Investigation Of Cassava-Based Farmers Retorts to the Activities of Hydrocarbon Pollution Remidiation Project (HYPREP) in Tai Local Government Area of Rivers State, Nigeria

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Abstract

*This study investigated cassava -based farmers retorts to the activities of hydrocarbon pollution remediation project (**HYPREP**) in the Tai Local Government Area of Rivers State, Nigeria. Data were collected from both primary and secondary sources. Purposive and random sampling techniques were employed to select 80 cassava-based farmers with well-structured questionnaire. Descriptive statistics and a bivariate probit regression model were employed in the assessment. The results of the study revealed that majority (56.25%) of the respondents were female and 46.25% had between 21 and 30 years of farming experience. Most (67.50%) of the respondents had a moderately high-level awareness of HYPREP activities, while only (40.48%) accentuated that the most common activity of HYPREP in the study area was hydrocarbon clean-up caused by oil spills. It was only (33.33%) who claimed that skill acquisitions were the next most common activities by the project. The result of the bivariate probit model revealed that the probability of the household size (-0.128287) annual income (1.84E-06) and schooling (-0.001680) retorting to the project activities were statistically significant but negative, while farming experience (0.014212) and age (0.017896) was statistically significant and positive. The findings recommends that **HYPREP** needs to target its communication and outreach efforts to those with lower levels of schooling and smaller households. It should also focus on activities that are very relevant to the needs of farmers in the area.*

Keywords: Cassava-Based, Farmers Retorts, Hydrocarbon Pollution, Remidiation, Rivers State

1. INTRODUCTION

Cassava is a major staple crop and a source of income for many people in Nigeria. It is the second most important food crop after maize and provides food for over 500 million people globally. The production of cassava in Nigeria has been on the increase, with a total production of 54.8 million metric tons in 2020 (FAOSTAT, 2021). Despite the increase in production, the cassava industry in Nigeria is faced with number of challenges, such as, low productivity, poor quality processing

methods, limited access to markets, credit, and inadequate use of innovative technologies coupled with environmental consequences such as oil spills and pollutions usually caused by oil exploration(Ahmadu,2013).The federal government has implemented several programs to mitigate against environmental and socio-economic impacts of oil spills in the Niger Delta region. This initiative is aimed to address the concerns of affected communities, including farmers, by providing support for remediation efforts, livelihood restoration, and community development. Niger Delta Development Commission (NDDC), was established in the year 2000, by the federal government. for the purpose of actualizing sustainable infrastructural development such as, agriculture, healthcare, education and the general wellbeing of the communities affected by oil pollution. The Hydrocarbon Pollution Remediation Project (HYPREP) was established by the Federal Government of Nigeria to remediate and restore areas affected by oil spills in the Niger Delta region, including Tai Local Government Area (LGA) of Rivers State. The project has been implementing various activities, such as the cleanup of polluted sites, provision of potable water, skills acquisitions and rural livelihood support for impacted communities (HYPREP Annual report,2021 and Nahar, N. (2021)). However, the impact of HYPREP on cassava-based farmers which is the main source of livelihood for many communities in the region, has not been adequately assessed. Despite the increase in production, of cassava in Nigeria. These areas are faced with myriad of environmental problems such as low productivity as a result of polluted soils and water bodies, limited access to markets, poor credit facilities, inadequate use of innovative technologies and poor management practices. Several studies have been conducted on the impact of oil pollution on agriculture in the Niger Delta region, but few have focused specifically on the impact of HYPREP on cassava production. Therefore, this research study will assist HYPREP to build up intervention programs for cassava farmers. Also, other researchers interested in HYPREP activities will gain insight from the findings of this study. However, Oluwole et al. (2018) found that oil pollution negatively affected soil fertility and crop yields, with farmers health in the region. Similarly, Akinbile and Ojo (2021) reported that oil pollution has resulted in the loss of farmlands and reduced crop yields, which has impacted the livelihood of farmers in the region. There is no study that has been conducted to assess the impact of HYPREP activities on cassava-productivity in Tai LGA of Rivers State. Therefore, this study is aimed to fill this research gap in the area, as well as give answers to the following research questions: (1) what are the socio-economic characteristics of the respondents? (2) what is the awareness level of HYPREP activities? (3) what the different activities of HYPREP in the study area? (4) examine how respondents' socio-economic characteristics, affect their retorts on HYPREP activities in the study area. (5) what are the constraints encountered by the respondent in the study area? This study gave answers to these research questions.

