

Oil and Gas Pipelines versus Environmental Health and Safety in the Niger Delta Region of Nigeria

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ABSTRACT

This paper analyses the impact of oil and gas pipelines on the environment and settlements from the perspective of environmental health and safety, using a case study of the oil-producing communities in the Niger Delta region of Nigeria. The paper mobilises theories of environmental justice to support an in-depth empirical analysis of the development and management of oil and gas pipelines in the region. The empirical evidence equally suggests that the lack of community involvement and appropriate recognition of some groups of stakeholders in the management of the oil and gas pipeline project is strongly related to the incidence of pipeline impacts on the communities. The paper advocates a new approach, based on the core principles of environmental justice that promotes inclusion of the necessary stakeholders, including the physical planners, and would incorporate local knowledge and experience into the environmental management of the region in a way to protect the environment and people from the impacts of the pipeline.

Keywords: *environmental justice, planning, oil and gas pipelines, Niger Delta, Nigeria*

INTRODUCTION

Pipeline maintenance is another important activity that ensures the integrity of pipelines and the safety of people in the vicinity. The oil producing communities have often attributed most of the spillages to the lack of proper maintenance of oil and

gas pipelines by the companies. After construction, periodic monitoring and repairs are vital requirements for a successful pipeline network. Figure 1 below shows a scene of fire outbreak caused by an oil pipeline leakage.



Figure 1: A ruptured oil pipeline burns in a Lagos Suburb after an explosion in 2008 which killed at least 100 people

Source: The Observer, 2010.

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Even when the pipeline is no longer in use, it is left to rust in the open field as the companies are not very willing to spend money dismantling (decommissioning) the pipeline. For example, a respondent to a group discussion has argued that “some oil and gas pipelines in their community well are over 35 years old”. Readings from literature further support the respondent’s view. For example, Nwilo and Badejo (2008) point out that the actual life span of an oil pipeline recommended by the International Body of Oil and Gas Pipelines Marketing is between 20-25 years. While the communities continue to point accusing fingers at the negligence of the oil companies in failing to replace old pipelines, the oil companies have defended themselves during the interviews by lamenting that the local communities would not

allow replacement of oil and gas pipelines without being given monetary compensation. However, during field observation, it was noticed that when oil pipelines are left on the surface, they occupy agricultural land, separate communities and impede free movement of people. More so, it was observed that oil companies prefer leaving unused pipelines on the surface instead of burying them underground. It was a collective view from the staff of oil companies that they prefer leaving unused pipelines on the surface than installing them underground because, as long as oil pipelines are buried underground, whether or not they are in use, the communities will assume they are functioning in order to justify their demand for further compensation.

Figure 2 below shows a young girl walking across the vast oil and gas pipelines that run through the middle of her town of Okrika in the Niger Delta region of Nigeria.



Figure 2: Erosion exposes Oil pipelines in a community of Okrika.
Source: Circles of Blue, 2009.

LITERATURE REVIEW

Air, Land and Water Pollution

In 2006, the United Nations Development Programme (UNDP) pointed out that between 1976 and 2001; a total number of 6,817 oil spill incidents were recorded in the Niger Delta, with a significant loss of approximately 2.1 million barrels of oil to the environment. However, Moffat and Linden (1995) do not only blame the activities of the oil multinationals in the Niger Delta, but also the Nigerian government, because decades of non-existent environmental regulations have allowed oil companies to operate their facilities without incorporating the costs of environmental damage into their decision-making policies. Air, land and water pollution occur in the course of petroleum pipeline construction. For example, it was gathered from the empirical findings in the course of this paper that large

Damage to the Vegetation

In attempts to construct oil and gas pipelines, oil companies have constructed canals that in some cases have caused saltwater to flow into freshwater zones, destroying the fresh water ecological system. Oil companies constantly dredge river channels to facilitate navigation. Similarly, oil spillage adversely alters the biodiversity of the environment as it destroys soil, plants, animals and water resources as a result of the toxicity of oil. In 1980 for example, about 340 hectares of mangrove forest were lost to oil spillage in the Niger Delta Region of Nigeria as a result of

volume of dust and air-borne particulate matter, originating from construction sites during pipeline route digging, were discharged into the air in one of the study cases (Eleme community). When the air is laden with such dust, it can cause health hazard for some people. Pollution studies around Bille community in Rivers State of Nigeria have shown that several people are suffering from eye-related problems and asthmatic attacks due to the dust-laden air that prevails within a few kilometres radius of the oil pipelines construction sites (Aigbedion, 2005). As mentioned earlier, oil spillage, resulting from oil pipelines, has caused extensive water, air and land pollution in many parts of the Niger Delta Region. Another negative impact of the oil pipelines which the research analyses below is the kind of damage they cause to the vegetation of Niger Delta.

