of Niger Delta: a study of Akwa Ibom State between 2010 and 2023. The region assumed the mainstays of Nigeria. Economy since the discovery and commercialisation of crude oil since 1957 and 1959, respectively. Akwa Ibom State, particularly,, is one of the statess in the region accounting for for 32% of the production output. This makes it the highest oil. Producers in the region. This result in making Akwa Ibom State identified with vast oil and gas, as well as other mineral resources, domicile in the region. Unfortunately, the availability of resources has made the Niger Delta a subject to diverse forms of degradation, which have impeded the socio-economic development of the region, and Akwa Ibom State in particular. Thus, the aim of the study was to examine the impacts of environmental depredation on socio-economic development of the State. The ecological footprint theory was used in the descriptive and surveying designs. The primary sources of data include questionnairere and interview were used for the study. The study was conducted in Southern region of the state with seven (7) selected local government areas. The sample size was 400,, while the sample technique was the purposive.. Sampling. The study found that the effect of oil spillages on aquatic life in oil-producing communities in the State from 2010 to 2023 is significant. Additionally, it was discovered that Ecological degradation impacts negatively on agricultural activities, which affected crop yielding in oil producing communities in the State in the corresponding years is significant It was recommended that more stringent punitive be adopted in the oil related legislations to mitigate the extent of oil spillages in the region and Akwa Ibom State in particular.
Keyword: Environment Degradation Impacts Akwa Ibom State

Introduction

Understanding the impacts of economic activities on environmental resources is at the heart of development, making it a much researched area in the social and management sciences. More recently the field has seen a resurgence in interest from policymakers and researchers on environmental degradation caused through economic activities. Today many researchers have documented in various researches the impact of economic activities on the environment.

Nigeria's environment faces continuous degradation ranging from desert encroachment in the north, air and marine pollution in the Niger Delta, to massive area

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of soil across the Southern States. The Niger Delta, including theEastern part of the region of which Akwa Ibom State is included constitutes most environmental challenges due to largely from oil spills, flaring and deforestation.

The issue of sustainability has raised a critical question on sustainable practice of oil and gas producers in the Niger Delta given the more than 4,000 Oil Spills that was recorded in the region. The country recorded 211.73 million cubic meters (7.48 billion cubic feet) of gas, out of the 148 billion cubic meters (5.23 trillion cubic feet) flared globally in 2023. Correspondingly, the economic activities of Akwa Ibom State, especially in the Southern part of the State which constitutes the oil belt has undergone significant ecosystem modification and primarily caused by economic activities.

In the region that homed more than **6.5 million people** and widely recognized for its rich in environmental resources and a hub of oil/ mineral production since oil/minerals recovery and commercialization in 1956 and 1959, respectively. This contribute to at least more than 70% of revenue since 1970s (Ekeuweiet al, 2023). The environmental degradation has been an issue of existential importance and debacle. This Environmental degradation's issues sterns from deforestation, bush - burning, chemical fishing, oil spillage, open defecation etc., all have an in-depth effect on socio - economic development in any society. (Ogundipe, et al (2019).Particularly, Akwa Ibom State which is one of the Niger Delta states has witnessed a vast share of environmental degradation, especially in the southern part of the state which is home to enormous natural resources and vegetation. Pervasive in this part of the state are degrading activities owing to oil spills on land and water, deforestation, gas flaring, open defecation, chemical fishing, gas flaring, pollution by dumping into waters and lands, etc. These activities have affected food supply chain, posed health, economic problems to residents thus corresponds to low Rate of Return on investment and low produce yielding and especially in oil and gas producing communities **(Abraham et al, 2021)** like the Ukpenekang, Iwuchang, and Atabrikang in Ibeno Local Government Area. These have not only disrupted agricultural and aquatic yields, but have plunged the residents who depended on these resources into general poverty. Other forms of environmental degradation such as deforestation, open defecation into streams, and open dumping into streams and rivers in areas like Ibeno, Eastern Obolo, Oron, and Ikot Abasi, have threatened the health of individuals and acquatic lives, while also causing gully erosion in the Oron metropolis (Iquita and UyaOron) which lies along the Atlantic coast **(Abraham et al, 2021).**

The study area, Akwa Ibom State south, has experienced significant environmental degradation due to its proximity to the Atlantic coast and the possession of abundant natural resources. The subsequent ecological issues in Akwa Ibom State are Oil spills notably in Ibeno, Eket, EsitEket, Onna, Ikot Abasi and Oron that resulted in the pollution of local streams, destroy biodiversity, degraded forest, killed aquatic life and contaminated ground water and farmland in Upenekang and AtabrikangUtaEwa in Ibeno LGAs and Iko Town and neighboring communities in Eastern Obolo. This paper therefore examine the impact of Environmental Degradation on the Socio-economic development of the Niger Delta region specifically Akwa Ibom State.

