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Research Article

Community Members' Knowledge of Shell Petroleum Development Company's Remediation of Land and Water Bodies in Areas Under The Niger Delta Development Commission, Nigeria

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Abstract

The study examined community members' knowledge of Shell Petroleum Development Company's (SPDC) remediation of land and water bodies in areas under the Niger Delta Development Commission (NDDC), Nigeria. A purposive random sampling technique was used for the selection of 240 community members in SPDC host communities. The data for the study were collected through the use of questionnaire and were analyzed using both descriptive (the mean) and inferential statistics (ANOVA). The result showed that radio advertisement (94.6%), radio talk show (94.6%), television talk show (95.8%), bill board promotional campaign of SPDC's activities (90.0%) and advocacy visit by SPDC to royal fathers (87.5%) were various SPDC's communication strategies employed in creating awareness of their environmental degradation impact management project. The result further showed that community members had moderate knowledge of SPDC's conversion of organic wastes into manure for remediation of polluted lands (=3.9) and low knowledge of the use of micro-organism to reclaim soil and water environment polluted by oil spill (=2.9) and burning of contaminated soil to destroy the crude oil in the soil (=2.4). The ANOVA result showed no significant difference in knowledge of SPDC remediation of land and water bodies by host community members across the states under the NDDC at P<0.05 level of significance. It was concluded that, community member's knowledge of SPDC's remediation of land and water bodies was low. The study recommended that more effort should be made by SPDC to educate community members more on their environmental remediation activities.

Keywords: *Knowledge, remediation of land, water bodies, SPDC, and NDDC.*

Introduction

For many, the environmental resource base, for agriculture and forest products, is their principal or sole source of livelihood. To this end, legislation was put in place by the Federal Government of Nigeria to ensure improved environment. Some of them are; Oil pipelines Act (1958), Minerals Act (1958), Public Health Act (1958), Mineral Oil Safety Regulations (1963), The petroleum production Act (1967), Gas Re-Injection Decree (1979), The Federal Environmental Protection Agency (FEPA) Decree (1988), Oil Pollution Act (1990), The National Effluent Limitation Regulations (1991), The Pollution Abatement in Industries (1991), The Environmental Impact Assessment (EIA) Decree (1992), The Oil Mineral Producing Area Development Commission (OMPADEC) (1992), The Petroleum Trust Fund (PTF) (1994) and The Niger Delta Development Commission (NDDC) Act (2000). Despite these, the poorest of the poor according to Okringbo (2019) attribute their suffering to the persistent damage on the environment.

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According to the United Nations Development Programme (UNDP) (2006) more than 60 percent of the people in the Niger Delta region; which form the majority of the area under the Niger Delta Development Commission (NDDC) depend on their natural environment for their livelihood. However, oil pollution and environmental damage, pose significant risks to human rights and survival of these people Ekanem (2013). There is no doubt that oil spillage and gas flaring damages the soil, water and air quality, and that hundreds of thousands of people are affected. This seems worse with those who rely on traditional livelihood such as fishing and other agricultural activities, but more particularly with the poorest of the poor. The persistent outcry by host communities of oil companies' damages on the environment through oil spillages and gas flaring that affects their lives and livelihood, coupled with the condemnation by international community of its global warming risk, the Shell petroleum Development Company (SPDC) had embarked on projects aimed at eliminating gas flaring (Odisu, 2015) and also to clean the environment.

Currently, the SPDC waste management is incorporated into the Health, Safety and Environment (HSE) management system for every facility. Their aim is to reduce the impact of operation on the environment by treating and disposing of waste products in accordance with relevant regulatory requirements. Notably, SPDC has two recyclable waste depots in Warri (Delta State) and Port Harcourt (Rivers State). These serves as transit centers for all recyclable wastes generated from residential areas, canteens and out stations. The organic wastes are converted into manure used for remediating polluted land (Okringbo, 2020). How knowledgeable community members of SPDC's host communities in the Niger Delta Development Commission area are about this is yet to be ascertained. There is no empirical evidence to indicate that a study of the nature has been conducted. It was against this backdrop that this paper seeks to assess community members' knowledge of Shell Petroleum Development Company's remediated land and water bodies in areas under the Niger Delta Development Commission, Nigeria, to fill the gap in knowledge.

Objectives

This study specifically aimed to-

1. ascertain the awareness of the community members' of the various SPDC's communication strategies for creating awareness of their remediation of land and water bodies activities;
2. Determine the level of knowledge of community members' on SPDC remediation of land and water bodies in the study area.

Hypothesis

There is no significant difference in knowledge of SPDC remediation of land and water bodies across the states under the Niger Delta Development Commission

Methodology

The study was conducted in Niger Delta Development Commission area. The Niger Delta Development Commission area is one of the 10 most important wetlands and world's third largest wetland (Niger Delta Technical Committee's report, 2008). Administratively it is made up of nine states - Abia, Akwa Ibom , Bayelsa, Cross River, Delta, Edo, Imo, Ondo and Rivers. The nine states of the Niger Delta Development Commission area, covers approximately112, 110 km² or 12 percent of Nigeria's land mass. It lies between longitude 6.2509 and Latitude 5.2373.

