ASSESSMENT OF THE IMPACT OF VEHICULAR POLLUTION ON HUMANS AND THE ENVIRONMENT (A CASE STUDY OF UGHELLI NORTH LGA DELTA STATE, NIGERIA)

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ABSTRACT: Numerous harmful health effects, ranging from acute to chronic illnesses, have been linked to exposure to air pollution associated with vehicles. In Delta State, Nigeria's Ughelli North Local Government area, researchers looked into the effects of vehicle pollution on people, animals, and agriculture productivity as well as potential solutions. One thousand five hundred (1500) people make up the sample size population. Two hypotheses were developed and tested at the 0.05 level of significant degrees of freedom in order to conduct the inquiry. Data for the study was gathered via a questionnaire. Furthermore, the data was analyzed using weighted mean and simple percentage statistics, and the hypotheses were tested using chi-square. The results showed that vehicle pollution has had a significant detrimental impact on both the environment and human health, resulting in environmental deterioration and human illnesses. The findings also shown how vehicle pollution has significantly decreased agriculture and animal productivity. Thus, the results of this study demonstrated how crucial it is for the government to uphold current environmental protection legislation. The results also showed that car owners should maintain their vehicles on a regular basis and follow current environmental protection laws and regulations. This is to safeguard the ecosystem's health and stop impending airborne illnesses. In order to mitigate the impact of vehicle pollution, recommendations were made.

Keywords: Pollution on humans, Vehicular pollution, Environmental pollution, Air pollution

Introduction

When the biotic and abiotic elements of the environment are so polluted that it seriously impairs the ability of all environmental processes to function properly, this is referred to as environmental pollution. Because of its detrimental long-term repercussions, environmental contamination has gained international attention. Pollution has several negative impacts, such as a reduction in the amount of vegetation, an abundance of dangerous substances in the air, and in food grains, and growing risks of environmental accidents and threats to life support systems (Rai, 2016). Although scientific innovation had sought to decrease the number of toxins discharged into the environment through green energy and environmental friendly products, a lot of pollutants are still being introduced into the ecosystems.

Anthropogenic activities and other causes can contribute to environmental contamination. Anthropogenic air pollution is one of the world's greatest public health threats, contributing to nearly 7 million deaths annually (WHO, 2021). According to WHO (2021), around 91% of people on the planet reside in areas with high levels of pollution, where the air quality above the WHO's maximum permissible standards. A Swedish cohort study claimed that prolonged exposure to air pollution could cause diabetes (Eze *et al*., 2014). Furthermore, it has been experimentally demonstrated that air pollution causes a number of health issues, including cardiovascular, pulmonary, and ocular abnormalities, which can lead to chronic disease in adulthood or high infant mortality (Kelishadi and Poursafa, 2010; Manisalidis *et al*., 2020). Because of its hazardous effects on ecosystems and long-term accumulation, environmental pollution from road vehicle traffic has become a serious problem for environmental engineers (Zhang *et al*., 2012). One of the world's emerging nations, Nigeria, has seen a substantial increase in the number of vehicles on the road, with 11,760,871 vehicles in use as of 2018. Toxic gas emissions from automobiles can cause air pollution; these emissions also have negative impacts on the environment, plant life, soil and water quality, human health, and climate (Rai and Panda, 2014). Toxic gas emissions into the environment are bad for people because they can cause a lot of heart problems, according to Rai (2015). Because it will significantly increase the rate of emissions, traffic congestion exacerbates the severity of air pollution. As a result, the environment requires appropriate assessments of road networks and car emissions regulations (WHO, 2005).

In their study on how driving affects the environment, Dheeraj *et al*. (2020) found that traffic volume and road surface characteristics had a significant impact on the quantity of particles released into the atmosphere. Dheeraj and his group also pointed out that some of the main sources of pollution along highways are non-exhaust vehicle emissions, such as tire and brake wear, re-suspended road dust, etc. Nitrogen oxides, sulfur oxides, lead oxides, cadmium, and other elements are abundant in these non-exhaust vehicle emissions (Gurjar *et al*., 2010). Additionally, Moryani *et al*. (2020) found that particulate matter resuspension is caused by emissions from road operations, primarily from poor surface roads. Depending on the wind speed, local geography, and prevailing climatic conditions, these re-suspended particles can travel long distances. In their study, Moryani *et al*. (2020) found that buildings along a major road were contaminated with lead, nickel,

and cadmium, among other harmful metals. Assessing the consequences of vehicle pollution on crops, animals, human health, and potential solutions were the goals of this study.

