

## **Influence of Petrol Subsidy Removal on Perception of Noise Pollution in Port Harcourt Metropolis, Rivers State, Nigeria**

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### **Abstract**

The study examined the influence of petrol subsidy removal on perception of noise pollution in Port Harcourt Metropolis, Rivers State, Nigeria. The study deployed the cross-sectional research design. A total sample of 400 respondents were determined using the Taro Yamane equation. A total of 400 hundred copies of questionnaire was administered to the residents of the study area using the random sampling technique. Data analysis was achieved using descriptive statistics. Results showed that more males participated in the survey with 69.5% while females were 30.5%. The age of the population fell within different age range as majority of the respondents were between the ages of 46 to 55 (28.5%), and between the age of 36 to 45 (22.4%) respectively. A large proportion of the respondents have acquired tertiary education (70%). 35% of the respondents agreed that the use of generators to provide electricity for businesses has significant reduced after the removal of energy subsidy by the federal government. The respondents (21.2%) affirm that the amount of fuel used has reduced due to cost of fuel. Albeit, there was no uniformity in this view as other respondents reported that they have sustained the amount of fuel consumed (16.9%) in spite of the removal of fuel subsidy. Nevertheless, 54.4% of respondents agreed that noise pollution has reduced in their communities due to the fuel subsidy removal. The study thus concluded that the removal of subsidy has reduced the use of generators significantly in different parts of the city but many of the businesses and industry did not reduce the use of generators due to the poor delivery of public electricity. Therefore, the study recommends the development and implementation of alternative energy policy to curb noise pollution in the city.

**Keywords: Subsidy, Noise, Pollution, Perception, Petrol**

### **1.0. Introduction**

From the outset of human existence, there has always been the yearning to live in a safe and secure, as well as well-organized, environment that ensures sustainable living and the provision of essential amenities that meet the demands of daily living (Makinde, 2015). Among the factors that could pose threats to this environmental comfort is the presence of noise. Noise was derived from the Latin word “nausea,” which depicts the idea or meaning of something unpleasant or unwanted. According to Ebeniro and Abumere (1999), environmental noise simply refers to the undesirable acoustic signal released into the environment without any consideration for the negative impacts that might arise from this stress in human beings and the surrounding environment. These often pose threats to acceptable intensity values in many occurrences. Several countries and other authoritative bodies have stipulated the intensity of noise permitted in any

given process or in any given area in the interest of ensuring the promotion of public health and environmental quality (Ozabor et al., 2024). Noise, in any case, is nonetheless often produced by people and institutions in the quest to meet any given objective and as such becomes the apt characteristic in the generation of noise pollution. Noise is simply that unwanted and meaningless sound that surpasses the acceptable intensity of the senses in any setting (Banerjee & Chakraborty, 2006).

Environmental noise can be generally defined as noise produced by sources other than workplaces, or any kind of unwanted noise that is emitted into the environment regardless of its damaging effects on human health and the ecosystem (Ozabor et al., 2024b). These types of noise usually exceed safety standards (Oloruntoba et al., 2012; Okeke & George, 2015). How the human ear will be affected by noise depends mostly on its level of intensity, described as its amplitude, as well as its frequency, which gives information on its pitch (Kaushik, 2008). Noise in the environment can either emanate from fixed or moving sources, as well as indoor or outdoor activities. Major sources of this problem in the environment can result from activities of power stations, construction site activities, vehicles such as railways, airplanes, as well as roads, blenders, mixers in homes, emergency sounds of ambulances, safety vehicles, electric power production in private generators, loud music, as well as public address systems (FEPA, 1991; Kaushik, 2008; Oyedepo, 2012). On the other hand, socio-political, as well as religious activities from politics, the government, churches, as well as mosques, account for high noise levels in the environment (Akunbulire et al., 2007; Banerjee & Chakraborty, 2006).

Energy is one of the important drivers of economic development (Weli & Famous, 2018). Energy is needed for manufacturing, cooking, heating, vaccine storage in health facilities, and the functioning of engines used by industries and transportation (Ozabor et al., 2024c). Both households and industries require huge amounts of energy for the continuity of productivity. Nigeria has huge energy resources, including crude oil and gas, that make the country a prominent actor in the international energy market (Isihak & Akpan, 2012; Ezirim et al., 2010). Being a critical agent of economic stability, the affordability of energy has been a major concern of the government (Ozabor et al., 2024c). Affordability of energy has been largely sought through the regulation of the prices of energy in an effort by governments, including that of Nigeria, to protect consumers from any international instability that might affect the prices of oils (Ozabor et al., 2020). The easy accessibility of any country's wealth due to the huge amount of national resources available, including energy, has led to the formulation of a scheme that would redistribute the wealth, including the establishment of a subsidy (Godspower et al., 2023). The Nigerian energy industry, as with many countries that have large amounts of energy, has been controlled through the formulation of policies regarding pricing, supply, or investment (Nwachukwu & Chike, 2011). The Nigerian government introduced fuel subsidies in the 1960s with the main objective of increasing social welfare and allowing citizens, especially low income households, to enjoy the benefits of Nigeria's resource endowment (Isihak & Akpan, 2012). The fuel subsidy was

