An Assessment of Noise Pollution in Addis Ababa: The Case of Bole Michael Community Area

By

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Lists of Abbreviations

A.A …….. Addis Ababa

CBO…….Community Based Organization

CSA……. .Central Statistical Agency

DSTV……Digital Satellite Television

dB (A)……A weighted decibels

ECA……...Economic Commission for Africa

EPA……Environmental Protection Authority

FDRE……. Federal Democratic Republic of Ethiopia

FGD……Focus Group Discussion

GIS…….Geographical information survey

HAD……Housing Development Agency

Hz……Hertz

µPa……..Micro Pascal

NIDC……..Noise Induced Disease Case

NIHL…….. Noise Induced Hearing Loss

NS…….. Not Specified

NSR…… Noise Sensitive Receiver

SPL……..Sound Pressure level

SPSS……Statistical Package for Social Science

TTS…….Temporary Threshold Shift

UNCED……..United Nations Conference for Environment

WHO……...World Health Organization

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Abstract

Noise causes adverse effect on human health, deteriorates environment and diminishes the value of property. Thus, this study aimed to survey different sources of noise pollution giving particular emphasis to religious institutions' loudspeaker and impulsive sound amplifier and night clubs live musical beat in the midnight. Though there are five zones in the study area i.e. Woreda 1 of Bole sub-city, only two zones were selected for the study as these zones were densely populated having more than 10,000 or 50%of the woreda residents and highly exposed to noise pollution. A total of 120 participants in the study were selected by applying simple random sampling technique and purposively. In order to attain the proposed objectives instruments like questionnaire, key informants interview and FGDs were employed. To analyze the collected data both qualitative and quantitative methods were used. More specifically, quantitative data analyzed by using descriptive Statistical Package for Social Science version whereas the qualitative data analyzed by narration. The noise measurement was carried out using SPL, in dB.

The study findings indicated that the major four religious institutions that exist in survey domain released in a minimum average 71dB (A) and also a maximum average level reaches to be 87dB (A). In the same manner, the night clubs, bars and restaurants situated in the community residential area release minimum average 64dB(A)and maximum average accounts 84dB(A). This result indicated that it was excessively high and above permissible limits of noise level as compared to (WHO, 1999) guidelines in community residential area to be at night 40dB and day time45 dB, in patient ward room 30 dB and in school classroom to be 35dB. This means that the noise level in the area is over legally limited noise level and this may cause profound health effects on the residents and also this had been clearly confirmed by the majority of the respondents that they had been faced sleep disturbance, interference with spoken communication and interruption in teaching-learning process in schools area.

The study identified that there is acted rule and regulation to protect the citizens from noise pollution. But, Authority being reluctant to pay attention for the public outcry especially with the religion institution cases, lack of human, material and financial resources has contributed to some extent. This means that the responsible body's major problem to control noise level in the residential area is not a matter of law making; rather it is the problem of enforcement and implementation the existing law. Therefore, noise level in the residential area should be controlled with the full participation of different stakeholders so that the regulatory body needs to provide training and education to the community and raise the awareness of religious institutions to minimize the level of noise or to implement noise suppressor technology. On the other hand, for night clubs and bars, before grant license, Ministry of Trade has to set noise issue as one point of criteria for authentication and issuance of license.

Keywords: ***Sound, Noise, Noise pollution, sources of noise, effect of noise***

CHAPTER ONE

1. Introduction

1.1. Background of the study

Environment has been described as the surroundings that an individual or community living area in which includes both physical and cultural setups. In general terms environment means everything around to a living being. Especially the circumstance of life of people or society in their living conditions. It comprises the set of natural, social and cultural values existing in a place and at a particular time, that influence in the life of the human being and in the generations to come. i.e., it is not only the space in which life develops, but it also includes living beings, objects, water, soil, air and the relations between them as well as intangibles like culture (Encyclopedia of Britannica 2013).

It also sometimes designates a certain set of circumstances surrounding a particular occurrence such as environment of deposition (Keller, 1976). Environmental pollution may be defined as the unfavorable alteration of our surroundings. It changes the quality of our air, water and land which interferes with the health of human beings and other life on earth (Gour, 2013). In Ethiopia natural environment is one of the most valuable element and the demands and challenges of development issues and preservation of its rich natural environment requires to be met with most importantly and concurrently.

Community noise (also called environmental noise, residential noise or domestic noise) is defined as noise emitted from all sources. Main sources of community noise include road, rail and air traffic, industries, construction and public work, and the neighborhood. Typical neighborhood noise comes from premises and installations related to the catering trade (restaurant, cafeterias, discotheques, etc.); from live or recorded music; from sporting events including motor sports; from playgrounds and car parks; and from domestic animals such as barking dogs. The main indoor sources are ventilation systems, office machines, home appliances and neighbors (WHO, 2001). Although, many countries have regulations on community noise from road, rail and air traffic, and from construction and industrial plants, few have regulations on neighborhood noise.

This is probably due to the lack of methods to define and measure it, and to the difficulty of controlling it. In developed countries, too, monitoring of compliance with and enforcement of noise

regulations are weak for lower levels of urban noise that correspond to occupationally controlled levels (Frank 1998). On top of that WHO has documented seven categories of adverse health effects of noise pollutions on humans. These include hearing impairment, interference with spoken communication, sleep disturbances, cardiovascular disturbances, disturbances in mental health, impaired task performance and negative social behavior and annoyance reactions (Goines and Hagler,2007). Many surveys have been carried out to assess the noise pollution in many cities of the world including some countries in Africa (Saadu *et al*., 1998).

Actions to control noise effects have been an immediate concern for communities in countries of the developed world, as evidenced by a large number of anti-noise laws, regulations and noise policies (Ahmad, 1998). However, such action remains limited in the developing countries, especially in Africa. Ethiopia is among the developing countries whose urban environment has undergone significant changes due to industrialization, urbanization, the expansion of the road network and the increase in the number of motor vehicles and competitions of some of the religious institutions loudspeakers overly disturbs the lives of the society. These changes have probably led to an increase in noise levels that have negative effects on the citizens. Despite the fact that Ethiopia had developed a practical rule and regulation to control noise pollution in order to cope with the existing situation, still noise pollution issues continued without end solutions.

Addis Ababa is a cosmopolitan city of close to four million people which hosts African Union Head Quarter and Other International and Regional Organizations, but when we come to noise pollution, the biggest polluters are the religious institutions, and by far, the biggest contributor to the pollution being the Ethiopian Orthodox Church which kicks off at 4:30am, and keeps going for the next five hours.

The other one which people also highly complain about being woken up at 5:00am is the Mosques' call to prayer, following the Evangelical churches impulsive sound amplifier beat that makes the community restless (Stretcher, 2007).

1.2. Description of the Study Area

Since, Addis Ababa city is in a tremendous development path and because of that there is large expansion of industrialization, urbanization, and road net work construction, the recent Addis Ababa light rail networking development, and too many motor vehicles which emit hazardous fume

on the city street has contributed to increase in noise levels which aggravated the negative impact on the urban citizens.

Figure 1.1: GIS 1996 Addis Ababa Aerial Map

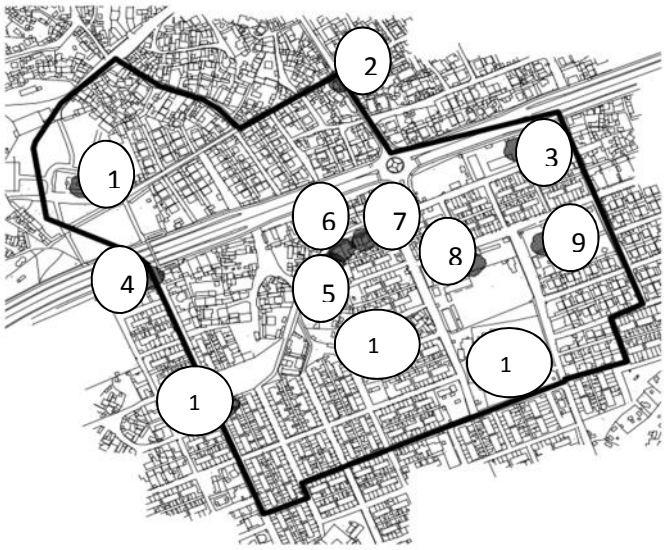
Source: A.A. City Administration, 1996

Coupled with rapid natural population growth, Addis Ababa is one of the cities at the boom of development ladder in Africa, posing critical challenges, including high rate of unemployment, housing shortage and environmental deterioration. In Addis Ababa most residential areas are located near the busy places such as bus-stand, market area, busy roads, air port, including church, mosque, night clubs, bars and restaurants…etc, which have came lately, but contributed a high level of noise pollution. Even though, currently there is a high endeavor to change the old picture of the city, by clearing the slam areas of some parts of the city, either by redevelopment or other mechanisms, still the problem is mounting from time to time.

Bole Sub-city is one of the ten boroughs, which have nearly 400,000 number of population. It comprises totally 14 Woredas. There are numerous Orthodox Churches, Mosques and Evangelical churches, Catholic Churches coupled with new business centers such as bars; restaurant and night clubs which were embarked with following the booming development line in each construction sites. In the light of the above statement, Bole Michael Community residential area is the one which has been originated within last three decades, but severely exposed to numerous source of noise pollutions, because of the area is geographically surrounded by Bole International Air Port where (passengers and cargo planes) flight landing and take-off now and then, Religious institutions such

as (Orthodox, and Evangelical Churches and Mosque and others) are highly situated in the residential area send off their competitive loudspeaker and amplifier musical beat endlessly

Figure1.2: Bole Michael Survey Area Noise Pollutants Location



Source: Extracted from New Revised A.A master plan, GIS 2016.

N.B: 1.Orthodox – Michael Church 4.Ethio-Link Bar 7.Ayu Night club
12.Muslim....Jafar Mosque 10.Tedi " 9. Kebele Recreation
8.BoleKale Hiwot church 5.Moon Light Night club 2.Mesi(under Condominium house)
11. Biftu Oromiya " 6.Remina " 3.Yesh bar

1.3. Statement of the Problem

As we can observe the current conditions of Addis Ababa, the most noise sensitive institutions such as schools, health care centers, courts and residential areas are located randomly around main traffic roads, commercial areas, airports, business center and construction sites. Highly developed countries use a combination of both technological and legal approach to reduced noise pollutions that emanates from different sources by applying different mechanisms such as maintenance of automobile; control over vibrations; low voice speaking; reducing noise level from domestic sources; prohibition on usage of loud speakers; selection of types of machineries and maintenance of existing machines. Although, these technology based materials are lacking in our country, still there seems to be a great reluctance from responsible authority side to implement the acted rule and regulation (WHO, 2001).

Though, Bole Michael community area had been developed within last three decades, particularly the residential area is surrounded by different noise pollutant sources, which were built by usual non sound proof materials that cannot protect the noise pollution disturbance of the community at large.

Also, as it had been stated above, in the national level, there is rule and regulation that was enshrined to control environmental pollution in general and noise pollution in particular, but due to lack follow up and implementation problem, Addis Ababa citizen in general and Bole Michael residential areas in particular suffering from the noise pollution of loud speakers of the religious institutions, live musical beat of night clubs, bars and restaurants dance and shouting at midnight, the obsolete trucks and automobiles fumes on the Ring Roads, the landing and takeoff air plane stiff noise and the like. Where the sources of noise pollution in Bole Michael residential area are many and diverse, this research study mainly focused in depth on the assessment of environmental noise pollution of two sources, namely, religious institutions loudspeaker and night club's live music disturbance. Then, our benchmark will be WHO's guidelines for community noise pollution in the residents, healthcare centers and schools to evaluate the noise pollution levels and legal issues for noise pollution in the required government institutions in Addis Ababa that are responsible to monitor and control these hazardous problems.

1.4. Objectives the study

1.4.1. General Objectives

The general objective of this research may be to assess and analyze the religious institutions loudspeaker and night clubs and bars live musical beat noise level in Bole Michael community residential area.

1.4.2. Specific Objectives

- To analyze current noise pollution situations of the community by applying different research tools.
- To identify the sources of noise in the residential environment and then to determine the noise pollution level of the residential area by using different modern decibel measurement devices.

- Then, to compare the measured noise level with the responsible Addis Ababa Environmental Protection Authority and WHO's noise pollution standard level for residential area, school and heath center.
- To analyze the effect of the noise pollution in the community lives in context with literature review reading findings and,
- To recommend ways of mitigating the problems based on the research findings.

1.5. Research Questions

From the above distinguished research statement, the researcher shall try to derive some basic questions that would be answered by the respondents. It is obvious that these questions will be the guidelines that help the researcher to pose required points to the respondent by using different data collection tools.

1. What are the levels of noise pollution that severely affect the lives of the community in the residential areas?
2. What are major impacts do the community faces because of noise pollution?
3. What remedial actions to be taken to reduce the levels of noise pollution in the community residential area?
4. What roles should be played by the responsible authority, the pollutants and the community as well to bring the solution?

1.6. Significance of the study

The research study seeks to evaluate a number of published literature reviews that are related to different sources of noise pollution.

Noise pollution is the basic source of environmental problem, involves in a technical aspects, particularly in engineering discipline, in the case of noise detective materials. It also requires legal instrument that helps to take action against polluters. Besides to that noise pollution is the major problem that exposes the community to variety of acute health problems such as hearing impairment, sleep disturbance, disturbance of mental health, impaired task performance and negative social impact and annoyance…etc.

Therefore, the significance of this thesis would be:

- Community affected by the problem will be the first beneficiary, when the problem gets its end solution by the responsible authority.
- The research will lay the theoretical foundation for those who are interested for the further deep research.
- The study could also set the stage and an agenda to bring different stakeholders for a dialogue to collaborate in seeking solution.
- The research study could enable the regulating body to give more attention about noise pollution, in most sensitive areas as community residential area, schools, healthcare centers and court compounds and help the concerned body to seek immediate solution.
- Finally, this study will more helpful to identify and to know in-depth about the procedures, principles, and objectives of noise pollution, its impact and controlling mechanism of the developed countries' practices in technological as well as in legal aspects which helps us to learn in comparison with our county's present time situation in general and Bole Michael community residential area in particular.

1.7. Scope of the study

Noise pollution is prevalent in whole Addis Ababa due to industrialization, rapid growth of urbanization, fast development schemes that helped to layout skyrocketing buildings construction and road network lay out has been increased the intensity of noise pollution. Due to the consequence of the above problem, the citizens have been exposed to different types and impacts of noise pollutions. For these reasons this research mainly limited to one specific locality, namely Bole Michael community residential area, although, the problem is wide divergent in whole Addis Ababa.

1.8. Limitations of the study

- This research study is only focused one specific community area is one of the study's shortcoming.
- Some errors (although in acceptable range) associated with sampling and data collection and
- Unavailability/inaccessibility of continuous data from Woreda law enforcement offices on complaints

1.9. Organization of the study

This thesis is categorized into five major chapters:

Chapter.1. Introduction: comprises background, description of study areas, statement of the problem, objectives of the study, research questions, significance of the study, scopes and limitations of the study and organization of the study.

Chapter.2. Literature Review: deals with brief explanation about environmental noise pollution of present and past secondary data sources, types, impacts it causes in human and animals lives regarding noise pollution. The information shall be collected from different reference sources and finally analyzed in context with selected topics

Chapter.3. Research Methodology: Here, the research design and sample size determination, primary and secondary data collection methods will be carried out, and also, the noise measurement devices will be applied in the study area.

Chapter.4.Data analysis and presentation: such as personal observation, questionnaires, interviews and focus group discussion analysis will be held in depth.

Chapter.5. Summary of findings: Conclusion and Recommendation. Here, what had been found in the literature review will be carried out in connection with new research findings.

CHAPTER TWO

2. Literature Review

2.1 Empirical Literature Review

The Study of environmental noise in Addis Ababa, major sources and public reactions was carried out by A.A Environmental Protection Authority and noise pollution is any unwanted sound from stationary and moving sources with numerous adverse impacts. In this regard, noise pollution source investigation indicates that vehicles, religious institutions and dogs are the top high-and-above noise pollution sources in the city during day as well as night. Commercial activities and music-video shops/rentals (during day) and sporting activities/events, night-clubs and airplanes (during night) are also among the top five high and above sources. Statistically significant time (day night) and space (peripheral-central) based differences were found on noise pollution sources.

Noise pollution is the second major source of environmental complaints lodged to environmental offices in the city after air pollution. A good proportion of the respondents in the current study lodged noise complaints with statistically insignificant area based differences (though more peripherals than centrals complained). The main complaint destinations were Kebelle law enforcement offices with an increasing trend in all parts of the metropolis namely peripheral, central and overall Addis Ababa. Religious institutions were the major sources of noise complaints lodged to Woreda law enforcement offices followed by music-video shops/rentals. Most of the complaints were dealt with by education/awareness followed by law enforcement.

Finally, noise pollution is a serious problem in Addis Ababa with numerous sources and ever increasing public reactions/complaints and the study findings indicated that measurement (equipment)-based research, regular inspection of high noise sources, education, better land use and law enforcement, effective inter-sectoral links and participatory noise mitigation approach are crucial to manage the problem(Birhanu, 2011).

Another empirical study was done by Zenath Kucha(2014), in eight comprehensive government schools of Addis Ababa city and from the study findings of noise level meter shown that noise pollution does exist in all of the schools. The selected schools are highly noise polluted institutions although all schools exceed the tolerance level of noise pollution which clearly indicates that the

environment is not suitable for teaching-learning process. The study showed conclusively that road traffic is the predominant source of this problem because all these institutions are located in the busy place of the town and surrounded by busy roads like Churchill road, ring road and so on.

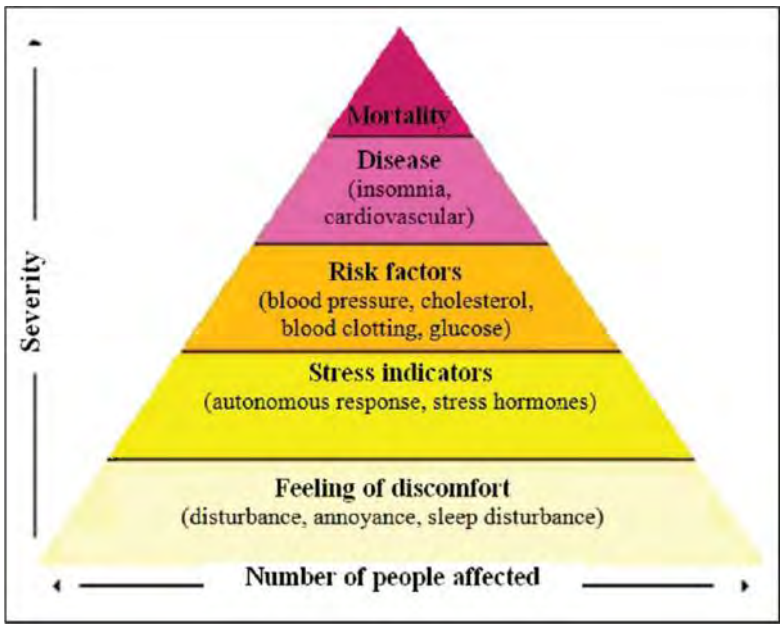
And also the findings of the study shown that the adverse effect of noise pollution on educational Institutions and the findings is summarized as there is a lot of disturbance in teaching-learning process as 82% agrees with it. Following this, from the study it is also observed that the people strongly supported the action from authorized body, Govt., or committee to reduce noise pollution. Generally, it was observed that the levels of Noise Pollution during teaching learning, in all selected schools are much higher when compared with the standard limits. In a nut shell, at all the locations the sound level is observed to be much greater than the permissible limit throughout the day perceived noise exposure in the school environment.

2.2 Conceptual framework of the noise pollution

Environmental noise remains a complex and fragmented interplay between industrialization, population growth, technological developments, and the living environment. Next to the circulatory diseases and cancer, noise pollution has been cited as the third epidemic cause of psychological and physiological disorders internationally (WHO, 1999).

