WOLKITE UNIVERSITY

COLLEGE OF SOCIAL SCIENCE AND HUMANITIES

DEPARTMENT OF GEOGRAPHY AND ENVIRONMENTAL STUDIES

ASSESSMENT OF URBAN INFRASTRUCTURE DEVELOPMENT: IN CASE OF WOLKITE TOWN GURAGHE ZONE, SNNP, ETHIOPIA.

A SENIOR ESSAY SUBMITTED TO THE DEPARTMENT OF GEOGRAPHY AND ENVIROMENTAL STUDIES IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR BACHOLAR OF ART DEGREE IN GEOGRAPHY AND ENVIRONMENTAL STUDIES

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Assessment of Urban infrastructure Development: In Case of Wolkite Town Guraghe Zone, SNNP, Ethiopia

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Declaration

Enyew Adam and Lelisa Ararsa do here by declare to Wolkite University Department of Geography and Environmental Studies that this thesis is a product of our original research work, and it has not been submitted to any other university for any academic degree. Any materials and information in a report other than our own are duly acknowledged.

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ACRONOYM

BoFED	Bureau of Finance and Economic Development
CP	Per-Capita
GDP	Gross Domestic Product
MAO	Municipal Administrative Office
MDG	Millennium Development Goals
OECD	Organization for Economic Cooperation and Development
UN	United Nation
WHO	World Health Organization
WTAO	Wolkite Town Agricultural Office
WTMLAO	Wolkite Town Municipal and Land Administration Office
WTMO	Wolkite Town Municipal Office

ABSTRACT

Infrastructure refers to broad and can be applied to any system, organizational structure or physical facility that supports an organization or a society. The most important problem`s witnessed in Urban infrastructure development are identified as acute shortage of education and health center, water supply, energy supply, transportation and telecommunication of the town. The study was conducted in Wolkite town Guraghe Zone; SNNP, Ethiopia assessment on urban infrastructure development. The information obtained from both primary and secondary data sources. The primary data source was obtained through questionnaire, interview, and observation. While secondary data sources obtained from reading materials, from different books and municipal office. For the study 99 respondents were selected proportionally from 6872 households so the study was collected by employing interview guide line, questionnaire and observation were used as data gathering tools. The researcher finally, recommended the possible solution for concerned bodies to further improve the condition of urban infrastructure of the study area

.**Keywords**: Wolkite Town, The study Area, Source

CHAPTER ONE

1. INTRODUCTION

1.1. BACKGROUND OF STUDY

The term Infrastructure refers to broad and can be applied to any system, organizational structure or physical facility that supports an organization or a society. The availability of infrastructure determined the development of a given society. Infrastructure facilitates the production of goods and services and also the distribution of finished products to markets, as well as social services (Eberhard, 2007). Infrastructure can be defined as the physical components of interrelated systems providing commodities and services essential to enable, sustain or enhance societal living condition (Jeffery, 2009).

Infrastructure is fundamentally concerned with the provision of connectivity and energy. In the Organization for Economic Cooperation and Development (OECD) the problems posed by infrastructure investment have necessarily been surmounted: large investments in both types of infrastructure have enabled firms to be productive. Provision has been partly through public investment financed by taxation and public debt, and partly through private investment facilitated and circumscribed by regulation. In contrast, in most poor countries such infrastructure is grossly inadequate. Economic activities are disconnected from each other and from global markets, while energy is mispriced and underprovided. This inadequacy reflects a failure in both the public and the private means of provision. The scope for private provision differs considerably between the various types of infra-structure. As demonstrated by prevailing practice in the OECD, the investments necessary for energy are potentially financeable entirely through the private sector. In contrast, much of the infrastructure needed for connectivity is best provided publicly. Some (such as roads) are public goods, use of which may be non-rival and access to which may be non-excludable. Many of the investments are uneven, implying non-marginal changes and hence the creation of economic surplus that is not captured by suppliers. Some are responses to negative externalities (addressing congestion or sanitation in dense urban areas) and others, we suggest below, support positive externalities of agglomeration.

According to researchers at overseas development institute; the lack of infrastructure in many developing countries represents one of the most significant limitations to economic growth and achievement of millennium development goals (MDGs). Infrastructure investment and maintenance can be very expensive; especially in such areas as land locked, rural and sparsely populated countries in Africa (Hayes Brian, 2005). It has been argued that infrastructure investment contributed to more than half of Africa`s improved growth performance between 1990 and 2005 and increased investment in necessary to maintain growth and tackle poverty (Cawely, 2006).

Urban infrastructure development has two key aspects; one is urban infrastructure development and urbanization itself; which is related to the number and size growth of cities in urban system. The other aspects of urban infrastructure development, urban is concern or development form of urban concentration. Indeed, urban concentration shows the degree to which two large cities opposed to spread over many cities (Henderson, 2000).

1.2. Statement of the Problem

The most important problem`s witnessed in Urban infrastructure development are identified as acute shortage of education and health center, water supply, energy supply, transportation and telecommunication of the town. Wolkite town is one of the many towns in Ethiopia, which would have low urban infrastructure development. The town has unfavorable for other condition, and for other development activities (WTMLAO, 2007).

There are many factors that affect urban infrastructure development of Wolkite town; such as transportation pattern, progress of technology, and educational level of residents, land use and other related things. These factors interact with each other and show temporal changing cause effect relationship, they also impose various factors at different stages of development (WTMLAO, 2007).

According to (Beyene, 2011),a study on cause and effect of the delay in road and drainage construction project in case of Wolkite town in Gurage zone of SNNPs region mostly focus on cause and effect about road and drainage construction only. But in this study, we tried to investigate and analyses contribution of local government in urban infrastructure development as infrastructure is not only road and drainage construction project, rather than it include education, health, water supply and telecommunication. In this study all infrastructures in the study area were investigated and identified.

