integrity Research Journals

Global Journal of Earth and Environmental Science
Volume 6(3), pages 67-74, August 2021
Article Number: 58E2A3921
ISSN: 2636-6002
https://doi.org/10.31248/GJEES2021.106
https://integrityresjournals.org/journal/GJEES

Full Length Research

Assessment of disaster management strategies employed by oil companies and government agencies towards oil pipeline vandalism in selected states in Niger Delta Region

Evans, U. I.*, Mmom, P. C., and Weli, V. E.

Department of Geography and Environmental Management, University of Port Harcourt, River State, Nigeria.

*Corresponding author. Email: muserve@yahoo.com

Received 17th July, 2021; Accepted 15th August, 2021

ABSTRACT: The study was carried out to assess disaster management strategies employed by oil companies and government agencies towards oil pipeline vandalism in selected states in the Niger Delta region. The study made use of cross sectional research design, the simple random sampling method was used in selecting the sample for the study. Using this technique, the three states was selected for the study. From among the selected states (3), three LGAs and two communities each was also selected. For this study, eighteen (18) communities representing nine (9) local government areas from three (3) states of the study Area was used for the study. Questionnaire was used as the instrument for data collection. A total of 400 respondents were used for the study, this was achieved from using the Taro Yamane formula for sample size determination, hence 400 copies of questionnaire which is the major source of data collection were administered to the respondents using the proportionate sampling technique. The study found amongst others that there have been cases of pipeline vandalism on oil companies' infrastructure; however, they are unaware of prevent/mitigation means used by the oil corporations to prevent/mitigate the occurrence of pipeline vandalism, on the prevention/mitigation and preparedness activities engaged by government agencies, security engagement was perceived as the most adopted strategies. Activation of emergency spill response team is the response strategy adopted by government and its agencies followed by arrest of vandals/victim and medical treatment of victims. Among various strategies adopted by government and its agencies for recovery/rehabilitation, community arrest of vandals was perceived as the most adopted strategy. The study recommended that oil multinationals should synergize with credible formal community-based platforms to work out a grassroots approach to pipelines surveillance and protection.

Keywords: Assessment, disaster management, government agencies, oil companies, oil pipeline, strategies, vandalism.

INTRODUCTION

A disaster is a serious disruption of the functioning of the society or community, causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope with, using its own resources (NNDRR, 2009). A disaster according to Oluwatuyi and Ileri (2013) could be defined as any fragile event stemming from events such as earthquakes, flood, catastrophic accidents, fires or explosions. It is a phenomenon that can cause damage to life and property and destroy the economic, social and cultural life of people.

In contemporary academics, disasters are seen as the consequence of inappropriately managed risk. These risks are the product of a combination of both hazards and vulnerability. Hazards that strike in areas with low vulnerability will never become disasters, as in the case of un-inhabited regions (Agbo, 2008).

Haddow and Bullock (2005) as cited in Lamidi and

Benson (2014) posited that risks are most often man-made which seldom led to crisis and disaster as the case may be. Carter (1999) identified two types of disaster - Natural and man-made. Major natural disasters include flood, cyclones, cold waves, drought, thunderstorm, earthquake, heat waves, mud slides and storms among others. On the other hand, man-made disasters include fire outbreak, road accident, riots, food poisoning, epidemic, industrial accidents, oil spills, deliberate attacks, deforestation, environmental pollution, building collapse, plane crash, chemical pollutions, act of terrorism and war, pipeline vandalism, etc. It therefore, becomes imperative for a preventive system to be designed at mitigating all forms of disasters - this constitutes the focal point of emergency management.

