



QUALITY OF LIFE OF RESIDENTS IN GAS FLARING COMMUNITY IN AKWA IBOM STATE, NIGER DELTA REGION, NIGERIA

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ABSTRACT

Gas flaring remains a persistent environmental and public health issue in Nigeria's Niger Delta, particularly in Akwa Ibom State, where crude oil extraction is widespread. This research compares the quality of life (QoL) of residents of a gas flaring community (Mkpanak) and a non-gas flaring community (Okposo) in the Niger Delta region of Akwa Ibom State, Nigeria. A cross-sectional, comparative survey was conducted. Multistage sampling was used to sample 389 respondents. The analysis was conducted using the four components of QoL: subjective wellbeing, objective wellbeing, psychological wellbeing and environmental quality. Data analysis involved descriptive statistics and comparative analysis. The results showed that many residents of Mkpanak indicated low environmental quality (86.7%), low objective wellbeing (29.1%) and low psychological wellbeing (13.3%). Comparatively, Okposo residents reported better environmental quality (61.7%), objective wellbeing (15.5%) and psychological wellbeing (6.7%). However, subjective wellbeing in Mkpanak (46.9%) was marginally better than in Okposo (43.0%), the difference in subjective wellbeing warrants further investigation into factors that may influence residents' perceptions of quality of life. In conclusion the research highlights the negative impacts of gas flaring on various dimensions of wellbeing. It recommends policy action to implement environmental laws, enhance social infrastructure, and address health and livelihood needs. The study adds to the conversation on environmental justice and sustainable development in the extractive industry.

Keywords: Gas flaring, quality of life, Niger Delta, Mkpanak, Okposo

1: Introduction

Nigeria's Niger Delta is one of the world's largest producers of crude oil and natural gas, responsible for more than 80% of the country's exports (Aniefiok, et al., 2024). One of the nine oil-producing states, Akwa Ibom State, plays a significant role. Despite this abundance of natural resources, the region, especially communities around gas flaring areas, paradoxically remains underdeveloped, with environmental degradation and a declining standard of living. Gas flaring, the burning of natural gas produced alongside oil, has been an environmental issue in Nigeria since the 1950s. Despite government commitments and legislation to stop it - such as the Associated Gas Re-injection Act of 1979 and more recent

provisions in the Petroleum Industry Act of 2021 - gas flaring continues. According to the National Oil Spill Detection and Response Agency (NOSDRA 2023), more than 45 billion Standard Cubic Feet (SCF) of gas were flared in Akwa Ibom State alone between 2012 and 2022, with much of the flaring happening in Ibeno Local Government Area, a severely impacted coastal community. Oruonye et al. (2024) stated that Gas flaring adversely impacts the quality of life for local communities. World Health Organisation (WHO, 2012) defines Quality of Life (QoL) as an individual's perception of their position in life within their cultural and value context It is the expectancy and concern for one's health and life. It is as a multidimensional construct

that assesses an individual's subjective (life satisfaction) and objective (standard of living) well-being, psychological well-being (mental health, social support, and emotional well-being) and environment. These four domains were defined by World Health Organisation Quality of Life-BREF (WHOQOL-BREF, 2012). The practice of gas flaring expels harmful pollutants such as carbon monoxide, nitrogen oxides and volatile organic compounds that are major contributors to poor health, including respiratory diseases, cardiovascular diseases, skin infections and eye diseases. The widespread pollution also causes widespread environmental deterioration such as acid rain, acidified soils, loss of flora and fauna and aquatic ecosystem pollution (Ejumudo, et al (2012). These effects have a negative impact on the sustainability of agriculture and fisheries, important economic activities for the local Populations Peace Point Development Foundation. Gas flaring remains a critical environmental and public health issue in Nigeria, particularly in the Niger Delta region where oil exploration and production are concentrated. In Akwa Ibom State, communities like Mkpanak in Ibeno Local Government Area are continuously exposed to the negative consequences of routine gas flaring. Allison et al. (2018) identified gas flaring as a significant source of harmful pollutants, including sulfur dioxide, nitrogen oxides, benzene, toluene, xylene, and hydrogen sulfide, which several studies such as Nwafor, (2022); Obi, Bwitti, and Nwose, (2021); and Aregbe (2017) revealed are deleterious to human health. Similarly, the evidence of the consequences of ongoing gas flaring worsened the rise in greenhouse gas build-up on the planet was also given. Obi, Bwitti, and Nwose (2021) suggested that the greenhouse effect changes the weather, which increases the exposure to the sun, elevation in temperature, flooding, and finally food insecurity. The recent flooding in the Niger Delta region is a case in point. Exploration for crude oil (gas flaring) results in the release of several toxic elements.

