

INFLUENCE OF ENVIRONMENT EDUCATION, LAW AND POLICIES ON GAS FLARING CONTROL IN MULTINATIONAL OIL COMPANIES IN NIGER-DELTA, NIGERIA

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Abstract: The implementation of Environmental education, law and policies were swift response to environmental issues. Thus, necessitated the study. Descriptive survey research design was used. The study population comprised, personnel of Department of Petroleum Resources at Multinational Oil Companies in Niger-Delta, Nigeria. The sample size of the study was one hundred and eighty respondents. Ten respondents were selected from five multinational oil companies from the Nine (9) states that made up Niger-Delta in Nigeria (Ondo, Edo, Delta, Balyesa, Rivers, Cross-River, Akwa-Ibom, Imo and Abia). The research instrument that was used to gather data was self-developed by the researchers, titled “Ranking scale on influence of environmental education, law and policies on gas flaring control in Niger-Delta, Nigeria”. The research instrument was validated by two expert Test and Measurement, which its reliability was determined through test-retest method, 0.66 coefficient reliability was obtained. Data generated on research hypotheses was analysed using inferential statistics (Pearson Ranking Correlation Coefficient). Based on the findings of the study, conclusions were made that Environmental education, law and policies could create awareness on risks associated with gas flaring. Also, that gas combusting could be reduce and so on. Based on the conclusion, recommendations were made that government should out up measure to ensure compliance with measures (Environmental education, law and policies to control gas flaring, human and nonhuman actions which are very hazardous and threats to the environment.

Keywords: Environment, Education, Law, Policies, Gas flaring, Multinational Oil Company.

1. INTRODUCTION

Background to the Study

The gas flaring of multinational oil company constitute environmental menace in the Niger-Delta, Nigeria. In Nigeria, oil was first discovered in Balyesa State in the Niger-Delta in 1956. The presence of crude oil in Niger-Delta has attracted the attention of multinational oil companies. However, the activities of oil multinational companies on destruction of the environment is a serious issues in Nigeria, the negative impact of oil activities is much on the people and environment. The Niger-Delta is bio-diverse with its mangroves providing carbon sequestration capacity and its permits a wide range of plant variety and animal life, as well as; agriculture and fishing which tends b)to their reliance for their livelihood. However, Bello and Nwaeke, (2020). However, many people in Niger Delta have been pauperized; acqua-farming activities have been made impossible, drinking clean water very difficult. Gas flaring is one of the negative resultant effects of multinational oil activities in Niger-Delta, Nigeria. Gas flaring is the burning of natural gas associate with all extractor (World Bank, 2022). According to Ologunorisa (2001),

The Niger Delta has suffered all forms of pollution and degradation arising from oil and natural gas exploration. These made a decrease in agricultural yield, depression in flowering and fruiting in okro and palm trees, deformities in children, liver damage and skin problems, increasing concentration of sulphates, nitrate and dissolved solids with associated socio-economic problems. In spite of decree 99, which bans unauthorized flaring, over 75% of the gas produced is still being flared.

Over the past five decades, petroleum activities started, oil companies have done little to tackle gas flaring. Ologummorisa (2001), stated that gas flaring has significantly contributed to greenhouse gas (GHG) emission and harmony the ecological quality and health of the locality. Similar to the submission above, Uwen and Enobong (2021) reported that:

the issue of gas flaring in Nigeria has become a topical one in view of the devastating effect gas flaring has on the socio-economic lives of the people in the affected areas. Historically, it is said that gas flaring is as old as oil production in Nigeria, oil exploratory activities of oil companies in Nigeria have caused gas flaring resulting in loss of lives and properties in the affected communities where gas is flared....

Today, in Niger-Delta, Nigeria gas flaring is a daily occurrence, a method of disposing of the associated gas that comes from oil production. The impact and risks associated with gas flaring in Niger-Delta, Nigeria. In this wise, Nigerians government have devised several ways to save environmental challenge, including gas flaring in response to public perception and outcry that human health and the environment were inadequately protected. These include; Environmental Education, Law and Policies.

Observable, several studies had been conducted or carried out on gas flaring activities of multinational oil companies in Nigeria, domiciled in Niger-Delta but much have not been done on influence of Environmental Education (EE), law and policies on gas flaring of multinational oil control in Niger-Delta, Nigeria. Also, the few extant researches, most of them had been self-reported without empirical validation and analysis. It is against this backdrop the study was carried out.