Materials and Methods

Area of the Study

The study was conducted in Delta State, Southern Nigeria, at the Ughelli-North Local Government area. Ughelli-North L.G.A., which is located between latitudes 5028'N and 5030'N and longitudes 5058'E and 6001' E, with a total land area of roughly 820 km² and a population of roughly 340,000 (Ughelli, 2020). Ughelli, Orogun, Agbarho, Agbarha, Ufuoma, Oteri, Evwreni, and Uduere are a few of the well-known settlements in the Ughelli-North metropolitan (Figure 1). Seasonal flooding occurs in the tropical rain forest that surrounds the Ughelli-North Local Government District. The dry and wet seasons were the two main climatic seasons of the region. The rainy season begins in April and lasts until October, whereas the dry season typically lasts from November to March. An important source of groundwater recharge is the 1,900 mm of precipitation that falls there each year.

Among the enterprises in the metropolitan area are those involved in oil production and exploration, block industries, retail centers, gas stations, water purification and packaging, etc. The pace of road activities has dramatically increased over the past ten years due to the presence of major highways in the study region and a rise in economic activity.

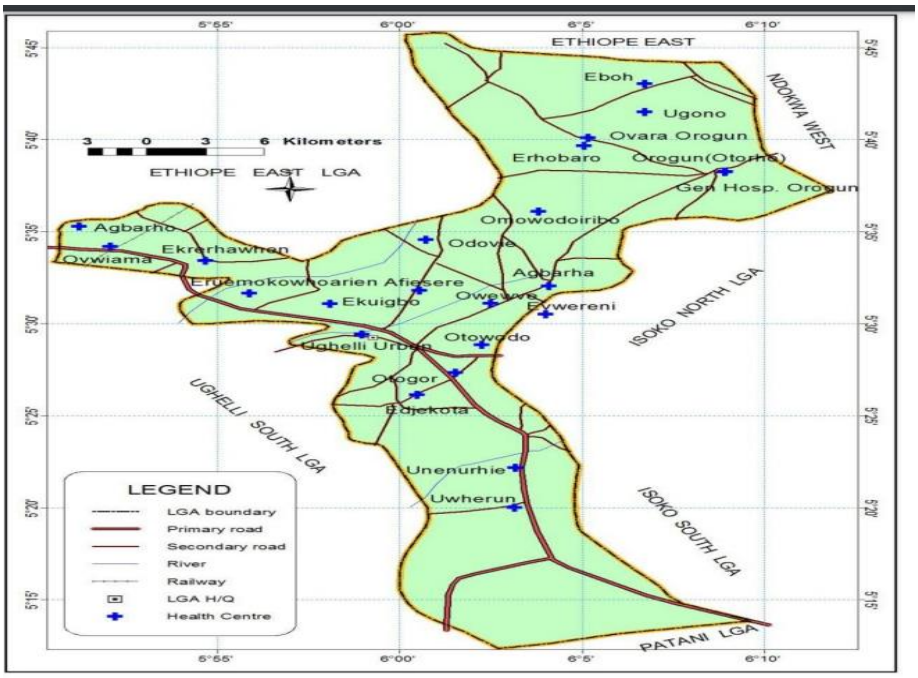

Figure 1: Map of Ughelli North LGA. Source: Google map

Sources of Data

To accomplish the objective of this study, primary and secondary data sources were considered.

Primary data collections:

i. **Questionnaire:** To gather accurate data, a specially designed questionnaire was given to everyone in the study region.
ii. **Oral interview:** In order to gather pertinent information for the study, the indigenous people were questioned in-depth during the fieldwork. As the researcher had the chance to explain everything to the respondents and make an impromptu appraisal of the situation, this data gathering system became essential.

B. Secondary Sources: Information from tetbooks, journals, papers, and other publications, such as the World Health Organization (WHO), made up the secondary data. These proved to be quite helpful in describing the issue, making comparisons, and formulating hypotheses.