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Statement of Problem

The Mal-exploitation of environmental resources have attendant effect on the environment, the people and the economy. The once fertile farmland are no longer suitable for cultivation and it is common feature in communities along the oil producing belt in the State, like Iwuchang community in Ibeno Local Government Area; the local stream have been overflown with oil and toxic substances due to oil spillages which is the case of Ibaka River in Mbo Local Government Areas. The fishes are either poisoned or completely death on a daily basis, mangroves, the wilds and essentials are gradually extincts which increases the environmental problem and especially in the near future. This have not only cause food scarcity/ shortages and inflation, but pose a greater danger to health of the people through land, air pollution and disruption of commercial activities in these communities. Oil and Gas Exploitation and Production (E&P) activities take the highest share in the degradation which have not only responsible for soil infertility, but contributes to health problems and especially among the residents of the oil producing communities and some of the adjoining Local Government Areas of the State The issues of environmental degradation when not approaching through a pragmatic policy measures would reduce the carrying capacity of the affected areas and the resources thereof, which will severely impact on the Socio-economic development of these Communities, Local Government Areas and the State at large.

It is on this note that the study was conducted to investigate the impact of environmental degradation on the Socio-economic development of the Niger Delta region from 2010-2023, with specific interest on Akwa Ibom State. The findings can informed government on policies that shape the opportunities **by** influencing the policy making process. However, even if policy environment is likely to experienced improvements, addressing all of the policy hiccups will be challenging for any government. Thus understanding how these challenges affects the performances of regulators make policies that impact the economic development is importance and necessary to prioritize reform effort of the government to protect the environment.

Objectives of the study.

The objectives of the study are divided into two namely, the general objective and the specific objectives. The general objective of the study is to examine the impacts of environmental degradation on socio-economic development in Akwa Ibom State from 2010-2023. The specific objectives of the study are to; (i). investigate the effect of oil spillage on aquatic life in oil producing communities in Akwa Ibom State from 2010-2023, (ii). examine the impacts of gas flaring on health of people who reside in oil producing communities in Akwa Ibom State from 2010-2023, and to(iii). investigate ecological degradation impact on crop yields in oil producing communities in Akwa Ibom State from 2010-2023.

Research Hypotheses

The following hypotheses of the study. we're postulated

1. H_1: There is a significant effect of oil spillages on aquatic life in oil producing communities in Akwa Ibom State from 2010-2023; H_0: There is no significant effect of oil spillages on aquatic life in oil producing communities in Akwa Ibom State from 2010-2023.

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2. H_1: There is a significant impact of gas flaring on health the residents of oil producing communities in Akwa Ibom State from 2010-2023; H_0: There is no significant impact of gas flaring on health the residents of oil producing communities in Akwa Ibom State from 2010-2023.

3. H_1: There is a significant effect of ecological degradation impact on crop yields at the oil producing communities in Akwa Ibom State from 2010-2023 is significant; H_0: There is no significant effect of eincological degradation impact on crop yields at the oil producing communities Akwa Ibom State from 2010-2023 is significant.

Concept of Environment

Originally, the term "environment" is derived from the French word "environ" which means 'everything surrounding us". Hence, the environment generally refers to the complex, physical, chemical, cultural, and biotic factors that act upon an organism. It is also an ecological community which determines the form and survival of an organism (Environ Review, 2020). By extension, an environment is described in a holistic and broad term as any factor affecting the activities of humans and organisms, including non-concrete factors like cultures and traditions. This constitutes a broad-space view of the term in that it explains it in both abstract and concrete forms. Corroborating the broad and general trajectory of the definition of the term, Josh (2016) noted that an environment is that which controls the life of an organism or humans. In extension, he described it as the materials and forces which surrounds the living organism. Similarly, the use of "material" and "forces" in the definition of the term explains both the concrete and abstractual constituents of an environment.

