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Environmental degradation and poverty among women of Niger Delta: A study of two selected communities in Nembe local government area of Bayelsa State

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Abstract

The study investigated environmental degradation and poverty among women of two communities in Nembe Local Government Area of Bayelsa State. This study adopted the cross-sectional survey research design. Primary data were collected with the use of structured questionnaire from 200 women from Nembe LGA. Data collected were analyzed using descriptive and inferential statistics and found that the mean age of the women respondents in Nembe LGA was 47 years, majority of about 78% are married and about 54.1% had secondary school education out of which about 82.4% are members of Community Development Committee (CDC). The result of the findings revealed 5 ways in which environmental degradation contributed to inadequate yield of farming activities such as deforestation and forest degradation, climate change, charcoal production and consumption, overgrazing, agricultural depletion of soil nutrient through poor farming activities, 5 ways it causes low yield of farming activities contributing to poverty among women such as desertification, soil exhaustion, salinization, hazardous and untreated wastes, pollution and contamination which also causes health challenges of Nembe women. Based on the findings, the study among others recommended that government and critical stakeholders should be deeply involved in curbing environmental degradation and vandalism of oil structure for safe water for drinking and other purposes and that women farmers in degraded soil and polluted water bodies should be supported with subsidies of credits to cushion the effects of environmental threats in their farming activities.

Keywords: Environmental, women, Nembe, Government

Introduction

Environmental degradation and poverty are both natural and man-made problems and can be grouped into physical, sociological and managerial. In the words of Koleosho and Adeyinka, 2006^[31], environmental degradation renders the environment unhealthy and unsustainable over time. It is one of the ten threats officially cautioned by the High-level Panel on Threats, Challenges and Change. United Nations International Strategy for Disaster Reduction (2010) defines environmental degradation as “the reduction of the capacity of the environment to meet social and ecological objectives, and needs.

Environmental degradation is caused by various factors with devastating effect on the environment. It has its greatest impact on the rural population because the deterioration of the environment deprives them of their livelihood. The farming and fishing trades drop and lead to aggravated economic hardships, deteriorating social conditions and abject poverty. The income of women in agricultural activities in Nembe Local Government Area is affected as a result of pollution of fresh water sources which contains all kinds of germs, virus, heavy metals, bacteria and dust particles (Galadima, 2011)^[25]. This is worsened by oil spillage as a result of poorly maintained and monitored pipelines and sabotage (Ekubo and Abowei, 2001)^[20].

The combined issue of environmental degradation and poverty was promptly addressed in the report presented by the World Commission on Environment and Development 1987 which was termed “Our Common Future”.

In this report, the commission clearly stated that poverty is the bane of environmental degradation in most countries of the third world, especially in the rural areas. Since this declaration, there have been growing scholarships on the field of environmental degradation and poverty, which aimed at finding the possible linkage between poverty and environmental degradation.

In Nembe Local Government Area of Bayelsa state, majority of women are in the agricultural and informal sectors of the economy; they constitute about 60 per cent of Nembe farm labour and produce over 90 percent of the domestic food supply (Aina, 2001; Dankelman and Davidson, 1997) ^[3].

The Niger Delta Region as oil producing states of Nigeria, has natural endowment with its exploration and exploitation of oil and gas is expected to be an abundant blessing to the entire Nembe local government area of Bayelsa state. Unfortunately and regrettably too, oil has turned out to be a curse to the Niger-Delta Region of Nigeria since 1956 when it was first discovered in Oloibiri community. Today, the inhabitants are left with nothing but damaged farmlands and polluted rivers with no electricity, portable drinking water and other basic social amenities like the Nembe local government area of Bayelsa state claim to still live in primitive conditions side by side with the high tech and modern facilities of the multinational operation that they play host to. No tangible benefits, instead it ushered in high degradation of the environment with concomitant poverty to the region and area.

In this consideration, the study examined the effects and relationship between environmental degradation and poverty among women in Niger Delta with specific focus on Nembe local Government Area of Bayelsa State.

Statement of Problem

The Women in Nembe local government area are committed and preoccupied with farming activities as their major source of income. Despite their commitment, oil and gas production has caused farming and fishing outputs to be on the decline, due to widespread pollution. Most families hardly feed three square meals per day, and a lot of children are school drop-out (mostly the girl child) due to failure in the payment of their school fees. There are lot of health challenges that are acute and begging for solution, as inhabitants of the region are faced with serious environmental challenges due to gas flaring and oil spillage that lead to destruction of farmland, aquatic lives, air pollution, water pollution and the ecosystem. These activities, therefore caused low yield of farm produce and widespread of poverty among women of Nembe Local Government area, including activities that are inimical to the existence and survival of the of the region. As a departure from the extant studies this study considered the danger of environmental degradation and poverty to the wellbeing of the women and their economy, it has become imperative that a study of this nature be conducted so as to determine the consequences and proffer remedies to problems identified. Therefore, this study wants to generally examine the impact and to determine how environmental degradation has impoverished Nembe Women, in spite of their significant commitment in farming and fishing.

Research Questions

1. To what extent have gas flaring affect Nembe women and their farming activities in Nembe Local Government Area of Bayelsa State?

2. In what ways has oil spillage contributed to poverty in Nembe Local Government Area of Bayelsa state?

Aims and Objectives of the study

The main objective of the study was to determine the effect of environmental degradation on women poverty in two communities of Nembe Local Government Area of Bayelsa State. The specific objectives were as follows:

1. To determine the extent to which has flaring affect Nembe women and their farming activities.
2. To ascertain the extent to which oil spillage affect has contributed to poverty among Nembe women.

Hypotheses

This study will be guided by the following hypotheses:

H01: Gas flaring has no significant effect on Nembe women farming activities.

H02: Oil spillage has no significant effect on poverty among Nembe women.

Conceptual / Theoretical

Environment

The Federal Environmental Protection Agency Act, Section 38 defines environment as including water, air, land and all plants and human beings or animals living therein and the inter-relationships that exist between and among them. According to Mabogunje, (2002) ^[33], the Nigerian environment is known for substandard and inadequate housing, slums and lack of infrastructure, transportation problems, low productivity, crime and juvenile delinquency. Degradation of the environment has been mostly attributed to non-natural or man-made incidents such as climate change, invasion of alien species, over-harvesting, deforestation, charcoal production and consumption, pollution, hazardous and untreated wastes, and land cover change. The continual depletion of the environment by these activities reduces the natural potential of the environment resulting to increased poverty. In 1975, at the Mexico City First World Conference on Women, Vandana Shiva, the Indian scholar and environmental activist, introduced the issue of women's relationship to the environment.

