THE IMPACT OF OIL AND GAS EXTRACTION IN NIGER DELTA: A NEED FOR ENVIRONMENTAL SAFETY AND SUSTAINABILITY IN KOLMANI, NIGERIA

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ABSTRACT

Oil and gas extraction generates economic benefits, which leads to jubilation among the people of Kolmani. However, the lack of awareness regarding the detrimental environmental consequences of unsustainable oil and gas extraction renders this jubilation worthless. It is on this drawback that this review paper presents experiences of the environmentally unsustainable impact of oil and gas extractions pictorially, in order to build a sense of environmental safety, consciousness, and a desire for a sustainable environment. To achieve this, experiences of the Niger Delta expressed through militancy where militants attacked oil and gas installations, a response to the feelings of being exploited and demanded a share of the revenue, kidnapping, and hostage-taking, a tactic in getting the government to address their grievances, secure release of detained members and for ransom, vandalization of oil and gas installations a consistent strategy used to command government attention, oil bunkering an illegally siphoning oil from the pipelines, loss of livelihood sources affecting the social and economic lives of the people, the degraded environment which posed health risks and reduced biodiversity, and water pollution which contaminate the drinking water and harmed the aquatic life were reviewed and presented pictorially. It is therefore concluded that environmental safety and sustainability are essential for present and future generations and recommend ways to protect the environment from oil and gas activities, such as community awareness, conflict resolution, regulatory enforcement, and environmental impact assessment.

Keywords: Environmental Safety, Kolmani, Niger Delta, Need, Oil and Gas Extraction, Sustainability.
INTRODUCTION

Located on Latitude 10° 07'03.9'' N and Longitude 10° 42' 43.8''E, Kolmani a village in Alkalari Local Government Area (LGA) of Bauchi State, Nigeria (Nwojjijim et al., 2013) was swamped with people in jubilations at the announcement of the oil and gas discovery. The jubilation was in recognition of the economic benefits of derivation being an oil-producing community these resources are expected to command (Babalola, 2022). No doubt Niger Delta states enjoyed 13% derivation from sales of oil and gas extracted from their states as acknowledged in section 162(2) of Nigeria’s 1999 constitution (Emmanuel and Sofiri, 2020). The benefits comes in billions which Emmanuel and Sofiri (2020) alleged that it was mainly to cushion the effects of the destructions resulting from oil and gas exploration, as well as to recompense oil producing communities for divesting them of their proprietary right. Corroborating this is Ebiri, (2019) who states that derivation is a financial incentive disbursed to oil producing communities as a way to encourage them to create a more enabling environment for more production of crude oil and gas. This provides a base for the celebration by the people of Kolmani when drilling was recently flagged off by the President. Many people in Kolmani are uninformed of the impact of the environmentally unsustainable extraction of oil and gas that has threatened health, social well-being environmental safety, and sustainability since the extraction of oil and gas began in the Niger-delta region. However, environmentally unsustainable oil and gas extraction has a deleterious impact on the environment which Sustainable Development Goal (SDG) 11 frowned at and prompted Planitz and Kuzu (2015) to advance the existence of apprehensions worldwide linked both in the biophysical and socio-economic environment around the oil fields, a need for environmental health, safety and sustainability in Kolmani.

Over two decades ago, according to Wapwera et al. (2023), the worrisome reality of the deleterious impact of unsustainable oil and gas extraction on the environment reversed the celebrations and excitement the people of Niger-delta felt upon the discovery of oil and gas to agitations and restiveness expressed through kidnapping, vandalism, hostage taking, and oil bunkering, among others, owing to the socio-economic, health and environmental challenges the region is plunged into. These experiences, despite being widely documented remain vague or elusive to the people of Kolmani (Wapwera et al., 2023).

