



COLLEGE OF SOCIAL SCIENCE AND HUMANITIES
DEPARTMENT OF GEOGRAPHY AND ENVIRONMENTAL
STUDIES

**AN ASSESSMENT OF CAUSE AND CONSEQUENCES OF ENVIRONMENTAL
POLLUTION IN ETHIOPIA, CENTRAL ETHIOPIA REGION, GURAGE ZONE IN
WOLKITE TOWN**

A senior essay submitted to Wolkite University College of Social Science and Humanities, Department of Geography and Environmental Studies in partial fulfillment of the requirement for the Bachelor of the (BA) degree in Geography and Environmental studies.

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WOLKITE UNIVERSITY

COLLAGE OF SOCIAL SCINCE AND HUMANTIES

**DEPARTMENT GOEGRAPHY AND ENVIRONMETAL
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WOLKITE TOWN**

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Acronyms

EPA Environmental Protection Agency

HHs Households

WHO World Health Organization

EFFOR Endowment Fund for the Rehabilitation

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ABSTRACT

Environment is a place where both living and non-living things live in it. Environmental pollution is the way of changing normal/natural/ environment into harmful environment that cause adverse consequences on human health. The study was conducted in Wolkite town which is located about 158 km of south of Addis Ababa. The major purpose of the study was assessing causes and consequences environmental pollution .This study used to identifying types, source and consequences of environmental pollution. For this study data received primary and secondary data. Primary data collected through direct observation and distributing questionnaires for samples of 92 respondents and secondary data collected from wolkite town health service and municipality office. By using this data the researchers used simple random sampling and describe the analyses in table in percentage according to specific objective.

Pollution is caused by industrial and commercial waste, agriculture practices, human activities and transportation. It is created by human actions and by natural disasters.

Generally, the most people have a view about the environment as useful and applying mitigation methods or prevention such as preparing underground storage table for domestic liquid waste, burning solid waste, informing for municipality to lift out dead body of animals and performing other activities to prevent environmental pollution. Therefor education is the most important means that helps to protect the environment.

CHAPTER ONE

1. INTRODUCTION

1.1. Background of the Study

Environment is one of our most important and basis of all living things and non-living things that surround us. History emerged as a new field of study as environmental problems began to rise up the global political in 1960 and 1970, its primary goal is to show how environmental change and human actions interconnected. Long before the industrial revolution human activities began to alter the earth environment. However, only in this century has the scale of such alterations become global in scope, moreover the rate of these recent change is enormously high compared with the historical record. Although this environment is unable to remain stable in the long future because where it is exposed to various pollution caused by different pollutant from different sources. The most common sources that realized pollutant that pollute the environment are natural hazards such as volcanic eruption ,forest fire ,bio organic process, natural climate change and also anthropogenic sources such as deforestation ,waste disposal from (industries, municipalities ,agricultural lands),construction sites, rail road ,biochemical wastes ,hazardous wastes (William.p,2003).

All over the world today, environmental pollution is issue of great concern because of what the environment to human survival and indeed the survival of the earth itself. these days ,the argument on greenhouse effects is rife everywhere in the world .If it is not greenhouse effect, it is global warming .Both point to the effect to that earth is polluted (William,2006;88) affirm that it is well recognized that environment is one the health. The problem of refuse disposal environmental pollution as regard altering of steers with refuse material is a crucial problem of the developing countries. It has been observed that environmental pollution identifies improper, ineffective and unhygienic disposal of refuse materials as vector of environmental pollution .the most talk about pollution is the industrial pollution which is now a global issue. This has generated a lot of discussion and augments at various social states especially among the scientist (AdimekweS).

Environmental pollutant can be classified under the following heading; (1)water pollution (2) soil pollution (3)noise pollution (4)air pollution .water pollution is the introduction in to ocean

water of chemicals, physical or biological bio-accumulative, halogenated, hydrocarbons) face and focal polluted water that causes cholera (AdimekweS.C,2013, 2013).

Ethiopia is a landlocked country located in the Horn of Africa. It is one of the fastest-growing economies in Africa and has experienced significant industrialization and urbanization over the past few decades. However, this rapid development has also led to increased environmental pollution in the country.

To address these environmental challenges, the Ethiopian government has taken measures like implementing environmental regulations, promoting renewable energy, and afforestation initiatives. However, further efforts are needed to mitigate pollution and ensure sustainable development in the country.