Statement of the Problem

Gas flaring occurrence is a daily activity of multinational oil companies in Niger-Delta, Nigeria. It consequential effect and risk is much felt by individual and environment. Gas flaring and other manifestation of environmental hazards have resulted outcry and problems in Niger-Delta, Nigeria. The realization of the environmental menace have resulted into Environmental Education, law and policies in Nigeria. It is against this background this study was carried out.

Research Hypotheses

Three research hypotheses were formulated to guide the study.

H01: There is no significant relationship between Environmental Education (EE) and gas flaring risks awareness in multinational oil companies in Niger-Delta, Nigeria.

H02: There is no significant relationship between Environmental Law and gas combustion control in multinational oil companies in Niger-Delta, Nigeria.

H03: There is no significant relationship between Environmental Policies and environmental hazards control in multinational oil companies in Niger-Delta, Nigeria.

Purpose of the Study

The general purpose of the study was on influence of Environmental education, law and policies on gas flaring of multinational oil companies control in Niger-Delta, Nigeria. The specific objectives were to:

1. ascertain the influence of Environmental Education (EE) on creation of awareness on associated gas flaring risk in Niger-Delta, Nigeria;
2. determine the impact of Environmental law on gas combustion control in multinational oil companies in Niger-Delta, Nigeria; and
3. examine the influence of Environmental policies implementation on gas stack management in multinational oil companies in Niger-Delta, Nigeria.

Significance of the Study

The findings of the study are significant to stakeholders in oil industry in Nigeria.

Firstly, the result of the research will enable government to know the effectiveness of Environmental Education, Law and Policies on environment management in terms of controlling hazards associated with gas flaring.

Also, the findings of the study will also reveal the level of compliance of oil multinational in Niger-Delta to Environmental Law and Policies.

Finally, the study will contribute to the extant literature, thus, serves as a good source of reference to the researcher in future. It will be made accessible to public through Open Educational Resources (OER).

2. METHODOLOGY

Descriptive survey research was adopted for the study. The population comprised, personnel of Department of Petroleum Resources (DPM). The sample size of the study was One hundred and Eighty (180) respondents, selected through a simple random sampling techniques. Ten (10) respondents were selected from two (2) oil companies from nine (9) states in Niger-Delta, Nigeria (Ondo, Edo, Delta, Bayelsa, River, Cross-Rivers, Akwa-Ibom, Abia and Imo).

The research instrument used to gather data was self-developed by the researchers, titled "Ranking Scale on Influence of Environmental Education, Law and Policies on Gas Flaring Control in Multinational Oil Companies in Niger-Delta, Nigeria". The research instrument was validated by two experts in Test and Measurement, while its reliability was done through test retest method and 0.66 coefficient reliability, obtained at two weeks interval. Inferential statistics (Spearman Ranking Correlation Coefficient) was used to analyse data generated on research hypotheses.

Presentation of Findings and Discussion of Results

Presentation of Findings

H01: There is no significant relationship between Environmental Education (EE) and gas flaring risks awareness in multinational oil companies in Niger-Delta, Nigeria.

Table 1: Showing Spearman Ranking Correlation Coefficient on there is no significant relationship between Environmental Education and gas flaring risks awareness in multinational oil companies in Niger-Delta, Nigeria.

S/N	Multinational Oil Companies	Environmental Education	X ²	Gas flaring Risks Awareness	Y ²	D = x ² -y ²	D ²
1.	Ab oil company Nigeria Ltd	16	3	15	4	-1	1
2.	Boblak oil and gas company	12	7	11	8	-1	1
3.	Dubril oil company Ltd	14	5	12	7	-2	4
4.	Pan ocean oil company	27	1	23	1	0	0
5.	Kinmason gas plant	7	12	6	13	-1	1
6.	Delta Marine Oil Service Nig. Ltd	9	10	8	11	-1	1
7.	Bayelsa oil Company	5	14	4	15	-1	1
8.	Aristo Global Oil and Gas	8	11	7	12	-1	1
9.	Belema oil producing ltd	11	8	10	9	-1	1
10.	Cherron Texaco Nigeria Ltd	1	18	1	18	0	0
11.	Androsse Gas Nig. Ltd	10	9	9	10	-1	1
12.	Petrosery Ltd	17	2	19	2	0	0
13.	Stylus International Ltd	15	4	14	5	-1	1
14.	Exxon Mobil	13	6	18	3	3	9
15.	Shell company	6	13	5	14	-1	1
16.	Kerim Petroleum and gas	2	17	13	6	11	121
17.	Panteen oil and gas ltd	4	15	3	16	-1	1
18.	Southoak oil and gas	3	16	2	17	-1	1