Environmental Degradation

Environmental degradation have been viewed by many expert and authorities. The United Nations International Strategy for Disaster Reduction (2010) defines environmental degradation as "the reduction of the capacity of the environment to meet social and ecological objectives, and needs". Environmental Degradation is the deterioration of the environment through depletion of resources such as air, water and soil; the destruction of ecosystems, habitat destruction: the extinction of wildlife and pollution is a process through which the natural environment is compromised in some way, reducing biological diversity and the general health of the environment, this process can be entirely natural in origin, or it can be accelerated or caused by human activities. Environmental degradation can thus be described as the process of reducing the quality of the environment. Environmental degradation in most rural areas in Nigeria has increased over the years and both human activities and natural disasters have contributed to this problem (Titola 1998; Girigiri 2000) ^[67, 26]. Environmental degradation is of many types. When natural habitats are destroyed or natural resources are depleted, the environment

is degraded.

In Nigeria, the Niger-delta communities are mostly cited as examples of environmentally degraded rural areas like the study area Nembe Local Government Area. A recent World Bank research has identified the vulnerability of people on fragile lands (i.e. lands that steeply-sloped, arid or covered by natural forest) as a major basis of rural poverty and natural resources degradation in developing countries (World Bank, 2003) ^[38]. Land degradation is defined as loss of fertility or potential utility or the reduction, loss or change of features or organisms, which cannot be replaced. Approximately 1.4 billion people live on fragile lands that are steeply-sloped, arid or forested and many of these people are mostly women and there is consensus among researchers and policy-makers that the people on fragile lands bear a high risk of natural resources degradation and they are impoverished (Awan, 2013). Efforts to counteract this problem include environmental protection and environmental resources management.

Poverty

Poverty is inseparably linked to lack of access over resources including land, skills, knowledge, capital and social connections United Nations, (2013). The average human being has always interacted with natural environment for its subsistence by way of extraction, agriculture, processing and consumption of natural resources to prosper and meet his economic needs (Ahmad, 2012). Poverty has increased dramatically in the over the years and is often associated with environmental degradation the rural population are often marginalized and the backward economic condition in the rural area of Nembe have caused underdevelopment such as lack of portable water, health care system, quality education system and poor rural infrastructure. Most importantly, poverty could be said to be "Urban Bais" (Girigiri, 2000) ^[26]. The vulnerability of women to poverty results from their lack of education and effective participation in decision making affecting them in communities. They are often relegated to the background and bear a second-class status as traditional societies create and sustain inequality in the distribution of resources such as land. In typical traditional settings in Nigeria, women are prohibited from owning land. The estimation that nearly half of the world's poor live in environments that are highly degraded which has led many observers to advocate that there is a causal link between poverty and environmental degradation (OECD, 2001). (Ahmad, 2012) cited in (Sharma, 2004 ^[64]), as arguing that the realization of relationship between man and environment is the dictum that environmental degradation leads to poverty. Poverty is cited as a major factor behind land degradation in many developing countries.

As rightly observed by (Fabra, 2002) ^[23] poverty and environmental degradation are often bound together in a mutually reinforcing vicious cycle, and thus human rights abuses related to poverty can be both cause and effects of environmental problems. It is defined as any change or disturbance to the environment perceived to be deleterious or undesirable (Ahmad, 2012). Women, especially those who are pregnant and/or living in rural or marginal suburban areas in developing countries, are particularly susceptible to environmental threats. Until recently, women had few choices regarding their lifestyle and fewer opportunities to change unsatisfactory domestic or work conditions and improve their families' and their own health. Women are susceptible to health problems and hazards because of their

roles as home-managers, economic providers, and their role in reproduction. Being raised in poverty places, women are at a higher risk for a wide range of problems. Research indicates that poor women are disproportionately exposed to factors that may impair and affect cognitive, social, and emotional functioning (Hair, Hanson, Wolfe, & Pollak, 2015) ^[27].

The women and development unit of the Economic Commission for Latin America and Caribbean (ECLAC) and the International Labour Organization (ILO), jointly convened an expert meeting on Poverty and Gender which was held in Santiago Chile, defined poverty by taking its various dimensions into account. Firstly, poverty indicates that it is a situational syndrome in which the associated factors include under consumption, malnutrition, precarious living conditions, low educational levels, poor sanitary conditions, feelings of discouragement and anomaly, etc.

From this point of view, it has been proposed that poverty should be defined as "the result of social and economic process with cultural and political components in which individuals and households become deprived of essential assets and opportunities as consequence of different individuals and collective reasons and processes, thus making it multidimensional in nature". So, apart from material deprivation, poverty encompasses subjective dimensions that go beyond material subsistence (ECLAC 2003).

Effects of Gas Flaring on Women Farming Activities

Women have been making prominent and important contributions to agriculture right from creation and they actually constitute the bulk of the world's food producers. In the pre-colonial days, women in Africa cultivated food crops while men hunted and fought wars. Women are responsible for farm work and related domestic food production. A recent statistics on rural farming population in Nigeria show that women farmers are more in population than the men IFAD (2010) ^[28]. Having limited access to rural resources necessary for their livelihood like land, pushes them further into poverty.

An increasing number of women are taking over and expanding their involvement in agricultural tasks but this has not changed the gender division of labor with regard to reproductive work. Ester Boserup looked into the farming systems of men and women in Africa and found that many African tribes, nearly all the tasks connected with food production continue to be left to women. (Shultz, 2001) found that 90% of women in developing world, where most of the planet's biological wealth is found depending on their land for survival. Women constituted an important live wire of peasant farming distributed all over Nigeria. Women in Nembe Local Government Area engage in various farming activities such as planting, weeding, hoeing, harvesting, threshing and winnowing of agricultural products as well as the processing, storage and marketing of these farm produce. Many of these women farmers in the country are also directly involved in the production of some important crops like yams, maize, cassava, groundnut, among others. Similarly a good number of women in rural areas undertake many responsibilities concerning care and management of farm animals like poultry, goats and sheep (Loagun, 1998), (Norman 1993) ^[41] argues that the poor feel compelled to do what they often recognize is harmful to their own long-term interest yet they feel they have no alternative by virtue of their absolute poverty. On the other hand degraded environment encourages impoverishment, because the poor, who depend

on the environmental resources for survival, will be pushed into more poverty when these resources become depleted. They often destroy their immediate environment for survival by cutting down forests and trees, allowing their livestock to overgraze in marginal lands; using harmful chemicals in their agricultural practices such as in harvesting fishes and cultivation; and farming in marginal lands. (Vivian, 1994) observed that the reason for this problem is the influence of poverty and high population density, which encourage rural people to over exploit their environmental resources for food, shelter and income generation. Moreover, challenges of poverty tend to facilitate deterrence from effective conservation of environmental resources such as land, sea water and trees; which form major supplies for food and agriculture for the rural population. In many areas, an increasing shortage of biomass energy adds to the burden of women, who are generally responsible for collection of woody biomass (OECD, 2004) ^[44].

