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ASSESSING THE IMPACT OF GAS FLARING COST ON SOCIOECONOMIC DEVELOPMENT IN NIGERIA

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Abstract

The impact of gas flaring costs on Nigeria's socioeconomic development is assessed in this study. The study employed ex post facto research methodology. The World Bank's open data, marotrends.net, statistis.com, and the NEITI report from 2012 to 2022 are examples of secondary sources for this data collection. To ascertain the extent of the association between the variables under investigation, the researchers employed regression analysis, correlation analysis, and descriptive statistics. To that purpose, E-views 10 was utilized to look for correlations between the dependent and independent variables using the Ordinary Least Squares (OLS) approach to estimation. We used the cost of gas flaring as a proxy, and we used GDP, unemployment, life expectancy, crime, and safety rate as proxies for socioeconomic progress. The findings indicate a statistically significant and positive correlation between the cost of gas flaring and life expectancy, GDP, and unemployment. However, the gas of gas flaring has no bearing on the rate of crime or safety. Overall, the analysis found that GLC and GDP were positively correlated with life expectancy and unemployment together. GLC, however, has no bearing on the rate of crime or safety. The study recommends that government should have enough economic and political clout to enact laws that will strengthen its control over the oil market. When valuable natural resources are frittered away by venting and flaring, they should be conserved for later use or put to good use, such as producing electricity. If correctly controlled, gas flaring costs should be used to lower the unemployment rate by creating more jobs. To guarantee that communities have access to adequate healthcare and health education on the effects of gas flaring, the government and oil companies should collaborate.

KEYWORDS: *Gas Flaring Cost, Socioeconomic Development, GDP, Unemployment, Life Expectancy, Crime and Safety Rate*

INTRODUCTION

The practice of burning natural gas used for oil extraction, known as gas flaring, has long plagued Nigeria and had a disastrous impact on the nation's ecology, economy, and society. Nigeria, one of Africa's developing countries, has the greatest rates of urbanization and population growth on the continent, along with a wealth of natural resources (Ishisone, 2003). Standing as the world's twelfth-largest producer and eighth-largest exporter of oil. One of the numerous detrimental effects of petrol flaring is the loss of $2.50 billion in revenue annually. Climate change, air and water pollution, ecological degradation, health risks including cancer and asthma, and socioeconomic stagnation like poverty, inequality, and unemployment are other adverse effects. Petroleum, also referred to as crude oil, is one of Nigeria's naturally occurring resources and accounts for more than 90% of the country's GDP. One consequence of this sector is gas flaring. Since its discovery in Olobiri in 1958, the oil and gas industry has explored and exploited the resource, resulting in both benefits to the Nigerian people and costs to the Niger-Delta region. Crude oil, often known as petroleum, is a resource with several uses. Its use consequently produces a wide range of byproducts, each having unique benefits and drawbacks for people (Opafunso, 2005).

Before extracting crude oil, it is common practice to flare the natural gas that is present. Black carbon, carbon dioxide, and methane are among the hazardous gases that are frequently released accidentally during the extraction of crude oil. This status is unaltered more than 160 years after oil was first extracted. Potential causes of this flare include the oil market, economic constraints, a lack of political will on the part of the government, and inadequate regulation. Rather than being stored for later use or

put to good use, such as producing power, the precious natural resource is frittered away through venting and flaring. Flares produce more than 148 billion cubic meters of gas annually, which is enough to power all of sub-Saharan Africa for a long time. Despite the fact that flaring is hazardous and wasteful, it is nevertheless thought to be a somewhat safe method of getting rid of the gases that come with oil extraction. Because crude oil extraction is said to involve exceptionally high and unexpected pressures during gas extraction and processing, flaring the associated gas raises safety concerns. In any other scenario, an extremely quick or excessive rise in pressure during processing or extraction could result in an explosion. Despite being uncommon, oil and gas explosions in industrial environments have the potential to start fatal, protracted fires that are challenging to put out. Operators can depressurize their equipment by burning it if the pressure is suddenly too high or too low. The Zero Routine Flaring by 2030 (ZRF) projects were introduced in 2015 by the UN Secretary-General and the World Bank (www.worldbank.org). With the help of these activities, routine gas flaring during the development of new oil fields will be avoided, and routine flaring will be stopped as soon as feasible but no later than 2030. Development, according to the National Institute of Open Schooling (2015), is a period of multifaceted and multicontextual advancement in a variety of fields, such as biology, politics, social and political science, technology, and language and literature. A socioeconomic perspective on development reveals that it relates to initiatives to improve living conditions through means like increased access to jobs, training, education, and income. Development, then, is the process of changing a society's economic and social structure in reaction to cultural and environmental factors. usually measured using metrics such as GDP, employment rates, life expectancy, and literacy rates. Numerous authors have studied gas flaring and its impact on the environment and development of Nigerian and global society (Francis *et al*. 2022; Azeez 2017; Adewale *et al*. 2024; Emmanuel *et al*. 2021; Stephen, A. A. *et al*. 2023; Amaechi & Emejulu, 2021; Lord Godwin, O.A. A *et al.* 2023; Jude & Ernest, 2016; Abdulkadir *et al.* 2019; Omoniyi, 2022; Nkemdilim, 2021; Bello, B.R. *et al.* 2023; Sunday, A. E *et al*. 2012; Ngboawaji, 2013). One way that the authors' results diverge is in the variables they employ to represent gas flare and environmental and social development. Research findings regarding the impact of gas flares on environmental and social development have been mixed. While some have found good impacts, others have revealed negative ones. Furthermore, there is evidence that gas flares can occasionally influence or perhaps be linked to advancements in society and the environment. Due to this unusual position, which has also produced a gap, more investigation is now required. The researcher has selected GDP, unemployment, life expectancy, crime rate, and safety rate as proxies to reflect Socio-Economic Development (the study's dependent variable), and gas flaring cost as the explanatory variable. The aim of this study is to assess the impact of gas flaring on the socioeconomic development of Nigeria.

Merriam-Webster (2021) defines socio-economic concerns as when a person is harmed by a combination of social and economic causes. In a similar vein, socioeconomic issues cover the difficulties that individuals and groups encounter (Dawud, 2020). According to the Nigerian Economic Summit (2021), Nigeria has the potential to become a political and economic powerhouse on the continent and on a worldwide scale in the near future. It might significantly improve Nigeria's socioeconomic status if effectively executed. With a population of more than 200 million, a wealth of natural and human resources, and easy access to international trade via its coastline, Nigeria has the potential to follow in the footsteps of Norway, Sweden, Singapore, and Luxembourg and become one of the great inclusive and sustainable development (ISID) nations. She may have a significant influence on the economy and society, yet she hasn't garnered any media attention. Our social and economic advancement is under danger due to the high percentages of unemployment, poverty, and illiteracy.

Therefore, if Nigeria is to have any chance of a future, its leaders must make it very clear that resolving these socioeconomic issues is a major priority. The fact that many Nigerians lack the opportunity to work is a major issue for the country. Nigeria's unemployment rate rose from 27.10 percent in the first quarter of 2020 to 33.30 percent in 2021, according to the National Bureau of Statistics (2021), and is expected to hit 40 percent in 2023. The startlingly high unemployment rate in Nigeria was made public during the March 15, 2014, recruiting drive by the Nigerian Immigration Service (NIS). According to Vanguard (2014), more than 125,000 young people descended on interview centre’s in Abuja and Lagos, respectively, out of a total of less than 5,000 NIS openings. Due to the extreme stress of the statewide recruiting effort, hundreds of youths fainted from adrenaline and weariness, and twenty aspirants tragically died. Banditry and other criminal activities have exacerbated the already high level of insecurity because this horrible unemployment situation has made many people more vulnerable to a number of social vices, such as armed robbery, kidnapping, human trafficking, cybercrime, prostitution, and terrorism. Nigeria's inability to transform its natural gas and other significant resources into improved living conditions is not justified by the fact that it is the continent's top oil producer (CBN, 2021). According to the UN, people are considered to be living in poverty when they are unable to pay for their most basic needs, such as clothing, food, and housing.

