Residents' Adaptation and Management Strategies to Noise Pollution in Capital cities in south- south, Nigeria

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Abstract: - The study examined residents' adaptation and management strategies to noise pollution in capital cities in south-south Nigeria. The capital cities of the BRACED states which were Yenagoa, Port Harcourt, Uyo, Calabar, Benin and Asaba are the study areas for the study. Primary data source involved the use of a well-structured questionnaire instrument. Residents across these capital cities constituted the study population whereby a sample size of 400 was determined from the study population of 2,727,790 as projected estimates from the 2006 population census. Descriptive statistics in form of Tables and maps aided the study in data presentation while the ANOVA, Post Hoc, Excel worksheet 2010 and SPSS version 24.0 statistical tools aided the study in statistical analyses for the study. Findings of the study revealed the major sources of noise pollution in capital cities as vehicular (85.3%), electric generating sets (89.3%), and entertainment/social activities (56.8%). Findings revealed that majority of adaptation and noise management strategies were not fully implemented in the study area by residents. Thus, strategies for reducing noise like engineering designs, provision of stiffer penalty by government, planned unit strategy and location and design strategies were only indicated by 11.4%, 9.3%, 4.8%, and 22.3% as adaptation and management strategies of noise pollution in the study area. For mitigation/control measures to combat noise among sampled residents showed that few respondents 80.3%, 57.1% and 90.5% agreed to adopting increasing use of solar panels, initiate choice of residential apartments and created dedicated quiet spots and locations. Residents' adaptation and management strategies significantly vary across capital cities ($F=2.967;p<0.05$) showing that Calabar, Yenagoa, Asaba and Port Harcourt were more similar in their level of adaptation/management strategies against those investigated in Uyo, Benin, Calabar and Yenagoa. The study based on findings recommended amongst others that a noise Act is urgently needed to help control noise pollution in the study area; and residents need to understand the dangers of exposure to excessive noise pollution levels and channel their energy toward its management.

Key Words: — ***Adaptation strategies, Noise Pollution, Residents, Mitigation measures, Capital cities, South-south.***

I. INTRODUCTION

In 2011, the world population hit 7 billion according to Population Reference Bureau (PRB, 2016). The world is undergoing the largest wave of urban growth in history: already, over half the world's population is living in towns and cities, and by 2030 it will increase to 5 billion, with urban growth concentrated in Africa and Asia (United Nations Organization (UNO), 2011; United Nations Population Fund (UNFPA), 2014). Nigeria's situation according to 2006 Census, reports that more than seven cities in Nigeria have population exceeding 1 million while the population of its two largest Metropolitan cities; Lagos and Kano, are currently over 9 million each (Adekola and Ogundipe,2017). Furthermore, the proportion of population living in urban centres in Nigeria rose from 15% in 1960 to 43.3% in year 2000. This rose to 48% and 50% in 2006 and 2013 respectively and projected to reach 60% by the end of 2015 (Population Reference Bureau (PRB), 2016). Presently, there are more than a thousand of Nigeria settlements with over 20,000 inhabitants in 2016 (Adekola and Ogundipe, 2017).

Consequently, this level of growth in population as regards urban centres in Nigeria gave rise to a lot of problems and challenges which now have the potentials to hamper sustainable growth and development. One of such uncontrolled challenge is noise pollution. Growth in terms of economic, social

Manuscript revised September 08, 2021; accepted September 09, 2021. Date of publication September 11, 2021.
This paper available online at www.ijprse.com
ISSN (Online): 2582-7898; SJIF: 5.494

development and population increases the tendency towards increasing noise generation. Due to the ignorance of Nigerians on the fact that there exist a close nexus between noise pollution and sustainable city, little or no attention is paid to the control of noise pollution in Nigeria (Olayinka, 2013). The execution and implementation of the law as regards environmental noise pollutio is never implemented to the letter. Noise is considered a growing health threat, and if, left unchecked could result to hazardous conditions (Adejobi, 2012). The urban environmental noise pollution simply entails all what make the urban centre not to be conducive for living and also makes the environment to be unhealthy for living (Olayinka, 2013). This is a source of worry going by the problems and challenges presently faced in ensuring that urban areas of Nigeria become functional, liveable, and aesthetically pleasing (Ademiluyi and Dina, 2011). In comparison to other pollutants, the control of environmental noise has been hampered by insufficient knowledge of its effects on human and lack of defined criteria.