1.3. Objective of the Study

1.3.1. General Objective of the Study

The main objective of this study was to assess the urban infrastructure development of Wolkite town.

1.3.2. Specific Objectives of the Study

- To identify the existing urban infrastructure development in the study area.
- To point out the current status of urban infrastructure development in the study area
- To identify factors affecting urban infrastructure development in the study area

1.4. Research Question

- ✓ What are the major urban infrastructure developments existing in the study area?
- ✓ What is the current status of urban infrastructure for urban development in the study area?
- ✓ What are factors that affect urban infrastructure development the study area?

1.5. Significances of the Study

This study serves policy makers and other development agents serving as an input for urban development and important principals are necessary to solve the problems related to it or behind urban infrastructure development. Therefore, it serves as an input in urban planning and hence helps to gear for better results. Furthermore, it would be an important starting point for researchers or academicians who want to conduct further research on the problem under investigation. Additionally, it would help urban residents, government`s bodies, and policy makers to understand the major problems existing in urban infrastructure development in the study area.

1.6. Delimitation of the Study

The study was focused on the assessment urban infrastructures such as water, transport, health, telecommunication, education development in Wolkite town. Geographically; it covers the entire administrative *Kebeles* of the Wolkite town. This research was conducted in Wolkite town, Gurage zone, SNNP regional state.

1.7. Limitation of the Study

The study was limited on Wolkite town in Guraghe zone, in urban infrastructure development. In the course of study, the researchers faced different problems like shortage of available documented data, lack of time, lack of internet access and financial constraints. The researchers therefore suspect that; those constraints might have a slight impact in compromising on the quality of finding of the study.

1.8. Organization of the Paper

This research paper contains five chapters: the first chapter provides background of the study, statement of the problem, objective of the study, specific objective of the study, research questions, and significance of the study, delimitation of the study area, while the second chapter deals about review the related literature. The third chapter contains research methodology and chapter four includes data analysis and interpretation. The last chapter incorporates summary, conclusion and recommendation of the data.

1.9. Definitions of Basic Terms

Urban infrastructure; refers to structuring, system, and facilities serving the economy of a country to function (Ebarhard, 2015).

Urban; refers to large cities with dense population (Ichimura, 2012).

Urban development; is the growth mainly emphasizes economic change as a city or town passes in different stages of growth (Balchinet. Al, 2013).

Development; is simply the quality of change (Chabers, 2010).

Urbanization; is the process of by which large number of people become permanently concentrated in urban areas (Dessale, 2015).

CHAPTER TWO

2. REVIEW OF RELATED LITERATURE

2.1. Concepts and Definition of Urban Infrastructure Development

2.1.1. Definition of Urban Development

Usually urban refers to large cities with dense population (Ichimura, 2012). Urban is used commonly to describes various activities that define life in a big city urban describes as the area were homes densely populated. Urban is defined as to identify urban place in terms of distinct lifestyle. This is argued that as the size density and heterogeneity of places increased the level of economic and social disorganization. Urban as a separate spatial realm with its own environmental influences on individuals and contrasted the social disorganization of urban life or in which much social interaction is a transitory and superficial nature with unknown others, with the strong extended family links and communities is small settlements and rural areas (Wirth`s, 2005). The urban infrastructure development is the intersection of economic, technological, demographical, cultural and political trends for urban change. In the 20 century and speculate a little on the likely nature of urban development and restructuring in the first decade or two of the 21 century one resin for pouring these them is that it draws together in dynamic context (Lawless P. and brown F. 2006).

2.1.2. Definition of Urban infrastructure Development

The term developmental can be noun or adverb and applied to sub division of cities united nation entire municipal area. Development itself is that mean`s different thing to different people. Ideally, urban development means; that of health and safety, inclusion and equity, accessible services; are part of urban development and what many people think successful urban development. Urban development sometimes called urban growth mainly emphasizes namely; urbanization and sub-urbanization and re-urbanization (Balchin, 2013).

2.2. Major Component Urban Infrastructure Development

Infrastructure is a fundamental to urban development such as without access to road, water, and other public services; land has little potential for residential, commercial and industrial use. Most form of urban infrastructure serves many firms and households for long periods of time and is costly to provide facility of serves (Robert Olshanskey, 2007). In the case, urban utility infrastructure accounts electric power, water supply, transport and telecommunication are the major components.

2.2.1. Transport

Transport plays crucial role in urban development by providing access for people to educate market, employment recreation, health care and other key services. Especially in cities of developing world enhanced mobility for a poor and vulnerable growth is one of the most pre-conditions for achieving millennium development goals (MDGs). Cities are at different wave length in terms of their context any historical development. It is however their respective choices of either automobile-oriented transport system or public transit that leads to sprawling or compact city which in many dictate the progressive development after world transport technologies have shaped the pattern of urban development and forms of cities throughout history (Rodigique, 2008).

2.2.2. Water Supply

Water supply is the provision of water by public utilities, commercial organizations, community endeavors or by individuals, usually via a system of pumps and pipes. Public water supply systems are crucial to properly functioning societies. These systems are what supply drinking water to population around the globe. Aspects of service quality include continuity of supply, water quality and water pressure. The institutional responsibility for water supply is arranged differently in different countries and regions (urban versus rural). It usually includes issues surrounding policy and regulation, service provision and standardization. Clean drinking water supply is the basic social infrastructure to maintain goods health and clean environment of human life and improving standard of urban people. This is also an indicator of human development and urban development. Save drinking water is the birth right of all human kind as much as birth right as clean air (Reo, 2005). While access clean water can reconsider as one of the basic needs and rights of human being.