However, environmental institutions and scholars have provided specific definitions of the term, especially in relation to the physical and concrete elements which directly affects the existence and survival of living things. In view of this, Witchell&Sheeshka (2011) defined the environment as the geographic area and factors around humans and other organisms which influences or affects the resources (example, food) available to the inhabitants and the quality of such resources. These factors may include built environment (man-made infrastructure) like buildings, roads, and the natural environment such as land, plants, air, animals, water bodies, etc. according to Live Well San Diego (2014), the environment refers to the external surroundings and conditions in which humans live and which has a direct influence on a person's health. These factors comprises of air, trees, natural vegetation, lakes, oceans, and lands. An acceptable definition of the term in relation to the study is one which does not only state the constituents of the environment, but the importance of such in man's survival and development. Thus, the New Zealand Ministry of Social Development (2003) referred the environment as the concrete factors like plants and animals, land, water, buildings, air , and other infrastructures and all the natural resources embedded therein which provides the basic needs of man and the opportunities for socio-economic development.

On the components contents of the environment Durgasrilakshmi (2020), explains that there are four (4) major components of the environment. They are: the Hydrosphere, the Lithosphere, the Atmosphere, and the Biosphere.

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Concept of environmental degradation

Environmental degradation takes other nomenclatural permutations as environmental law violation, environmental crimes, and environmental violation. Whatever the nomenclature, the general factor is that it refers to the disregard of environmental rights or safety principles which may result in physical, biological, and socio-economic malfunction to humans and their environment (Agala, 2023). According to the Pennsylvania Lease and Agreement Law, environmental degradation refers to any direct or indirect discharge, disposal, spillage, emission, escape, pumping, pouring, injection, leaching, release, seepage, filtration or transporting of any hazardous substance at, upon, under, unto or within either related premises, or from either related premises to the environment in violation of any reportable quantity.

According to Impact Law (n.d), environmental degradation also known as environmental crimes is simply the disregard or violation of laws intended to protect, preserve and maintain the environment in relation to human health. From these definitions, it can be summarized that environmental degradation involves the activities, conditions, processes or actions which are destructive to the human environment and resources therein, and which also contradicts extant environmental laws in an entity.

Environmental degradation is an umbrella concept which covers a variety of issues including pollution, biodiversity loss & animal extinction, deforestation & desertification, global warming, and a lot more. Environmental degradation is the deterioration of the environment through depletion of resources such as air, water and soil; the destruction of ecosystems and the extinction of wildlife. It is defined as any change or disturbance to the environment perceived to be deleterious or undesirable (Chodhary, Chauhan&Kushwah, 2015)

Forms and dimensions of environmental degradation

There various forms of Environmental Degradation. It could assume any dimensions as presented in Nnaji (2012) to includes (a) oil spills; (b) natural gas flaring; (c) use of pesticides for fishing; (d) improper waste disposal; (e) artisanal refinery and (g) deforestation

Several studies (e.g Rami, 2016; Ihaba, 2017; Abraham et al. 2021; Ekeuwei and; Akpan, 2022) that environmental degradation at variouse forms impacted negatively on the environment.

Causes of environmental degradation

Environmental degradation is caused by the dynamic inter play of social, economic, institutional and technological activities. In extension, environmental changes could be driven by many factors including economic growth, population growth, urbanization, intensification of agriculture, rising energy use and transportation. Poverty and underdevelopment still remain a problem at the root of several environmental problems.

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Concept of Development

In order to grasp the concept of socio-economic development, one must first have a clear understanding of what development means. Development is a term that can be viewed from two distinct perspectives: the liberal and the Marxist perspectives (Ekeuwei, et al, 2023). Liberal scholars define development solely in financial and economic terms. This interpretation implies that development involves achieving sustained rates of growth of income per capita to enable a nation to expand its outputs at a faster rate than the growth rate of its population, which can only be accomplished via industrialization (Obikeze& Obi, 2004).

Theoretical Framework: The Ecological Footprint (EFP) Theory

The ecological footprint theory was first introduced by William Rees in 1992 and developed by Mathis Wackernagel in 1994. However, both Rees and Wackernagel officially launched the theory in 1996 in their book "Our Ecological Footprint: Reducing Human Impact on the Earth (Wackernagel & Rees, 1996).