Therefore, the planning, development, and establishment of noise control strategies are very important consideration in noise control and management (Bond, 1996; Olayinka 2013). There is need for abatement plans for noise generation areas like areas around major transport facilities especially at bus stops along traffic routes having economic activities and major market areas. The noise pollution situation in the capital cities of the Niger Delta States is similar to that in many urban areas or cities in Nigeria. Looking at the serious and disastrous effects of noise pollution on human life, it is essential to take preventive and protective measures. Thus, adaptation/coping and control strategies becomes necessary because of the failure of existing legislation measures to prevent or control the effect of noise pollution and its attendant harmful effects on humans in south-south Nigeria. In addition, the perception on the mitigation and control measures toward effective management of noise pollution among residents also becomes important in order to agree on the best applicable way to abet noise pollution problems in south-south Nigeria. Findings shall expose the gaps that need urgent attention as regards managing and controlling noise pollution in the south-south region of Nigeria. From previous works, (Anomohanran et al., 2008; Oyedepo and Saadu, 2009; Ademiluyi and Dina, 2011; Adejobi, 2012; Olayinka, 2013; and Eludoyin, 2016) it was observed that those studies focused on noise pollution in urban cities, towns and Metropolitan centres but did not carry out a perception studies on the adaptation, management and mitigation of noise pollution across capital cities in south-south Nigeria. Thus, these probing questions are therefore useful for the study, and these are: What are the major sources of noise in capital cities in south-south Nigeria? What adaptation and management strategies are employed by residents to cope with noise pollution challenges? Are there mitigation measures put in place by residents to control noise pollution in the study area? Do residents' adaptation and management strategies to noise pollution differ among capital cities?

II. MATERIALS AND METHODS

The study area is located in the southern region of Nigeria and is positioned between latitudes $4^0 21' 43.2''N$, $7^0 40' 52.8''$ N and longitude $5^0 8' 42''E$, $9^0 30'7.2''$ E and spatially covers an area of about 84,640km^2 which encompasses the following states; Bayelsa, Rivers, Akwa Ibom, Cross River, Edo and Delta (called the BRACED states) (Figure 1). Most parts of the Niger Delta (BRACED states) are intersected with creeks, estuaries and rivers for which it obtains its name from being positioned at the mouth of the Niger River which finally ends at the edge of the Atlantic ocean (UNDP, 2006; Musa, Koki, Taura and Mukhtar, 2014). The topography of the south-south region is gently sloping lowland which is less than 10 degrees in most areas and the highest part of the lowland which is well drained form mosaic with altitude between 15 to 25 meters (Musa et al., 2014); and a flat monotonous low relief interspersed by several wetlands (Encyclopedia Britainica, 2019). According to Oyegun (1993) the geomorphological structure is grouped into five subdivisions, namely; Arcuate Delta, Strand Coast, Delta Flank, Barrier Lagoon coast and Transgressive mud coast with regards to the characteristics of the beach, slope, vegetation and the morphological features. The key climate variable is rainfall which has spatial variation in the study area. Thus there are two seasons as in the other parts of the country which are the wet and dry seasons (Abams, 2001). The vegetation of the area at its inception was dominated by high rainforest, mangrove forest and brackish swamp forest which covers approximately within the range between 5,000km^2 and 8500km^2 of land in the area (Musa et al., 2014). The area is densely populated with over 30 million people and majority reside in the urban areas, it has more than forty ethnic groups some of which are Ijaw, Efik, Calabari, Annang, Urohobo and Itsekiri which speak close to 250 languages (Okhakhu, 2014). Farming fishing and coastal trading were the main occupation of the people of the Niger Delta Region providing a means of livelihood and abundant revenue in the region (Okhakhu, 2014).