conducted implicitly through pricing, where the government regulated fuel prices by manipulating the forces of demand and supply (Adagunodo, 2013). With the creation of the Petroleum Products Pricing Regulatory Agency (PPPRA) in 2003, the new agency was charged with the responsibilities of calculating fuel subsidies paid to fuel importers (Okumagba & Ozabor, 2016). The subsidies were paid based on the difference between local retail prices and global prices of fuel, once landing and distribution charges were applied (Okumagba & Ozabor, 2016). The fuel subsidy policy of the Nigerian government was aimed at achieving several other goals, which included developing industry, increasing domestic fuel consumption, improving accessibility of fuel for low income households, and addressing political factors associated with oil revenue distribution due to resource abundance (Eyetan & Ozabor, 2021). Nevertheless, with the abolishment of fuel subsidy by the Nigerian government in 2023, there has been a dramatic change in its socio-economic and environmental environments (Eyetan & Ozabor, 2021). This development has encompassed diverse implications, which should be appropriately and systematically analyzed for thorough comprehension of the implications of the contrary variations.

In addition, high cost of diesel prices has increased residents demands for petrol powered generators (Ozabor & Ajukwu, 2023). As an alternative source of energy, petrol powered electric generators usages are on the increase among the residents in Nigeria, due to the high demand for power supply (Ozabor & Obisesan, 2015). Many people and companies now supplement the electricity provided by the public power suppliers with their own generators (Ozabor & Obaro, 2016). In fact, as long as you can afford a generator you should have one. Commercial business owners are not left out, according to one approximation, well over 90% businesses utilize generators for day-to-day operations. This in-turn have raised prices of domestic goods, and companies which import generators have created extremely lucrative industry (Oparaku, 2003; Ibitoye & Adenikinju, 2007).

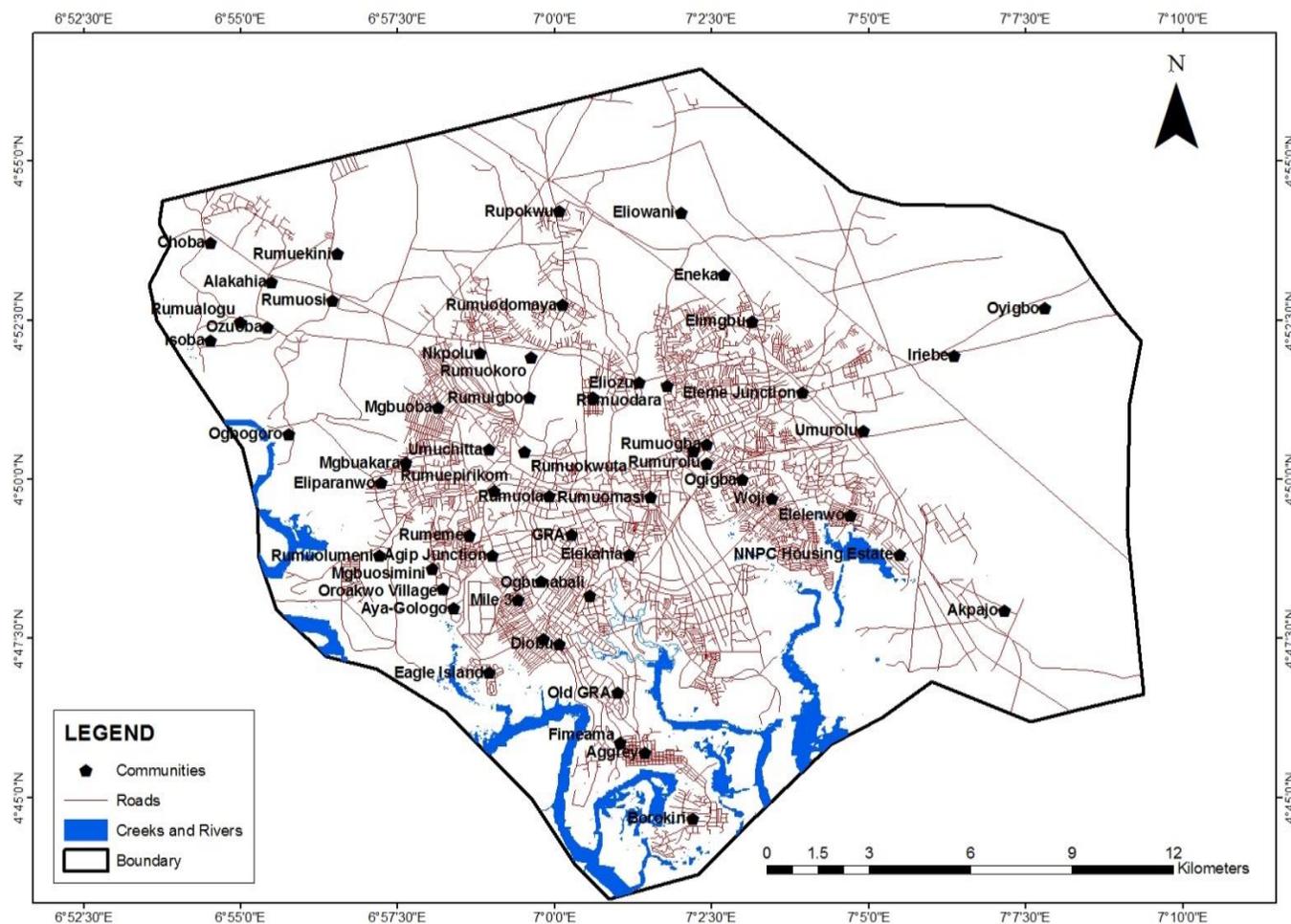
Similarly, in Port Harcourt, where electricity supply can be unreliable, generators have become a common solution to meet the power needs of households, businesses, and industries. Thus, individuals, businesses, and commercial centres (since they depend on generators for power supply) all play crucial roles in promoting environmental noise levels in Portharcourt. Notably, the extensive use of generators comes with environmental consequences, and one of such environmental consequences are the high noise pollution which generators have contributed overtime especially as it concerns increasing noise levels across land use areas. However, with the recent changes in fuel prices, generators usage has considerably reduced in Portharcourt and its environs. Being that the removal of fuel subsidy is recent in Nigeria, literature investigating the impacts of its removal are scant and to the best of the knowledge of the researchers, none exist for noise pollution impacts. Based on this background, the present study sought to carry out an assessment of environmental noise pollution and fuel subsidy removal in Portharcourt, Rivers State, Nigeria.

