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Appraisal of the Institutional and Policy Framework for Addressing Noise Pollution in Ghana

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Abstract
Noise pollution is a growing environmental health concern in many growing urban countries including Ghana. However, the effectiveness of the institutional policy framework addressing noise pollution in Ghana has received less attention over the years. The study examines the effectiveness of regulatory bodies in abating noise pollution nuisance in Ghana focusing on the effectiveness of the Environmental Protection Agency Act of 1994, the Environmental Assessment Regulations of 1999, and the Land Use and Spatial Planning Act of 2016 in addressing noise pollution, with a focus on the existing laws on noise pollution abatement. This was accomplished through a systematic review of scholarly literature to identify information on institutional and policy frameworks for addressing noise pollution in Ghana. The results revealed that the range of noise pollution levels at industries, markets, schools, and most institutions exceed the Ghana EPA recommended limits by higher values due to a lack of strong regulations and enforcement.

Keywords
Noise pollution; Legislation; Enforcement; Institutional framework; Permissible noise levels; Environmental Protection Agency

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Contents

1. Introduction

Urban growth in most nations is accompanied with environmental pollution, particularly noise pollution, due to the rise in economic activity, transportation, and energy demand (Mesene et al., 2022). Noise pollution is considered a possible obstacle to achieving comprehensive urban transformation, as envisioned in the UN's New Urban Agenda and exemplified by Sustainable Development Goal 11's aim to create cities and human settlements that are inclusive, safe, resilient, and sustainable (Paunovic & Clark, 2018). According to epidemiological research conducted in cities across Europe and North America, it is estimated that environmental noise is responsible for causing around 48,000 new cases of ischemic heart disease annually, along with 12,000 early deaths. Furthermore, research indicates that approximately 22 million individuals have persistent and significant levels of annoyance, while 6.5 million individuals endure ongoing and substantial sleep disruption (Clark et al., 2022). Due to the growth of industry, airport activities, and motor vehicle fleets, environmental noise pollution is escalating in most developing cities.

The key causes driving these developments are rapid population growth and urbanization, motorization, and to a large extent, technical advancement (Schwela, 2021). As the population grows, noise sources become more numerous and powerful, resulting in increased exposure to noise pollution, which has serious public health implications (Laetitia & Fanny, 2019). Urbanisation significantly transforms landscapes and acoustic soundscapes by replacing rural and natural habitats with man-made structures and impermeable surfaces, and by introducing human-generated noise sources like vehicle traffic and equipment. Noise, as described by Atianashie (2021), refers to excessive or insignificant sound that is louder than normal, typically produced by sources such as traffic, machinery, factories, and electronics. The impact on human health and well-being is categorized into four groups based on the duration and volume of exposure. These include physical consequences like hearing impairment, physiological effects such as heightened blood pressure, irregular heart rhythms, and the development of ulcers. Psychological outcomes encompass disorders, sleep disturbances, delayed sleep onset, irritability, and increased stress levels. Furthermore, there are repercussions on work performance, leading to reduced productivity and misunderstandings in processing auditory information (Hunashal & Patil, 2019).

Ghana is rapidly an emerging economy with most of its cities urbanizing and thus, facing severe challenges of noise pollution nuisance (Addo Sowah et al., 2014). Human activities such as commercial, industrial and social events continue to increase the level of noise pollution in Ghana's cities (Dzidzo, 2018). The primary contributors to noise pollution in Ghana include industrial and commercial facilities, spinning establishments, music and cassette shops, constant honking of horns by various vehicles, busy markets, schools located in such vicinities, churches and corn mills (Abankwa et al., 2017). According to Yeboah (2019), noise pollution in Ghana has become a significant annoyance and a public health concern, especially in the Greater Accra region. The inadequate monitoring and enforcement of noise-related laws and regulations have led to a lack of proper documentation on the trends in noise levels across the country. In contrast to many other environmental problems, noise pollution continues to grow and is accompanied by an increasing number of complaints from people exposed to the noise. However, the frequency of noise complaints is expected to rise dramatically shortly due to the country's fast development in population, corporate activity, and industrialization. Several studies; (Essandoh et al., 2011); (Baffoe et al., 2022); (Clark et al., 2021); (Atianashie, 2021) assessed noise levels and its effects in selected sectors or industries, whereas studies examining the more direct effects of the regulatory bodies in addressing noise pollution in the Ghanaian context are still scarce. Therefore, assessing the problem and programmatic interventions for controlling noise and its adverse effects should be of immediate concern. This makes it imperative for the regulatory authority to enforce compliance with noise. Targeting the existing laws on noise pollution abatement, this study seeks to evaluate the effectiveness of the Environmental Protection Agency Act of 1994, the Environmental Assessment Regulations of 1999, and the Land Use and Spatial Planning Act of 2016 in addressing noise pollution in Ghana. This was done by a scientific search through scholarly literature to identify information on institutional and policy frameworks for addressing noise pollution in Ghana. Search results were analyzed concerning the available laws on noise pollution abatement including sources of noise, environmental noise indicators, and observed and perceived noise impacts.

