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NOISE POLLUTION: A CATALYST TO CLIMATE CHANGE AND HUMAN HEALTH CATASTROPHE

I. INTRODUCTION

The National Environmental Standard and Enforcement Agency Act¹ defines environment broadly to include, water, air, land and all plants and human being or animals living therein or any of them.¹ Environment is the totality of the places and surroundings, in which we live, work and interact with other people in our cultural, religious, political and socio-economic activities for self-fulfillment and advancement of our communities, societies or nations. It is within this environment that both natural and man-made things are found². The environment is evidently nature's most generous contribution to human existence on earth³. Human being all over the world until their death resides in an environment and their survival depends largely on an enabling environment, once an environment is no more enable, it becomes polluted.

Environmental pollution on the other hand, has been described as the contamination of the environment by biological, chemical, and or physical agents that are harmful to human, animal or plant, life and the general environment, and may arise through the natural events, industrial and human activities or the interaction of all⁴. Pollution is

...man made or man aided alteration of chemical, physical or biological quality of the environment to the extent that is detrimental to that environment or beyond acceptable limits....⁵

Pollution is the introduction by man directly or indirectly of substances or energy into the environment resulting in such deleterious effect as harm to living resources; hazard to human health, hindrance to marine activities including fishing, impairment of quality for use of seawater and reduction of amenities.⁶ Not surprising over the last two decades there is

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¹ See, Section 41 of the NESREA Act, 2007 which repealed the FEPA.CAP.F10LFN2004. Also in the provision of Sections 20 of the 1999 Constitution of the Federal Republic of Nigeria the term environment means, the water, air and land, the forest and wild life, all layers of the atmosphere, all organic and inorganic matter and living organisms and the interacting natural system that include components referred to in paragraph (a) to (d). see the case of Attorney General of the Lagos v Attorney General of the Federation (2003) FWLR (pt 168) 109 at 946

² Akinbode A, *Introductory Environmental Resource Management*, (Daybis Limited, 2002) PP 1-2

³ Taiwo O, *A Conspectus of Environmental Laws in Nigeria*, (Nigerian Journal of Public Law, vol. 1, 1997), p:85

⁴ Otukong I. T. O., *Environmental Pollution and Emerging Health Hazard: the Nigerian Scenario*, (The Journal of General Practice Vol. 7 No 1, 2002) P 3

⁵ See section 38, NESREA Act 2007.

⁶ See A.I Obe 'Criminal liability for Damage caused by oil pollution in J.A Omotola ed. *Environmental Law in Nigeria including Compensation* (Faculty of Law University of Lagos, 1990) 231

widespread agreement that mankind is faced with environmental crises of an alarming dimension which trend if not reversed or slow down may lead inevitably to unmitigated decline in those area of the global Eco-systems which sustains human life on this planet. According to Taiwo:⁷

This crisis is a global one. It does not recognize the North-South polarization neither does it know of the East-West divide. It is boundary neutral. No country can opt out of the crisis; so no country can afford not to appreciate its urgency. The red signal is ubiquitous.

It is in this regard that the preservation and protection of the environment from all source of pollution or degradation as well as the preservation of the heritage of mankind for the benefit of the present and future generation is expedient⁹. Otukong¹⁰, discussing about the importance of environment to mankind said;

...the environment is an irreplaceable legacy. It is indeed, the very framework upon which lays the solid foundation for the assurance of our future development not only holds our natural habitat as the life support system, and it also provides the basic resources for virtually all socio-economic activities.

This paper examines the meaning, causes and effect of noise pollution in Nigeria. It further examines the legal framework regulating noise pollution in Nigeria and in some advanced countries of the world. The paper observed that many people are ignorant of the fact that noise pollution is a major catalyst to climate change. Based on this, the paper put up a Jurisprudential argument on the nexus between Noise Pollution and Climate Change; and the paper ends with a recommendation among others that public enlightenment campaign be put in place to educate Nigerians on the danger in noise pollution and also on the nexus between noise and climate change.

II. NOISE POLLUTION, A CLIMATE POLLUTANT

Noise is a sound especially a loud or unpleasant one. It is also a series or confusion of loud sounds, irregular fluctuations accompanying a transmitted signal. Noise is a number of tonal components disagreeable to man and more or less intolerable to him because of the discomfort, fatigue, disturbances and, in some cases, pain it causes.¹¹

Noise pollution is a type of energy pollution in which distracting sounds which are clearly audible and which may result in disturbing any natural process or causes human harm. Consequently, noise is unwanted sound. What is pleasant to some ears may be extremely unpleasant to others depending upon a number of psychological factors¹²

⁷ Taiwo A *Taking environmental danger seriously: Time to break new grounds*, (The Lasu Law Journal, vol 1999-2000), 83

⁸ *ibid*

⁹ Umezurike U. O. *Introduction to International Law*, (Spectrum Book limited, Ibadan, 2005) PP 252 to 259 at 254

¹⁰ Otukong I. T. O., *op.cit*(n4) P 1

¹¹ Hamza A.D *Noise pollution regulatory measures for protection of Ecosystem*, (University of Ilorin, Faculty of Law Journal, 2007-2008, vols 3&4, 2008), 32

¹² Combating Noise Pollution: www.articlesbase.com/health-and-safety-article/combating-noise-pollution P 1 accessed on 10/04/2010

Noise pollution is one of the environmental hazards affecting human as well as climate. In most urban areas of the third or developing countries of the world there are lots of noise pollutants which includes noise from exhaust cars, industrial as well as home generating plants. In the advanced countries however, scientific experimentations like launching and re-launching of rockets, bombs and satellites sounds constitutes a major climate pollutant.

Human being, animals, plants and even inert objects like buildings and bridges have been victim of the increasing noise pollution caused in the world. Noise has become a very significant stress factor in the environment, to the level that the term noise pollution has been used to signify the hazard of sound which consequences in the modern day development is immeasurable¹³. Though not physically visible, noise has been a major catalyst to climate change and practical sources of human health catastrophes globally.