2.2.3. Energy supply/ Electricity

Energy does not play an important role in our everyday living life, but also has essential role in the development of industry, agriculture, medicine, and field of human activities. In the present modern era electricity is very important for the growing economy. Without electricity, no bird can run or live. Electricity alone will help not only leading industry but humanity as a whole. Because it provides comforts and luxury that satisfies their needs (Pregayandash, 2003)

2.2.4. Telecommunication

The telecommunication technology is improving the spread, responsiveness and control of enormous infrastructure networks. They are suggesting optimistically that new policy approaches to infrastructure provision may help the development of socially, equitable, economically and environmentally efficient cities. Now day's information and communication developments are becoming an in disputable input for well-informed urban development. The role of media, information technology and communication services and networks like telephone, internet, fax and postal services is very important to speed up all Rounded development (Aberalules, 2007).

2.2.5. Health Facilities

Health is one of the fundamental social developments of a country. Getting health services is a part of human right and without its economic development a country becomes in considerable. Besides improved health status of society in fact has an affirmative effect in enhancing the quality of life and promoting social development achieved an initial step may be to give adequate emphasis for health as a means of identifying priorities in urban (WHO, 2009).

2.3. Role of Infrastructure Services on Economic Development

The importance of infrastructure for sustained economic development is well recognized. High transaction costs arising from inadequate and inefficient infrastructure can prevent the economy from realizing its full growth potential regardless of the progress on other fronts (James, 2007). Physical infrastructure covering transportation, power and communication through its backward and forward linkages facilities growth, social infrastructure including water supply, sanitation, sewage disposal, education and health, which are in the nature of primary services and has a direct impact on the quality of life (Chander,2010).

The performance of urban infrastructure is largely a reflection of the performance of the economy. The overall growth and performance of infrastructure services has been examined in depth on the basis of different parameters such as trends in growth of physical output in infrastructure sectors, telecommunication, electricity, ports, transportation, civil aviation, and post so as to examine whether there is a negative or positive association between infrastructure developments (Dhār P.N., 2012).

2.4. The role of urban infrastructure for urban development

The role of urban infrastructure for urban development is usually the fundamentally facilities systems serving a country, city of other area including service and facilities necessary for its economic, political, and social function. Urban development covers infrastructure for education, health, justice, solid waste, markets, street pavements and cultural heritage protection. These constructions usually form part of specific sector programs, including capacity building measures.It typically characterized by technical structures, such as road, bridge, tunnels, water supply, sewers, electrical grid, telecommunication and including internet connectivity, broad band speed and provide commodities (Belching, 2006).

2.4.1. Role of urban infrastructure development on the economic

Foster and Morella, (2010) on the article Ethiopians Infrastructure, a continental perspective analyzed the contribution of infrastructure to Ethiopians annual PC GDP growth which stood at 0.6%. The study indicated that the country has made significant progress in infrastructure. It has launched ambitious investment program to upgrade network of trunk road and is establishing a modern funding mechanism for road maintenance. Similarly access to water and sanitation is expanding rapidly. The study indicated that the country's greatest infrastructure challenge lies in the power sector, where a further 8700 Megawatts of generating plant will be needed over the next decade- a doubling of the current capacity. Another key challenge is to improve Ethiopians low level of rural accessibility and ensuring adequate maintenance of recent investments in the sector. Ethiopians effort to create access to improved water and sanitation is rising rapidly. However, water utilities continue to generate large hidden costs indicating that the sector has made little progress on institutional reform agenda.

2.5. Polices and Strategies on Urban Infrastructure Development

Development and good governance activities in Ethiopia urban centers have been identified as propriety and are being implemented taking the country's urbanization level and growth in to account. As part of policy intervention in addressing the challenges of urban development in the country, activities such as investment promotion improvement of governmental services in land and infrastructure, job creation, and having provisions have been carried out. As a result, large and medium urban centers have explained a remarkable thought in construction manufacturing, and tourism sectors, more over job creation for the urban work force has proliferated. Besides, creating to opportunities, the low and middle - income urban dwellers to own property and have equitable wealth redistribution (Rose and Lawton, 2011).

2.5.1. Policy on urban infrastructure development

Kassahun and Tiwari, (2014) examined the role of policies and institutions in addressing the developmental challenges of urban cities in Ethiopia- highlighted the importance of improving the quality of institutions and governance to consolidate the gains of growth. Large and medium urban centers have exhibited a remarkable growth in construction, manufacturing and tourism sectors. The policy outcomes include decentralization, micro and small scale enterprises development, housing development, urban land management system etc. They observed significant improvement in these policy outcomes especially in terms of job creation, housing and wealth creation in urban centers. Tegenu, (2010) examined the causes, patterns, consequences and policy implications of the ongoing urbanization in Ethiopia. The study examined the driving forces behind rapid urbanization in Ethiopia, the economic aspects and characteristics of urbanization; effect of rapid urbanization on employment, public service provision and special organization of towns and concluded by suggesting appropriate developmental strategies.

2.6. Factors affecting urban infrastructure development

Solo, (1993) examined the constraints that can hinder the provision of water and sanitation to urban informal settlements under four sub headings: Physical and technical, economic and financial, institutional and structural. Under physical and technical constraints difficult sites and terrain, layouts of towns, over reliance on conventional service delivery etc were included. Economic and financial constraints included the high cost of water and sanitation

to low income families and the shortage of capital for investment were analyzed. Institutional constraints were primarily result of ineffective public work system which is complicated and disorganized. Structural constraints involved conflicting values and policy viewpoints. From the analysis of related literature above, we can realize that only few studies were engaging directly in the analysis of infrastructure problems in urban centers. Limited studies on contribution of infrastructure, governance structure, on causes and consequences of urban development and urbanization, role of policies and institutions, urban development choices and development corridors, water and sanitation challenges, drainage infrastructure studies have been done by some authors. This shows that there in a need to investigate area specific challenges through problem solving research.