The unsustainable agricultural practices found in most rural areas in the developing countries at most illustrate a better picture of the relationship between environmental degradation and poverty. For instance, in Nigeria, the rural population of Nembe Local Government Area depends on agriculture for sustenance and income generation. A report from IFAD (2010) ^[28] noted that about 90% of the rural dwellers depend on agriculture for their livelihood. Major agricultural activities in these areas include: farming (planting and keeping of husbandries), hunting, nomadic cattle rearing, fishing and wine tapping all dependent on the built environment. In the rural areas, environment forms the major supply for food, raw materials, livelihood, and income generation. It is also noted that the rural areas inhabit majority of the poor and marginalized in the country.

Effects of Oil Spillage on Women in Nembe

The people of the Niger Delta region have been known to be very vocal and agitated over their purported natural resource devastation in the face of chronic poverty, weak infrastructure and the poor state of social services. This is as a result of the activities of oil and gas exploration which have destroyed the livelihood sources amidst other health and social implications on the rivers which has affected the fishing activities of the women in the host communities and socio-cultural lifestyle are the disturbing scale of environmental degradation and its social implications on rural people whose major source of income are connected to the river. The prevailing environmental situation in Nembe Local Government area in Bayelsa State, many of these fishing communities face numerous problems, such as inadequacy of fish catches, spoilage, loss of income. The women divide their time between household chores and income-generating activities, sometimes spending between both functions of fish marketing and the marketing of other products that are lucrative is also revealed that women, children and other relatives participate in the daily household chores fish marketing and the marketing of other products is the most lucrative activity in the communities. Also, activities in kind, though these do not directly attract income, are indirect income-generating activities for these women. For most of them, especially the fulltime house-wives, activities in kind are the only income-generating activities fisher folk are aware of their dwindling fortunes due to inadequate capital to expand their businesses, low volume of catches and loss of income due to spoilage. Multinational

corporations' exteriorization of its hydrocarbon exploration, production and distribution transfers the hazards from its activities to host communities.

Environmental Degradation and women Poverty

Environmental degradation and its effects on the life of women has become an overarching issue mostly in developing economies like Nigeria. In 2010, more than 1 in 5 women (22 percent) lived in families with incomes below the poverty line, the highest level since 1993; by 2015, this had fallen to 20 percent (Proctor, Semega, & Kollar, 2016) ^[57]. Women particularly those living in the rural areas of third world countries, play a major role in managing natural resources. In addition, their tasks in agriculture and animal husbandry as well as in the household make them the daily managers of the living environment (Dankelman and Davidson, 1997). The inability of most families in engaging in agriculture and other related activities due to degradation results in a lower income for most families and consequently among women. Women therefore rely more heavily on natural resources than men as they have fewer alternative sources of livelihood. They rely on the resources available to them locally as they tend to grow crops and keep animals for consumption and rarely engage in cash cropping or market orientated production as they are too occupied meeting household activities.

In poor communities wood or dung is collected as fuel by women and burned for cooking, warming water and as a source of heat, so women are frequently blamed for deforestation due to their fuel wood collecting activities. Access to resources is a critical factor affecting poverty reduction and income generation. Women tend to have very insecure access to natural resources despite their reliance on them for their livelihoods. Redistribution of land by government, resettlement and the sale of traditionally held lands to commercial enterprises can leave women landless or reliant on more marginal lands. Tenure security encourages farmers to invest in their land through soil conservation, fertilization and irrigation and it can help them to access credit using the land as collateral. However, women traditionally do not have access to technical inputs and advise that increase productivity and some actors may erroneously not consider them to be 'farmers' or to be economically active. The World Bank estimates that if women in sub-Saharan Africa had equal access to agricultural inputs, the total agricultural output for the region could increase by up to 20 percent (World Bank, 2013). With the massive exploration of oil in this area, the ecosystem has been badly destroyed resulting to occupational redundancy, thus affecting the means of livelihood of the women in Nembe Local Government Area of Bayelsa state.

Theoretical Framework

This study was anchored on Marxist theory of Centre Periphery. The Centre Periphery model are mostly encountered in studies of economic underdevelopment And drawn from the Marxist tradition of analysis. This theory is also implicated in various types of world system of theories like A.G. Frank, (1978) dependent accumulation and S. Amin (1976) unequal development, propounded in the 18th century by Karl Marx and Fredrick Engels.

This model describes the structural relationship between the advanced center and the less periphery within a country or society or as applied to the relationship between capitalist and

developing societies. Centre Periphery models are mostly used in studies of economic underdevelopment and dependency with analysis drawn from the Marxist tradition, the theory assumes that the world system of production and distribution is the unit of analysis. The theory assumes that underdevelopment is not a simple descriptive form that refers to a backward traditional economy, but it is a concept rooted in the theory of imperialism.

According to the theory model, underdevelopment is not the result of tradition but is produced as part of the process necessary for the development of capitalism in the center. The theory also assumes a central core capitalist centre in which there is high organic composition of capital and wage levels are relatively high, whereas at the periphery, there is a low organic composition of capital and wage level not to meet the cost of reproduction of labour, with this capitalist economy, likewise in the peripheral economics, production and distribution may be determined largely by none market forces such as kinship or patron-client relationship. The centre periphery model thus suggest that the global economy is characterized by a structure relationship between the economic centre using coercive forces to extract economic samples from the subordinate periphery units. One aspect of this is the inequality wage level between the centre and periphery which makes it possible for capitalist enterprise to locate part or all of their production in underdeveloped regions. The extraction of profit depends on the part of the cost of production of the labour force that is not met by wages being met in the non-profitable capitalist sector. This according to the centre periphery model, the appearance that capitalism is developing traditional and backward societies by locating enterprises in an underdeveloped regions confirm the structural relationship by which capitalist economics develop and prosper at the expense (or progressive underdevelopment) of non-capitalist economics.

Methodology

Research Design

This study adopted the cross-sectional survey research design. Primary and secondary data were collected for this study. Primary data were collected with the use of questionnaires and observational techniques from a representative sample of the population of women organized groups, community leaders such as Chieftaincy Councils, Community Development Councils (CDC) etc in sampled communities of Nembe Local Government Area of Bayelsa State. Secondary data used for the study were collected from internets, journals, newspapers and previous research work. Based on the 2006 population census, the population of the study is 130,966 with 66,768 male and 64,198 female for Nembe Local Government Area of Bayelsa State (NPoC, 2006). Therefore, since the study is on women the population for this study is 1084 women for Okoroba and ologo-ama communities, according to the census figure as stated in the 2006 population census figure.