In recent times especially in the developing countries as in Nigeria, cases of pipeline vandalism are rampant. The Nigerian National Petroleum Corporation (NNPC) depots and its pipelines at different locations around the country have suffered severe product shortages due to the nefarious activities of the vandals who destroy the pipelines feeding the activities (Nwachukwu, 2003). Statistics from the Nigerian National Petroleum Corporation (NNPC, 2012) shows increase in the frequency of vandalism on the pipelines across the country. The statistics show that Port Harcourt territory which reported about 600 instances of pipeline damage owing to vandalism in 2003, was by 2006 already reporting 1,650 instances between January and September alone. Reported cases of vandalism in the Warri area escalated from only 100 to 600 during the same period. Furthermore, the Mosimi area, which recorded only 50 cases of vandalism in 2003, reported about 375 between January and September 2006 (Ekwo, 2011). Instances of high frequency of pipeline vandalism have also appeared where formerly they were rare and isolated. The Kaduna and Gombe areas have lately recorded high frequency cases of vandalism. The frequent attacks by vandals on the pipelines in these areas have also accounted for pipeline fire disasters in the last decade. This has jeopardized both human lives and the environment in the areas surrounding the pipeline (Onuoha, 2008), hence the need for this study.

METHODOLOGY

The study area is the Niger Delta Region of Nigeria, located at latitude 4º49'60" North andlongitude 6º0'00" East (Figure 1) protruding towards the Gulf of Guinea on the Atlantic coast of West Africa (Shittu, 2014). The Niger Delta region is a densely populated area in Nigeria. Its population is about 31 million people. The land mass extends over about 70,000 km^2, and make up 7.5 percent of Nigeria's landmass. The region consists of the present day Abia, Akwa-Ibom, Bayelsa, Cross- River, Delta, Edo, Imo, Ondo, and Rivers States. It harbours more than 40 ethnic groups, which include: the Annang, Efik, Ibibio, Isoko, Ijaw, Ikwerre, Oron, Itsekiri, Urhobo, Ukwani, Kalabari, Ibo, etc. Each of these ethnic groups has its own unique feature in terms of culture. The Niger Delta region is oil-rich by nature and has been the centre of international controversy over waste of natural resources, pipeline vandalism, devastating pollution, ecocide, and human rights violations. The nation extracts over 2 million barrels of crude oil from the Niger Delta region in a day (Ekwo, 2011).

The simple random sampling method was used in selecting the sample for the study. Using this technique, the three states of study was selected. From among the selected states (3), three LGAs and two communities each was also selected. For this study, eighteen (18) communities representing nine (9) local government areas from three (3) states of the study area was used. The randomly selected states, LGAs and communities are: Bayelsa, Imo and Rivers States; while Sagbama, Yenagoa, and Kolokuma/Okpokuma, Ohaji/Egbema, Oru East, and Oguta, Emohua, Eleme, and Ikwerre, were selected as LGAs for enumeration. The communities selected and their population is shown in Table 1.

A total of 400 respondents were used for the study, this was achieved from using the Taro Yamane formula for sample size determination, hence 400 copies of questionnaire which is the major source of data collection were administered to the respondents using the proportionate sampling technique but 392 copies of the questionnaire were distributed and returned for analysis. This study adopted the use of both primary and secondary sources of data. The data collected were analysed using descriptive statistics.

RESULTS

Disaster management strategies employed by oil companies

Table 2 revealed that 69.9% of the respondents agreed that oil companies are operating in their community while 30.1% claimed oil companies are not operating in their community. Also, 30.1% of the respondents agreed that oil companies have flow station in their community while 69.9% claimed an oil company does not have flow station in their community. 65.1% of the respondents agreed that there have been cases of pipeline vandalism on oil companies' infrastructure while 34.9% claimed no cases of pipeline vandalism on oil companies' infrastructure. The finding revealed that 40.1% of the respondents claimed to be aware of means used by the oil corporations to prevent/mitigate the occurrence of pipeline vandalism while 59.9% claimed not to be aware of prevention/ mitigation used by oil companies.