Therefore, from the foregoing, it can rightly be summed up that noise is an unwanted pollutant introduced directly or indirectly into the environment usually at 80-85dB level and at which sound becomes so painful and of deleterious effects as harm to living resources, hazard to human health and sea amenities¹⁴. A major distinction between sound and noise is that sound is regarded as noise when it becomes a source of inconvenience to another¹⁵.

Noise pollution is not unique or peculiar to developing countries alone; it is a common occurrence and of highest magnitude in most of the Advance countries. For instance China until the third century B C of its existence had used noise for torturing instead of hanging men for dangerous crime¹⁶. Similarly in India, not until of late when most of the people do not consider noise as pollutant and takes it as part of life routine, noise was before considered grivous just like any other serious crime¹⁷.

1. Sources of Noise Pollution

Noise disrupts the tranquility of the environment and can affect climate and human health negatively. Amongst the common sources of noise pollution that contributed directly to climate change are:

Electricity generating plants

Electric energy occupies the top grade in energy hierarchy as it finds innumerable uses in homes, industry, agriculture, and defense and of course in some nations,

¹³ Mohammed J A supra P 2

¹⁴ Sound is measured by its frequency. The rate of sound is called frequency and is measure in Hertz (Hz) and sound pressure measured in decibel (dB). See Alawode A.J., Stephen J T and Adeyemi G J Health Safety and Environmental Issues in Nigerian Manufacturing and Processing Industries, (2008) Journal of Engineering and Applied Sciences, P636 www.mewljournal.com accessed 11/03/2010. A normal ear in healthy young person can detect sounds with frequencies from 20Hz to 20,000Hz, while dogs can hear high-pitched sounds up to 50,000 Hz. Noise measurement are expressed by the term Sound Pressure Level (SPL), which is logarithmic ratio of the sound pressure to a reference pressure and is expressed as a dimensionless unit of power, the (dB), the reference level is 0.0002 microbars, the threshold of human hearing. See also a Position Paper on Noise Pollution by Pressure Horns and Pakistan Environmental Agency, presented at Pakistan Environmental Programme <http://www.pakistantimes.net/2005/07/31/letter.htm> accessed on 22/ 03/2010.

¹⁵ Mohammed Javed Aslam, Effect of Noise Pollution on Hearing of Public Transport Drivers in Lahore City (2008) Pakistan Journal Of Medical Sciences, Vol 24 Nos 1 P 1 see drj302@yahoo.com accessed on 19/04/2010

¹⁶ Kapoor B S and Singh, K, *Noise the Insidious Killer*, The Tribune of 25 November, 1995 p5

¹⁷ Nagi G.K, Dhillon M.K. and Dhlwal G.S., *Noise Pollution*, (Common Wealth Publishers New Delhi, 1999) P 5

transportation. Nigeria's electricity power situation is very poor because of erratic power supply. As a result there is an upsurge in the use of electricity generating plant with its attendant noise pollution on the environment and human health. Most workplaces and homes use generating plants 24 hours in alternative to power supply¹⁸. The noise from generated plants in Nigeria couples with its accompany smoke emission to the sky which has greatly contributed to the breaking of the ozone layer in the sky¹⁹.

Vehicular Traffic Noise engine and pressure horns

Increase in vehicular traffic is also a source of noise pollution around the globe especially in most urban cities around the world. The situation is getting seriously alarming with increase in traffic density on city roads²⁰. The emissions of smoke from cars are of great concern to the changes we are currently experiencing in the climate of this country.

Construction /Industrial Noise

To meet the demands of the basic necessity of living²¹, the construction of buildings, highways and city streets causes a lot of noise. Pneumatic hammers, air compressors, bulldozers, loaders, dump trucks and pavement breakers are the major sources of noise pollution in construction sites all emitted one classes of smoke or another which are all contributing to the current changes in climate.

Machinery Noise

Motors and compressors used in the industries create a lot of noise which adds to the detrimental state of noise pollution in Nigeria. Plumbing, boilers, generators, air conditioners and fans create a lot of noise in the buildings and add to the prevailing noise pollution²².

Other sources of Noise Pollution

Other sources of noise pollution that are not contributing directly to climate change but that are indirectly contributing and that are having some negative effect on human health are:

Noise from Religious Worship Institutions

Nigeria is a multi religious society and is therefore prone to religious activities. These activities manifest in congregational worship in various forms. These

¹⁸ Akinbulire T.O., Oluseyi P.O., Awosope C.O.A and Okoro O.I: Data-Based Analysis of Power System Crisis in Nigeria, takinbulire@unilag.edu.ng ; poluseyi@unilag.edu.ng ; cawosope@unilag.edu.ng and oiokoro@hotmail.com P 1 -2 accessed on 11/03/2010, COA Awosope; Power Demanded But Not Supplied: the Agonizing Roles of Emergency Power Supply and Transmission System Inadequacy, University of Lagos, Inaugural Lecture Series, 2003., P.B.Oyebolu; "That We May Have Light", Eleventh October Lecture, Nigerian society of Engineers, (1992).

¹⁹ Nigeria is facing a very serious erratic Electricity supply all governmental efforts to meet the need of the populace in this premises proved abortive. The industries and most people whom the sources of livelihood depend on electricity find generating plant as an inevitability to meet their needs. Even at home office generators become the main source of getting power to meet their socio-economic advancement.

²⁰ There is astronomical increase in rural-urban migration in Nigeria. A significant of urban populace use motorized transportation. The noise generated from these is enormous as to affect human health.

²¹ The need to build a modern city with up to date amenities has led to the installation of series of machine that uses diesel which produce higher smoke emission while working.

²² Deepak M., Noise Pollution, Sources, Effects and Control (2009) www.legalserviceindia.com/article/noise.htm

congregational worships are held in Mosques, Churches and other non-conventional areas like residential and workplaces, in the daytime and even throughout the night²³.