The tripod supporting jubilations was the quantum of oil and gas deposit in the Kolmani oil field as estimated by the Nigerian National Petroleum Company (NNPC) to include: one billion barrels of crude oil reserves and 500 billion standard cubic feet of gas which is the first phase of the exploration will entail an in-situ oil refinery of up to 120,000 barrels in a day, a plant to process about 500 million standard cubic feet of gas per day, a 300-megawatt capacity power plant, and a 2,500 tons per day fertilizer plant, (Jeremiah et al., 2022). Many in Kolmani felt a sigh of relief socially and economically but such feelings cannot be put off if, extraction is done with the lens of environmental, health, safety, and sustainability, not the Niger-delta way. If a bird eye view of the Niger-delta region taken before and after the discovery of oil and gas with the lens of an environmentalist is shown to the people of Kolmani, none will celebrate the discovery of oil and gas in Kolmani, as the extraction in the Niger-delta region has brought more pains and agony through, land clearing, gas flaring, health-related issues, poor infrastructural development, and spills which have left land and waterways inaccessible and unproductive, (Malden, 2017; Mafiana et al., 2021) this can better be described as blessings in futility as about 64% of the population has neither a stable income nor access to basic amenities, (Malden, 2017). Bribena (2017) alleged that the need for food led to further deforestation of the region and exploitation of marginal land, thereby enhancing environmental health, safety, and
sustainability challenges. Environmentally unsustainable extraction of oil and gas has inflicted severe environmental degradation on oil-bearing communities as a result of oil spillage and other environmental challenges, with socio-economic activities adversely affected, leaving the people completely impoverished, no meaningful alternative source of livelihood, reduce the people ability to farm, fish and live in a healthy and safe environment, loss of livelihoods, and poverty which undermining the parents' ability to send their children to school or participate in skills building, (Ikelegbe and Umukoro, 2016; Abimbola, 2019; Eboh, 2019).

The aforementioned impact of oil and gas extraction in the Niger-delta made Eboh (2019) to allege that land, water, and air have been polluted with spilled oil and flared gas. The spilled oil causes oxygen depletion, deteriorate the thermal insulation of some organisms, changes in the behavior and reproductive systems of those organisms that come into contact with the oil, mass mortality and decomposition of aquatic animals, loss of a major food source, death and extinction of one or more species as outlined by Libre Texts libraries (2023). This has heightened youth restiveness and apprehension on the importance of oil and gas in the region. Spilled oil reduces the soil’s fertility, dead of plants, reduces and restricts permeability when hydrocarbons fill the soil pores expel water and air, degradable soil texture, infiltration, hydraulic conductivity, moisture content and density, which affect root and leaf development and plant growth and plant yield thereby affecting farm income, and by extension, the social and economic livelihoods of farming communities (Brian, 1977; Michael, 1978; Odugwu, 1987; Henry and Gary, 1996; Macdonal and Gilman, 2007; Abii and Nwosu, 2009 all cited in Simon and Jean, 2019). These have caused death and destruction of both biotic and abiotic components of the ecosystem, and have made the environment unproductive without commensurate alternative means of livelihood. Kareem et al. (2012) alleged that all stages of oil exploitation negatively affect the environment with no host community yet to suffer from environmentally unsustainable oil and gas extraction, reasons for various agitations by the indigene with implications on the people, environment, economic development of the region and national integration at large, as many billions of naira are loss through vandalization of oil installation, payment of ransom, bunkering decreasing accruing national income and causing spilled of extracted products, and making the people and the environment unsafe.

It is on these premises that this study is hinged to present pictorial expressions of the impacts of oil and gas extraction in the Niger-delta region which are lessons to Kolmani oil and gas fields where the first drill comes with lots of jubilations. Leveraging on UK (2018) studies that state human recall only 10% of what they listen to, 20% of what they read, and 80% of what they see because the human brain is better at processing pictures than the written words. The pictorial expression of the environmental impact of unsustainable oil and gas extraction will send lots of messages than abstract expression through written or verbal communications to the people, communities, states, government, and the nation, which will serve as a framework or reference in clamoring for environmentally health, safe, and sustainable oil and gas extraction in the newly commissioned Kolmani oil file to building a livable environment that sustainable development goal 11 strive to achieve.