## 2.0 Materials and Methods

### 2.1. Study Area

The study was carried out in Port Harcourt Metropolis, Rivers State. It lies within the Longitude 4° 40' E to 4° 55' E. and latitudes 6° 58' N to 7° 6' N (Figure 1). It is situated on the Bonny River, 66 kilometers from the open sea and at the southern end of the eastern railway and where the coastal marshes give way to the low land of the interior. At the east of Port Harcourt Local Government is bounded by Emohua Local Government Area while at the west is Eleme Local Government Area and at the North is Obio/Akpor Local Government Area and south is Okrika Local Government Area. To this end, in terms of amenities, the city has grown into a large conglomerate of industrial, economic and social base in the development of the nation. From the initial population of 5000 persons in 1913, the current population status is estimated to be the order of 2,000,000 growing at an annual growth rate of about 5.8% per annum (Ayotamuno & Obinna, 2017).

Port Harcourt features a tropical monsoon climate with lengthy and heavy rainy seasons and very short dry seasons. Only the months of December and January truly qualify as dry season months in the city (Chukwudi et al., 2025). The harmattan, which climatically influences many cities in West Africa, is less pronounced in Port Harcourt. Port Harcourt's heaviest precipitation occurs during September with a rainfall amount of 367 mm. Temperatures (25 °C-28 °C) throughout the year in the city is relatively constant, showing little variation throughout the course of the year. The rising population, a thriving petroleum industry and the good climate makes room for a thriving economy. However, the poor electricity in the city, necessitates the use of generators and other sources of energy most of which results in noise pollution. The fuel subsidy removal temporarily affected the noise pollution temporarily, however, the need for the businesses to thrive and the absence of electricity, continues to make businesses use generators and the noise continues to escalate in the city.



**Figure 1: Port Harcourt Metropolis**  
 Source: Adapted from Rivers State, Lands and Housing

**2.2. Methods**

The study adopted the cross-sectional research design. This study utilized only the primary source of data by deploying the modified Likert Scale questionnaire. The population was drawn from the residents of the study area. According to the National Bureau of Statistics, the 2006 population of Portharcourt was 538,558 which is estimated to have grown to 817,678 in 2023 (Table 1). Thus, to obtain a sample size for the study, the Taro Yamane (1967) formula was used to determine the sample size of 400.

**Table 1. Population of the Study Areas**

State	Capital	NPC 2006*	Total Estimate**	Projected
Rivers	Port Harcourt	538,558	817,678	
Total			817,678	

\*NPC – National Population Commission (2006); \*\* Projected population

The sampling procedure employed for the study was the random sampling technique. This technique was employed for questionnaire administration in the study area across land use areas of residential, business/commercial and industrial in Portharcourt. The targets population were those who have resided in the city for up to 5 years and have experienced both pre-subsidy removal and subsidy removal periods.

To adequately distribute the questionnaire, the respondents for the study based on land use areas across Portharcourt. The instrument utilized for the study was a well-structured 5 points Likert scale questionnaire. The scoring of the Likert scale reflects the degree of agreement or disagreement: SA – strongly Agree (5 points), A – Agree (4 points), D – Disagree (3 points) and SD – Strongly Disagree (2 point) and undecided (1 point). The structure of the questionnaire was in six parts; A-E sections. Section A was on respondents Bio-data; section B identified the sources of noise pollution in the study area; section C investigated how the hike in petrol prices due to the subsidy removal has affected the perception of noise pollution in the study area; section D focused on knowing whether perception of noise pollution vary among sampled locations; while section E sought to examine the other associated factors that was identified as affecting noise pollution in Portharcourt.