Based on the population size of 64,198, the sample size would be determined using Taro Yamane formula. Below is the calculation of the sample size;

$$n = \frac{n}{1 + N(e)^2}$$

Where; n = Sample size
N= Population size
e = Error Margin (0.05)

$$n = \frac{64,198}{1 + 64,198(0.05)^2} = 200$$

Therefore the sample size is 200 women from Nembe LGA.

Purposive sampling technique was used for the study. This technique was used because there is no reliable population frame that captured the membership of organized groups in the sampled communities. The researcher would personally identify organized groups such as women corporative societies, community leaders as CDC, Chieftaincy Councils etc. so as to administer the questionnaires to 200 women members by physical identification and interaction.

Data collected were analyzed using descriptive and inferential statistics. The descriptive analysis was done using percentages, frequencies and presented in tables and charts. In answering the research question a cut-off point was determined thus:

$$\frac{5 + 4 + 3 + 2 + 1}{5} = \frac{15}{5} = 3.00 \text{ (Cut-off point)}$$

On the research question, items with mean values of 3.00 and above were interpreted as "Agreed" while items with mean values of less than 3.00 are interpreted as "Disagreed" on 5-point rating scale. The hypotheses formulated to guide the study were tested with inferential analysis using Chi-square test with the aid of Statistical Package for Social Science (SPSS) 25.0 version.

Presentation of Results and Findings

The findings of the study are presented in line with the research questions answered and the hypotheses tested.

Women Age Bracket

Table 1: Frequency and percentage distribution of women in Nembe LGA by Age Bracket

SN	Age Brackets	Frequency	Percentage (%)	Mean
1	18 – 35 years	72	36	
2	36 – 60 years	89	44.5	47
3	61 years & above	39	19.5	
	Total	200	100	

Source: Field Survey, 2022

The data presented in Table 1 revealed that about 36% of the selected women in Nembe LGA are within 18 – 35 years age bracket, majority of 44.5% of the women are within 36 – 60 years age bracket while 19.5% of the women are 61 years and above in age. The mean age of the women respondents in Nembe LGA was 47 years which indicated that majority of the women are still in their active working stage. The bar chart in figure 1 further gave a pictorial illustration of age distribution of the women at glance.

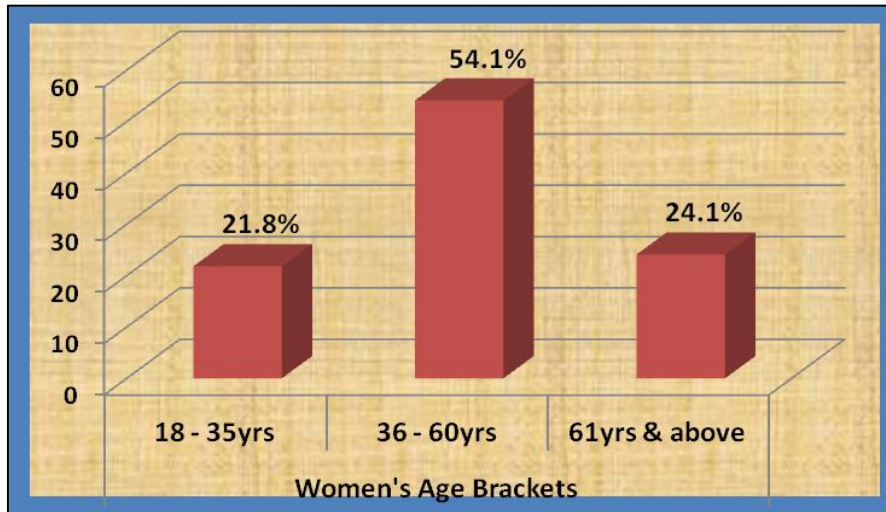


Fig 1: Bar Chart of Percentage Distribution of Women by Age Brackets

Marital Status

Table 2: Frequency and percentage distribution of women in Nembe LGA by Marital Status

SN	Marital status	Frequency	Percentage (%)
1	Single	9	4.7
2	Married	156	78.0
3	Divorced	19	9.8
4	Widow	16	8
	Total	200	100

Source: Field Survey, 2022

The data presented in Table 2 showed that only 4.7% of the selected women in Nembe LGA are single as at the time of carrying out this study, majority of about 78% are married, 9.8% of the women are divorced while 8% of the women are

widow. The bar chart in figure 2 below further presents the pictorial illustration of marital status distribution of the women at glance.

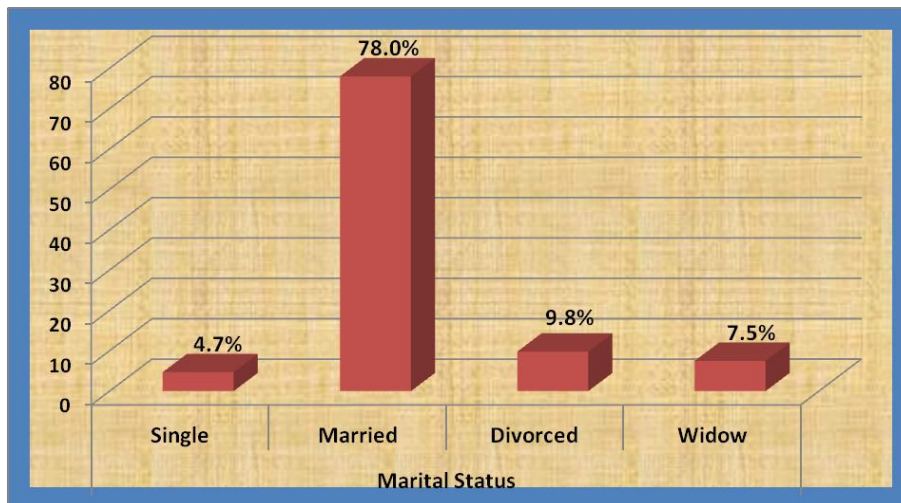


Fig 2: Bar Chart of Percentage Distribution of Women by Marital Status

Educational Qualification

Table 3: Frequency and percentage distribution of women in Nembe LGA by Educational Qualification

SN	Edu. Qualification	Frequency	Percentage (%)
1	No Formal Education	24	12
2	Primary school	37	18.7
3	Secondary school	108	54.1
4	Higher institution	31	15.8
	Total	200	100

Source: Field Survey, 2022

The data presented in Table 3 revealed that only 12% of the women respondents in Nembe LGA had no formal education, 18.7% had primary school education, majority of about 54.1% of the women had secondary school education while only 15.8% of the women had higher education ranging from

colleges of education, polytechnics and university education. The bar chart in figure 3 below further showed the pictorial illustration of the educational qualification distribution of the women at glance.