Fig.1. Study Area (BRACED states)

The cross-sectional research design which endeavor to collect information from respondents across the population at a specific time in the study area was employed for this study. The study was carried out between December 2020 and March 2021. The study was designed to elicit information from the residents in capital cities in the BRACED states. The primary data collection involved the use of questionnaire surveys designed for collecting first hand information from respondents. The sample size of the study was drawn from the population figures projected from the National Population Census (NPC) 2006 which was 1,879,032 persons. The total projected population estimate for all selected capital cities was 2,727,799 persons. The Taro Yamane (1967) formula was used to determine the sample size of 400 from the projected population size of 2,727,790 for the study (Table 1).

Table.1. Population Figures for BRACED states used for Sample size Determination

States	Capital Cities	Population census 2006	*Projected Population Estimate	Proportional Sample sizes
Bayelsa	Yenagoa	352,285	504,434	74
Rivers	Port Harcourt	538,558	771,157	113
Akwa Ibom	Uyo	305961	438,011	64
Cross River	Calabar	183,681	263,011	39
Edo	Benin	375,515	536,265	78
Delta	Asaba	150,032	214,829	32
Total		1,879,032	2,727,799	**400

Source: NPC 2006; *Projected Population for Year 2020;**Determined Sample size from Taro Yamane (1967)

The instrument adopted was a well-structured questionnaire. The questionnaire utilized the 5-point modified likert scale format. The scoring of the likert scale reflects the degree of agreement or disagreement: SA – strongly Agree (5 points), A – Agree (4points), D – Disagree (3 points) and SD – Strongly Disagree (2 point) and undecided (1 point). Effective retrieval of questionnaire was employed to ensure that all questionnaires were answered and returned which makes the return rate 100%. Descriptive statistics was used for data presentation. Questionnaire samples returned were coded, recorded in excel worksheet 2010 and imported into the Statistical Package for Social Scientist (SPSS) 24.0 version for data analysis.

III. RESULTS AND DISCUSSION

3.1 Socio-economic Characteristics of Respondents

The demographic information of sampled respondents is presented on Table 2. The distribution revealed that 37.0% respondents were males while the remaining 63.0% were females. Therefore, most respondents for the study were females and this is because women usually stay at home more than men and are also active in commercial activities. The age category of sampled respondents for the study showed that (5.3%) of sampled respondents were between (18-24) years of age; (48.0%) respondents were between (25-40) years old; (25.3%) of sampled respondents were between (41-60) years of age; while the remaining (5.8%) of sampled respondents were 60 years of age and above. The information for the marital status of sampled respondents for the study indicated that (31.8%) were single; (57.0%) of them were married; 8.3% of them are divorced while the remaining 3.0% are widowed. The information for the occupational status of sampled respondents indicated that (14.3%) of sampled respondents were traders; (32.3%) of sampled respondents are workers (either self-employed or privately employed); (25.5%) of sampled respondents are civil servants; (9.3%) of sampled respondents are students; while the remaining (18.8%) of respondents are into business. The status of religion among sampled respondents showed that 97.3% of sampled respondents are Christians while the remaining 2.8% are Muslims. The information on the educational status of sampled respondents showed that (15.0%) respondents had secondary education while the remaining (85.0%) respondents have tertiary education. The average monthly income of sampled respondents showed that (23.0%) respondents earns between #20,000 and #30,000; (28.5%) of sampled respondents earns

between #31,000 and #40,000; (29.0%) of sampled respondents earns between #41,000 and #50,000. The remaining (19.5%) of sampled respondents earns #51,000 and above.

