

# The Niger Delta region of Nigeria's declining ecological integrity may be attributed in part to associated gas flaring.

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## ABSTRACT

Since 1956, when commercial quantities of mineral oil were discovered in Oloibiri, in what is now the state of Bayelsa, Nigeria, crude oil exploration has been conducted in the petroleum-rich River Niger Delta Region of Nigeria. The region's ecosystem experiences decreasing ecological integrity due to environmental deterioration caused by petroleum exploration activities and related gas flaring. The evaluation suggests, among other things, explorer-responsibility, cleanup efforts, and the adoption and enforcement of relevant legislation.

**Keywords:** Petroleum exploration, gas flaring, environmental pollution and degradation, dwindling ecological integrity, remediation, explorer-responsibility, flora and fauna.

## INTRODUCTION

The population's health depends on a clean environment since it reduces infections, boosts self-esteem, increases productivity, and fosters a sense of wellbeing. The ecology and ecological integrity of Nigeria's River Niger Delta Region are destroyed by petroleum exploration activities, which also involve the flaring of natural gas related with petroleum resources. It is necessary to compile, update, and enhance reviews on this crucial topic in order to support

legislative actions that would cease the unsustainable practice of gas flaring. This was what the study's goal was. Hogan<sup>2</sup> stated that the River Niger Delta Region is situated in Nigeria's nine southern states of Abia, Akwa Ibom, Bayelsa, Cross River, Delta, Edo, and the Atlantic Ocean's Gulf of Guinea.

## Gas flaring and declining environmental integrity in Nigeria's River Niger Delta region

According to Wurtzebach and Schultz<sup>6</sup>, natural gas and crude oil are frequently found together as combined bank deposits. Oil explorers would rather access the oil reserves than explore the associated gas (AG) due to a lack of infrastructure. After crude oil was discovered in 1956 in Oloibiri, in what is now Bayelsa State in Nigeria, crude oil has been explored in the River Niger Delta Region of Nigeria since 1958. Other states in the vicinity were quickly affected by the activity. AG flaring is said to occur concurrently with crude oil drilling by Ite and Iboke<sup>7</sup>. In terms of gas flared, Nigeria is ranked second behind Russia. During the procedure, In terms of gas flared, Nigeria is ranked second behind Russia. As a result, Russia and Nigeria emit almost 110 million metric tons of carbon dioxide annually. This makes up roughly 0.5% of the world's carbon dioxide emissions, a significant contributor to climate change. In the Nigerian Niger Delta, 2.5 billion ft<sup>3</sup> of AG were flared daily in 2005. According to the Nigerian Senate, 40% of all gas flared in Africa occurred in Nigeria. Table 1 displays the amount of AG used and flared in the Nigerian River Niger Delta Region's Ijaw area between 2003 and 2012. Approximately 77.8% of the AG produced from Nigerian oil fields is flared, according to Ajugwo<sup>8</sup> and Ibitoye<sup>10</sup>. Flaring of gas is a Out of the three elements, gas flaring is one that negatively impacts ecological integrity. First of all, burning with fire disrupts natural processes. Second, the burning process releases toxic gaseous pollutants that damage the air and surrounding environment, hence lowering human well-being and lowering quality of life. The flaring of Nigerian gas makes a substantial contribution to global carbon dioxide emissions. Open space for socioeconomic growth and the availability of drinking water in urban and rural areas are impacted by pollution, according to Eneh<sup>11</sup>, Eneh<sup>12</sup>, and Ishaku et al. <sup>13</sup>. The ability of future generations to meet their requirements is compromised by this unsustainable activity. Human significance is affirmed by the Brundtland criterion. welfare and obligation to the

next generation. Future generations have the same right to breathe clean air as the current generation, according to Shockley<sup>14</sup>. This right should not be violated, and it cannot be violated by enhancing other aspects of wellbeing. Valuable items should be calibrated using several scales. Individuals should have the freedom to assess the values of changing environments.