2.6.1. Informal settlement

Informal settlements are human habitats but without formal license, lease, and the tenants pay rent to unofficial property owners (Onyekachi, 2014). Informality is reinforced where the state is not able to accomplish the applicable law. Nevertheless, there is a difference between informality and illegality since informal activities are not necessarily illegal. In fact, some informal activities like building a house, providing services or founding an economic enterprise rather contribute to achieve central concerns of a democratic legal system.

(Kitila, 2015) studied sectorial integration of urban services of Dire Dawa, along the lines of planning approach, challenges in implementation and effects of poor coordination in four urban sub sectors namely water supply, telecommunication, transport and electricity. The findings indicated that cross sectorial planning approach has not yet been adopted and implemented due to administrative(political), economic and social factors. Hence major factors identified for the 15 less likely performance include: weak institutional arrangements; lack of budget; lack of monitoring, poor coordination among sectors. The study recommended cross sectorial planning approach.

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1. Study area Description

3.1.1. Location of the study area

Absolute Location: The geographical location of the study area 07°10'08" North latitude and 37°37'50"East longitude. The study was conducted at research sites of Wolkite town, which is found in south western Ethiopia. The town is surrounded by Kebene and Hola woreda in the north and south respectively whereas, the east and west part of the town is encircled by Abeshege woreda. The elevation of the town is 1910 meter above mean sea level (Wolkite town municipal office, 2007).

Relative location: Wolkite town is found 259 km in the North East of Hawassa the capital city of Southern Nations, Nationalities, and People Region. The town is located on the main road of Jimma 158 km far from Addis Ababa to south-west direction of the capital city of Ethiopia. The town is structured in to five *kebeles*, namely; EdgetBer, Addis Hewot, Edget Chora, Menehary and Selam Ber. The town is found in SNNPs regional state and it is the capital city of Gurage Zone. Wolkite has access road that links the town with Addis Ababa, Jimma, Woliso and Hosanna towns (Wolkite town municipal offices, 2007).

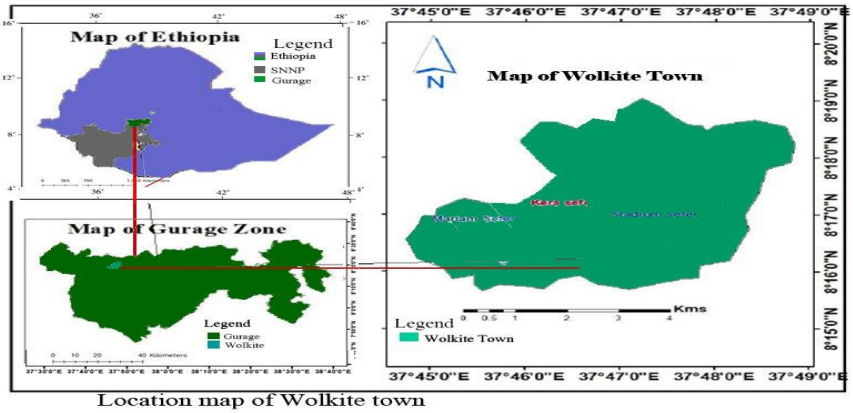

figure 3. 1. Map of Wolkite Town Source. Wolkite Town Administration Office, (2015)

3.2. Topography of the Study Area

A topographic feature of the study area was mostly characterized by up and down (Rugged) areas with some extent of plateau.i.e. 45% of the area was up and down area while, 55% of the area was plateau. The town surrounding by forest features and lowlands the elevation of town1910 meter above sea level (WUAO, 2015).

3.3. Climate of the Study Area

The average altitude of study area is found to be 1910 meter above sea level. Wolkite town and its surrounding areas receive average annual rainfall 1244mm. The main rainy season which accounts for around 70-90% of the total annual rainfall occurs from June to September. Two main distinct seasons, dry and wet seasons are recognized in the area. The dry season starts from November to May, while the wet season covers the remaining part of the year, when most of the precipitation takes place. Rain usually starts in March, but the effective rainy season is from June to October with the peak in July, receiving a monthly mean of 222.8 mm of rainfall. Based on the Ethiopian agro ecological classification Wabe, Geche and Yefereze sites are located in the Woyena Dega zone, whereas Kotergedera and Keratemo sites are located on the Dega agro-ecological zones. The maximum temperature is 26^0c, medium temperature of 19.5^o_c, the lowest temperature of 13^o_c (Guraghe Zone BoFED, 2015).

3.4. Demographic Characteristics of the Study Area

According to (CSA, 2007) the total population of the town was 28,866 from this male 15,074 and female 13,792; this indicates that the number of male is greater than the female. The inhabitant of town in terms of religion, Orthodox Christians accounts 48.17%, Muslims were 42.31%, 7.86% are Protestants, and 1.34% are Catholic Christians. But, currently the total population of the town estimated to be 42,237. Due to the strategic location of the town, trade and hotel business are the dominant economic activities. With the exception of government office workers, majority of the inhabitant are engaged in trade and hotel activities (Wolkite town population status report, 2022)

3.5. Research Design

In this study mixed researches design was employed because both qualitative and a quantitative method is used. The qualitative methods used to analyze the descriptive data that was collected in the form of individual opinion and suggestion. On other hand, quantitative method was used to analyze data that have numerical values. The study used a descriptive and assists urban infrastructure development in Gurage Zone, Wolikte Town.