Sampling Techniques

To get primary data, stratified sampling approaches were used. As shown in Table 1, the Ughelli-North Local Government region was split up into five macro-zones using stratified sampling procedures. Following the creation of macro-zones according to the local population, the researcher used the basic random sampling technique to choose the necessary sample size from each macro-zone, choosing 300 individuals from each. To represent the entire community, a total sample size of 1,500 individuals was therefore chosen for the study.

Table 1: Distribution of target population

S/No	Town	Samples	Percentage %
1	Ughelli	300	20
2	Orogun,	300	20
3	Agbarho	300	20
4	Evwreni	300	20
5	Agbarha	300	20
	Total	**1500**	**100**

Research Instrument

Values were allocated to various scaling in the following manner in order to ascertain the level of agreement or disagreement with each of the scaling statements in the questionnaires:

i.Strongly agreed	(SA)	= 5
ii.Agreed	(A)	= 4
iii.Disagreed	(D)	= 3
iv.Strongly disagreed	(SD)	= 2
v.Undecided	(UD)	= 1

The expression given in equation 1 will be used to calculate the cut-off point.

$$cut - off = \frac{5+4+3+2+1}{5} \quad \text{-} \quad \text{-(1)} \quad = \frac{15}{5} = 3.0$$

As a result, responses with a mean score of 3.0 or more are recognized as agreed, while those with a mean score below 3.0 will not be.

Validity of the Instrument

Copies of the instruments were distributed to environmental health professionals, community health workers, and environmental science specialists for critical evaluation. The instrument's construct validity, content validity, and face validity were all improved during this process. Prior to distributing the questionnaires to the respondents, their recommendations were included into the instrument's final draft, which improved the instrument's quality.

Reliability of the Instrument

Using the test-retest procedure, a smaller sample of the same respondents was chosen to guarantee the reliability of the constructed instrument. After three weeks, the respondents were given the questionnaires again, and the results of the two administrations were computed using a straightforward percentage.

Data Analysis Techniques

To reach a correct result, the raw data was tested and analyzed using the chi-square (X2) statistical technique. The null hypothesis in chi square tests describes the number of cases that should be anticipated in each category if it is true. The difference between each category's observed and predicted values serves as the foundation for the chi square test. The formula for chi-square is displayed in equation 2.

$$X^2 = \sum_i \frac{(O_i - E_i)^2}{E_i} \quad \text{(Cochran, 1952)-} \quad (2)$$

Where:
O_i = observed number of cases in category i,
E_i = expected number of cases in category i.

The difference between the observed and expected numbers of cases in each category is used to compute this chi square statistic.
The basic percentage, represented in equation 3, was used to process the raw data in addition to the Chi-square. In contrast, the weighted mean was determined using equation 4's formula.

$\% = \frac{F}{N} \times 100$ - - (3) Where:

F = Frequency
N = Number of respondents
% = Percentage

$weighted\ mean = \frac{\bar{X}\sum x}{\sum f}$ - (4)

Where:

Ex = Total Scores
Ef = Total Frequencies
X = Mean Scores

Results and Discussion

The data gathered for the study was explained and examined in this chapter. The research questions and hypotheses served as the framework for the presentation and analysis. I was successful in retrieving all 1500 of the disseminated questionnaires. This demonstrates complete success.

Data Analysis

Question 1: What are the effects of environmental degradation from vehicular emissions?

Table 3.1: Responses on the effects of environmental degradation from vehicular emissions

S/N	Item statement	SA	%	A	%	SD	%	D	%	UD	%
1.	It leads to loss of farmlands	860	57.3	398	26.5	0	0	35	2.3	207	13.8
2.	It leads to degradation of the environment.	905	60.3	345	23	0	0	42	2.8	208	13.9
3.	It leads to water pollution and deforestation	800	53.3	352	23.5	0	0	40	2.7	258	17.2
4.	It poisons various habitats for years	850	56.7	418	27.9	0	0	12	0.8	230	15.3
5.	It devastate the ecosystem	750	50	359	23.9	0	0	191	12.7	200	13.3
6.	It causes desertification and slow growth valuable trees	842	56.1	288	19.2	0	0	121	8.1	149	9.9
7.	It gives room to global warming	865	57.7	384	25.6	0	0	111	7.4	140	9.3

Source: author's Field Survey, 2021

Question 2: What are the effects of vehicular emissions on health of human?