Noise of significant levels is generated from these congregational worships with the use of heavy public address systems and intensity of the voices of the worshippers oozing from inside. However, despite the thunderous nature of the noise and the adverse effect on human health, the government has shied away from adding the issue. For example a Bill to control noise emission from religious places in Kwara State was met with strong opposition and eventually, the idea was dropped.

Household Noise

Household equipments such as vacuum cleaners, mixers and some kitchen appliances are noisemakers of the house. Though they do not cause too much of problem, their effect of noise emitted on human health cannot be neglected. Furthermore, noise can be generated from neighbourhood noise consisting of neighbouring apartments and noise within one's own apartment²⁴.

Honking Noise - Hawking?

The people while honking do not realize the difficulties they caused to others and themselves. There can be loss of hearing, stress level may go high and even mental instability. Honking unnecessarily while driving or stationed in a place has become a trend these days and one can hear it very well at the traffic signals²⁵.

2. Jurisprudential Arguments on Noise Pollution as a Catalyst to Climate Change

Since the changing in climate is majorly as a result of the environmental destruction caused by human activities i.e. industrially induced destruction, mechanically induced destruction, chemical induced destruction etc., and since most of these activities could hardly occur devoid of noise; therefore a nexus certainly exists between noise and climate change.

No matter how mild it may be, it is a fact that, before an atomic bomb will explode, sound must accompany it, a bomb devoid of noise (if not a silence bomb) is a detonated bomb, and a detonated bomb would not cause earthly havoc which would change climate, but an earthly havoc caused bomb would surely produce noise and climate would change.

Not only that, in the industrial sector, noise would certainly accompany the factories generating plant before the emission of the hazardous smoke that would flair into the air before it goes to the sky and break the ozone layer that shield earth from direct sun radiation, the effect of which will be increase in the density of the sun on earth (climate change) and the resultant effect of skin cancer on human health.

Furthermore, most of the scientific and ground breaking experiment and their outcome have one or two nexus with noise. Air transport for example, though convenient

²³ A journey through most urban cities in Nigeria will reveal the springing up of places of worship in virtually every corner of the cities.

²⁴ Niemann H., et al Noise-induced Annoyance and Morbidity Results from the Pan-European LARES Study, (Noise Health Journal Vol 8, 2009) PP. 63-79.

²⁵ Goods are now advertised and sold in vehicle using loud speaker even in promoting goods and services, Banks, GSM providers, Local herb seller, transporters to invite intending traveler are very prominent in Nigeria.

and "safe"²⁶ but an airplane will never take off or land devoid of a polluted sound both in the air and on the ground. This emission of a great percentage of smoke in to the atmosphere will later vanish in to the air and added up to the green house gas emission with the resultant effect of global warming (climate change).

Launching of rockets and testing of any atomic power all has a close nexus with noise. According to a report²⁷ the recent volcano's ash eruption in some part of Europe is principally as a result of damages done to earth due to frequent launching of bombs and rockets, and according to Amao O.N et al²⁸ all these human manipulation of the earth "is widely recognized as one of the most critical challenges the world has ever faced". In fact, according to him:

The intergovernmental panel on climate change (IPCC) confirmed in its fourth assessment report that there was "new and stronger evidence that most of the warming observed over the last 50 years is attributable to human activities....the IPCC also concluded that the world faces an average temperature rise of around 3 oC this century if greenhouse gas (GHG) emissions continue to rise at their current pace and are allow to double from their pre-industrial level. The resulting impacts, even at the lower end of the range given by IPCC, are likely to be severe"

3. Effects of Noise Pollution on Human Health

Concerns about the impact of noise pollution on health and environment have resulted in measure to reduce and or control the sources noise pollutants which affect human health. However the health impacts of noise pollution are not likely to decrease unless appropriate action is taken. Environmental degradation brings about significant pressure on the climate and human health. How badly noise pollution affect individual will depend on pollutant's length of exposure. Exposure to noise pollution can affect human health in the following circumstances.

Hearing Loss in fetus and newborn

Pregnant women are exposed to noise in the market place, road, vehicle, workplace (etc) and it may result in noise-induced hearing loss and other health hazards on fetus²⁹. Expert study found that children with high-frequency hearing loss tested at 4 to 10 years of age were more likely to have been born to women who were exposed consistently to

²⁶ Considering the recurrent plane crash in the recent times, the issue of safety of airplane is even doubtful. Plane crash has claimed more life than any other means of transport all over the world, the latest being the death of the Polish President Lech Kaczynski and some people in a plane crash on the 10th April, 2010.

²⁷ From Aljazeera cable news @aljazeera.english.net of 26th, 27th April, 2010. On the current spread and effect of Eyjafjallajökull volcano visit <http://www.nigeriamasterweb.com/paperfirms.html>.

²⁸ Amao Onidundu, et al "Tropical Deforestation: A major contribution to Climate change" in edited proceeding of the international conference on research and development, vlm 2 No 13(Pan-African Conference Book Company, 2009)p:46

²⁹ Normal growth, premature and intrauterine (inside womb) growth retardation

occupational noise in the range of 85dB during pregnancy³⁰. This goes to establish the fact the excessive noise pollutant has adverse effect on health of a child in the womb³¹.

Sleep disturbance

Uninterrupted sleep is known to be a prerequisite for good physiological and mental functioning in healthy individuals.³² There is both objective and subjective evidence for sleep disturbance by noise. Exposure to noise disturbs sleep proportional to the amount of noise experienced in terms of an increased rate of changes in sleep stages and in number of awakenings. Habituation occurs with an increased number of sound exposures by night and across nights. Objective sleep disturbance is likely to occur if there are more noise events in the night with a maximum level of 50 dBA indoors or more³³.

When sleep disruption becomes chronic; the results are mood changes, slowness in task performance, and other long-term effects on health and well being³⁴. Noise exposure during sleep may increase blood pressure, heart rate and finger pulse amplitude as well as uncontrollable body movements. There may also be after effects during the day following disturbed sleep; perceived sleep quality, mood and performance in terms of reaction time all decreased following sleep disturbed by road traffic noise³⁵.