The theory particularly explains that human activities impacts on the natural resources of the earth measures in terms of the area of biologically productive land, water, air, and other components of the environment required to produce consumables and get rid of wastes generated (Miglietta & Pastore, 2010). The theory states that as humans continue to seek means of consumption and survival, their activities (which include the utilization of resources and the culminating degradation) impacts on biocapacity, which further affects environmental sustainability (Wei et al, 2023). Biocapacity represents the natural producive and sustaining components of the earth such as forests, fisheries, pastures, croplands, atmospheric gases, etc, which when left unexploited and undegraded would not only serve future generations, but also serve the present purpose of absorbing all wastes produced by humans particularly, carbon **(Rinkesh,** 2023). Hence, the theory does not only track the use of productive areas by measuring the relationship between human activities (demand) and earth's capacity (supply), but explains the pressure on the environment which has sustainable effects on renewable resources and absorption of wastes **(Rinkesh, 2023; Wiedemann & Barrett, 2010).**

Methodology

This study adopts both descriptive and survey research designs. This approache enables the researchers to obtain data from the population marked for description of the character of the sturdy. The sample size was 400 responded proportionally selected from the 13 Local Government Area of Akwa Ibom State. The main Instrument used in collecting data for this study was a well-designed questionnaire. Data on this research was collected from two sources, including primary and secondary sources. The data were analysis using descriptive and inductive statistics. The descriptive statistics was frequency count and percentage analysis. The inductive statistics used for test of hypotheses and deriving estimate. For the purpose of this study, both descriptive and survey designs are adopted. The descriptive research design is used in explaining in qualitative forms the major variables of the subject under study and their relationships. The survey research design is used in the collection of primary data through the questionnaire and analyzed using the quantitative approach.

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Testing of Hypotheses

The simple linear regression analysis was adopted in testing the three (3) hypotheses of the study. In simple regression analysis, when the significant value is less than 0.05 at 95% level of confidence or less than 0.01 at 99% level of confidence, we accept the Alternative hypothesis (H1) and reject the Null hypothesis (Ho), and vice versa. Using the simple linear regression

Table 1.2.1a: **Model Summary**

Model	R	R Square	Adjusted R Square	Standard Error of Estimate
1	0.56a	0.55	0.53	0.48

Source: SPSS, 2024

Predictor: Oil spillage

Table 1.2.1a above shows that there is a significant relationship between Oil spillage and aquatic life at R = 0.56. The R square at 0.55 indicates that oil spillage accounts for 55% of variations which implies a significant effect on aquatic life in oil producing communities in Akwa Ibom State

Testing Null hypothesis 1: There is no significant relationship between oil spillages and aquatic life in oil producing communities in Akwa Ibom State from 2010-2023. Using the simple linear regression.

Table 1.2.1a: **Model Summary**

Model	R	R Square	Adjusted R Square	Standard Error of Estimate
1	0.56a	0.55	0.53	0.48

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Tablet 4.3.1b: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Significance
1						
	Regression	30.12	3	6.87	57.45	0.000[b]
	Residual	35.61	350	0.67		
	Total	65.73	353			

Source: SPSS, 2024

Dependent Variable: Aquatic life of oil producing communities

Predictor: (Constant): Oil spillage

Table 1.2.1b reveals that the F value (which is the Mean Square Regression of 6.87) divided by the Mean Square Residual of 0.67 yields F at 65.73. From these results, the model is significant (Sig=0.000). Therefore, oil spillage is a significant predictor of aquatic life of oil producing communities at 3 Degree of Freedom (df).

Table 1.2.1c Coefficients[a]

Model		Unstandardized Coefficients		Standardized coefficients	t	Significance (Sig)
		B	Standard Error	Beta		
	Constant	0.67	0.337		4.41	0.001
	EW	0.33	0.034	0.377	5.38	0.000

Source: SPSS, 2024

Dependent Variable: Aquatic life of oil producing communities

The table above shows the degree of oil spillage impact on aquatic life of oil producing communities in Akwa Ibom State and the level of significance. The result is given as (Oil spillage; $\beta=0.23$; $t=4.28$; $p<0.01$). This implies that Oil spillage is a significant predictor of the dependent variable which is aquatic lives of oil producing communities.