1.2 statement of the problem

Environmental pollutions are defined as problems with the (air, water, soil, noise.) that have developed as a result of human interference or mistreatment of the Environment. Our environment is poised on the brink of severe environmental pollutions. Current environmental problems make us vulnerable to disasters and tragedies, now and in the future. We are in a state of environmental emergency, with environmental problems piling up high around us. Unless we address the various issues prudently and seriously,

Environment of the study area is constantly changing. There is no denying that fact. However, as environment changes, so does the need to become increasingly aware of the problems that surround it. with a massive influx of natural disasters warming and cooling periods, different types of weather patterns and much more, people need to be aware of what types of environmental problems is facing. The area is warming up because of air pollution and the communities are definitely part of the problem. We are surely doomed for disaster. Current environmental problems also require urgent attention. It is described as the undesirable change in physical, chemical, and biological characteristics of our air, land and water. As a result of over-population, rapid industrialization, and other human activities like agriculture and deforestation etc., earth became loaded with diverse pollutants that were released by-product[<http://safer environment. word press, com/2009>].

Environmental pollution is one of the most serious problem in our country, it affects that all living things exist on the surface of the earth. This phenomena is not only disturbing or disquieting the quality of our environment, it also leads to global warming .in most developing countries the problem is a little better than developed countries, because developing countries are characterized by rapid population growth, in-appropriate way of agricultural practice and un-wise use of environmental resources. Due to this reason less developed nations are highly responsible for environmental pollution (AdimekweS.c.2013). Similarly, this is true for Ethiopia while these countries are late in civilization and technological advancement, but this country the environmental pollution more emphasized due to population growth and the related activities time to time.

Wolkite Town is one of the administrative, which is found in the region of Central Ethiopia where endowed with this site has serious environmental pollution problems on environmental sustainability and to prevent this problem. However, the reason to select Wolkite town is highly susceptible to the current time environmental pollution. That is largely faced by human activities such as water, soil, air due to this pollution many peoples were affect by water borne diseases such as diarrhea, ameba, and cholera are the common diseases affect the community .because of air, water and soil pollution and water quality becomes decreases. (According to Wolkite Town municipality offices, 2020).

However, there were not studies has been conducted in Wolkite Town so far on issues related to causes and consequences of environmental pollution. Even if the study was conducted in wolkite town there is no significance change about causes and consequences of environmental pollution. Therefore to fill the gap, this study will attempt to assess such main issues of causes and consequences of environmental pollution (According to Wolkite Town municipality offices, 2020).

1.3 Objective of the study

1.3.1 General objective

The general objective of this study is to assess the causes and consequences of environmental pollution in CENTRAL ETHIOPIA region in wolkite town

1.3.2 Specific objectives

To identify types of environmental pollution in Wolkite town

To investigate the major source of environmental pollution in Wolkite town

To identify consequences of environmental pollution in Wolkite town

1.4 Research questions

What is the most common type of environmental pollution in the study area?

What is the major cause of environmental pollution in the study area?

What are the consequences of the environmental pollution?

What are the control methods of environmental pollution?

1.5 The scope of the study

The coverage of the study would be limited to the assessment of causes and consequences of environmental pollution in wolkite town that influences the life. The study would generally focuses on the causes and consequence of environmental pollution in wolkite town , this study focuses mainly on water pollution , soil pollution , air pollution and noise pollution because wider nature of the topic under study the respondent to our questionnaire would be wolkite municipal. Including all members would be beyond our capacity in labor, time and cost.

1.6 Significance of the study

The result of the study would be expected to increase the knowledge of community on the study area about causes and consequences of environmental pollution. Besides to this the study helps to tackle the problem related to the adaption of mitigation measures of technology. Today much of great attention is given for the protection of the all environmental is limited when we protect within its capacity. However ,this environment can be under extreme of pollution today in most developing countries like Ethiopia particularly in the area of high population dominates whereas the demand for the unlimited gift of environmental increase .Environmental provides multifunctional benefits for human beings such as clean water supply ,air ,road , shelter and cloth as well as supplies on the consumption we want throughout the world (Annevning,2004).

1.7 Limitations the of study

While doing the research some constraints were faces such as, lack of enough money, in accessibility of the study and lack of enough documented data about the study area , it not have

enough time and some people were not willing to offer necessary information and most of the people not willing to make interview with the researcher. These constraints are resisted by requesting financial support from our families, our relatives and friends, and also we get necessary information's from familiar peoples with our study and from willing peoples to give desirable information.

1.8 Organization of the paper

The research contains five chapters. The first chapter introduction part which includes background of the study, statement of the problem, objective of the study, research question, significance of the study, scope of the study and organization of the paper. The second chapter deals with literature review. The third chapter deal about methodology of the study. The four chapters describe analysis and interpretation based and finding and the remaining chapter includes conclusion and recommendation.