Beyond environmental and health concerns, the socioeconomic well-being of affected communities is severely impacted (Okonta & Douglas 2003). Many families experience reduced incomes due to diminished agricultural yields and unsustainable fishing, leading to increased poverty and food insecurity. Education suffers as well, with children from impoverished households often leaving school because of health problems or financial hardship. The psychological stress of living in polluted and unsafe conditions further intensifies social issues, contributing to higher rates of depression and youth unrest Amnesty International depression and youth unrest Amnesty International (2020).

Despite Akwa Ibom being a resource-rich state, its gas flaring communities have not undergone commensurate socioeconomic growth (World Bank, 2022). A plethora of studies and environmental justice reports routinely point out the lack of basic amenities in these communities, such as clean water, health facilities and schools. Moreover, efforts by government agencies, oil companies and development commissions (such as the Niger Delta Development Commission, NDDC) to resolve these challenges have often been ad hoc and ineffective. Akanimo (2025) indicated that gas flaring and hydrocarbon pollution in Akwa Ibom State are major environmental health concerns in Ibeno and Mkpanak, where these exposures have been associated with respiratory and cardiovascular health risks, as well as environmental degradation. The study by Akanimo (2025) further revealed that stroke

prevalence was notably higher in polluted oil-producing communities (21.9%) compared to non-polluted control areas (18.0%). Similarly, an epidemiological study conducted in Ibeno Local Government Area compared 386 adults exposed to environmental pollution with matched control participants. The findings revealed significant reductions in lung function parameters, particularly Peak Expiratory Flow Rate (PEFR) and Forced Expiratory Volume in one second (FEV_1), alongside a higher prevalence of chronic respiratory symptoms, including persistent coughing and throat irritation (Ekwere, 2021). Gas-flaring has been attributed to the large concentrations of toxic substances such as Sulphur dioxide, nitrogen dioxides, benzene, toluene, xylene and hydrogen sulfide, which several studies (Nwafor, (2022); Obi, Bwitti & Nwose, (2021); Aregbe (2017) have revealed are deleterious to human health. In the same vein, testimony of the impact of continuing global warming exacerbated up the increasing petrol accumulation on earth. Obi, Bwititi, and Nwose (2021) opined that amongst these changes in the climatic conditions, is the steady rise in atmospheric temperature, which exposes the earth to intense radiation, warming, flooding and eventually hunger. Recent flooding occurrence in the Niger Delta region is a good example. Ofose (2019) reported substantial contamination of surface and groundwater resources in Mkpanak Community, Ibeno Local Government Area, Akwa Ibom State. The study identified elevated concentrations of heavy metals, including cadmium (0.62 mg/L), nickel (1.23 mg/L), manganese (1.42 mg/L), and iron (1.37 mg/L), alongside turbidity levels of 11.72 NTU and *Escherichia coli* counts of 17.67 CFU/100

mL. The reported findings indicated that these parameters exceeded the permissible limits established by the World Health Organization (WHO) and the Nigerian Standard for Drinking Water Quality (NSDWQ), suggesting potential risks to water quality and public health in the Mkpanak community (Ofose, 2019).

These severe and enduring challenges underline the need for a comprehensive study of the living standards of people in Akwa Ibom's gas flaring communities. This research is crucial as Nigeria is now gearing up to fulfil international obligations such as the World Bank's Zero Routine Flaring by 2030 Initiative and the Sustainable Development Goals (SDGs), specifically Goal 3 (Good Health and Well-being), Goal 6 (Clean Water and Sanitation), Goal 13 (Climate Action) and Goal 16 (Peace, Justice and Strong Institutions) (United Nations 2015). This research seeks to contribute to the existing body of knowledge by comparing the quality of life of residents in gas flaring community (Mkpanak) in Ibeno Local Government Area and those farer aware from the flare site. The findings will be valuable for policymakers, environmental regulators, oil companies, and civil society actors aiming to design more equitable, evidence-based interventions to improve the well-being of people living in these marginalized yet strategically important communities.