Variables	N	DF	D ²	P-Cal	P-critical	Decision
X	18	16	146	0.97	0.506	*
Y	18					

*=significant at 0.05 alpha level

Since, P-calculated is greater than P-critical, the null hypothesis therefore is rejected. This implies that there is a significant relationship between Environmental Education and gas flaring risk awareness in multinational oil companies in Niger-Delta, Nigeria.

H02: There is no significant relationship between Environmental Law and gas combustions control in multinational oil companies in Niger-Delta, Nigeria.

Table 2: Showing Spearman Ranking Correlation Coefficient on there is no significant relationship between Environment law and gas combustion control in multinational oil companies in Niger-Delta, Nigeria

S/N	Multinational Oil Companies	Environmental Law	X ²	Gas combustion control	Y ²	D = x ² -y ²	D ²
1.	Ab oil company Nigeria Ltd	19	2	15	4	-2	4
2.	Boblak oil and gas company	11	8	19	3	5	25
3.	Dubril oil company Ltd	12	7	10	9	-2	4
4.	Pan ocean oil company	18	3	13	6	-3	9
5.	Kinmason gas plant	6	13	20	2	11	121
6.	Delta Marine Oil Service Nig. Ltd	8	11	12	7	4	16
7.	Bayelsa oil Company	4	15	11	8	7	49
8.	Aristo Global Oil and Gas	7	12	14	5	7	49
9.	Belema oil producing ltd	10	9	9	10	-1	1
10.	Cherron Texaco Nigeria Ltd	1	1	21	1	0	0
11.	Androsse Gas Nig. Ltd	9	10	8	11	-1	1
12.	Petroserly Ltd	16	4	3	16	-12	144
13.	Stylus International Ltd	14	6	2	17	-11	123
14.	Exxon Mobil	20	1	4	15	-14	196
15.	Shell company	2	2	1	18	-16	256
16.	Kerim Petroleum and gas	3	16	7	12	4	16
17.	Panteen oil and gas ltd	5	14	6	13	1	1
18.	Southoak oil and gas	15	5	5	14	81	1
					£d2 = 1,094		

Variables	N	DF	D ²	P-Cal	P-critical	Decision
X	18	16	1,094	0.81	0.506	*
Y	18					

*=significant at 0.05 alpha level

Since, P-calculated is greater than P-critical, therefore, null hypothesis is rejected. This indicates that there is a high positive relationship between Environmental Law and gas combustion control in multinational oil companies in Niger-Delta, Nigeria.

H03: There is no significant relationship between Environmental policies and environmental hazards control in multinational oil companies in Niger-Delta, Nigeria

S/N	Multinational Oil Companies	Environmental Law	X ²	Gas combustion control	Y ²	D = x ² -y ²	D ²
1.	Ab oil company Nigeria Ltd	21	1	17	3	-2	4
2.	Boblak oil and gas company	14	5	3	16	-11	121
3.	Dubril oil company Ltd	11	8	5	14	-6	36
4.	Pan ocean oil company	13	6	13	7	-1	1
5.	Kinmason gas plant	16	4	20	1	-3	9
6.	Delta Marine Oil Service Nig. Ltd	7	12	2	17	-5	25
7.	Bayelsa oil Company	12	7	1	18	1	1
8.	Aristo Global Oil and Gas	6	13	8	11	-2	4
9.	Belema oil producing ltd	5	14	9	10	4	16
10.	Cherron Texaco Nigeria Ltd	20	2	4	15	-13	169
11.	Androsse Gas Nig. Ltd	1	18	6	13	5	25

12.	Petroseriy Ltd	3	16	10	9	7	49
13.	Stylus International Ltd	10	9	15	5	4	16
14.	Exxon Mobil	18	3	19	2	1	1
15.	Shell company	8	11	7	12	-1	1
16.	Kerim Petroleum and gas	9	10	11	8	2	4
17.	Panteen oil and gas ltd	4	15	14	6	9	81
18.	Southoak oil and gas	2	17	16	4	13	169
					£d2 = 732		

Variables	N	DF	D ²	P-Cal	P-critical	Decision
X	18	16	732	0.87	0.506	*
Y	18					

*=significant at 0.05 alpha level

Since, P-calculated is greater than P-critical. Null hypothesis therefore, rejected. This implies that there is a positive relationship between Environment Policies and Environment hazards control.