CHAPTER TWO

2. LITERATURE REVIEW

2.1 Definition and concept of environmental pollution

Environment is formed both the biotic environment such as plants and animals and abiotic such as light, water, soil, climate and their interaction of make up the total environment (Roger .P, 2003.) pollution is defined as the introduction of contaminants in to the natural environment that causes adverse change (Mechael.C.2003). Environmental pollution means guarding all the surrounding condition which influences growth and development (air, water, land, atmosphere and space) against pollution (DERID, 2000) Udoudo (2006) observe that in some location in wolkite town is one can hardly find modern toilet facilities. In some water pollution is the introduction into river waters chemical, physical or biological material that degrades the qualities of water. The process ranges from sampling addition of dissolved or suspended solids to discharge of the insidious toxic pollutant (such as pesticides heavy materials non-degradable bio accumulative, halogenated ,hydrocarbons)which persist and pervade the environment .Much water bodies are heavy polluted by human face and faecal polluted water that causes cholera (AdimekweS .C,2013)

The significance of environmental factors to the health and well-being of human population increasingly apparent (Rosenstock, 2003', WHO, 2010b).the environmental pollution is worldwide problem and its palatial to influence the health of human population is great (Fereidoum et al; 2007).

2.2 Types of environmental pollution

Environmental pollution can be classified under the flowing heading; (i) water pollution (ii) soil pollution (iii) air pollution (iv) noise pollution.

2.2.1 Water pollution

Water pollution is the contamination of water by sewage, toxic chemical, toxic metals or other subsistence that can affect the water source such as surface water, ground water and water harvesting sources.

2.2.2 Soil pollution

Soil pollution is the destruction of the earth thin layers of healthy productive soil where much of our food is grown .Although without fertile soil farmers could not enough food to support people.

2.2.3 Air pollution

Air pollution is the contamination of atmosphere by gaseous liquid or solid wastes or byproducts that can attack endanger human health and welfare of plants and animal or can attack materials, reduce visibility or produce undesirable odors.

2.2.4 Noise pollution

Noise pollution –unlike all other pollution causing components emits of the sound is not an element, compound or substance which accumulates and harms the future generations. Any sound that has the potential to cause disturbance discomfort or physiological stress to the subject exposed to it or unwanted, unpleasant sound that cause discomfort irritation to human beings.

2.3 Source of environmental pollution

Environment may be pollution in different ways, thus the two most common source of environmental pollution are natural and anthropogenic source.

2.3.1 Source of water pollution

The recent major source of surface and ground water pollution includes the following; industrial effluent, domestic sewage, fertilizers and pesticides and leached from liquid water disposal sites.

2.3.2 Source of air pollution

The pollutants which discharge from sources may threat persist in the atmosphere, transformed, deposited .There are various kinds of estimated pollutants liberated by different activities in developed and developing countries.

2.3.3 Source of noise pollution

Source of noise pollution can be formed natural forest fire, volcanic eruption, and lathing and from manmade such as modern mechanics and technology invention, motor vehicles greatly increased the source of noise pollution .However, noise pollution is not the problem of advanced countries but it has stated raising its ugly heard in the developing countries too.

2.4 Consequences of environmental pollution

Environmental pollution is a worldwide problem that affects air, water, various human activities mainly since the industrial revolution has created waste products that have simply been realized in to the environment without any thought being point to their effects (Dr.H.Gillary, 2003).

2.4.1 Consequences of air pollution

Consequences on vegetation

Air pollution can affect plants in varying degrees at the lowest levels that below threshold there is no effect such as visible cumulative chronic effects. However, event at these level air pollutants can be stored in the plant and introduced into the food chain affecting animals which eat the plant .Air pollution commonly affects vegetation as follows; changes in sun are energy failing on the leaf surface the energy exchange due to dust, decrease chlorophyll content, interruption in gaseous exchange and due to clogging of stomata on dust particulates (A.Kging, 2003).

2.5 Methods of environmental pollution mitigation

2.5.1 Air pollution control methods

Gaseous pollutants such sulfur dioxide, nitrogen dioxide, carbon dioxide and acidic gases and hydrocarbons are the principal gases responsible for air pollution .For the control of these gasses the mechanism are chemical engineering unit operation each include adsorption, absorption combustion and condensation .Automobile emission is the major problem of metropolitan town. It can be controlled by crankcase emission, control of exhaust emission, control of evaporation emission and alternatives to the gasoline engine (Purohit et al ;2009).