Table.2. Socio-economic Characteristic of Sampled Respondents for the Study

Socio-economic Characteristics	**Response**	
Sex	**Frequency**	**Percentage (%)**
Male	148	37.0
Female	252	63.0
Age (years)		
18-24	84	21.0
25-40	192	48.0
41-60	101	25.3
60 and above	23	5.8
Marital Status		
Single	127	31.8
Married	228	57.0
Divorced	33	8.3
Widowed	12	3.0
Occupation		
Trader	57	14.3
Worker	129	32.3
Civil Servant	102	25.5
Student	37	9.3
Business	75	18.8
Religion		
Christianity	389	97.3
Muslim	11	2.8
Educational status		
Primary	0	0.0
Secondary	60	15.0
Tertiary	340	85.0
Average Monthly income (#)		
20,000-30,000	92	23.0
31,000-40,000	114	28.5
41,000-50,000	116	29.0
51,000 and above	78	19.5

Source: Researcher's Computation, 2021

3.2 Major Sources of Noise in BRACED states

The information for the major noise sources in the selected BRACED states and their capital cities are presented on Table 3. The distribution revealed that majority of sampled residents (89.3%) indicated electric generating plant sources; (85.3%) of sampled respondents indicated vehicular traffic sources; (56.8%) of sampled respondents indicated entertainment and social activities sources; (50.0%) of sampled residents indicated religious centre sources; while (9.5%) of sampled residents indicated Aircraft sources. However, 56.8% of sampled residents indicated other sources as sources of environmental noise pollution in their cities.

Table 3: Major Sources of Noise in the Study Area

S/N	Sources	Capital Cities						Total
		Yenagoa	Port Harcourt	Uyo	Calabar	Benin	Asaba	
1	Vehicular Traffic	67 16.8%	99 24.8%	53 13.3%	29 7.3%	68 17.0%	25 6.3%	**341** **85.3%**
2	Aircraft	5 1.3%	10 2.5%	7 1.8%	4 1.0%	12 2.0%	0 0.0%	**38** **9.5%**
3	Electric Generating Plant	69 17.3%	101 25.3%	58 14.5%	31 7.58%	70 17.5%	28 7.0%	**357** **89.3%**
4	Religious Centre	33 8.3%	71 17.8%	31 7.8%	18 4.5%	32 8.0%	13 3.3%	**198** **50.0%**
5	Entertainment/Social activities	41 10.3%	84 21.0%	22 5.5%	23 5.8%	41 10.3%	16 4.0%	**227** **56.8%**
6	Other sources	47 11.8%	79 19.8%	38 9.5%	30 7.5%	45 11.3%	21 5.3%	**260** **65.0%**

Source: Researcher's Computation, 2021

3.3 Adaptation and Management Strategies of Residents toward Noise Pollution

The information on Table 4 shows the adaptation and management strategies adopted by residents to noise pollution. From the distribution it was revealed that majority of adaptation and noise management strategies were not fully implemented in the study area. For instance, as regards the planning laws and regulations banning noise pollution in some zones in capital cities showed that 10.3% of respondents only agreed while the remaining 89.3% disagreed to the use of planning laws in some zones in the city. The ban on use of heavy noise equipment in residential areas in the city was agreed to by 13.3% of sampled respondents while the remaining 86.7% disagreed to this out of which 5.3% of respondents were undecided. The use of acoustic architectural designs to reduce noise in buildings was only adopted by 11.6% of the total sampled respondents while the remaining 80.8% did not adopt the use of acoustic architectural designs in their buildings. The enforcement of noise abetment laws on noisy areas was indicated by 10.0% respondents as a strategy for noise adaptation while the remaining 90.0% (5.8% were undecided) indicated that it was not evident in their respective locations.

Furthermore, the need to advocate for tree planting around residential/CBDs areas are being practiced by 16.5% respondents while 84.0% of sampled respondents have not been practicing it and the remaining 6.5% respondents were undecided. For use of engineering designs to reduce noise, introduction of stiffer penalty by government, planned unit development strategy, and location and design strategies were indicated by 11.4%, 9.3%, 4.8%, and 22.3% as adaptation and management strategies of noise in the study area. On the other hand, with respect to highlighted noise management strategies,

88.6%, 90.7%, 95.2% and 77.7% of sampled respondents did not employ these strategies.