Linear Regression Model is represented thus;

$Y = a + \beta X$

Where Y = aquatic life of oil producing communities.

a = Constant

βX= Coefficient of X

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Therefore, aquatic life of oil producing communities. $= 0.67 + 0.33EW$

Decision: Based on the results in the ANOVA table above, the level of significance for all the items are less than 0.01. Hence, we accept the alternative hypothesis (H1) and reject the null hypothesis (Ho). Therefore, there is a significant relationship between oil spillages and aquatic life in oil producing communities in Akwa Ibom State from 2010-2023.

Testing Null hypothesis 2: There is no significant relationship between gas flaring and health of people who reside in oil producing communities in Akwa Ibom State from 2010-2023.

Using the simple linear regression

Table 1.2.2a: Model Summary

Model	R	R Square	Adjusted R Square	Standard Error of Estimate
1	0.34[a]	0.69	0.14	0.24

Source: SPSS, 2024

Predictor: Gas flaring

Table 2.2.2a above show that there is a significant relationship between gas flaring and health of people who reside in oil producing communities at R = 0.34. The R square at 0.69 indicates that gas flaring accounts for 69% of variations which implies a significant effect on health of people who reside in oil producing communities

Table 1.2.2b: ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Significance
	Regression	12.86	3	3.215	38.58	0.002[b]
	Residual	8.47	350	0.08		
	Total	21.33	353			

Source: SPSS, 2024

Dependent Variable: Health of people who reside in oil producing communities

Predictor: (Constant) Gas flaring

Table 2.2.2b reveals that the F value (which is the Mean Square Regression of 3.215) divided by the Mean Square Residual of 0.08 yields F at 38.58. From these results, the model is significant (Sig=0.002). Therefore, gas flaring is a significant predictor of health of people who reside in oil producing communities at 3 Degree of Freedom (df); that is, (3, 353) = 38.58

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Table 2.2.2c. Co-efficients[a]

Model		Unstandardized Coefficients		Standardized coefficients	t	Significance (Sig)
		B	Standard Error	Beta		
	Constant	0.54	0.204		6.97	0.000
	COMP	0.28	0.047	0.266	6.19	0.002

Source: SPSS, 2024

Dependent Variable: Health of people who reside in oil producing communities

The table above shows the degree of influence of gas flaring on health of people who reside in oil producing communities and the level of significance. The result is given as (Gas Flaring $\beta=0.28$; t=6.19; p>0.05). This implies that gas flaring is a significant predictor of health of people who reside in oil producing communities in Akwa Ibom State.

Linear Regression Model is represented thus;

$$Y = a + \beta X$$

Where Y = Health of people who reside in oil producing communities

 a = Constant

 βX= Coefficient of X

Therefore, **health of people who reside in oil producing communities= 0.54 + 0.28EW**

Decision: Based on the results in the ANOVA table above, the level of significance for gas flaring is less than 0.01. Hence, we reject the null hypothesis (H1) and accept the null hypothesis (Ho). Therefore, there is a significant relationship between gas flaring and health of people who reside in oil producing communities in Akwa Ibom State from 2010-2023.

Testing Null hypothesis 3: There is no significant relationship between ecological degradation and farming activities, crop yields in oil producing communities in Akwa Ibom State from 2010-2023

Using the simple linear regression

Table 2.2.3a: Model Summary

Model	R	R Square	Adjusted R Square	Standard Error of Estimate
1	0.35[a]	0.34	0.10	0.441

Source: SPSS, 2024

Predictor: Ecological degradation

Table 2.2.3a above show that there is a significant relationship ecological degradation and farming activities and crop yields in oil producing communities at R = 0.35. The R square at 0.34 indicates that ecological degradation accounts for 34% of variations which implies a significant effect on farming activities and crop yields in oil producing communities

Table 4.2.2b: ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Significance
	Regression	16.18	3	4.04	21.26	**0.000[b]**
	Residual	35.18	350	0.19		
	Total	51.36	353			

Source: SPSS, 2024

Dependent Variable: Farming activities and crop yields in oil producing communities