Other primary sleep disturbances are difficulty in falling asleep, frequent awakenings, waking too early, and alternations in sleep stages and depth. It thus seems that, although there may be some adaptations to sleep disturbance by noise, complete habituation does not occur, particularly for heart rate. Although the long term health consequences of noise are inconclusive, noise induced sleep loss has been found to impair task performance the next day.³⁶

Impaired Task Performance

There is good evidence, largely from laboratory studies, that noise exposure impairs performance³⁷. Performance may be impaired if speech is played while a subject reads and remembers verbal material, although this effect is not found with non speech noise. The effects of irrelevant speech are independent of the intensity and meaning of the speech. The susceptibility of complex mental tasks to disruption by irrelevant noise suggests that reading with its reliance on memory, may be impaired by noise.

³⁰ Rudolph L., Forest C S. Female Reproductive Toxicology, In LaDou J ed. Occupational Medicine, (Norwalk CT: Appleton & Lange, 1990) P 279 and Paul M. (ed) Occupational and Environmental Reproductive Hazards: A Guide for Clinician (Williams and Wilkins, 1993) P 6.

³¹ Arlene L. B. The Increase in Noise Pollution: What are the Health Effect and the Harmful of Noise. <http://www.findarticles.com> accessed 22/03/2010. In 1982 the United States of America in 1982 issued a warning that pregnant mother should not work in noisy industrial plants.

³² See Suffer A.H. Noise and its effects, Administrative Conference of the United States (1991) www.noise.library/suffer accessed on 19/04/2010. Babisch W. Noise and Health Environment: Health Perspective (2005). <http://www.pubmedcentral.nih.gov/artic/erender,leg> article 1253720

³³ *ibid*

³⁴ Sufer A.H.op.cit .6

³⁵ Stephen A S & Mark P M Noise Pollution: Non-auditory Effect On Health (2003) British Medical Bulletin Vol 68 P 244

³⁶ Arlene L.B. The Increase in Noise Pollution what are the Health Effects? www.medscape.com/viewarticle accessed on 12/02/2010.

³⁷ *ibid*

Noise exposure may also slow rehearsal in memory, influence processes of selectivity in memory, and choice of strategies for carrying out tasks. There is also evidence that noise may reduce helping behaviour, increase aggression and reduce that noise may reduce the processing of social cues seen as irrelevant to task performance.³⁸

Cardiovascular effects

Noise has been associated with important cardiovascular health problems³⁹. Experts have shown that noise exposure causes a number of predictable short-term physiological responses mediated through the autonomic nervous system. Exposure to noise causes physiological activation including increase in heart rate and blood pressure, and thus increased peripheral vascular resistance. There is rapid habituation to brief noise exposure but habituation to prolonged noise is less certain.⁴⁰

A growing body of evidence confirms that noise pollution has both temporary and permanent effects on human (and other mammals) by way of the endocrine and autonomic nervous systems⁴¹. It has been postulated that noise acts as a nonspecific biologic stressor eliciting reactions that prepare the body for a fight or flight response. For this reason, noise can trigger both endocrine and autonomic nervous system responses that affect the cardiovascular system and this may be risk factors for cardiovascular disease. These effects begin to be seen with long-term daily exposure to noise levels above 65 dB with acute exposure to noise levels above 80 to 85 dB⁴². Temporary noise exposure is readily, however, noise exposure of sufficient intensity, duration and unpredictability provokes changes that may not be so readily reversible.⁴³

Hearing Impairment

Hearing is essential for well-being and safety. Hearing impairment is typically defined as an increase in the threshold of hearing a clinically assessed by audiometric. Impaired hearing may come from the workplace, from the community, and from a variety of other causes (e.g. trauma, infection, and heredity)⁴⁴. The process of hearing impairment may be gradual but it can eventually result into the destruction of the hair cell organ⁴⁵. There is general agreement that exposure to sound levels less than 70 dB does not produce hearing damage, regardless of the duration of exposure⁴⁶. The study of the effect of the noise pollution on hearing of public transport in Lahore city in Pakistan shows that public

³⁸ Jones D.M, Chapman A.J. & Auburn T.C, Noise in the Environment: Social Perspectives. (1981) Journals of Applied Science and Physiology PP 43-59 at 46

³⁹ World Health Organization concluded that the available evidence showed suggested a weak association between long-term exposure above 67-70 dBA and hypertension see Noise-Induced Endocrine Effects and Cardiovascular Risk, Noise Health 1 www.noiseandhealth.org/article accessed on 12/03/2010

⁴⁰ See Valet M, Gagnex J & Claret J.M, and Heart Rate Reactivity to Aircraft Noise after Long term Exposure. (1983) In Rossi G (ed) Noise as a Public Health Problem (Centro Recherche e Studio Ampliton, 183) 963

⁴¹ *ibid*

⁴² Sufer A.H op.cit P 7

⁴³ Salame P, Baddley A.D. Disruption of Short-term memory by Unattended Speech Implications for Structure of Working Memory (J. Verb Learn Verb Behav, 1982) P 163

⁴⁴ Harris C.M. Handbook of Noise Control (2nd ed, Mc Graw Hill, New York 1979) p.6

⁴⁵ *ibid*

⁴⁶ *ibid*

drivers are exposed to excess noise on roads and about 75% of them are suffering from Noise induced hearing loss⁴⁷.