Table 2: Responses on the effects of vehicular emissions on human health

S/N	Item statement	SA	%	A	%	SD	%	D	%	UD	%
1.	Memory loss	545	36.3	618	41.2	7	0.5	72	4.8	208	13.9
2.	Dizziness and irritability	650	43.3	595	39.7	10	0.7	49	3.3	196	13.1
3.	Headache	654	43.6	556	37.1	60	4	157	10.5	73	4.9
4.	Nausea and vomiting	516	34.4	404	26.9	47	3.1	93	6.2	440	29.3
5.	Chest pain	652	43.5	661	44.1	13	0.9	73	4.9	215	14.3
6.	Coughing and lung problem	926	61.7	459	30.6	5	0.3	19	1.3	91	6.1
7.	Fatigue	550	36.7	595	39.7	10	0.7	149	9.9	196	13.1
8.	Skin, injuries, rash and blisters	516	34.4	494	32.9	157	10.5	93	6.2	240	16
9.	Eye sores	820	54.7	568	37.9	9	0.6	23	1.5	80	5.3
10.	Easily kill infant	526	35.1	394	26.3	97	6.5	193	12.9	290	19.3
11.	DNA alterations	391	26.1	504	33.6	372	24.8	103	6.9	130	8.7
12.	Heart problems	652	43.5	561	37.4	13	0.9	173	11.5	115	7.7
13.	Post – traumatic stress disorders	626	41.7	394	26.2	197	13.1	93	6.2	190	12.7
14.	Stomach illness	542	36.1	560	37.3	24	1.6	175	11.7	213	14.2
15.	Genotoxicity	491	32.7	504	33.6	72	4.8	203	13.5	230	15.3
16.	Endo urine toxicity	542	36.1	560	37.3	24	1.6	175	11.7	213	14.2
17.	Skin cancer, melanoma, lung cancer and leukemia	539	35.9	558	37.2	27	1.8	179	11.9	211	14.1

Source: author's Field Survey, 2021

Question 3: What are the effects of vehicular emissions on aquatic animals and crops?

Table 3: Responses on the effects of vehicular emissions on aquatic animals and crops

S/N	Item statement	SA	%	A	%	SD	%	D	%	UD	%
1.	Absence of fresh water for aquatic animal to breeds.	616	41.1	504	33.6	47	3.1	93	6.2	240	16
2.	Infertile land for crop production	594	39.6	558	37.2	22	1.5	107	7.1	219	14.6
3.	Reduction of aquatic animal production	566	37.7	504	33.6	47	3.1	93	6.2	240	16
4.	Reduction of crops production	494	32.9	658	43.8	22	1.5	107	7.1	219	14.6
5.	Loss of job/means of living (farmers and commercial fishermen and fisherwomen)	511	34.1	609	40.6	40	2.6	200	13.3	140	9.3
6.	Retarded crop growth	594	39.6	680	45.3	22	1.5	50	3.3	154	10.3
7.	Loss of life of aquatic animals	560	37.3	494	32.9	53	3.5	203	13.5	190	13
8.	Loss of fishing ponds and grounds	476	31.7	604	40.2	77	5.1	93	6.2	200	13.3
9.	High cost of food crops	594	39.6	680	45.3	22	1.5	89	5.9	115	7.7
10.	Destruction of fish eggs	570	38	609	40.6	80	5.3	121	8.1	120	8
11.	Cultivable farm plots are reduce.	471	31.4	603	40.2	82	5.5	143	9.5	201	13.4
12.	Some aquatic plants and animals are already extinct	476	31.7	604	40.3	127	8.5	93	6.2	200	13.3

Source: author's Field Survey, 2021

Question 4: What are the possible solutions to vehicular emissions?

Table 4: Responses on the possible solutions to vehicular emissions

S/N	Item statement	SA	%	A	%	SD	%	D	%	UD	%
1.	Sales and use of poorly maintained vehicles should be highly prohibited.	851	57	499	33	0	0	140	9	10	0.7
2.	Vehicles should be periodically maintained to minimize emissions	859	57	440	29	0	0	132	9	69	4.6
3.	NGOs should work with the Government to combat vehicular emissions	859	57	440	29	0	0	182	12	19	1
4.	Poor quality fuels should not be used	848	56	340	23	0	0	132	9	180	12

5.	Vehicles owners should follows Environmental laws and policies in relation to environmental pollution	808	54	371	25	0	0	182	12	139	9

Source: author's Field Survey, 2021

Testing of Hypothesis

Hypothesis 1

Hi_1: Vehicular pollution has a significant effect on the environment.