Noise is perceived as an environmental stressor and nuisance, from road traffics, railways, airports, industrial sites and domestic activities (Bhanap, 2013). Noise pollution has been synonymous with the urban settlements, industrialization, rapid housing expansions, population growth and technological developments. Environmental noise interferes with the social behavior and manifest in the form of psychological and physiological disorders through a variety of mechanisms. Exposure to a continuous noise of 85-90 dBA could lead to progressive hearing loss and changes of the threshold sensitivities (Kelly, Boyd, Henehan and Chambers,2012). These annoyance reactions are associated with the degree of magnitude, variety, and severity on the daily activities (Passchier-Vermeer, 2000)

Figure2.1: WHO pyramid of health effects of noise



Source: Yuen (2014), a vision of the environmental and occupational noise pollution

These potential implications of noise exposure are numerous, pervasive, persistent, cumulative and augmented synergistically and antagonistically, with corresponding real (economic) and intangible (well-being) losses. An explicit link between environmental noise with the activation of sympathetic and endocrine systems has been witnessed, resulting in the changes of blood pressure, hypertension, peripheral vasoconstriction and cardiovascular disease (Rahma, Mustafa and Razali,2013). Scientific evidence has proposed that chronic aircraft noise exposure may impair reading comprehension and long-term memory among children whereas high noise level of industrial settings is subjected to nausea, headaches, argumentativeness and modulation of mood and anxiety (Fyhri and Aasvang, 2014). Epidemiological studies have shown that irregular traffic noise of 45 dBA has been interlinked to the interference of daily activities, sleeping, rest, study, communicating, and adverse health implications such as frustration, lower tolerance, and changes of blood compositions (Babisch, 2014)

The present time environmental pollution issues are the most prevalent and general concern in almost all over the world both in the agenda of developed and developing countries. In this regard, there are seven different types of environmental pollutions; namely, air, water, land, light, noise, thermal and radioactive pollutions (Gour, 2013).

Before, we deeply go-over about the noise pollution; we have firstly to get a bird's eye view of all the pollution types, definitions, sources and impacts that they create both in the human and environments.

2.3. Categories of Pollution

2.3.1. Air pollution: may be defined as the presence of one or more contaminants like dust, mist, smoke and smog in the atmosphere that are injurious human beings, plants and animals. The contaminations of air by smoke and harmful gases, mainly oxides of carbon, sulfur and nitrogen such as exhaust fumes from vehicles, the burning of fossil fuels such as coal oil or gas, harmful off gassing from things as plants, plastic production, radiation spills or nuclear accidents. The causes of air pollution might be: Rapid industrialization, Fast urbanization, Rapid growth in population, Growth of vehicles on the roads and Activities of human beings has disturbed the natural balance of the atmosphere. Sources of air pollution are of two types: 1. Natural sources of pollution are those that are caused due to natural phenomena. Ex: Volcanic eruptions, Forest fires, Biological decay, Pollen grains, Marshes, Radioactive materials. 2. Artificial sources are those which are created by man. Ex: Thermal power plants, Vehicular emissions, Fossil fuel burning, agricultural activities etc. Air pollution has a linkage with human health problems such as Asthma, Allergies and other respiratory diseases (Gour, 2013).

2.3.2. Land/Soil pollution: is the degradation of the earth surfaces due to the misuse of resources and improper disposal of waste materials such as litter thrown on the road sides, illegal dumping of chemical waste in natural habitats, oil spills that happen in the land, the use of pesticides and other farming chemicals, damages and debris caused from unsustainable mining and logging practices. It is also defined as, contamination of soil by human and natural activities which may cause harmful effect on living organisms. This type pollution is responsible for damages of natural habitats of animals, deforestation and the general damages of natural resources and also these pollutants affect and alter the chemical and biological properties of soil. As a result, hazardous chemicals can enter into human food chain from the soil or water, disturb the biochemical process and finally lead to serious effects on living organisms (Gour, 2013).

2.3.3. Light pollution: is the brightening of the night sky in habiting the visibility of stars and planets by the use of improper lighting of communities. The cause of light pollution might be street lamp that shines light in all direction, instead of light downward toward the streets, extra unnecessary lights around the home and cities that run all night long. The impact of this pollution is that using more energy may lead human health problem such as lack of sleeping and corrupts the kids' health (Gour, 2013).

In addition to that the research suggests that artificial light at night can negatively affect human health, increasing risks for obesity, depression, sleep disorders, diabetes, breast cancer and more (Crawford 1988).

2.3.4. Thermal pollution: is an increase of temperature caused by human activity such as warm lake water from nearby manufacturing industries, rise in the eco- system due to release of excessive heat energy into environment by artificial methods. The main sources of this type of pollution might be some thermal power plants use coal as fuel, Industries generating electricity require large amount of Cooling water for heat removal, Nuclear power plants emit a large amount of unutilized heat and traces of toxic radio nuclear into nearby water streams, Generation of hydro-electric power also results in negative thermal loading of water bodies and Domestic sewage is often discharged into rivers, lakes, canals or streams without waste treatment. This creates an increment in the optimum water temperature by industrial process (steel factories, electric power houses and atomic power plants) may be called as "Thermal Pollution." Many industries generate their own power and use water to cool their generator.

This hot water is released into the system from where it was drawn, causing a warming trend of surface water. If the system is poorly flushed, a permanent increase in the temperature may result. However, if the water is released into the well flushed system, permanent increase in temperature does not occur. As far as its effect is concerned, it causes aquatic life to suffer or die due to the increased temperature plus discomfort to community and also affects the plant life in and around the area and also many organisms are killed instantly by the hot water resulting into a high mortality. It may bring other disturbance in the eco-system. The egg of fish may hatch early or fail to hatch at all. It may change the diurnal and seasonal behavior and metabolic responses of organisms. It may lead to unplanned migration of aquatic animals. Macro-physic population may also be changed. As temperature is an important limiting factor, serious changes may be brought about even by a slight increase in temperature in a population. For minimizing thermal pollution, hot water should be cooled before release from factories and removal of forest canopies and irrigation return flows should be prohibited (Gour, 2013)

2.3.5. Radioactive pollution: The presence of radioactive materials in our surroundings is quite normal as we come across several gadgets, items used on a daily basis do radiate but when these substances radiate more than the safe limit of radiation or whenever there is incidents which spark excess amount of hazardous level of radioactivity leading to massive damage to our immediate surroundings including live and matter we categorize them as radioactive pollution. Sitting in front of television sets for long hours also expose us to radiation but these are not considered as hazardous. It's only when accidents like under water weapon testing in Pacific Ocean islands lead to massive damages to marine lives and their surrounding at all we categorize them as radioactive pollution. The radioactive substances radiate off particles which penetrate soft skin and tissues and cause irreparable damages to living biota and hence whenever such incidents or accidents like the sinking of nuclear submarine occur we put them as hazardous radiation pollution. The major causes of this type of pollution might be: dumping of solid and liquid radioactive wastes, pollution due to underwater nuclear weapon testing and explosions, radioactive pollution caused due to water streams and other water run offs from nuclear testing sites, the atmospheric radioactive fallout mainly due to cosmic particle shower or due to entry of extra-terrestrial materials from deep space, and radioactive pollution that are caused due to the accidents in deep sea weapon testing, nuclear tipped weapon loss, radioactive emission from thermos-electrical generators, falling satellites with radioactive materials on board, and finally aircrafts and ships carrying nuclear materials. Amongst all kinds of effects the most potentials are basically which effect the human population: multi-factorial diseases such as: birth defects and adult onset diseases which are both chronic as well as acute in nature. Reproductive effects: Effects like disfigured birth, physical impairment at birth and other such things lead to reproductive defects. Somatic effects: Individuals who get exposed to radiation pollution could face cells and tissue damages leading to hair loss, mouth ulceration, hemorrhage, skin discoloration and lower blood count or platelets. Some of them might face problems of cardiovascular disorders, leukemia, sterility and premature aging. Genetic effects cause damage to DNA strands, adverse effects to genetic break up which are either immediate or delayed over a period of time (chemistry.tutorvista.com, radioactive pollution).

2.3.6. Water pollution: is the contamination of anybody of water (lakes, ground water, oceans…etc). Some examples of this type of environmental pollutions are raw sewage running into lakes or streams, industrial waste spills contaminating ground water, radiation spills or nuclear acids, illegal dumping of chemical substances or items within the body of the water, biological contaminations such as bacteria growth and farm runoff into nearby body of water. This type of environmental pollution linked with health issues in humans', animals and plant lives such as: large populations of bacteria decomposing these wastes can

degrade water quality by depleting water of dissolved oxygen. This causes fish and other forms of oxygen-consuming aquatic life to die, can threaten human health by causing nervous system damage and some cancers, can cause excessive growth of algae and other aquatic plants, which die, decay, deplete dissolved oxygen in water thereby killing fish, causes cloudy water thereby reducing photosynthetic activity and disruption of aquatic food chain (Gour, 2013).

2.3.7. Noise Pollution. Noise is all around us. It is unavoidable part of our daily lives and has increasingly become a major burden on our quality of lives. There are clear distinction between sound and noise. Sound is essential to our daily lives, but noise is not. Noise can be defined as unwanted sound. It is a source of irritation and stress for many people and can even damage our hearing if it is loud enough. Sound becomes unwanted when it either interferes with normal activities such as sleeping, conversation, or disrupts or diminishes one's quality of life. The fact that you can't see, taste or smell it may help explain why it has not received as much attention as other types of pollution, such as air pollution, or water pollution. The air around us is constantly filled with sounds, yet most of us would probably not say we are surrounded by noise. Though for some, the persistent and escalating sources of sound can often be considered an annoyance. This "annoyance" can have major consequences; primarily to one's overall health.(Assefa,2014) Noise pollution is defined as the form of air pollution that is audible unwanted sound that poses a threat to a person's health and wellbeing (Goines and Hagler ,2007).

On the other hand, the sources of noise Pollution is concerned, it is any loud sound that is either harmful or annoying to human and animals such as Airplanes, Helicopters, Motor vehicles, Construction demolition noises, Manufacturing processes and Market areas and Loudspeakers … etc. are some of the most prevalent sources of which are unwanted sound that routinely transmitted the air (Birgitta, Berglund and Lindvall, 1995). All these problems are emanating from the consequence of rapid growth of population, self-centered human mentality, fast change in human life styles, huge number of garbage vehicles in the city, use of large number of instruments in the daily life , excessive exploitation of natural resources, rapid development of urbanization and industrialization (Kucha, 2014). As far as the effects of this type of environmental pollution is concerned, it is disruptive to human's stress level, it is also harmful to unborn babies and drives animals away by causing nervousness and decreasing their ability to hear prey or predatory.

According to WHO noise is defined as is unwanted sound that creates annoyance and interferes in conversation disturbs sleep, teaching learning process, reduces work efficiency, causing stress and challenge public health and it is shortly silent killer when the problem mounts day to day (WHO,1980).

Noise features different characteristics that make it different from every other pollutant, noise is invisible, it doesn't smell, if disappears when the source is turned off and leaves no traces in the environment (Gonzalez, 2014). Adding to this, most people tend to consider that noise is price to pay for accessing to amenities of the technologies era and it is indivisible and inevitably liked to this situation.

2.4. Definitions of noise pollution

Noise has many definitions made by different scholars depending on where the sound exists and its effect to the recipient. The definition of noise by Christopher is sound which is undesired by the recipient (Penn, 1979). According to environmental studies: it is defined as, "the unwanted, unpleasant or disagreeable sound that causes discomfort to all living beings". Sound intensity is measured in decibels (dB) that is the tenth part of the longest unit Bel. One dB is the faintest sound that a human ear can hear (Gour, 2013). The decibel scale is logarithmic and climbs steeply. An increase of about three decibels is a doubling of sound volume. In the wilderness, a typical sound level would be 35 decibels. Speech runs 65 to 70 decibels; heavy traffic generates 90 decibels. By 140 decibels, sound becomes painful to the human ear, but ill effects, including hearing loss, set in at much lower levels (Encyclopedia, 2009). Noise pollution is defined as the form of air pollution that is audible unwanted sound that poses a threat to a person's health and wellbeing (Goines and Hagler, 2007). According to Khopkar (1993), Sound is the form of energy which requires a material medium for propagation. Sound can be propagated through solids and liquids, but not through vacuum.

On the other hand,, according to WHO Community noise (also called environmental noise, residential noise or domestic noise) is defined as noise emitted from all sources(WHO, 2001). The definition of noise is not limited to few individual, but many other scholars have defined and analyzed it widely. In this regard, noise is defined as unwanted sound, consequently it can be consider as the wrong sound in the wrong place at the wrong time (Kiely, 1997). There have been a lot of definition that have been given to noise depends on the knowledge and understanding of individuals. Noise is a subjective matter even with a sound measurement it does not necessary given a guide to what noise is. Noise in this study can be defined as sound that is unwanted to human, it is human as a recipient of sound has the right to judge either the sound can be called noise or not. Every human receives noise in different ways. It depends on some factors such as age, sex and mood of a person. This means that noise rate can only be measured by giving range of guide lines for the determination of 'noise sound' or 'non-noise sound (WHO, 1999).

2.5. Sources of noise pollution

The urban areas are generally noisier than rural areas, and because larger numbers of people live in urban areas, where they are presumably affected by the noise, the benefits may be expected to be proportionally larger. Urban noise levels are a complex mixture of noise from transportation, factories, industries, machines, and people. Basically, there are many sources of divisions of noise pollution, but we have categorized it into three major sources, namely:

2.5.1. Transportation noise

Transportation noise is the main source of environmental noise pollution, including road traffic, rail traffic and air traffic. As a general rule, larger and heavier vehicles emit more noise than smaller and lighter vehicles. Exceptions would include: helicopters and wheeled road vehicles.

The noise of road vehicles is mainly generated from the engine and from frictional contact between the vehicle and the ground and air. In general, road-contact noise exceeds engine noise at speeds higher than 60 km/h. Railway noise depends primarily on the speed of the train, but variations are present depending upon the type of engine, wagons, and rails and their foundations, as well as the roughness of wheels and rails. Small radius curves in the track, such as may occur for urban trains, can lead to very high levels of high-frequency sound referred to as wheel squeal. Noise can be generated in stations because of running engines, whistles and loudspeakers, and in marshaling yards because of shunting operations. At speeds greater than 250 km/h, the proportion of high-frequency sound energy increases and the sound can be perceived as similar to that of overflying jet aircraft. Aircraft operations generate substantial noise in the vicinity of both commercial and military airports. Aircraft takeoffs are known to produce intense noise, including vibration and rattle. The landings produce substantial noise in long low-altitude flight corridors. The noise is produced by the landing gear and automatic power regulation, and also when reverse thrust is applied, all for safety reasons. In general, larger and heavier aircraft produce more noise than lighter aircraft. The main mechanism of noise generation in the early turbojet-powered aircraft was the turbulence created by the jet exhaust mixing with the surrounding air. Noise from military airfields may present particular problems compared to civil airports (Gierke and Harris, 1987, WHO, 2001).

2.5.2. Construction and building services noise

Building construction and excavation work can cause considerable noise emissions. A variety of sounds come from cranes, cement mixers, welding, hammering, boring and other work processes. Construction equipment is often poorly silenced and maintained, and building operations are sometimes carried out without considering the environmental noise consequences. Street services such as garbage disposal and street cleaning can also cause considerable disturbance if carried out at sensitive times of day. Ventilation and air conditioning plants and ducts, heat pumps, plumbing systems, and lifts (elevators), for example, can compromise the internal acoustical environment and upset nearby residents (WHO, 2001).

2.5.3. Domestic noise and noise from leisure activities

In residential areas, noise may stem from mechanical devices (e.g. heat pumps, ventilation systems and traffic), as well as voices, music and other kinds of sounds generated by neighbors (e.g. lawn movers, vacuum cleaners and other household equipment, music reproduction and noisy parties). Aberrant social behavior is a well-recognized noise problem in multifamily dwellings, as well as at sites for entertainment (e.g. sports and music events). Due to predominantly low-frequency components, noise from ventilation systems in residential buildings may also cause considerable concern even at low and moderate sound pressure levels. According to WHO Typical neighborhood noise comes from premises and installations related to the catering trade (restaurant, cafeterias, discotheques, etc.); from live or recorded music; from sporting events including motor sports; from playgrounds and car parks; and from domestic animals such as barking dogs.

On the other hand, the use of powered machines in leisure activities is increasing. For example, motor racing, off-road vehicles, motorboats, water skiing, snowmobiles etc., and these contribute significantly to loud noises in previously quiet areas. Shooting activities not only have considerable potential for disturbing nearby residents, but can also damage the hearing of those taking part. Even tennis playing, church bell ringing and other religious activities can lead to noise complaints. Some types of indoor concerts and discotheques can produce extremely high sound pressure levels. Associated noise problems outdoors result from customers arriving and leaving. Outdoor concerts, fireworks and various types of festivals can also produce intense noise. The general problem of access to festivals and leisure activity sites often adds to road traffic noise problems. Severe hearing impairment may also arise from intense sound produced as music in headphone (WHO, 2001).

Table2.1: The sources for domestic noise

S. No	Source of Noise	Sound Pressure level(SPL) in dB
1	Threshold of audibility	0
2	Garden	20
3	Rustling leaves on tree	20
4	Bed room	25
5	Soft whisper (5' away)	30
6	Library	30
7	Living room	40
8	Conversation speech	60
9	Vacuum cleaner	70
10	Business office	60-70
11	Ringing alarm clock	80
12	Average street traffic	80-85
13	Heavy truck traffic	90
14	Pneumatic chipper	100
15	Pop music	110
16	Jet take off(100 m distance)	130
17	Jet engine (25 m distance)	140
18	Threshold pain	140

Source: Cunniff, (1977) and Anthrop, (1973), Environmental pollution Analysis

2.6. The difference between sound, noise and noise measurement parameters

2.6.1. The difference between Sound and noise

There is clear distinction between sound and noise. The sound which is pleasing to our ears, which is melodious to hear and which gives comfort like musical note is defined as sound, while one which is penetrating and uncomfortable, which creates psychological stress is called as noise (Khopkar, 1993). Sound is essential to our daily lives, but noise is not.

Noise can be defined as unwanted sound. It is a source of irritation and stress for many people and can even damage our hearing if it is loud enough. Sound becomes unwanted when it either interferes with normal activities such as sleeping, conversation, or disrupts or diminishes one's quality of life. The fact that you can't see, taste or smell it may help explain why it has not received as much attention as other types of pollution, such as air pollution, or water pollution. The air around us is constantly filled with sounds, yet most of us would probably not say we are surrounded by noise. Though for some, the persistent and escalating sources of sound can often be considered an annoyance. This "annoyance" can have major consequences; primarily to one's overall health (Assefa, 2014).

It is often said that noise differs from other forms of pollution in that, unlike atmospheric pollutants for example, once abated; noise leaves no residual accumulation in the

environment or the human body. Noise does leave behind its effects, however, and these can deteriorate after continued exposure to harmful sounds. So it is not true, strictly speaking, that “noise … leaves no visible evidence” (Lai, 1996). The hazardous effects of noise depend on its intensity (loudness in decibels), duration, and frequency (high or low). High and low pitch is more damaging than middle frequencies, and wide noise covering the entire frequency spectrum is less harmful than noise of a specific pitch. Noise may be ambient (constantly present in the background). Noise features different characteristics that make it different from every other pollutant, noise is invisible, it doesn’t smell, it disappears when the source is turned off and leaves no traces in the environment (Gonzalez, 2014). Adding to this, most people tend to consider that noise is price to pay for accessing to amenities of the technologies era and it is indivisible and inevitably liked to this situation.

According to WHO guideline for community noise pollution, sound is a sensory perception evoked by physiological processes in the auditory brain. The complex pattern of sound waves is perceptually classified as “Gestalts” and is labeled as noise, music, speech, etc. Consequently, it is not possible to define noise exclusively on the basis of the physical parameters of sound. Instead, it is common practice to define noise simply as unwanted sound. However, in some situations noise may adversely affect health in the form of acoustical energy (WHO, 2001).