While gas flaring is illegal due to laws such as the Associated Gas Re-Injection Act of 1979 and the Petroleum Industry Act of 2021, it is still rife, suggesting regulatory lapses (Federal Republic of Nigeria, 2021). NOSDRA (2023) reports that more than 45 billion standard cubic feet (SCF) of gas was flared in Akwa Ibom from 2012 to 2022, with Mkpanak being one of

the worst-affected areas. But data available and government reports often do not contain micro assessments of communities that reflect the lived experiences of residents and perceive indicators of quality of life.

In the absence of this data, it's challenging to design suitable policy measures and community programs to address the effects of gas flaring. This study will therefore compare the quality of life of communities affected by gas flaring (Mkpanak) with another community

that is not (Okposo) to determine the level of environmental injustice and inform sustainable development in Akwa Ibom State.

2: Research Questions

The following research questions will guide the study:

1. What is the level of Quality of Life (QoL) of residents in Mkpanak?
2. What is the level of Quality of Life (QoL) of residents in Okposo?

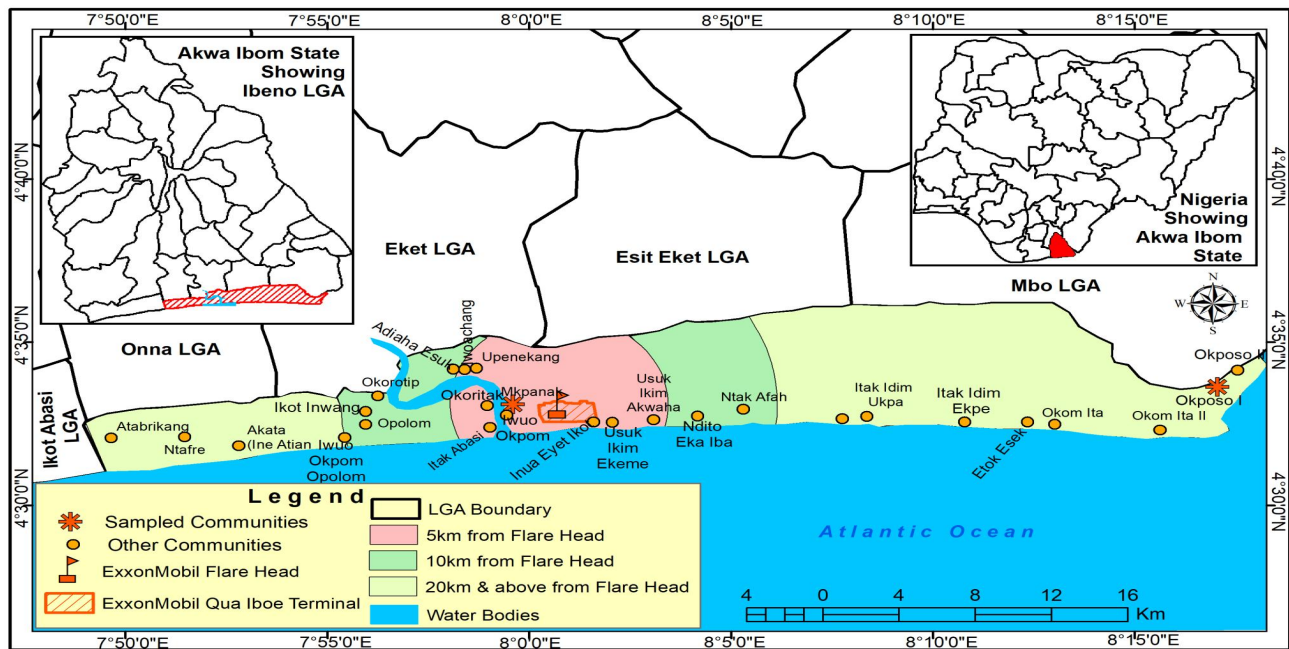


Fig. 1: Map of Ibeno LGA; This is the map of the study area and sampling locations.

The map indicates the distribution of respondents in the study area. From the map it can be seen that two location where selected for the study the first one was Mkpanak which is the community where the gas flare site is located and the second location Okposo is 5km away from the gas flare site. Okposo is the last community in the local government area which is 30.45km. These two communities where selected because the share same characteristic.

The study focused on the quality of life. Quality of Life will be measured using subjective wellbeing, objective wellbeing, psychological wellbeing and environmental quality. The study is delimited to the sampled communities on the map, Mkpanak and Okposo. The oil and gas industry are housed at the Ibeno local government. Mkpanak is located within 5km from the flare site this location was chosen to check the severity of the impact of gas flaring while Okposo is located

30.45km from the flare site this is to check the impact from this distance (See the map). The two communities have similar socio-economic and cultural characteristics and the residents are essentially artisans, traders, farmers, students, and anglers.