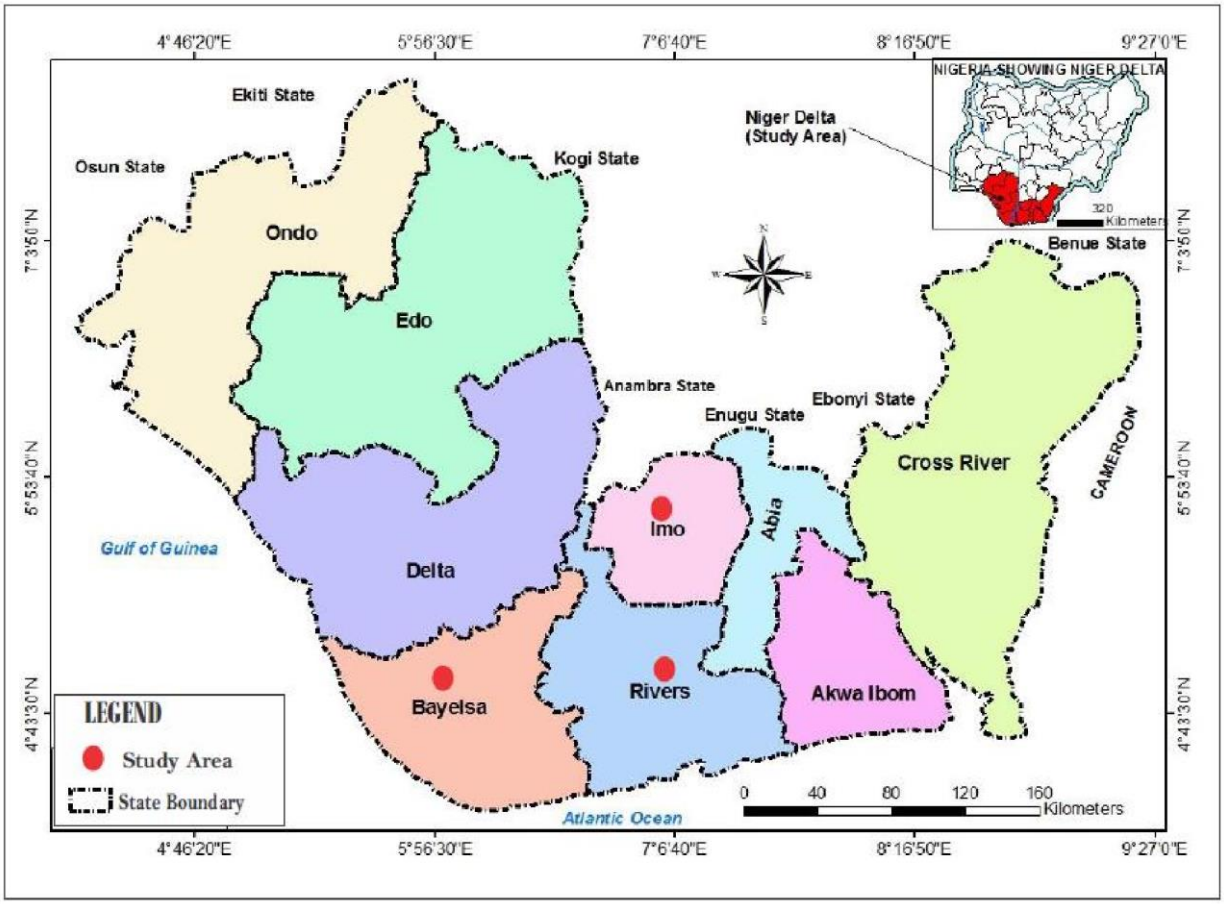

Figure 1. Niger Delta showing selected states of study.

The prevention/mitigation for oil companies as shown in Table 3 revealed that 20.0% of the respondents claimed that meeting with community is the strategy for prevention/ mitigation against pipeline vandalism adopted by oil companies, 10.7% claimed empowerment workshops while 6.1%. 59.9%, 1.3% and 2.0% of the respondents claimed education programs, media announcement, no strategy and others as strategies adopted by the oil companies respectively. Also, the preparedness activities of the oil companies revealed that 7.9% of the respondents claimed that maintenance of oil pipelines is the prepared-ness activities engaged by oil companies, 63.3% claimed security engagement while 6.4%. 12.0%, 8.9% and 1.5% of the respondents claimed emergency contact points, public enlightenment, area surveillance and others form as strategies adopted by the oil companies respectively.