There is also general agreement that exposure for more than 8 hours to sound levels in excess of 85 dB is potentially hazardous, this roughly 85 dB equivalent of the noise of heavy truck traffic on a busy road. With sound levels above 85 dB, damage is related to sound pressure (measured in dB) and to time of exposure.⁴⁸ The major cause of hearing loss is occupational exposure, although other sources of noise, particularly recreational noise, may produce significant deficits. Studies suggest that children seem to be more vulnerable than adults to noise induced hearing impairment.⁴⁹

There is little doubt that the use of consumer products, which produce increasingly high levels of noise and which are used with headsets or earphones, is growing and may well be responsible for the impaired hearing that is being seen with growing frequency in younger people. This form of noise is largely unregulated, despite warnings by the manufacturers.⁵⁰

Disturbance in Mental Health

Noise pollution is not believed to be a cause of mental illness, but it is assumed to accelerate and intensify the development of latent disorders. Noise pollution may cause or contribute to, anxiety, stress, nervousness, nausea, headache, emotional instability, argumentativeness, and sexual impotence, changes in mood, increase in social conflicts, neurosis, hysteria, and psychosis⁵¹. Population studies have suggested association between noise and mental health indicators, such as rating of well-being, symptom profiles, the use of psychoactive drugs and sleeping pills, and mental hospital admission rates. Children, the elderly, and those with underlying depression may be particularly vulnerable to these effects because they may lack adequate coping mechanisms. Children in noisy environments find the noise annoying and report a diminished quality of life⁵².

The aforementioned effects of noise may help explain some of the dehumanization seen in the modern, congested, and noisy urban environment. Noise exposure per se is not believed to produce aggressive behaviour. However, in combination with provocation,

⁴⁷ Hussain M.Y., Ghaffar A.Q., Qureshi & Imran N., Road Traffic Noise Level at Different Locations of Faisalabad (Pakistan) (2002) International Journal of Agriculture & Biology P 6 and Mohammed J.A., Muhammed A.S. & Amia B., Effect of Noise Pollution on hearing of public transport Drivers in Lahore City (2008) Pakistan Journals of Medical Science Vol 24 N1

⁴⁸ Harris C M supra P 10

⁴⁹ Ibid P.6

⁵⁰ Those working in clubs, bars, and other places of entertainment are also at risk. It is well known that rock musicians frequently have noise induced hearing loss. Apart from the musicians themselves, employees of music clubs, where noise frequently exceeds safe levels, are at risk. Noise induced hearing impairment may be accompanied by abnormal loudness perception (loudness recruitment) and distortion.

⁵¹ Passchier-Vermeer Noise: A Health Problem, (2002) Environmental Health Perspectives <http://www.noisehealth.org> accessed on 10/03/2010

Stephen J. S. & Mark P. Matheson

⁵² Cohen S., Evans G w, Martin Stokols D, & Karntz D.S. behaviour, Health and Environment Stress, (New York Press, 1986) P25

preexisting anger to hostility, alcohol or other psychoactive agents, noise may trigger aggressive behavior by virtue of our views with examples of this kind of behaviour.⁵³

The degree of annoyance produced by noise may vary with the time of day, the unpleasant characteristics of the noise, the duration and intensity of the noise, the meaning associated with it, and the nature of the activity that the noise interrupted. Annoyance may be influenced by a variety of non acoustical factors including individual sensitivity to noise. These include fear of the noise source, conviction that noise could be reduced by third parties, individual sensitivity, the degree to which an individual feels able to control the noise, and whether or not the noise originated from an important economic activity. Other less direct effects of annoyance are disruption of one's peace of mind, the enjoyment of one's property, and the enjoyment of solitude.⁵⁴

III. THE NIGERIAN STATUTORY AND INSTITUTIONAL INTERVENTION ON ENVIRONMENTAL AND NOISE POLLUTION EXAMINED

1. Genesis of Environmental Protection Law in Nigeria

Prior to the Nigeria independent in 1960, Nigerian environment protection efforts had been through the colonialists. The colonial economics development policies and plans contained little or no stringent rules to conserve the natural resources or to limit pollutions. The major laws on pollution then were included in the Criminal Code and Public Health act of 1958 with section 246 aimed at controlling spread of diseases slaughtering of animals and disposal of night soil and refuse⁵⁵. The formative years of institutional environmental regulation were absent due to non existence of clear scientific method of waste management. The 1970 Oil pollution attracted some considerable attentions from the public⁵⁶ that revolted against destruction of their farm land and marine animal, by the oil exploration and its spillage⁵⁷.

The incidence of the toxic waste dumped at Koko village of Abeokuta accounted for the government swift reaction to environmental protection which eventually gave birth to the creation of the Federal Protection Agency (FEPA)⁵⁸. The major concern of the agency is

⁵³ Cohen S. Weinstein N, Non-auditory effect of Noise in Behaviour and Health J. Social Issues, 1981 at 3. (PP 36-70 & Gunn W.J. The importance of the Measurement of Annoyance in prediction of Effect of Aircraft Noise on

⁵⁴ *ibid*

Health and well being of Noise express communities. In Koelaga H.S. (ed) Development on Toxicology and Environmental Science Amsterdam Elsevier 1987 pp 237-55

⁵⁵ Ighoroje A D A, Marchie C, and Nwobodo E D Noise-Induced Hearing Impairment as an occupational Risk Factor Among Nigerian Traders, (Nigerian Journal of Physiological Sciences, 2004) P 14

⁵⁶ Chokor B. A. Government Policy and Environmental Protection in developing world (1993) Environmental Management Journal Vol 17 No 1 (15-30) this was the period when the people of Niger delta area protested against ecological problems resulting from oil spillage as well as government neglects in alleviating their problems.

⁵⁷ The concern of most African countries which was their major preoccupation of government for many years has been basically the provision of basic amenities health, Road, Education etc. However the past efforts on environment particularly in Nigeria in pre and post colonial era is the protection and conservation important major natural resources as shown from these laws, Oil Pipeline Act 1956, Forestry act 1958, Destruction of Mosquito Act 1958, Public Health Act 1958, Mineral Act 1990, Fishery Act 1990 etc

⁵⁸ Joseph A. A. The History of Environmental Policy in Nigeria (1960-2004) The Way Forward. www.gene.eder_africa@yahoo.com accessed on 19/03/2010

the establishment of natural environmental guidelines including noise pollution control⁵⁹. The Nigerian government had made several efforts in the past on environmental protection which was focused on the safety and or the protection and conservation of the economically important natural resources of the nation⁶⁰.