3.6. Sampling Techniques and Sample Size Determination

A two stage of sampling technique was employed in this study to collect the primary data. Firstly, 3 *kebele* was selected purposely out of the 5 urban kebeles. Because the selected kebele would be represent the town in terms of socio economic and physical characteristics sufficiently to gain full information about the research. The researcher at this technique would take very great care. Secondly, the sample would be selected from each *kebele* using proportional sampling method. The proportion of the sample to five group of association from 99 of the sample is determined by proportional sampling technique. Accordingly, out of association the researchers took from municipality of town 20, from mayors 18, from elder 31, from urban dwellers 30. In general, the researchers took samples from four associations.

This would be carried after the household in selected *kebele* would be listed based on their *kebele* which would be obtained from Wolkite town municipality office. At table below, the *kebeles* officials would be consulted to identify the location of each house hold. The study was conducted in Wolkite town having these total populations of 28,866 live in the town. From this total population there are 6,872 household head (WTAO, 2007). The researchers selected 99 respondents. Because of using the formulas the number of the sampling. Municipality of town, elders and urban dwellers, the selected households of three *kebeles* using proportional sampling techniques. Because of time, budget constraints and manage ability of data the researcher was enforced to collect data from the above sample size. The proportionality of the sample size was determined as follows by using Yeman Tao (1967) sample size determination formula. With e = +_10% precision value, N refers, number of total household head =6,872

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

Where, N= Number of total household head

n=total sample size

e= margin of error (0.1%)

Therefore $n = 6872/1+6872(0.1)^2$

$= 6872/1+6872(0.01)$

$= 6872/1+68.72$

$=6872/69.72$

$= 99$

Sample size (n) =99

Table .3. 1. Population of Wolkite Town

***Kebele* Name**	**Number of Households**			**Number of Family**		
	Male	**Female**	**Total**	**Male**	**Female**	**Total**
Selam Ber	260	280	540	570	740	1310
Edget Chora	220	378	598	2484	3289	5773
Menehary	199	130	329	1719	1835	3554
EdgetBer	480	596	1076	2490	4460	6950
Addis Hewot	600	726	1326	2350	5060	7410
Total	1759	2110	3869	9613	15384	24997

Source: Own processing Based on the Data Gained from Guraghe Zone BoFED, (2015).

3.7. Type and source of data

The data collected from both primary and secondary data sources. Primary data sources were collected from local community and government office leaders through open and close ended question type. In addition, we collected those using interviews, questionnaires' and observational techniques. Meanwhile, secondary data were collected from municipal office documents archives as well as from various published and unpublished materials.

3.8. Data collection methods

To collect necessary information, the researchers were used the following data collection methods and tools.

- **Questionnair**es

The researchers used developed questionnaire for respondents, the developed questionnaires properly selected and arranged reflecting investigates the true information. Both close ended and open ended questionnaire were used for data collection.

- **Key informants' interview**

In order to get detail information from persons who have been expected to have much knowledge about the urban infrastructural development in study area, the structured interview was used.

- **Focus Group Discussions (FGD)**

The data that collected by the FGDs to enabled a dialogue in which information flowed freely and openly among its members, providing much agreed up on information on the primary issues available for discussion. Participants in the focus group discussions included three elderly urban residents, two female heads of households and other key informants. Issues practically related to the state of urban infrastructure were discussed on the current status of infrastructure development in the study area.

- **Field Observation**

In contemporary, field observation is the important technique to collect original data (Sheller R, J, 2009). This is because sometimes the information of the research gathered from the informants may contradict with what the real situation. Therefore, observation was supplemented to get better information from original sources.

3.9. Data Analysis

The data was analyzed through both qualitative and quantitative data analyzed method. Therefore, the qualitative data was analyzed through context analysis, grounded theory and narrative analysis method and the quantitative data was analyzed through descriptive statistics like percentage and frequency. We were used MS-Excel to efficiently run the process and to summarize the data for easy interpretation for the purpose of analyzing the collected data. Finally, the result was presented through the use of percentages, tabulations, distribution and simple descriptive methods for analysis and qualitatively data would be interpreted by different words in order to achieve the objectives of the study and answer the formulated questions.

3.10. Ethical Consideration

The researcher is informed about and assured that this research work did not have any purposes other than academic one. In order to ensure the confidentiality of data collection and to keep the right of the respondents the following ethical protocols in a research is a must, especially when the research subjects are humans. Therefore, to assure these things, the researcher asked the willingness of the respondents before beginning to give questionnaire or conducting an interview. Based up on their permission the researcher has oriented them or informs the respondents about the objectives and aim of the research and letter of confirmation for conducting the research (from Wolkite University) was shown for them. He also promised to the subjects not to disclose their names in any part of the report. In addition to the above ethical conduct for human subjects ethical considerations applied in this study includes acknowledging the works of others during citation and referencing. Accordingly, the researcher acknowledged the owners of information whenever it is taken from books, journals, websites, articles and other sources including the information gained from Key Informants Interviews.

CHAPTER FOUR

4. DATA ANALYSIS AND INTERPRITATION

This chapter describes the result and interpretation of the study. The data obtained from the respondent was analyzed in the form of table and percentage. This chapter also contains the condition of urban infrastructure, major component of urban infrastructure development, the role of urban infrastructure for urban development and back ground of the information; socioeconomic and demographic characteristics such as sex, age, education status, marital status and occupational status was briefly discussed.

4.1. Background of the Respondents

Table. 4. 1.Ages and Sex Distribution of the Information Age Characteristics of the Information

Age	No of Information	Percent (%)
18-24	25	25.3
25-34	39	39.4
35-44	25	25.3
Above 45	10	10
Total	99	100

Source: Field Survey, 2023.