**Pictorial Expression of Social Impact of Unsustainable Oil and Gas Exploitation, the Niger-delta Experienced**

Lots of audio and written communications on the impacts of oil and gas extraction in the Niger-delta region are on the shelves and internet which provides abstract feels of impact. Socio-economic and environmental issues of unsustainable extraction of oil and gas in the Niger-delta region which Oyadeyi (2012); Ogbadu et al. (2019); Eze-Michael (2020) enumerated as corruption, poverty, unemployment, youth restiveness, militancy, violence, and
lawlessness, hostage-taking of prominent citizens and expatriate oil workers, as well as oil bunkering, vandalization of oil installations, arms insurgence, cultism, etc. Maciver and Chukwuemeka (2019) expressed it as great security risks to this country; social restiveness, terrorism, and militancy which cause killings, destruction of public properties, confusion, rioting, hostage taking, arson, extorting money from innocent people, armed robbery, and theft, among other. Based on these issues, Enueme and Onyene (2010) report that it is becoming fashionable to use restiveness, terrorism, or militancy as a transactional scheme to get what they desire from concerned authorities or the government. Igbo and Ikpa (2013) alleged that it is socially unacceptable in any society, these social restiveness: terrorism, and militancy among others are presented pictorially as thus:

**Militancy in the Niger-delta Region**

The feelings of being exploited from the oil revenue, the destructive environmental impact experienced and the demand for improvement of conditions of living have fueled violence (militancy) as alleged by the European Union Agency for Asylum (EUAA, 2023). Obuah and Keke (2022) corroborate the above by stressing that it is irrelevant to say that oil has been of immense benefit to the Nigerian state as it is the most important revenue earner because the people of the region suffer pollution, piracy, kidnapping, militancy, religious and chieftaincy disputes, land crisis, unemployment, poor international image of the region, destruction of farmlands, contaminated drinking water, destroyed mangrove forest, fish and aquatic population and destruction of the biodiversity. This is adjudged to caused severe land and food shortages, poverty, unemployment, insecurity and environmental pollution and militarization of nearly the entire region by ethnic militia groups, the Nigerian military, and police forces, notably the Nigerian Mobile Police (Koos and Pierskalla, 2015). Militancy despite being described as an extreme form of deviant behaviour which is socially unacceptable (Igbo and Ikpa, 2013) is thriving in the region as a means of funding for individual and communities. There are various militant groups in the region, Ugwuanyi et al. (2014) expressed that the most potent of such militant groups include the Movement for the Emancipation of the Niger Delta (MEND), the Niger Delta Peoples Volunteer Force (NDPVP), the Niger Delta Vigilante, the Tombolo Boys (TTB), Joint Revolutionary Council (JRC), Matyrs Brigade (MB), and Icelanders Coalition for Military Action (ICMA) (Omadjohwoef, 2011); Plate 1A-F. These plates present a pictorial representation of militants in the Niger delta region displaying their might.

**Kidnapping and Hostage Taking in Niger Delta Region**

Another reoccurring decimal in the Niger-delta region of Nigeria is kidnapping and hostage-taking. Albert (2017a), described it as a pressure tactic used by militants to get the government to address their grievances, secure release of detained members, and source of income through collection of ransoms for the release of captive, with the funds used in funding their activities, plate 2A-F is a pictorial representation of kidnapped and rescued victims in the Niger delta region. Many Nigerians and foreigners have lost their lives as kidnapped victims or hostages. In expressing their might, militants execute some of the captives in demonstrating how brutal they are and could be (Albert et al., 2020), when government or individuals failed to heed to their demands. This experience has sent many people to an early grave. According to Eze-Michae (2020) some of the reasons that militants use to justify their actions are: the absence of social support and humanitarian aid, the high rate of poverty and unemployment, the poor governance and corruption among government officials, lack of adequate training programmes and employment opportunities, the scarcity of recreational facilities, and the low quality of education, poor infrastructures, same could be in Kolmani
should extraction of oil gas takes place in an environmentally unsafe and unsustainable manner or better described as the Niger-delta way.

The factors that will make people of Kolmani (Bauchi and Gombe States) susceptible to these acts are the fact that these states are among the educationally less advantageous states with high out-of-school children, high unemployment, and underemployed. Alkassim (2019) reported that 80% of youth in Bauchi are either unemployed or uneducated. These hungry and uneducated fellows can easily be used as tools to perpetrate these deadly acts that will harm national integration and the safety of citizens and expatriates. Another thing to note is the fact that many people in Bauchi and Gombe States depend on agriculture for their survival in which environmentally unsafe and unsustainable oil and gas extraction will increase their susceptibility to poverty with deviant behavior undeniable if allowed to continue the Niger-delta way.