From Table 4, the response activities of oil companies revealed that 18.3% of the respondents claimed facilitating repair of pipelines is the response strategy adopted by oil companies, 58.6% claimed activation of security agencies while 5.4%. 10.5%, 3.1% and 4.1% of the respondents claimed medical treatment of victims, clean-up activities, search and rescue and activation of emergency spill response team as response strategies adopted by the oil companies respectively. The recovery/rehabilitation activities of oil companies revealed that 8.9% of the respondents claimed providing relief materials to victims is the recovery/rehabilitation strategy adopted by oil companies, 54.1% claimed community arrest of vandals while 16.6%, 5.6% and 14.8% of the respondents claimed repair of damaged community infrastructure, payment of compensation to victims and community re-orientation on effects of pipeline vandalism as recovery strategies adopted by the oil companies respectively.

Table 5, revealed that 61.0% of the respondents claimed to be aware of government agencies activities towards pipeline vandalism in the community while 39.0% claimed they are not aware of government agencies activities towards pipeline vandalism in the community. Also, the operational overtime revealed that 62.0% of the respondents claimed the government agencies have been operational overtime while 38.0% of the respondents claimed the government agencies have not been operational overtime.

Table 1. Population of the study and sample size determination.

Communities of study	1991 Population (NPC)	Projected Population (2020)	Distribution of the Questionnaire
Imo State			
Awarra	13,726	34,727	26
Mmahu	3,239	8,195	6
Eziorsu	3,286	8,314	6
Izombe	11,382	28,797	22
Ofekatta	4,253	10,760	8
Awomamma	3,255	8,235	6
Rivers State			
Elele-Alimini	10,383	26,269	20
Rumuji	6,719	16,999	4
Elele	32,709	82,754	61
Apani	5,099	12,901	10
Alode	7,236	18,307	14
Aleto	7,322	18,525	14
Bayelsa State			
Kaima	8,754	22,148	17
Kalama/Sampoo	571	1,445	2
Agbere	9,482	23,990	18
Sagbama	86,859	219,753	161
Kalaba	825	2,087	2
Ikarama	1036	2,621	3
Total		546,827	400

Source: National Population Commission, 2019 and Researchers Computation

Table 2. Disaster management strategies employed by oil companies.

Variable	Frequency (n=392)	Percentage (%)
Presence of oil company in the locality		
Yes	277	70.6
No	115	29.4
Presence of flow station in the locality		
Yes	293	74.7
No	99	25.3
Awareness of pipeline vandalism in the locality		
Yes	293	65.1
No	99	34.9
Prevention/mitigation of pipeline vandalism		
Yes	157	40.1
No	235	59.9

Source: Researcher's field work, 2021.

T**able 3.** Prevention/mitigation and preparedness activities of oil companies.

Variables	Frequency (n=392)	Percentage (%)
Prevention/mitigation activities of oil companies		
Meetings with community	78	20.0
Empowerment workshops	42	10.7
Education programs	24	6.1
Media Announcement	235	59.9
None	5	1.3
Others	8	2.0
Preparedness activities of oil companies		
Maintenance of oil pipelines	31	7.9
Security engagement	248	63.3
Emergency contact points	25	6.4
Public Enlightenment	47	12.0
Area surveillance	35	8.9
Others	6	1.5

Source: Researcher's field work, 2021.

Table 4. Response and recovery/rehabilitation activities of oil companies.

Variables	Frequency (n=392)	Percentage (%)
Response activities of oil companies		
Facilitates repair of pipelines	72	18.3
Activated Security Agencies	230	58.6
Medical treatment of victims	21	5.4
Clean-up activities	41	10.5
Search and Rescue	12	3.1
Activate emergency spill response team	16	4.1
Recovery/rehabilitation activities of oil companies		
Provide relief materials to victims	35	8.9
Community arrest of vandals	212	54.1
Repair of damaged community infrastructure	65	16.6
Payment of compensation to victims	22	5.6
Community re-orientation on effects of pipeline vandalism	58	14.8

Source: Researcher's field work, 2021.

Table 5. Disaster management strategies employed by government agencies.

Variable	Frequency (n=392)	Percentage (%)
Aware of Government agencies activities		
Yes	239	61.0
No	153	39.0
Operational overtime		
Yes	243	62.0
No	149	38.0

Source: Researcher's field work, 2021.

Table 6. Prevention/mitigation and preparedness activities of government agencies.