3. DISCUSSION OF RESULTS

The results on hypothesis one shows a positive relationship between Environmental Education and flaring gas risks awareness in multinational oil company in Niger-Delta, Nigeria. The result aligns with the submission of many scholars that through Environmental Education (EE) environmental threats could be control. Erinsakin (2014), contended that the incorporation or integration of (EE) with the existing courses, either in the formal system or non-formal system of education is to teach some basic concepts on environmental challenges and precautions. Thus, (EE) creates awareness to causes, effects and preventive measures to tackle environmental menace. Also, (EE) teaches people on human action and inaction that cause environmental challenges, such as; gas flaring.

Also, the findings on research question two is corroborated by the submission of Okorodudu (1998) that until the adoption of National Environmental law and policy, Nigeria has to distinct and clearly articulated national policy goals for the nation's environment. It was contended further that Nigerian Environmental Law has moved Nigeria away from being a mere control and compensation of hazards, rather, reduction and possible prevention of environmental pollution, including gas flaring.

In the same vein, the finding on research hypothesis three is also attested to and strongly buttressed by Erinsakin (2014), who opined no nation can survive in isolation of laws and policies. What this portends that the series of Environment laws and policies have regulated human actions and inactions capable of putting the environment under threat and cause hazards, as well. Ola (1984), stated that Environmental law covers the whole universe including not only human being but also plants, animals, forests, shrubs, refuse, bacterial disease and insects. In this contention, Environmental law in Nigeria has positively tamed threat to the environment.

4. CONCLUSION

Based on the findings of the study, commission were made that; Environmental education could made people to become aware of the risk that associated with gas combustion or flaring. Also, that environmental law and policies have positively impacted on people in terms of curtailing or controlling their actions any inactions which constitutes threats and hazards to the environment, thus, conserving and protecting the environment. This is the cause of flaring or combustion control or in multinational oil companies in Niger-Delta, Nigeria.

5. RECOMMENDATIONS

Based on the conclusions, the following recommendations were made:

1. There should be a strict measures to enforce compliance with Environmental Education, Law and policies in multinational oil companies in Nigeria
2. Alternative way of gas combustion which has no effect negatively on people and environment should be adopted by multinational oil companies in Nigeria. This can be achieved by adopted a more advanced technical device on gas flaring.

3. The multinational oil companies should compensate people in Niger-Delta, Nigeria because of their activities which have people lives in the region at risk.
4. The locations of multinational oil should be moved far from where people are living in Niger-Delta, Nigeria and so on.

THEORETICAL FRAMEWORK

Behavioural Change Model

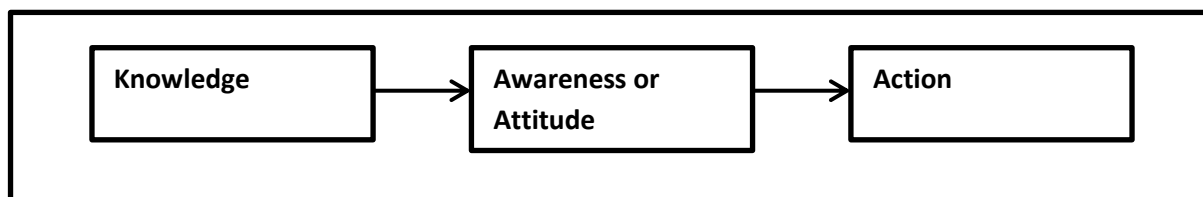
A theory presents a systematic way of understanding behaviours, events and/or situations. It is a set of interrelated definitions, concepts and prepositions that predicts or explains events or situations by specifying relationship among the variables. The theory hinges on the ideology or belief that if people were better or well informed, they would become more knowledgeable and aware of environmental challenges and be behaving or exhibiting actions that will protect the environment. In other words, people would be more environmental responsible.

The theory says that when people are knowledgeable and understand actions and inactions, the tendency is high for people to develop attitudes and manners that are favoured to the environment. Several scholars have stated that people tends to be very unfriendly with the environment because they do not have knowledge on environmental culture and friendly attitudes towards the environment. When knowledge increases, environmentally favoured attitude that lead to responsible environmental actions are developed (Hengertold & Volt, 1990).