According to the above table 4.1, 25(25.3%), of the respondents were the age group between 18-24, whereas 39(39.4%), of the respondents aged between 25-34.Similary, age group between 35-44, accounts 25(25.3%) of the respondents, and above 45 age group 10(10%) of the respondents. Of this 39(39.4%) is the dominant age group and working age groups. So, as from interview concluded, that urban residents, they need a good urban infrastructure for coming development because of they have high number of working age group in the office.

Table. 4. 2 Sex Table Characteristics of the Respondents

Sex	No of Information	Percent (%)
Male	60	60.6
Female	39	39.4
Total	99	100

Source: Field Survey, 2023.

As it shows on the table 4.2, 60(60.6%) of the respondents were male and 39(39.4%) 0f respondents were female. Form this data we can see that generally that most the respondents were males. Those tell as having infrastructure problems in the town because of high number of males in the office. As we understand here, urban development is not only ensured by men but women have a role in this. Therefore, urban development should be equally inclusive.

4.1.1. Marital Status of the Information

Marital status is one of the demographic characteristics: The distribution of respondents by marriage is illustrated below.

Table. 4. 1. Information Marital Status

Marital status	No of Information	Percent (%)
Single	40	40.4
Married	47	47.48
Divorced	8	8.08
Widowed	4	4.04
Total	99	100

Source: Field Survey, 2023.

As indicate above the table 4.3 about 40(40%) and 47(47.48%) of the respondents were single and married respectively, were as about 8(8.08%) and 4(4.04%) were divorced and widowed respectively. So as the researchers concluded that, marital status of the study area

about 47% /were married and those have urban infrastructure problems. As we can see from here, the problem of urban development is not just one part but the whole. This can only be solved if there is sufficient public and government participation.

4.1.2. Education Status of Information

Educational status is usually predicate the status of population. The educated people have ability to do more things with better understanding on manner of gratified thinking and the more educated people have more experience on family plan, better means of income and with calculated manner of income expenditure pattern.

Table. 4. 2.Education Status of Respondents

Educational Level	No of Information	Percent (%)
Read and Write	15	15.15
5-8 grade	16	16.16
9-12 grade	25	25.3
Diploma	30	30.30
Degree and above	13	13.1
Total	99	100

Source: Field survey, 2023.

As indicated above the table 4.4, about 15(15.15%) were read and write, 16(16.16%) grade level 5-8 were 25(25.3%) grade level nine up to twelve, 30(30.30%) were diploma and 13(13.1%) were degree. As the table attempts to explain, there are few people with degrees which prevent students from getting enough knowledge. There are more than 60 students in one classroom, which also has a significant impact on the teaching methods and students cognitive abilities. So the teaching methods and class rooms need to improve.

4.1.3. Occupational Status of Information

Table. 4. 3. Occupational Status of Information

Occupational status	No of Information	Percent (%)
Government employed	25	25.3
Merchant	44	44.4
Farmer	-	-
Labor	30	30.3
Total	99	100

Source: Field Survey, 2023.

As stated in table 4.5 indicated that about 25(25.3%) of the respondents were government employed, about 44(44.4%) were merchants, 30(30.3%) were the labor. The majority of the respondents were merchants by government employed and labor. Because they often travel to work and face many problems. For example, they many face transportation problems that burn their working hours and similar problems.

4.2. Existing Conditions of Urban Infrastructure

The condition of urban infrastructure shows the situation or condition of the existing infrastructure in the town as it is high, medium and low the situation of urban infrastructure the present day in the study area.

Table. 4. 4. Respondents Respond on the Condition of Urban Infrastructure

Items	No of respondents	Percent (%)
High	15	15.15
Medium	45	45.45
Low	39	39.4
Total	99	100

Source: Field Survey, 2023.

As in the table 4.6 indicated that, about 15(15.15%), respondents responded that there was high condition of urban infrastructure, 45(45.45%) of respondents were responded, that there were medium; and 39(39.4%) of respondents were responded that there were low urban infrastructure condition. From this were can concluded that, there is low urban infrastructure conditions in the study area.

4.3. Role of Urban Infrastructure for Urban Development

The role of urban infrastructure is increasing the societal economy and encouraging of the workers. It improves the quality of the urban area and increase people living standard per capital income. The role of urban infrastructure for urban development is usually the fundamentally facilities systems serving a country, city of other area including service and facilities necessary for its economic, political and social function. It typically characterized by technical structures, such as road, bridge, tunnels, water supply, sewers, electrical grid, telecommunication and including internet connectivity, broad band speed and providing commodities (Belching, *et al*, 2006).

Urban infrastructure is the pillar of urban development and enhances urban development, to provide sustain communication interaction and transportation. Urban infrastructure provides basic needs of human being as well as facilitate human living standard. It is important for development of one town because of when people are full fill their own goods and services.

Urban infrastructure creates job opportunity for urban community and increase the income of labor employed people and integrate between local merchants and their traders, it improves better urban way of life. Urban infrastructure is most widely used for urban development service like telecommunication, water supply service, road construction, postal service, transportation service and electric city of the town. Urban infrastructure is used to reduce poverty and to past up urban growth (Wolkite town municipal office, 2023).

4.4. Components of Urban Infrastructure Development

4.4.1. Transportation Infrastructure

Road transport plays a great role in increasing the accessibility of a given area and facilities of the development of the town. Transport is one of the components of the urban system

which is responsible for bringing the gap between areas of production and consumption, as well as creating medium for spatial interaction.

Table .4.5. Information sufficient infrastructure in the town

Item	No of information		Percent
Is sufficient infrastructure there in your town	**Yes**	**45**	**45.5**
	No	**54**	**54.5**
	Total	**99**	**100**

Source: Field survey, 2023.