2. Ghana's Regulatory (Policy and Institutional) Framework for Addressing Noise Pollution

The three main factors behind the continued rise in noise exposure in emerging nations include increase in population, urbanization, and to a considerable extent technological advancement. As evidenced by how quickly a major city is expanding, urbanization has increased over the past two centuries and is continuing to do so in the current one (Schwela, 2021).

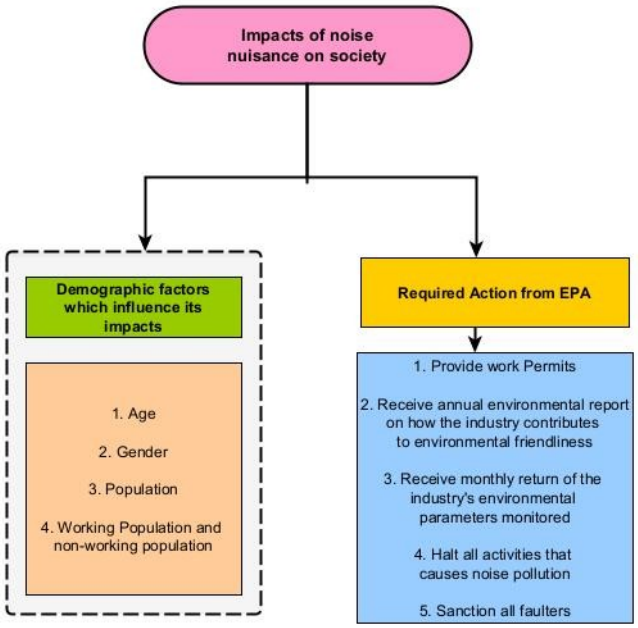

Figure 1. Noise level from industry

Urban areas tend to have more noise than rural ones. Because of population growth and urbanization, more people are being exposed to noise pollution daily. Nigerians live in greater noise-polluted settings when compared to citizens of other nations (Baloye & Palamuleni, 2015). The Federal Environmental Protection Agency (FEPA) in Nigeria set daily noise exposure restrictions for industrial workers at 90 dB for an 8-hour exposure. Ghana, meanwhile, has daytime noise levels of 55 Db and night me noise levels of 48 dB (Tunde & Abdulquadri, 2021).

A typical urban resident's day in Ghana starts with loud morning broadcasts by evangelists who claim to be preaching damnation for sin, together with the loud Muslim calls for prayers over amplified loudspeakers. The next step is a drive through congested traffic, with taxis and trotros blasting their horns to direct passengers to their various destinations. You can be fortunate to avoid being near business or industrial areas during the day. When one gets back home, they are greeted by the obtrusive music coming from the corner stores, which they have no control over. This normally lasts until morning, when the religious sects take charge once more. Residents are virtually always in this situation (Dzidzo, 2018).

Numerous studies have been done on the effects of noise pollution on people, and traffic noise is a significant contributor to this problem. These factors can typically be divided into four groups: Traffic factors, Road factors, vehicle factors, and human factors (Ibili et al., 2022).

All environmental concerns in the nation are handled by the Environmental Protection Agency (EPA), which

was founded by the Environmental Protection Agency Act of 1994. This organization develops and implements environmental policies and ensures that environmental laws and regulations are followed (Mensah et al., 2015). The environmental challenges in Ghana have been confronted through a range of interventions and policy instruments, encompassing activities such as environmental impact assessments, parliamentary acts, legislation, environmental guidelines, and the imposition of environmental taxes like reclamation bonds. Both past and present administrations have actively participated in implementing environmental permitting standards, exemplified by measures such as emission permits. (Tuokuu et al., 2018). The EPA also has the authority to license and issue environmental permits while managing all pollution-related lawsuits and other illegal environmental waste discharges, which are often detrimental to the quality of the environment. This means that the EPA's monitoring of the environment is fully mandated. However, a study on environmental performance by Darko-Mensah & Okereke (2020) reveals that the reality is different. In actuality, the EPA still faces several difficulties that keep their ability to properly monitor the environment in the dark (Mensah et al., 2020). The Environmental Protection Agency (EPA) has guidelines on noise making and has asked metropolitan, municipal, and district assemblies (MMDAs) to adopt them into their bye-laws. Nevertheless, despite multiple recent government initiatives aimed at increasing public consciousness regarding the detrimental health consequences of noise pollution, as well as sporadic measures taken against violators in Ghana, the implementation of current legislation seems to be a significant obstacle. Dealing with noise pollution nuisance in Ghana, the regulation and enforcement of abatement controls is of principal concern to the EPA and MMDAs. The Environmental Protection Act 1994, also known as Act 490, requires the EPA to issue environmental permits and pollution abatement notices in the form of directives, procedures, or warnings to individuals or organisations. These measures are aimed at regulating the level, intensity, and quality of noise in the environment. Additionally, the Act also sets standards and guidelines for controlling pollution (Republic of Ghana, 1994).