Olanrewaju (2022) projects that 95.1 million Nigerians will be impoverished in 2022, with 86.9 million of them living below the $1.90 daily international poverty threshold. Nigeria has surpassed even India to become the world's poorest nation, according to the 2019 World Poverty Clock study. Furthermore, according to Vanguard (2018), six new Nigerians fall into poverty every minute, and a fifth of the worlds impoverished reside in Nigeria. This harsh climate leads to hunger, dietary malnutrition, social marginalization, prejudice, and inadequate access to basic healthcare.

Furthermore, a major barrier to Nigeria's social and economic advancement is illiteracy. The Federal Government of Nigeria reported in 2021 that 76 million individuals, or about 38% of the country's total population, are illiterate (Tribune, 2021). Many people in northern Nigeria find it challenging to receive a quality education because the area is predominantly rural. This is caused by a number of factors, including outdated and inadequate classroom facilities, anti-girl social attitudes in society and culture, and a lack of funding for educational initiatives. Former Nigerian Minister of State for Education Chief Nyesome Wike expressed his

sorrow at the unfortunate state of affairs, pointing out that the country now has the greatest number of out-of-school children, having seen the number rise from 10.5 million to 13.2 million. Could you explain the long-term effects? A decrease in the development of human capital, an increase in child labor and marriage, and a rise in the prevalence of child marriage are all effects of widespread illiteracy. Nigeria's social and economic advancement is also threatened by rapid innovation and the rise of disruptive technology. The objective is to transform the way individuals work and provide them with the abilities required to succeed in the contemporary workplace. The requirement for pupils to acquire 21st-century employability skills including critical thinking, problem-solving, leadership, cooperation, and management is not sufficiently addressed in our country's school curricula. Many young people lack the skills necessary to meet the growing demand for work because of this regarding employment prospects (Anzaa, G. 2018)

Charles Soludo (2016), a former governor of the Central Bank of Nigeria (CBN), raised an intriguing issue when he stated that 65% of Nigerian graduates do not have jobs. Notably, a predilection for white-collar occupations is frequently linked to a deficiency in employable abilities. Many young Nigerians will rather overlook other career prospects in favor of the one they have their eye on, according to Anzaa (2018). Many people are deterred from participating in entrepreneurship initiatives and vocational training by this approach. Regretfully, white-collar jobs are scarce in the nation. Another element that adds to Nigeria's pervasive poverty is the deadly social disputes that occur there. For instance, the Fulani Herdsmen's raging through northern Nigeria has torn communities apart and destroyed social networks. Economic growth slows, forced migration occurs, individuals have limited access to healthcare, and many refugees become homeless as a result of these issues. Many people are impoverished as a result of losing their means of subsistence. Due to their inability to attend school, the majority populace also struggles with reading and writing.

According to Adedigba (2017), only 30% of college applicants were accepted in 2017. A number of factors, including low enrolment rates, high attrition, and insufficient educational resources, particularly in rural regions, contribute to the startlingly high illiteracy rate in the country. Therefore, it's critical to think about how these socioeconomic issues and their links could be utilized to enhance Nigeria's socioeconomic growth while accounting for the expense of gas flaring. The question that worries academics is whether the money spent on petrol flaring could have an impact on social and economic advancement. Will Nigeria's GDP rise as a result of gas flaring costs? Does the cost of petrol flaring have a positive effect on the unemployment rate? Would life expectancy be improved by the cost of gas flaring? Does Nigeria's crime and safety rates change in response to the price of petrol flaring? This is the first study to examine gas flaring costs and socioeconomic growth from multiple angles. The findings of this study offer a chance to investigate this area further.

REVIEW OF RELATED LITERATURE

Conceptual Framework

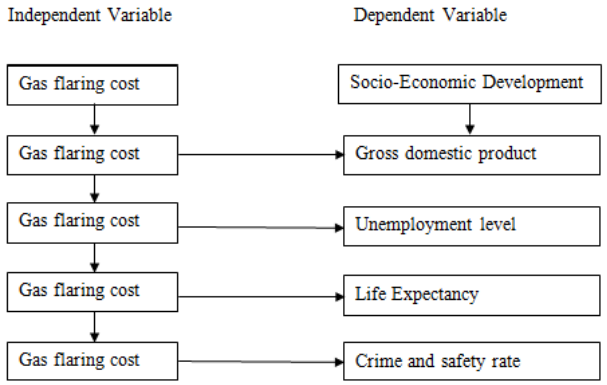

Figure 1: Conceptual Framework of Gas flaring cost and Socio-Economic Development In Nigeria (2024)

REVIEW OF RELATED LITERATURE

Conceptual clarification

Concept of Gas Flaring

The process of burning off the natural gas found in crude oil during its production is known as gas flaring (Orimoogunje, O.I. *et al* 2010). Flaring becomes a significant problem in areas that produce petroleum but lack the infrastructure needed to utilize the natural gas that is produced. This is one method of disposing of the gas generated in certain areas. Despite how simple it may seem, this has serious negative impacts on the local population as well as the ecosystem. Because it was difficult to transport and store natural gas to its destination, it was not considered a lucrative product in the early days of petroleum exploration. In order to create space for other activities and, presumably, to prevent a gas explosion that would have destroyed the entire system, the gas was either burned off at the well or released into the atmosphere.

According to Zheng et al. (2010), flaring and venting continue to occur in areas where local markets and gas transportation infrastructures are deficient or where the gas is combined with other inflammable gases. In 2015, the World Bank calculated that 140 billion cubic meters of natural gas produced by oil flare in thousands of oil fields worldwide. This inefficient technique is most common in developing countries that lack the infrastructure needed to process gas. The enormous flames that are seen shooting out of smoke stacks at oil refineries, however, are referred to as gas flaring. Another possible site for the flare is the earth, more precisely an oil well. Some nations engage in this behaviour more frequently than others, including the Gulf States, Nigeria, Russia, and the United States. Around the clock, 10,000 gas flares are operating, according to the World Bank. If all of the gas flares from past years had been converted to electricity, Sub-Saharan Africa could have been powered for a year. Sometimes it is necessary to burn up the released gases for safety concerns. Therefore, in order to drill for oil, the gas that has accumulated around the oil in subterranean reservoirs must be removed. One element that could cause explosions is the abrupt rise in gas pressure upon discharge to the surface. Thus, releasing the gas is an effective method of lowering the pressure. Flaring gas is

frequently described as a "non-routine" or "safety" event. However, drilling in awkward locations or with little gas is another common method used by energy companies to save money, which leads them to question whether the expense of collecting and transporting the gas is worthwhile. After then, the remaining petrol is burned out for convenience. In its most basic form, this phenomenon is called "routine flaring" (www.bbc.com/news/science-environment).