One of the rights to an environment that is safe and clean is an ethical goal. Seeing individuals only as objects of need is a narrow perspective on humanity. All species should be protected, regardless of whether they are useful or not. According to Ishaku et al. (2013), gas flaring has a major impact on climate change and causes global warming. ramifications for both Nigeria and the global community. The Intergovernmental Panel on Climate Change (IPCC) predicts that in the twenty-first century, global warming will worsen. Africa has a low resilience capability, limited ability to adapt, and is very vulnerable to climate change. Gas flaring specifically releases nitrogen oxides and sulfur dioxide (SO<sub>2</sub>), according to Eneh<sup>15</sup>. Equations 1 and 2 show that both gases react with ambient moisture to produce sulfuric acid and nitric acid, respectively: Rainwater is acidified by these acids, resulting in acid rain. They also make streams and lakes more acidic. In addition to poisoning domestic water supplies, aquatic animals and wildlife are also affected by acidification. harm flora. Additionally, gas flaring emits particulate pollution, hydrocarbons, ash, photochemical oxides, hydrogen sulfide (H<sub>2</sub>S), and oxides of nitrogen (NO, N<sub>2</sub>O, and NO<sub>2</sub>), carbon (CO<sub>2</sub> and CO), and sulfur (SO and SO<sub>2</sub>). These pollutants reduce soil nutrients by acidifying the soil, which lowers the nutritional value of crops. Additionally, the intense heat generated by gas flaring clears the surrounding vegetation. AG flaring causes financial losses by corroding corrugated roofs, releasing sulfur and nitrogen oxides, and creating acid rain. Additionally, a large portion of A large portion of the gas that is flared can be used to generate power for domestic use or sold to earn the country billions of dollars every day. In addition to reducing visibility, sulphates and nitrates have the potential to be toxic and so provide a risk to public health. When gas flares, incomplete combustion releases dangerous air pollutants that have detrimental effects on human health, including cancer, neurological disorders, reproductive issues, and developmental consequences, including skin issues, lung damage, and abnormalities in children. Hydrocarbon compounds that are also emitted during gas flaring, such as benzene, naphthalene, styrene, toluene, and xylene, have an impact on haematological parameters and can harm blood and blood-forming cells as well as cause pneumonia, anemia, and leukemia. Suffocation and irritation of the eyes, lungs, skin, and respiratory system are caused by gas flaring air pollution. According to Obi et al. (16) and Eneh (17), flaring has caused host communities to become impoverished,

posing problems for the environment, the economy, and public health. There are many examples of soil pollution from oil leaks and spills, increasing deforestation, economic loss, and environmental deterioration.

### **Weak legal framework for gas flaring in Nigeria**

Despite laws prohibiting gas flaring in Nigeria since 1969, succeeding administrations have lacked the political will to use law enforcement agencies that have been compromised to enforce them. Concerns are raised by the government's apparent lack of seriousness in trying to stop gas flaring. Nigerian laws, according to Eneh and Agbazue<sup>18</sup>, are antiquated, disjointed, nonexistent, or poorly applied. Eneh<sup>19</sup> said that "natural gas shall not be flared or vented after December 31, 2012, in any oil and gas production operation, block or field, onshore or offshore, or gas facility, except under exceptional and temporary circumstances" is what the draft Petroleum Industry Bill (PIB) proposes. Preventive and corrective measures are widespread, but governmental politics are deficient. The government of Nigeria is The Nigerian government doesn't care as much about the harm that oil production causes to the environment or to people's health as it does about maximizing economic and political gains. Furthermore, the compradors live far from the Niger Delta Region's deteriorating environment in Abuja with their families. Once more, it is more practical for oil corporations to pay the little charge for AG flaring or avoid it altogether rather than recovering the gas by re-injecting it into oil wells or looking for other sources of financial gain. About 80% of Nigerians live in rural areas, making them the victims of this whole disaster. Contradictions and abuses of human rights in the context of corporate social responsibility, the social compact, and the sanctity of life: Pro-life advocates oppose abortion because contraception, the right to die on the grounds that human life is holy, precious, and sacred, and euthanasia and research involving embryonic stem cells. Sentient life must be seen as holy and sacred in ethics and religion, with the implication that it must be protected against infringement. If anything, the oil and gas industry in Nigeria's Niger Delta Region disregards this idea<sup>13</sup>. The social compact gives the government protection over human life. According to Eneh<sup>20</sup>, the social contract theory's defining characteristic is the unrestricted personal freedom that people give up to the government in order to assure their safety. Corporate social responsibility requires that businesses enhance rather than worsen the quality of life for residents in host communities. Gas flaring is still environmental, though. damages, risks to one's health, and financial losses caused by oil exploration companies working in tandem with host governments and compradors, whose main goal is to safeguard their financial interests at all costs. As a result, the Niger Delta Region of Nigeria will continue to experience underdevelopment and