Vandalization of Oil and Gas Installations

The most consistent strategy used by militants to command government attention is the vandalization of oil and gas installations through bombing, Kehinde (2021) of swift reporters expressed that one of the most worrisome issue in the Niger delta region is frequent attacks on oil and gas installations due to their devastating environmental effects, the attacks on oil and gas installations also comes with a lot of economic loses. It destroyed good fertile land for agriculture, reduced oil and gas revenue, and waste resources in transit which increased the volume of spilled in the environment. Nnodim (2021) alleged that the 2021 NNPC report stated, the cost of fixing the damaged oil and gas facilities was N898.93bn. The implication of this is that the resource that should have been used for the development of the country is diverted to repairs of oil and gas installation. Adekoya and Jeremiah (2019) report that the NNPC said oil and gas pipeline vandalism rose by 77 percent in June, the corporation's Monthly Financial and Operations Report (MFOR) released in the June edition shows that 106 pipeline points were breached as against the 60 points vandalized in the preceding month. The audit report by Nigeria Extractive Industries Transparency Initiative (NEITI) by Sada et al. (2013) revealed that, in three years 2009-2011, Nigeria and oil companies lost an estimated total of N1.737 trillion ($10,992,776,474). The total sum of the losses is put as N134,126,921,724 ($894,179,478), all were due to pipeline vandalism and crude oil thefts, see Plate 3A-F. These plates show the pictorial representation of vandalization of oil and gas installation, and group of people scooping oil from a vandalized pipeline.

Another medium at which large sum is used is in curbing the menace which Fatehins (2021) alleged that Nigerian government in order to improve pipeline security spent a huge sum of money on hiring private security firms and equipping the armed personnel to protect oil and gas installations. Another report also confirmed that NNPC spent over $600 million to fortify the security of oil and gas facilities (NOIPolls, 2013), this huge sum of money could have been used to improve the lives of the people and provide infrastructural facilities to the region. Vandalism of oil and gas installation in Nigeria has harmed the economy and the environment with the power sector also having a share. The vandalization of gas supply installation to the power sector has made many communities stay in the dark for months without a power supply and also affects industries that rely on power in production.
Figure 1: Various Militant Groups in Niger-delta Region of Nigeria.
Source: A: Ogbeche (2015); B: Mbachu (2008); C: Oladayo (2019); D: BBC (2012); E: Ahmed (2020); F: Economic Confidential (2016).

Figure 2: Kidnapped and Hostages in Captive and Released in Niger-delta Region.
Source: A: Saharanews (2020); B: Abolo (216); C: Campbell (2019); D: VOA (2010); E: Odu (2021); F: Said (2022).
Oil Bunkering in the Niger-Delta Region

Bodo et al. (2020) stated that oil bunkering is a common practice in the Niger Delta region in Nigeria and described as a thriving business with different militant groups, oil marketers, security personnel, indigenous oil servicing companies, and international businessmen engaged in this illicit trade. Campbell (2015) alleged that, in Nigeria more than 300,000 barrels of crude oil is lost to illegal bunkering which is equivalent to 15% of the 2.4 million barrels of crude oil produced daily by the nation with the monetary quantification of loses put at $1.7 billion i.e. more than 13 trillion lost monthly. Corroborating this, Albert et al. (2020) alleged that the oil stolen from the Niger Delta daily as reported by Shell in 2004 was between 60,000 to 90,000 barrels per day which the Nigerian Navy alleged the quantity could be higher as 150,000 barrels per day. Considering the revenue base of Nigeria being oil, and the fact that Nigeria gets about 90% of her export earnings from oil, it's unfortunate that these large quantities of oil that accrued to the revenue which should have been used for development and tackling some of the environmental challenges are stolen by certain sets of people. Based on this quantity of oil lost in a day, Albert et al. (2019) alleged that from fifth-biggest, Nigeria is now thirteenth biggest oil-producing country in the world.