Variable	Frequency (n=392)	Percentage (%)
Prevention/mitigation activities of government agencies		
Security	225	57.4
Payment of Community Vigilante	52	13.3
Training/Public Enlightenment	29	7.4
Monitoring of Pipeline	41	10.5
Government Community Collaboration	33	8.4
Corporate Social Responsibility	12	3.1
Preparedness activities of government agencies		
Community Engagement	84	21.4
Security engagement	221	56.4
Emergency contact points	17	4.3
Public Enlightenment	33	8.4
Area surveillance	27	6.9
Others	10	2.6

Source: Researcher's field work, 2021.

Table 7. Response and recovery/rehabilitation activities of government agencies.

Variables	Frequency (n=392)	Percentage (%)
Response activities of government agencies		
Arrests of vandals/victims	54	13.8
Medical treatment of victims	34	8.7
Clean- up activities	21	5.4
Search and Rescue	13	3.3
Activate emergency spill response team	270	68.8
Recovery/rehabilitation activities of government agencies		
Provide relief materials to victims	28	7.1
Community arrest of vandals	245	62.5
Repair of damaged community infrastructure	54	13.8
Payment of compensation to victims	23	5.9
Community re-orientation on effects of pipeline vandalism using the media	42	10.7

Source: Researcher's field work, 2021.

Disaster management strategies employed by government agencies

From Table 6, prevention/mitigation activities of government agencies revealed that 57.4% of the respondents claimed that security is the prevention/mitigation activities engaged by government agencies, 13.3% claimed payment of community vigilante while 7.4%. 10.5%, 8.4% and 3.0% of the respondents claimed training/public enlightenment on the dangers of pipeline vandalism, monitoring of pipelines, joint collaboration with community leadership on pipeline policing (surveillance) and corporate social responsibility are the prevention/mitigation activities engaged by government agencies respectively. The preparedness activities of government agencies revealed that 21.4% of the respondents claimed community engagement is the preparedness activities adopted by government and its agencies, 56.4% claimed security engagement while 4.3%, 8.4%, 6.9% and 2.6% of the respondents claimed emergency contact points, public enlightenment, area surveillance and other activities as the preparedness activities adopted by government and its agencies respectively.

From Table 7, the response strategies of government agencies revealed that 13.8% of the respondents claimed arrest of vandals/victims is the response strategy adopted

by government and its agencies, 8.7% claimed medical treatment of victims while 5.4%, 3.3% and 68.8% of the respondents claimed clean-up activities, search and rescue and activation of emergency spill response team as the response strategies adopted by government and its agencies respectively. Recovery/rehabilitation strategies of government agencies revealed that 7.1% of the respondents claimed providing relief materials to victims is the recovery/rehabilitation strategy adopted by government and its agencies, 62.5% claimed community arrest of vandals while 13.8%. 5.9% and 10.7% of the respondents claimed repair of damaged community infrastructure, payment of compensation to victims and community re-orientation on effects of pipeline vandalism as recovery strategies adopted by government and its agencies respectively.

DISCUSSIONS

Disaster management strategies employed by oil companies

Many of the respondents (agreed that oil companies are operating in their community but does not have flow station in their community. The respondents agreed that there have been cases of pipeline vandalism on oil companies' infrastructure; however, they are unaware of prevent/ mitigation means used by the oil corporations to prevent/ mitigate the occurrence of pipeline vandalism. Considering the various strategies for disaster management adopted by the oil companies, the respondents perceived media announcement as the most adopted prevention/mitigation activities of oil companies. The finding corroborated with the Shell Sustainability Report (2019) which highlighted media engagement as part of the effort to prevention of oil spill due to third-party interference (vandalism). According to SPDC, the media engagement is collaborative engagement with community representative and government official to create more awareness on the negative effect of oil spill through van-dalism on the environment and socio-economic generally. Furthermore, security engagement was perceived as the major preparedness strategy adopted by the oil com-panies. The response strategy adopted by oil companies as perceived by the respondents is the activation of security agencies, facilitation of repairs of pipelines and clean-up activities. The recovery/rehabilitation strategy adopted by oil companies was community arrest of vandals, repair of damaged pipelines and community re-orientation on effects of pipeline vandalism using the media.