The instrument validity was assured using the face content validity. The study used the test-retest method to test the reliability of the questionnaire and deployed 40 (10%) of the questionnaire to the field on respondents at two intervals of two weeks. The relationships between both observations were thereafter tested using the Pearson's Product Moment Correlation Coefficient (PPMC) and an r value of 0.89 was realized and the questionnaire was deployed to the field thereafter. The descriptive statistics was employed for data presentation and analysis. The data for the study was presented in tables, charts, percentages, and frequencies for clarity purposes. All statistical analyses were performed using the IBM/Statistical Package for Social Scientist (SPSS) 24.0 and the Excel worksheet 2010.

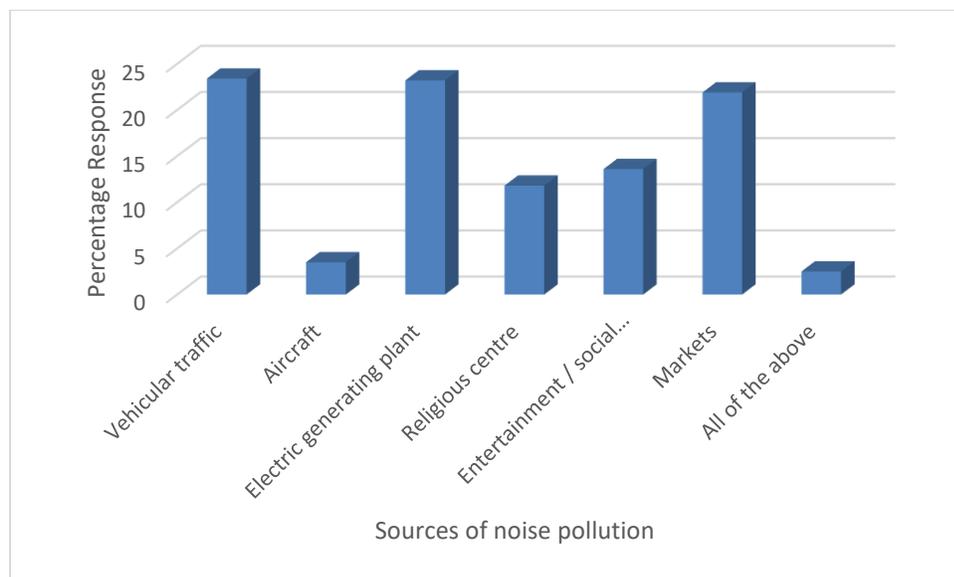
### 3.0 Results

The demographic characteristics of respondents presented in Table 2 show the data on sex, age, occupation and other demographic characteristics. The tables show that more males' participated in the survey with 69.5% while the population of females was 30.5%. The age of the population falls within different age range as majority of the respondents are between the age of 46 to 55 (28.5%), and between the age of 36 to 45 (22.4%). Majority of the respondents have acquired tertiary education (70%), secondary education (14.1%) and primary education (3.1%) and other post graduate and technical education with 12.3% of the population. The major occupations of the people are civil service jobs, trading (15.1%), and artisanship (22.2%). The occupation of the people is reflected in the income of the people where 2.5% of the population earn between ₦5,000 – ₦20,000, 12.3% of the population earn ₦21,000 – ₦40,000, 33.5% of the population earn ₦41,000 – ₦60,000 and 29.2% of the population earn ₦81,000 and above.

**Table 2. Demographic characteristics of the respondents in the study area**

<b>Characteristics</b>	<b>Categories</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>Sex of Respondent</b>	Male	276	69.5
	Female	121	30.5
	<b>Total</b>	397	100.0
<b>Age</b>	18–25	41	10.3
	26–35	67	16.9
	36–45	89	22.4
	46–55	113	28.5
	56 and above	87	21.9
	<b>Total</b>	397	100.0
	<b>Level of Education</b>	Primary	14
Secondary		56	14.1
Tertiary		278	70.0
Other (Post Graduate, Technical colleges)		49	12.3
<b>Total</b>		397	100.0
<b>Occupation</b>		Civil Servant	146
	Self employed	103	25.9
	Artisan	88	22.2
	Trader	60	15.1
	<b>Total</b>	397	100.0
	<b>Average Monthly Income</b>	₦5,000 – ₦20,000	10
₦21,000 – ₦40,000		49	12.3
₦41,000 – ₦60,000		133	33.5
₦61,000 – ₦80,000		89	22.4
₦81,000 and above		116	29.2
<b>Total</b>		397	100.0

The data presented in Figure 2 show the different sources of noise pollution in the study area. Vehicular movement and areas with traffic congestion records enormous noise with residents' perceptions showed 23.4%. The contribution of aircraft to noise pollution is minimal with 3.5%. The absence of public delivery of electricity is reflected in the 23.2% of noise pollution from electricity generating plants in the study area. Also, religious activities 11.8%, entertainment and social activities 13.6%, markets 21.1% and other informal activities contributes significantly to noise pollution in the study area.