Predictor: (Constant): Ecological degradation

Table 4.2.3b reveals that the F value (which is the Mean Square Regression of 4.04) divided by the Mean Square Residual of 0.19 yields F at 21.26. From these results, the model is significant (Sig=0.000). Therefore, ecological degradation is a significant predictor of farming activities and crop yields in oil producing communities at 3 Degree of Freedom (df); that is, (3, 353) = 21.26

Table 2.2.3c. Coefficients[a]

Model 1		Unstandardized Coefficients		Standardized coefficients	t	Significance (Sig)
		B	Standard Error	Beta		
	Constant	3.40	0.27		16.18	0.000
	TCD	0.26	0.06	0.34	4.04	0.000

Source: SPSS, 2024

Dependent Variable: **Farming activities and crop yields in oil producing communities**

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The table above shows the degree of influence ecological degradation has on farming activities and crop yields in oil producing communities and the level of significance. The result is given as (ecological degradation; $\beta=0.26$; $t=4.04$; $p<0.01$). This implies that ecological degradation is significant in farming activities and crop yields in oil producing communities

Linear Regression Model is represented thus;

$Y = a + \beta X$

Where Y = farming activities and crop yields in oil producing communities

   a = Constant

   βX = Coefficient of X

Therefore, farming activities and crop yields in oil producing communities = 3.40 + 0.26TCD

Decision Rule

Based on the results in the ANOVA table above, the level of significance ecological degradation is less than 0.01. Hence, we accept the alternative hypothesis (H1) and reject the null hypothesis (Ho). Therefore, there is a significant relationship between ecological degradation and farming activities, crop yields in oil producing communities in Akwa Ibom State from 2010-2023.

Discussion of findings

1. Findings on Hypothesis 1

Accepting the Alternative Hypothesis (H1): There is a significant relationship between oil spillages and aquatic life in oil producing communities in Akwa Ibom State from 2010-2023.

After the analysis of primary data from the respondents, it was discovered that the effect of oil spillages on aquatic life in oil producing communities in Akwa Ibom State within the period understudy is significant. This connotes that as oil spillages increased in these communities, more aquatic lives were exterminated, hence, eliminating the source of subsistence and commerce, especially for those primarily engaged in fishing.

Buttressing the stance above, the fisheries sector is one of the most important sectors in Nigeria, both from an economic and social standpoint. This sector supports about 7 million people (directly and indirectly) and contributes to the livelihood, employment, and household food security of Nigeria's coastal communities, including the Niger Delta. In the Niger Delta, the fisheries sector is of utmost importance to particularly small-scale fish farmers which make up about 80% of the sector, supplying roughly 82% of the country's domestic fish production. In spite of the large number of fish farmers available, the demand for fish far outweighs production and is far from being satisfied either through imports or domestic production. It is stated that one of the causal factors of this scarcity is oil spillages in the fishing communities which also serve as oil producing communities (Iruoma, 2020).

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The finding above is supported by **Tyger&Akujuru (2021)** in their study titled *The Effects of Oil In Acquatic Lives and Property in Kalabari in Rivers State of Nigeria highlighted the negative impacts of the incident on* aquatic lives and causes which includes reduction in tourism, destruction of mangrove, loss of fishes and other aquatic resources which the people depended on for subsistence and commerce. Also supported was the work of **Ipogah&Ikenga (2023)**

2. Findings on Hypothesis 2:

Accepting the Alternative Hypothesis (H1):There is a significant relationship between gas flaring and health of people residing in oil producing communities in Akwa Ibom State from 2010-2023. After the analysis of data, it was discovered that the impact of gas flaring on health of people who reside in oil producing communities in Akwa Ibom State is significant. This infers that gas flaring by IOCs and individuals through artisanal refinery is prevalent in communities in Akwa Ibom State, with obvious effects on the health of the residents.

The research affirms this decision taking evidences from the cases and impacts of gas flaring in the communities understudied. For instance, according to **Nta et al (2017)**, the Edo area of EsitEket LGA has seen an increase in surface temperature due to gas flaring which has inhibited soil fertility and crop yields. Furthermore, affirming the health impact of gas flaring in the oil producing communities is a declaration signed

The gas flared in Akwa Ibom State is valued at $165.2 million USD and has the power generation potential of 4.7 gigawatt hours. It is also stated that payable penalties on the flared gas amounted to $94.4 million USD **(Simon, 2023).** The report pointed out that within the State, Ibeno LGA is the most impacted with 45.3 million MSCF gas flared while EsitEket follows with 1.9 million MSCF within the period.The impact of gas flaring on health among the oil producing communities is acknowledged by stake holders (Comrade Isua-Ikoh in Simon, 2023).