Concept of Socio-Economic Development

Zbyszko Chojnick (2010) asserts that the notion of socio-economic development is essential to any issue involving change in the socio-economic domain. According to Stemplowski (1987), "the concept of development functions as a product of an optimistic vision and an articulation of social interests; and as a tool of analysis," which the author argues accurately captures its relevance. The author went on to say that there are many different concepts of development in any research on socio-economic development, and that the two main concerns that form the basis of the concept's construction are the nature of socio-economic development and its scope, as well as its reference. In addition, the author underlined that the idea of socio-economic development and its application include societal changes, primarily of an economic character. It is regrettable to learn that, despite the fact that the economic aspects of change are prominent in his earlier research on change in the eight ZBYSZKO CHOJNICKI economies (a study of economic phenomena and processes), he felt that these aspects could not be separated from the social aspects. Therefore, by integrating the two elements, the author believes that "change and socio-economic development" is a more acceptable name for change and development.

It is also important to remember that Chołaj (1998) said that political economy and the primary economic realm are clearly distinguished in a traditional sense by the science of economics. Political economy, according to the author, solely maintains functions related to the economic facets of a society's existence. The various forms of socioeconomic systems, ownership relationships, and the motivations and interests underlying economic action are all topics of appropriate relevance to this branch of economic theory. According to the author, systems and a dynamic approach can be used to support research into social reality in order to arrive at a meaningful interpretation of it. The systems approach basically entails taking a systemic perspective on reality. Social reality is made up of distinct social systems that exist at varying levels of complexity, serve different purposes, and take on different shapes. Thus, a range of social (economic, political, and cultural) and natural factors cause social structures to arise, evolve, and vanish.

Classifying social systems is a very difficult and complex task, according to Chojnicki (1988). Nonetheless, some social systems play a fundamental part in determining the way that social groups with distinct territorial boundaries live and behave. Territorial social systems are those. In territorial social systems, a human group permanently inhabits, develops, and governs a designated region of the Earth's surface, also known as a territory. Territorial social systems differ from other social systems primarily because of their heterogeneity of composition, which includes both the presence of a material substratum that provides a living environment for people as well as the human community; multi-aspect and global integration, which means that internal links predominate over external ones; self-organization, which refers to the self-control and self-regulatory mechanisms that keep the system functioning; and the differences in the spatial scale or range with which various functions and degrees of openness are associated at the local, regional, national, supra-national, and global levels. The dynamic approach, on the other hand, takes into account system changes. These modifications affect the systems' exterior connections and surroundings in addition to its global characteristics, parts, and structure. Because of their immense complexity, internal and external structural entanglement, and uneven rate of change in its constituent parts, social systems—especially territorial social systems—are extremely challenging to understand. Few people question that social structures actually undergo change; what matters is how they do it. The dynamic approach ought to be viewed as an adjunct to the systems approach. Only when those two methods are combined can they offer a foundation for addressing social systems holistically. A systems approach to things provides for a better understanding and depiction of the complexity, the different characteristics, and the mutual relations that occur during their change. On the one hand, no system has a static, unchanging character.

Measures of the Study

Gross domestic product

According to Jason Fernando (2024), a nation's GDP is the total market value of all finished goods and services produced inside its borders during a specific time period. The author claims that because GDP calculates total domestic production, it is a reliable predictor of a nation's economic health. GDP can be calculated quarterly even though it is typically calculated annually. The gross domestic product (GDP) of a nation is calculated by taking into account all expenditures, both public and private, investments, paid-in building expenses, net exports and imports, and adjustments to the government's budget. Imports lower the value, whereas exports raise it. Furthermore, there are two ways to compute GDP: nominal and real. The real basis accounts for inflation. The author comes to the conclusion that real GDP, which accounts for all of the GDP's long-term components—among which the foreign balance of trade is particularly important—is a more accurate indicator of a nation's economic health. The monetary value of all finished goods and services produced by a country in a given year is measured by the gross domestic product, or GDP. GDP can also be calculated using consumption, government spending, net exports, and total investment. There are three primary methods for calculating GDP. All three methods ought to yield the same outcome when properly calculated. These three approaches are commonly referred to as the spending technique, the output method, and the revenue method.

Unemployment level

According to the OECD (2016), the unemployment rate is a key indicator of economic and social well-being and a gauge of the degree of labor market slack. The gender-specific unemployment rates show how women are doing in relation to males. Individuals who are eligible for work, have actively sought employment within the last four weeks, and report being unemployed are classified as being in the unemployment category. People can actively look for work by replying to job postings, visiting the locations of possible

employers (like factories or construction sites), placing advertisements in the media, and registering with local labor offices, as per the International Labour Organization's (ILO) Guidelines. The number of persons without jobs divided by the total number of people actively seeking work (those in the labor force, which includes both paid and unpaid workers) is the unemployment rate, the author further emphasized. Some people lose faith and stop looking for work when the unemployment rate is high, which indicates they are no longer qualified to work. Therefore, the unemployment rate may decrease or even level out even if there hasn't been a significant improvement in the labor market. All OECD countries use the ILO Guidelines to quantify unemployment in their national labor force surveys for comparability's sake. However, in their labor force surveys, several nations may use marginally different operational definitions. In a similar vein, changes to the survey's design and methodology may affect unemployment numbers. Despite these drawbacks, unemployment rates are stable over time and have good global comparability. The unemployment rate is reported differently in different nations. The former are determined by the number of individuals who have registered with their respective labor offices as unemployed. There is limited global comparability in registered unemployment data since different countries have different registration processes at labor offices. The OECD's overall unemployment rate was greater in 2014 than it was in 2008, according to the gender split of the rate, and this was true for both men and women. In 2008, men's unemployment was lower than women's, but it increased much more quickly and surpassed women's by 2009. This is somewhat explained by the fact that three businesses that were disproportionately impacted by the early phases of the crisis were manufacturing, building, and mining and quarrying. Between 2009 and 2010, men's unemployment rates decreased faster than women's across the OECD as a whole, and in more than two-thirds of the nations, the male to female unemployment ratio decreased between 2010 and 2014. However, in almost half of the countries, men's rates were still higher than women's in 2014.

Life Expectancy

According to Judith Marie Bezy (2024), a person's life expectancy is the anticipated average number of years that they would live past the typical lifetime for a particular age group. When determining longevity, life expectancy at birth is the ideal standard. The author claims that life expectancy is only an estimate. The age-specific death rates will apply to everyone born in that year for the remainder of their lives, isn't that correct? That is the fundamental presumption. The estimate projects age-specific mortality (death) rates over the lifetime of a population born or living during a specified timeframe. When the measure is split down by age, race, gender, and geography, there is a significant disparity. Therefore, rather than reporting life expectancy for the entire population, it usually reports it for subsets. The author also believed that life expectancy is influenced by regional circumstances. The life expectancy at birth is lower in less developed countries than in highly developed ones. Due to high infant mortality rates (sometimes brought on by infectious diseases or a lack of access to safe drinking water), life expectancy from birth to one year may be lower than life expectancy in some underdeveloped countries. One must first construct a life table in order to ascertain an individual's anticipated longevity. A life table requires enumeration data for the entire population as well as the number of deaths by age group in order to generate age-specific mortality rates for a particular population. These estimates, which provide the average life expectancy for each age group in the population, are often obtained from national census and Italian statistics data. Therefore, the potential accuracy of life expectancy estimations depends on how complete the population's census and death records are. The completeness of the data varies per country.