A crucial role of the Planning Authority, specifically the District Assemblies, with direct implications for controlling noise pollution, lies in its enforcement powers against nuisances, as outlined in Section 120 of (Ghana Government, 2016). Hence, there exists a lawful and justified foundation for the involvement of the assemblies in the regulation and resolution of noise pollution, as stipulated in Act 925, where they serve as the planning authority for their respective areas of jurisdiction, as outlined in Section 120(1). Also in submitting an environmental impact statement for an undertaking, proponents are required to address noise and vibration levels in their impact assessment. (1652, 1999). A common penalty for a conviction in cases of loud music is typically a fine or a minor sanction. However, in rare instances, imprisonment may be considered as a consequence. According to (Zakpala et al., 2014) Accra's sound levels and land use trends were similar to those reported in a South African study. Additionally, it was discovered that the majority of the GAMA's observed daytime and nighttime sound levels surpassed the restrictions set by the Ghana Standards Authority for neighborhood noise in regions like these (Clark et al., 2022). There are no regional ambient noise standards established for Africa by the World Health Organization to which we may compare our findings (Clark et al., 2021). The exact interpretation of a loud music violation differs based on the jurisdiction, either by a certain decibel level or the distance from the source at which the music becomes audible. Many a time, the hour of the day also affects the law, with certain jurisdictions only allowing certain activities during specific hours of the night, like from 10 p.m. to 6 a.m. Additionally, different areas require different amounts of effort from law enforcement to deal with loud music. Loud music may occasionally provide a reason for incarceration, but the most typical sentence for the conviction is a fine or another minor sanction (Kwarteng, 2019).

The FEPA Act in Nigeria fills the gap by establishing noise emission standards and noise abatement programs. And under current law, noise pollution is addressed to the extent that sanctions are spelled out against violators. Anyone found guilty of violating the law enacted to reduce noise levels faces a fine of up to 50,000 Naira, up to one year in prison, or both (Pam & Garba, 2019). The cultural revitalization initiative, named Sankofa, was instigated by Jerry Rawlings, the eleventh head of state. The National Commission on Culture supervised the extra expansion of the facility in the 1990s. This policy is responsible for the current widespread implementation of the "prohibition on drumming and noise making" in society. The aforementioned historical changes occurred in the 1980s. Currently, both adherents of Ga traditional beliefs and followers of Pentecostal/Charismatic Churches have reached a shared understanding of each other's perspectives. Nevertheless, they utilise legal jargon to express their concerns within the framework of the non-religious government (Goshadze, 2019).

Various governmental entities may distinguish between the Ga "prohibition on drumming and noise creation" and the issue of non-religious noise in the City. However, the AMA Task Force on Nuisance Control is tasked with overseeing both secular and religious "noise" that is considered "excessive" using the same thorough and precise procedures. The Environmental Protection Agency (EPA) receives complaints from individuals and organisations over different types of noise pollution in the city. Approximately fifty percent of these complaints

are exclusively directed towards Pentecostal/Charismatic Churches (Ackah, 2020). Presently, the Environmental Protection Agency in Accra offers specialised decibel-measuring equipment at a predetermined cost to aid in addressing difficult noise complaints.

3. Zoning, Description, and Permissible Noise Standards

The EPA Ghana demonstrates efficient collaboration with all stakeholders, serving as a catalyst for change to establish environmental preservation and sustainable development as shared principles.

Participation in environmental protection in Ghana is restricted to businesses that adopt practices that put them on the road to lowering environmental pollutants, such as noise, and solid, liquid, and gaseous waste (Efobi et al., 2018).