**Figure 2. The sources of noise pollution in the study area**

The data presented in Table 3 show the perception of respondents on the impact of subsidy removal on the noise levels in the study area. Residents that use generators to provide electricity for businesses agreed (16.9%), and strongly agreed (21.7%) that there is significant reduction in the use of generators after the removal of energy subsidy by the federal government. However, 28% of the respondents disagreed strongly that the removal of fuel subsidy did not impact their use of generators. The responses on the use of generators are also reflected in the use of fuel where 21.2% of the people affirmed that the quantity of fuel they use has reduced significantly, but there is no uniformity in this view where other respondent reported that they have sustained the amount of fuel they consume (16.9%) in spite of the removal of subsidy. The implication is they while the residents that have reduced fuel consumption and generator usage would also generate lesser noise pollution, the businesses that have retained fuel consumption and generator usage would also retain the levels of noise generated in the environment. This is reflected in the perception of the people where 24.7% agreed strongly that noise pollution has reduced in their communities, this opinion is further corroborated by the 29.5% of the residents that agreed, and however, 25.4% of the people reported that the noise levels in their places have remained unchanged even with the removal of subsidy in the place.

**Table 3. Respondents' perception of subsidy removal and effects on noise levels in the study area**

<b>Impacts of petrol subsidy removal on noise pollution levels</b>	SA (%)	A (%)	D (%)	SD (%)	UD (%)	Total (%)	WM
Petrol subsidy removal has made me/my business/my company to reduce the use of our generator sets	86 (21.7)	67 (16.9)	133 (33.5)	111 (28.0)	0 (0.0)	397(100)	3.32
I/we use less fuel now since the subsidy removal indicating less power and less use of my/our generator sets	84 (21.2)	97 (24.4)	142 (35.8)	67 (16.9)	7 (1.8)	397(100)	3.46
Noise pollution levels have reduced significantly in my area since the petrol subsidy removal	98 (24.7)	117 (29.5)	101 (25.4)	72 (18.1)	9 (2.3)	397(100)	3.56
I don't get to hear the sound of generator sets like it used to before the petrol subsidy removal	103 (25.9)	138 (34.8)	89 (22.4)	63 (15.9)	4 (1.0)	397(100)	3.69
Public power supply (PHCN etc.) has improved in recent times, therefore causing reduction in noise levels amidst the recent petrol subsidy removal	32 (8.1)	47 (11.8)	158 (39.8)	148 (37.3)	12 (3.0)	397(100)	2.85
The number of hours I/we spent on the use of generator sets have reduced because of the subsidy removal	56 (14.1)	89 (22.4)	132 (33.2)	112 (28.2)	8 (2.0)	397(100)	3.18
I am strongly convinced that the petrol subsidy removal is the cause of the recent low noise levels in my area	97 (24.4)	86 (21.7)	113 (28.5)	101 (25.4)	0 (0.0)	397(100)	3.45

In spite of the removal of fuel subsidy and the reduction in the use of generators that contributes enormously to the noise levels in the study area. Residents reported that the delivery of public electricity has not improved. This is reflected in the 8.1 % of the pollution that strongly disagreed on the question on whether electricity has improved. This opinion is further corroborated by the 11.8% of the people that disagreed, however, 39.8% of the population agreed that power

has improved after the removal of petrol subsidy. The differences in opinion show that there is no uniformity in the delivery of electricity in the study area. The lack of uniformity has manifested in differences in the consumption of fuel, use of generators and the noise levels generated in different places in the study area. This is also reflected in the opinion of the people where 14.1% of the people affirmed that the number of hours, they spend on generators has increased, while 28.2% of the population disagreed.

The data presented in Table 4 show the perception of residents on the spatial variability of noise pollution in the different land uses in the study area; 36.5% of the residents strongly agreed that noise pollution was high in the commercial zones of Portharcourt. This viewpoint is further corroborated by the 42.1% that agreed. However, 9.8% of the population do not think that the commercial zones of the city generated more noise than other land uses. This opinion is also strengthened by the 8.8% that disagreed. The population of residents that are without knowledge of the noise levels in the commercial zones of the city accounted for 2.8% of the respondents. The data presented on the table show that residential areas close to highways and markets are exposed to levels of noise pollution in high decibel; this is reflected in the 38.8% of the population that agreed strongly that residents close to the highway suffers intense noise pollution. However, 4.8% of the respondents held that they do not consider residential places close to the market and highways are vulnerable to noise pollution.