pipeline blow-out at a Texaco offshore location (Awosika, 1996). As indicated from speaking to a member of a non-government organisation; vast hectares of vegetation in the form of natural forest or crop plantation have been lost due to oil and gas pipelines networking. The NGO member referred to above further narrated that at Eleme and Okrika communities of Rivers State, a large amount of vegetation were stripped due to route clearing. Tolulope (2004) supports the NGO member when he stated that, in the Niger Delta region, oil spillage has equally affected the growth of vegetation; consequently, the growth of economic crops like

kola nuts has been drastically reduced within the vicinity of the spill due to the amount of oil that retards vegetative growth. Apart from information collected on air pollution and damage to vegetation of the Niger Delta region of Nigeria, data was also collected on the coastal and ecological disturbance which is reported below.

Coastal Pollution and Ecological Disturbance

In the context of this paper, the term coastal pollution is used as defined by the United Nations Group of Experts on Scientific Aspects of Marine Environmental Protection (GESAMP): "Introduction by man of substances into the marine environment resulting in such deleterious effects as harm to living resources, hazards to human health, hindrance to marine activities including fishing, impairment of quality for use of sea water and reduction of amenities" (GESAMP, 1969:60). In 1993, a study by the Organisation for Economic Cooperation and Development (OECD) showed that waste disposal and pollution control is one of the critical competing demands for coastal and marine resources. Nakashima (1997) makes it clear that oil and gas activities pose some significant threats to the long-term sustainability of coastal ecosystems through their hydrocarbons operations and the corresponding marine transportation of their products worldwide. The biodiversity of communities living in the region are affected in various ways.

According to the empirical materials obtained in the course of this paper, the gas pipelines construction at Ughelli community in Delta State of Nigeria affected the plant and animal populations. Some of the animals were said to have migrated to other parts of the Niger Delta region. In like manner, the oil spills that occurred in Peremabiri community of Bayelsa in the year 2000 was said by interviewees to have affected both soil and water, resulting in the death of, especially, fishes and other aquatic creatures, as well as some terrestrial animals particularly those that feed on fish and lower plants. Aigbedion and Iyayi (2007) further lament the effects of oil spillage on Niger Delta communities when they note that whenever oil spill occurs, the soil gets soaked in oil, and water will be filmed with oil, consequently, the ecosystem suffers not only disequilibria but also pronounced degradation with dire consequences on the food chain.

Degradation of Natural Landscape

Patin (1999) maintains that the coastal zone is where the main living resources of the ocean reproduce and at the same time, it serves as home to most of the known oil and gas fields. Talking of the assimilation capacity of the ecosystem, Beatley *et al.* (2002) argue that, over time, the recuperative abilities of the natural environment in this zone will not be able to withstand the pressures from the oil and gas sectors without a significant alteration or degradation. The degradation of natural landscape

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was clearly observed with the Eleme vegetation where oil pipeline construction has resulted in the destruction of scenic landscape and has left widespread erosion and some alluvial heaps behind. A resident at Eleme noted this during an informal discussion. When asked about the efforts of the company to help reduce the degradation of the natural landscape, responses from the oil company staff suggest that there are huge challenges in working in the Niger Delta region. These challenges they expressed in the areas of their relationship with the host communities; securities of their lives and properties; and their relationship with the Nigerian government in terms of policies and procedures guiding their operations. On the other hand, the oil companies blamed the communities for making them

undertake multiple negotiations before they could be allowed to work. They argued that the issues concerning oil and gas pipelines is a matter in which the generality of the populace should be involved, since they have observed that most of the time, the communities are not well represented by their representative, particularly on the issue of compensation. They further expressed some bitterness about the fact that the Niger Delta youths come from the surrounding towns to the companies to stage rioting. They also blamed the government which has not performed well in providing infrastructure and has not approved a certain sum for infrastructure provision. This they said has forced them to use the money from their vote to settle with the communities, often as the needs arise.