Ho_1: Vehicular pollution does not has a significant effects on the environment

Table 5: Using item 2 of question 1

	FO	FE	FO-FE	$(FO - FE)^2$	$(FO - FE)^2/FE$
SA	905	300	605	366,025	1,220.08
A	345	300	45	2,025	6.75
SD	0	300	-300	90,000	300.00
D	42	300	-258	66,564	221.88
U	208	300	-92	8,464	28.21
Total	1500				1,776.92

$X^2 = \sum_i \frac{(O_i - E_i)^2}{E_i}$ = 1,776.92

Expected is calculated by dividing total observed frequency by the number (n) which is 5.

Fe = 1500/5 = 300

Degree of freedom (df) = (n - 1)

= n - 1

= 4

The table value X^2 at 0.05 level of significance for 4 degrees of freedom is 9.488 Since the calculated X^2 value is greater than the Table value, the researcher reject the null hypothesis and accept the alternate hypothesis.

Therefore, vehicular pollution has significant a effect on the environment.

Hypothesis 2

Hi_2: Vehicular pollution has significant effect on health of human beings.

Ho_2: Vehicular pollution does not have significant effect on the health of human beings.

Table 6: **Using item 6 of question 2**

	FO	**FE**	**FO-FE**	**$(FO - FE)^2$**	**$(FO - FE)^2/FE$**
SA	926	300	626	391,876	1,306.25
A	459	300	159	25,281	84.27
SD	5	300	-295	87,025	290.08
D	19	300	-281	78,961	263.20
U	91	300	-209	43,681	145.60
Total	1500				2,089.4

$X^2 = \sum_i \frac{(O_i - E_i)^2}{E_i}$ = 2,089.4

Expected is calculated by dividing total observed frequency by the number (n) which is 5.
Fe = 1500/5 = 300
Degree of freedom (df) = (5 - 1)
= n - 1
= 4

The table value X^2 at 5% significance level for 4 degree of freedom is 9.488.

Since the calculated X^2 value is greater than the Table value, I reject the null hypothesis and accept alternate hypothesis.

Therefore, vehicular pollution has significant a effect on the health of human beings

Discussion of finding

According to item 1 in Table 1, 83.8% of respondents agreed and strongly agreed that farmlands are lost as a result of environmental deterioration caused by vehicle emissions, whereas 2.3% disagreed with the statement and 13.8% were unsure. According to item 2 in the table, 83.3% of residents agreed and strongly agreed that vehicle emissions degrade the environment, compared to 2.8% who disagreed and 13.9% who were undecided. But according to Item 3, 76.8% of the residents agreed and strongly opposed that vehicle emissions cause deforestation and water pollution, 2.7% disagreed, and 17.2% were unsure. According to item 4, 84.6% of community members agreed and strongly agreed that vehicle emissions have been polluting different habitats for years. Among those surveyed, 0.8% disagreed with this statement, and 15.3% were unsure. When it came to Item 5, 73.9% of community members agreed and strongly agreed that vehicle emissions destroy the ecology, 12.7% disagreed, and 13.3% were unsure.
Item 6 also revealed that 75.3% of respondents agreed and strongly agreed that vehicle emissions contribute to desertification and the delayed growth of precious trees. Among the community's residents, 8.1% disagreed

with this statement, and 9.9% were unsure. Item 7 showed that 83.3% of respondents agreed and strongly agreed that vehicle emissions contribute to global warming, compared to 7.4% who disagreed and 9.3% who were unsure.

Using the aforementioned analysis, item 4 has the highest percentage of 84.6%, indicating that vehicle emissions have contaminated various habitats for years in the study area. The analysis of question above showed that some of the effects of vehicle emissions on the environment include deforestation, farmland loss, water pollution, and environmental degradation; the study also demonstrated that the effects of vehicle emissions on the environment include devastation of the ecosystem, desertification and slow growth of valuable trees, and the creation of avenues for global warming. These findings are consistent with the findings of earlier research by Kumar *et al*. (2021), which found that vehicle emissions deplete the ozone layer, which either directly or indirectly results in global warming.