On top of that, sound is a form of energy that is transmitted by pressure variations which the human ear can detect. When one plays a musical instrument, say a guitar, the vibrating chords set air particles into vibration and generate pressure waves in the air. People nearby May then hear the sound of the guitar when the pressure waves are perceived by the ear. Sound can also travel through other media, such as water or steel. Apart from musical instruments, sound can be produced by many other sources - man's vocal cord, a running engine, a vibrating loudspeaker diaphragm, an operating machine tool, and so on. Usually the sound of a violin is referred to as music is something pleasing. Depending on other factors, the sound may be perceived as noise.

Noise perception is subjective. Factors such as the magnitude, characteristics, duration, and time of occurrence may affect one's subjective impression of the noise (Environmental protection department, 2013).

2.6.2 Noise measurement parameters

Sound is the quickly varying pressure wave travelling through a medium. When sound travels through air, the atmospheric pressure varies periodically. The number of pressure

variations per second is called the frequency of sound, and is measured in Hertz (Hz) which is defined as cycles per second. The higher the frequency, the more high-pitched a sound is perceived. The sounds produced by drums have much lower frequencies than those produced by a whistle. Hence, sound is defined the energy in the frequency range0.02-20kHz or 20-20,000 Hz is the unit of frequency representing cycles per second which is typical hearing of human ears. The lowest frequency which is audible is 20Hz, while, the highest audible frequency is 12,000Hz (Khopkar, 1993).

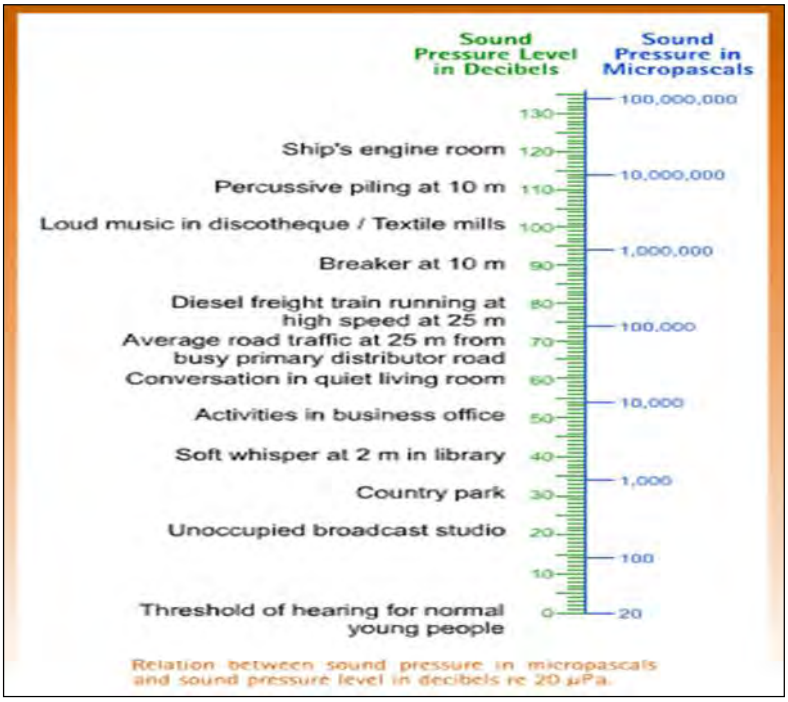
Shortly, Noise is described in terms of loudness (intensity) and pitch (frequency) and noise exposure is measured using a logarithmic decibel (dB) scale (NIDC fact sheet, 2007).

A simpler way is to use a logarithmic scale for the loudness of sound or noise, using 10 as the base. The following is a brief introduction of the common logarithm to the base 10.To avoid expressing sound or noise in terms of Pa, which could involve some unmanageable numbers, the decibel or dB scale is used. The scale uses the hearing threshold of 20 μPa or 20 x 10^{-6} Pa as the reference level. This is defined as 0 dB. The decibel (dB) is the universal unit of sound, name after Alexander Graham Bell. It is measured with a meter that registers sound pressure and displays these readings on a sound level scale. Decibels are a logarithmic unit, which means that a noise measuring 30 decibels is actually10 times louder than a noise registering at 20 decibels. A decibel can be defined as an abstract unit. It is to be remembered that the threshold at the normal hearing is 20-25 decibels and of normal conversation is 60 decibels. It has also been noticed that speech interference occurs at 75 decibels and definite annoyance begins at 80 decibels.

The motor- activities disturbed at 90 decibels and physiological disturbance occurs beyond 120 decibels. Definite pain occurs at 140 decibels and though no human being has reportedly died of noise (WHO, 2001, Cunniff, 1977).

Sound pressure level, which is often abbreviated as SPL in decibels (dB) and some sounds are expressed both linearly in μPa and logarithmically in dB

Figure2.2: Comparison of sound pressure level in dBs and in Micro-pascals



Source: Environmental Department, 2013 Hong Kong, Special Administrative Region

2.7. Impact of noise pollution on environment and on human health

2.7.1. Impact of noise pollution on environment

Sound plays a key role in the ecosystem. In this case, the acoustical environment affects wildlife in terms of its ability to find adequate habitat, avoid predators, protect young, locate food and attract a mate. As noise pollution from human beings in the form of motor vehicle and airplane traffic among other causes increases, wildlife is forced to adapt in ways that are not sustainable. For example researchers discovered that the males of a particular frog species began calling at a higher pitch in an effort to distinguish their calls from traffic noise. However, the females of that species prefer a lower pitch, which means there is less successful mating within the species in general. An increasing number of studies indicate that wildlife is stressed by noise pollution causing a variety of impacts on the environment by disturbing mammal, bird and fish feeding and breeding patterns. According to the National Park Service, these effects are compounded by other stressors including disease and extreme weather (Forni and Meckay, 2010).

In addition, noise can harm animals and the environment, as well as physical property. Livestock and pets are harmed by noise, as are animals in the wild. Noise can also disturb wildlife feeding and breeding. Noise-related property damage includes structural damage from vibrations induced by sound waves and economic harm in the form of lower property

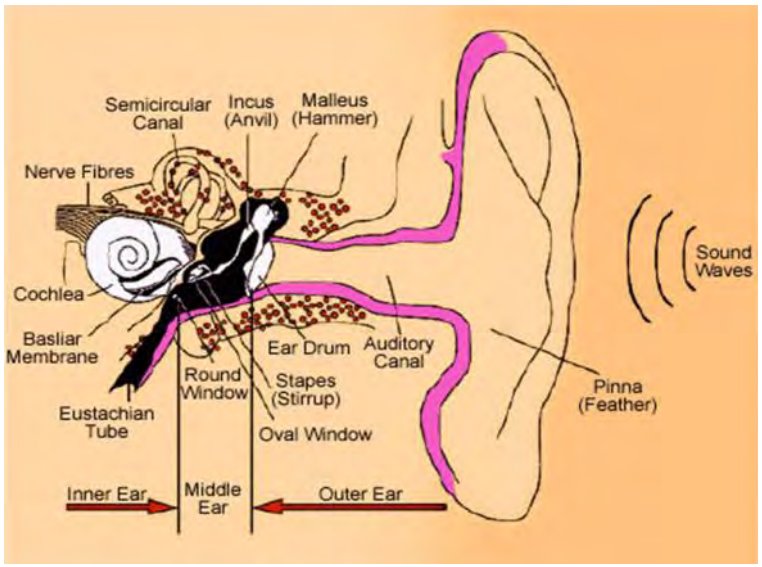
values. The true social costs of noise pollution also must include monetary losses from sickness, absenteeism, loss of productivity and earning capacity, and much more (Smelser and Balter, 2009).

2.7.2. Impacts of noise pollution on human health

As the population grows, there is increasing exposure to noise pollution, which has profound public health implications. Noise pollution creates a need for action at the local level, as well as for improved legislation and management. Urban noise pollution produces direct and cumulative adverse health effects by degrading residential, social, working, and learning environments with corresponding real (economic) and intangible (well-being) losses.

Noise as public health issues may be characterized as a “transparent” environmental hazard. Noise cannot be seen, smelled, touched, removed or purified as, for example, waste or water. The effects of noise do not pose a stress on the environment per se but accumulate in individual people as noise experience with effects on hearing and well-being. Noise is perceived at an individual level, but when a critical mass of individuals experience noise as a problem that causes hearing problems, disturbs cognitive functions and reduces well-being, noise becomes a public health concern (Hagler, 1998). Noise as a public health issue is relevant to the general public and to politicians and administrations at the local, national and international levels. For children, the situation is different as they usually have no influence in which school or institutions they are enrolled, and they are thus forced to stay in environments surrounded by noise, such as kindergartens, schools and leisure settings. This makes it imperative to study and to regulate the noise levels in children’s (DeJoy, 1983).

Figure 2.3: Human inner and outer ear



Source: Human inner and outer ear (Chesky K. et.al. 2009)

Loud and abrupt sounds can harm the eardrum, while sustained sounds at lower volume can damage the middle ear; both types of sounds can cause psychological damage (WHO, 2001).

Almost everyone has had one experience of being temporarily "deafened" by a loud noise. This "deafness" not in a permanent manner, although it is often accompanied by a ringing in the ears, and one can hear another person if he raises his voice. Likewise, normal hearing comes back within a few hours at most. This sort of partial hearing loss is called Temporary Threshold Shift (TTS) (Bugliarello, 1976). A TTS may be experienced after firing a gun or after a long drive in the car with the windows open. It may not be considered that if exposure to this type of loud noise at a rate of eight hours a day, five days a week can be a threat to develop permanent hearing loss. This type of exposure to noise does not have to be as loud as a gun being fired; it can be as simple as a person shouting across the room. This type of hearing loss is any degree from partial to complete hearing loss. This loss, usually, is permanent and is not satisfactorily corrected by any devices such as, hearing aids. The loss is caused by the destruction of the delicate hair cells and their auditory nerve connections in the Organ of Corte, which is contained in the cochlea. Every exposure to loud noise destroys some cells, but prolonged exposure damages a larger amount of cells, and ultimately collapses the Organ of Corte, which causes deafness (Berglund and Lindvall, 1995).

On the other hand, the Noise-induced hearing loss (NIHL) is a type of sensor neural hearing loss that is second only to age linked hearing loss or presbyacusis, (International

encyclopedia,2016). It occurs by exposure to recreational and occupational noise that results in the damage of the hair cells of the cochlea in the inner ear. These hair cells are important structures of the inner ear that are responsible for converting sound energy to electrical signals transmitted to the brain. The damage is irreversible once it occurs. Exposure is usually over prolonged periods of time however an intense sound such as an explosion, sometimes referred to as an acoustic trauma, heard at one instance can cause NIHL. In general, the amount of noise required to cause permanent damage from chronic exposure is anything equivalent to 10 years or more at a level of 85 dB for more than 8 hours a day. Currently, noise pollution is globally recognized as a major problem which affects the quality of life in urban areas (Krishna, et al., 2007).

Extended exposure to excessive noise levels can reduce the ability of the hair cells to transmit sound by flattening or disfiguring them or by causing them to fuse together. Sensory hearing loss is generally irreversible, but further loss can be prevented by using protective equipment.

Degree of hearing loss refers to the severity of the loss. According to WHO, there are five broad categories that are typically used. The numbers are representative of the patient's thresholds, or the softest intensity that sounds is perceived: Normal range or no impairment = 0 dB to 20 dB, Mild loss = 20 dB to 40 dB, Moderate loss = 40 dB to 60 dB, Severe loss = 60 dB to 90 dB and Profound loss =90 dB or more (WHO, 1999).

2.7.2.1. The adverse health effects of noise pollution on human beings

The World Health Organization has documented seven categories of adverse health effects of noise Pollution on humans (WHO, 2001, Hagler, 1998).

1. Hearing Impairment: Hearing damage is related to duration and intensity of noise exposure occurs at levels of 80 dB or greater, which is equivalent to the noise of heavy truck traffic. Children seem to be more vulnerable than adults (Brookhouse, 1996).

2. Interference with Spoken Communication: Noise pollution interferes with the ability to comprehend normal speech and may lead to a number of personal disabilities, handicaps, and behavioral changes. These include problems with concentration, fatigue, uncertainty, lack of self confidence, irritation, misunderstandings, decreased working capacity, disturbed interpersonal relationships, and stress reactions (Stansfeld and Matheson, 2003).

3. Sleep Disturbances: Uninterrupted sleep is known to be a prerequisite for good physiological and mental functioning in healthy persons. Noise pollution is a major cause of sleep disturbances. Apart from various effects on sleep itself, noise pollution during sleep causes increased blood pressure, increased heart rate, increased pulse amplitude, vasoconstriction, cardiac arrhythmias, and increased body movement. These effects do not decrease over time. Secondary effects include fatigue, depressed mood and well-being, and decreased performance. Combinations of noise and vibration have a significant detrimental effect on health, even at low sound pressure levels (Suter, 1991).

4. Cardiovascular Disturbances: A growing body of evidence suggests that noise pollution may be a risk factor for cardiovascular disease. Acute exposure to noise activates nervous and hormonal responses, leading to increased blood pressure and heart rate and to vasoconstriction. If the exposure is of sufficient intensity, there is an increase in heart rate and peripheral resistance; an increase in blood pressure, and increased levels of stress hormones (Eegecova and Kellerova, 2005).

5. Disturbances 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 mental disorders. Noise pollution may cause or contribute to the following adverse effects: anxiety, stress, nervousness, nausea, headache, emotional instability, argumentativeness, and sexual impotence, changes in mood, increase in social conflicts, neurosis, hysteria, and psychosis. Children, the elderly, and those with underlying depression are particularly susceptible to these effects.

6. Impaired Task Performance: The effects of noise pollution on task performance have been well-studied. Noise pollution impairs task performance, increases errors, and decreases motivation. Reading attention, problem solving, and memory are most strongly affected by noise. Noise produces negative after-effects on performance, particularly in children; it appears that the longer the exposure, the greater the damage.

7. Negative Social Behavior and Annoyance Reactions: Annoyance is defined as a feeling of displeasure associated with any agent or condition believed by an individual to adversely affect him or her. Annoyance increases significantly when noise is accompanied by vibration or by low frequency components. The term annoyance does not begin to cover the wide range of negative reactions associated with noise pollution; these include anger, disappointment, dissatisfaction, withdrawal, helplessness, depression, anxiety, distraction, agitation, or exhaustion. Social and behavioral effects are complex, subtle, and indirect (Leventhal, 2004). These effects include changes in everyday behavior (closing windows and doors to eliminate

outside noises), changes in social behavior (aggressiveness or disengagement), and changes in social indicators (residential mobility, hospital admissions, drug consumption, and accident rates), and changes in mood (increased reports of depression). Noise above 80 dB is consistently associated with decreased helping behavior and increased aggressiveness.

Although everyone may be adversely affected by noise pollution, groups that are particularly vulnerable include infants, children, those with mental or physical illnesses, and the elderly. Because children are particularly vulnerable to noise induced abnormalities, they need special protection (Ray and Levinson, 1992).

The term "Noise Sensitive Receiver", often abbreviated as NSR, refers to premises that is used for purposes sensitive to noise and requires protection. Examples of noise sensitive receivers are domestic premises, hotels and hostels, educational institutions and hospitals and clinics. Non-NSRs include multi-storey car parks and markets go downs, community uses such as sports complexes and commercial centers or premises (Environmental Protection Department, 2013).

2.8. Examples of Developed Nation's actions against use of loudspeaker

Loudspeakers were invented in the early 1900s, but widely introduced in mosques in1930s for the call to prayer and some mosques have loudspeakers that are powerful enough to be heard as far as 5kms away (Adhan and Iqamat, 2010). Adding to this, Indonesia, the world's most populous nation, has recognized that the overzealous use of sound amplifier by its mosque is an act of environmental pollution issue and the consequence appears to be taken official measures to curb the problem (The Guardian News, 2015). As far as legal implementation issues are concerned, some of popular cities in the world such as Mumbai in India, Lagos in Nigeria, Michigan in USA, Riyadh, in Saudi Arabia, Cairo in Egypt have banned or restricted the use of loudspeaker to maintain and protect the interests of citizens from noise pollutions (BBC, 2016, Richard,2010). Beyond to that some counties as Netherland, Germany, Switzerland, France, the UK, Austria, Norway and Belgium have made limitation on call to prayers by muezzins. When we observe specific actions of some counties, Nigeria, shuts down noisy mosques and churches in Lagos, Indian prohibited mosques the installment of loudspeaker, without priori permission of the required authority and Cairo in Egypt, to use computerized call to prayer after complaints by the citizens over tuneless muezzins.

Also we can take one practical example of An Indian High court decision case which was reversed by Supreme court in stating that no community has a right to use microphones or loudspeakers to amplify their religious preaching and prayer, by disturbing the peace of

others nor does it preach that they should be done through voice amplifier or beating drum. The judges added that, in our civilized society, in the name of religion, activities which disturb old or infirm persons, students or children having their sleep in the early hours or during day-time or other persons carrying on their activities cannot be permitted. It should not be forgotten that babies in the neighborhood are also entitled to enjoy their natural right of sleeping in a peaceful atmosphere, the court said. Giving more instances of the disturbances caused by such use of loud speakers, the apex court said a student preparing for his examination was entitled to concentrate on his studies without being unnecessarily disturbed by noise pollution. Similarly, the old and infirm are entitled to enjoy reasonable quietness during their leisure hours without there being any nuisance of noise pollution, the court said. Aged, sick, people afflicted with psychic disturbances as well as children up to six years of age are considered to be very sensitive to noise and their rights are also required to be honored (http://www.rediff.com/news/2000/aug/30loud.htm).

On top of that the Israel ministerial cabinet has approved a proposal to prohibit loudspeaker during rest hour by religious institutions (The Jerusalem post, 2016).

Up to this point, we have discussed a lot about Muslim counties loudspeaker usage and its restriction action or ban, and then we have stick to Eastern Russian orthodox Church, which have installed microphones and loudspeakers from electro-voice in order to provide a fundamental improvement in the quality of the sound with the church itself and a means of relaying service to the open area in front of the building, that is to say the system had to be easy to operate and the loudspeaker invisible to worshippers by suppressing the noise pollution (Russian Orthodox Church,2010)

Concerning about Addis Ababa, it is contrary to other civilized nations which keep the interests of their citizens either by controlling the noise pollution level or shut down the source of noise pollution. In this regard, most critics have been perceived that more notable issue to be seeming competition among various faith institutions to make the loudest noise in the area.

Churches and Mosques located in the midst of residential areas seem to have no compulsion with broadcasting their early morning service via loudspeakers. The call for prayer from neighborhood mosque, the liturgical services of Orthodox Church and the use of amplifier musical services of worship of Evangelical churches all seem to neglect the rights of other people in the neighborhood. In addition to this because of lack of proper city planning and due to the absence of strictly enforced zoning rules and regulations, various loud business like music shop and night clubs are allowed to set the shops in the midst of residential areas.

Government authorities should step in that the noise levels are not exceeding the legal limits for the residential area, as is clearly established in the rules and regulations (TekleBerhan, 2012).

2.9. Noise Management

The goal of noise management is to maintain low noise exposures, such that human health and well-being are protected. The specific objectives of noise management are to develop criteria for the maximum safe noise exposure levels, and to promote noise assessment and control as part of environmental health programs. According to the United Nations Conference for Environmental Development (UNCED 1992), Agenda 21 environmental management principles on which

government policies, including noise management policies, can be based on the following three basic principles: The precautionary principle. In all cases, noise should be reduced to the lowest level achievable in a particular situation. Where there is a reasonable possibility that public health will be damaged, action should be taken to protect public health without awaiting full scientific proof: The polluter pays principle. The full costs associated with noise pollution (including monitoring, management, lowering levels and supervision) should be met by those responsible for the source of noise. The prevention principle: Action should be taken where possible to reduce noise at the source. Land-use planning should be guided by an environmental health impact assessment that considers noise as well as other pollutants. The government policy framework is the basis of noise management. Without an adequate policy framework and adequate legislation it is difficult to maintain an active or successful noise management program (UNCED 1992). Noise control should include measures to limit the noise at the source, to control the sound transmission path, to protect the receiver's site, to plan land use, and to raise public awareness. With careful planning, exposure to noise can be avoided or reduced. Control options should take into account the technical, financial, social, health and environmental factors of concern.