2.5.2 Control of noise pollution

Exposure of mankind to the day by day increasing noise nuisance must be reduced and abated, If its adverse effects on human health are to be controlled. The society must ,therefore ,be protected from the harmful effects of noise by devising and implementing ways and means for the abatement of noises .There are certain noise of which have to be dampened and attenuated by use of good technology and town planning .For example the noise produce d by motor vehicles can be controlled to some extent by proper maintenance of vehicles which can be ensured only by prescribing maximum premise able noise levels for different types of automobiles ,though

motor vehicles Act. Another very important method for abating noise effect on mankind is to use proper town planning techniques, thus to ensure construction of house and office away from major source of noise (Garg et al; 2006)

2.5.3 Control of water pollution

Sewage disposal and treatment sewage is defined as the water supply of the used water of community .It contains dilute water borne wastes from residence, business house and industries .The sewage water is treated by physical or biological processes for removal of organic matter. Using mechanical devices ,various suspended and floating solids from sewage can be removed physically .Biological treatment is widely used method for sewage treatment .The water from toilet ,bath tubes ,kitchen and sinks is processed septic tanks ,which can hands at the most a few hundred gallons per day to municipal plants which handle of gallons (Purohit et al;2009)

2.5.4 Control of soil pollution

Eco-friendly farming system is the only approach to control soil pollution .There are several established approaches to eco-friendly system .This includes organic farming which is a productive system which avoids or largely excludes the use of synthetically compounded fertilizers ,pesticides ,growth regulators and livestock feed additives .Biological farming diagnostic instrument to monitor plant and soil condition are frequently used in biological farming .this include refract meters to monitor sugar content (brix) in plant tissue sap. per-musculature is another method of controlling soil pollution which a contraction of permanent agriculture .It is concerned with designing ecological human habitats and food production system and follows specific guide lines and principles in the design of these system (Purohit et al ;2009).

CHAPTER THREE

3 MATERIALS AND METHODS

3.1 Description of study of area

3.1.1 Location

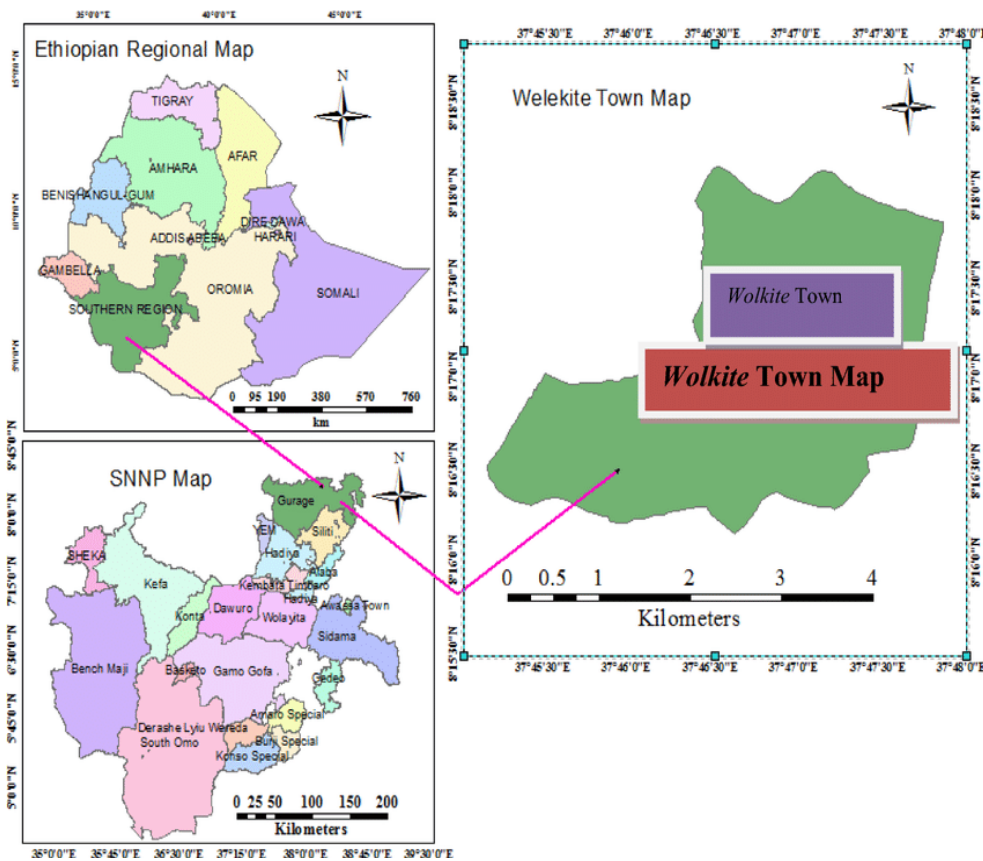


Figure: 3.1 map of the study area

Source: the study area map (GIS 2016)