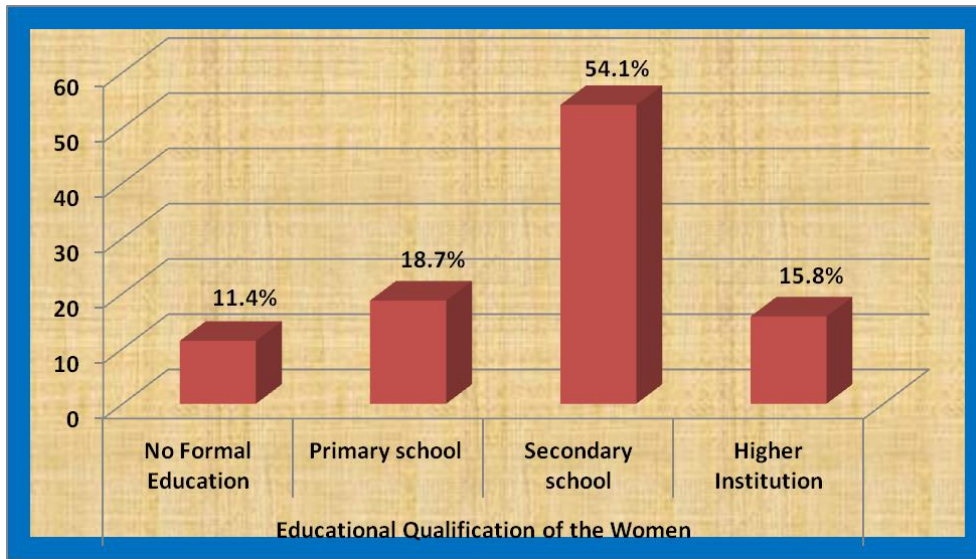


Fig 3: Bar Chart of Percentage Distribution of Women by Educational Qualification

Status in the Community

Table 4: Frequency and percentatge distribution of women in Nembe LGA by Status in the Community

SN	Status	Frequency	Percentage (%)
1	Traditional ruler	0	0
2	Community ruler	0	0
3	Religious leader	3*	1.3
4	Member, Community Development Committee (CDC)	165*	82.4
5	Women leader	50*	25.1
6	Member, Women Cooperatives	122*	60.9

Note: * indicates multiple responses

Source: Field Survey, 2022

From the data presented in Table 4 above, it was revealed that none of the selected women respondents in Nembe LGA are traditional and community ruler. Hence, the responsibility of traditional and community rulership rest on the shoulders of the men folks. Only 1.3% of the selected Nembe women are religious leaders, majority of about 82.4% of the women are members of Community Development Committee (CDC), 25.1% of the women are leaders in their various women groups within Nembe communities while 60.9% of the women are members of cooperative societies. This indicate that Nembe women are actively involved in various community development groups, hence, they are dynamic players in the development of Nembe communities. The bar chart in figure 4 below further showed the pictorial illustration of the community status distribution of the women at glance.

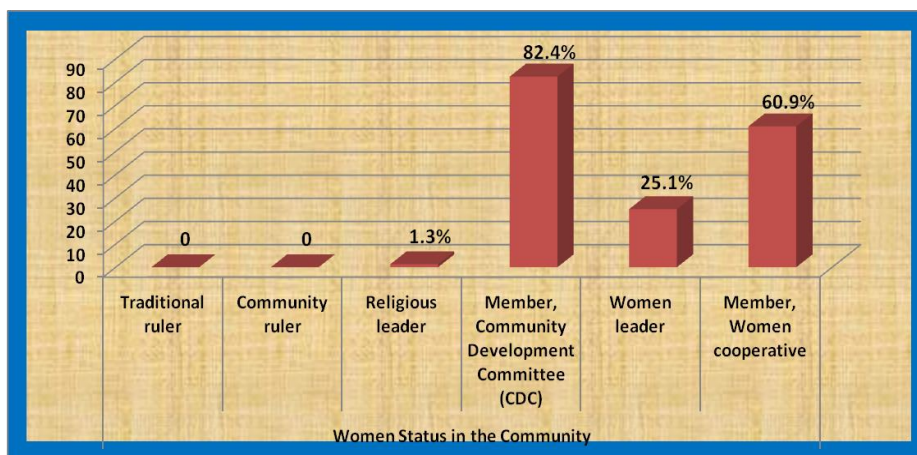


Fig 4: Bar Chart of Percentage Distribution of Women by Status in the Community

Findings of the study are presented in line with the research questions answered and the hypotheses tested.

Women Age Bracket

Table 5: Frequency and percentage distribution of women in Nembe LGA by Age Bracket

SN	Age Brackets	Frequency	Percentage (%)	Mean
1	18-35 years	72	36	
2	36-60 years	89	44.5	47
3	61 years & above	39	19.5	
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Source: Field Survey, 2022.

The data presented in Table 1 revealed that about 36% of the selected women in Nembe LGA are within 18 – 35 years age bracket, majority of 44.5% of the women are within 36 – 60 years age bracket while 19.5% of the women are 61 years and above in age. The mean age of the women respondents in Nembe LGA was 47 years which indicated that majority of the women are still in their active working stage. The bar chart in figure 1 further gave a pictorial illustration of age distribution of the women at glance.

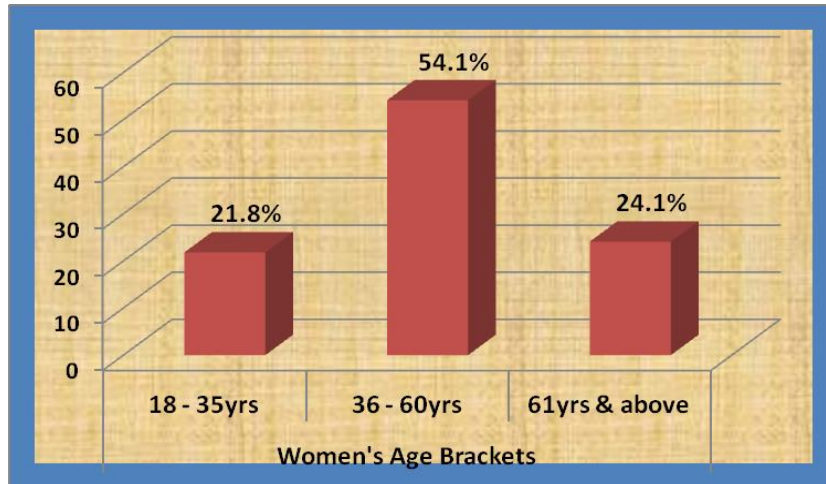


Fig 5: Bar Chart of Percentage Distribution of Women by Age Brackets

Marital Status

Table 6: Frequency and percentage distribution of women in Nembe LGA by Marital Status

SN	Marital status	Frequency	Percentage (%)
1	Single	9	4.7
2	Married	156	78.0
3	Divorced	19	9.8
4	Widow	16	7.5
	Total	200	100

Source: Field Survey, 2022

The data presented in Table 2 showed that only 4.7% of the selected women in Nembe LGA are single as at the time of carrying out this study, majority of about 78% are married, 9.8% of the women are divorced while 7.5% of the women

are widow. The bar chart in figure 2 below further presents the pictorial illustration of marital status distribution of the women at glance.