Apart from the revenue lost to the country, oil bunkering also contributes to making the environment unsafe as oil bunkering has made oil spillages and pollutions a common occurrence in the Niger Delta region (Campbell, 2015). Thus, making multinationals and state-owned oil companies spent over $360 million on clean-up in the past two years, (Bodo and Gimah, 2020). This is rather unfortunate to have spent a huge amount of resources in cleaning the environment and enhancing its safety that bunkering had contributed to 70 percent of all oil spills through sabotage...
on its facilities as claimed by Shell Petroleum Development Company (SPDC) as revealed by Campbell (2015). If 70% of the spills caused by oil bunkering done by the indigene of the communities who care about their gains from the illicit activity without considering the contribution to making the environment unsafe and unhealthy, which the United Nations Environment Program (UNEP) discovered in their environmental assessment of Ogoniland in Rivers State that oil contamination had damaged the mangrove forests, contaminated the soil and water sources, wiped out the fish populations, and endangered the people’s well-being (UNEP, 2011). Those engaged in this illicit acts are inhuman considering the number of persons affected as their cry for environmental restoration still loud (Campbell, 2015). Despite these cries, Bodo (2019) stated that oil bunkering in the Niger Delta is still proceeding with greater intensity, plate’s 4A-F. These pictorial representation shows individuals engage in various oil bunkering activities in Niger delta region, shows a reservoir of crude oil and containers filled with refined oil.

![Images of oil bunkering activities](source: A and B: Law Carenigeria (2020); C: NAN (2015); D: Williams (2020); E: NAN (2017); F: Adamolekun, (2022).)

**Figure 4: Oil Bunkering in Niger-delta Region of Nigeria**

Loss of Source of Livelihood in Niger-delta Region

Livelihood, according to Loubser (1995), is the whole set of ways that people use to obtain what is necessities for existence and contentment and it is essentials for staying alive and being happy. This is the reason why a safe and healthy environment is very important to man and its sustainability for future generations cannot be overemphasized. Also, this explains why UNDP (2006) in their Niger Delta Human Development Report, expressed that the environment is very important to the people Niger of Delta where 60% of the population depends on the natural environment (biotic and abiotic) components for their livelihoods. When the environment is affected, the social and economic lives of the people are also affected, thus increasing unemployment, social deprivation, restiveness, poor agricultural output, abject poverty, filth and squalor, and endemic conflict. Olawoye (2000) alleged that out of the desires of earning a living, Niger-Deltans engage in illicit acts to ensure their survival and needs are met. These are
the reasons for constant agitation by indigenes of the region, oil theft, oil bunkering, militancy, hostage-taking, and other violence happenings in the region.

Oil spillage and gas flaring in the Niger-delta region being the most referenced form of pollutions, Ejiba et al. (2016) expressed that it has had consequences which has affected the living conditions of the people especially those that rely on the environment for fishing and agriculture for their sustenance, other issues of note are provision of portable water, pure and refined air, and green/clean land and waterways which has continued for decades and still threaten hope for a sustainable living. By nature the people are mostly fishermen and farmers, as such, they depend on the environment for their sustenance. Oyadongha (2021) in responding to the issue expressed that investigations conducted show a devastating situation in fishing and farming occupations. The spilled oil in the ecosystem, impact the people' health, source of livelihood and rendering the people unproductive, thus facing untold hardship. In an interview with one of the community leader as reported by Oyadongha (2021) the community leader alleged that, "if one should go into the swamp, the sight of discovery will becloud ones emotions as different kinds of aquatic animals will be seen death, plate 5A-F. A shows poor catch among fishermen; B show a man showing his hand with spilled oil after inserting in the water, C-F shows dead fishes in various locations.

According to Zabbey (2009) the fundamental rights to the existence of communities is impacted by environmental threats associated with oil and gas extraction, especially when such extraction is done without the consideration of environmental sustainability. It destroyed the sources of sustainable livelihoods; also contributing to this are poor monitoring and maintenance of oil and gas installations. Despite having policies and programmes aimed at protecting the environment, poor implementation of the existing legislative backing required for their protection against environmental destructions and degradations with their associated social exclusion has made the communities vulnerable to the negative impact of oil and gas extraction, thus threatening their safety and healthy living and contributing to poverty and unhealthy agitations among indigenes of the region. This influences the outburst of Balouga (2009) when he stated that about 70% of the people live below less than $1 a day i.e. below the poverty line. UNDP, (2006) alleged that the damages from oil operations are chronic and has damaged the coastal ecosystem and compromised fishing as the source of livelihoods and impoverished the people. This provoked Embeke 2000 (as cited in Inyang, 2018) to saying it is even more sad seeing the Niger Delta people living in poverty, yet billions of dollars' worth of oil is being extracted from beneath their mud houses on daily basis.