Table 2.2: Legal, engineering and education measures

Legal measures	Examples
Control of noise transmission	Regulations on sound-obstructive measures
Noise mapping and zoning around roads, airports, industries away from residential areas	Initiation of monitoring and modeling programs
Noise speed limits	Residential areas; hospitals, Schools
Enforcement of regulations	Low Noise Implementation Plan
Minimum requirements for acoustical properties of buildings	Construction codes for sound insulation of building parts
Engineering Measures	
Emission reduction by source modification	Low-noise road surfaces; changes in engine properties
New engine technology	Road vehicles; aircraft; construction machines
Transmission reduction	Enclosures around machinery; noise screens
Traffic management	Speed limits; guidance of traffic flow by electronic means
Passive protection	Ear plugs; ear muffs; insulation of dwellings; façade design
Implementation of land-use planning	Minimum distance between industrial, busy roads and residential areas; location of tranquility areas; by-pass roads for heavy traffic; separating out incompatible functions
Education and information	
Raising public awareness	Informing the public on the health impacts of noise, enforcement action taken, noise levels, complaints
Monitoring and modeling of sound escapes	Publication of results to public
Sufficient number of noise experts	University or high school curricula
Initiation of research and development	Funding of information generation according to scientific research needs
Initiation of behavior changes	Speed reduction when driving; use of horns; use of loudspeakers for advertisements, use of live music in residential area

Source: WHO, 2001, guidelines for community noise pollution

2.9.1 Methods of noise mitigation

A noise problem starts with a noise source such as loudspeaker or live music. The noise is transmitted through a path and then arrives at the receiver. The noise will be perceived as a problem when the noise is as high as to be a nuisance to the receiver.

To reduce environmental noise, there are three methods:

Control at noise sources: It is often a primary consideration to reduce noise at its source, by creating some quieter working methods or technology. For example noise from motor vehicles including motorcycles is under control and should meet internationally recognized noise emission standards.

A noise enclosure for reducing loudspeaker and live music level in residential area by creating legally binding situation just the noise has not to go over limited standard

Noise reduction at the transmission path: An obvious way of reducing noise is to separate the sources of noise from noise sensitive uses. This is however often not practical in a compact and high-rise city to rely only on distance attenuation to cut down the noise such as in the case of tackling road traffic noise. Proper land use planning to avoid busy highways cutting across residential developments or coming too close to sensitive uses; locating noise tolerant uses to screen noise sensitive developments and a combination of the different noise attenuation means can often pre-empt noise problems at the design stage. Options to avoid or minimize noise, say, through adopting alternative transport such as railway, pedestrian link, cycling path, underground roads can also be considered at the early planning stage.

Protection at the receiver end: By arranging noise sensitive uses such as bedrooms facing away from the noise sources, the impact of noise on the receiver can be reduced. While acoustic insulation by good glazing can cut down noise, its application for residential buildings practically deprives the receiver of an "open-window" life style and requires the provision of air-conditioning due to the warm and humid climate. As such, it is often used as last resort only.

2.10. Legal frameworks of environmental issues in Ethiopia

The Government of the Federal Democratic Republic of Ethiopia (FDRE) has established a comprehensive environmental policy in 1997. The overall policy goal was aimed to improve and enhance the health and quality of life of all Ethiopians. The policy sets the following objectives and principles among others. Environmental issues are recognized under the FDRE Constitution (1995) in Articles 44 and 92proclaims that all citizens shall have to live in clean and healthy environment. Government and citizens shall have a duty to protect the environment.

Ethiopia has also endorsed a legislation to control noise pollution. The Ethiopian Environmental Pollution Control Proclamation No.300/2002, effected on December 3, 2002, consists of 22 articles divided into six parts has identified noise as a serious waste that should be managed through legal aspects.

According to Article 5 of the proclamation, noise is listed as one of harmful wastes that are prohibited. The article provides for collection, transportation, treatment (including recycling) of municipal waste. The Environmental Protection Authority shall formulate "practicable"

environmental standards based on scientific and environmental principles. These standards deal with discharge or effluent waste water and sewerage, air quality, subsoil, noise and waste management. According to Addis Ababa City Government Environmental Protection Authority Pollution Control RegulationsNo.25/2007, noise pollution is prohibited unequivocally under these regulations. Article fourteen of the afore mentioned regulations; special permit is required to release pollutants to the environment that exceed the set standards and also article 8, prohibits environmental pollution against community, stating that unless otherwise permitted by these regulations, it is prohibited to release noise exceeding the limited standards.

In addition to that according to the Criminal Code of the Federal Democratic Republic of Ethiopia of 2005 provision article 815, sub article 1&2, States that whoever disturbs the work, rest or tranquility of others, in particular by brawls and wranglers, shouts, songs, vociferations or uproars, signals, calls or the ringing of bells, or by the abuse of noisy instruments, apparatus, machines or other noisy producing articles will be punished in money terms. In article 2, it further regulates that if the noise or disturbance is caused at night as defined in the police regulations or by custom, or is willfully caused in the vicinity of hospitals, schools or similar institutions, if it is caused in deliberately mischievous manner, the court may impose fine arrest not exceeding one month.

Besides, at Federal level, there are laws and regulations of Environmental Pollution Control and Environmental Impact Assessment Proclamation, which address noise pollution. In Addis Ababa, there are stipulated working conditions that the authorities of the city administration can license or prohibit the use of loudspeakers at the open air gatherings for entertainment and set a limit to the level of noise that could be released. The use of large amplifiers by vehicles that drive all over the city disturbing the peace of residents, schools, businesses and health facilities, should be restricted. Furthermore, vehicles selling perishable foods in residential areas using loudspeakers should also face limits regarding the level of noise they discharge. Addis Ababa Administration is acclaimed by many for issuing a directive in 1995 hygiene and health care protection, which included noise pollution. It is serving as a model and counting shelf life, because of there is no implementation movement, has not yet been realized.

CHAPTER THREE

3. Research Methodology

The residential areas (Apartments and condominium houses) are blended with bars, restaurants, night clubs and groceries where live music sounds, night club dance and shouting, DSTV shows in the midnight disturbs the peace of the community. On top of that, old and obsolete trucks and automobiles fume on the Ring Road from Kebbena River Bridge uphill to Bole Air Port Bridge and transport taxi station passenger invitation calls in the early morning to various directions in the community residential area are the main sources of noise pollution.

3.1 Research design and Sample Size Determination

3.1.1 Research design

As it had been stated, in the research proposal this research is bench marked on the objectives and research questions, by using basic research tools as interviews, questionnaires and focus group discussion. In this regard, numerous required government organizations such as A.A Environmental Protection Authority, Bole sub-city Environmental protection office and Woreda1 Environmental Protection Bureau interviews are to be launched. On the other hand, one of the government organizations that release noise pollution is A.A Housing development Administration Agency. This agency governs and sales the condominium Houses throughout Addis Ababa and hence an interview will be launched in this agency. It is obvious that Bole Michael community residential area which is more exposed to different sources of noise pollution has been selected for the research study, the researcher has also discussed with some group of people who had been highly affected by noise pollution of different sources. To this end, the researcher has designed 120 questionnaires and distributed to the respondents.

3.1.2 Determining the Sample size

In this study, our main focus area is in Woreda 1 Administration, Bole Michael community residential area where surrounded by different sources of noise pollutants. Concerning about the number of population of woreda 1, there are about 20,000 residents in the area, according to 2007 population census of CSA, irrespective of the refugees of Ethiopian Somalia who come and live temporarily. The Woreda has subdivided into five zones or community residential area

Table3.1: Survey Area Descriptions

Ser. no	Community areas	No .of population	Noise Exposure level to	Sources of Noise	Main contributors
1	Apartment & 66village	5,200	High	Loudspeaker Amplifier Night club	Mosques Evangelical Churches Night clubs, Bars & Taxi station
2	Michael church area	4,800	High	Loudspeaker Amplifier Night club	Orthodox Church Night clubs, Bars DSTV, Taxi station
3	Ayer Amba	4,100	Calm	-	-
4	Nedaj Mehaber	3,950	Calm	-	-
5	110 Community Area	1950	Moderate	In landing Air plane	Air plane
	Total number of population	20,000			

Source: Own survey 2017

On the above access population data, the researcher used to apply simple random sampling method in order to determine the sample size. In this case, the data basement for determining sample size will be the two highly affected by noise pollution, but densely populated community areas, namely, Apartment and 66 villages and Michael church areas. The total number of population of these two community areas accounts 10,000 or 50% of the total Woreda population. Therefore, to determine sample size from this severely affected community areas population, the researcher applied a simple random sampling formula.

According to Yemane (1967) the formula to determine and calculate the sample size; at 93% confidence level and precision level of ±7%. The level of precision is the range in which the true value of the population is estimated.

The sample size was selected systematically at an interval based on the following formula:

$$\mathbf{n} = \frac{N}{1+N(e)^2}$$

Where; n = Sample size

N = the total survey area population

e = Level of Precision

Based on the above formula the two survey area zones population number is 10,000

Therefore, $\mathbf{n} = \frac{10{,}000}{1+10{,}000(0.07)^2} = 200$

As per the above formula the sample size (n) computed is 200. However, according to Kothari (1990) description when the target population is large in the study area finite population correction for proportions was applied to reduce sample size slightly. This is because a given sample size provides proportionately more information for a small population than for large population.

Hence, target population in the study area and sample size (no) can be adjusted using the following formula: $\mathbf{n} = \frac{n}{1+(\frac{no-1}{N})}$ $\mathbf{n} = \frac{200}{1+\frac{200-1}{10000}} = 120$

Where, n = sample size

N=target population size

no= adjusted sample size computed previously

For the survey area, sample size is 120 indentified as collecting reliable and valid primary sources of data through questionnaire from the respondents. Following this, the data collection activities are carried out more concentrating on the areas which are highly affected by the religious institutions loudspeakers and sound amplifiers and night clubs and bars live musical beat, dance and shout and also English premier DSTV shows in the midnight. Concerning about data collections from the respondents, a total of 120 questionnaires were distributed to the respondents randomly in Bole Michael community residential area.

3.2 Sources of data and collection methods

3.2.1 Primary sources of data collection

The primary data sources employed for survey of noise pollution in selected area based on two ways:

Personal observation, here, the study area is the researcher's residential area for last 30 years, where he had equally faced the noise problem. This circumstance had initiated the researcher for this study. Another very essential technique that applied in the survey period was interviews that were done with different government institutions as A.A. Environmental Protection Authority, Bole Sub-City Environmental Protection Office, Woreda 1 Environmental Protection Bureau, and A.A. Housing Development Agency. The other methods the researcher had employed for collecting primary data source were questionnaires that distributed to the respondents and finally focus group discussion carried out with randomly selected individuals who were faced severe problem in the study area.

3.2.2 Secondary Sources of data collection

The secondary data sources were collected from published and unpublished documents. These are environmental manuals, brochures, WHO manuals and noise guidelines for community, magazines, internet, news papers, e-books, different government offices, different bureaus etc…were the major sources of secondary data that the researcher has used

3.3 Noise Measurement Parameters

Noise can be characterized by its sound level, its frequency spectrum and its variation over time. Although the level of noise largely depends on the subjective perception of the hearer about the loudness, the term sound level refers to a physical measure which is a function of the magnitude of the pressure fluctuations. The most common measures of sound level are sound intensity and sound pressure. Sound intensity (also called sound power density) is the average rate of sound energy transmitted through a unit area perpendicular to the direction of sound propagation, typically measured in Pico-watt per square meter.

Sound pressure is usually proportional to the square root of sound power. Because of dealing with large range of numbers, a logarithmic measure called decibel (dB) is used to describe sound level. In more commonly understood source of noise, is in fact a Combination of Intensity and Frequency which can be measured in Decibels (Lawrence K, Wang, Norman C. Pereira, Yung-Tse Hung, 2005). Intensity, or loudness, is measured in decibels (dBA). The level of sound is usually expressed in terms of the Sound Pressure Level (SPL) in decibels.

It is useful to note that the reference pressure is the threshold of hearing such that 0 dB corresponds to the limit of hearing. Noise measurements are, quite simply, sound measurements, and the term "noise level" is often the word used synonymously with sound pressure level.

Frequency or pitch is measured as sound vibrations per second, or hertz (Hz). – Frequency of a sound wave is the number of times it repeats itself in each sound (i.e the rapidity, with which the pressure fluctuations occur). Human beings generally have the ability to hear sounds in the frequency range 20 to 20,000 Hz (1 Hz = 1 cycle per second). The point at which the limit of the hearing threshold i.e., O dB, the sound pressure is equal to the standard reference pressure of 2 x 10-5 N /m2. Human hearing is most sensitive to frequencies in the range 500 to 6000 Hz and less sensitive both at lower and higher frequencies.

3.4. Religious Institutions and Night Clubs Noise Pollution Measurement Tools

3.4.1 Devices applied for measurement of noise pollution.

Noise pollution issues are not limited to survey methods as personal observation, interview, questionnaire and focus group discussion; rather it requires extra noise measurement parameter which is done through different types of measurement devices. Hence, the researcher used to measure noise pollution in two basic sources that are identified for the study:

1. The religious institutions loudspeakers and overzealous use of sound amplifier and

2. The night clubs and bars live musical beat in the midnight in the residential area might be measured by instruments Sound Meter through the help of Smart Phone have measurement parameter that indicates noise level at study site which plots sound pressure level in the graphical form in decibel, dB (A) on the one side and on the other side it plots time measurement in 30 Seconds.

Figure 3.1: Sound Measurement Devices

Sound Meter Smart Phone

Multi Test -Master device

And at the same time it records the noise measurement level minimum, average and maximum in every 30 seconds.

And also equally important device very helpful for measurement of noise pollution is a Multi Test -Master device which holds multi dimensional measurements useful to measure ambient temperature, illumination, wind speed, relative humidity, and noise pressure level (dB). This device doesn't plot graph but registers sound in a similar way to human ear. Human hearing involves specific auditory curves. In this situation the greater the sound pressure, the louder the sound is perceived to be. The higher the frequency, the higher the pitch of the sound is perceived to be. The device is fitted with filters and displays the highest (MAX), lowest (MIN) and average (AVG).

3.4.2 Religious Institutions and Night Clubs Noise Pollution Measurement.

A noise level survey had been carried out to assess Bole Michael community residential area noise pollution that emanates from Religious Institutions and night clubs and bars. In the light of this, the main polluters from religious institutions, and night clubs and Bars are shown below:

Religious Institutions & Night club &Bars

Noise Level Measurement

Table3.2: Details of Measured data

S. No.	Main Pollutants in Residential	Approx, Distance	Measurement			No of Observation	Sound Pressure Levels, dB(A)		
			Date	Time					
				Day	Night	(N)	MIN	AVG	MAX
1	Religious Institutions								
	. Orthodox Church(St. Michael)	100m	May, 14,-18,2017	4-6pm	5am	5	75	83	87
	. Muslim(Jafar Mosque)	100m	May 14,-18,2017	12:pm-1:am	5:pm&5:am	5	76	83	88
	. Evangelical Churches								
	→ Bole KaleHiwot	30m	May 14, 16&23,2017	10-12: Am		3	66	79	88
	→Biftu Romyia Congregation	30m	"	10-12: Am		3	68	79	85
2	Night clubs &Bars								
	. Ethio –Link	4m	May,1-3, 2017		8-12pm	3	70	76	84
	. TEDI	4m	"		8-12pm	3	70	79	86
	. Remina	4m	"		8-12pm	3	59	71	79
	. Moon Light	4m	"		8-12pm	3	57	74	85
	. Ayu	4m	"		8-12pm	3	62	74	84

Source: own survey data

NB: WHO/EPA residential area standard level at daytime 40dBand night time 45dB

It can be seen from the above figure that the researcher had observed the two competitive religious institutions, namely Orthodox and Muslim at simultaneous days, but at different time periods from equal 100m approx. distances. This is because of both of these institutions release their loudspeaker noise pollution from their uppermost level towers. Even though, their worship period differs, the researcher tried to record as per their the schedules of worship program, The 5 days observations indicates that both of them release on an average 83dB (A) each, which is as double as the night time noise level in the community residential area set by WHO/ EPA.

On the other hand, the two evangelical churches, namely, Kale Hiwot and Biftu Oromiya Congregation are in a nearby distance and the researcher tried to observe at 30m away from their compound at same time period. This is because; their sound amplifier is not hanged on the tower, but in the in house worship hall. The two churches result shows an average of 79dB (A) each which is as higher as the WHO/ EPA standard level in the residential area. Equally important pollutants in the study area are night clubs and bars and restaurants, so the researcher observed the 5 chaotic night clubs and bars at distance of 4m away from their locations and observed 3times each from 8-12pm. Their overall average noise pollution level reached 75dB (A), which is as twice as the WHO/EPA night time residential area legal limit. Generally, in survey area there is neither the religious institutions nor night clubs and bars fulfill the criteria set for night time residential area by WHO/EPA.

Hence, except the St. Michael church, which is a one km away and not in similar zone, the remaining three pollutants (Jafar, Kale Hiwot and Biftu) are geographically situated in a very nearby distance and interconnected fence to fence, so they send off loudspeakers and impulsive sound amplifier noise having no apparent end in their prayer or worshiping time. In the consequence of that high cumulative noise pollution is released from three directions and because of that the residents in the area are terribly exposed to different types of health problems as restlessness and sleep disturbance. When they use competitively their loud speakers and sound amplifier continuously the community residential areas are immediately be changed to chaos environment where those vulnerable groups in the society as infants, old aged people, patients, school children, workers do not have a rest.

CHAPTER FOUR

4: Data Analysis and Presentation

4.1 Questionnaires Data Analysis

Out of the total 120, questionnaires distributed, 112 questionnaires or 93.33% were responded. This means only 8 questionnaires or 6.6 7% were not responded and unconsidered in this study. The questionnaires collected from the respondents were converted and analyzed based on statistical package for the social sciences (SPSS) and data analyses that are consists of frequency and cross tabulation in tables shown below:

Table 4.1: Gender of respondents

Descriptions	Frequency	Valid Percent
Male	89	79.5
Female	21	18.8
Non Specified	2	1.8
Total	112	100.0

Source: Own Survey, 2016

The above table1 shows that 79.5 % of respondents are male (n=89), female respondents 19% (n=21) and the remaining 2% (n=2) of respondents do not specified their sex.

Table 4.2: Age of respondents

Descriptions	Frequency	Valid Percent
18-30	21	18.8
31-50	39	34.8
>50	45	40.2
Non Specified	7	6.3
Total Total	112	100.0

Source: Own Survey, 2017

The above table2 states that most of the respondents are in the age category of greater than 50 years old (n=45 or 40.2%), closely followed by the age category of 31-50 (n=39or 34.8%), this followed by the age category of 18-30(n=21or 18.8%). Out of total respondents (n=7or 6.3%) do not specified their age. The result reflects that most of the respondents 75% (n=84) fall in the age 31 and above years old.

Table 4.3: Education level of respondents

Descriptions	Frequency	Percent
Reading, writing to certificate	18	16.1
Diploma & Degree	63	56.3
MA & above	30	26.8
Non Specified	1	.9
Total	112	100.0

Source: Own Survey, 2017

The above table 3 indicates that the sample mainly comprises of education level that hold Diploma to First Degree (n= 63 or 56%), followed by respondents that hold MA and above (n=30 or 26.8%) and by respondents that hold certificate and below to reading and writing (n=18 or16.1%) .The result indicates that diploma and above respondents holds (n=93or 83%) Qualified personnel have an ability to identify and evaluate easily what is happening in the community residential area in a knowledgeable manner

Table 4.4: Religion of respondents

Descriptions	Frequency	Percent
Orthodox	44	39.3
Muslim	20	17.9
Protestant	41	36.6
Catholic	3	2.7
Non Specified	4	3.6
Total	112	100.0

Source: Own Survey, 2017

The above table 4 depicts the most popular religions in the country. The representations reflects that majority of respondents are Orthodox faith followers (n=44 or 39.3%), followed by Protestant faith followers (n=41 or 17.9%), Muslim faith followers (n=20 or 17.9%) and the remaining respondents are Catholic faith followers (n=3 or2.7%). Out of the respondents 4% or n=3 do not specified their religion. This shows that the respondents represented from various religions that dominate in the country. As can be observed from above table, all the religious institutions believed that there is noise pollution in the survey area and the main contributors that release the noise pollution of loudspeaker and impulsive amplifier musical beat endlessly in the community residential area are the first three. According to TekleBerhan (2012) the first two are the indigenous and highly competitive each other, and located in the midst of the residential areas seem no compulsion with broadcasting their early morning service via loudspeakers. Again she added that the call for prayer from neighborhood Mosque, the liturgical services of Orthodox Church and the amplifier musical beat of Evangelical Churches all seem to neglect the rights of other people in the neighborhood

Table 4.5: Reducing the noise level of loudspeaker in religious institutions

Do you believe in reducing the noise level of loudspeaker in religious institutions?						
Description		Yes	No	I don't have any idea	NS	Total
Sex	Male	74	10	3	2	89
	Female	17	4	0	2	23
Total		91	14	3	4	112

Source: Own Survey, 2017

Table 5 depicts that out of total 112 respondents 91 of them (74 male and 17 female) said that it is possible to reduce the noise level of loudspeaker while worshiping in the religious institutions ceremony. On the other hand, 14 respondents (10 male and 4 female) said that it is impossible to reduce the noise level of loudspeaker in religious institutions. The remaining 3 said that they have no idea about noise pollution and 4 respondents not clearly stated their position.