Crime and safety rate

Statistics on crime and safety demonstrate how much people trust that their freedom of movement and property are protected (OECD, 2014). People are more inclined to open up, engage with others, and remain together when they feel comfortable. The degree to which people in the majority of OECD countries feel secure going for nighttime walks by themselves has barely changed over time. The number of nations where people say they feel comfortable walking alone at night has increased rather than decreased. Though they are more common in the Nordic countries, reports of people feeling at ease taking walks at night are also seen in Austria, Canada, Germany, and Slovenia. Up until lately, there had been little sign that a result of the economic slump would be a reduction in the safety of walks at night. Greece is the OECD country where citizens are least likely to feel comfortable going for nighttime walks by themselves. Now that the economic slump has reduced the tensions and loudness that come with nightlife, people could feel more at ease taking walks alone at night. That being said, the crime rates did not significantly alter from 2004 and 2010. Japan, Poland, and Portugal saw the biggest declines, while Greece, Italy, and Turkey saw the biggest gains. An older population, less cash transactions, and better safety technology could all lead to a decrease in crime. Local police are trusted by the public in the majority of OECD countries, and this trust has only increased during this crisis. The OECD average shows a little increase between 2007 and 2012. The countries with the biggest gains were the Slovak Republic, Greece, Estonia, and Chile. Hungary, Belgium, Mexico, and Norway experienced the steepest declines. Among emerging economies, walking alone at night became safer in China, Argentina, Brazil, and Russia, but less safe in South Africa, India, and Indonesia. While popular faith in local police declined in South Africa and India, it increased in Argentina, Brazil, and Indonesia.

THEORETICAL FRAMEWORK

Over the past 20 years, there has been a discernible movement in the social sciences towards a more thorough grasp of economics, claims Victor (2018). This change is reflected in the rise in interdisciplinary research and the writing of books that try to offer a cross-disciplinary philosophy of socioeconomic growth. This trend is most evident in the four hypotheses proposed by Diamond (1997), North, Wallis & Weingast (2009), Acemoglu & Robinson (2012), and Welzel (2013) based on relevant field results. While North, Wallis, and Weingast (2009) and Acemoglu and Robinson (2012) support an institutional approach theory to socioeconomic development, Diamond (1997) underlined the significance of spatial factors theory in socioeconomic development.

Theory on the role of geographic factors on socioeconomic development

Diamond (1997) utilized the example of Eurasia's superiority over other continents as a model hypothesis to demonstrate the significance of geographic factors. All of Europe and Asia are part of Eurasia, the largest contingent on Earth. According to one school of physical geography, Eurasia as a whole is truly one supercontinent. The notion of Europe and Asia as distinct continents has endured since antiquity despite changing borders. Africa was once seen by the ancient Greeks as an essential component of Asia. They consequently divided Asia and Europe. Africa and Eurasia are connected by the Suez Canal, but occasionally the two continents combine to form Afro-Eurasia, the largest continuous landmass on Earth. The author makes the case that geographic factors are very important in influencing social and economic advancement. He attempts to explain the emergence of modern civilization in Eurasia by assuming that North Africa is also a part of Eurasia due to their strong ties. He listed four geographical advantages of Eurasia over other continents under this context. He claimed that thirteen of the fourteen domestic animal species that are currently common in Eurasia are descended from predecessors that were unique to this continent. There were no domesticable animals in North America, Australia, or sub-Saharan Africa, but there were llamas and alpacas in South America. No other continent could match Eurasia's fertile land. Consequently, the agricultural revolution and the Furthermore, because of its east-west orientation, Diamond thinks that modern farming methods and household management practices may spread more readily throughout Eurasia because the continent experiences less drastic climate swings than the Americas and Africa. Due to their north-south orientation and the climatic and physical barriers separating them, diffusion was far slower in the Americas and Africa. The Americas and Australia were geographically separated, even if favorable conditions allowed dispersal between sub-Saharan Africa and Eurasia. As a result, Eurasia had a much bigger total population and land area than other continents. This allowed for the emergence and spread of novel concepts related to social and economic growth. Diamond presents a compelling argument, but he ignores the factors that drove Western

Theory of causes of wealth and poverty: the case of extractive and inclusive institutions

Acemoglu and Robinson (2012) created the theory of the causes of poverty and riches, focusing on the role of inclusive and extractive institutions in socioeconomic growth. According to the author, the dominance of inclusive or extractive institutions determines a system's economic success or failure. He underlined that the majority of people will be encouraged to engage in the economy as long as inclusive institutions are in charge, enabling them to maximize their talents and fulfill their own aspirations. A fair legal framework, governmental services that level the playing field, and the promotion of private property protection are all crucial elements of inclusive economic systems. Because they guarantee a good standard of life for the majority of people while transferring the majority of the wealth to the wealthy—who, surprisingly, are huge supporters of these institutions—extractive institutions have existed for a long time. First and foremost, a more centralized political structure inside the state is necessary for economic growth under extractive institutions. Since investing in or promoting economic growth enhances the rent that the elite may collect through extractive institutions, there are always strong incentives for the government or the elite that controls it to do so. This can be accomplished even if the elite try to copy some aspects of inclusive marketplaces and institutions. Because they ensure a respectable level of life for the vast majority of people while, surprise, receiving significant support from the wealthy elite, extractive businesses—by definition—are institutions that take money from the general public and have persisted for a long time. First, for economic growth backed by extractive institutions to occur, political power must be consolidated within the state. The government or ruling class frequently has great incentives to invest in or promote economic growth since the rent that they may receive from extractive institutions increases as the economy expands. The privileged may attempt to imitate inclusive institutions and markets in order to get there. All things considered, extractive businesses

North, Wallis and Weingast (2009) theory of social orders

According to NWW theory, institutionalized social hierarchies function as both inclusive and extractive institutions. The authors clearly define both limited access orders (LAOs) and open access orders (OAOs). Communities have controlled political, economic, religious, and educational activities to minimize and contain violence for the past 10,000 years. They illustrate this with a series of ideas in their book. The authors (North et al., 2009) contend that addressing a society's violence issue is a prerequisite for socioeconomic advancement. The limited access order (LAO) is one characteristic that distinguishes the so-called natural states. There are just a few elite-controlled groups, social interactions are driven by personal relationships, and the governmental system is not founded on broad consensus among people. The notion that not everyone is created equal is reflected in LAO institutions, which results in the emergence of privilege and social hierarchies, the selective application of the law, and the erosion of ownership rights (North et al., 2009). LAO economies are characterized by slow growth and shock susceptibility. Patron-client networks, which seem inherently corrupt, are reflected in contemporary open access (OAO) societies. In the open access (OAO) cultures of today, nothing is public. What a person does is not as important as knowing and being known. This perspective on natural states may seem reasonable to an open-access society, but it ignores the part that personalities, interpersonal relationships, and patronage networks play in managing and resolving conflict in these contexts. Cooperation in its natural condition is made possible by the incentive mechanisms created by interpersonal interactions and the capacity to earn rent. The basic idea underlying the limited access social order is expressed by the fact that all relationships are fundamentally personal by nature. The creation of rent, the granting of rights, and the validation of individuals

EMPIRICAL REVIEW

Alternative Solutions to Natural Gas Flaring was investigated by Azeez (2017). One of the world's biggest challenges, according to the author, is gas flaring. It has detrimental effects on society since it uses up valuable natural resources and generates trash that is bad for the environment. In terms of energy and the environment, it is among the most annoying issues that the world is currently dealing with. This environmental disaster has been going on for decades,

and it's costing billions of dollars. There was a total of 12,602,480.25 million cubic feet of flared natural gas in Nigeria between 1996 and 2010 (NNPC). This amounts to squandering approximately 12,967.952 × 1012 Btu of energy that could have been utilized for electricity generation or transformed into alternative energy sources. Developing nations without gas processing capabilities or alternative ways to use the produced gas flare 140 billion cubic meters of natural gas yearly, according to the World Bank's 2015 estimate. The detrimental effects of greenhouse gas emissions on the environment are well-known, and flaring or venting gas is one known example. So, it's critical to find other ways to either lessen or make use of the gas that is flared. Researching and explaining these alternatives to gas flaring in depth is, hence, crucial. In the article, the negative impacts of gas flaring were detailed, along with many viable substitutes. Gas for secondary oil recovery, chemical plant feedstock, home usage, natural gas liquids (LNG) and compressed natural gas (CNG), and energy conservation through storing gas as hydrate for later use are all potential alternatives. At pressures high enough, gas hydrate will remain stable even after water freezes. Under the conditions of saturation temperature and pressure, it is substantially denser than regular ice and also fairly stable. Instead of wasting fully burning the gas, this ability of gas hydrate can be explored experimentally and used to store natural gas as hydrate for energy conservation. There is little doubt that the alternative solutions will significantly cut down on and eventually eliminate gas flaring around the world.