2. The Statutory Intervention

The Federal Government in 1988 established the Federal Environmental Protection Agency (FEPA)⁶¹. And with the establishment of the Agency, State Environmental Protection Agencies and Local Government Environmental Protection Communities was set up in all the states of the Federation⁶².

Nigeria has specific legislations on noise pollution with different statutory provisions that touches on noise pollution in some ways. The Federal Environmental Protection Agency Act represents a major legislative intervention in the control of noise pollution in Nigeria⁶³. However in 2007, the National Assembly enacted a law creating the National Environmental Standards and Regulations Enforcement Agency (Establishment) Act (NESREAA). For instance the law⁶⁴ provides that:

(1) The Agency shall, on the commencement of this Act, in consultation with appropriate authorities:

- a) Identify major noise sources, noise criteria and noise control technology; and
- b) Make regulations on noise, emission, control, abatement, as may be necessary to preserve and maintain public health and welfare.

(2) The Agency shall enforce compliance with existing regulations and recommend programmes to control noise originating from industrial, commercial, domestic, sports, recreational, transportation or other similar activities.

The Nigerian Constitution⁶⁵ outlines provision for state to protect and improve the environment; however the section of the law is not justiciable. The combined effect of

⁵⁹ Ibid see petroleum Refining Act 1974 and the 1999 Constitution.

⁶⁰ Oil Pipeline Act 1958, Forestry Act 1958, Destruction of Mosquitoes Act 1958, Public Health act 1958, Mineral Act 1958, Mineral Oil Safety Regulations Act 1963, Oil in Navigable Water Act 1963, Endanger Species Act 1990 Quarries Act 1990 Sea Fishery Act 1990 etc.

⁶¹ The 1972 Stockholm conference on Human Environment that was attended by Nigeria ignited the Lagos plan action of 1980 and also reinforce the emergence of the Federal Environmental Protection Agency (FEPA) now Federal Ministry of Environment with effect from September, 1999

⁶² Decree 58 of 1988

⁶³ See section 20 of FEPA, section 198 Penal Code provides that 'whoever commits a public nuisance in any case not otherwise punishable by this code shall be punished with imprisonment for one year or with fine or both' mentioned in this section 234 and 243-248 Criminal Code cap C38 Law of the Federation 2004

⁶⁴ Section 22 of the National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, 2007 No 25 and Section 22(3) makes a person who violates the Regulations made pursuant to sub-section (1) of this section to have committed an offence who shall on conviction be liable to a fine not exceeding N50, 000 or to imprisonment for a term not exceeding one year or to both such fine and imprisonment and an additional fine of N5, 000 for every day the offence subsists. And by sub section (4) where an offence under subsection (3) of this section is committed by a body corporate, it shall on conviction be liable to a fine not exceeding N500, 000 and an additional fine of N10, 000 for every day the offence subsists.

⁶⁵ Section 20(1) of the Nigerian Constitution 1999

section 33 (1) of the same constitution which states that every person has a right to life and no one shall be deprived intentionally of his life read in conjunction with the provision of section 20 as well as section 24 of the African Charter on Human and People's Rights⁶⁶ can be relied upon by Nigerians to enforce violation of their right to peaceful environment rather than relying solely in Section 20 of the Constitution. Unlike Nigeria, some countries made the right to peaceful environment a constitutional matter⁶⁷. However, the major problems that impede access to environmental justice in Nigeria are the operation of the rules of burden and standard of proof.⁶⁸ Most of the environmental crimes require proof of intent or evidence that the defendant acted "knowingly", "willfully", "intentionally" or "lawfully".⁶⁹

The statutory intervention on the issue of noise pollution in Nigeria can be considered from the Common Law perspective. The common law⁷⁰ intervention is through the actionable tort of nuisance. Generally, the tort of nuisance can be explained as the unlawful interference with a person's use or enjoyment of his property by another person. It can manifest in the form of noise, vibration, smoke, fume, smell, pollution, flooding, fire etc.⁷¹. Through a court action for nuisance, an aggrieved person can obtain damages for injury suffered from the offensive noise and also injunction to stop any further emission of such noise.⁷²

Luxmoore J⁷³ in the English case of propounded the cruxes of the tort of nuisance. The principle in this case recognizes the inevitability of some discomfort arising from noise in that interfere with healthy enjoyment of environment and the right of individual against the discomfort. However, there is the need to discourage noise that is offensive to the point of materially interfering with the ordinary physical comfort of human existence.

In line with the above stated Common Law principle, Nigeria courts have also stepped in to abate offensive noise pollution at different times. An example is the case of *Abiola V. Ijoma*⁷⁴ wherein the plaintiff and defendant were neighbours, occupying adjoining premises in a residential area. As a pastime, the plaintiff kept poultry at the back of his

⁶⁶ Gani Fawehinmi v Abacha ()

⁶⁷ South African Constitution, by Section 24 of that country's Constitution, everyone has a right to an environment that is not harmful to their health and well being, to have environment protected for the benefit of present and future generation, through reasonable legislative measures that, prevent pollution and ecological degradation, promote conservation and secure ecological sustainable development and has of natural resources while promoting justifiable economic and social development. See Government of the Republic of South Africa v Grootboom and others (2000) 11 BCLR 1169 (CC) see also article 21 of Indian Constitution, Article 9 of Pakistan Constitution, and Articles 31-32 of the Bangladesh Constitution used various Constitutional rights Provision to protect the environment and Human Rights

⁶⁸ Joseph N, *Access to Environmental Justice in Nigeria* (Lead City University Journal, vol, 1, pt. 1, 2008) p:18

⁶⁹ Amokaye O.G *Procedural Aspects of Environmental Litigation in Nigeria*, (The Nigerian Journal of Private and Commercial Law, vol. 2, 2001), p:193

⁷⁰ As a component of the Received English Law, Common law is one of the sources of Nigerian law and Common law rules and doctrines thus apply in Nigeria- see generally Asein J O *Introduction to Nigerian Legal System* (2nd ed. Ababa Press Ltd, Lagos, 2005) PP 98-99 and 102-104.