According to Item 1 in Table 2 above, 77.5% of respondents agreed and strongly agreed that memory loss is one of the negative health effects of vehicle emissions, whereas 5.3% disagreed and strongly disagreed and 13.9% were undecided. According to item 2, 83% of residents agreed and strongly agreed that vehicle emissions cause irritation and dizziness in human health, 4% disagreed and strongly disagreed with this statement, and 13.1% were unsure. According to item 3, 84.7% of the community members agreed and strongly agreed that car emissions give people headaches, 14.5% disagreed and strongly disagreed, and 4.9% were undecided. According to item 4, 61.3% of respondents agreed and strongly agreed that driving causes nausea and vomiting, 9.3% disagreed with this assertion, and 29.3% were unsure. According to item 5, 87.6% of respondents agreed and strongly agreed that human chest pain is caused by vehicle emissions, compared to 5.8% who disagreed and strongly disagreed and 14.3% who were unsure. According to item 6 above, 92.3% of respondents agreed and strongly agreed that vehicle emissions cause coughing and lung issues in people. Only 1.6% disagreed with this statement, and 6.1% were unsure. According to Item 7, 76.4% of respondents agreed and strongly agreed that it makes people tired, whereas 10.6% disagreed and strongly disagreed.

Item 8, however, showed that 67.3% of respondents agreed and strongly agreed that vehicle emissions cause human skin damage, rashes, and blisters, compared to 16.7% who disagreed and 16% who were unsure. According to item 9 above, 92.6% of respondents agreed and strongly agreed that eye sores are caused by vehicle emissions, whilst 2.1% disagreed and strongly disagreed and 5.3% were unsure. According to item 10, 61.4% of the population agreed and strongly agreed that car emissions can easily kill infants, compared to 19.4% who disagreed and 19.3% who were unsure. According to item 11 above, 59.7% of respondents agreed and strongly agreed that vehicle emissions affect DNA, compared to 31.7% who disagreed and 8.7% who were unsure. According to item 12, 80.9% of respondents agreed and strongly agreed that heart problems are caused by vehicle emissions, compared to 12.4% who disagreed and 7.7% who were unsure. According to item 13, 67.9% of residents agreed and strongly agreed that vehicle emissions contribute to PTSD, compared to 19.3% who disagreed and 12.7% who were undecided.

Furthermore, as seen in item 14 above, 73.4% of respondents agreed and strongly agreed that vehicle emissions cause stomach illness, compared to 13.3% who disagreed and 14.2% who were unsure. According to item 15, 66.3% of respondents agreed and strongly agreed that it causes genotoxicity, compared to 18.3% who disagreed and 15.3% who were undecided. According to item 16 above, 73.4% of community members agreed and strongly agreed that endo-urine toxicity is caused by vehicle emissions, whereas 13.3% disagreed and 14.2% were unsure. Finally, as seen in item 17 above, 73.1% agreed and strongly agreed that vehicle emissions cause leukemia, lung cancer, melanoma, and skin cancer, whereas 13.7% disagreed and strongly disagreed and 14.1% were unsure.

Item 9 has the highest percentage of 92.6% according to the research above. Thus, in the research region, eye sores are caused by vehicle emissions. This is consistent with the findings of Ogur and Kariuki (2014), who investigated the impact of vehicle emissions on the environment and human health and found that the immediate effects of exhaust gas pollutants on people included odor, vomiting, and eye discomfort. Their findings also indicated that many appeared to be suffering from cancer, asthma, and other illnesses linked to exhaust gases. The results obtained from the questionnaire on the effect of vehicular emissions on human health showed that, on average, 28.3%, 16.6%, 23.3%, 18.3%, and 13.3% were affected by headache, sleeplessness, heavy eyes, asthma attacks, and running noses, respectively. These findings are also consistent with the works of Adeyanju and Manohar (2017) on the effects of vehicular emissions on environmental pollution in Lagos.