poverty for both current and future generations of residents. According to Eneh21, the Niger Delta region of Nigeria is experiencing devastating poverty as a result of both internal and external processes of the Neoclassical Dependence Model of development. The wealthy nations that control the oil and gas companies in Nigeria, known as the “centre,” utilize and compensate the “comprador elite groups” on an international scale.

## CONCLUSION

Petroleum extraction and exploitation in Nigeria’s River Niger Delta region have directly contributed to a number of environmental, socioeconomic, and political issues. The area rich in crude oil. Specifically, gas flaring results in significant environmental contamination, degradation, loss of biodiversity, ecological integrity, and financial losses. Deforestation, environmental deterioration, and financial losses are increased when vegetation is removed to make space for seismic lines and sites. Arable soil is damaged by oil spills and leaks, while hydrocarbons (benzene, xylene, toluene, and ethylbenzene) produced by gas flaring contaminate both surface and groundwater.

## REFERENCES

- Hendryx, M., M.M. Ahern and K.J. Zullig, 2013. Improving the environmental quality component of the county health rankings model. *Am. J. Public Health*, 103: 727-732.
- Afinotan, L.A. and V. Ojaborotu, 2009. The Niger Delta crisis: Issues, challenges and prospects. *Afr. J. Political Sci. Int. Relations*, 3: 191-198.
- Emam, E.A., 2015. Gas flaring in industry: An overview. *Pet. Coal*, 57: 532-555.
- Reza, M.I.H. and S.A. Abdullah, 2011. Regional index of ecological integrity: A need for sustainable management of natural resources. *Ecol. Indic.*, 11: 220-229.
- Tierney, G.L., D. Faber-Langendoen, B.R. Mitchell, W.G. Shriver and J.P. Gibbs, 2009. Monitoring and evaluating the ecological integrity of forest ecosystems. *Front. Ecol. Environ.*, 7: 308-316.
- Wurtzebach, Z. and C. Schultz, 2016. Measuring ecological integrity: History, practical applications, and research opportunities. *BioScience*, 66: 446-457.
- Ite, A.E. and U.J. Ibok, 2013. Gas flaring and venting associated with petroleum exploration and production in the Nigeria’s Niger Delta. *Am. J. Environ. Prot.*, 1: 70-77.
- Ajugwo, A.O., 2013. Negative effects of gas flaring: The Nigerian experience. *J. Environ. Pollut. Hum. Health*, 1: 6-8.
- Giwa, S.O., O.O. Adama and O.O. Akinyemi, 2014. Baseline black carbon emissions for gas flaring in the Niger Delta Region of Nigeria. *J. Nat. Gas Sci. Eng.*, 20: 373-379.
- Ibitoye, F.I., 2014. Ending natural gas flaring in Nigeria’s oilfields. *J. Sustainable Dev.*, 7: 13-22.