2. Materials and Methods

Tai Local Government Area is one of the 23 local government areas in Rivers State, Nigeria. It is situated in the southern part of the state and covers an area of 159 km2 and at the 2006 Census it had a population of 117,797. Tai LGA is bordered by Khana to the east, Eleme to the west, Oyigbo to the north, and Ogu/bolo to the south. Tai Local government area has two broad sections: the Tua Tua Kingdom and the Barasi Nonwa Kingdom, both under the overall Tai kingdom headed by the Gbene Mene Tai. The headquarters of Tai LGA is located in Saakpenwa, which serves as

the administrative center for the local government area. Communities in Tai includes; Ban-Ogoi, Bara-Ale, Bara-Alue, Barayira, Borobara (a central community), Botem, Bunu, Deeyor Kira, Gbam, Gbene-Ue, Horo, Kebara Kira, Korokoro (the seat of the Tai monarch), Koroma, Kpite, Nonwa Tai (Kebara), Nonwa Uedume, Norkpo, Sime and Ueken Kporghor and Gio. The area is predominantly inhabited by the Ogoni ethnic group, who are known for their rich cultural heritage. Tai LGA is blessed with natural resources and scenic landscapes. The area is home to lush vegetation, fertile farmlands, and the presence of the Niger Delta region's famous mangrove swamps. The economy of Tai LGA is predominantly agrarian, with farming, fishing, and trading being the main occupations of the people. The region is known for the cultivation of crops such as yam, cassava, maize, oil palm, and various vegetables.

A sample size of eighty (80) respondents was selected using a purposive and random sampling techniques. The first stage involves purposively selecting clusters within the LGA, and the second stage entails random selection of farmers within each cluster. In each of the communities, twenty (20) farmers were randomly selected, giving a sample size of eighty (80) farmers. Objectives 1,2,3, and 5 was achieved by use of descriptive statistic while Objective 4 was achieved using bivariate probit regression model.

3 Model Specification

$$\text{Prob} (Y = 1) = \Phi (\beta_0 + \beta_1 X_1 + \beta_2 X_2 + ... + \beta_k X_k)$$

Where Y= Dependent variable, (1) = cassava-based farmers retorted that the activities of hydrocarbon pollution remediation project (HYPREP) was helpful to their farming activities while (0) = Otherwise.

X_1 = Farming experience in years

X_2 = Households size in numbers

X_3 = On-farm and Off-farm annual income in naira (#)

X_4 = Years spent in formal schooling in years

X_5 = Age of Households in years

4. RESULTS AND DISCUSSIONS

4.1 Socio-economic characteristic of Respondents in the study area

Table 1 below shows that majority (56.25%) of the respondents are female while only (43.75%) are male. This finding is in consonance with food and agricultural organization (FAO,2020) which states that female folks, makes up a significant portion of the agricultural workforce. Also, most (43.75%) of the respondents falls within the age range of 25-54 years, while most, (72.5%) are married. The findings also identify that majority of the respondent has been through formal schooling with (52.50%) having spent 6 years in formal schooling. Only (42.50%) have a

household's size of 1-3 persons. Most (46.25%) have 21-30 years of farming experience and majority (85.00%) have an income range of between N200k - N400k. It was only (57.5%) that realized income from other sources like Okada riding.