Study Area and Methodology

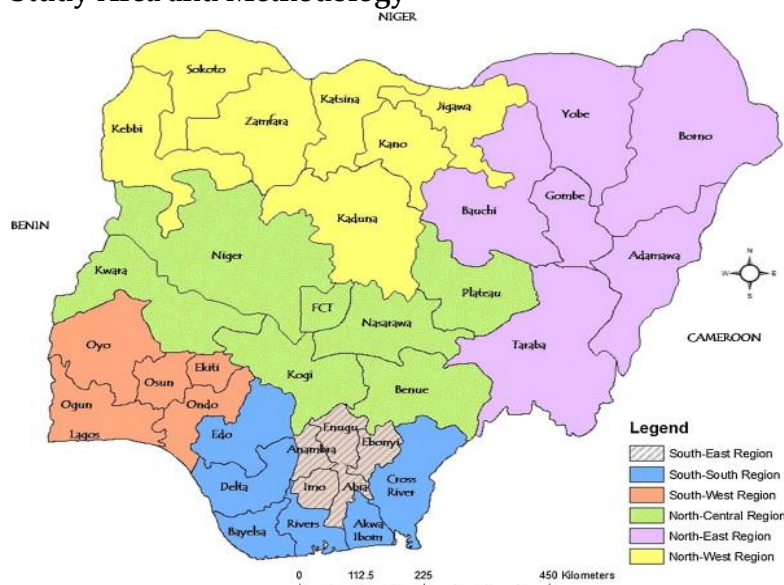


Figure 3: Map of Nigeria showing the six geo-political zones (Niger Delta Region in Blue).

The above map shows the six geo-political zones with the oil rich Niger Delta region occupying the South-South Zone. This study was conducted in the Niger Delta region of Nigeria. The region serves as the epicentre of Nigeria's oil industry activities which involve most of its crude oil exploration and marketing for the past 50 years.

MATERIALS AND METHODS

The data collection for this paper took place in three case study areas, and included a total of 6 group discussions, 30 in-depth interviews and 2 workshops. The method of data collection determines the reliability and validity of the result. The major approaches adopted for data collection in this study are group discussion and in-depth interviews with key informants. In addition, field observation and textual analysis were used to supplement the data.

Group Discussions

For this paper, the groups were all made up of 6 persons and above. Four group discussions were conducted at the beginning of the fieldwork to provide useful background information on the main impacts of the oil and gas pipelines, and to identify the main oil pipeline stakeholders and their roles regarding the impacts. This also helped to identify the policy actors to be enlisted for in-depth interview.

In-Depth Interviews

To balance the information on the issues of oil and gas pipelines under investigation and in addition to the group discussions, 30 in-depth interviews were conducted. For these interviews, five respondents were drawn from each of the following organisations: academia, local residents, government departments concerned with petroleum resources, non-governmental organisations (religious and environmental activist groups), oil companies, and physical planning departments.

Field Observation and Feedback Workshop

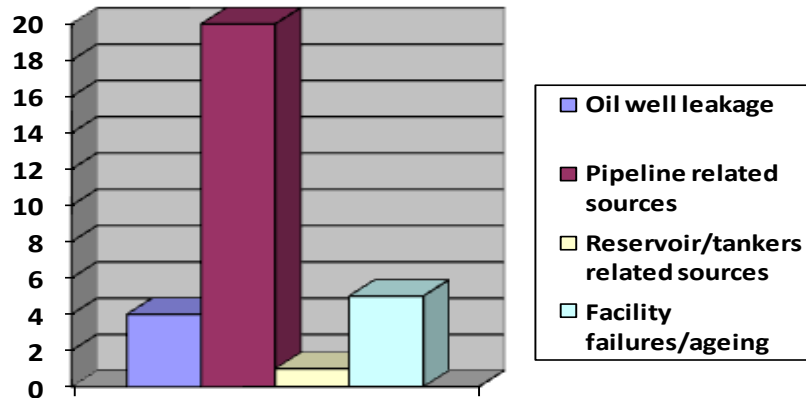
Two feedback workshops were organised towards the end of the fieldwork. The workshop made it possible to communicate preliminary results to the community in a way that would motivate them to act on and use the information, especially in local decision making. The question and answer time helped in gaining further information, for example, information on pipeline leakages and the compensation paid to the community.