Research on the Long-Term Effects of Gas Flaring in Nigeria was conducted by Adewale et al. (2024). As a byproduct of drilling for crude oil, the authors point out that flaring gas endangers Nigeria's economy in the long run. Finding out if it's financially feasible to flare natural gaseous chemicals in Nigeria was the driving force behind their empirical study. The data for the survey was supplemented by sources such as the World Development Indicators, the Statistical Bulletin of the Central Bank of Nigeria, the Bureau of Statistics, the Department of Petroleum Resources, and the Bureau of Statistics. An ARDL model and an Augmented Dickey-Fuller test were employed to estimate the long-range presence link between the exogenous and explanatory variables. The study concluded that flaring natural gas in Nigeria somewhat boosts GDP development. There was a little but positive effect of the current employment rate on the gas flare. In terms of gas flaring, the current oil revenue value had a positive and statistically significant influence. Meanwhile, the oil revenue lag had a small impact on gaseous pollutants in Nigeria that flared up on their own. According to the study, the right natural gas authorities should implement stringent rules to reduce the harmful impacts of natural gas flaring on people's health, the environment, and the country's economic development and growth. Contrarily, gas flaring is an approach that the government should support since it is both practical and long-term.

Consistent with the research, Emmanuel et al. (2021) examined gas flaring, inefficient use of energy resources, and the subsequent economic impacts in Nigeria. SDG 7 aims to "ensure access to affordable, clean energy, reliable, sustainable and modern energy for all," which includes gas flaring. The Gazetted Flare Gas Regulations 2018 lay forth the legal requirements for the federal government to reach its policy objective of lowering emissions of greenhouse gases by venting and flaring natural gas. Without the Regulations, which provide the essential legal parameters, a program to commercialize gas flares in Nigeria would not be able to begin. This study looks at the factors that caused gas flaring in Nigeria from 1970 to 2019. To begin, gas flaring operations do not go away with time. Second, the expansion of the economy leads to flare-ups. Thirdly, the effect of petrol costs is not uniform. As for the fourth point, using petrol and fossil fuels are indicators of a downturn. The results were produced by utilizing the co-integration and autoregressive distributed lag error correction representation methods. With a significance threshold of 1%, the results show that petrol prices have a positive and concurrent influence. Gas flaring decreases by 0.293 percent at the 1% significance level due to the first lag in gas price, and increases by 0.180% due to gas price. There is also sufficient evidence in this investigation to show that gas flaring continues in Nigeria.

The impacts of gas flaring in leading economies that flare natural gas were studied by Stephen, A. A. et al. (2023), with a focus on how government quality tempered these effects. This research aims to shed light on the environmental and economic consequences of natural gas flaring, with a focus on the top countries in this practice: Russia, Iraq, Iran, USA, Algeria, Venezuela, and Nigeria. This study used appropriate empirical panel and country-specific methods to determine that exporting fuel energy had a positive effect on economic growth, with an elasticity ranging from 0.22 to 0.24 in the panel analysis. It is also shown that urbanization; fuel energy export, gas flaring, and increased economic growth all contribute to worsening environmental quality in the panel. Government quality also moderates gas flaring's economic and environmental impacts in Russia and Iran, and in Venezuela and Nigeria, according to the country-wise inference. Gas flaring causes economic depression in the USA, although government quality controls it. Increases in urbanization in Iraq and the USA, gas flaring in Iran and the USA, government quality in the USA, and fuel energy export in Algeria all contributed to faster economic growth, whereas increases in urbanization in Russia and the USA, fuel energy export in the USA, and government quality in Russia all contributed to slower economic growth. On the other hand, environmental quality is deteriorating due to high levels of carbon dioxide emissions caused by factors such as increased urbanization in Iraq, Iran, Algeria, and Nigeria; increased export of fuel energy in Nigeria; increased flaring of natural gas in Algeria and Nigeria; increased gross domestic product (GDP) in Russia, Iran, the United States, Algeria, and Venezuela; and high-quality government in Iran. Curiously, the results showed that rising gas flaring in Algeria and Nigeria, rising urbanization in the United States, and rising GDP in Nigeria all lead to worsening environmental quality. This study sheds light on sustainable approaches to natural gas production, government efficacy, and regulatory quality, which are important policy considerations.

The Niger-Delta Area of Nigeria was the subject of a case study by Amaechi and Emejulu (2021), who analyzed the costs and benefits of associated gas flaring from 1958 to 2004. The researchers found that flare stacks and the gas flaring they release significantly contribute to local climate change in the areas where these flares are located. Environmental damage, air pollution, and the resulting health effects on the residents of these host towns are all contributed to in large part by associated gas flaring. Since it has been contended that flaring this gas is less expensive than total

utilization, this study goes forward and evaluates the economic advantage of total utilization of associated gas as a preventative measure against these issues. This study examines the years 1958–2004 in one West African country, specifically looking at the Niger–Delta region of Nigeria. Secondary in-person interviews and the Cost-Benefit analysis method were both utilized in the study. Total utilization of associated gas has a significantly greater economic value than flaring related gas, according to the study's results. Additionally, the study found that Nigeria could have been $32 billion richer if it had used the gas that came with extracting crude oil from 1958 to 2004. The estimated multiplier effect of reinvesting these funds is not included in this calculation. According to the analysis, in order for the country to fully process these related gases for future use, another LNG plant with 1.4 times the capacity of the Bonny LNG project would be necessary. In view of these findings, the study suggests that the government establish a legislative framework to address the main obstacle to the growth of the Nigerian Liquefied Natural Gas (NLNG) industry: the creation of an act governing the operation and administration of the NLNG. Additionally, the host communities should actively participate in formulating strategies and policy guidelines for the act's implementation. The goal is for everyone involved to be on the same page, which will lead to complete collaboration and compliance. In order to keep plans and policy guidelines up-to-date for future development, the study also suggests setting a time period for routine reviews.

Multi-level governance and policy coherence analysis of gas flaring in Nigeria was conducted by Lord Godwin, O.A. A et al. (2023). According to the authors, natural gas flaring is a waste of resources that harms people and the environment, accelerates the rate of climate change, and reduces fuel availability. Even though reducing flare is becoming a top concern in international environmental policy, very little has been done in this regard. They take a look at the gas flaring policies in Nigeria, a really important example, through an MLG lens. They examine policy consistency (which facilitates the achievement of common objectives) and policy divergence (which causes friction and retards development) across sectors and institutional frameworks at the international, national, state, and local levels. Documents, interviews, and expert surveys make up the dataset that is analyzed using content analysis and Qualitative Document Analysis (QDA). This article examines the current state of gas flaring in Nigeria, the roles played by various stakeholders, and the level of knowledge about the practice across several policy domains and industries. Political polarization, incompetent leadership, regulatory noncompliance, and policy conflicts between growth goals and environmental protection have all contributed to a lack of coherence in gas flaring policies, which has negatively impacted attempts to reduce greenhouse gas emissions. To tackle the urgent problems confronting Nigeria, it is essential to listen to stakeholders from every level of government, reassess economic objectives in view of the necessity to broaden sources of income, strengthen federal institutions, and figure out how to rein in the influence of international oil corporations (IOCs) that are attempting to exploit the country's convoluted mineral lease regime (MLG). By implementing these measures, the government could improve the environmental justice situation for communities affected by flaring.