Table 4.6: Rating the level of noise pollution in the selected study area

How do you rate the level of noise pollution in Bole Michael residential area?		
Descriptions of noise level	Frequency	Percent
very high	78	69.6
moderately high	23	20.5
Low	3	2.7
very low	8	7.1
Total	112	100.0

Source: Own Survey, 2017

Table 6 shows that most of the respondents (n=78 or 69.6%) said that the rate of noise pollution in the Bole Michael residential area is very high, followed by moderately high (n= 23 or 20.5%). The other 7.1% of the respondents said that the noise level is low while the remaining 2.7% said the noise rate is very low. This indicated that the area selected for survey is highly exposed to noise pollution.

Table 4.7A: Sources of noise pollution more severe in Survey area

Noise Level	Frequency	Percent
Religious institutions loudspeaker	64	57.1
Live musical beat of night club	13	11.6
Air plane landing and take off	16	14.3
Old trucks fume on the ring road	1	0.9
Taxi call for passengers	1	0.9
All	1	0.9
Non Specified	16	14.3
TOTAL	112	100

Source: Own Survey, 2017

Table 7A indicates various sources of noise pollutions in Bole Michael community residential area face in their lives and most of respondents (n=64 or 57%) indicated that the major source of noise pollution in Bole Michael residential area is the noise that comes out from the religious institution loudspeakers and use of amplifier and followed by that the landing and takeoff air plane which accounts 14% or n=16, and 11.6% or n= 13 of respondents said that night clubs' and bars' musical beat highly disturbs the lives of the residents in the area. On the other hand, n= 2or 2.0% of the respondents indicated that the noise that comes out from old truck on the ring road, and taxi call invitation for passengers is the source of noise pollution in the area. The remaining n= 16 or 14% of the respondents remain abstained.

Table4.7B: Evaluation of the sources of noise pollution in respect to the respondents of each religion types

Descriptions	If your response to question Q7 is "very high", which sources of noise pollution is more severe in Bole Michael residential area							Total
	Religious institutions loudspeaker	Live musical beat of night club	Air plane landing and take off	Old trucks fume on the ring road	Taxi call for passengers	all	NS	
Orthodox	27	5	5	1	0	0	6	44
Muslim	10	3	4	0	0	0	3	20
Protestant	22	5	6	0	1	1	6	41
Catholic	2	0	1	0	0	0	0	3
Non Specified	3	0	0	0	0	0	1	4
Total	64	13	16	1	1	1	16	112

Source: Own Survey, 2017

Besides, Table 7B depicts the positions and attitudes of respondents towards source of noise pollution in the area based on their religion. As the table shows clearly, out of total 44 respondents who follow Orthodox religion 27 of them said that the most severe source of noise pollution in the area is religious institutions loudspeaker. In similar manner out of total 41 respondents who follow Protestant religion, 22 said that it is the religious institutions loudspeaker that contributes for high noise pollution in the area. Similar to the Orthodox and Protestant followers, out of 20 respondents having Muslim religion 10 of them said that the most severe noise pollution in the area comes from religious institutions loudspeaker. This shows that majority of respondents from Orthodox, Evangelical churches, Muslims and Catholics believe that the most hectic source of noise pollution in the Bole Michael community area is the noise that comes out from religious institutions using loudspeaker and amplifier. To the contrary, 3 respondents said nothing regarding the source of noise in the area. In relation to this, it is observed that even though, there are different sources of noise pollutions that became hindrance to the community lives, particularity the religious institutions loudspeaker and amplifier beat and also the night clubs and bars live music, shouting and dance in the midnight are the most common one in the area. On the other hand additional information obtained from some respondents indicated that the newly phenomenon that occurred in the residential area is that the shout that comes out from people who watched

the English premiere soccer on the DSTV. This means that as deeply stated above the cumulative effect of different sources of noise pollution in the community residential areas have created more annoyance and irritation to the residents.

Table4.8: What is to be done to reduce noise level in survey Area.

Description	Frequency	Percent
Noise level must be reduced	70	62.5
Noise level has to be continued	4	3.6
Neutral	6	5.4
It has to be completely closed	31	27.7
Non Specified	1	.9
Total	112	100.0

Source: Own Survey, 2017

The above table 8 shows what actions should be taken to minimize the level of noise pollution released through loudspeakers of religious institutions and the nightclubs in the surveyed community area. As the table indicates,(n=70or 62.5%) of the respondents indicated that the current level need to be reduced to the standard level set by regulatory body while significant number of respondents (n=31 or 27.7%) responded that the noise that comes out from the religious institutions' loudspeakers as well as night clubs' musical beat must completely be banned from use in the residential area. It is only 3.6% or n= 4 stated that they need the current level of noise in the area to be continued as currently is doing. The remaining 5.4% or n= 6 became neutral towards reduction of noise pollution in the area.

Table 4.9: Report done to responsible authority

Descriptions		If your answer is "yes" to which authority did you report?				Total
		to Woreda executive	to Environmental protection bureau	to Justice bureau	NS	
Have you ever reported to responsible authority about noise pollution?	Yes	9	14	6	0	29
	No	0	0	0	83	83
Total		9	14	6	83	112

Source: Own Survey, 2017

The cross tabulation Table 9 depicts the different authority stage levels in Woreda 1 administration Buearu which the executive officer is responsible to handle all cases including noise pollution of the community complaints. As clearly seen from the table out of total 112 respondents only (n=29 or 25.89%) were reported their complaints to the required authority regarding noise pollution in the area. Out of which (n=9or 31.03%) respondents applied their complaints to Woreda Executive Officer, (n=14or 48.28%) applied their complaints to the Environmental Protection Bureau which has direct responsibility regarding noise pollution and the remaining (n=6or28.69) respondents applied their complaints to the Justice Bureau

Table 4.10. Actions taken by the responsible authority regarding noise pollution

Descriptions		What action had been taken from the responsible authority to solve the problem?				Total
		immediate action has been taken against offender	warning is given to the offender to reduce the noise level	no action has been taken& noise disturbance is continued	NS	
Have you ever reported to responsible authority about noise pollution?	Yes	1	3	25	0	29
	No	0	0	0	83	83
Total		1	3	25	83	112

Source: Own Survey, 2017

Also, as in the cross tabulation Table 10 shown different actions that had be taken regarding noise pollution in the Bole community area based on the application of residents. It is observed that out of 29 respondents who applied to the woreda concerning the noise pollution 25 respondents or 86.21% indicated that no action had be taken by the woreda to reduce noise level in the area based on their application, 3 respondents or 10.34% indicated that the woreda office gave warning to those who release extra noise pollution in the area while 1 respondent or 3.44 % indicated immediate action had been taken by the woreda to solve the problem. From this table we can observe that the responsible authority in the community did not respond to the complains raised by applicants except in the few cases. On the other hand, majority of the respondent (n=83 or 74.10%) in Bole Michael community residential area, prefer to be silent despite the fact that there is high level of noise pollution caused by different sources in the area.

Table 4.11: Level of satisfaction towards the efforts of responsible authority in reducing noise level in the area

What is your level of satisfaction with the efforts done by the responsible authority?		
Description	Frequency	Percent
Highly Satisfied	1	0.9
Satisfied	1	0.9
Moderately Satisfied	7	6.3
Not satisfied at all	71	63.4
Non Specified	32	28.6
Total	112	100.0

Source: Own Survey, 2017

Table 11 shows the level of satisfaction of respondents' with the efforts of the responsible organ in minimizing noise pollution in the area. As we can observed from the above table, majority of the respondents n=71 or 63.4% indicated that they are totally dissatisfied with the efforts of the responsible organ in controlling noise pollution in the area while n=32 or 28.6% remain abstain in responding the question. Out of total 112 respondents it is only 2 respondents or 1.79% indicated that they are satisfied and highly satisfied with the efforts done by the responsible organs' in minimizing noise pollution in the area while 6

respondents or percent indicated on the table above, said they are moderately satisfied. This indicates that the efforts that have been done by the responsible authority in minimizing the level of noise in the area is not to the level of respondents.

Table 4.12: Remedial actions suggested by the respondents to minimize noise pollution in the area

If your answer for questionisQ13 is "not satisfied at all", what remedial action do you suggest		
Description	quency	Valid Percent
Law enforcement body has to take decisive action	34	30.4
Community has to take its own action in collaboration with leaders of religious institutions	19	17.0
Joint committee has to be established from all stakeholders	18	16.1
All	2	1.8
NS	38	33.9
Total	112	100.0

Source: Own Survey, 2017

Table 12 shows that the responsible authority is silent for complaints of the community in the area where the research is carried out and hence the researcher of this survey paper wanted to give an opportunity to the respondents on the open end questionnaire part to express their internal feelings freely.

In light of this (n=34or30.4%) suggested that the law making body has to take decisive action against the offenders and also (n=19or 17%) said that community has

to take its own action in collaboration with religious leaders for the problem that emanated in the study area. The other respondents (n=18or 16.1%) suggested that joint committee has to be organized from all stakeholders as government body, victimized community itself, including religious institutions

Table 4.13:Time in which noise pollution that makes the resident more annoyance

Description	Frequency	Valid Percent
Day time	15	13.4
Midnight	34	30.4
Evening	37	33.0
Early morning	2	1.8
Day break	13	11.6
All	10	8.9
Ns	1	.9
Total	112	100.0

Source: Own Survey, 2017

The other respondents commented that those stakeholders that are initiated from community based organizations (CBO) such as Idir, Youth and Women's Associations to be established in a committee form and seek for common solutions that bring the community as well as the government into one round table. On the contrary, 34 % 0f the respondents are not volunteer enough to express their ideas and finally few respondents agreed in all the suggestions mentioned

As we can easily observe from above table 13 that the time in which noise pollution from religious institutions and night clubs be released is more irritable to the respondents. In this respect (n=37 or33%) agree that the noise discharged in the evening (n=34 or 30.4%) at the

midnight (n=15or 13.4%) at the daytime (n=13or 11.6%) agree in the daybreak and(n=10or8. 9%) said that the irritable noise pollution comes irrespective of timeliness and the remaining 1% of the respondents chosen being silent

Table4.14: The major impacts due to noise pollution

Description	Frequency	Valid Percent	Cumulative Percent
Interference with spoken communication	19	17.0	17.0
Sleep disturbance	42	37.5	54.5
Impaired task performance	2	1.8	56.3
Negative social behavior and annoyance action	4	3.6	59.8
All	42	37.5	97.3
NS	3	2.7	100.0
Total	112	100.0	

Source: Own Survey, 2017

World Health Organization (WHO, 2001, Hagler, 1998) identified seven categories of adverse health effects on human being because of noise pollution. Also, these impacts are inevitable in our country where noise pollution is prevalent throughout the nation and controlling mechanism not properly layout .In this regard, on the above table 14, the respondents identified that which one of the above listed categories are the worst effect upon human health condition and (n=42or 37.%) respondents said that noise pollution is the first cause for sleep disturbance(Suter1991) and in the same manner the other (n=42or 37.%) of the respondents agree that it is impossible to separate one from the other, so all categories listed above affect adversely the human health.

The other respondents who hold (n=19or17 %) position chosen interference with spoken communication as (Santfeld and Matheson,2003)said, whereas(n=or3.6%) indicated that it causes for negative social behavior and annoyance reaction on human being scholars as (Ray and Levinson,1992)identified in their studies and the remaining (n=2or 1.8%) agree that it causes impaired task performance as (Leventhal,2004) stated and lastly(n=3or2.7%) not clearly specified their ideas.

Table 4.15: The respondents personally faced health problem due to noise pollution in their lives

Description	Frequency	Valid Percent	Cumulative Percent
Impaired Task Performance	3	2.7	2.7
Interference With Spoken Communication	15	13.4	16.1
Sleep Disturbance	28	25.0	41.1
Hearing Damage	1	.9	42.0
Mental Health Disturbance	5	4.5	46.4
All	7	6.3	52.7
NS	53	47.3	100.0
Total	112	100.0	

Source: Own Survey, 2017

The table 15 above indicates that (n=28or25%) majority of the respondents agree that personally they have been faced the problem of sleep disturbance due to noise pollution, whereas (n=15or 13.4%) explained that the main problem that they have confronted in the residential area is the interference with spoken communication. And also the other respondents (n=5or 4.5 %) have answered that they have faced the Hearing damage as (Brookhouse, 1996) written in his research book. Also (n=7or 6.3%)respondents agree that they have personally faced disturbance of mental health and (n=3or2.7%)of the respondents said that they have faced impaired task performance and finally (n=53 or 47%)of the respondents said that they have personally did not face any problem due to noise pollution. This indicates that, though, there is high noise pollution from different sources in survey area, majority of the respondents not exposed to health problem.

Table 4.16: The groups that more exposed to noise pollution

Which groups of the society is more vulnerable to the noise pollution?				
Description	Frequency	Percent	Valid Percent	Cumulative Percent
Infant	41	36.6	36.6	36.6
School Children	20	17.9	17.9	54.5
Aged People	20	17.9	17.9	72.3
Patients	28	25.0	25.0	97.3
All	1	.9	.9	98.2
Ns	2	1.8	1.8	100.0
Total	112	100.0	100.0	

Source: Own Survey, 2017

The above table 16, depicts that out of the total respondents (n=41or36.6%) believe that infants are more vulnerable and following that patients which accounts (n=28or 25%) and the other respondents answered that the two groups, namely aged people and school children have equal value of (n=20or 18%) each in exposure to noise pollution. The remaining respondents (n=1or 0.9%) agree that it is impossible to distinguish one from the other, so all stated on the above table have equal value and finally (n=2 or 1.8%) of the respondents not suggested anything for the exposure.

This is an open end questionnaire in which the researcher gave an opportunity to the respondents in order to express their opinion freely. So the researchers' suggestion had been summarized from the open end questions into sweet able manner for analytical purpose.

Based on these, the above cross tabulation 17,depicts that majorities of the respondents, (n=29or25.89% believe that rules and regulations in the country is abundantly available, but the problem lays in that from the government said there is a problem to implement properly and indecisive to take fast action against fault makers. Following lack of enthusiasm

Table4.17: Rules and regulations to control noise pollution in the country

Description		If your response for the question Q19 is "yes" why the authority is reluctant to public outcry					
		The responsible authority not interested to enforce offenders to apply sound proof technology	The government not create awareness, train and teach them how noise pollution affects the lives of the community	Being indecisiveness to take fast action against fault makers	The government's fear of the religious institutions and being reserved not interfere in their issues	NS	Total Total
Do you think that there are rules and regulations to control noise pollution?	yes	3	4	29	23	3	62
	No	0	1	0	1	48	50
Total		3	5	29	24	51	112

Source: Own Survey, 2017

on part of the responsible authority, still other respondents (n=23or 20.5%) said that the government's fear of the religious institutions and being reserved not interfere in their issues. The others(n=4or 3.57%) on the open-end questions suggested that the government's weak point is that not friendly approaching to create awareness, train and teach the religious institutions how noise pollution affects the lives of the community. The other respondents suggested that the responsible authority has to enforce the offenders to use sophisticated technology to suppress the noise within. On the other hand, since cross tabulation has double face, the other question raised was if there is rules and regulations in the country, concerning about noise pollution, (n=59or 52.68%) believed that there is rules and regulations, but the problem lays from the government side to bring into the ground, i.e. lack of implementation and follow up problem. On the contrary, numerous respondents (n=48or42.86%) do not have awareness or knowledge about rules and regulations of noise pollution in the country

Table4.18 Respondents suggestion for strongly disagree of music shop under condominium

Description		If your response to question 20 is" strongly disagree", what is your suggestion				Total
		Residential area must be free of noise, peaceful. comfortable and safe for community	Infants, school children, patients, aged people & workers have to get mental & physical rest	to allow such business in residential area leads the generation to unnecessary social problems	NS	
Do you agree on the presence of music shop, night club on the first floor of condominium and apartment?	strongly agree	0	0	0	1	1
	Agree	0	0	0	3	3
	disagree	17	13	7	5	42
	strongly disagree	31	16	5	13	65
	NS	0	0	0	1	1
Total		48	29	12	23	112

Source: Own Survey, 2017

From above cross tabulation, we can easily understand that the respondents had asked that if they agree in the presence of music shop& night club on the first floor of condominium and apartment, totally(n=65 or 58%) of the respondents strongly disagree, whereas(n=42or37.%)) disagree. And trivial in number (n=3 or 2.7% said that they agree. On above cross tabulation, since there is double questions, if the respondents strongly disagree, the researcher asked their opinion and if what the residential area to be resembled,(n=48or 42.86%) the of respondents suggested that residential areas must be free of noise, peaceful, comfortable and safe for existence, the others(n=29or 25.9%commented, that those vulnerable groups in a society as infants, school children, patients aged people and workers have get in a residential area mental and physical rest and finally the remaining respondents(n=12or10.71%) suggested that business licensing body has to take due consideration to identify the business nature before

issuing license in residential area, that may lead the current generation to an unavoidable social problems. As per the above cross tabulation almost (n=89or 79.46%)of the respondents have similar position that noise pollution in the residential area have great impact on the residents. On the other hand, (n=23or 20.54%) are abstain to suggest their opinion.

Table 4.19: Problems faced in teaching- learning Process due to noise pollution

Description	Frequency	Valid Percent	Cumulative Percent
The teacher is forced to stop teaching- learning process	25	22.3	22.3
The students couldn't afford to comprehend properly	19	17.0	39.3
The students faced hearing problem during learning	4	3.6	42.9
All	14	12.5	55.4
NS	50	44.6	100.0
Total	112	100.0	

Source: Own Survey, 2017

Since, educational institutions, health care centers and court premises are the most noise sensitive receiver (NSR) and require high protection(Environmental Protection Department, 2013). In respect to this, majority of the respondents suggested that, in Bole Michael community residential area, there are schools such as Bole Kale Hiwot that runs teaching activities starting from kindergarten to college preparatory level, Bole County primary school, Promising academy and Alpha Unique academy and other various kindergartens, primary, and secondary schools are nearby to various religious institutions are badly exposed to severe noise pollution. As it had been mentioned in our statement of problem in project proposal, the residential area is surrounded by different religious institutions which release noise pollution endlessly. As per our observations of the above table 19,(n=25or 22.32%)of the respondents from school area pointed out that teachers in their teaching -learning process are forced to stop it, while call for prayer loudspeaker released from nearby Mosque. The other respondents (n=19or 16.96%) suggested that when loudspeaker is released in teaching period, the students couldn't afford to comprehend properly, and few in number (n=4or 3.57%) suggested that the students face retardation in their mental ability. Finally,(n=14or 12.5%) respondents suggested that it is not required to choose the alternatives, but all are

impacts in the school compound area. Apart from these, those respondents (n=50or 44.64%) that school issues do not concern them, answered nothing.