**Table 4. Respondents' perception on the variation in noise pollution levels across land use areas in Port Harcourt**

Statements	SA (%)	A (%)	D (%)	SD (%)	UD (%)	Total (%)	WM
Noise pollution is most intense in commercial zones of Port Harcourt.	145 (36.5)	167 (42.1)	35 (8.8)	39 (9.8)	11 (2.8)	(397)100	3.99
Residential areas near markets or highways in Port Harcourt experience high noise levels.	154 (38.8)	187 (47.1)	32 (8.1)	19 (4.8)	5 (1.3)	(397)100	4.18
Industrial land use areas in Port Harcourt have the highest noise pollution levels.	135 (34.0)	193 (48.6)	46 (11.6)	16 (4.0)	7 (1.8)	(397)100	4.09
Public recreational or green areas in Port Harcourt are relatively quiet.	97 (24.4)	146 (36.8)	85 (21.4)	63 (15.9)	6 (1.5)	(397)100	3.47
The pattern of noise pollution in Port Harcourt	99 (24.9)	123 (31.0)	87 (21.9)	67 (16.9)	21 (5.3)	(397)100	3.34

clearly reflects the type of land use in each area.

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Residents reported that industrial land uses contribute significantly to noise pollution in the city (34%), which is further validated by 48.6% that agreed, however, 11.6% of the population disagreed that industries that proliferates the city do not contribute significantly to noise pollution. The operation of recreational centres was also reported as sources of noise pollution by the residents, 24.4% of the population agreed strongly the entertainment industry is a major source of noise in high decibel. Relative consensus exists in the city under study that the pattern of noise pollution is a reflection of land use and land cover changes

The data presented in Table 5 show the perception of respondents on the impact of subsidy removal on the noise levels in the study area. Residents that use generators to provide electricity for businesses agreed (16.9%), and strongly agreed (21.7%) that there is significant reduction in the use of generators after the removal of energy subsidy by the federal government. However, 28% of the respondents disagreed strongly that the removal of fuel subsidy did not impact their use of generators. The responses on the use of generators are also reflected in the use of fuel where 21.2% of the people affirmed that the quantity of fuel they use has reduced significantly, but there is no uniformity in this view where other respondent reported that they have sustained the amount of fuel they consume (16.9%) in spite of the removal of subsidy. The implication is they while the residents that have reduced fuel consumption and generator usage would also generate lesser noise pollution, the businesses that have retained fuel consumption and generator usage would also retain the levels of noise generated in the environment. This is reflected in the perception of the people where 24.7% agreed strongly that noise pollution has reduced in their communities, this opinion is further corroborated by the 29.5% of the residents that agreed, and however, 25.4% of the people reported that the noise levels in their places have remained unchanged even with the removal of subsidy in the place.

**Table 5. Respondents' perception of subsidy removal and effects on noise levels in the study area**

Impacts of petrol subsidy removal on noise pollution levels	SA (%)	A (%)	D (%)	SD (%)	UD (%)	Total (%)	WM
Petrol subsidy removal has made me/my business/my company to reduce the use of our generator sets	86 (21.7)	67 (16.9)	133 (33.5)	111 (28.0)	0 (0.0)	397(100)	3.32
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In spite of the removal of fuel subsidy and the reduction in the use of generators that contributes enormously to the noise levels in the study area. Residents reported that the delivery of public electricity has not improved. This is reflected in the 8.1 % of the pollution that strongly disagreed on the question on whether electricity has improved. This opinion is further corroborated

by the 11.8% of the people that disagreed, however, 39.8% of the population agreed that power has improved after the removal of petrol subsidy. The differences in opinion show that there is no uniformity in the delivery of electricity in the study area. The lack of uniformity has manifested in differences in the consumption of fuel, use of generators and the noise levels generated in different places in the study area. This is also reflected in the opinion of the people where 14.1% of the people affirmed that the number of hours, they spend on generators has increased, while 28.2% of the population disagreed. There is relative consensus among the people that the removal of subsidy has led to economic disruption and has reshaped the use of generators and the levels of noise generated in the study area.

#### **4.0 Discussions of Findings**

As discovered in the results sources of noise pollution in the study area were numerous. Vehicular movement and traffic jam was reported as one of the major sources of noise in the place. Majority of the residents reported that the blaring of horns by vehicles is a major source of noise. The experiences of the people is consistent with previous studies in the literature such as Ogbodo et al. (2021) that reported that the nature of public transportation, the state of vehicles used for commercial transportation and use of the horn is a major cause of public discomfort. The UN-Habitat (2007) also reported that blaring of the horn which is intended to communicate with other road users is used incautiously and developing countries have not been able to regulate its usage. By implication the residents in the study area are faced with noise pollutions that could hinder their rests, health and general wellbeing (Ozabor et al., 2023).