3: METHODOLOGY

A cross-sectional comparative survey design was adopted. The population of the study was 75,380 residents in Ibeno LGA of Akwa Ibom State. A total of 398 respondents were selected using of Taro Yamane formula (1967), $n = N/[1 + N(e)^2]$, a. $N = 75,380$ at $e = 0.05$. This formula for sample size determination was considered appropriate because the researcher had a definite population, which is one of the major criteria for using the formula. This sample size was divided into two equal halves. However, after the administration of 396 instrument, 196 was retrieved from Mkpanak and 193 was retrieved from Okposo, 9 were missing. Hence, the actual sample size used for analysis was 389. The sampling technique that was used for the study was the multistage sampling technique; which included non-proportionate sampling technique, systematic sampling technique, purposive sampling technique and snowball sampling technique.

Stage I: In the first stage, the non-proportionate sampling technique was adopted where each community under study had equal proportion from the sample size drawn. Mkpanak had 50% of the sample size vice-versa Okposo.

Stage II: Systematic sampling technique was used to select the 1st house that is closest to the flare site and every other 5th house.

Stage III: The purposive sampling technique was use to pick the head of the household and was co-opted for the study.

Stage IV: After which snowball-sampling technique was adopted for the study; in this case, there was a chain of referral where the existing respondents recommended other respondents with same inclusion criteria (the respondent must be up to 18 years) for the study. Those less than 18 years were not used for the study. Until the required sample size was reached, this process was repeated. Hence, snowball was used to get the total number of respondents in Mkpanak and Okposo.

An instrument was adapted from World Health Organisation Quality of Life- BREF, (WHOQOL-BREF,2012) for the study. To ascertain the validity of the instrument, five experts from the Department of measurement and evaluation and the department of Health, Safety and Environmental Education validated the instrument. In order to establish the reliability of the instrument, the modified instrument and the original instrument adapted from WHOQoL. The instrument was administered to twenty respondents from the population who were not part of the sample size then an estimate of concurrent or criterion validity (correlation statistics) was use to find the association. The result yields a Pearson r of 0.78 and 0.74. To find the level of association a fisher's-Z Statistic was used with a z-value of 0.18 which is less than 1.96. This indicates that there is no significant different between the two Pearson r. Hence, the instrument is reliable. The researcher with the aid of two research assistants who reside in the community administered the instrument. Data were analyzed across four domains of QoL: subjective wellbeing, objective wellbeing, psychological wellbeing, and environmental quality. Descriptive statistics and comparative

analysis were used to evaluate inter-community differences.

4: RESULTS AND DISCUSSION

Research Question 1: What is the level of Quality of Life (QoL) of residents in Mkpanak?

Table 1a: Distribution Table on the Different Domain on Quality of Life in Mkpanak

%		Frequency	Percent
Subjective wellbeing			
Valid	High QoL	92	46.9%
	Average QoL	81	41.3%
	Low QoL	23	11.7%
	Total	196	100.0%
		Frequency	Percent
Objective wellbeing			
Valid	High QoL	21	10.7%
	Average QoL	118	60.2%
	Low QoL	57	29.1%
	Total	196	100.0%
		Frequency	Percent
Psychological wellbeing			
Valid	High QoL	74	37.8%
	Average QoL	96	49.0%
	Low QoL	26	13.3%
	Total	196	100.0%
		Frequency	Percent
Environmental Quality			
Valid	High QoL	2	1.0%
	Average QoL	24	12.2%
	Low QoL	170	86.7%
	Total	196	100.0%

The table 1a above reveal the result of the different domain that make up quality of life. The data indicates that subjective wellbeing is relatively high in Mkpanak, with nearly 47% of respondents reporting a high quality of life in this domain. This indicates that while gas flaring may be environmentally and economically damaging, residents may have a sense of satisfaction or personal coping mechanisms. This may be due to cultural values, coping strategies, social support or optimism for change rather than objective QoL. Just 10.7% reported a high objective QoL, suggesting issues with objective measures of income, housing, health

care, education and infrastructure. Most are in the average category, but almost a third (29.1%) have a low objective wellbeing. This confirms gas flaring has negative impacts on development. A large proportion of people (nearly 50%) reported average psychological wellbeing and 13.3% reported low psychological wellbeing. Although 37.8% of respondents are still reported high psychological QoL, the results suggest an increase in mental health problems that could be due to psychological distress from health risks, economic uncertainty and environmental degradation. Almost 87% of the respondents assess environmental quality of life as low, and just 1% as high. This is clearly a result of the environmental consequences of gas flaring in the community of Mkpanak, such as air and water pollution, acid rain, biodiversity loss and land degradation, which negatively impact agricultural production and community health.