The relevance and appropriateness of behavioural change model is that Environmental Education, law and policies, people's attitudes could do positively developed towards the environment. People could be made to become more aware of the negative effects of gas combustion on the environment and people.

The figure below shows the likely relationship of knowledge, awareness or attitudes and action.

Fig. 1



Adopted Behavioural Change Model

Source: Hungerfold, H.R. & Bolt T.L (1990)

6. LITERATURE REVIEW

Gas, Flaring in Niger-Delta, Nigeria

Nigeria is seventh on the list of the world's top flaring countries. This indicates that gas flaring is not restricted to Nigeria, alone; countries like Venezuela, the United States and Iran are having a high rate of gas flaring. According to World Bank (2002), gas flaring is the burning of natural gas associated with oil extraction. Thousands of gas flares at oil production sites worldwide burned approximately 142 billion cubic meters of gas in 2020. Gas flaring is the controlled combustion of associated gas, a large volume of which make up Nigeria's gas reserves, generating during various processes including oil and gas recovery, petro-chemical process and landfill gas extraction into an open air. Between 2016 and 2020, Nigeria flared 1252.26 trillion cubic feet of natural gas into the atmosphere, according to the Nigerian National Petroleum Corporation monthly oil and gas report.

Oil and gas production in Nigeria dates back to 1958, when the first oil discovery well was drilled in Olobiri in the present day Bayelsa State, Niger-Delta, Nigeria. The oil rich Niger-Delta of Nigeria lies between 40 and 60N of the equator and between Longitude 50 and 90E of Greenwich, with an estimated area of 70,000Km². The Niger-Delta consists of a number of distinct ecological zones, characteristics of large river deltas in tropical regions, coastal ridge barriers, mangroves, freshwater, swamp forests and lowland rain forest.

In Niger-Delta, Nigeria gas flaring has negative effects on people and other living organisms. Gas flares are killing crops, polluting water and injurious to human health. In the oil rich Niger Delta of southern Nigeria, 2 million people live within 4 kilometers (2.5 miles) of gas flare. The Niger-Delta is among the world's most oil rich regions. Since the state of crude oil exploitation, thousands of oil spills have fouled the delta, and helped fuel conflict in the region. Ogunmorisa (2001), stated that gas flaring has commenced since the petroleum exploration in the Niger Delta and that it has contributed to environmental degradation and climate change coupled, with acid rain within the flares micro-environment. Studies have revealed that gas flaring has serious economic, social and health implications for Nigeria and the world in general.

Flaring of gas in Niger Delta releases contaminants that affect air quality negatively, thereby increasing health risks, such as; tumors, neurological, reproductive and developmental disorders. Most gas flaring sites in the Niger-Delta are situated close to the residences of the inhabitants. Several people within the location of gas flaring sites are suffering from different gas flaring associated health challenges.

In conclusion, gas flaring in Niger-Delta has caused series of environmental challenges and health problems to the people of the region. Also, it has also increased the rate of poverty, since air combustion has contributed into destruction of land, and rivers for practicing the traditional occupation of the people in the region.

REFERENCES

- [1] Bello, A.T. & Nwaeke, T.A (2020). Environmental impacts of oil exploration (oil and conflict: Niger Delta as a case study). <https://ssm.com> Accessed 26th, 2022.
- [2] Hunger-Fold, H.R. & Volk, T.L. (1990). Changing learner behaviour through environmental education. *The Journal of Environmental Education* 21: 8-21.
- [3] NIH, E. (2015). National institute of health social and behaviour theories.
- [4] Okorodudu-Fabara, M.T. (1998). *Law of environmental protection: Materials and Text*, Caltap publication (Nigeria), Limited, Ibadan, Nigeria.
- [5] Ola, C.S. (1984). *Town and country planning and environmental law in Nigeria*, OUP, Jericho, Ibadan.
- [6] Ogunmorisa, T.E. (2001). A review of the effects of gas flaring on the Niger-Delta environment. *The International Journal of Sustainable Development and World Ecology*, 8(3); 249-255.
- [7] Uwen, U & Enobong, B.A (2001). Gas flaring in Nigeria: Problems and prospects. *European American Journals*.
- [8] World Bank (2022). Global gas flaring reduction partnership worldbank.org.