Table.4. Adaptation and Management Strategies adopted by Residents toward Noise Pollution

S/N	Adaptation & Management Strategies	SA	A	D	SD	UND	WA	R
1	Planning laws/regulation banning noise in some zones in the city	5 1.3%	36 9.0%	108 27.0%	239 59.8%	12 3.0%	2.46	Disagree
2	Ban on use of heavy noise equipment in residential areas in the city	5 1.3%	48 12.0%	93 23.3%	233 58.3%	21 5.3%	2.46	Disagree
3	Introduction of acoustic architectural designs to reduce noise in buildings	5 1.3%	41 10.3%	92 23.0%	230 57.5%	32 8.0%	2.39	Disagree
4	Enforcement of noise abetment laws on noisy areas	1 3.0%	28 7.0%	110 27.5%	238 59.5%	23 5.8%	2.37	Disagree
5	Advocacy on tree planting around residential/CBDs…	3 8.0%	34 8.5%	104 26.0%	233 58.3%	26 6.5%	2.39	Disagree
6	Engineering design to reduce noise in machines/vehicles	4 1.0%	45 11.3%	103 25.8%	235 58.8%	13 3.3%	2.48	Disagree
7	Stiffer penalty on violators of noise abetment laws	4 1.0%	33 8.3%	108 27.0%	243 60.8%	12 3.0%	2.44	Disagree
8	Planned unit development strategy for reducing noise pollution	1 3.0%	7 1.8%	108 27.0%	251 62.8%	33 8.3%	2.23	Disagree
9	Location and design strategies that will aid noise reduction	9 2.3%	80 20.0%	94 23.5%	211 52.8%	6 1.5%	2.69	Disagree
10	Non-conforming-use-zoning for managing noise pollution	0 0.0%	0 0.0%	108 27.0%	250 62.5%	42 10.5%	2.16	Disagree

Source: Researcher's Computation, 2021 SA – Strongly Agree; A – Agree; D – Disagree; SD – Strongly Agree; Und – Undecided; WA – Weighted Average; R - Remark

3.4 Mitigation/Control Measures Adopted by Residents to Combat Noise

The information on Table 5 shows the mitigation/control measures adopted by residents in the study area to combat noise pollution. The residents agreed to the use of tree planting to reduce noise (4.6%) while the remaining 95.4% of residents did not agree. The construction of sound barriers and high fences were being practiced by only 1.5% of sampled respondents while the remaining 98.5% of sampled respondents are not using these measures to control noise in their areas. The uses of thick and heavy curtains were agreed by 24.6% of sampled residents while the remaining 76.4% of residents disagreed to the use of this particular control measure. The study indicated that 80.3% of sampled respondents agreed to increasing use of solar panels than generating sets while 19.7% of residents disagreed. The study also showed that 57.1% of residents agreed to choice of residential apartments away from noise, 37.2% of residents disagreed to this use while 5.8% of the remaining residents were undecided. Other control measures like creating dedicated quiet spots were agreed to as a measure of coping with noise by 89.5% respondents while the remaining 11.5% of respondents disagreed to employing this control measure. The shutting of door and windows; the installation of sound proofing materials; installation of wall carpeting; and the use of modern acoustic design were agreed to as a measure for controlling noise in the study area by 34.5%;

3.5%; 6.0% and 7.0% respectively. However, the study showed that 65.5%; 96.5%; 94.0% and 93.0% of sampled respondents disagreed to the use of these mitigation/control measures of noise pollution in the study area.