Impact on the Environment of Niger-delta Region

The environmental issues in the Niger Delta region are caused by environmentally unsafe and unsustainable oil and gas extraction. As the largest wetland, third largest drainage basin in Africa (Wetlands International, 2016), also its equatorial climate has made Obi (2012) describe it as an incredibly well-endowed ecosystem having the highest concentrations of biodiversity on the planet. In addition it supports abundant plant and animals, fertile alluvial soil that can sustain a wide variety of crops production, lumber or economic trees, and different species of freshwater fish than any ecosystem in West Africa. Oil and gas extraction has impacted the region negatively due to unprecedented oil spillage and gas flaring experienced in the past 60 years, making the region the most polluted in the world with over 9,343 cases of oil spills within 10 years compared to the European Union experience of 10 incidences in 40 years, (Albert, et al. 2017). These high incidences of oil spillage have positioned the region as one of the most petroleum-damaged environments in the world, (Kadafa, 2012; Anejionu et al., 2015)
Oil spillage and gas flaring affect the land, water, and air of the immediate oil-producing communities with little or no concern from those responsible and the government see plate 6. Effort on the part of the government and the multi-nationals companies, to control environmental problems associated therein are ineffective. The signs of these ineffective efforts arisen in the massive destruction of the environment, affecting vegetation, soil, fish, and human also affected, (Odu, 1972; Vidal, 2010) with no hope of when such will end, as it still a reoccurring decimal till date. Based on the attitude of the government and multi-national companies in the region, Numbere (2020) alleged that large tracts of the mangrove forests have been destroyed, and an estimated 5 – 10% of Nigeria's mangrove ecosystem has been wiped out, as the rainforest which previously occupied some 7,400sq.km of land has disappeared, (Agunobi et al., 2014). The damage done to the environment cannot be kept mute since oil and gas is just being discovered in Kolmani with extraction celebrated and the quest for ensuring environmental safety, health and well-being, provide clean water, protect life below water and on land, poverty and hunger reduction for sustainability as desired by sustainable development goals.

The soil as a natural resource has been of importance for human survival (Okoye, 2022), and it is generally regarded as the key receptacle of sundry pollutants from diverse sources. Since soil acts as an infinite sink of several pollutants, its chances to transfer pollutants to the food chain is high and which has huge public health implications (Khan et al., 2010) when impacted negatively. To Lu et al. (2012), it is important to note that the heavy metals content of oil not only impacts agricultural soils and farmlands by compromising soil ecological function and polluting groundwater but also may endanger living organisms, through bioaccumulation and entry into the food chain, (Du et al., 2015). The environmental degradation resulting from unsustainable oil and gas extraction as presented on plate 6A-F show various degraded land in the Niger delta region affects both biotic and abiotic components of the environment and human; a call is therefore made for environmentally sustainable extraction of oil and gas in order to project a healthy environment for all.

Impact on the Source of Water Supply in the Niger-delta

The peoples voices are loudly when they complain about health issues which include: breathing problems, miscarriages in women, asthma, skin lesions, etc. as contained in many pieces of literature. They are usually caused by the consumption of contaminated water resulting from oil spillage. It will interest everyone to know that every year; more than 1 million gallons of oil contaminate the oceans according to the U.S. Department of Energy (Thompson, 2010). According to Chelsea (2019) the world's water sources are contaminated by oil spills making it unsafe and unhealthy for human consumption. The contaminated parts of the ocean and can seep into the underground clean water source that supply humans and other species drinking water for their survival as it seeps into rivers, and lakes because these water bodies are naturally connected to the ocean. Further, while developed countries have access to clean water from manufacturing companies, many underdeveloped countries do not as poverty-ridden countries tend to suffer the most. This makes it important to review the impact of oil extraction on the water supply to the people of the Niger-delta region, which will caution the people of Kolmani where the first oil extraction is being celebrated because water is life and anything short of clean water supply is detrimental to the health of the people. In addition rainfall the natural source of replenishing water invariable in the area, which hardly last for four months.