According to Item 1 in Table.3 above, 74.7% of respondents agreed and strongly agreed that one of the effects of vehicle emissions on crops and aquatic animals is that they cause fresh water to be scarce for aquatic animals to breed. The remaining 9.3% disagreed with this statement, and 16% were unsure. According to item 2, 76.8% of the population agreed and strongly agreed that vehicle emissions result in infertile land for crop production, compared to 8.6% who disagreed and strongly disagreed and 14.6% who were undecided. 71.3 percent of respondents agreed and strongly agreed with item 3 above that vehicle emissions reduce the production of aquatic animals, whereas 9.3 percent disagreed and strongly disagreed with the assertion, and 16 percent were undecided. According to item 4 above, 76.7% of respondents agreed and strongly agreed that vehicle emissions reduce crop output, compared to 8.6% who disagreed and 14.6% who were unsure. According to item 5, 74.7% of the population agreed and strongly agreed that vehicle emissions result in the loss of jobs and income for farmers, commercial fishermen, and fisherwomen. In contrast, 15.9% disagreed with this statement, while 9.3% were undecided.

Regarding Item 6 above, however, 84.9% of the community members agreed and strongly agreed that vehicle emissions cause crop development to be delayed, compared to 4.8% who disagreed and strongly disagreed and 10.3% who were unsure. 70.2 percent of respondents agreed and strongly disagreed with item 7's assertion that vehicle emissions result in the death of aquatic and animal life, compared to 17% who disagreed and strongly disagreed and 13% who were unsure. According to item 8 above, 71.9% of respondents agreed and strongly agreed that vehicle emissions result in the decline of fishing ponds and grounds, whilst 11.3% disagreed and 13.3% were undecided. According to Item 9 above, 84.9% of respondents agreed and strongly

agreed that vehicle emissions drive up the price of food crops, compared to 7.4% who disagreed and 7.7% who were undecided.

In addition, as seen by item 10 above, 78.6% of the population agreed and strongly agreed that vehicle emissions destroy fish, compared to 13.4% who disagreed and strongly disagreed and 8% who were unsure. According to item 11, 71.6% of respondents agreed and strongly agreed that driving limits the amount of land that may be used for farming, whereas 15% disagreed and strongly disagreed with this statement, and 13.4% were unsure. Finally, Item 12 revealed that 72% of respondents agreed and strongly agreed that some aquatic plants and animals became extinct as a result of vehicle emissions, compared to 14.7% who disagreed and 13.3% who were unsure.

Items 6 and 9 have the greatest proportion of 84.9% according to the research above. Consequently, the high cost of food crops and delayed agricultural growth are caused by vehicle emissions. According to Asheden *et al*. (2003), who looked into how vehicle emissions affected vegetation, the levels of pollutant mixtures found in urban areas do have direct, species-specific effects on plant growth and may also make plants more vulnerable to other environmental stresses.

According to Item 1 in Table 4 above, 90% of respondents agreed and strongly agreed that banning the sale and use of poorly maintained vehicles is one potential way to reduce vehicular emissions. Only 9% disagreed with this statement, and 0.7% were unsure. Item 2 revealed that 86% of residents agreed and strongly agreed that cars should have regular maintenance to reduce pollution, compared to 9% who opposed and 4.6% who were undecided. According to item 3 above, 86% of community members agreed and strongly agreed that NGOs should collaborate with the government to reduce vehicle emissions, whilst 12% disagreed and 1% were undecided. Furthermore, according to Item 4 above, 81% of community members agreed and strongly agreed that using low-quality fuels is not a good idea. Only 9% disagreed with this statement, and 12% were unsure. Last but not least, item 5 above revealed that 79% of the population agreed and strongly agreed that car owners should abide by environmental laws and policies regarding environmental pollution, whilst 12% disagreed and 9% were undecided.

According to the data above, item 1 has the highest percentage—90%. Thus, it should be strictly forbidden to sell or use cars that aren't maintained. This is consistent with the findings of Sati and Dare (2022), who examined the analysis of the amount of vehicular emissions in Kaduna city and recommended awareness programs and routine maintenance for commercial vehicles as ways to reduce vehicular emissions. They added that in order to lower the number of private automobiles and motorbikes on the road and so lower hazardous emissions, the government should set up a dependable and effective public transit system.

Conclusion

Based on the study’s findings, it can be said that vehicle emissions have a detrimental and statistically significant impact on both surrounding and human wellbeing, vehicle emissions and poor agriculture and animal yield are significantly correlated lastly the indigenous people mentioned how their crop output and farm income are adversely affected by vehicle pollution.

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