Table 1: Distribution of socio-economic characteristic of Respondents in the study area

Distribution of Socio-characteristics of Respondents in the study area

Socio-economic Characteristics	Frequency	Percentage
Gender		
Male	35	43.75
Female	45	56.25
Total	80	100
Age		
0-14	2	2.50
15-24	19	23.75
25-54	35	43.75
55-64	20	25.00
Above 64	4	5.00
Total	80	100
Marital Status		
Married	58	72.5
Divorcee	13	16.25
Widow	4	5.00
Widower	5	6.25
Total	80	100
Year spent in formal schooling		
0	10	12.50
6	42	52.50

12	23	28.75
16	5	6.25
Total	80	100
Household size		
1-3	34	42.50
4-7	23	28.75
8-11	16	20.00
Above 11	7	8.75
Total	80	100
Farming experience		
1-10	6	7.50
11-20	28	35.00
21-30	37	46.25
Above 30	9	11.25
Total	80	100
Income Status		
Less than ₦100k	0	0.00
₦200k - ₦400,000.00	68	85.00
₦500k- N700,000.00	12	15.00
Above ₦100,000.00	0	0.0
Total	80	100
Other Sources of income		
Hunting/fishing	2	2.50
Okada ridding	46	57.5

Petrol business	25	31.25
Trading	4	5.00
Others	3	3.75
Total	**80**	**100**

Source: Field survey, 2023.

4.2 Awareness level of HYPREP activities in the study area

Table 2 below revealed that majority (67.5%) of the respondents have a moderately high level of awareness level of HYPREP activities in the study area. It was only (5%) who had very low-level awareness of its activities in the study area. This implies that Hyprep is relatively well-known in the study area, but there is still room for improvement in terms of awareness levels. The findings also suggest that Hyprep should engage the services of extension agents to   relay their activities on agricultural productivity in the region.

Table 2: Distribution of respondents according to the awareness level of HYPREP activities in the study area.

Awareness level of HYPREP Activities	FREQUENCY	PERCENTAGE	MEAN
Very high level of Awareness (4)	12	15.00	2.9
Moderately high level of awareness (3)	54	67.50	
Moderately Low level of awareness (2)	10	12.50	
Very low level of awareness (1)	4	5.00	
Total	80	100	

Source: Field Survey: 2023.

4.3 Identification of Different Activities of HYPREP in the study area

Table 3 below recorded multiple responses. It discovered that majority (40.48%) of the respondents claimed that the common activity of HYPREP in the study area was hydrocarbon clean-up from water bodies caused by oil spills. Also (33.33%) emphasized skill acquisitions especially for unemployed youths of the region as another activity, while (14.29%) acknowledged, restoration of peace and harmony in the region. This is because a community without peace and harmony cannot progress in all facets, while (7.74%), responded that the project encouraged agricultural productivity and (7.7%) falls under other activities in the region. It is important to note that multiple responses were recorded, in this study. HYPREP is also working to improve education, through granting of scholarships bright students from the community. However, there

is still room for improvement, as some respondents are not aware of all of the activities that HYPREP is undertaking. Therefore, sensitization programs are needed yearly.

Table 3: Distribution of respondents according to different activities of HYPREP in the Study Area.

Different OF Activities of HYPREP in the Study Area.	Frequency	Percentages
Environmental sustainability (Hydrocarbon clean -up caused by oil spills)	68	40.48
Skill acquisitions by Ogoni youths	56	33.33
Restoring peace and harmony	24	14.29
Encouraging Agricultural productivity	13	7.74
Others	7	4.17
Total	168	100

Source: Field Survey: 2023

Multiple Responses recorded.

4.4 Impact of Socio-Economic factors on HYPREP Activities

Table 4, below revealed that the probability of respondents responding to the activities of hydrocarbon pollution remediation project (HYPREP) based on their farming experience in years (0.014212) and age (0.017896) were statistically significant and positive. This was based on the facts that as respondents' years of farming experience and age increases the more, they tends to be more knowledgeable to responds to the impact of a project on their farming activities. Respondents' household size (-0.128287), income (1.84E-06) and schooling (-0.001680) were all found to be statistically significant but negative in retorting to the impact of HYPREP activities on their farming operations in the region. These findings could be that as respondents' family size increases there is the tendency that some could engage in other income generating activities away from farming activities. Likewise, respondents' income and years spent in formal schooling. It is expected that higher level of education could attract more income rewarding employment than peasant farming activities.