This indicates that the cases recorded in medical centres in respective oil producing areas in the state resonate with the known health consequences of gas flaring. Corroborating this finding is a study by Ekwere et al (2021) titled *The Health Impact and Lung Function Indices of Adult Residents of Ibeno Community exposed to Gas Flaring in South-South, Nigeria.* Accordingly, it was found that both exposed and controls subjects experienced similar symptoms suggestive of respiratory disorders, however the prevalence was higher among exposed subjects than controls: cough-57(14.8%) vs. 39(10.1%); breathlessness 58(15%) vs. 28(7.3); wheezing 22(5.7) vs. 12(3.1). The respondents from the exposed community were mostly traders and fishermen while the controls were predominantly farmers. The study compared the prevalence of poor health in communities classified according to their proximity to a gas flare site as an index for health impact. The findings confirmed that the health consequences of gas flaring were more severe in gas flaring host than in non-gas flaring host communities. The ill health conditions surveyed were diabetes, cancer, stress, heart diseases and respiratory problems. Stress was reported in 62.3% of participants and 50.9% family members while respiratory problems were indicated in approximately 25% of the participants and 33% of family members. However, diabetes was shown to be more prevalent than other ill health problems such as cancer, and heart diseases.

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3. Findings on Hypothesis 3:

Accepting the Alternative Hypothesis (H1): There is a significant relationship between ecological degradation and farming activities, crop yields in oil producing communities in Akwa Ibom State from 2010-2023

After the data analysis, it was discovered that ecological degradation impacts on farming activities and crop yields in oil producing communities in Akwa Ibom State is significant. This connotes that the diverse environmental degrading activities posed both remote and immediate effects on land and crop yields through increases in atmospheric temperature, acid rains, soil infertility and soil nutrients loss, etc.

In the oil producing communities in Akwa Ibom State understudied, cases/instances of environmental degradation which have affected farming activities and crop yields have been recorded. For instance, residents of Okoro-Utip and Ukpenekang communities which have been ravaged by oil spills and other forms of environmental degradation over the years in September 2023 lamented the poor yields from their farms as a result of oil spills in July of the same year. It was noted as part of the report that the texture of the soil had deteriorated, coupled with constant erosion as a result of climate changes from the activities of IOCs in the area. Particularly, farmers complained that cassava planted over a year ago were unable to bear buds, with adverse effect on availability of cassava-related products such as "garri".

Empirically, the finding above is supported by **Abraham et al (2021)** in their study titled *Assessment of Ecological Degradation and Associated Implications in Southern Akwa Ibom State: Why Actions need to be Taken*. The study revealed that, the high level of degradation in Southern Akwa Ibom State has impacted upon agricultural production, even as 24 hectares of farmland are seriously affected by either oil spill or deforestation. Starting from the correlation matrix, the correlation between farmland affected by deforestation and oil spillage was strong (0.828) and significant at (0.002). In the same vein, the correlation between farmland affected and oil spillage was strong (0.807) and also significant at (0.002). Furthermore, the finding agrees with the findings of Effiong et **al (2023)**in their study titled *Perceived Determinants of Oil Spillage on Agricultural Lands in Ibeno Local Government Area, Akwa Ibom State, Nigeria.* The study found that most respondents (91.67%) stated that oil spillage affected plant biodiversity in the area. During pollutions, the process of plant photosynthesis that enhanced plant diversity is impaired due to crude oil deposits on leave surfaces. The respondents also noted that crop germination in the field were affected as follows wilt and death of plants (40%), low yield (30.83%), poor germination/growth (20.00%). These results showed that there was serious effect on the physiochemical properties of the soil including the PH values of the soil caused by oil spillage , hence, leading to the death of crops and low yields in the long-