Lindén and Pålsson (2013) reported that the continuing and vast contamination of the Niger Delta region remains unremediated, based on this, it is not surprising that findings of UNEP test revealed approximately three inches of refined
oil floating on the groundwater that supplies the community’s drinking water, (UNEP, 2011). Analysis of the water from the individual borehole shows the water contains numerous petroleum hydrocarbons, notably benzene at concentrations as high as 9280 micrograms per liter, approximately 1800 times higher than the United States Environmental Protection Agency (US EPA) drinking water standard and over 900 times higher than the World Health Organization (WHO) drinking water guideline (ATSDR, 2007; UNEP, 2011), making it unhealthy for human consumption and can be adjudged to why many people in the region suffers health issues such as breathing problems, miscarriages in women, asthma, skin lesions among others. Corroborating this Kponee et al. (2015) attest that consumption of contaminated water has adverse human health effects, acute exposures to high concentrations of volatile compounds (VOCs) cause central nervous system toxicity, resulting in symptoms such as headaches, fatigue, and dizziness (Greenberg, 1997, Kraut et al., 1988). Chronic exposure to VOCs can impair the immune system via oxidative stress and decrease white blood cell count (Uzma et al., 2008; Bahadar et al., 2014). Benzene in particular is strongly associated with disorders of the hematopoietic system such as aplastic anemia (Smith, 2010; Collins, 2014), plate 7A-F. Plate A shows women trying to fetch contaminated water; B-F shows different contaminated water bodies

![Figure 5: Dead Fishes Resulting from Oil Spillage in the Region](source: A: Akintunde (2016); B: NOAA (2021); C: HistoryVille (2020); D: Ravi (2010); E: Larry (2020); F: Nushera (2019).)
Figure 6: Environmental Destruction due to Oil and Gas Extraction in Niger-delta Region
Source: A: Ben (2011); B: Joel (2020); C: Orazulike (2021); D: Bashiru (2011); E: Elaine (2022); F: Daniel (2013).

Figure 7: Film of Oil in Water in Niger-delta Region.
Source: A: Gabriel (June); B: Amnesty International (2018); C: Justin (2010); D: Ifeoluwa (2023); E: Ojewale and le Roux (2022); F: Clara (2016).
CONCLUSION

In 2015, world leaders committed to protecting the environment without reneging on their effort to do the needful and had committed resources and personnel to that effect. Endangering the environment through oil spillage and gas flaring in the region of the Niger-delta is a threat to the visions of world leaders and disastrous to posterity as posterity will have a bitter taste of the environment if oil and gas extraction is allowed to continue the Niger delta way. Oil and gas extraction has affected the environment by making it unsafe with little or no concern and effective effort on the part of the government and the multinational companies to control the environmental problems associated therewith. At present no concrete measure to mitigate oil and gas pollution and its effects on the people despite various policy statements in which its effectiveness has been questioned severally with the same expectations in Kolmani. The conscious oil and gas extraction on the tenets of environmental safety and sustainability will reduce youth restiveness demonstrated in kidnapping, hostage taking, and vandalization of oil and gas installations, protect the health of residents, reduce the poverty profile, and improve the socio-economic livelihood of the residents. Therefore environmentally conscious oil and gas extraction in Kolmani is not an option and must be carried out with all sense of seriousness to achieve the vision of sustainable development and protecting same for posterity.

RECOMMENDATIONS

1. Community awareness of the impacts of oil and gas extraction should be a top priority as it is a key foundation to building a safe environment and protecting the same through monitoring oil installations against saboteurs and reporting negative incidents promptly.
2. There should be a push for environmentally conscious handling of extracted oil products and the reduction of pollution, as it will lead to both a healthier environment and healthier residents.
3. The dosing of restiveness lies in the state of the environment, as such the cord of positive nexus between a sustainable safe environment and national integration should not be broken, as the benefits lie in economic, and social development and peaceful coexistence.
4. The unsustainable oil and gas extraction experienced in Niger-delta are lessons to renege on for environmental safety and sustainability to thrive in Kolmani as it will help in averting challenges of environmental degradation, forest clearing, toxic discharges, habitat degradations, and population displacement, economic and social inequality, which armed restiveness.
5. Strengthening and updating the activities of the Federal Environmental Protection Agency (FEPA), NOSDRA, NESREA, and state ministry of environment among others to international standards is a must for building a healthy environment for posterity.

COMPETING INTERESTS

The authors declare that they have no competing interests

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