The study is conducted in Ethiopia, central Ethiopia region in Gurage zone, Wolkite town. Wolkite town is located at 158 km from the capital city of Ethiopia Addis Ababa. The town has an elevation of 1,910m (6,270ft), which mean an elevation between 1,910 and 1,935 m above sea level. The town was surrounded by Cheha woreda and it was part of former Goro woreda. Wolkite Town is located at 8° 12' 50" -08° 16' 40" North and 37° 46' 40"-037° 48' 17" east. The water supply coverage of the town is 40%, and it has a surface area of 72km², the elevation of 1820 to 1900 m and that receives a mean annual rainfall of 1310mm per year (Wolkite Town Water Supply Office 2019).

3.1.2 Population size

Wolkite town is one of the towns in Gurage zone, which has the population number approximately 28,886 in 2007, of which 15,074 were males and 13,852 females (CSA,2007).

3.1.6 Social service

There are different social services that take place in Wolkite town including education, water supply, electricity, health service, building hospital, public and private drug vendor, telecommunication and road that connect the town with other woredas in the Jimma town and Waliso town, from these social services.

3.1.4 Topography

The topographic feature of Wolkite town is generally as mountains, plains, plateau, swampy area and valley. Generally Wolkite town has leveled topographic feature and the altitude of this woreda ranges from 1910 to 1935 meters, above sea level (CHM, 2010).

3.1.4 Soil type

Wolkite Town due to its topography and various land forms with regard to the variation in altitude the soil type also differ; because the land form is very fertile in nature. The land use of wolkite town is dominated by agriculture but now days various activities of soil and water conservation practices have done by governmental and non-governmental organization such as construction of hillsides terraces. Trenches and establishment of the plant of plantation.

3.1.5 Water supply

The water supply system of Wolkite town was established in 1989 when a borehole was drilled in the town and connected to a 30m³ elevated steel tanks. However, the present daily water yield of Wolkite town from the spring source (Bojebbar) is estimated to be 150L/s in dry season and it reaches 200L/s in wet season. The provision of potable Water is through 28 public fountains, 345 house connections and yard Connections, 21 Government and public connections, 72 commercial Connections. (Solomon, 2011).

3.1 .6 Climate

The main annual temperature of Wolkite town range from 20c^o-12c^o. Its climate has seasonal variation. The Wolkite town is characterized by small rain from March to May, heavily rain from June to September and the amount of rainfall become being decreases from October to February, and however, the climate of Wolkite town is more of woina dega (CHM, 2010).

3.1.7 Rainfall

Wolkite town has five rainy months; from Jun to September, 48.9% of the rain occurs between July and August. But sometimes unexpected rainfall would be occurred, in October 95.63mm rainfall. Humidity is close to 40%

3.1.8 Economic activity

The major economic activity in Wolkite town is trade and ,around peripheries agricultural activities are taken place includes crop production ,inset production and rearing of animal, and some peoples are engaged in tertiary economic activity.

3.2 Research Design

The research design that was used in this study is descriptive survey. Descriptive survey can collect detail information about a given subject and uses it in order to address the research problem on cause and consequence of environmental pollution in Wolkite town.

3.2.1 Research Approach

The study was used both qualitative and quantitative methods of investigation. In the researchers will employ at the same time in mixed the researchers would be used interview, questionnaire, and field observation. This is because the mixed method helps to check validates of one form of the data with the other form, to address different types of questions.

3.2.2 Sampling techniques

From the target population respondents will be selected using simple random sampling techniques that need to be administered in order to select cases and respondents that constitute

the representative of the target population. The town is structured in to six kebeles, namely; Gubre 01 and 02, Edget Ber, Addis Hiwot, EdgetChora, Menharya, Seba Kuteba and SelamBer. The sample is selected three kebeles from 6 kebeles by lottery method.

3.2.3 Sampling size

In this study simple random sampling was used to choose an individual from the large number of population and there is no bias, we select this town, because the area is depleted by different pollutants, so communities should have to aware about the pollutants and its consequences. The principle of simple random sampling is that every population has the same probability of the being chosen .from the above mentioned kebeles we are selected gubre 01 & 02,Edgetber,and Addis hiwot, because they are severely vulnerability to environmental pollutions. From these kebeles frequently we seen peoples illness, bad smell,even death of people by blood and heart related disease. So 92 responets were selected from the total household of 1200(KKWARD, 2007).