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Conclusion

The Niger-Delta region of Nigeria accounts for over 90% of Nigeria's foreign exchange earnings and over 80% of the country's revenue. This benefit is traceable to the abundance of oil and gas in the region, as well as other resources such as limestone, clay, natural gas, salt, coal, silver nitrate, glass sand, etc. The region is also home to coastal barrier islands, mangroves, freshwater swamp forests and lowland rain forests. In fact, according to Ilevbare&Omorogieva (2020), the Niger-Delta region boasts of a cumulative production plus proven reserves of 34.5 billion barrels of oil and 93.8

trillion cubic feet of gas. Particularly, Akwa Ibom State being one of the Niger-Delta states holds a capacity of about 504,000 barrels per day (BPD) of crude oil, accounting for 32% of Nigeria's production output, and making it the highest oil producer in the country. The oil and gas and other mineral resources domiciled in the state are particularly domiciled in the southern parts of the state including the 7 Local Government Areas studied. Communities in these LGAs have been subject to environmental degradation over the years, which have plunged the already neglected residents into deep multidimensional poverty, hence the need for the study.

First, it was found that environmental degradation in the form of oil spillage has a significant impact on aquatic life in the LGAs understudied. These spillages do not only exterminate fish and other water resources such as periwinkles, crabs, etc, but also block access routes of these resources, hence, their migration to other areas, leaving the affected areas in scarcity. In the long run, the residents of these areas who depend on fishing are deprived of their means of subsistence and commerce, while prices of available resources are increased as a result of scarcity. Many of these cases have been recorded especially in communities in Ibeno, Mbo, Eastern Obolo, IkotAbasi, and EsitEket LGAs respectively.

Second, gas flaring was discovered to have posed deleterious health effects to residents of the area understudied. These flares are noted to contain dangerous Greenhouse Gases such as sulphur-dioxide, nitrogen dioxide, benzapryene, etc, which all have sickening effects on human health. These emissions affect drinking water of the residents, which further exposes them to infectious diseases as cholera, gastritis, diarrhea, meningitis, and pneumonia. The polluted waters of these areas were also known to contain substances like benzopyrene, an alternative polynuclear hydrocarbon, responsible for skin, breast, lungs and abdominal cancer. Additionally, it was found that these gases also affected the reproductive health of residents in the area.

Lastly, it was revealed in the study that overall ecological degradation impacts on farming activities and crop yields in oil producing communities in Akwa Ibom State were significant. Constant oil spills, gas flares, water, land and air pollution, artisanal refinery, deforestation, bush-burning, etc, in the area were noted to affect soil texture and result to deleterious environmental conditions like rise in temperature, floods and erosion from rising sea levels, loss of soil topography, acid rains, etc, which affected crop yields and farming activities in some of the communities. In fact, occurrences like floods and erosion were discovered to have displaced some persons involved in farming in communities in Ibeno Local Government Area, while also washing off their crops, hence, disrupting farming activities.

5.3 Recommendations

Following the findings, the study recommends that the federal government of Nigeria should;

1. Mitigate oil spillages and its impacts on aquatic life in oil producing communities in Akwa Ibom State and Niger-Delta as a whole, by ensuring more stringent punitive measures such as forfeiture of assets, temporal or permanent seizure of operating license, and forfeiture of oil fields should be drafted into oil-related environmental legislations

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2. Review the Associated Gas (Re-injection) Act, 2004 which allows the Minister of Petroleum (who is also the President of Nigeria) to monetize gas flaring offences, or replaced with similar stringent measures in order to reduce gas flaring and its impacts on health of people residing in oil producing communities in Akwa Ibom State and Niger-Delta in entirety.

3. In order to prevent, mitigate and manage ecological degradation and its impacts on farming activities and crop yields in oil producing communities in Akwa Ibom State and the Niger-Delta, Environmental Protection Agencies (EPAs) like the National Environmental Standards and Regulations Enforcement Agency (NESREA) should have zonal offices/branches in Akwa Ibom State, and all Niger-Delta states in order to efficiently and effectively respond to emergency situations.

4. should ensure that IOCs is mandated and enforced to pay compensation to affected communities and individuals, while also conducting clean-up exercise in less than 48 hours of any form of environmental degradation in oil producing communities in Akwa Ibom State.

5. should establishment of Department of Homeland Security (DHS) to enforce environmental laws in Akwa Ibom State, the Niger-Delta states, and all over the country, especially as concerning, the inneptitute of oil and gas producing companies, artisanal refinery and deforestation.

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