4. Kodinlinye G and Aluko O, *The Nigerian Law of Tort* (Spectrum Books Limited, Ibadan, 2001), PP. 99, 103 and 106

5. *ibid* PP. 99-103.

⁷¹ *Samoris v Maja* (1996) 7 NWLR (PT 460) at 336

⁷² *Abiola v Ijoma* (1970) 2 ALL NLR 268

⁷³ *Vandepant v Mayfair Hotel Co Ltd* (1930) 1 Ch. 138

⁷⁴ *Abiola v Ijoma* *Supra*

house. At a time the defendant kept four hundred chickens in pens erected against a wall that constituted the boundary with the plaintiff. The plaintiff contended, among other claims, excessive noise made by defendant's chickens in the early hours of the morning that disturbed his sleep. The court agreed with the plaintiff and awarded damages against the defendant for the nuisance; the court also made an order of injunction restraining the defendant from further acts of nuisance.

In view of the judicial intervention in the control of noise as exemplified above, it can be safely be concluded assumed that an effective remedy to combat noise pollution lies in court⁷⁵ action for the tort of nuisance which can be instituted by affected citizens⁷⁶.

However, while legal action for nuisance, no doubt is a potent means of confronting noise pollution in Nigeria, the use of this device may be hampered by some legal factor which are the legal classification of nuisance into public⁷⁷ and private nuisance⁷⁸. It should be noted at this juncture that the prevailing view is that the demarcation between private and public nuisance no long exists, an aggrieved member of the public can institute an action in nuisance without going through the Attorney-General provided he can establish his/her legal infringed upon.

3. The Institutional/Human right Intervention

International concerns with human rights, health and environmental protection have expanded considerably in the past several decades. The international community has created a vast array of international legal instruments, specialized organs, and agencies at the global and regional levels to respond to identified problems in each of the environmental and health issues. Yet the links between human rights, health and environmental protection were at least from the first international conference on the human environment, held Stockholm in 1972⁷⁹. At the Stockholm concluding session, the participants proclaimed that:

Man is both creature and moulders of his environment, which gives him physical sustenance and affords him the opportunity for intellectual, moral, and social spiritual growth... Both aspects of man environment, the natural and the man-made, are essential to his well-being and to the enjoyment of basic rights even the right to life itself.

⁷⁵ The powers of courts in relation to infringements and breaches of environmental law are derived from the law itself. The Constitution of Nigeria, 1999, confers on the Federal High Court and the state High Courts unlimited jurisdiction to hear suits in relation to infringement and breach of environmental laws.

⁷⁶ There is no special regime on liability for environmental damage. Thus, suits arising from environmental damage are treated as tortious liabilities and claimants may only seek relief under the applicable tort.

⁷⁷ A public nuisance is committed where a person undertakes an activity which affects the general public or a section of the public. Sections 183- 194 Penal Code only the Attorney General can sue for public nuisance unless an individual taking an action show special circumstance on how he/she is affected more than others and if in representative capacity it must be shown that there is common grievance, common interest and that the relieve sought will be beneficial to all. See *Daudu v NNPC* (1998) 2 NWLR (pt 538) at 362

⁷⁸ G. Kodinlinye and O. Aluko op.cit, (n.22) at p. 92.

See *Amos V. Shell-BP (Nigeria) Ltd.* (1974) e ECSR 486 at p. 488. *Oyindiohu V. Okechukwu* (1972) 5 S.C. 191 particularly at 198.

⁷⁹ See Stockholm Declaration of 1972, United Nation Document (1973) www.undoc/48/14/Rev accessed on 12/03/2010

There are circumstances where the full enjoyment of the rights to life, to healthy living and to one's culture can lead to the depletion of natural resources and environmental degradation. Nevertheless, clearly there is *prima facie* rhetorical and moral advantage in making the environment human rights issues⁸⁰.

Most human rights treaties were drafted and adopted before environmental protection became a matter of international concern. As a result, there are few references to environmental matters in international human right instrument, although the right to life and to health is certainly included and some formulations of the latter right make reference to environmental issues⁸¹.

The importance of approaching environmental issues through human right is that human rights approach is strong claim, a claim to an absolute entitlement, theoretically immune to the lobbying and trade-offs which characterize bureaucratic decision-making. Its power lies in its ability to trump individual greed and short-term thinking⁸².

Aside from the above human right procedural dimensions, environmental rights can provide access to justice in a way that bureaucratic regulation, or tort law, cannot ordinarily achieve. A robust environmental right can mobilize redress where other remedies have failed.

Similarly a human rights procedural approach may stimulate concomitant political activism on environmental issues. Concerned citizens and NGOs are more likely to rally around a general statement right than a highly technical, bureaucratic regulation expressed in legalese. More significantly human rights approach can provide the conceptual link to bring local, national, and international issues within the same frame of legal judgment.⁸³

In the United States, communities since colonial days have enacted ordinances against excessive noise primarily in response to complaints from residents. It was not until 1960s however that federal government officially recognized noise as pollutant and began to support noise research and regulation. The federal laws against noise pollution included the National Environmental Policy Act of 1969, the Noise Pollution and Abatement Act 1970 and Noise Control Act 1972 which established the Environmental Protection Agency (EPA).⁸⁴

⁸⁰See Boyle A and Anderson M, *Human Right Approaches to Environmental Protection* (Oxford, 1996). Margaret Demerutis, *Deriving Environmental Rights from the European Convention for the Protection of Human Rights and fundamental Freedom* 21 (3) *Oxford Journal of Legal Studies* 521 (2001)

⁸¹The International Covenant on Economic, Social and Cultural Rights, guarantees the right to safe and healthy working conditions and the right of children and young person's to be free from work harmful to their health (see Article 7), the Convention on the Rights of the Child refers to aspects of environmental protection in respect to the child's right to health. (See Article 24), International Labour Organization Convention No 169 Geneva 1989 the International Covenant on Civil and Political Rights. The regional human rights treaties contain specific provisions on the rights to environment. The approach of each differs, with the African Charter linking the environment to development, while the American Convention Protocol speaks of a healthy environment. The African Charter contains both a right to health and a right to environment. (Articles 16 and 24 of the African Charter) see the Text in Brownlie, *Basic Documents on Human Rights* (3rd edn. Oxford, 1992), 125. Note that the convention has been in force since 1976.