The area, by the 2006 census, has a population of 31 million people or 22 percent of the National population (NPC, 2006). There are about 40 ethnic groups; speaking 250 Languages and dialects. Fishing, farming and trading are the major occupations of the rural people of the area. with the major groups being Ijaw people who predominate across the coastal region; the Ogoni and Ikwerre of the eastern region; the Annang, Efik Bokis and Yakurrs people in Akwa Ibom and Cross River States; the Ijaws, Itsekiris, Ishans,

Isokos, Urhobos, Ndokwas, in the western region.

The population of the study comprised all community members in the Shell Petroleum Development Company's clustered communities under the Niger Delta Development Commission.

A purposive sampling technique was used to select Abia, Bayelsa and Rivers States; due to high incidence of oil spillages within these states. Approximately, 220 oil spillages were recorded in Bayelsa and Rivers and 65 percent of SPDC installations are within these states compared to other states under the Niger Delta Development Commission (Nwachukwu and Ekanem, 2016). The study purposively selected Ukwa West Local Government area in Abia State, Ogbia Local Government area in Bayelsa State and Eleme Local Government area in Rivers State. Twenty four (24) cluster communities within Shell operation were purposively selected. Systematic random sampling technique was used to select ten (10) community members using lists provided by the community's leaderships. Thus, a sample size of two hundred and forty (240) community members was obtained and used for the study.

Model Specification

The knowledge of the community members' of SPDC remediated land and water bodies was done using the Likert five-point rating scale. The five-point rating was as follows: Very high knowledge =5; high knowledge = 4, moderate knowledge = 3, low knowledge = 2 and very low knowledge = 1. A mean score of 3.0 and above was seen as very high knowledge, while a mean score of less than 3.0 was regarded as very low knowledge.

The hypothesis that there is no significant difference in knowledge of SPDC remediated land and water bodies across the states under the Niger Delta Development Commission was tested using One-way Analysis of Variance (ANOVA). It is specified as;

$$\text{F-statistic} = \frac{\text{Between group mean square (BGMS)}}{\text{Within group mean square (WGMS)}} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(1)$$

Decision Rule: if $F_{cal} > F_{tab}$ at ($P \leq 0.05$) we reject the null hypothesis and accept the alternative hypothesis and vice versa

Results and Discussion

Table 1: Distribution according to the awareness of the community members' of the various SPDC's communication strategies on SPDC remediated land and water bodies

Communication strategies	Abia (n=80)		Bayelsa (n=80)		Rivers (n=80)		Total (n=240)	
	Aware	Not aware	Aware	Not aware	Aware	Not aware	Aware	Not aware
Radio advertise-ment by SPDC	74 (92.5%)	6 (7.5%)	75 (93.8%)	5 (6.3%)	78 (97.5%)	2 (2.5%)	227 (94.6%)	13 (5.4%)
Radio talk show by SPDC	75 (93.8%)	5 (6.3%)	75 (93.8%)	5 (6.3%)	77 (96.3%)	3 (3.8%)	227 (94.6%)	13 (5.4%)
Television talk show by SPDC	78 (97.5%)	2 (2.5%)	74 (92.5%)	6 (7.5%)	78 (97.5%)	2 (2.5%)	230 (95.8%)	10 (4.2%)
Bill board promo-tional campaign of SPDC's activities	75 (93.8%)	5 (6.3%)	70 (87.5%)	10 (12.5%)	71 (88.8%)	9 (11.3%)	216 (90.0%)	24 (10.0%)
Feature article in newspapers about SPDC	54 (67.5%)	26 (32.5%)	45 (56.3%)	35 (43.8%)	48 (60.0%)	32 (40.0%)	147 (61.2%)	93 (38.8%)
Feature article in	45	35	38	42	41	39	124	116

magazine about SPDC	(56.3%)	(43.8%)	(47.5%)	(52.5%)	(51.2%)	(48.8%)	(51.6%)	(48.4%)
SPDC news letter	41 (51.2%)	39 (48.8%)	39 (48.8%)	41 (51.2%)	42 (52.5%)	38 (47.5%)	122 (50.8%)	118 (49.2%)
Advocacy visit by SPDC to royal fathers	70 (87.5%)	10 (12.5%)	70 (87.5%)	10 (12.5%)	70 (87.5%)	10 (12.5%)	210 (87.5%)	30 (12.5%)
Town hall meeting with men leaders	76 (95.0%)	4 (5.0%)	71 (88.8%)	9 (11.3%)	79 (98.8%)	1 (1.3%)	226 (94.2%)	14 (5.8%)
Town hall meeting with community members	74 (92.5%)	6 (7.5%)	71 (88.8%)	9 (11.3%)	79 (98.8%)	1 (1.3%)	224 (93.3%)	16 (6.7%)
Community liaison officers (CLO) of shell	62 (77.5%)	18 (22.5%)	52 (65.0%)	28 (35.0%)	79 (98.8%)	1 (1.3%)	193 (80.4%)	47 (19.6%)