No Sample kebbele	Total households			Sampling households			Sample HHs (%)
	M	F	T	M	F	T	%
1 gubre 01 and 02	350	150	500	22	15	37	40.2%
2 EdgetBer	200	100	300	20	13		35.9%
3 Addis Hiwot	250	150	400	12	10	22	23.9%
Total	800	400	1200	54	38	92	100%

Source: field survey 2024

Table3.1sample size selection

As shows that the above table3.1 gubre 01and 02 represents 40.2% .these is the highest among two kebeles because at these kebeles more people can provide sufficient information about environmental pollution, but Edgetber and Addishiwot kebele represents 35.9% and 23.9% respectively are the lowest percentage in case of communicative language to collect the information.

Numerous formulas can be used to get /calculate the appropriate sample size. However, (Yemane, 1967) provides a simplified formula to calculate sample size.

$$n = N/1+N (e)^2$$

Where, n=sample

$$e=10\% \quad 10 \times 1/100=0.1$$

N=total population/household

required: n=?

e=level of precision/sample error

Solution: $n=N/1+N (e)^2$

$$= 1200/1+1200(0.1)^2$$

$$=1200/1+1200 \times 0.01=1200/13= 92$$

Therefore, a total of 92 respondents will select by using simple random sampling techniques from the total of 1200 households which is found in the study area.

Then by using systematic random sampling method we take the individual respondents by the following formula to avoid bias.

$K=N/n$ where K =constant n =sample size and N =total number of households

$K=N/n$ Where, K =constant

given: $N=1200$

N =total number of households

$n=92$

n =sample size

required: $K=?$

Solution: $K=N/n$

$$K=1200/92= 13$$

3.2.4 Data collection instruments

Both open-end and closed end questioners were used to collect data from individual households, some of them may be government workers and others may be merchants. The researcher was used questionnaires, observation, and interviews as a main data gathering instruments:

Questionnaire: Structure questionnaire were developed and necessary information was gathered from sample households. Firstly, it was developed in English and later translated into Amharic

language that the reliable information was gather. In addition, the questionnaire was made mainly to capture data on ideas concerning overall types, socio-economic demographic characteristics of the smallholder farmers and sources of their livelihood income and like variables.

In-depth interview: The interview was consisting of a combination of unstructured & opened questions. To generate necessary data set unstructured interview were conducted with 10 interview participation, Through such instrument, information regarding the view of 4 from experts from the town office ,3 community elders & 3 from youths of the respective sample town will collect.

3.2.5 Data sources

The main data source for this study was both primary and secondary source .Primary source of data collection collected from local people through questionnaire.

View municipality and direct observation whereas secondary sources is used to gather information about the number of households which is collected from different written materials like written books and different documented material of the Keble and district which provide main information.

3.2.6 Data analysis and interpretation

After the collections of the necessary information from the respondents through questionnaire staffs on the issue would have been carried out both qualitative data analysis and quantitative data analysis will be used.

Qualitative data researcher was analyses and interprets the collected data by narrative analyzing and statements. Quantitative data analysis including averages, frequency, percentage and tables.

CHAPTER FOUR

RESULTS AND DISCUSSION

The chapter provides discussion on the qualitative and quantitative data obtained from household survey, interview of key information's, field observation and from published and unpublished materials

4.1 Demographic characteristics of the respondents

4.1.1 Sex and Age status of the respondents

Table 4.1 Age and sex status of the respondents

Number	Respondents profile	Parameter	Number of respondent	Percentage
1	Sex	Male	50	54.3
		Female	42	45.7
		Total	92	100
2	Age	<25 years	18	19.6
		26-35 years	28	30.4
		36-45 year	22	23.9
		46-55 year	14	15.2
		55 Above	10	10.9
		Total	92	100

Source: Field survey 2024

As shown in table 4.1 above among 92 respondents that have been interviewed 54.3% of them are male and the rest 45.7% are females. According to the data obtained from the study area, major of parameter in the study area existed 26-35 years were account to 30.4% of the more power respondent because of those age group respondents are high in number in different sectors and, less than 25 year were account to 19.6% of the respondent, 36-45years were account 23.9%, 46-55 years were account 15.2% and above 55 years account 10.9%.

4.1.2 Marital status and Education Level of Respondents

Table 4.2 Marital and educational level of respondents

No	Respondents profiles	Parameters	Number of respondent	percentage
1	Marital status	Single	28	30.4
		Married	52	56.5
		Divorce	12	13.1
		Total	92	100
2	Educational level	Uneducated	10	10.9
		Elementary	25	27.2
		High school	30	32.6
		Diploma	15	16.3
		Degree	12	13
		Total	92	100

Source: Field survey 2024

The level of education is one of the demographic characteristic of the household. out of the total respondent 10.9% were due to family problem of uneducated, 27.2% were achieve elementary,

32.6% were high school,16.3% were diploma and the remain 13% were achieved their degree programmer.