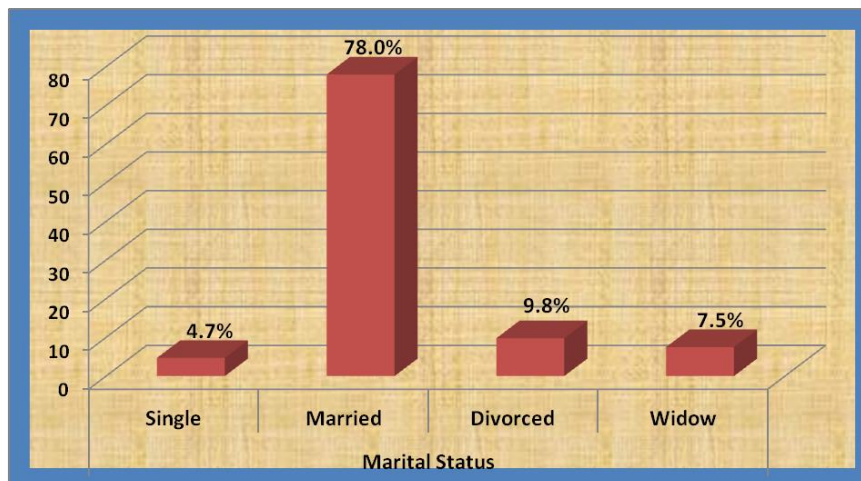


Fig 6: Bar Chart of Percentage Distribution of Women by Marital Status

Educational Qualification

Table 7: Frequency and percentge distribution of women in Nembe LGA by Educational Qualification

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2	Primary school	37	18.7
3	Secondary school	108	54.1
4	Higher institution	31	15.8
	Total	200	100

Source: Field Survey, 2022

The data presented in Table 3 revealed that only 12% of the women respondents in Nembe LGA had no formal education, 18.7% had primary school education, majority of about 54.1% of the women had secondary school education while only 15.8% of the women had higher education ranging from colleges of education, polytechnics and university education. The bar chart in figure 3 below further showed the pictorial illustration of the educational qualification distribution of the women at glance.

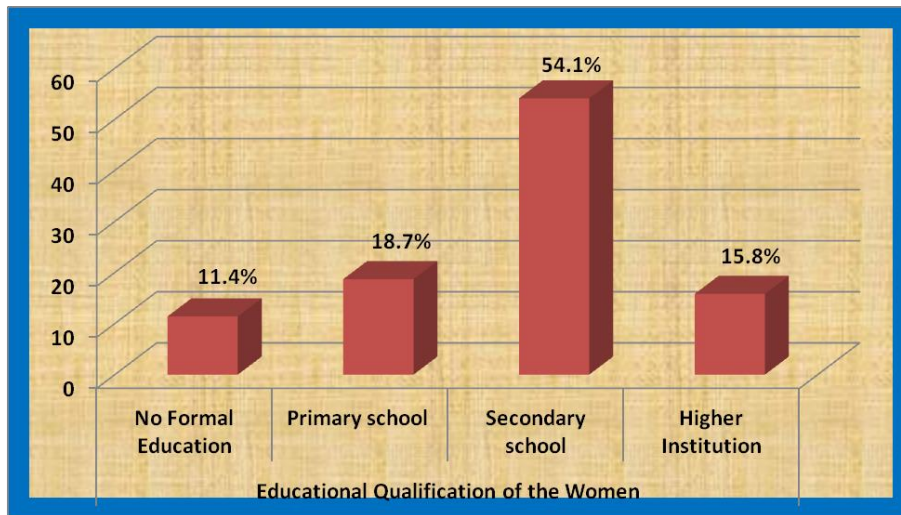


Fig 7: Bar Chart of Percentage Distribution of Women by Educational Qualification

Status in the Community

Table 8: Frequency and percentge distribution of women in Nembe LGA by Status in the Community

SN	Status	Frequency	Percentage (%)
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2	Community ruler	0	0
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4	Member, Community Development Committee (CDC)	165*	82.4
5	Women leader	50*	25.1
6	Member, Women Cooperatives	122*	60.9

Note: * indicates multiple responses

Source: Field Survey, 2022

none of the selected women respondents in Nembe LGA are traditional and community ruler. Hence, the responsibility of traditional and community rulership rest on the shoulders of the men folks. Only 1.3% of the selected Nembe women are religious leaders, majority of about 82.4% of the women are members of Community Development Committee (CDC), 25.1% of the women are leaders in their various women groups within Nembe communities while 60.9% of the women are members of cooperative societies. This indicate that Nembe women are actively involved in various community development groups, hence, they are dynamic players in the development of Nembe communities. The bar chart in figure 4 below further showed the pictorial illustration of the community status distribution of the women at glance.

From the data presented in Table 4 above, it was revealed that

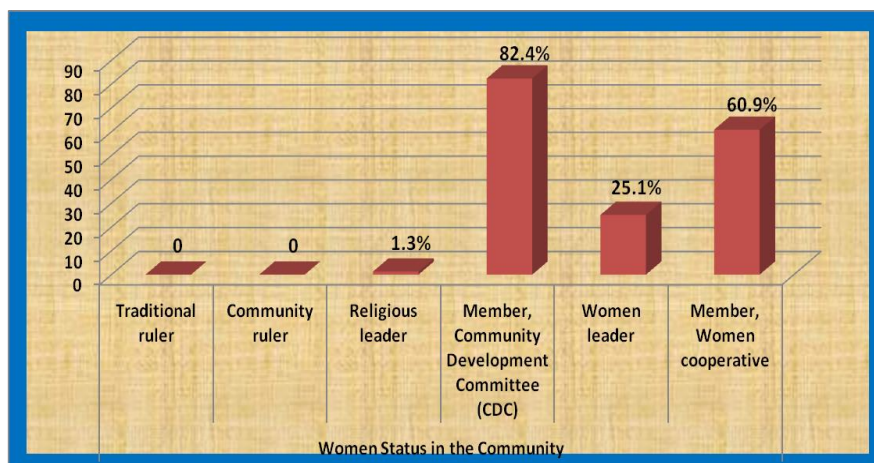


Fig 8: Bar Chart of Percentage Distribution of Women by Status in the Community

Research Question One

To what extent has Gas Flaring affect the Nembe women and their farming activities?