Table 1b: Descriptive statistics on the level of Quality of Life in Mkpanak

Quality of Life	Frequency	Percent
High	48	24.5%
Average	139	70.9%
Low	9	4.6%
Total	196	100.0%

The data analysis revealed that a substantial proportion of respondents in Mkpanak recognize their quality of life to be average (70.9%). While a smaller group (24.5%) considers their quality of life to be high, a very small percentage (4.6%) reported their quality of life as low. These findings suggest that the overall quality of life in Mkpanak is average.

Research question 2: What is the level of Quality of Life of residents in Okposo. Table two shows the frequency and percentage distribution on the level of quality of Life in Okposo.

Table 2a: Distribution Table on the Different Domain on Quality of Life in Okposo

	Frequency	Percent
Subjective wellbeing		
Valid High QoL	83	43.0
Average QoL	98	50.8
Low QoL	12	6.2
Total	193	100
	Frequency	Percent
Objective wellbeing		
Valid High QoL	14	7.3
Average QoL	149	77.2
Low QoL	30	15.5
Total	193	100
	Frequency	Percent
Psychological wellbeing		
Valid High QoL	81	42.0
Average QoL	99	51.3
Low QoL	13	6.7

Total		193	100.0
		Frequency	Percent
Environmental quality			
Valid	High QoL	13	6.7
	Average QoL	61	31.6
	Low QoL	119	61.7
	Total	193	100.0

The table 2a above reveal the result of the suggests that Okposo has less economic and different domain that make up the quality of infrastructural difficulties as a result of less life. environmental impact. The majority of

The majority of respondents in Okposo report Okposo residents report high or moderate either average (50.8%) or high (43.0%) levels psychological QoL (93.3%). This is higher than of subjective wellbeing. Only 6.2% rate their Mkpanak (13.3% low psychological QoL). quality of life as low in this domain. This finding implies that environmental suggests a positive personal and emotional pressures and social instability may have a state, probably as a result of a cleaner and negative impact on psychological and healthier environment, lifestyle, and fewer emotional quality of life. While still of concern, negative environmental influences (such as gas the environmental quality of life in Okposo is flaring). Okposo residents seem slightly better than Mkpanak. While 86.7% of happier than Mkpanak (where 11.7% reported respondents in Mkpanak report low low subjective wellbeing). Okposo's objective environmental quality, it is 61.7% in Okposo. wellbeing is focused on average levels (77.2%), Further, 6.7% in Okposo report high with more people reporting low (15.5%) and environmental QoL while it's 1% in Mkpanak. and fewer reporting high (7.3%) QoL. This supports the conclusions reached about indicates that basic needs are met to some the impact of gas flaring on environmental extent but not in a way that maximises quality quality of life in Mkpanak. Okposo, while not of life. The comparatively lower proportion of optimal, is probably affected by regional low QoL (15.5%) than Mkpanak (29.1%) pollution, but not by industrial pollution.

Table 2b: Descriptive statistics on the level of Quality of Life in Okposo

Quality of Life	Frequency	Percent
High	34	17.6
Average	153	79.3
Low	6	3.1
Total	193	100.0

The analysis of the data revealed that a significant majority (79.3%) of the respondents reported their quality of life to be average. While a smaller group (17.6%) reported their quality of life as high, a very

small percentage (3.1%), consider their quality of life to be low. These findings deduce that the overall quality of life for the majority of respondents is average.

Comparative Insights (Okposo vs. Mkpanak)			
QoL Domain	Okposo (Non-Flaring)	Mkpanak (Flaring)	Key Difference
Subjective Wellbeing	43% High, 57% Low	46.9% High, 53.1% Low	Mkpanak slightly higher high score, but more low cases
Objective Wellbeing	7.3% High, 92.7% Low	10.7% High, 90.3% Low	Mkpanak has more extremes; Okposo more moderate
Psychological Wellbeing	42% High, 58% Low	37.8% High, 62.2% Low	Okposo residents have better mental well-being
Environmental Quality	6.7% High, 93.3% Low	1.0% High, 99.0% Low	Marked environmental deterioration in Mkpanak

5: Discussion of Findings

Objective wellbeing remains moderate in both communities, though Mkpanak shows lower QoL cases, likely linked to livelihood disruption and resource scarcity caused by flaring, suggesting substantial issues with infrastructure. This is consistent with UNDP (2006) and Ibaba (2011), who reveal how oil-affected communities experience lower socioeconomic status such as lack of employment, infrastructure and income - despite the fact that they are the source of the oil.