The table 4.7 indicated that about 45 (45.5%) respondents replied that they can get sufficient of infrastructure it is While 54(54.5%) of the respondent's area they cannot sufficient infrastructure. As we can see from this table, the majority of the urban population does not have access to adequate infrastructure. Infrastructure plays an important role in socio- economic life and the government or the relevant authority should address this problem

Figure. 4 .1. Transportation problem in Wolkite Town (photo by researcher, April,

4.4.2. Clean Water supply

Water is very essential and important for all living things. Sufficient clean water supply necessitates residents to service there and in case the interest of people to build quality house and investors to invest their capital on different purposes. Urban water supply is one of the most among the many and required high investment to meet the demand of rapid urbanization. Access to save drinking water is important as a health and development issues at a regional and local level (Wolkite town natural and water office).

Table. 4. 6. Information's Response on Clean Water Supply in the Town

Item	No of information		Percent
Is there sufficient water supply in the town	Yes	30	30.3
	No	69	69.7
	Total	99	100

Source: Field survey, 2023.

Above the table 4.8, indicated that about 69(69.7%) of the respondents were responded, that there is no sufficient water supply in the tow, because water is not found continuously spatially during dry season. While 30(30.3%) of the respondent there is water supply in the town. The main problem is the water supply source is not connections at dry seasons. As interview made with different offices of the town municipality some progress has been made in provision of water in the town time to time. However, there is still big gap between the supplies and demands of water services. This is due to inadequate finance, inadequate man power week coordination among offices, failure to the policies effectively as it was written on the paper, lack of other institution which in urban in the provision of water service, rapid population growth failure to the community and water were the major challenges. As a result, this shortage of water supply is highly affected all activates in the town: such as urban agriculture, construction activates, education, hotel development and other activities. According to residents, there is a growing water crisis in Wolkite town. We saw a lot of bottles clumped (Jars) together and people gathered in search of water many people in the city are suffering due to water shortage and the concerned authority should solve this problem.

Figure. 4. 2. Water problem in Wolkite Town (photo by researcher, April, 2015)

Table .4. 7. Information on Water Point

Item	Information	Number	Percent
Number of water point	Private	56	56.6
	Government	43	43.4
	Total	99	100

Source: Field Survey, 2023.

Above the table 4.9, indicated that about 56(56.6%) was privately owned house, 43(43.4) were government rented house. As we can here that private water point information is better than government water point information. However, the government also has a role to play in this and should solve the water problem.

4.4.3. House Condition

Currently, housing is one of the most important services in the city, and the outlook for home ownership in Wolkite is regulated by private and public land ownership patterns. The number of residents in the study area is shaded by the sample on the table.

Table. 4. 8. . House Ownership Status of Respondents

No	House Ownership Type	No of information	Percentage
1	Private Owned house	40	40.4
2	Government	44	44.4
3	Rent Owned house	15	15.2
	Total	100	100

Source: Field survey, 2023.

Above the table 4.10 indicated that about 40(40.4%) of the respondent were they can get telecommunication services it is suitable and there is enough services, while 44(44.4%) of the respondents response area they cannot get telecommunication service. From the data, we can see that telecommunication services are not provided in the same form in all regions. Therefore, the relevant authority should provide a solution to this problem.

Table. 4. 9. Table the Information of Number of Health Service in the Town

No	Types	No of information	Percentage
1	Health station and center	40	40.4
2	Clinic and medium clinic	37	37.4
3	Hospital and door vendor	22	22.2
	Total	99	100

Source: Field survey, 2023.

As above the table 4.11, indicated that about 40(40.4%) was health station and center, 38(38%) were clinic and medium clinic and 22(22.2%) were hospital and drug vendor. However, these services are inadequate for the public and the public cannot access them wherever and whenever they want. In particular, public health institutions should be systematically expanded because even private institutions can sell inflated prices and expired medicines to the public, the government should properly expand health services everywhere.

4.5. The Role of Municipality in Infrastructure Provision and Development

From the interview argument there were many agreements obtained. In the process of sustainable urban infrastructure service in the town municipality office or administration should know all the basic information about urban infrastructure service system. Municipality or administration of the town needs to set the different steps of service streets. The municipality has the role of monitoring and controlling the infrastructure service in guiding urban infrastructure network system coordinating utility infrastructure providing institution and safeguarding its infrastructures true role services.

On the other hand, municipalities and service authorities may need to transfer service infrastructure provision process to other organization of town infrastructure service process of planning, monitoring, management and maintenance. Furthermore, some of these institutions perceived the problem as to critical and they suggested the need of on independent institution from federal to local levels, so mentoring and controlling of overall urban infrastructure service is the role of the independent institution.

Table.4. 10. Respondents Respond on the Role of Municipality in infrastructure Provision Development

Item	No of respondents	Percent
High	60	60.61
Medium	29	29.29
Low	10	10.1
Total	99	100

Source: Field survey, 2023**.**

As in the table 4.12. Indicated that, about 60(60.61%), respondents responded that there was high role of Municipality in infrastructure provision development, 29(29%) of respondents were responded, that were medium; and 10(10.1) of respondents were

responded that there was low Municipality in Infrastructure provision. From this we conclude that, there is high Municipality in Infrastructure provisions in the study area.

4.6. Contribution of Urban Infrastructure Development

The core infrastructure in the smart city in this adequate water supply, assured electricity supply and the sanitation including waste management, those infrastructure contribution for the people at this town giving service like light, keep the persons health.

Table .4. 11. Information's Response on the contribution of urban infrastructure development in the Town

Item	No information		Percent
Is there urban infrastructures are contributions for the development?	Yes	75	75.8
	No	24	24.2
	Total	99	100

Source: Field survey, 2023.

Above the table 4.13, indicate that about 75(75.8%) respondents replied that urban Infrastructures are contributions for the development it is while 24(24.2%) of the respondents they cannot contribution for the development. As shown in the table, infrastructure plays an important role in urban development.