According to Abdulkadir *et al.* (2019), the Nigerian government is making an effort to end gas flaring by the year 2020. The authors noted that gas flaring has been technically prohibited in Nigeria since 1979; yet, due to multiple deadline extensions, the country is still ranked seventh in 2016 for gas flaring, even though only 10% of flared gas is still present. Nigeria reduced flared gas by an extra 1% in 2018, bringing the total decrease to 9%. Because of the country's exploration of unconventional petroleum resources, including coal and shale resources, as well as its vast gas sector (as suggested in the PIB), gas flaring must be put an end. The establishment of gas development companies, legislative measures to govern the oil and gas industry, and a pipeline to transfer gas to Europe and other neighboring African nations are all part of Nigeria's commitment to stopping gas flaring by the year 2020.

Omoniyi (2022) looked into how gas flaring affected the health of children in Nigeria. To promote the sharing of ideas regarding development issues, the Policy Research Working Paper Series distributes the results of ongoing study. The goal of the series is to publish the results as soon as possible, regardless of how sloppy the presentations may be. All of the authors' names appear in the publication, and it was properly referenced. All opinions, analyses, and findings presented in the article are solely those of the writers. No part of this text should be construed as expressing the official opinion of the World Bank, its affiliated organizations, or the governments represented by its executive directors. Gas flaring, the technique of burning off the gas that comes out of oil wells, is something that many developing nations that produce oil do. This practice is examined in Policy Research Working Paper 10153. Infrastructure has been developed with an emphasis on oil production rather than gas capture, and oil firms are attracted to flare due to lax laws and poor environmental monitoring, which leads to this economically unproductive and ecologically destructive activity. Gas flaring also releases contaminants into the air, which can have negative effects on human health. The Niger Delta is home to over two million people, and more than 10% of Nigeria's gas is flared. These individuals live within four kilometers of gas flares, which is the main focus of this research. However, due to a lack of data, researchers in developing nations are unable to draw the same conclusions as those in wealthy nations about the links between gas flaring and human health, particularly that of infants. This research analyses the correlation between gas flaring and the occurrence of diseases and infant mortality in Nigerian oil-producing regions using data on baby health collected from Demographic Health Surveys and data on gas flaring identified by satellite. Children younger than five years old are more likely to experience respiratory illnesses and fevers when gas flaring is present, according to the results. An increasing amount of research is employing satellite data to evaluate well-being in areas where traditional data sources are either unavailable or unreliable; this study adds to that growing body of work by measuring the societal cost of oil and gas production.

Bello, B.R. et al. (2023) investigated the relationship between Nigeria's unemployment rates and industrialization based on natural gas. Using bi-annual time series data from 1997 to 2021, the study investigates the connection between Nigeria's unemployment rate and the industrialization of natural gas. The ARDL methodology and Granger causality test were used to analyze the data, and the Augmented Dickey Fuller method was

used to check for stationarity. The ARDL Bounds test for co-integration was necessary since the unit root test findings show that the variables were non-stationary at the level but became stationary at the first level. A long-term correlation between the explanatory factors and the unemployment rate was found via the boundaries test. An annual correction of 33.21% of the short-term disequilibrium is made, according to the error correction term (-0.3321). According to the study, industrial output has a short- and long-term detrimental impact on youth unemployment, indicating that boosting industrial activity may help lower youth unemployment. The Granger causality test revealed a unidirectional causal relationship between the unemployment rate and population growth rate, as well as between the unemployment rate and natural gas rent, but a bidirectional causal association between Nigeria's natural gas output and unemployment rate. Therefore, in order to maximize its potential to boost the economy and create employment opportunities in Nigeria, the paper suggests addressing the issues facing the natural gas sector, such as limited infrastructure, low private sector investment, security concerns, limited power (load) capacity, inconsistent gas supply, and high flaring costs. It also suggests putting policies in place to ensure equitable distribution of its benefits across various sectors of the economy.

Sunday A. E et al (2012) investigated oil spillage cost, gas flaring cost and life expectancy rate of the Niger delta people of Nigeria. The study examined the degree of influence of oil spillage and gas flaring costs on life expectancy rate of the Niger Delta people of Nigeria. It was intended to survey the life threatening impacts of lost revenue occasioned by oil spillage and gas flaring activities of the Oil and Gas companies operating in the Niger Delta region of Nigeria between 1979 and 2008. The descriptive survey research method was used to select forty oil and gas producing local government areas from the nine states of the Niger Delta region. Data on oil spillage rate, gas flaring rate, oil spillage volume, gas flaring volume, oil spillage cost and gas flaring cost were obtained from NNPC, the oil and gas companies and the Central Bank of Nigeria for the thirty years studied. Data for life expectancy were obtained from the United Nations Common Database for the thirty years. The study revealed a total oil spillage and gas flaring revenue lost of US $175,795,811 or N20,671,321,766.00 with a mean life expectancy rate of 49.12 years between 1979 and 2008 with an insignificant correlation between life expectancy rate and the costs of oil spillage and gas flaring ranging between 1.8% and 5.2% but a significant impact of oil spillage and gas flaring activities on socio- economic conditions and poverty rate of the people of the Niger Delta region of Nigeria for the years studied. Based on these results, the study recommended that government should enact mandatory legislations for oil and gas prospecting companies to establish Oil and Gas Compensation Fund to control the frequency of oil spillage and gas flaring in the Niger Delta region of Nigeria. Nigerian Government need to initiate people oriented policies in governance to ensure micro economic empowerment and human capital development of the people of the Niger Delta region aimed at reducing the rate of poverty. There should be a conscious implementation of the Niger Delta Master Plan to fast track infrastructural development in the region and to enhance life expectancy rate of the people of Niger Delta.

Ngboawaji (2013) did a work on gas flaring, environmental crime and community conflicts in Nigeria: exploring public safety and national security implications of bourgeois exploitation Oil exploration and exploitation remains the main stay of Nigeria's economy. However, in the course of prospecting for oil, man's environment in the Niger delta has remained under unmitigated assault. Part of this environmental assault comes in the form of gas flares which created very terrible conditions inimical to human health and economic survival of the people. This study takes an analytical review of gas flaring as an environmental crime and the safety and national security implications emanating from this environmental challenge. The study discovered that gas flares have remained a source of conflict between oil bearing communities and oil firms, even as residents of these communities live in near hellish conditions. Relying on primary data the study made useful recommendations to stem this deadly scourge.