Table 4.20: Problems practically identified in residential area

Schools during teaching - learning process

Description	Frequency	Valid Percent
Low level of students' academic comprehension, and annoyance	7	6.3
Interruption in learning- teaching process	16	14.3
Forced change of teaching periods & mental disturbance of students	18	16.1
NS	71	63.4
Total	112	100.0

Source: Own Survey, 2017

On the above table 20,the respondents had been requested to explain, if what problems had actually been faced them during learning- teaching time and(n=18 or 16.1%) said that they have forced to change the teaching program, when loudspeaker releasing pollutants in the school compound area becomes calm and the other respondents(n=16or 14.28%) said that when loudspeaker noise is discharged in teaching period most of the students disturb so the teachers are compelled to stop any activity in the classroom. As per the respondents answer (n=7or 6.25%) the other problem faced during teaching time due to noise pollution in school compound area, is low level of students' academic comprehension, and annoyance. On the contrary majority of the respondents (n=71or63.39%) chosen silent, because of the school issues in the residential area do not concern them. According to the research of (Ikenberry,1974), some effects of noise pollution to school students, identified can be the students didn't hear the teacher as well, to students it is more difficult to hear lectures and classroom discussion, more difficult to study, some teachers spoke too loudly. (Slater,1968) has proved in her study that student will performed better under quiet condition than under

noisy conditions and also, she said that noise pollution in school environment disturbs during study

Table 4.21: Solutions suggested for the problems in School area

What solution do suggest for the question Q21A			
Description	Frequency	Valid Percent	Cumulative Percent
The government, religious institutions other have to work together to control the noise should not exceed limited level	17	15.2	15.2
The government has to give prior awareness & training to the religious institutions to honor rules & regulations	27	24.1	39.3
The religious institutions &business centers should not allowed to be established near school compound area	15	13.4	52.7
NS	53	47.3	100.0
Total	112	100.0	

Source: Own Survey, 2017

As we can see from the above table21, the respondents asked to suggest the solution to the problems occurred in the school area due to noise pollution, (n= 27or 24.11%) agree that the government has to give prior awareness to the religious institutions just to respect the rules and regulations and the others(n=17or15.18%) said that the government, religious institutions other stakeholders to work together to control the noise should not exceed legally limited level. On the other hand, the respondents (n=15or 13.39%) suggested that the religious institutions and business centers that release noise pollution should not be licensed in the school and residential area since these are sensitive noise receivers. Lastly,(n=53 or 47.23%) of the respondents are silent because majority of them do not know about the school issues. According to Slater(1968),to reduce noise pollution problems from school environment, she suggested some solution as using a school building that has sound insulation and a good planning before building school and stop or remove the noise

Table 4.22: Problems faced in health care center, due to noise pollution

Description	Frequency	Valid Percent
The patient's problem is more aggravated	10	8.9
The patient is more depressed	6	5.4
NS	96	85.7
Total	112	100.0

Source: Own Survey, 2017

Though, the questionnaire was distributed to respondents on the above table22, to identify if there is noise pollution problem in the health care center area, only those respondents (n=10or8.93%) who have direct relationship with health care centers answered the questionnaire in that they have identified that if there is noise pollution in the area it more aggravates the patients sickness. The other respondents (n=6or5.36%) said that existence of noise pollution in health care center causes make the patients to be more depressed. About (n=96or 85.71%) of the respondents have no knowhow about health case to express their opinion about the problem. According to World Health organization (WHO, 1999) the average sound pressure levels measured over time not exceeds 30 dB in patient ward room or 35dB in patient treatment and observation room. And also, according to Ryherd, 2012, hospital noise has been associated with patient risk for sleep disturbance, cardiovascular response, increased length of stay, incidence of re- hospitalization

Table 4.23: Practically identified problems in health Care center due to noise pollution

Description	Frequency	Percent
Patients cannot get peace, rest & sleep due to noise pollution	1	.9
Noise pollution leads the patient to more aggravation of disease , depression & disturbance	6	5.4
Government has to give due attention for patients in reducing the noise pollution level	8	7.1
Ns	97	86.6
Total	112	100.0

Source: Own Survey, 2017

As it had been stated on table 22 (n=8 or7.14%) respondents said that the government has to give due attention for patients in reducing the noise pollution level, The other respondents (n=6or 5.36%) said that noise pollution leads the patient to more aggravation of disease, depression, disturbance and the remaining majority of the respondents (n=97or86.61%) kept silent for healthcare center problems, because of they have no relationship with it.

Table 4.24: Solutions suggested for the problems in health Care center due to noise pollution

Description	Frequency	Valid Percent
Safe , secured& noise free environment for patients	15	13.4
The government has to create awareness among different stakeholders to reduce the noise level	4	3.6
Business centers& religious institutions that release noise should not be allowed to open nearer to health care centers	1	.9
Ns	92	82.1
Total	112	100.0

Source: Own Survey, 2017

On the above table 24, the respondents have given an opportunity in order to suggest a solution, so (n=15or 13.39%) of the respondents agree that the patients should be safe, secured, and be in a noise free environment and the others (n=4or 3.57%) commented that the government has to create conducive atmosphere to patients and then work with different stakeholders in the issue of the patients by reducing the noise level in the health care centre area. Though, insignificant in number, the others (n=1or .9%)said that bars, restaurants and religious institutions that release high level noise in hospitals and clinical compound areas, primarily should be screened out before licensed. On the contrary,those who do not have any idea about the health centre problem, can not suggest any thing.

4.2 Interview Analysis and Presentations

4.2.1 Addis Ababa Environmental Protection Authority

Noise pollution amongst those which have different features that make it unique from any other pollutants (Gonzalez, 2014). Addis Ababa Environmental Protection Authority has full responsibility to manage all problems related to different kinds of pollutions in the city. In the interview session three experts had been participated those who have the responsibility to cover the whole 10 Sub-Cities in the Addis Ababa city administration based on the complaints that they have received from victims of noise pollution.

The experts have explained that the authority has its own noise pollution control guidelines which was adapted from WHO community noise pollution guidelines set for those noise sensitive receivers like residential area, healthcare centers, schools and courts as identified by (Environmental Protection Department, 2013) and also for those the most vulnerable groups in a society such as infants, patients, school children and old people based on the guideline of (WHO, 2001.)

As per the information obtained from these experts, the current experience of the authority is that when they have received the complaints they try to investigate the situation by visiting the area physically and take all necessary actions based on the rules and regulations of the authority. So far the authority has taken the following measures on those who did not act as per the rule of the authority:

16 night clubs were closed temporarily until they have adjusted the problem,

5 night clubs license were canceled and completely closed

46 night clubs were at final warning stage.

Despite the fact that the authority has taken such kinds of measure to alleviate the problem in the city, the experts are not satisfied with their efforts and unable to control the situation for the following basic reasons:

- Lack of integration and cooperation among different stakeholders,
- The Cultural and Tourism Bureau do not consider the noise pollution in the city as basic point of criteria before forward to Trade Bureau.
- Trade Bureau is reluctant to demands the investor to fulfill the noise pollution criteria set from the required Bureau before issue the license,
- Lack of resources such as human resources, financial constraints for night allowance and transport problem for accessibility and outreach immediately where the problem is reported.
- Fragmented organizational linkage. To put clearly, A.A. Environmental Protection Authority is accountable directly to A.A city Mayor and in similar manner Bole Sub-City Environmental protection office is answerable to Executive of sub–city and finally the Woreda Environmental protection Bureau is callable to Woreda Executive Officer. Here, the respondents clearly described that organizationally the institutions are not linked each other and due to these cases most reports received from victims delay for long time, without any action
- The other stakeholders as Ministry of Trade issues License to big investors without the authority's consultation had more aggravated the noise pollution level in the area.
- Finally, the experts explained that as most complaints are came from residents regarding religion institution, the authority has a plan to create a smooth relationship with the religious institutions and then provide tailor made training and teach them about negative impact of noise pollution by creating awareness not to exceed the noise level beyond the standard set by the law. On top of this, the Authority's future strategy is to work together with different stakeholders as community based organizations such as Idir, youth and women's Associations.

4.2.2 Bole Sub-City Environmental Protection Office

Bole sub-city is one of the largest sub city having 14 Woredas under its administration. Amongst these woredas, there are most problematic night club villages which the people call it "Chichnia" due to the presence of more night clubs and full of disturbances located near Atlas hotel the way to 22 Mazoria, Bole Medhanialem, Gerji, Summit, Bole Michael area and others which disturb the lives and peace of the citizens in the residential area. As far as resources availability for the Sub-City environmental protection office is concerned, similar to A.A Environmental Protection Authority, there is shortage of human resource (only 2

experts are found currently who have the responsibility to cover all weredas, shortage of transport to visit the area, no night allowance for the experts to observe and overlook situation that complaints received.

Concerning the religious institutions loudspeaker and amplifier musical apparatus beat that became the cause of restless and sleepless of the residents, however, the responsible authority in the Bole sub city recognized the problems of noise pollution that emanates from the religious institutions, they prefer not to take any remedial actions for the reason that they understand to deal with religion institutions in such issue is not an easy task.

Likewise to the A.A environmental protection Authority, there is no integrated work activity to be carried out among different stakeholders. To cite few, Trade licensing unit doesn't consider noise pollution as a big issue while providing license and Culture and Tourism unit doesn't take noise pollution as part and parcel of its point of criteria before issuing authentication letter to the investor. Thus, the study reveals that Bole sub-city environmental protection office and the other responsible offices do not work together to solve the problems of noise pollution that faces the community in the residential areas.

As part of its remedial action the Bole Sub-city Environmental Protection Office has a plan to work together with different stakeholders of community based organizations like that of Idir, Youth and Women's Association, and religious institutions. The office will also arrange awareness creation programs about the impacts that the noise pollution brings upon community and advise not release noise pollution beyond legally limited level. Besides, the office has a plan to enforce night clubs to utilize noise suppressing technology that can restrain noise pollution that disturbs the community in the residential area.

4.2.3 Woreda 1 Environmental Protection Bureau

This woreda is the main area where the survey is carried out. It is subdivided into five zones. Some zones are restrict residential areas where as the others are mixed residential areas. Some of the woreda's community residential areas are highly exposed to different noise pollution sources as religious institution loud speaker and amplifier musical beat, night clubs and bars dance and shout in the midnight, air plane landing and takeoff heavy noise and others, where as the other zones are calm and peaceful places.

Although, it is a must to have an appropriate instrument that helps to measure noise pollution which is called decibel (dB) measurement sound meter, there is no any such kind of measurement in the Bureau instead the Bureau tries to handle complaints by simple personal observation due to budget shortage. Despite all this, the Bureau doesn't have legal

background to give final solution except directly reporting the findings to Bole sub-city environmental protection office. Like all environmental offices in the sub city, the Bureau faces with transport, human resource and other materials that can facilitate their day to day operations.

Concerning of handling complaints with regard to noise pollution emanated from religious institutions loudspeaker and amplifier, no officers from sub-city appear in the area and attempt to cool down the problem based on the report from the Bureau, rather after receiving the letter of complaints from the Bureau they keep silent for indefinite period of time. For instance, woreda1 environmental protection office sent a letter of complaints received from victims of Bole Michael community residential area, about noise pollution of night clubs, on October 24, 2009, to sub-city environmental protection bureau. But, no officer of sub-city came to solve the outcry of the community in this residential area, till the researcher compiled the research data.

The study reveals that the government has chosen to follow a centralized controlling system, even in procuring essential material to help alleviate the problems that the community encountered due to noise pollution. Furthermore, they do not carry out responsibility in integrative manner amongst the working units at woreda level is just the copy of upper ladder environmental protection offices characteristics as we have stated previously on different parts of this paper.

4.2.4 A.A. Housing Development Administration Agency

One of the government organizations that contribute noise pollution in the community condominium and Apartment residential houses area is the A.A. Housing Development Administration Agency. One of the appreciable duties of the Agency is to equip those houseless citizens became a property owner, by provision of condominium houses either by redevelopment scheme or through other mechanisms. On the contrary, we observed that there are mixed up situations in which majority of condominium houses ground floors nearer to main road or feeding roads are sold for business purposes. Due to this condition, currently the condominium houses became the major sources of noise pollution. To know this reality the researcher posed some questions to A.A Housing Development Agency, that is directly responsible. In this regard, before selling the condominium houses ground floors to buyer, if there is any means that the Agency can identify the nature of business that don’t release noise pollution. Then the Agency’s experts responded that primarily the buyer has to enter into obligation in the bid document not to disturb in the condominium house residential area and

release noise pollution. Other than that the Agency simply sells the condominium houses in bid, but not considers the nature of the business.

On top of that in the condominium houses residential areas, there is Co-operative Association which is legally organized from residents that have authority to sue and to be sued in any court. The association has been organized in a committee form among residents so that it beautifies the residential area, keeps security and controls the noise pollution. This Association has power to control any evil act in the condominium residential area including noise pollution. Though, noise pollution in condominium houses and apartments were prevalent, somehow this committee controls and ceases down the noise pollution problems, if it is most aggravated and disturbs the residents. We can shortly observe that in the condominium housing area the line of authority is brought down to the grassroots level where the residents can administer their own affairs by themselves, so this indicates that there is decentralized leadership. As compared to environmental protection authority where working units have structurally disintegrated linkage each other, while the housing development agency is in better position that it carries out its activities in collaborative and democratic manner

4.3 Analysis of Focus Group discussion (FGD)

Focus group discussion was held in order to have in- depth knowledge about noise pollution and its effect in the study area. Hence, the researcher randomly invited 10 residents from the area for discussion those more affected in the area. Regarding the major source of noise pollution, the group identified and strongly stressed the noise that emanate from religious institutions loudspeaker and amplifier beat, the night clubs dance and shout, the DSTV English sport show in the midnight and the landing plane noise are the major source of noise pollution.

With respect to the problem that the regulatory body does not take action against the offenders, the group identified the following major points:

- Being indecisiveness to take action against fault makers,
- Fear of religious institutions not to interfere in the religious issues,
- Not smoothly approach to convince the religious institutions about the situations in the residential area
- Not create awareness, train and teach them how noise pollution affects the lives of the community and advise them to use sound proof technology and
- Not giving due attention in order to shoulder together the activities in collaborative and cooperative manner in the government institutions concerning about noise pollution.

Concerning the remedial action that should be done to alleviate noise pollution in the area, even if each person in group takes his own priority, generally speaking it can be said that all of them agreed on the following points:

- That the government have to work to gather with religious institutions, community itself, and other stakeholders as community based organizations(CBO) like Idir, Youth and Women Association so that harmonized efforts will be done.
- The government has also to show dedication in creating awareness, provide training and teach the religious leaders to reduce the levels of the noise to the required level.
- Primarily no bars, night clubs and restaurants should be allowed to run business in the residential area. If it becomes necessary, there should be strong enforcement to use sound suppressing technology that makes the noise remain within the room.
- The Trade Bureau which issues license should screen deeply if the business nature that selected to be run will not affect interests of the community in the area.
- The government units like Culture and Tourism Bureau should work in collaboration with environmental protections in order to minimize the noise level.

CHAPTER FIVE

5. Summary, Conclusion and Recommendations

5.1 Summary of findings

According to WHO, noise pollution results in loss of hearing, stress, high-blood pressure, sleep disturbance, irritability and decreased concentration in the work place and reduced efficiency and decreased productivity. Also, noise related property damage includes structural damage from vibrations induced by sound waves and economic harm in form of lower property values (Smelser and Balter, 2009). According to Straton (2013) economic interest has always dominated noise control, but it has to be weighed against other likely costs of noise pollution such as loss of economic earnings, loss of productivity, loss of quality of life, burden on the health services and the criminal justice system, increasing violence, human misery and social anger that noise causes.

The main objective of this study was assessing the problem of noise pollution, especially loudspeaker and impulsive sound amplifier that is released from religious institutions and live musical beat and dance from night clubs and bars in Bole Michael community residential area. The research was conducted in two selected community areas, namely Apartment and 66 village and Michael church area which the aggregate number of population accounts10,000 that were selected basically for the presence of high noise pollution as compared to the remaining three community areas.

In order to achieve the indicated objectives the researcher used mixed research design, particularly survey design. Source of data for the research were both primary and secondary sources. Out of five zones in Bole community area two zones were selected for the sample. From 10,000 total populations 120 were taken as a sample size. Out of these questionnaires 8 was non-responded. The sampling technique used was Simple random sampling and concerning sources of data collection questionnaire, interview, focus group discussion (FGD) and field survey were instruments of data collection. Descriptive statistical analysis like frequency distribution, percentage and cross tabulation was provided by the SPSS 23 version taken as method of data analysis.

The research findings indicated that the major four religious institutions that exist in survey domain released in a minimum average 71dB (A) and also a maximum average level reaches to be 87dB (A). In the same token, the night clubs, bars and restaurants situated in the community residential area release minimum average 64dB(A)and maximum average accounts 84dB(A). This shows that it was excessively high and above

permissible limits of noise level as compared to WHO/ EPA guidelines in community residential area to be at night 40dB and day time45 dB, in patient ward room 30 dB and in patient treatment and observation room 35dB. This over standard noise level may cause health effects and also this is confirmed by the majority of the respondents which said that they had faced personally sleep disturbance and interference with spoken communication, interruption in teaching-learning process in schools in the study area. In this case the respondents indicated that most vulnerable groups in the society were infants, old aged open up to noise pollution and patients consecutively.

The research findings also indicated that 57% of respondents from four popular religions institutions believed that the high level of noise pollution emanates from the loudspeaker and sound amplifiers and 63% of them suggested that the noise pollution level should be reduced from its sources. However, the religious institutions agreed in having noise pollution in the residential areas that could attract their followers in prayer times, the responsible authorities are reluctant to give immediate solution to the community's outcry. In this regard, out of 112 respondents only 26% reported to various units of woreda bureaus that are accountable for noise pollution problems and 86.21% indicated that no action had been taken by the woreda responsible authority to solve the acute problem of noise pollution. Likewise, 63% of the respondents indicated their total dissatisfaction with the efforts that had been done by the responsible organs and this was confirmed by the researcher no solution had been given for the complaints raised by the residents of survey area. Furthermore, participants in focus group discussion confirmed that the regulatory body is reluctant to take actions against offenders due to fear of religious institutions not to interfere in the religious issues, being inactive to approach friendly to convince, to raise religious leaders awareness, and teach them about the negative impact of noise pollution in human and environment as well.

On the other hand, majority of the respondents disagree on the presence of music shop and night club on the first floor of condominium and apartments for business purposes.

Hence, they suggested that the residential area must be free from noise and need to be peaceful, comfortable and safe for residents, though on the contrary to the current situations in which majority of condominium houses ground floors nearer to main road or feeding roads were sold for business purposes and became the major sources of noise pollution.

The research pointed out that some of those problems that paralyzed the efforts of regulatory body in controlling noise pollution in survey area were lack of resources as human, financial constraints for night allowance and transport bottlenecks for accessibility and outreach, where noise pollution problems reported. Besides, there was lack of coordination among different

ministries such as the Ministry of Trade grants license to big investors without the consultation of Environmental Protection Authority(EPA) that should incorporate the issue of noise pollution and they have suggested that the government have to work together with various stakeholders including religious institutions themselves and create a system that help to unify and coordinate among different actors who are responsible in solving noise pollution problems. Not only that there is lack of structural integration and linkage problems within EPA in the line from upper top to down grass root level.

5.2 Conclusion

As it had been clearly stated in the body of this paper, there is clear distinction between sound and noise. Sound which is pleasing to our ears, which is melodious to hear and which gives comfort like musical note is defined as sound, while one which is penetrating and uncomfortable, which creates psychological stress is called as noise (Khopkar, 1993). Sound is essential to our daily lives, but noise is not. Noise can be defined as unwanted sound. Sound becomes unwanted when it either interferes with normal activities such as sleeping, conversation, or disrupts or distinguishes one's quality of life. Noise has a unique characteristic that make it different from every other pollutants, noise is invisible, it doesn't smell, it disappears when the source is turned off and leaves no traces in the environment.

Following this, as clearly defined on the objectives of the study, the researcher tried to assess the noise pollution problems of Bole Michael community residential area which is surrendered by various sources of pollutants, but mainly focused on the two sources, namely, loudspeaker and impulsive sound amplifier from religious institutions and also live musical beat, dance and shout from night clubs and bars in the midnight.