Source: *Field survey data, 2018*

Table 1 shows the awareness of the community members' of the various SPDC's communication strategies on SPDC remediation of land and water bodies. The result shows that radio advertisement by SPDC (94.6%), radio talk show (94.6%), television talk show (95.8%), bill board promotional campaign of SPDC's activities (90.0%), feature articles in newspapers about SPDC (61.2%), feature article in magazine about SPDC(51.6%), SPDC newsletter (50.8%), advocacy visit by SPDC to royal fathers (87.5%), town hall meeting with men leaders (94.2%), town hall meeting with community members (93.3%) and community liaison officers (CLO) of Shell (80.4%).This implies that community members' were aware of the various communication strategies used by SPDC to create awareness on their remediation of land and water bodies activities.

Table 2: Mean score responses of the knowledge of the community members' on SPDC remediated land and water bodies in Niger Delta

Indicator	**Abia (n=80)**		**Bayelsa (n=80)**		**Rivers (n=80)**		**Niger Delta (240)**	
	$\bar{x}$	RM	$\bar{x}$	RM	$\bar{x}$	RM	$\bar{x}$	RM
SPDC convert organic wastes into manure used for remediation of polluted lands	3.6	H	4.3	VH	3.9	VH	3.9	H
The use of micro-organism to reclaim soil and water environment polluted by oil spill	3.1	H	2.9	L	2.9	L	2.9	L
The use of dispersant to lower the interfacial tension between the oil and water by SPDC	2.7	H	2.3	L	2.3	VL	2.4	VL
SPDC burns contaminated soil to destroy the crude oil in the soil	2.9	H	2.3	L	1.9	VL	2.4	VL
Grand mean score	**3.2**	**VH**	**3.2**	**VH**	**2.9**	**L**	**3.1**	**VH**

Source: Field survey data, 2018.

Note: $\bar{x}$ = Mean Responses of Community Members; RE = Remark; VH = Very High Knowledge, H = High Knowledge, L= Low Knowledge, VL = Very Low Knowledge. Decision Mean Cut-Off Point 3.0

Result in Table 2 shows the community members knowledge level of SPDC's remediation of land and water bodies in Niger Delta Development Commission area. The mean rating on a 5-point scale shows that community members have moderate knowledge of SPDC's conversion of organic wastes into manure for remediation of polluted lands ($\bar{x}$=3.9) and low knowledge of the use of micro-organism to reclaim soil and water environment polluted by oil spill ($\bar{x}$ =2.7), the use of dispersant to lower the interfacial tension between the oil and water by SPDC ($\bar{x}$ =2.9), and burning of contaminated soil to destroy the crude oil in the soil ($\bar{x}$=2.9). This community members' knowledge of SPDC's remediation of land and water bodies was moderate with a grand mean of 3.10. The observed moderate knowledge of community members of the remediation activities of the SPDC, falls short of expectation going by the high percentages earlier recorded on the awareness of the community members' of the various SPDC's communication strategies for the creation of awareness of their activities on remediation of land and water bodies.

The minimal knowledge could be indicative of the ineffectiveness of the strategies. This is in line with the finding of Subi and Amodu (2014) that SPDC environmental educational programmes and community development projects are ineffective. This perhaps calls for review of strategies and the contents of message by the SPDC.

Table 3: Result of ANOVA for Significant Difference in Knowledge of SPDC Remediation of Land and Water Bodies across the States In Niger Delta

	Sum of Squares	**Df**	**Mean Square**	**F_{cal}**	**F_{tab}**
Between Groups	0.927	2	0.464		
Within Groups	339.193	237	1.431	0.324	3.04
Total	340.12	239			

NB: *** = Significant at $p < 0.05$; Df = Degree of freedom
$H0_1$ accepted at 0.05 levels.

Table 3 shows the ANOVA result of the test of difference in knowledge of SPDC remediation of land and water bodies in Niger Delta Development Commission area. From the table, the calculated F-value of 0.324 was not significant at $p < 0.05$ which was lower than critical value of 3.04 at $p < 0.05$. This shows that there was no significant difference in the mean rating of community members' on their knowledge on SPDC remediation of land and water bodies in NDDC area. This implies that the community members do not differ in their knowledge level on SPDC remediation of land and water bodies. Therefore, the null hypothesis that there is no significant difference in knowledge of remediation of land and water bodies SPDC in areas under NDDC was accepted.

Conclusion and Recommendations

The study concluded that community members of the different host communities of the various states under the NDDC are aware of SPDC's communication strategies in remediation of land and water bodies. They do not differ in their knowledge level on SPDC remediation of land and water bodies. They Community member's knowledge on SPDC's remediation of land and water bodies was low. It was therefore recommended that more effort should be made by SPDC to educate their host community members on environmental remediation activities.

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