Psychological and subjective wellbeing are generally higher in Okposo, implying that environmental stressors affect mental health and personal satisfaction. This finding is in agreement with Obida and Lubanga (2013) who found increased psychological stress, respiratory diseases and mental health problems in people living near flaring sites due to noise, heat and air pollution. Similarly,

Nriagu et al. (2016) demonstrated a strong link between proximity to oil development and the prevalence of mental disorders (such as anxiety and depression) in rural communities in the Niger Delta.

Environmental quality is drastically worse in Mkpanak, supporting the conclusion that gas flaring has important negative effects on the local ecosystem and public health. This is consistent with Anejionu et al. (2015) who reported that long-term gas flaring changes the composition of air, water and soil in host communities, leading to ecosystem degradation and reduced wellbeing. Equally, Olalekan et al. (2020) observed that gas flaring-induced environmental degradation has resulted in loss of biodiversity and productivity in agricultural systems in the Niger Delta, which affect livelihood and wellbeing.

The overall trend of this study indicates that proximity to gas flaring (Mkpanak) significantly reduces quality of life, particularly

in health, environment, and socioeconomic stability.

Proposed Policy for Improving the Quality of Life of Residents in Gas-Flaring

Communities in Akwa Ibom State, Nigeria

This policy proposes an integrated approach to improving quality of life in gas-flaring communities in Akwa Ibom State, with particular focus on Mkpanak in Ibeno Local Government Area. The study found that Mkpanak residents experience poorer environmental conditions and lower quality-of-life outcomes than residents of Okposo, the comparison community. The policy therefore moves beyond financial compensation to address environmental protection, health, livelihoods, infrastructure, and community participation.

Its central goal is to improve residents' overall wellbeing through coordinated environmental regulation, public health services, socioeconomic empowerment, and participatory governance. Key objectives include reducing exposure to air pollution and other hazards, improving access to affordable healthcare and psychosocial support, strengthening income and employment opportunities, expanding access to safe water and essential infrastructure, and ensuring communities benefit fairly from oil and gas activities.

The proposed interventions include stricter enforcement of gas-flaring regulations, routine monitoring of air, water, and soil quality, and remediation where pollution is confirmed. Health services should provide respiratory screening, cardiovascular assessments, health education, referrals, and mental-health support. Livelihood programmes should offer vocational training, grants, agricultural and

fishing support, aquaculture, and microcredit, while oil companies should create transparent local employment and skills-development opportunities.

This policy also prioritises safe drinking water, sanitation, electricity, roads, and healthcare facilities, with regular water testing and alternative supplies where contamination exists. Community representatives, women, young people, traditional leaders, regulators, and operators should jointly participate in environmental and development decisions through a community monitoring committee.

Implementation should be phased: establish baseline conditions, deliver urgent health and pollution-control measures, then expand livelihood and infrastructure programmes. Progress should be measured annually against objective, psychological, subjective, and environmental wellbeing indicators, with a comprehensive evaluation after three to five years. The policy's success depends on sustained funding, transparent governance, strong regulation, and the active involvement of affected residents.

6: Summary of the Study

This research examined and compared the quality of life between Mkpanak (a gas flaring community) and Okposo (a non-gas flaring community) in Akwa Ibom State, Nigeria. Results showed a multifaceted difference in quality of life between the two communities, whereby gas flaring has important negative effects on environmental quality, objective wellbeing and psychological wellbeing among residents of Mkpanak. Although some Mkpanak residents had high levels of subjective wellbeing (possibly due to cultural adaptation or optimism), their objective quality of life, especially environmental and

socioeconomic aspects, was considerably lower than Okposo.

7: Conclusion

The research finds that gas flaring is a key factor that negatively affects quality of life by polluting the environment, posing health threats, destroying livelihoods and deepening poverty. The analysis highlights the need for multifaceted measures to safeguard impacted communities in the Niger Delta against the harmful consequences of oil and gas exploration.

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