⁸²Michael A. *Human Right Approaches to Environmental Protection: An Overview* (Clarendon Press Oxford, 1996) P 21

⁸³Ibid

⁸⁴Saenz, A. L. and Stephens R.W.B, (eds) *Noise pollution: Effects and Control*. (New York: Wiley, 1986) P 23. There is other institutions regulation noise in the United States i.e. Federal Aviation Administration (FAA).

Similarly, the Pakistan Environmental Protection Agency (Pak-EPA) exercising its power under clause (d) of Section 6(1) of the Pakistan environmental Protection Ordinance (PEPO); 1983 with the approval of the Pakistan environmental Protection Council (PEPC) established National Environmental Quality Standards (NEQS) for regulating noise emission⁸⁵. Under Environmental Protection Act 1996, Indian equally established Noise Pollution Control Rules, 2000 in order to curb the growing problem of noise pollution⁸⁶.

IV. CONCLUSION

Due to the ignorance of Nigerians on the fact that there exist a close nexus between noise pollution and climate change, little or no attention is paid to the control of noise pollution in Nigeria. The execution and implementation of the law as regards environmental pollution is never implemented to the letter. It is observed by the writers that the persistence of this problem could endanger the future stability of human health and could aggravate the human health catastrophe in the fast growing cities in Nigeria.⁸⁷

The sources of noise pollution identifies in the paper also exposed the common channels of environmental pollution through noise and its effects on the public in Nigeria which is most significantly similar throughout the world⁸⁸. The challenges posed by noise pollution on human health and the environment have not yet received full attention which it deserves. Though, generally statutory and policy provisions regulating noise on pollution in Nigeria as well as the world over have lofty aims and are quite salutary, however, there is need for proper implementation.

Conclusively therefore, since Nigeria is yet to be a super power or neck deep into launching of rockets, bomb or other scientific experimentation that could result in hyper climate change, aggressive implementation of the existing laws, policies and guidelines on environmental pollution will go a long way in addressing the problem of noise pollution and its resultant effect of climate change in Nigeria.

V. RECOMMENDATIONS

Bill for combating Noise pollution

Considering the adverse effects of noise pollution on human health and environment, it is significance to evolve proper approaches to address the issue of noise and protection of human and environmental health in Nigeria. This paper recommends that the national

monitored and controlled noise from airplanes. The Occupational Safety and Health Administration (OSHA), charge with reducing noise in workplaces. People are employers to measure noise levels, to muffle extremely noisy equipment, to provide ear-protection gear if necessary, and to offer regular hearing tests to workers who are regularly exposed to high sound levels. The Bureau of Mine Safety (BMS) has comparable rules to protect miners. The department of Housing and Urban Development and the Veterans Administration require noise proofing in dwellings houses. The department of Defense even has noise standards for certain military situation.

⁸⁵ See Abedullah, Sources and Consequences of Environmental Pollution and Institution's Roles in Pakistan (2006) Journal of Applied Science Vol 6 Nos 16 P 3135. See also Shaikh et al; (1997), Position Paper for Noise Pollution by Pressure horns, Pakistan environmental Protection Agency Pakistan Environment Programme see also Mohammed Javel *supra* P 9.

⁸⁶ See the Causes and Effects of Noise Pollution, www.lifestyle.iloveindia.com accessed on 24/04/2010. Chapter iv of the Indian Penal Code particularly section 268, 269, 270, 280, 288, 290, 291 and 294 deal with offences relating to public health safety, decency etc.

⁸⁷ Most of Nigerian cities are becoming highly populated due to urbanization, thus human activities are more of sources of noise therein. (Abuja, Lagos, Kano, Kaduna, Port Harcourt, Cross River, Ilorin, Ibadan, Enugu etc

⁸⁸ See World Health Organization Report on Effects of Noise on Human Health and the Environment 2000

Assembly passed a bill making it mandatory for all states and local government of the federation to enact law to combat noise pollution in Nigeria.

Putting in place a regulatory agency

The realization of the importance of sustainable environment is necessary. This is achievable if specific laws are put in place to determine level of acceptable noise and regulate noise pollution in Nigeria. Putting in place a regulatory agency will assist in the measurement, control and enforcement of the laws to achieve a desired goal.

Encouragement of Scientific as well as Natural Protection

There is the need to take advantage of the opportunities presented to man by technological advancement in the area of measurement and control of noise through the use of gadgets like insulator and sound proofing to doors, walls, ceilings, using ear protection and planting vegetation and screen out noise pollution and zoning urban area to maintain a separation between residential area and zones of excessive noise⁸⁹.

Review of Environmental Policies in Nigeria

There is the need for review or strategic assessments of government policies, plans and programmes for noise pollution and environmental health. Strict punishment is recommended for any breach of environmental laws in Nigeria.

Public awareness campaign on danger in noise pollution and its nexus with climate change

There is the need for public enlightenment, education and sensitization on the hazard, danger and human health catastrophe associated with noise pollution and also on the nexus between noise pollution and climate change. This is of paramount significance, because many are still ignorant of the fact that there exist any nexus between noise pollution and the change in climate with the resultant effect we are witnessing in the world today.

⁸⁹ Alawode A.J., Stephen J T and Adeyemi G J; op.cit (n.14)pp 636-637