Disaster management strategies employed by government agencies

The respondents claimed to be aware of government agencies activities towards pipeline vandalism in the community and that those agencies have been operational over time. This finding is supported by Tomas (2010) as cited in Odalonu (2015) which asserted the government military presence in the region since 2003 and the deployment of Joint Task Force in 2008. On the prevention/mitigation and preparedness acti-vities engaged by government agencies, security engage-ment was perceived as the most adopted strategies. This supported the finding of Adishi and Hunga (2017) which suggested that Nigeria government have attempted to prevent vandalism through the formation of new security platform and militarization of various areas of the Niger Delta; however, it has not achieved the expected success.

Among the respondents, activation of emergency spill response team is the response strategy adopted by government and its agencies followed by arrest of vandals/victim and medical treatment of victims. Among various strategies adopted by government and its agencies for recovery/rehabilitation, community arrest of vandals was perceived as the most adopted strategy. This finding is corroborated with that of Ogodo (2012) as cited in Odalonu (2015) which noted that the JFT at several times launched offensive operations on various vandals and the outfit had paraded several of these vandals.

Conclusions and Recommendations

The study however concluded that efforts have been made to examine the various disaster management strategies employed by oil companies and government agencies on oil pipeline vandalism with a view to ascertain their effectiveness across the study areas. The damaging effects of oil pipeline vandalisms are enormous and cut-across various aspect of life both at the community and national level. On this basis the following recommenda-tions were made;

1. The government need to consider the adoption of environmental justice principles that ensures right to environmental protection and prevention of resource injustice of host communities.
2. There is need to address and/or re-address the importance of improved livelihood for many impacted individuals due to various oil and gas operations.
3. Oil multinationals should synergize with credible formal community-based platforms to work out a grassroots approach to pipelines surveillance and protection.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

REFERENCES

Adishi, E., & Hunga, M. O. (2017). Oil Theft, Illegal Bunkering and

Pipeline Vandalism: It's Impact on Nigeria Economy, 2015–2016. *International Journal of Economics and Business Management*, 3(2), 47-65.

Agbo, C. (2008). Principles of disaster management. National Emergency Management Agency: Quarterly News magazine ISSN 1596-8979, Vol. 1 No.9, July-September.

Carter, W. N. (1991). *Disaster management handbook*. Manila; ADB

Ekwo, U. S. (2011). *Collaboration-based management of petroleum pipeline rights of way in Nigeria* (Doctoral dissertation, Newcastle University).

Lamidi, O. K., & Benson, K. S. (2014). Institutional need and relevance of emergency management agency in the Nigerian local government system. *International Journal of Politics and Good Governance*, 5(5.2), 1-17.

Nwachukwu, M. U. (2003). The Impact of Pipeline Related Problems on the Distribution of Petroleum Products in Nigeria. *Environmental and Research Journal*, 3(1), 7-16.

NNPC (2012) Annual Statistical Bulletin. Retrieved from https://www.nnpcgroup.com.

Odalonu, H. B. (2015). Upsurge of oil theft and illegal bunkering in the Niger Delta region of Nigeria: is there a way out? Mediterranean Journal of Social Sciences, 6(3), 563-573.

Oluwatuyi, O., & Ileri, O. M. (2013). Petrol tanker disaster, pipeline vandalization and impacts on regional development in Nigeria. *International Business and Management*, 7(1), 112-116.

Onuoha, F. (2007). Poverty, pipeline vandalization /explosion and human security: Integrating disaster management into poverty reduction in Nigeria. *African Security Review*, 16(2), 94-108.

Shell Sustainability Report (2019). Retrieved from https://reports.shell.com/sustainability-report/2019/special-reports/spill-prevention-and-response-in-nigeria.html.

Shittu, W. J. A. (2014). *Mapping oil spill human health risk in rivers state, Niger Delta, Nigeria* (Doctoral dissertation, University of Nottingham).

United Nations Office for Disaster Risk Reduction (NNDRR) (2009). *2009 UNISDR terminology on disaster risk reduction*. Prevent Web.