4.7. Factor Affecting Urban Infrastructure Development

The need to receive real time information and understand both the short and long term impacts of particular design approach socially ,economically and environmentally is belonging critical, factor affected urban infrastructure development ,such as economic aspect ,unbalanced spatial development, social aspects such as slope ,soil, elevation and so on ,with computing everywhere and in just about every device .infrastructure needs to pet connected and its happening from accommodating cycle to vehicle for autonomy driving to sensors that warn.

Table.4.12. The information factor affecting urban infrastructure development in your town

No	Factor affect	No of information	Percentage
1	Economic aspect	38	38.4
2	Unbalanced spatial development	24	24.2
3	Social aspect	37	37.4
	Total	99	100

Source: Field survey, 2023.

As indicated above the table 4.12 38(38.4%) was economic aspect, 24(24.2%) of unbalanced spatial development, 37(37.4%) were social aspect. As we note in the table the lack of infrastructure development has a significant impact on the economic aspects, social aspects and sustainable development. Therefore, these factors that can affect urban development need to be addressed.

CHAPTER FIVE

5. CONCLUSION AND RECOMMENDATIONS

5.1. Conclusion

The study is aimed on the indenting assessment on urban infrastructure development in Guraghe zone Wolkite town to assess the development of the town and the condition of the urban infrastructure. Based on the finding transportation service is low. The road structure has difficult to the road transportation service in the town. Water supply problem is the main problem in the town, especially in dry season; it is not found continually. The methods used to collect data include questionnaires, interview and personal observation. The data obtained through the above methods was analyzed using quantitative and qualitative data analysis methods and interpreted through; percent and tables interpreted. According to data obtained residents, said that water is also serious problems; such as drinking, washing and planting of vegetation. Health facilities and service is also another problem for the residents of the town and surrounding rural areas of the town. There is also shortage of vender store lack of professional persons of health services in the town. Factors affecting urban infrastructure development **is** examined the constraints that can hinder the provision of water and sanitation to urban informal settlements under four subheadings: Physical and technical, economic and financial, institutional and structural.

5.2. Recommendations

Based on the findings the researcher suggests the following strategies could be applied for the enhancement of urban infrastructure so as to bring urban development.

- ✓ Absence of taxies and other transport on service problem on road transport should be solved by the collective effort of both government and the society by increasing the numbers of transport stabilizing the road structure.
- ✓ The shortage of electric service and road problems in the town should be solved and allocating budget by urban municipality.
- ✓ Problem of water supply should serve by building different water sources which available in area which can growing urban population with the growing problems.
- ✓ Health facilities should be enhanced by building health centers, hospitals and providing health professionals.
- ✓ Municipal town should have integrated planning and should have enough budgets to enhance the development of the town.
- ✓ Local government should have priority to town for facilitating urban infrastructure: in order to attract governmental and private investors.
- ✓ The municipality and other concerned bodies of the administration should establish mechanisms enhance to urban infrastructure development.
- ✓ The municipality office and the Town administrative body to progress the provision of water and other infrastructure in the town from time to time.

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APPENDIX

WOLKITE UNIVERSITY

COLLEGE OF SOCIAL SCIENCE AND HUMANITIES

DEPARTMENT OF GEOGRAPHY AND ENVIRNMENTAL STUDIES

Respondents. The main aim of this questionnaire. The main aim of this questionnaire is to gather information that is used as an input for a research. Our research title is an assessment of urban infrastructure development in case of Wolkite town. The main aim of this questionnaire information that you provide will be used only academic purpose. Therefore, be free because no other hidden purpose behind. Your information is very important to the overall success of the research end over.

Do not write your name

I. Mark in the boxes given next to every question.
II. Use the space provided for open ended questions.

Part 1; Background Information

1. Sex: A. Male B. Female
2. Age: A. 18-24 B. 25-34 C. 35-44 D. above 45
3. Marital status: A. Single. B. Married, C. Divorced D. Windowed
4. Level of education: A. Reading and writing B. 5-8 grades C. 9-12 grade D. Diploma E. Degree
5. Occupation: A. merchant, B. Labor, C. farmer D. Government employees

Part 2: Questioners related to the research topic.

1. Is there role of urban infrastructure for urban development of the town?

A. Yes B. No

2. If yes, what are the roles of urban infrastructure for urban development of the town?

_____

_____

_____

3. Is there sufficient infrastructure supply in the town?

A. Yes B. No

4. If no, give your reason

5. What is the current supply condition of urban infrastructure?

A. High B. Medium C. Low

6. Is there sufficient water supply in the town? A. Yes B. No

7. If yes, what is the condition?

A. High B. Medium C. low

8. The number of water point in the town?

A. Government B. private

9. What are the house conditions of the town?

A. Rental owned house B. Governmental C. Private owned house

10. What type of health service in the town?

A. Health station and center B. clinic and medium clinic

C. hospital and drug vendor

11. Is there urban infrastructure that contributes to urban development?

A. Yes B. No

12. If yes, what is the contribution of urban infrastructure development?

_____

_____

_____

13. Is there a Role for Municipality in Infrastructure provision and Development in the Town?

A. Yes B. No

14. If yes, what is the Role of Municipality in Infrastructure provision and Development in the town?

A. High B. Medium C. Low

Part 3 Interviewee questions

1. What are the major urban infrastructure development existing in the town?

2. What are the conditions of urban infrastructure development?

3. What are the roles of municipality in infrastructure provision?

4. What are factor affecting urban infrastructure developments in the town?

5. What is the standard for formal settlements in Wolkite town? Cadastre, master plan, quality of houses, area square meter, distance from road.

6. How many informal settlements are in the town different time periods?