The data for answering research question one are presented in Table 5 below.

Table 5: Mean ratings of respondents on how gas flaring has affected Nembe women farming activities. (n=386)

Hypothesis One

Gas flaring has no significant effect on Nembe women farming activities.

The data for testing hypothesis one are presented in Table 7 below.

Table 9: Result of Chi-Square Tests of No Significant Effects of gas flaring on Nembe Women Farming Activities

	Value	df	Asymp. Sig. (2-sided)	Decision
Pearson Chi-Square	72.991 ^a	3	.000	S*
Likelihood Ratio	73.021	3	.000	S*
Linear-by-Linear Association	72.455	1	.000	S*
N of Valid Cases	386			

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.32.

Note: S* = Significant at 0.05 level of probability.

The data on Chi-square statistics presented in table 9 above showed that the Pearson Chi-Square was 72.991 and Asymptotic significant value of 0.000 which is less than 0.05 level of significance. This indicates that gas flaring has significant effect on Nembe women farming activities. Hence, the hypothesis of no significant effect of gas flaring on women farming activities is rejected.

4.8 Hypothesis Two

Oil spillage has no significant effect on poverty among Nembe women.

The data for testing hypothesis two are presented in Table 8 below.

Table 10: Result of Chi-Square Tests of No Significant Effects of oil spillage on poverty among Nembe Women

	Value	Df	Asymp. Sig. (2-sided)	Decision
Pearson Chi-Square	84.894 ^a	3	.000	
Likelihood Ratio	86.019	3	.000	
Linear-by-Linear Association	84.602	1	.001	
N of Valid Cases	386			

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.32.

From the data on Chi-square statistics presented in Table 8 above, it was revealed that the Pearson Chi-Square was 84.894 and Asymptotic significant value of 0.000 which is less than 0.05 level of significance. This implies that oil spillage has significant effect on poverty among Nembe women. Therefore, the hypothesis of no significant effect of oil spillage on poverty among Nembe women is rejected.

Summary of Findings

Based on the data analyzed, the findings of the study summarily showed that:

The mean age of the women respondents in Nembe LGA was 47 years which indicated that majority of the women are still in their active working stage.

Majority of about 78% are married and about 54.1% had secondary school education.

Majority of about 82.4% of the women are members of Community Development Committee (CDC) which indicate that Nembe women are actively involved in various community development groups, hence, they are dynamic players in the development of Nembe communities.

The study identified five ways in which gas flaring affect farming activities of Nembe women such as invasion of alien species, deforestation and forest degradation, climate change, charcoal production and consumption, overgrazing, agricultural depletion of soil nutrient through poor farming activities.

The study identified five ways through oil spillage contribute to poverty among Nembe women such as lack of basic amenities like food, water, drinking water, shelter, resultant health challenges, water pollution and contamination, low production and consumption and their living standard.

6. Gas flaring has significant negative effect on Nembe women farming activities as the air and water are polluted, lands are depleted as result of gas flaring and oil spills.

7. Oil spillage has significant negative effect on poverty among Nembe women as their income is reduced, standard of living condition is also reduced, Cannot Pay Their Bills, As A Result They Are Faced With Lack Of Good Medical Care.

Discussion of Findings

The findings of this study are discussed in line with the specific purposes of the study as follows:

Effects of Gas Flaring on Nembe Women Farming Activities

This study on research question identified five ways in which environmental degradation contribute to inadequate yield of Nembe women farming activities which include that: soil degradation affect agricultural productivity, increase deforestation affects firewood production, air pollution and acid rains affect food production, Nembe women have no capital to invest in farm produce and that gas flaring affects women advancement of farming activities.

The findings of this study agreed with that of Ojimba (2012) [46] whose results indicated that the effect of crude oil pollution on crop farms reduced the size of farmland, significantly at 1%, reducing marginal physical product (MPP), while in non-polluted farms output increased. Physical inputs, crude oil pollution variables and their interactions show strong negative (diminishing) returns to scale in oil polluted farms, but in non-polluted farmlands result indicate strong positive returns to scale. Similarly, the findings of the study corroborated that of Akpokodje and Salau (2015) [8] who examined oil pollution and agricultural productivity in the Niger Delta of Nigeria, and found that increasing levels of oil spill and forest loss negatively affect agricultural productivity, while land, labour and capital positively improved agricultural productivity in the Niger Delta.

In addition, the findings of the present study substantiated that of Leera, George-West and Alalibo (2017) [32] who carried out a study on environmental pollution in the Niger Delta and consequential challenges to sustainable development of the region where that authors found that environmental pollution is central to the Niger Delta problems, as it has hampered farming and economic activities and posed threat to sustainable development. Onyerika

(2016) ^[53] investigated perceived effects of land degradation on agricultural production among farmers in Imo State, Nigeria had found that major perceived effects of land degradation on agricultural production in the area were reduction in crop yield, loss of farm labour due to forced migration, reduction in land productivity, decrease in farm income and destruction of markets and other infrastructure. The finding of this study is in line with that of Momtaz (2008) ^[37] who studied the impact of environmental degradation on women in Bangladesh and found that women are the worst victims of environmental degradation as they depend upon the responsibility of natural systems to provide them food, fuel, water and shelter for existence. The study also found out that environmental degradation affects the third world countries most adversely because of the vicious circle of poverty.

Effects of Oil spillage Contributed to Poverty among Nembe Women

This study in respect to research question two identified five ways through which oil spillage contributed to poverty among Nembe women which are inadequate basic amenities, such as food, drinking water of Nembe women which include that: low yield lead to low per capital income which affects women livelihood, destruction of forests and desertification reduces wildlife and adequate living condition, environmental degradation affects agricultural resources, roads, good drinking water, poor yields from farming reduces women economic capacity for good clothing and other basic needs and land depletion reduces agricultural output which affects women's food produce and increase impoverishment.

The findings of this study conformed with that of Joseph, Dickson and Theophilus (2013) ^[29] who carried out a study on oil exploration and poverty in Niger Delta region of Nigeria and found that most of the sample believes that the ecological devastation occasional by oil exploration has rendered farming and fishing, which are the main occupations of the rural people of this region, are useless. The study also found that pollution and continuous flaring of gas from oil prospecting and production have created health hazards and rendered fish and farming activities almost impossible. In addition, occasionally large oil spills kills fish; destroy agricultural crops; polluted the water which seriously affect families and communities. Similarly, Ekpenyong and Udeme (2015) ^[19] investigated the consequences of oil spill on sea-food safety in coastal areas of Ibeno, Akwa Ibom State and observed the mean concentration of toxic petroleum hydrocarbons in the tissues of various fish species sample to be increasing as a result of oil spills.