Table.5. Mitigation/Control Measures to Combat Noise Pollution

S/N	Mitigation/Control Measures	SA	A	D	SD	UND	WA	R
1	Tree planting to reduce the noise levels around our residences	5 1.3%	13 3.3%	35 8.8%	347 86.8%	0 0.0%	2.19	Disagree
2	Construction of sound barriers and high fences around homes and place of work	0 0.0%	6 1.5%	60 15.0%	324 81.0%	10 2.5%	2.16	Disagree
3	The use of thick and heavy curtains indoors	65 16.3%	33 8.3%	73 18.3%	229 57.3%	0 0.0%	2.83	Disagree
4	Increasing use of solar panels against the use of electric generating plants	213 53.3%	108 27.0%	60 15.5%	17 4.3%	0 0.0%	3.54	Agreed
5	Choice of residential apartments especially those not located close to roadsides, commercial areas and industrial areas	103 25.8%	125 31.3%	94 23.5%	55 13.8%	23 5.8%	3.50	Agreed
6	Creating dedicated quiet spots and locations for relaxation and other activities	316 79.0%	46 11.5%	23 5.8%	15 3.8%	0 0.0%	4.66	Agreed
7	Regularly shutting of doors and windows while indoor	4 1.0%	134 33.5%	95 23.8%	117 29.3%	50 12.5%	2.81	Disagree
8	By installing sound proofing materials on the walls, ceilings and on the floor	8 2.0%	6 1.5%	351 87.8%	35 8.8%	0 0.0%	2.97	Disagree
9	Installation of wall to wall carpeting at home and work place	10 2.5%	14 3.5%	309 77.3%	67 16.8%	0 0.0%	2.92	Disagree
10	The use of modern acoustic architectural designs in buildings and offices	14 3.5%	14 3.5%	306 76.5%	65 16.3%	1 0.3%	2.94	Disagree

Source: Researcher's Computation, 2021

SA – Strongly Agree; A – Agree; D – Disagree; SD – Strongly Agree; Und – Undecided; WA – Weighted Average; R - Remark

3.5 Variation in Adaptation and Management Strategies among Residents

The ANOVA statistical analysis was employed to determine the level of variation in residents' adaptation and management strategies towards noise pollution among capital cities in south-south Nigeria. The results are displayed on Table 7 while the information on Table 6 was used for this analysis. The result showing an F ratio value of 2.967 at probability value of 95% (0.05) revealed a level of significance of 0.019. Therefore, the adaptation and management strategies of residents toward noise pollution vary across capital cities in south-south, Nigeria.

Table.6. Weighted Average of Residents Adaptation Measures

S/N	Adaptation & Management Strategies	Uyo	Yenagoa	Asaba	Calabar	Benin	Port Harcourt
1	Planning laws/regulation banning noise in some zones in the city	2.53	2.53	2.31	2.49	2.32	2.50
2	Ban on use of heavy noise equipment in residential areas in the city	2.48	2.68	2.31	2.26	2.33	2.50
3	Introduction of acoustic architectural designs to reduce noise in buildings	2.34	2.68	2.28	2.21	2.26	2.42
4	Enforcement of noise abetment laws on noisy areas	2.41	2.36	2.31	2.41	2.26	2.42
5	Advocacy on tree planting around residential/CBDs…	2.44	2.63	2.19	2.49	2.17	2.37
6	Engineering design to reduce noise in machines/vehicles	2.64	2.39	2.41	2.51	2.41	2.50
7	Stiffer penalty on violators of noise abetment laws	2.53	2.41	2.31	2.49	2.32	2.50
8	Planned unit development strategy for reducing noise pollution	2.23	2.28	2.12	2.18	2.24	2.23
9	Location and design strategies that will aid noise reduction	2.53	2.54	2.31	2.82	2.35	3.17
10	Non-conforming-use-zoning for managing noise pollution	2.16	2.26	2.13	2.23	2.12	2.13

Source: Researcher's Computation, 2021

Table.7. ANOVA Analysis

	Sum of Squares	Df	Mean Square	F ratio	Significance at p<0.05
Between Groups	0.438	5	0.088	2.967	0.019
Within Groups	1.593	54	0.029		
Total	2.030	59			

Source: Researcher's Field analysis, 2021

3.6 Pattern of Variation

Furthermore, the Duncan Post Hoc analysis displayed on Table.8 was used to show the pattern of variation of residents' adaptation strategies among capital cities using their computed means. The result of the variability in management and adaptation strategy was such that Uyo, Benin, Calabar and Yenagoa were similar in the level of adaptation/management strategies employed for noise pollution. On the other hand, Calabar, Yenagoa, Asaba and Port Harcourt were more similar in their level of adaptation/management strategies toward noise pollution in the study area.