Hypotheses of the study

The following hypotheses were formulated based on the study objectives:

Ho1: there is no relationship between GLC and GDP
Ho2: there is no relationship between GLC and UEP
Ho3: there is no relationship between GLC and LEP
Ho4: there is no relationship between GLC and CAS

METHODOLOGY

The study employed an ex-post facto research design. There is no population or sample size determination because the main goal of the study is to assess the impact of gas flarin on Nigeria's socioeconomic development. Among the secondary data sources from 2012 to 2022 are the NEITI report, statistis.com, marotrends.net, and the World Bank's open data. To ascertain the extent of the association between the variables under investigation, the researchers employed regression findings, correlation analysis, and descriptive statistics. In order to do this, we employed the Ordinary Least Squares (OLS) estimate method. We used E-views 10 to look for correlations between our independent and dependent variables. Regression analysis, a statistical method for identifying relationships between variables to forecast future values, will be applied to the data. Applying the formula;

MODEL SPECIFICATION

The formula is as follows

$$GLC = F(GDP) \quad (1)$$
$$GLC = F(UEP) \quad (2)$$
$$GLC = F(LEP) \quad (3)$$
$$GLC = F(CAS) \quad (4)$$

This can be written in explicit form as:

$$GLC = \beta_0 + \beta_1 GDM + \mu \quad (1)$$
$$GLC = \beta_0 + \beta_1 UEP + \mu \quad (2)$$
$$GLC = \beta_0 + \beta_1 LEP + \mu \quad (3)$$
$$GLC = \beta_0 + \beta_1 CAS + \mu \quad (4)$$

Where:

GLC = Gas flaring cost

GDP = Gross domestic product

LEP = Life Expectancy

CAS = Crime rate and statistics

β0= Constant or intercept term

β1, β2, β3= the parameters, or coefficients, of the independent variables will be estimated using regression analysis. We expect all of them to be greater than zero, with μ representing the error term in the regression equation in a stochastic way.

Table 5 shows the Descriptive Results

	GLC	GDP	UEP	LEP	CAS
Mean	8.000000	2.862000	4.610000	53.43200	5.534000
Median	7.500000	2.430000	4.705000	53.51000	0.000000
Maximum	12.90000	6.670000	5.630000	55.12000	33.60000
Minimum	5.300000	-1.620000	3.710000	51.51000	0.000000
Std. Dev.	1.986063	2.487470	0.704588	1.240159	11.99693
Skewness	1.459294	-0.013467	-0.043533	-0.160194	1.696311
Kurtosis	5.026639	2.512220	1.485174	1.723698	4.153727
Jarque-Bera	5.260594	0.099439	0.959283	0.721498	5.350405
Probability	0.072057	0.951496	0.619005	0.697154	0.068893
Sum	80.00000	28.62000	46.10000	534.3200	55.34000
Sum Sq. Dev.	35.50000	55.68756	4.468000	13.84196	1295.336
Observations	10	10	10	10	10

Table 6- Covariance Analysis: Ordinary

Date: 08/31/24 Time: 20:00

Sample: 2012 2021

Included observations: 10

Covariance

Correlation

t-Statistic	GLC	GDP	UEP	LEP	CAS
GLC	3.550000				
	1.000000				

GDP	1.675900	5.568756			
	0.376925	1.000000			
	1.150998	-----			
UEP	-0.848500	-0.861140	0.446800		
	-0.673723	-0.545931	1.000000		
	-2.578641	-1.843008	-----		

LEP	-1.791600	-1.322214	0.761290	1.384196	
	-0.808217	-0.476238	0.968043	1.000000	
	-3.881887	-1.531876	10.91795	-----	
CAS	-3.122800	-16.47697	1.002000	1.822972	129.5336
	-0.145626	-0.613489	0.131710	0.136141	1.000000
	-0.416331	-2.197294	0.375807	0.388685	-----

Table 7
Regression result

Dependent Variable: GDP

Method: Least Squares

Date: 09/07/24 Time: 12:10

Sample: 2012 2021

Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GLC	0.472085	0.410152	1.150998	0.2830
C	-0.914676	3.370994	-0.271337	0.7930

R-squared	0.142072	Mean dependent var	2.862000
Adjusted R-squared	0.034831	S.D. dependent var	2.487470
S.E. of regression	2.443765	Akaike info criterion	4.801813
Sum squared resid	47.77590	Schwarz criterion	4.862330
Log likelihood	-22.00907	Hannan-Quinn criter.	4.735426
F-statistic	1.324796	Durbin-Watson stat	1.237676
Prob(F-statistic)	0.282971		

Table 8

Dependent Variable: UEP

Method: Least Squares

Date: 09/07/24 Time: 12:12

Sample: 2012 2021

Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GLC	-0.239014	0.092690	-2.578641	0.0327
C	6.522113	0.761808	8.561364	0.0000

R-squared	0.453902	Mean dependent var	4.610000
Adjusted R-squared	0.385640	S.D. dependent var	0.704588
S.E. of regression	0.552264	Akaike info criterion	1.827276
Sum squared resid	2.439965	Schwarz criterion	1.887793
Log likelihood	-7.136379	Hannan-Quinn criter.	1.760889
F-statistic	6.649388	Durbin-Watson stat	0.793863
Prob(F-statistic)	0.032685		

Table 9

Dependent Variable: LEP

Method: Least Squares

Date: 09/07/24 Time: 12:13

Sample: 2012 2021

Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GLC	-0.504676	0.130008	-3.881887	0.0047
C	57.46941	1.068519	53.78415	0.0000

R-squared	0.653215	Mean dependent var	53.43200
Adjusted R-squared	0.609867	S.D. dependent var	1.240159
S.E. of regression	0.774611	Akaike info criterion	2.503946
Sum squared resid	4.800184	Schwarz criterion	2.564463
Log likelihood	-10.51973	Hannan-Quinn criter.	2.437559
F-statistic	15.06905	Durbin-Watson stat	0.671385
Prob(F-statistic)	0.004662		

Table 10

Dependent Variable: CAS

Method: Least Squares

Date: 09/07/24 Time: 12:14

Sample: 2012 2021

Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GLC	-0.879662	2.112893	-0.416331	0.6881
C	12.57130	17.36562	0.723919	0.4897

R-squared	0.021207	Mean dependent var	5.534000

Adjusted R-squared	-0.101142	S.D. dependent var	11.99693
S.E. of regression	12.58901	Akaike info criterion	8.080382
Sum squared resid	1267.866	Schwarz criterion	8.140899
Log likelihood	-38.40191	Hannan-Quinn criter.	8.013995
F-statistic	0.173331	Durbin-Watson stat	2.549355
Prob(F-statistic)	0.688113		

DISCUSSION OF FINDINGS

Table 5. The study's descriptive statistics for assessing the effect of gas flaring cost (GLC) on Nigeria's socioeconomic development are shown in table5. Costs associated with gas flaring range from 5.30 to 12.90, with an average of 8.00, suggesting a rather significant cost. There is a lot of variance in the Gross Domestic Product (GDP), with a mean of 2.86 and a standard deviation of 2.49, indicating moderate economic development. There is minimal dispersion around the mean of the unemployment rate (UEP), which is 4.61%, with a standard deviation of only 0.70. The average life expectancy (LEP) is 53.43 years, and there isn't much of a spread between the lowest and highest values, which means that this socioeconomic indicator hasn't changed much. The data is skewed with occasional extreme crime rates, as indicated by the large standard deviation (11.99) and median (0.00) of the crime rate (CAS), which has a mean of 5.53. Gas flaring cost (GLC) and crime rate (CAS) are positively skewed in terms of distribution, with skewness values of 1.46 and 1.69, respectively. This indicates that there may have been a handful of outlier observations that inflated the average. Kurtosis values further show that there are outliers in the data, with GLC having a leptokurtic distribution (5.03) and CAS having a 4.15. Only GLC and CAS come close to being statistically significant at the 0.05 level, according to the Jarque-Bera test for normalcy. In contrast, variables such as GDP, UEP, and LEP have p-values that are not statistically significant, indicating that they do not follow a normal distribution.