The noise from air vehicles were also identified to be causing some noise pollution issues in the study area. The increasing patronage for air transport is not without environmental challenges, and beyond the emission of harmful gases into the atmosphere, there is also the materiality of the effects of the noise exuded into the environment due to the frequent passage of aircraft through the study area. The use of generators is commonplace in the study area. Places such as commercial centres, markets, residential places and religious places, rely heavily on generators to provide electricity in the study area. Other places such as recreational centres, drinking parlours and night clubs also rely on the use of generators. Only few places such as banks and the mast of telecommunication companies have transitioned to the use of solar power which is noiseless. The implication of the heavy use of generator is that the noise levels in almost all the land uses have increased beyond the limits that is acceptable to the respondents. Ogbodo et al (2021) reported that the noise levels in Trans-Amadi market is above 65 decibel which is not good for public health. They reported that the use of generator is a major source of noise in the market which is consistent with the outcome of this study where residents reported that the open market is a major source of noise, and by implication residential areas close to the markets were exposed to high levels of noise. Ogbodo et al (2021) reported that exposure to noise level above 90 decibel for more than 8 hours is unsafe and could create environmental annoyance and other health problems.

The macroeconomic policies of the current administration and the removal of petroleum subsidy has been factored as one of the predictors of noise levels in the literature. Residents in the study area, expressed different perception about their lived experiences due to the removal of subsidy. Majority of the residents affirmed that the removal of subsidy has reduced the hours of generator usage, which is also manifested in the significant reduction in noise levels in the place. However, others have retained the hours of generator usage due to the need to keep their businesses afloat. The implication is that the cost of running generators have increased and the cost is also shifted to consumers of the goods and patronizes of the services rendered.

The perception of the respondents is consistent with Medupin and Ekop (2010) that reported that the removal of subsidy could have diverse effects on the economy, however, there was no previous documentation that provided the nexus between subsidy removal and the noise levels experienced in different land uses. While some of the users of generators did not cut down on the use of generators; due to the need to keep business afloat, others have simply cutdown on the use of generator or advanced to the uses of alternative sources of energy. As a result, some respondents acknowledged that they have observed that the noise levels in their neighbourhoods have reduced significantly. Albeit, steady exposure to noise of more than 80 dBA can have harmful physiological effects as corroborated by Mehrotra et al. (2024).

Generally, this study has revealed that noise pollution in different parts of the study area is above the bearable limits for residents. The perception of the people that residential areas are close to open markets, motor parks, and other commercial land uses is evidenced indicator that the respondents are exposed to the health implication of noise pollution. Previous studies have reported that prolonged exposure to noise pollution can manifest in different types of health conditions. Niemann (2006) reported that elevated noise level can cause changes in the immune system, birth defects and hearing impairment. Ogbodo (2021) reported that prolonged exposure to noise pollution could cause hypertension, heart disease, annoyance, sleep disturbance, and stimulate aggression and other anti-social behaviours. Jibiri et al. (2015) reported that noise can result in an increased risk of depression and psychological disorders, migraines, and even emotional stress. Noise has been linked to stresses and health related stroke and heart attack. In addition, noise can interfere with communication and reduce concentration. The results harvested from this study therefore highlight the need to intensify policy options that will improve the noise situation in portharcourt city.

## **5.0 Conclusion and Recommendations**

The study concluded that noise pollution is a major environmental hazard in Port Harcourt city. Residents reported the different sources of noise pollution to include vehicular movement, traffic jam, blaring of horn and sirens, aircraft, commercial activities, religious centres, and industrial activities. Other causes of noise pollution include open markets and other informal activities. More importantly, the removal of subsidy has reduced the use of generators significantly

in different parts of the city, but many of the businesses and industry did not reduce the use of generators due to the poor delivery of public electricity. Thus, the noise levels from those businesses are sustained even after the removal of petroleum subsidy. However, this study did not measure the noise levels in the area using machines, representing a major limitation of the study. As such, the study is unable to validate the noise levels with that of world health organisation or any other regulatory body. Albeit, the findings of this study which is based on the perception of the residents, presents sufficient need to note that that area is experiencing some levels of noise pollution. Therefore, this study strongly recommends that a noise control policy, which will limit the use of generators and fuel ran engines to alternative sources of energy be initiated and enforced in the study area.

## 6.0 References

- Adagunodo, M. (2013). Petroleum products pricing reform in Nigeria: Welfare analysis from household budget survey. *International Journal of Energy Economics and Policy*, 3(4), 459-472.
- Akunbulire, T. O., Awosope, C. O. A., & Oluseyi, P. O. (2007, December). Solving the technical problems facing electrical energy development in Nigeria. In *3rd Annual Conference Research and Fair of the University of Lagos, Nigeria, December* (Vol. 3, pp. 175-181).
- Banerjee, D., & Chakraborty, S. K. (2006). Monthly variation in night time noise levels at residential areas of Asansol city (India). *Journal of Environmental Science & Engineering*, 48(1), 39-44.
- Chinedu, E. A., Titus, O. C., & Thaddeus, E. O. (2010). Achieving vision 2020 in Nigeria: A review of the economic and market-oriented business reforms. *Journal of sustainable Development in Africa*, 12(4), 58-71.
- Chukwudi, D. O., Francis, O. U., Famous, O., Onyeayana, W. V., & Adekunle, O. (2025). Monthly Variability of Selected Weather Elements in the Portharcourt Urban Enclaves, Rivers State, Nigeria from 2010 to 2020. *American Journal of Climate Change*, 14(1), 61-74.
- Ebeniro, J. O., & Abumere, O. E. (1999). Environmental noise assessment of an industrial plant. *Nigerian journal of Physics*, 11, 97-106.
- Eyetan, T., & Ozabor, F. (2021). Oil spills deposits effect on soil physicochemical properties in Port Harcourt metropolis: Implication for agricultural planning. *Journal of Management and Social Science Research*, 2(1/2), 45-58.
- Fepa, A. (1991). National Interim Guidelines and Standards for Industrial Effluents. *Gaseous Emissions and Hazardous Wastes Management Federal Environmental Protection Agency, Lagos, Nigeria*.