RESULTS/DISCUSSIONS

A notable environmental effect of oil and gas pipeline activities is that of oil spills. No oil and gas pipeline activity is 100% efficient; even in the most technologically advanced countries; pipeline failure may result in oil spills. According to Ukwet *al.* (2006), apart from marine pollution and marine debris, oil spillage caused by human

activities poses a great danger to the marine environment of the Niger Delta. As such, it is a matter that requires an urgent attention. Whilst the oil companies did blame the local communities for most of the oil spill incidents in the Niger Delta region, the communities on the other hand have equally attributed oil spill as a were asked to state the single most important cause of oil spillage in the Niger Delta region.

major problem caused by the oil companies. When asked, during a group discussion, what might be the likely cause of an oil spill, a resident blamed the oil company before anything else. The result of the responses from the 30 respondents to the in-depth interviews is displayed in Table 1 below. Here, the respondents



Source: Author, 2010.

Figure 4: A chart showing causes of oil pollution as expressed by respondents

Source: Author, 2010.

| Sources | No of respondents | Percentage |
|--|-------------------|------------|
| Oil well leakage | 4 | 13 |
| Pipeline related sources | 20 | 67 |
| Reservoir/tankers related sources | 1 | 3 |
| Facility failures/ageing (Mechanical and engineering errors associated with other oil installations apart from pipelines) | 5 | 17 |
| Total | 30 | 100 |

From table 1 and figure 4 above, the impact of oil and gas pipelines is something of concern to the communities. When asked to rank the causes of oil pollution in their local communities, 67% of the respondents blamed the pipelines for most of the oil pollution incidence that have affected their sources of water, land, vegetation, health and socio-economic activities negatively; whilst only 3% of the respondents attributed the oil pollution to reservoir/tankers related sources. Besides oil pollution, it was also gathered from discussions and interviews with the local people that the construction on pipelines in their communities has caused some damages to their cultural artefacts and sites of cultural values, for instance the Igbesu shrine at Tombia was affected in the course of constructing the Tombia-Yenagoa gas pipeline network. Also, at Okirika where the oil pipelines were left on the surface, there were complaints from the respondents that the elderly men and women found it difficult to cross those pipelines to and from the market, farm and rivers. The surface pipelines were claimed by the respondents as causing accidents (broken legs and arms) to children who see the pipelines as play grounds. However, discussions with the oil company staff showed how the staff frowned at some of these claims by the local people. The staff contended that they have often done their best to minimize the impact of pipelines on the local communities and blamed the communities for sabotage on oil facilities.

Conclusion and the Way Forward

Using environmental and socio-economic data, and relating this to the literature, this paper has been able to identify, in line with the concept of environmental justice, some of the negative impacts of oil and gas pipelines activities in the Niger Delta Region of Nigeria. While some of the impacts can be categorised as short term, the majority fall into the long term category and have major impacts on the host communities and the environment. The paper notes that at all stages of the petroleum pipeline networking; the negative externalities far outweigh the positive impacts of the pipelines on the environment and the communities. Thus, there is a call for urgent and necessary intervention by all stakeholders to harmonise their policies in order to achieve a concerted goal of protecting and sustaining the coastal settlements and the environment of the Niger Delta region of Nigeria. Based on the findings of this study, the Niger Delta communities are faced with serious environmental degradation as a result of oil pollution caused by leakages or explosion of oil and gas pipelines. This does not solely affect the natural environment but has significantly impacted on the lives of the inhabitants of these communities. The findings also revealed that there is great awareness regarding oil spillage occurrences and their impacts among the people in the communities studied. This could be due to the incessant occurrence of such cases, not only within these communities but also across the entire region. As such,

it can be inferred that oil spill is a common phenomenon in the Niger Delta region. Although the causes of the spills have been attributed to a range of factors including facility failure, pipeline rupture and vandalism, bunkering, sabotage, and militancy, the communities ascribed most of the blame to the oil companies, because of their negligence in preventing most incidences and their failure to provide appropriate oil and gas pipeline maintenance measures, that would curtail the menace of oil pollution through pipelines in the region. This indicates the need to devise a means for ensuring the protection of the environment and people who are mostly affected at the local level by pipelines activities. This advocates for an environmental management programme that would involve all the stakeholders in the context of environmental justice for the region. As a way forward, the paper recommends full involvement of physical planners and the local people in all stages of and decisions on pipelines networking in the region. It further calls for due recognition of the local people in the region by the government and the oil multinationals. The paper recommends a wholistic framework of environmental management for the region.

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