Table 4: Bivariate Probit Model Showing How Respondent's Socio-Economic Characteristics Affects Their Retorts ON HYPREP in the Study Area.

Dependent Variable: Y

Method: ML - Binary Probit (Newton-Raphson / Marquardt steps)

Sample: 1 80

Included observations: 80

Convergence achieved after 4 iterations

Coefficient covariance computed using observed Hessian

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-0.525231	1.092101	-0.480936	0.6306
FRMINGEX	0.014212	0.020321	0.699376	0.4843
HHSIZE	-0.128287	0.129758	-0.988662	0.3228
INCME	1.84E-06	1.75E-06	1.050035	0.2937
SCHLING	-0.001680	0.066756	-0.025174	0.9799
AGE	0.017896	0.018706	0.956673	0.3387

McFadden R-squared	0.039444	Mean dependent var	0.775000
S.D. dependent var	0.420217	S.E. of regression	0.425329
Akaike info criterion	1.174267	Sum squared resid	13.38697
Schwarz criterion	1.352919	Log likelihood	-40.97070
Hannan-Quinn criter.	1.245894	Deviance	81.94139

Restr. Deviance	85.30621	Restr. log likelihood	-42.65311
LR statistic	3.364822	Avg. log likelihood	-0.512134
Prob (LR statistic)	0.643933		

Obs with Dep=0	18	Total obs	80
Obs with Dep=1	62		

Field Survey ,2023.

4.5 Constraints Encountered by the Respondent in the Study Area

Table 5 below recorded multiple responses. It highlighted that most (25.81%) of the respondent's accentuated that their major constraints in the area was environmental pollution. This is normally caused by unsustainable explorations by oil companies in the region causing oil spills and gas flaring in the area. This suggests that a quarter of the surveyed individuals considered environmental pollution to be a prominent constraint in the region. Environmental pollution has a great impact on human health, ecosystems, and financial development. (N Nahar., 2021). It was only (7.42%) who attested that other factors like cult groups who engaged in criminal activities such as harassment, rape, burglary, robbery, and vandalisms.

Table 5: Distribution of Respondents on the constraints encountered in the Study Area.

Constraints Encountered	Frequency	Percentage
Environmental Pollution	80	25.81
High rate of Insecurity (Kidnapping)	65	20.96
High rate of Unemployment	59	19.03
Cultism and Armed Robbery	45	14.52
Hunger and Starvation	38	12.26
Others	23	7.42
Total	310	100

Field Survey,2023.

Multiple responses recorded.

Conclusion and Recommendations

This study revealed that HYPREP activities are known by the respondents. Also, analysis of socio-economic factors indicates that household size, income status and years of schooling have negative impact on respondents' responses to HYPREP activities on their agricultural activities. This finding has shown that larger households and higher levels of education reduce the likelihood of participation. Nevertheless, farm experience, and age of respondents have a positive effect, implying that individuals with longer farming experience, and age are more likely to engage with HYPREP initiatives. It is important to consider respondents socio-economic factors when designing engagement strategies. Therefore, the constraints reported by respondents, such as environmental pollution, insecurity, unemployment, and hunger, highlight the intricate challenges faced by the community. These issues demand attention from both HYPREP and local authorities to improve the living conditions of the population. Therefore, this study recommends that HYPREP should continue efforts to improve awareness, particularly targeting individuals with moderately low or very low levels of awareness. This could involve community outreach programs, information campaigns, and collaboration with local leaders. Invest in educational and vocational training programs that empower the community, particularly the youth, with valuable skills for economic independence. Addressing the constraints identified by respondents is crucial. HYPREP should collaborate with relevant authorities and organizations to; implement environmental sustainability measures to reduce pollution, enhance security to tackle insecurity and provide a safe environment, promote employment opportunities and skill development, implement measures to alleviate hunger and food insecurity. Implement sustainable initiatives that not only address immediate needs but also contribute to the long-term well-being of the community. This may include agricultural and environmental programs that provide lasting benefits.

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