Table 6. Displays the results of the study's Covariance Analysis, which examined assessing the effect of gas flaring cost (GLC) on Nigeria's socioeconomic development. The results showed that GLC was related to GDP, UEP, LEP, and CAS, among other socioeconomic factors. In the correlation matrix, GLC is negatively correlated with UEP (-0.674), LEP (-0.808), and CAS (-0.146), but weakly positively correlated with GDP (0.377). That is to say, when the price of petrol flare goes up, we see a general trend towards lower unemployment and longer life expectancy, a small uptick in GDP, and almost no correlation between GLC and the crime rate. Higher gas flaring costs are linked to reduced employment and life expectancy, which may be a reflection of socio-economic stress, according to the t-statistic values for UEP (-2.58) and LEP (-3.88), which in turn imply a strong negative relationship with GLC. Alternatively, there is a very poor association between GLC and CAS (-0.146), suggesting that shifts in gas flaring prices would not directly impact crime rates. A small association between lower unemployment and longer life expectancy and faster economic growth (-0.546 correlation with UEP and -0.476 correlation with LEP, respectively) is suggested by the GDP data. On the other hand, a link of -0.613 between GDP and CAS is more noticeable, indicating that lower crime rates typically occur alongside higher GDP. Covariance and correlation analyses show that the cost of petrol flaring significantly lowers life expectancy and unemployment rates but has a smaller effect on gross domestic product and crime rates.

Table 7. Gas flaring cost (GLC) shows a positive coefficient of 0.472 in the GDP regression analysis; however the link is not statistically significant with a t-statistic of 1.15 and a p-value of 0.283. This suggests that the impact of GLC on GDP is not significant enough to be considered noteworthy in this model, even though it may have some good effects. A poor model fit is indicated by the R-squared value of 0.142, which indicates that changes in GLC only explain 14.2% of the variance in GDP. There is little statistical significance in the model as a whole, as shown by the low F-statistic (1.32), together with the p-value of 0.283. This indicates that GLC does not adequately predict GDP within the given sample. With a value of 1.24, the Durbin-Watson statistic is less than 2.

Table 8. A negative coefficient of -0.239 for the GLC in the UEP regression results suggests that higher petrol flaring prices are linked to lower unemployment. This association is statistically significant at the 5% level, as suggested by the t-statistic of -2.58 and p-value of 0.033. Therefore, GLC is a significant predictor of unemployment. Unemployment is anticipated to be substantial in the absence of gas flaring, as indicated by the positive and highly significant coefficient (6.52) of the constant term (C), t-statistic of 8.56, and p-value of 0.0000. Changes in GLC explain 45.4% of the variation in the unemployment rate, according to the R-squared value of 0.454. When contrasted with GDP, this model fit is far stronger. The model is statistically significant, as confirmed by the 6.65 F-statistic and 0.033 p-values. Having said that, a Durbin-Watson value of 0.79 suggests that the residuals might have positive autocorrelation.

Table 9. A -0.505 coefficients and a p-value of 0.0047 indicate a statistically significant negative association between GLC and LEP in the regression for life expectancy (LEP). This indicates that the life expectancy is drastically lowered due to increased gas flaring costs. An additional piece of evidence for a strong association is the t-statistic of -3.88. Life expectancy is anticipated to be approximately 57 years, even when gas flaring expenditures are not taken into consideration, due to the highly significant constant term (C), which has a coefficient of 57.47 and a p-value of 0.0000.

This model fits the data well; the R-squared value of 0.653 shows that gas flaring costs explain 65.3% of the variation in life expectancy. All things considered, the model is statistically significant, as shown by the F-statistic of 15.07 (p-value = 0.0047).

But there's a lot of positive autocorrelation in the residuals (0.67) according to the Durbin-Watson statistic.

Table 10. There is no statistically significant link between GLC and the crime rate (CAS), as indicated by the negative coefficient of -0.880 in the regression results (t-statistic: -0.42 and p-value: 0.688). This indicates that the costs of gas flaring do not significantly affect the crime rates in this sample. A very poor model fit is indicated by the R-squared value of 0.021, which suggests that changes in GLC only explain 2.1% of the variation in crime rates. It is confirmed that the whole model is not statistically significant by the F-statistic of 0.173 and its p-value of 0.688. There is probably no autocorrelation in the residuals (Durbin-Watson value of 2.55, which is close to 2), suggesting that the mistakes are independent.

Test of Hypotheses

GLC and GDP

There is no relationship between GLC and GDP. Table 7 shows that Gas flaring cost as a positive coefficient of 0.472 and a p-value of 0.283. This shows that GLC significantly affects GDP in a good way, at least at the 5% level of significance. We can so conclude that the null hypothesis is false. This confirms the results of Research on the Long-Term Effects of Gas Flaring in Nigeria conducted by Adewale et al. (2024), who discovered that flaring natural gas in Nigeria somewhat boosts GDP development.

GLC and UEP

There is no relationship between GLC and UEP. Table 8 shows that gas flaring cost indicates positive and highly significant coefficient (6.52) and p-value of 0.0000. This shows that GLC significantly affects Unemployment at least at the 5% level of significance. We can so conclude that the null hypothesis is false. This confirms the results of Research on the relationship between Nigeria's unemployment rates and industrialization based on natural gas conducted by Bello, B.R. et al. (2023)

GLC and LEP

There is no relationship between GLC and LEP. Table 9 shows that gas flaring cost indicates a negative (-0.505) coefficients and a p-value of 0.0047. This shows that GLC significantly affects life expectancy at least at the 5% level of significance. We can so conclude that the null hypothesis is false. This confirms the results of Research on the relationship between oil spillage cost, gas flaring cost and life expectancy rate of the Niger delta people of Nigeria by Sunday A. E et al (2012) investigated

GLC and CAS

There is no relationship between GLC and CAS. Table 10 shows that gas flaring cost indicates a negative coefficient of -0.880 in the regression results and a p-value: 0.688). This shows that GLC does not significantly affects crime and safety at least at the 5% level of significance. We can so conclude that the null hypothesis is true. This confirms the results of Research on the relationship between gas flaring, environmental crime and community conflicts in Nigeria: exploring public safety and national security implications of bourgeois exploitation by Ngboawaji, D.N. 2013).

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary

This study looked into the relationship between gas flaring cost and socioeconomic development in Nigeria. World Bank's open data, marotrends.net, statistis.com, and the NEITI report are some of the secondary data sources from 2012 to 2022. The following is a summary of the findings: GLC significantly affects GDP in a good way, with GLC Unemployment rate is affected positively; GLC significantly affects life expectancy, while GLC has no affect on crime and safety rate.

Conclusion

Based on the ex-post facto research design, this study assesses the impact of gas flaring cost and socioeconomic development in Nigeria. Gas flares cost was indicated by GLC, while Socioeconomic Development was explained by GDP, unemployment, life expectancy, crime rate, and safety rate. The World Bank's open data, marotrends.net, statistis.com, and the NEITI report are some of the secondary data sources. Descriptive statistics, correlation analysis, and regression results were used to determine the degree of relationship between the variables under study. To that end, Ordinary Least Squares (OLS) approach to estimation was used to search for correlations between the dependent and independent variables using E-views 10. The findings demonstrate a positive correlation between GLC and GDP Unemployment and life expectancy put together. However, GLC has no effect on crime and safety rate.

Recommendations

The study's findings formed the basis for these recommendations:

1. Government should have sufficient political will, economic power to provide regulations that will enhance the control of the oil market.
2. The valuable natural resource frittered away through venting and flaring should be put to useful use, like making electricity, or saved for later use.
3. Gas flaring cost if properly annexed should be to create more jobs in order to reduce unemployment rate.
4. Government and oil companies should work together to ensure that communities have access to sufficient healthcare and health education regarding the effects of gas flaring.

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