Table.8. Post Hoc Results for pattern of Variation

Duncan[a]			
		Subset for alpha = 0.05	
Capital Cities	N	1	2
Uyo	10	2.2680	
Benin	10	2.2780	
Calabar	10	2.4090	2.4090
Yenagoa	10	2.4290	2.4290
Asaba	10		2.4740
Port Harcourt	10		2.4760
Sig.		.059	.434
Means for groups in homogeneous subsets are displayed.			
a. Uses Harmonic Mean Sample Size = 10.000.			

Source: Researcher's Analysis, 2021

IV. DISCUSSION

Findings of the study revealed the major sources of noise pollution to be vehicular (85.3%), electric generating sets (89.3%), religious centres (50.0%) and entertainment/social activities (56.8%). Findings agrees with the findings of Olayinka (2013) on noise pollution in urban areas in Nigeria, which reported that environmental noise pollution is very high in Nigeria urban cities, of which vehicular traffic accompanied with other commercial areas and points where musical instruments are being used; however the study discovered that traffic and generating plants are major sources. The findings also agrees with Azodo and Adejuyigbe (2013) on the level of effect of noise pollution from electric generating sets as the study focused on the examination of noise pollution from generators on the residents in Obantoko, Ogun state, Nigeria. Findings of the study also revealed that majority of sampled residents disagreed towards the adoption of strategies toward noise pollution management in the study area. Thus, planning laws/regulation banning noise; ban on use of heavy noise equipment; introduction of acoustic architectural designs; enforcement of noise abetment laws; use of engineering designs to reduce noise amongst other are all not fully implemented in the study area. Thus, it either that the residents are ignorant of possible ways of coping or managing noise pollution or they lack the capacity to deploy the strategies in the face of noise pollution. It means that environmental noise pollution do not always demonstrate significant improvements in its management in developing countries especially in Nigeria. This is coupled with the fact that state and LGAs hardly impose sound strategies to help in the management of noise pollution overtime. Finding agrees with Olayinka (2012) that noise pollution in Nigerian cities has no legal frame upon which it can be abated. In addition, Bhatia (2014) also added that the management, control and enforcement of all noise laws is variable and often subjective; even where laws exists, municipalities may not have sufficient or trained noise enforcement personnel, the ability to monitor noise compliance, or the willingness or capacity to pursue enforcement actions against noise transgressors. Similarly, the mitigation/control measures adopted by residents also revealed low rate of measures adopted to control noise. The study revealed that majority of residents agreed to the use of solar panels instead of generator sets; choose to stay in places where they can experience low noise levels like distance away from roads, commercial and industrial areas; and constantly create dedicated quiet spots. However, few responded to planting of trees; use of thick curtains; installation of sound proof materials amongst others. Thus, common control measures that will help to manage noise pollution are fairly practiced among residents in capital cities in south-south Nigeria. The study further revealed that residents' adaptation strategies are more similar among calabar, Yenagoa, Asaba and Port Harcourt when compared with levels obtained for Uyo and Benin.

V. CONCLUSION

The study revealed the major sources of noise pollution in capital cities as vehicular sources and electric generating sets sources. It was discovered that numerous past researches have exposed these facts. Thus, findings of the study agree with the findings of past researches. The adaptation and management strategies toward noise pollution in capital cities in south-south Nigeria revealed that residents had developed some resilience measures. However, these measures are not adequately implemented by residents which may be due to ignorance or the capacity to manage or control noise in their immediate environment or the willingness to pursue enforcement actions against noise transgressors in the study area. Based on these findings, the study recommended that: the government should enforce a Noise Act to help control noise pollution; proper public enlightenment programmes should be initiated especially in areas and locations that generates high noise levels; proper land use definitions should be the primary objective of urban planners as this will ensure that a mix of commercial and residential land use areas are properly checkmated; regular supply of electricity by Power Holding Company of Nigeria will ensure the reduction in use of electric generating sets which is one of the major contributor of noise pollution in the study area; residents need to understand the dangers of exposure to excessive noise pollution levels and channel their energy toward its management.

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