Based on these, survey was done in the residential area through different research methods. The findings from questionnaire result indicates that even if there is rules and regulations enshrined to control noise pollution in the residential area, the regulatory body chosen to become silent for the outcry of the community in the area. The religious institutions send off their loudspeaker and sound amplifier overzealously and night clubs and bars live musical beat and dance plus the DSTV shows in the midnight made the residents restless and sleepless.

In the same manner, during the interview and focus group discussion, it is identified that in some of responsible government organizations, there is acute resources shortage as financial, human and transport for A.A Environmental Protection Authority (EPA) experts in order to supervise 10 Sub-cities. Because of the Authority has no structurally linkage to each other and no integrated carrying out activities, work units bear their duties in a centralized manner.

As researcher observed at woreda1 level the expert of EPA is simply symbolic, he had no device to measure dB in the problematic area, rather he received letter of complaints of noise problems from victimized residents, and only compiles and send it to Sub-City EPA. The experts of sub-city take a year and above to reach those problems reported areas. Therefore, the echo of public goes in a vicious circle without getting any solution. Likewise, one of the sources of noise pollution in the study area is the rules and regulations of A.A Housing Development Administration Agency (HDA), which sales all condominium houses first ground floors nearer to main roads for business activities. As compared to EPA, the Agency is in a better position, concerning about organizational structure, it carries out its activities in a decentralized manner. This is done in the condominium houses level where power is granted down to the Co-operative Association which is established legally. This doesn't mean that the condominium housing residential area is completely calm and silent, but if there is any noise issue or others, the organized committee manages easily without waiting for top level's decisions.

Finally the call for prayer from neighborhood mosque, the liturgical services of Orthodox Church and the use of loudest amplifier services of Evangelical churches, all seem to neglect the rights of the people in the neighborhood. In addition to this, because of lack of proper city planning and due to absence of strictly enforced zone rules and regulations noise releasing from various sources continued because of business entities like music shops and night clubs allowed establishing shops in the midst of the residential area. This is because the regulatory body is reluctant to manage the situation as per clearly established rules and regulations.

5.3 Recommendations

Noise is unwanted sound. In the consequence of this, it causes potential health effects on the human being, deteriorates environments and leads to loss of property values. These health effects, in its turn, can lead to social problems, reduced productivity, decreased performance in learning-teaching process, absenteeism in workplace and schools, loss of economic earnings and loss of quality life of residents.

Following this, as per the result of the selected research survey area, the following recommendations are suggested for noise pollution problems:

- A.A Environmental Protection Authority (EPA) has to approach the main pollutants friendly, and educate, train and then raise public awareness by following precautionary principle that how noise affects human health and how it should be reduced to legally limited level in the residential area.

- Ministry of Trade and other government institutions as A.A Investment Authority should work in unified and integrated manner with EPA, before granting investment license to solve the noise pollution problem
- All EPA units responsible to handle noise pollution starting from upper top to down grass root level plus within lateral relationship manner to give immediate solution for public outcry.
- EPA has to give due attention in order to solve the problems of resources as materials(dB measurement devices), human resources, financial constraints(night allowance)and transport bottlenecks that hindered the experts' not to reach out, when noise problem complaints are reported.
- The existing rules and regulations to reduce noise levels in the residential area should be enforced and implemented by EPA; rules simply should not be symbolic.
- EPA should consider the protection of community from religious and night clubs and bars noise sources by taking as an integral part of general environmental pollution policy.
- Before, granting trade license to investors for music shops and night clubs and bars the noise pollution issues should deeply be screened by Culture and Tourism Bureau and also it should be one point of authentication criteria in Trade Bureau, for the community residential area.
- To suppress down the blaring loudspeaker and impulsive sound amplifier of religious institutions, in the residential area, the responsible authority should guide the pollutants step by step towards the use of sound proof technology.
- With current country's urban booming development path, the future urban planning should be based on zonal code system that isolates noisy urban activities from those areas that are noise sensitive receivers as residents, schools and health care centers and
- EPA should attract those stakeholders as community based organizations (CBO), like Idir, Youth and Women Associations; including religious institutions and community themselves to participate in noise pollution issues to bring amicably solutions.

5.4 Implications for future research

The study covered out of five, only two community areas of Bole Woreda 1 Administration with sample size of 120 and focused on only in Bole Michael community area which is highly affected by different sources of noise pollution. It is well known that noise pollution is prevalent specifically in whole Addis Ababa and generally throughout the regional cities. The adverse effects that the noise pollution causes on human health, environmental deterioration and decrease in the values of property requires further investigations. To this end, this research can be taken as a milestone for those who have keen interests to conduct further survey in different academic disciplines as engineering, health science, and environmental science... etc in –depth.

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ANNEXES

ANNEXES

ANNEX1: **Questionnaire**

Addis Ababa University Faculty of Business and Economics

Department of Public Administration and Development Management

QUESTIONNAIRE

Dear respondents:

The researcher is interested to conduct a research on "Noise Pollution in Addis Ababa: THE CASE OF BOLE MICHAEL COMMUNITY RESIDENTIAL AREA, Bole Sub-City, Woreda 1 Administration, for the partial fulfillment of the requirement of a Master's Degree in Development Management . Hence, the quality of this research highly depends on your duly and positive response. All respondents' name will remain confidential. Writing your name is not required. The researcher would like to thank you in advance for your full co-operation.

General Instructions:

Please,

- **Read the statements carefully.**
- **Answer the questions by circling the spelling.**
- **For open-end questions give your statement of opinion freely and also you can use Amharic language**

Part one: Personal Data

Q1. Sex A. Male B. Female

Q2. Age A. 18-30 B. 31-50 C. Above 50 years old

Q3. Educational Status

A. From reading and writing to certificate level B. Diploma to First Degree and M.A degree and above

Part Two: Questions in details

Q4. Which religion follower are you?

A. Orthodox B. Muslim C. Protestant D .Catholic E. others (Please specify)…….

Q5. Do you believe that in the religious ethics, it is possible to worship by keeping the peace and the right of others in minimizing the noise level of loudspeaker or musical amplifier?

A. yes, I believe B. No I do not believe C. I do not have Idea

D. I don't care for others peace and right

Q6. If no, what do you think that the major reason is?

A. Usage of high level of loud speaker or amplifier is a must

B. Low level awareness in the religious leaders

C. Followers of that religion enforce the religious leaders

Q7. How do you rate the Noise pollution in Bole Michael community residential area?

A. Very high B. Moderately high C. Low d. Very low

Q8. Which sources of sound pollution do you think more severe in Bole Michael community residential area? (Please rate 1 - 5 depending on its severity) 1 for more severe 5 for low sever

A. Loudspeaker or amplifier of religious institutions ☐

B. Air plane landing and takeoff ☐

C. Live musical bit of night club, bar and restaurant at midnight ☐

D. Old trucks noise fume on the Ring Road ☐

E. Taxi invitation calls for passengers in the early morning ☐

Q9. What is your attitude towards an increasingly aggressive use of loudspeaker by different religious institutions or live musical bit from neighborhoods bar and restaurant at your sweet sleep period?

A. The noise level need to be reduced B. The noise level has to be continued

C. Neutral D. It has completely to be banned or closed.

Q10 Have you ever reported to the responsible authority about Noise Pollution(loudspeaker or night club Musical disturbance) at your sleep time?

A. **Yes** **B. No**

Q11. If your answer for the above question is 'Yes', to which authority did you report?

A. To woreda 1 administration office B. Environment Protection Bureau.
C. To Trade Licensing Bureau. D. Other (specify)……..

Q12. What action had been taken from the responsible authority to solve your appeal in reducing noise pollution?

A. Immediate action has been taken against fault makers.
B. The authority gave notification and warning to the offenders to reduce the level of noise pollution
C. No action has been taken for the complaints forwarded and noise disturbance has been continued

Q13. What is your level of satisfaction with the efforts that has been done by the responsible organ in reducing or avoiding Noise pollution in the area?

A. **Highly satisfied B. Satisfied C. moderately satisfied D. Not satisfied at all**

Q14. If your answer for the above question is" Not satisfied at all, what remedial action do you suggestion to reduce noise pollution (for loudspeaker or amplifier of religious institutions or for live music of the bar or restaurant, night club in the midnight at the residential area?

A. The law enforcement body by its own account has to take decisive and sustainable action as soon as possible

B. The community has to take its own action in consultation with religious leaders, and business owners

C. A joint committee has to be established from all stakeholders that has the responsibility to control noise pollution in the area

Q14D. If you have any other alterative ideas please specify? ----------
----

Q15. At what time do you think the Noise pollution becomes harsh and annoying in the residential area?

A. day time B. mid night C. evening time

D. early morning E. dawn time (day break)

Q16. What major impacts the communities face due to Noise pollution in the residential areas?(More than one answer is possible)

A. Hearing impairment (Hearing damage) disturbances

B. Interference with spoken Communication (learning- teaching interruption)

C. Sleep disturbance

D. Disturbance in Mental Health

E. Impaired task performance (being unproductive)

F. Negative Social Behavior and Annoyance Reaction

Q17. Which of the above health problems, you have faced most frequently? Please, list down in a sequential order.1…….. 2……..3……..

4……5……..6…….7…….

Q18. Which groups of the society do you think are the most vulnerable or highly affected by the noise pollution? (Please rate from 1-5 depending on the level of vulnerability 1 for more vulnerable, 5 for less vulnerable)

A. Infant …… B. School children……. C. Aged people…… D. Patients…… E. Adult….

Q19. Do you think that there are rules and regulations in Ethiopia to control noise pollution?

A. Yes B. No

Q19A. If your answer for the above question is" yes", why do you think that the responsible organs are reluctant to hear the outcry of the public and give immediate solution to the problem?

.....

…….

Q20. Do you agree on the presence of music shop, night clubs, and bars on the first floor of condominium and apartments?

A. strongly agree B. Agree C. Disagree d. strongly disagree

Q20A. For the above question, if your answer is "strongly disagree" what is your suggestion for the problems

……

……

…..

21. If your institution's main objective is to carry out academic career what problems did you face due to noise pollution?

A. When there is high noise pollution, the teacher is forced to stop teaching – learning process

B. In the classroom, the students couldn't hear properly

C. The students faced health problem

D The students faced mental retardation

Q21 A What problems do you face due to noise pollution (loud speaker/musical amplifier bit) in your teaching- learning process

……

……

Q21B What solutions do you suggest for the problems occurred in your activities due to noise pollution?.....

……..

Q22.If your institution's main objective is to take care of health issues, what problems did you face due to noise pollution?

A. The health problem is more aggravated

B. The person sick is more depressed

C. No problem occurred

Q22A. What problems do you face due to noise pollution (loud speaker/musical amplifier beat in treating your patients?

Q22B. what solutions do you suggest for the problems occurred in your activities due to noise pollution?

-

N.B

- **If the space is not enough for writing, please use back of this paper**
- **በባዶ ቦታ ላይ አስተያየትዎን በአማርኛ ቋንቋ ሊሰጡ ይችላሉ።።**

Thank you

DANA DODA TITO

<u>አዲስ አበባ ዩኒቨርስቲ</u>
<u>ቢዝነስናኢኮኖሚክስ ፋካልቲ</u>

<u>ሕዝብ አስተዳደርና ልማታዊ ሥራ አመራር የድህረ-ምረቃ መርሃ ግብር</u>
<u>ለድህረ-ምረቃ ጥናት የተዘጋጀ መጠይቅ</u>

ውድ መልስ ሰጪ፡-

የጥናቱ ትኩረት በአዲስ አበባ ከተማ ፣ቦሌ ክ/ከተማ፣ ወረዳ አንድ አስተዳደር በተለይም **በቦሌ ሚካኤል ህብረተሰብ መኖሪያ ሰፈር** የሕዝብ የዕለት ተዕለት እሮሮና ጩኸት መነሻ በሆነው **ድምፅ ብክለት**፡-ችግር ዙሪያ ሁለተኛ ዲግሪዬን "**በልማታዊ ሥራ አመራር**" ለምሠራው ማሟያ ይሆን ዘንድ ይህ መጠይቅ ተዘጋጅቷል፡፡

የዚህ ጥናት ስኬት እርስዎ ትክክለኛ መረጃ በሚሠጡት ላይ የተመሠረተ ስለሆነ ትብብርዎ አይለየን፡፡ ማንኛውም በዚህ ቅፅ የሚሰጡት ምላሽ በሚስጥር የሚያዝ መሆኑን እያረጋገጥኩ በቅፁ ላይ ስምዎን መፃፍ አስፈላጊ አይደለም፡፡

ቅፁን ለመሙላት ፈቃደኛ በመሆንዎ በቅድሚያ ከልብ ላመሰግንዎት እወዳለሁ፡፡

የቅፁ አሞላል መመሪያ፡-

እባክዎን፡-

- **ጥያቄውን በደንብ ያንብቡ**
- **ጥያቄውን ሲመልሱ መልስ በያዘው ፊደል ላይ ይክበቡ ወይም በተሰጠዎት ክፍት ቦታ ላይ መልሰዎን ይፃፉት**
- **አስተያየት እንዲሰጡ በተሰጠዎት ክፍት ቦታ ላይ ስለድምፅ ብክለት ነፃ አስተያየትዎን ይሥጡ**

<u>ክፍል አንድ፡</u> የግል መረጃ፡-

1. **ዖታ ሀ/ ወንድ ለ/ ሴት**
2. **እድሜ G/ 18-30 K/ 31-50 N/ ከ50 ዓመት በላይ**
3. **የትምህርት ደረጃ**

   ሀ/ ማንበብና መፃፍ እስከ ሰርቲፊኬት

   ለ/ ዲፕሎማና የመጀመሪያ ዲግሪ

   ሐ/ ማስተርስ እና ከዚያ በላይ

ክፍል ሁለት፡- ስለድምፅ ብክለት ዝርዝር ጥያቄዎች

4. የትኛው ቤተ-እምነት ተከታይ ነዎት?

   ሀ/ ኦርቶዶክስ ለ/ ሙስሊም ሐ/ ፕሮቴስታንት መ/ ካቶሊክ ረ/ ሌላ (ይገለፅ) _____

5. በኃይማኖቱ ስነ-ምግባር መሠረት ድምፅ ማጉያና አፕሊፋዬር በመቀነስ የሌሎችን ሠላምና መብት መጠበቅ ይቻላል ብለው ያምናሉ?

   ሀ/ አዎን ይቻላል፣ ለ/ አይደለም አይቻልም ሐ/ ሀሳብ የለኝም መ/ ለሌሎች ሰላምና መብት ግድ የለኝም

6. መልስዎ "አይቻልም" ከሆነ ምክንያቱ ምን ይመስልዎታል?

   ሀ/ ድምፅ ማጉያን ወይም የሙዚቃ አምፕሊፋዬር ከፍ አድርጎ መጠቀም የግድ ነው::

   ለ/ የእምነት መሪዎች ግንዛቤ ማነስ

   ሐ/ የቤተ-እምነቱ- ተከታዮች የሃይማኖት መሪዎችን ስለሚያስገድዱ

7. በቦሌሚካኤል ህብረተሰብ መኖሪያ ሰፈር የሚለቀቀውን ድምፅ ብክለት እንዴት ይመለከቱታል?

   ሀ/ በጣም ከፍተኛ ለ/ መካከለኛ ሐ/ዝቅተኛ መ/በጣም ዝቅተኛ

8. ከላይ በቁጥር 4 ለተጠየቀው ጥያቄ ምላሽዎ "በጣም ከፍተኛ" ከሆነ ከሚከተሉት የድምፅ ብክለት ምንጮች በጣም የከፋ ነው የሚሉት የትኛው ነው? (እንደየደረጃቸው ከ1-5 ያስቀምጡ) ከፍተኛ1 ዝቅተኛ 5

   ሀ/ የሐይማኖት ተቋማት የሚለቁት ድምፅ ማጉያ ወይም አፕሊፋዬር ድምፅ

   ለ/ የሚያርፍና የሚነሳ አውሮፕላን ድምፅ

   ሐ/ በመኖሪያ ሰፈር ውስጥ ካሉት ቡና ቤቶች፣ምግብ ቤቶችና ምሽት ክበቦች የሚወጣ ድምፅ

   መ/ ያረጁ ተሽከርካሪዎች በቀለበት መንገድ ላይ የሚለቁት ድምፅ

   ሠ/ የታክሲ ረዳቶች ሰፋሪዎችን ሊነጋጋ ሲል የሚጠሩት ድምፅ

9. ሌሊት ጣፋጭ እንቅልፍ ላይ እያሉ ከሃይማኖት ድርጅቶች ከልክ ያለፈ የድምፅ ማጉያና እንዲሁም ከሰፈር ቡና ቤቶች፣ ምግብ ቤቶችና ከምሽት ክለቦች ለሚለቀቀው የሙዚቃ መሳሪያ ድምፅ ምን አስተያየት አለዎት?

ሀ/ የድምፅ ማጉያ፣ አምፕሊፋዬር ሙዚቃ መሣሪያ ምት ድምፅ መጠኑ ቢቀነስ

ለ/ ድምፅ መጠኑ በዚህ ሁኔታ ቢቀጠል ግድየለኝም

ሐ/ ለመወሰን አስቸጋሪ ነው

መ/ በመኖሪያ ሠፈር ድምፅ ማጉያና ሌሎች ሙዚቃ መሳሪያዎችን መጠቀም አያስፈልግም

10.ስለድምፅ ብክለት ወይም ምሽት ክለብ ሙዚቃ መሣሪያ ችግር ለሚመለከተው የመንግስት አካል አመልክተው ያውቃሉ?

ሀ/ አዎን ለ/ አይደለም

11.ከላይ ለተመለከተው ጥያቄ መልስዎ “አዎን” ከሆነ ለየትኛው የመንግስት አካል ሪፖርት አድርገዋል?

ሀ/ ለወረዳ ስራ አስፈፃሚ ለ/ ለአካባቢያዊ ጥበቃ ቢሮ ሐ/ ለንግድ ቢሮ መ/ ለፍትህ ቢሮ ሠ) ለሌሎች ለሚመለከታቸው አካላት (ይገለፅ) _____

12.ለአቤቱታዎ ምን ምላሽ አገኙ?

ሀ/ ወዲያውኑ በአጥፊው ላይ እርምጃ ተወሰደ

ለ/ አጥፊው ማስተካከያ እርምጃ እንዲወስድ መመሪያ ተሰጠው

ሐ/ ምንም እርምጃ አልተወሰደም የድምጽ ብክለቱም እንደቀጠለ ይገኛል

13.የሚመለከተው አካል የድምጽ ብክለትን ለመቀነስ እየወሰደ ባለው እርምጃ ምን ያህል ረክተዋል?

ሀ/ በጣም ረክቻለሁ ለ/ ረክቻለሁ ሐ/ በመጠኑ ረክቻለሁ መ/ በፍጹም አልረካሁም

14.ከላይ ለተመለከተው ጥያቄ መልስዎ “በፍጹም አልረካሁም” ከሆነ በመኖሪያ ሰፈር በሚለቀቀው ድምፅ ብክለት ላይ ምን አይነት እርምጃ እንዲወሰድ ይፈልጋሉ?