4.1.3 The local peoples view about environment

Table4.3 views of local people about environment

No.	Items	Number of respondents			Percentage
		Male	Female	Total	
1	As useful	50	26	76	82.6
2	As harmful	3	4	7	7.6
3	As nothing	3	6	9	9.8
	Household	56	36	92	100

Source: Field survey,

As indicated in the above table the result revealed that most of the local people in wolkite town viewed environment as useful. 82.6% represents as useful, But others viewed environment as harmful 7.2% , as well as nothing represents 9.8% because of lack of knowledge and shortage of knowledge. Few respondents viewed environmental as harmful because of the climate of Wolkite town is dynamic, not static. In some years, shortage of rainfall occurs, but this is not influence for agricultural activities because the evaporation is less.

As harmful, it recognized that there is miss-understanding of the society about their environment. It is possible to interpret this among the selected households at the town most of the local people considered as useful.

4.1.4 Type of environmental pollution

Table 4.4 Types of environmental pollution

No.	Pollution Types	Number of respondent			Percentage
		Male	Female	Total	
1	Air pollution	32	10	42	45.7
2	Water pollution	20	8	28	30.4
3	Soil pollution	8	6	14	15.2
4	Noise pollution	6	2	8	8.7
	Total	66	26	92	100

Source: field survey 2024

As indicated in the table 4.4, the most common types of environmental pollution is air pollution rather than other pollution like noise pollution, it represents 45.7% of the total pollution. One of the main concerns of citizens of wolkite was air pollution. Next to air pollution water pollution represents 30.4%. Soil pollution and noise pollution respectively represented as 15.2% and 8.7%. Which are the least pollution type. They affect the quality life of the study Area. The origin of the problem was on business and leisure activities such as wastes of chewing chats, plastics household wastes etc. Air pollution causes various types of disease such as common Cold, Asthma headache, irregular respiratory system etc.

Also based on the data released in the table the air pollution is more common than other pollution because of as the presence of one or more contaminants such as dust, mist, and smoke, fast urbanization growth of vehicles in roads and activity of human beings.

4.1.5 Sources of environmental pollution

Table 4.5 sources of environmental pollution

No.	Sources of environmental pollution	Number of respondents			Percentage
		Male	Female	Total	
1	Domestic source	32	20	52	56.5
2	Construction site	13	10	23	25
3	Municipality	10	7	17	18.5
	Total	55	37	92	100

Source; Field survey 2024

As in the above table it is recognized that, mainly domestic sources such as deposited dusts, mist, smoke, fast urbanization growth, riches in roads and activity of human beings represents the highest percentage of 65.5%. Construction site and municipality have the next and the least percentage represents 25% and 18.5% respectively.

Domestic sources of pollution that originates from activities within the study area. Typically from sources such as households, businesses, and industries. This type of pollution can have significant environmental and health impacts on local communities and ecosystems.

4.1.6 Consequence of environmental pollution

Table 4.6 Consequence of environmental pollution

No.	Consequences types	Number of respondent			Percentage
		Male	Female	Total	
1	health problem	28	20	48	52.2
2	Economic problem	14	10	24	26.1
3	social problem	12	8	20	21.7
	Total	54	38	92	100

source; Field survey 2024

The consequences of environmental pollution are common in wolkite town. The respondents responded that commonly environmental pollution has consequences on health of human beings, bad smell in working areas such as offices, construction sites, and bars and even in our homes can influence health and respiratory system and causes heart and lung related disease. Health problem is the highest critical issues in wolkite town. From the data it represents 52.2% followed by economic problem 26.1% and social problem 21.7%. Economically environmental pollutions affect the town trade centers, hotels, restaurants, service providing areas polluted by bad smells, noises disturbances etc. pollutions are also have social problem such as displaced settlements, migration, etc. are consequences of environmental pollutions.

4.1.7 Intervention on protecting environmental pollution

Table 4.7 Intervention on protecting environmental pollution

No.	Intervention for environmental pollution types	Number of respondent			Percentage
		Male	Female	Total	
1	Government participation	30	15	45	48.9
2	Non-Government participation	15	10	25	27.2
3	Community participation	10	12	22	23.9
	Total	55	37	92	100

Source: Field survey 2024

Intervention of Environmental Protection Agency, Governmental, private or community and WHO institutions to protect their environment from pollution on the surrounding. By providing awareness to the local people and, by formulating their own environmental protection policy in wolkite town. Based on these it could be interpreted that all the governmental, EPA, private or community and WHO are initiated to protect environment from pollution. From the data, it seems that Government Participation has the highest number of respondents (45) and the highest percentage (48.9%), followed by Non-Government Participation (25 respondents, 27.2%) and Community Participation (22 respondents, 23.9%).