- Godspower, I., Tsaro, K. M. B., & Famous, O. (2023). Spatial Assessment of the Perception of Environmental Pollution in Rivers State. *Journal of Geoscience and Environment Protection*, 11(10), 10-20.
- Ibitoye, F. I., & Adenikinju, A. (2007). Future demand for electricity in Nigeria. *Applied energy*, 84(5), 492-504.
- Isihak, S., & Akpan, U. (2012). Restructuring petroleum products subsidies: What is the roadmap for Nigeria. *Readings in Management Sciences*, 4, 64-81.
- Kaushik, A., & Kaushik, C. P. (2008). *Environmental studies: As per Mysore University syllabus* (3rd ed.). New Age International (P) Ltd. Publishers.
- Makinde, O. O. (2015). Influences of socio-cultural experiences on residents' satisfaction in Ikorodu low-cost housing estate, Lagos state. *Environment, Development and Sustainability*, 17(1), 173-198.
- Mehrotra, A., Shukla, S. P., Shukla, A. K., Manar, M. K., Singh, S. K., & Mehrotra, M. (2024). A comprehensive review of auditory and non-auditory effects of noise on human health. *Noise and Health*, 26(121), 59-69.
- Nwachukwu, M. U., & Chike, H. (2011). Fuel subsidy in Nigeria: Fact or fallacy. *Energy*, 36(5), 2796-2801.
- Okeke, P. N., & George, D. M. C. (2015). Evaluation of ambient noise levels in Port Harcourt metropolis, south-south, Nigeria. *IOSR Journal of Environmental Science, Toxicology and Food Technology (IOSR-JESTFT) e-ISSN*, 2319-2402.
- Okumagba, P. O., & Ozabor, F. (2016). Environmental and Social Implication of Urban Solid Waste in Abraka, Ethiope-East Local Government Area of Delta State, Nigeria. *Journal of Social and Management Sciences*, 11, 124-131.
- Oloruntoba, E. O., Ademola, R. A., Sridhar, M. K. C., Agbola, S. A., Omokhodion, F. O., Ana, G. R. E. E., & Alabi, R. T. (2012). Urban environmental noise pollution and perceived health effects in Ibadan, Nigeria. *African Journal of Biomedical Research*, 15(2), 77-84.
- Oparaku, O. U. (2003). Rural area power supply in Nigeria: a cost comparison of the photovoltaic, diesel/gasoline generator and grid utility options. *Renewable energy*, 28(13), 2089-2098.
- Ozabor, F., & Ajukwu, G. A. (2023). A comparative assessment of thermal comfort in residential buildings in Asaba and Igbuzor in Delta State. *Coou African Journal of Environmental Research*, 4(2), 130-150.

- Ozabor, F., & Obaro, H. N. (2016). Health effects of poor waste management in Nigeria: A case study of Abraka in Delta State. *International Journal of Environment and Waste Management*, 18(3), 195-204.
- Ozabor, F., & Obisesan, A. (2015). Gas flaring: impacts on temperature, agriculture and the people of Ebedei in Delta State Nigeria. *Journal of sustainable society*, 4(2), 5-12.
- Ozabor, F., Chukwurah, A., & Emetulu, V. (2024). Air Pollution Load Assessment In The Residential Land-Use Types In Asaba, Delta State, Nigeria. *coou African Journal of Environmental Research*, 5(2), 31-48.
- Ozabor, F., Efe, S. I., Kpang, M. B. T., & Obisesan, A. (2023). Social and economic wellbeing of seafarers across coastal Nigeria amidst Corona virus disease. *Heliyon*, 9(8).
- Ozabor, F., Onyemenam, P. I., Wekpe, V. O., & Obisesan, A. (2024). Determinants of housing demands and residential rent costs in an emerging city in Southern Nigeria. *Urban Governance*, 4(3), 232-244.
- Ozabor, F., Wekpe, V. O., Tega, E., & Ojoh, C. (2024). Spatial assessment of pollutants concentration in air and soils impacted by industrial wastes in lagos state, Nigeria. *Environmental Research Communications*, 6(6), 065013.
- Weli, V. E., & Famous, O. (2018). Clean Energy as a Compelling Measure in Achieving Lower Temperature: Evidence from Downscaled Temperatures of two Niger Delta Cities Nigeria. *Journal of Climatology & Weather Forecasting*, 6.