ሀ/ ሕግ አስከባሪው አካል አፋጣኝ የሆነ ዘላቂ እርምጃ መውሰድ ይጠበቅበታል

ለ/ ነዋሪው ሕብረተሰብ በራሱ ተነሳሽነት ከቤተ-እምነት መሪዎችና ከነጋዴዎች ጋር በመገናኘት መፍትሄ መፈለግ አለበት

ሐ/ ከሁሉም ባለድርሻ አካላት እንደ ፅድር፤ የወጣቶችና ሴቶች ፎረምና ወዘተ ከመሳሰሉት የተውጣጣ የጋራ ኮሚቴ ተቋቁሞ የድምጽ ብክለትን ለመቀነስ ኃላፊነቱን መወጣት አለበት፡፡

መ/ሌላ መልስ ካለዎት በዝርዝር ቢገልጹልን _____

15.በየትኛው ክፍለ ጊዜ የሚለቀቀው ድምጽ ብክለት በጣም ይረብሽዎታል/ያስቆጥዎታል፡፡

ሀ/በቀን ለ/በእኩል ሌሊት ሐ/ጧት ሊነጋጋ ሲል መ/ከነጋ በኋላ ሰ/ማታ ሲመሻሽ

16.ከድምፅ ብክለት የተነሳ ህብረተሰቡ በመኖሪያ ሰፈር በጣም ሊጋለጥ የሚችለው ጤና መታወክ የትኛው ዓይነት ነው ብለው ይገምታሉ? (ከአንድ መልስ በላይ ሊሰጡይችላሉ)

ሀ/የመስማት ሐይል መቀነስ

ለ/የ ውይይትና የ ማስተማር ሂደቱን ማደናቀፍ

ሐ/እንቅልፍ መከልከል

መ/አእምሮ ህመምና ጭንቀት

ሠ/ሥራ አፈፃፀም ማዳከምና ምርታማነት መቀነስ

ረ/ ከሕብረተሰቡ ጋር በማህበራዊ ግንኙነት አለመግባባት፣ ቁጣና ንዴት ስሜት ማስከተል

17.ከላይ ከተጠቀሱት የጤና መታወክ ችግሮች የገጠመዎት ካለ ቀጥሎ ባለው ባዶ ቦታ ላይ በቅደም ተከተል ያስቀምጡ

1.....2

.....3.....

4 .....5 6

.....

7. .....

17.ከህብረተሰብ ክፍሎች ለድምፅ ብክለት የበለጠ ተጋላጭ የሆኑት የትኞቹ ይመስሎዎታል?

(እንደየደረጃቸው ከ 1-5 ያስቀምጡ) ከፍተኛ 1 ዝቅተኛ 5

ሀ/ ጩኸላ ህፃን ☐ ተማሪዎች ☐

ሐ/ ሽማግሌዎችና አረጋዊያን ☐ መማን ☐

ሠ/ጎልማሳ ☐

18.በሀገራችን የድምፅ ብክለት መቆጣጠሪያ ደንብና መመሪያ አለ ብለው ያምናሉ?

ሀ/አዎን ለ/አይደለም

19.መልስዎ “አዎን” ከሆነ የሚመለከተው አካል ለሕዝብ እሮሮ ፈጣን ምላሽ ለመስጠት ችላ ያለበት ምክንያት ምን ይመስለዎታል? የራስዎን መልስ ይስጡት _____

_____

_____

20.ብዙ ህዝብ በሚኖርበት አከባቢ እንደአፓርታማ፣ ኮንዶሚኒም በመሳሰሉት ስፍራዎች ከፎቅ ሰር መጠጥ ቤቶች፤ ጭፈራ ቤቶች፤ መዝሚያ ቤቶች እንዲኖሩ መፈቀዱን ይስማማሉ?

ሀ/በጣም እስማማለሁ ለ/ እስማማለሁ ሐ/ አልስማማም መ/ በፍጹም አልስማማ

19. ከላይ ለተጠየቀው ጥያቄ ምላሽዎ “አልስማማም” ከሆነ የራስዎን አስተያየት ቢሰጡ.....

20. እርሰዎ የሚመሩት ተቋም ትምህርት ቤት ከሆነ ከድምፅ ብክለት የተነሳ ምን ችግር ገጠሞት?

ሀ. ድምጽ ብክለቱ ሲለቀቅ መምህሩ የመማር- ማስተማሩ ሂደትን ለማቆም መገደድ

ለ.ተማሪዎች በከፍል ውስጥ በአግባቡ ማዳመጥ አለመቻል

ሐ.በተማሪዎች ላይ ጤና መታወክ ችግር ማስከተል

መ.የተማሪዎች የትምህርት አቀባበል አቅምን መቀነስ

21.ከድምፅ ብክለት የተነሳ ሌሎች በትምህርት ቤት የተከሰቱ ችግሮች ካሉ በዝርዝር ቢገለፁ.....
.....

22. እርሰዎ የሚመሩት ጤና ተቋም ከሆነ በጤና ረገድ ከድምፅ ብክለት የተነሳ ምን ችግር ገጠሞት?

ሀ የሕመማን የጤና ሁኔታ ማባባስ

ለ በሕመማን ላይ የባሰ ጭንቀት ማስከተል

ሐ ምን ምያጋጠመ ችግር የለም

23 እርሰዎ በሚመሩት ጤና ተቋም ከድምፅ ብክለት የተነሳ የገጠመዎትን ችግር ዘርዘር አድርገው ቢገልጹልን _____
_____

24. እንደየተቋማችሁ የስራ ባህሪ ስለድምጽ ብክለት ምን መፍትሔይኖራል ብለውያምናሉ?
አስተያየትዎን ዘርዘር አድርገውይስጡ.....

ሀ/ትምህርት ተቋም
.....
.....
.....ለ/ጤና ተቋም
.....
.....

<u>ማሣሠቢያ</u>፡ -ባዶ ቦታ ካልበቃ በስተጀርባውበኩል ይጠቀሙ

አመሰግናለሁ

ዳና ዶዳ ቲቶ

ANNEX2：Interview Questions

Interview Questions

To Addis Ababa Environmental Protection Authority

It is obvious that the Authority's main objectives; noise pollution is the one that is listed.

1.Is there noise pollution standard level guidelines for those sensitive institutions as schools, healthcare centers, residential areas, courts and others?

2. Is there awareness at the Authority level that in A.A.in many places, particularly in community residential areas, loudspeakers and amplifiers musical bit emanating from religious institutions, hot music, shout and dance from night clubs, bars and restaurants in the midnight highly disturbs the peace of the residents? If it is known what action had been taken?

3. Have you ever received any complaint from the residents about noise pollution?

From which part of A.A?

4. How did you handle and what solution is given to the resident's outcry?

5. Do you have complaint handling section or officer that visits and investigates the problem at stake?

6. What is intended from the Authority to protect the community from noise pollution that emanates from different religious institution loudspeakers and night clubs, bars and music shop sources?

7. What is the future short and long plan of the Authority to solve the noise pollution problems in community resident area in collaboration with stakeholders (CBO) as idir, religious institutions, trade houses and other interested groups?

Thank you
DANA DODA TITO

ቃለ-መጠይቅ

አዲስ አበባ አካባቢያዊ ጥበቃ ባለስልጣን የቀረበ ጥያቄ

ከባለስልጣኑ ዋና ዋና አላማዎች ውስጥ ድምፅ ብክለት መቆጣጠር አንዱ ነው፡ ፡

1. ባለስልጣኑ መስሪያ ቤት ስለአንዳንድ አንገብጋቢ ለሆኑ ተቋማት ለምሳሌ ትምህርት ቤት፣ ጤና ጣቢያ፣ መኖሪያ ሠፈር እና ሌሎችም በድምፅ ብክለት ረገድ የሚከተልበት ደረጃውን የጠበቀ መመሪያ አለው?
2. በአዲስ አበባ ብዙ ቦታዎች በተለይም በህብረተሰቡ መኖሪያ ሠፈር ድምፅ ማጉያና አምፕፋየር መዚቃ መሣሪያ ከሃይማኖት ተቋማት የሚለቀቀውና እንደ መዚቃ ምት፣ ጭፈራ፣ ጩኸት፣ ከምሽት ክበቦች፣ ቡና ቤቶችና ምግብ ቤቶች የሚለቀቀው ድምፅ ብክለት ነዋሪውን ሠላም እየነሳው ስለሚገኘው ባለስልጣኑ መስሪያ ቤት ያውቃል? ካወቀስ እስካሁን ምን እርምጃ ተወሰደ?
3. ለመሆኑ ለባለስልጣኑ መ/ቤት ከነዋሪዎች ስለድምፅ ብክለት አቤቱታ ቀርቦ አስተናግደውያውቃሉ? ከሆነስ ከአ.አበባ ከየትኛውክፍልነው የቀረበው?
4. ከህብረተሰቡ ለቀረበውእሮሮና ጩኸት ምን መፍትሔተሠጠው?
5. በመስሪያ ቤቱ አቤቱታ ተቀብሎ የሚያስተናግድ የሥራ ክፍል አለ ወይ?
6. ባለስልጣኑ መ/ቤት በአጭርና ረጅም ጊዜ ዕቅድ የድምፅ ብክለትን ችግር ለመፍታት በራሱ በኩል ምን አቅዷል፡ ፡
7. እነዚህ በህብረተሰቡ መኖሪያ ሠፈር ድምፅ ብክለት ያለልክ ከሚለቁ የኃይማኖት ድርጅቶችና የምሽት ክበቦች፣ ቡና ቤቶችና ከሌሎችም ባለድርሻ አካላት ጋር የባለስልጣኑ መ/ቤት ተቀራርቦ የጋራ መፍትሔ ለማፈላለግ ያለውቁርጠኝነት ለወደፊት ምን ያህልነው?

To Bole Sub-City Environmental Protection Office

It is obvious that the Authority's main of the objectives is noise pollution.

1.Is there noise pollution standard level guidelines for those sensitive institutions as schools, healthcare centers, residential areas, courts and others?

2. Is there awareness at the Authority level that in A.A.in many places, particularly in community residential areas, loudspeakers and amplifiers musical bit emanating from religious institutions, hot music, shout and dance from night clubs, bars and restaurants in the midnight highly disturbs the peace of the residents? If it is known what action had been taken?

3. Have you ever received any complaint from the residents about noise pollution?

From which part of A.A?

4. How did you handle and what solution is given to the resident's outcry?

5. Do you have complaint handling section or officer that visits and investigates the problem at stake?

6. What is intended from the Authority to protect the community from noise pollution that emanates from different religious institution loudspeakers and night clubs, bars and music shop sources?

7. What is the future short and long plan of the Authority to solve the noise pollution problems in community resident area in collaboration with stakeholders (CBO) as idir, religious institutions, trade houses and other interested groups?

Thank you

DANA DODA TITO

ለቦሌ ክ/ከ አካባቢያዊ ጥበቃ ቢሮ የቀረበ ጥያቄ

ከቢሮ ዋና ዋና አላማዎች ውስጥ ድምፅ ብክለት መቆጣጠር አንዱ ነው ፡ ፡

1. ቢሮ መስሪያ ቤት ስለአንዳንድ አንገብጋቢ ለሆኑ ተቋማት ለምሳሌ ትምህርት ቤት፣ ጤና ጣቢያ፣ መኖሪያ ሠፈር እና ሌሎችም በድምፅ ብክለት ረገድ የሚከተልበት ደረጃውን የጠበቀ መመሪያ አለው?
2. በአዲስ አበባ ብዙ ቦታዎች በተለይም በህብረተሰቡ መኖሪያ ሠፈር ድምፅ ማጉያና አምፕፋየር መዚቃ መሣሪያ ከሃይማኖት ተቋማት የሚለቀቀውና እንደ መዚቃ ምት፣ ጭፈራ፣ ጩኸት፣ ከምሽት ክበቦች፣ ቡና ቤቶችና ምግብ ቤቶች የሚለቀቀው ድምፅ ብክለት ነዋሪውን ሠላም እየነሳው ስለሚገኘው ባለስልጣኑ መስሪያ ቤት ያውቃል? ካወቀስ እስካሁን ምን እርምጃ ተወሰደ?
3. ለመሆኑ ለቢሮ መ/ቤት ከነዋሪዎች ስለድምፅ ብክለት አቤቱታ ቀርቦ አስተናግደው ያውቃሉ? ከሆነስ ከአ.አበባ ከየትኛው ክፍል ነው የቀረበው?
4. ከህብረተሰቡ ለቀረበው እሮሮና ጩኸት ምን መፍትሔ ተሠጠው?
5. በመስሪያ ቤቱ አቤቱታ ተቀብሎ የሚያስተናግድ የሥራ ክፍል አለ ወይ?
6. ቢሮ በአጭርና ረጅም ጊዜ ዕቅድ የድምፅ ብክለትን ችግር ለመፍታት በራሱ በኩል ምን አቅዷል ፡ ፡
7. እነዚህ በህብረተሰቡ መኖሪያ ሠፈር ድምፅ ብክለት ያለልክ ከሚለቁ የኃይማኖት ድርጅቶችና የምሽት ክበቦች፣ ቡና ቤቶችና ከሌሎችም ባለድርሻ አካላት ጋር የባለስልጣኑ መ/ቤት ተቀራርቦ የጋራ መፍትሔ ለማፈላለግ ያለውቁርጠኝነት ለወደፊት ምን ያህል ነው?

Interview Questions

To CEO of woreda 1 Administration/ Environmental Protection Bureau

It is obvious that the Authority's main objectives; noise pollution is the one that is listed.

1.Is there noise pollution standard level guidelines for those sensitive institutions as schools, healthcare centers, residential areas, courts and others?

2. Is there awareness at the Authority level that in A.A.in many places, particularly in community residential areas, loudspeakers and amplifiers musical bit emanating from religious institutions, hot music, shout and dance from night clubs, bars and restaurants in the midnight highly disturbs the peace of the residents? If it is known what action had been taken?

3. Have you ever received any complaint from the residents about noise pollution?

From which part of A.A?

4. How did you handle and what solution is given to the resident's outcry?

5. Do you have complaint handling section or officer that visits and investigates the problem at stake?

6. What is intended from the Authority to protect the community from noise pollution that emanates from different religious institution loudspeakers and night clubs, bars and music shop sources?

7. What is the future short and long plan of the Authority to solve the noise pollution problems in community resident area in collaboration with stakeholders (CBO) as idir, religious institutions, trade houses and other interested groups?

Thank you
DANA DODA TITO

ወረዳ 1 አካባቢያዊ ጥበቃ ቢሮ የቀረበ ጥያቄ

ከቢሮ ዋና ዋና አላማዎች ውስጥ ድምፅ ብክለት መቆጣጠር አንዱ ነው፡ ፡

1. ቢሮ ስለአንዳንድ አንገብጋቢ ለሆኑ ተቋማት ለምሳሌ ትምህርት ቤት፣ ጤና ጣቢያ፣ መኖሪያ ሠፈር እና ሌሎችም በድምፅ ብክለት ረገድ የሚከተልበት ደረጃውን የጠበቀ መመሪያ አለው?
2. በወረዳው ብዙ ቦታዎች በተለይም በህብረተሰቡ መኖሪያ ሠፈር ድምፅ ማጉያና አምፕፋየር መዚቃ መሣሪያ ከሃይማኖት ተቋማት የሚለቀቀውና እንደ መዚቃ ምት፣ ጭፈራ፣ ጩኸት፣ ከምሽት ክበቦች፣ ቡና ቤቶችና ምግብ ቤቶች የሚለቀቀው ድምፅ ብክለት ነዋሪውን ሠላም እየነሳው ስለሚገኘው ቢሮ/ መስሪያ ቤት ያውቃል? ካወቀስ እስካሁን ምን እርምጃ ተወሰደ?
3. ለመሆኑ ለቢሮው ከነዋሪዎች ስለድምፅ ብክለት አቤቱታ ቀርቦ አስተናግደው ያውቃሉ? ከሆነስ ከአ.አበባ ከየትኛው ክፍል ነው የቀረበው?
4. ከህብረተሰቡ ለቀረበው እሮሮና ጩኸት ምን መፍትሔ ተሠጠው?
5. በመስሪያ ቤቱ አቤቱታ ተቀብሎ የሚያስተናግድ የሥራ ክፍል አለ ወይ?
6. ወረዳው መ/ቤት በአጭርና ረጅም ጊዜ ዕቅድ የድምፅ ብክለትን ችግር ለመፍታት በራሱ በኩል ምን አቅዷል፡ ፡
7. እነዚህ በህብረተሰቡ መኖሪያ ሠፈር ድምፅ ብክለት ያለልክ ከሚለቁ የኃይማኖት ድርጅቶችና የምሽት ክበቦች፣ ቡና ቤቶችና ከሌሎችም ባለድርሻ አካላት ጋር የባለሰልጣኑ መ/ቤት ተቀራርቦ የጋራ መፍትሔ ለማፈላለግ ያለውቁርጠኝነት ለወደፊት ምን ያህል ነው?

Interview Questions

To Addis Ababa Housing Development Administration Agency

It is very appreciable that the Government's long term plan to equip those houseless citizens to be a house owner, by providing condominium houses ether by redevelopment scheme or other reasons. On the contrary, we observe mixed up situations in which the condominium houses, in some areas become the source of noise pollution.

1. What are the main reasons that most of the ground floors nearer to main road or feeding roads are sold to the business activities?

2. In your Agency is there any means to identify the nature of the business in the light of peace of residents before selling or transferring to the buyers?

3. Has the Agency distinguished that there is high public outcry for severe noise pollution from sources as music shops, night clubs, bars and restaurants in the condominium houses?

4. Have you ever received and entertained any complaint from the residents?

5. If your answer for question no 4 is "yes" then what action did the Agency take to solve the problem?

6. What is your future (short and long term) plan to solve the noise pollution problems in resident area in collaboration with stakeholders as (CBO) idir, religious institutions, interested groups?

Thank you
DANA DODA TITO

ቃለ መጠይቅ

ለአዲስ አበባ ቤቶች ልማት አስተዳደር ኤጀንሲ የቀረበ

በልማት ይሆን ወይም በሌላ ምክንያት ቤት አልባ ለሆኑ ዜጎች መንግስት የረጅም ጊዜ ፕላን በማሰራት የኮንደምንየም ቤት ባለቤት እያደረገ መገኘቱ የሚደነቅ ነው፡ ፡

በአንፃሩ ደግሞ ኮንደምንየም ቤቶች ባሉበት በታሁሉ (ከጥቂቶች በስተቀር)

1. መንግስት በዋና ዋናና በመጋቢ መንገዶች ዙርያ ያሉትን ቤቶች ለንግድ ቤቶች የሚሸጥበት አበየት ምክንያቶች ምን ምን ናቸው?

2. ቤቶቹ ለንግድ ቤቶች ሲሸጥ በምን ምን የቢዝነስ አይነቶች እንዲሰማሩ ተለይቶ ነው የሚሸጠው

3. ካልሆነ በህብረተሰቡ መኖሪያ ሰፈር መዚቃ ቤቶች ምሽት ክለቦች ጭፈራ ቤቶች እና ቡና ቤቶች ከልክ ያለፈ ድምጽ ብክለት እንደሚያስከትሉ ነዋሪዎች እሮሮ ያሰማሉ ፡ ፡ ወደ መ/ቤት አቤቱታ ይዘው የቀረቡበት ሁኔታ ነበር? ፡ ፡ ለዚህ ችግር ምን መፍትሄ ተበጅቶለታል ?

4. በኤጄንሲው በኩል ለወደፊት በረጅም ግዜ እቅድ ችግሩን ለመቅረፍ ምን ታስቦአል?

ANNEX3：Questions for focus Group discussion

Interview Questions for Focus Group Discussion

1. **As resident and victim of religious Institutions Loudspeaker and impulsive sound amplifier and night clubs and bars live musical beat in the midnight, what do you suggest?**
2. **What do think that the responsible body is silent for the public outcry?**
3. **What do you suggest for the future that noise pollution of religious institutions and live musical beat in the residential area to be?**
4. **What strategies should the responsible authority follow in future to free the victims of noise pollution in the residential area?**

ለተመረጡመልስ ሰጭዎች የቀረበ ቃለ-መጠይቅ

1. እንደነዋሪነታችሁ በመኖሪያ ሠፈር ከሃይኖት ድርጅቶችና ጭፈራ ቤቶች ለሚለቀቀው የድምፅ ብክለት ምን አስተያየት አላችሁ?
2. ጉዳዩ የሚመለከተው አካል ለሕዝቡ እሮሮ ፈጣን ምላሽ የማይሠጥበት ምክንያት ምንድነው ብለውያሰባሉ?
3. ለወደፊቱ በመኖሪያ ሠፈር ከሃይማኖት ድርጅቶችም ሆነ ከጭፈራ ቤቶች ስለሚለቀቀው ድምፅ ብክለት ምን መፍትሔመጀት አለበት ይላሉ?
4. ጉዳዩ የሚመለከተው አካል ይህን ችግር ከመኖሪያ ሠፈር ለማስወገድ ምን ስትራቴጂ ነድፎ መንቀሳቀስ አለበት ይላሉ?