This data suggests that there is a significant interest in Government Participation as an intervention for environmental pollution, as it has the highest level of support among the respondents surveyed.

4.2 The current status of people's awareness about environmental pollution

Analyzing people's awareness levels about environment based on field observation and distribution questionnaires. Most of people in study area knowing the meaning about the environment and its importance. But some people are careless and did not know the meaning

about environment. In study area about 85% of people said that environment as useful but some of them saying by assumption and sure. There are different types of environmental pollution that exist in their surround such, as air pollution , soil pollution, water pollution and noise pollution. Among them air pollution is the most dominant one due to smelling problems, health issues, respiratory issues, cardiovascular issues etc. Lack of proper management urban town, currently, the most people become aware on environmental pollution but, they did not implement well known mitigation measure such as there is no well properly control dusts, mist in the same prevention methods implemented through local peoples and governmental organization such as Planting green trees and shrubs along roads, hospitals, educational institutions , transparency with citizens, local awareness and respect legislative measure and reduce the number of trips you take in your car. The current environmental status of the area is increase according to the data obtained from Wolkite town sanitation service; they informed to us there is no well-known consequences of environmental pollution on human, animal and vegetation.

CHAPTER FIVE

CONCLUSION AND RECOMENDATION

5.1 Conclusion

Based on research data there are different types of environmental pollution such as air pollution, soil pollution, water pollution and noise pollution, existed in the study area of WOLKITE town.

In our study underscore the urgent need to address environmental pollution through a combination of regulatory measures, technological innovations, public engagement, and international cooperation. By taking action to reduce pollution levels, society can safeguard human health, protect ecosystems, and mitigate the impacts of climate change.

According to the respondents the most common cause (source) of this environmental pollution is domestic source rather than construction and municipality source due to performing different activities. These activities illegal waste discharge, lack of waste management, loud music, the traffic movement, construction activities, drink water plastics, social events and performing different machinery works for development of their economies are practiced by human.

Environmental pollution is a worldwide problem that affects air, water, various human activities mainly since the industrial revolution has created waste products that have simply been realized in to the environment without any thought being point to their effects. The solutions of environmental pollutions are, Implementing stricter regulations and laws to limit pollution emissions from industries and vehicles, Promoting renewable energy sources such as solar, wind, and hydroelectric power to reduce reliance on fossil fuels, Encouraging sustainable practices in agriculture, forestry, and fishing to minimize environmental impact, Investing in waste management systems to reduce, reuse, and recycle waste materials, Educating the public about the importance of conservation and sustainable living practices.

Generally, most peoples have views about the environment as useful and applying mitigation measures or privation such as preparing transparency with citizens, local awareness and respect legislative measure and environmental protection program and performing other activities to prevent environmental pollution.

5.2 Recommendation

- In Wolkite town community people and governmental and non-governmental organization have responsibility to protect their environment from any deterioration by formulating their own environmental policy, by providing awareness to the local people, and respect legislative Wolkite town.
- Education is the most important, means that helps to protect the environment. It scales up people awareness about environment. Therefore, awareness creation for the society is the most provenance means of protecting environment from reduce number of complaints and, therefore, the administrative work associated with it and reduction in physical and psychological effects to boost citizen well-being and satisfaction.
- Environment and human beings are interdependent throughout their life time. So, to continue this interdependent we all take care of responsibilities to prevent unwanted pollutants at the source. In order to achieve this carrying capacity we should have to give the great attention to protect environment with help of international, national, regional and local efforts. Each household should keep a clean and safe environment.
- The Wolkite town governmental health sector through her health inspector should undertake routine inspection of the promises to ensure campaign by the dwell.

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2, General information about the study objective

7) Do you know the word environment? A) Yes B) no

8. If your answer is yes to Q7, what does it mean?

9. What is your view about the importance of environment?

Number important	Important	Less important	High	Very high

10. Do you know the word pollution? A) Yes B) no

11. If your answer is yes to Q10, What does it mean?

12. What do you know about environmental pollution?

13. Is there any type of environmental pollution in your area? A) Yes B) no

14. If your answer is yes to Q13, what types of environmental pollutions are facing in your area?

A) Air pollution

C) soil pollution

B) Water pollution

D) Noise pollution