The findings of this study also supported that of Sam, Coulton and Prpich (2017) ^[60] that oil activity depresses fish production in the long run because of the unwholesome environmental degradation that accompany exploration of crude oil in the region. Oil driven environmental factors affecting fishing activities include gas flaring, oil well blowouts, and improper disposal of drilling mud, and pipeline leakages. Hence, Sam, Coulton and Prpich (2017) ^[60] suggested prioritisation of sites for the clean-up exercise in the Niger Delta region, equally noting that high risk areas may not necessary imply the most contaminated zones, but based on the observed levels of hydrocarbon contamination and importance of the zone to the livelihood of the inhabitants. noni, Omotor and Adun (2006) investigated the effect of oil spillage on crop yield and farm income in Delta

State, Nigeria and found that oil spill reduced crop yield, land productivity and greatly depressed farm income as a 10 percentage increase in oil spill reduced crop yield by 1.3 percent while farm income plummeted by 5 percent. Ojimba (2012) ^[46] equally found that the effect of crude oil pollution on crop farms reduced the size of farmland, significantly at 1%, reducing marginal physical product (MPP), while in non-polluted farms output increased. Physical inputs, crude oil pollution variables and their interactions show strong negative (diminishing) returns to scale in oil polluted farms, but in non-polluted farmlands result indicate strong positive returns to scale.

The findings of this study equally collaborated that of Akpokodje and Salau (2015) ^[8] who examined oil pollution and agricultural productivity in the Niger Delta of Nigeria and found that increasing levels of oil spill and forest loss negatively affect agricultural productivity, while land, labour and capital positively improved agricultural productivity in the Niger Delta. Furthermore, the Anejionu, Ahiamunnah and Nri-ezedi (2015) ^[12] in a study found that health risk is not averted by abstinence from fish killed by spilled oil. Some of the fishes and animals that escape instant death from pollution are known to have taken in some of the toxic substances, which in turn get into human beings that eat them. This will in turn cause infections on man coupled with other "side effects in form of genetic mutations". Also in agreement with the findings of this study, Eze and Olaifa (2018) ^[22] investigated effects of oil spills on fish production in the Niger Delta and found that suggest that oil production, oil spills and soil degradation in Niger Delta have negatively affect fish production, while farm labour has a positive effect on fish production. On the other hand, fishery loan exerts a negative effect on fish production and this could be ascribed to the bottlenecks in accessing these loans.

Summary, Conclusion and Recommendations

Summary of the Study

The study was carried out to investigate environmental degradation and poverty among women of Niger Delta using Nembe Local Government Area of Bayelsa State as case study. To achieve the broad objective of the study, two specific purpose and two research questions were developed to guide the study. This study adopted the cross-sectional survey research design.

Primary data were collected with the use of structured questionnaire and observational techniques from a representative sample of the population of women organized groups in Nembe communities. The population for the study was 64,198 women in Nembe LGA of Bayelsa State. Through the Taro Yamane formula with purposive sampling, 400 women from Nembe LGA were selected as respondents to the study from which data were collected. The purposive sampling technique was used for the study because there is no reliable population frame that captured the membership of organized groups in the sampled communities.

The data for the study were collected using a well-structured questionnaire. The questionnaire was divided into two sections of A and B. Section A comprised of five questions on the demography of the respondents while section B comprised of 15 (fifteen) structured questions on the knowledge of environmental degradation and poverty among women in line with the research questions. Section B of the questionnaire were structured into 5-point rating scale of Strongly Agree (SA), Agree (A), Undecided (U), Disagree

(D) and Strongly Disagree (SD) with corresponding values of 5, 4, 3, 2 and 1 respectively. The instrument was face and content-validated by the project supervisor and other experts in the department for scrutiny and necessary input and corrections before it was administered on sampled respondents. All the suggestion of the supervisor and the experts were duly incorporated in the final draft of the questionnaire use for data collection. The reliability of the instrument was carried out using a pilot test of test re-test techniques was used. The test of test re-test reliability trial was conducted on 20 respondents different from the sample respondents over an interval period of two weeks several times in order to evaluate the reliability of the instruments. The data obtained from the two administrations were correlated and the Pearson Product Moment Correlation coefficient of 0.83 was obtained indicating that the instrument was very reliable. Data collected were analyzed using descriptive and inferential statistics such a mean, frequency, percentage, charts, and Chi-square test with the aid of Statistical Package for Social Science (SPSS) 25.0 version.

Conclusion

The impact of environmental degradation and poverty on the livelihood of people in the affected area most especially women and children has continued to raise questions of great concern among stakeholders. Women in Nembe local government area are committed and preoccupied in farming and fishing occupations as their major source of income. Unfortunately, despite their commitment to raise their living standard and that of their families, the overwhelming effects of gas and oil pollution in the area has negatively affected them in terms their farming activities, fishing, health and access to good drinking water.

Therefore, it was based on this background that this study was to examine effects of environmental degradation and poverty among women of Niger Delta using Nembe Local Government Area of Bayelsa State as case study. Based on the data collected and analysed, the study found that the mean age of the women respondents in Nembe LGA was 47 years which indicated that majority of the women are still in their active working stage, that majority of about 78% are married and about 54.1% had secondary school education, that majority of about 82.4% of the women are members of Community Development Committee (CDC) which indicate that Nembe women are actively involved in various community development groups, hence, they are dynamic players in the development of Nembe communities.

The study identified ways in which gas flaring and oil spillage has affected the farming activities and caused poverty among Nembe women.

Recommendations

Based on the findings of this study, the following recommendations were made:

- The government and donor agencies at all levels should provide awareness campaign on the part of the women and rural dwellers on how best to increase food production in the face of continuous soil degradation and water pollution in the area.
- That gas flaring and indiscriminate discharge of crude oil to the area by oil companies should be restricted by a law enacted by government to control land degradation in the state.

- That women farmers should come together to form a cooperative societies among themselves to discuss and look for a best way on how to handle land degradation menace to increase the fishing and farming output.
- The number of extension visit to women farmers is not encouraging and this could affect dissemination of land degradation. Hence, there is need for the three tiers of government to improve the extension-farmers ratio so that more women farmers could be reached and the contact period could be enhanced for sustained production.
- Government and critical stakeholders should be deeply involved in curbing environmental degradation and vandalism of oil structure for safe water for drinking and other purposes.
- Government should allocate higher investments to environmental sanitation and improved health condition of women and other vulnerable groups in Niger Delta. Increased investments in environmental sanitation and hygiene will promote good health and welfare benefits of the women which will also avert large economic losses and raise the standard of living of the women and their families.
- That the operation of the oil companies should be guided by adoption of best practices in the environmental management for improved farming and fishing in the Niger Delta.
- Women farmers in degraded soil and polluted water bodies should be supported with subsidies of credits to cushion the effects of environmental threats in their farming activities.

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