The EPA has implemented a quantitative methodology, in accordance with global standards, to address noise pollution. This involves establishing specific maximum noise levels, measured in decibels, for different urban regions with varying definitions. The Environmental Protection Agency (EPA) has issued guidelines on noise pollution and has urged metropolitan, municipal, and district assemblies to include these standards into local by-laws, according to the Acting Executive Director of the EPA (Dzidzo, 2018). Despite Ghana establishing acceptable noise thresholds, noise levels have remained unchanged over the past ten years as a result of inadequate enforcement (Schwela, 2021). The regulations and existing bye-laws are effectively non-existent.

According to Yeboah's (2019) research, the noise levels at 10 churches in the Madina and Adenta municipal districts exceeded the noise limitations established by the Environmental Protection Agency (EPA) Ghana. The noise levels, which were set at 55 dB during the day and 48 dB at night, were exceeded. The mean diurnal and nocturnal noise levels measured at five churches in Madina during the dry season were documented as 74.5 dB. In contrast, during the wet season, the average mean values decreased to 67.7 decibels. The average daytime and nocturnal noise levels measured at five churches in Adenta during the dry season were 70.6 dB. Throughout the rainy season, these levels experienced a little increase to 71.0 dB. In 2021, Atianashie (2021) discovered that all the churches and mosques examined in the Bono Region emitted excessive levels of religious noise, surpassing the allowable noise levels set by the EPA, Ghana. Specifically, the noise levels surpassed 55dB per day (0060 – 2200h) and 48dB during the night (2200 – 0060h). 35.9% of the participants regarded the noise as an annoyance. In Kumasi, sampled industries and social gatherings exceeded their daytime permissible EPA noise levels of 60 dBA and 65 dBA respectively (Abankwa et al., 2017). This implies that the enforcement of noise level limits and laws has not been effective (Abankwa et al., 2017). Wireko, V. (2013), was surprised by the delayed response of the city authorities in Accra to address the issue of noise-making. This reaction was in response to an article by the Ghana News Agency in the February 15, 2013 issue of the Daily Graphic, which reported the demolition of a church by the Accra Metropolitan Assembly due to excessive noise. The provisions and penalties of the laws are as well no longer deterrents and therefore must be revised. It is crucial for the regulatory authority to effectively enforce compliance regarding noise in order to achieve any level of success in controlling noise pollution. Managers and employees of firms must be sufficiently informed of environmental issues and how their actions affect the environment if they are to protect and sustain the environment effectively. It takes a shift in attitudes, beliefs, and behaviors to create a sustainable future environment. When enough information about the environment is available, this behavioral modification and action can be accomplished (Owusu et al., 2017)

Table 1. Classification of ambient noise control levels according to designated zones

Zone	Overview of the domain of noise pollution	The permissible noise level in dB	
		Daytime hours are from 6:00 a.m. to 10:00 p.m.	Nighttime hours from 10:00p.m to 6:00a.m
1	Residential zones	55	48
2	Academic and healthcare facilities, administrative buildings, and judicial establishments	55	50
3	Mixed-use	60	55
4	Regions characterised by a combination of light industrial activities	65	60
5	Commercial areas	75	65
6	Minor Industrial zones	70	60
7	Major industrial zones	70	70

Source: Yeboah (2019)

4. CONCLUSION

This study adds to the ongoing discussion over the efficacy of regulatory agencies in mitigating the problem of noise pollution nuisance in Ghana. Specifically, it reviewed Ghana's EPA, Land Use and Spatial Planning Acts, and the Environmental Assessment Regulations and checked for compliance concerning noise pollution nuisance. It has been demonstrated from the findings that EPA and other regulatory bodies are not in control so far as the enforcement of the laws on noise making is concerned. The range of noise pollution levels at industries, markets, schools, and most institutions exceed the Ghana EPA recommended limits by higher values due to a lack of strong regulations and enforcement. Therefore, it is vital that law enforcement authorities adopt a more stringent and proactive approach. Nevertheless, in addition to law enforcement, it is imperative to strive for a more profound transformation by amending the rules and punishments for individuals who violate the Law. Based on these findings, it is advisable for the EPA to

collaborate effectively with all stakeholders to bring about a significant transformation in environmental protection and sustainable development. Stringent and enforceable regulations should be incorporated into governmental policy to protect the environment. The Land Use and Spatial Planning Authority-Ghana, together with other local government bodies, should be granted the authority to oversee and verify that different industries and institutions possess the required permissions for operation, and that land allocation is properly organised. The EPA-Ghana units should also have the authorization to carry out educational initiatives regarding the consequences of noise pollution, the health risks associated with excessive noise, and the ailments linked to it.

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