

Challenges of Open Space Design and Development

The Case of Adama Town

By Mohamed Tilahun Kebede



**A Thesis Submitted to
The department of Architecture and Urban Planning and Design
School of Civil Engineering and Architecture**

**Presented in Partial Fulfillment of the Requirement for the Degree of
Master's in Urban Planning and Design**

**Office of Graduate Studies
Adama Science and Technology University**

Adama
June, 2019

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Advisor (s): Dr. BERHANE MEHARY



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Declaration

I hereby declare that this MSc Thesis is my original work and has not been presented for a degree in any other university, and all sources of material used for this thesis have been duly acknowledged.

Name: Mohamed Tilahun Kebede ID APR/15445/10

Signature: _____

This MSc Thesis has been submitted for examination with my approval as thesis advisor.

Name: DR. Berhane Mehary (PHD)

Signature: _____

Date of submission June, 17/2019

Approval of Board of Examiners

We, the undersigned, members of the Board of Examiners of the final open defense by Mohamed Tilahun Kebede's Have read and evaluated his/her thesis entitled **“Challenges of Open Space Design and Development the Case of Adama Town”** and examined the candidate. This is, therefore, to certify that the thesis has been accepted in partial fulfillment of the requirement of the Master of Science in Urban Planning and Design.

Name of Supervisor _____ Signature _____ Date _____

Name of Internal Examiner _____ Signature _____ Date _____

Name of External Examiner _____ Signature _____ Date _____

Name of Department Head _____ Signature _____ Date _____

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ACRONYMS

AfDB	African Development Bank
ASTU	Adama Science and Technology University
CSA	Central Statistical Agency
FUPI	Federal Urban Planning Institute
LDP	Local Development Plan
OUPI	Oromia Urban Planning Institution
POS	Public Open Space
PPS	Project for public space
UNDESA	United Nations Department of Economic and Social Affairs

ABSTRACT

The world's cities are becoming increasingly congested and polluted. Urban open space provides a wide range of ecosystem services that could help combat many urban ills and improve life for city dwellers especially their health. Cities are comprised of more than just buildings and people. The most "livable" cities – and some of the world's most famous cities – are known for their open spaces.

Due to the ongoing urbanization trend worldwide, the distance between city inhabitants and nature is increasing. Urban greenery is one of the ways to bridge this gap between people and nature. OUPI in Adama town, proposed to increase open spaces in their successive plans. However, the implementation of these plans has been far from satisfactory and probably leading to encroachment rather than conservation. But, also the existing open space condition in the town is beyond the need of the ever increasing population of the town. This situation leads to many questions that will form the basis for the research problem.

This study was conducted with the aim of assessing open space problems of the Adama town which comprises five parts which is introduction part, literature review, methodology, Result and discussion and conclusion and Recommendation.

The study found out that, there is a high degree scarcity of well designed and developed green open space and parks which fit the requirement of ever increasing population of the town with the absence of a land use (re)mixing strategy, weak development controls and absence of quality infrastructure in existing open spaces. In addition to this socio-economic and political challenges, fail to implement successive structural plan of the town and pressure of urbanization are the main factors for the failure of open space development and design in Adama town.

Therefore, in order to serve the ever increasing population of the town, the town administration should continue using Urban planning and Urban Design as a tool and explore several strategies for adding new public greenery, play fields, new parks, designing and developing existing parks, improving accessibility to open spaces, etc by Considering factors that affect the effectiveness of open space during open space development and design.

Key Words: Urbanization, Urban Planning, Urban Design, and Open Space.

CHAPTER ONE

1. Introduction

1.1 Background of the Study

The world's cities are becoming increasingly congested and polluted. Urban open space provides a wide range of ecosystem services that could help combat many urban ills and improve life for city dwellers especially their health. Such green open space is diverse, varying in size, vegetation cover, species richness, and environmental quality, proximity to public transport, facilities, and services. Kit Campbell Associates (2001).

Cities are comprised of more than just buildings and people. The most “livable” cities – and some of the world's most famous cities – are known for their open space as they are for their culture. Hyde Park in London, Central Park in New York, the Bukit Timah Nature Preserve in Singapore, Phoenix Park in Dublin... all are attractions in their own right for inhabitants and visitors alike. Open space are a necessity and not a luxury. Over the past two decades, the uneven accessibility of urban green space has become recognized as an environmental justice issue as awareness of its importance to public health has become recognized (Flink CA, Searns RM (1993).

Due to the worldwide ongoing urbanization trend, the distance between city inhabitants and nature is increasing. Urban greenery is one of the ways to bridge this gap between people and nature. High population density is one of the reasons for underdevelopment of urban greenery sector. Without careful planning and implementation cities will be stressed with environmental challenges. Flink CA, Searns RM (1993)

As Kit Campbell Associates (2001) states open space in urban environments provides many advantages: formal and informal sport and recreation, preservation of natural environments, provision of green space and even urban storm water management. Thus green space must be a key consideration in urban planning if the health of a city and its people are both considered important. A new, broader view of parks has also recently been emerging. This new view focuses on how policymakers, practitioners, and the public can begin to think about parks as valuable contributors to larger urban policy objectives, such as job opportunities, youth development, public health, and community building. As the world's cities continue to grow, continuing to value green

space in cities is vital: but it is also a challenge, particularly in developing nations where there is pressure for space, resources and development.

In the world of today, urban planning and design has shifted into a new concept that incorporates the safe usage of the environment in a way that is sustainable. It is understood that the health of a city, its economy and environment is improved more by a properly designed and implemented structural plan incorporating environmental issues. One of the ways to increase the quality of urban life is the introduction of urban open spaces and green areas in cities. These include squares, green corridors, urban parks, urban zoos and street greeneries. Studies show that cities which are designed with the above elements in consideration have improved health status in the public, low stress level in the society, decrease pollution and generally enhanced quality of life.

The way cities and neighborhoods are designed and implemented affects whether or not it is easy for people to walk, cycle, participate in active recreation, use public transport, and interact with neighbours and their community. It is believed that urban planning decisions have a key role to play in combating growing levels of open space scarcity.

Likewise, Adama town, is poorly equipped with open space and park. The importance given to open spaces and parks is very weak in all groups of the society including the planners and decision makers. When open spaces are proposed, it is mostly following rivers, streams and hillsides which is inaccessible to the users and protectors. Though without giving due consideration the inner part of the town, vast proportion of open spaces are proposed in the periphery of the town as green belt in physical development plan and they are not well designed and developed. Therefore proper assessment of the problem and planning intervention measure with implementation process is mandatory to build a sustainable urban environment.

1.2 Statement of the Problem

More proportion of the world population currently live in urban areas than rural areas. In 2014, people residing in urban areas has reached 53% and this figure is expected to grow further to 66% by 2050 (UNDESA, 2014). As the world continues to urbanize, sustainable development challenges will be increasingly concentrated in

cities, particularly in the lower-middle-income countries where the pace of urbanization is fastest. In Ethiopia, the current rate of urbanization is high. According to World Bank (2015), urbanization in Ethiopia increases by 5.4% per a year which put the country among the top 10 fast urbanizing countries in the world. The main drivers for current rapid rate of urbanization in Ethiopia include the expansion of existing cities, rural-urban migration and transformation of small rural villages to towns. They'll all need homes, services and places to work, new buildings. The impacts of those buildings are long term (Kit Campbell Associates (2001)).

Cities in Ethiopia specifically in Adama are inadequately equipped with open spaces. The increasing urbanizations trend is attracting more people to come to Adama town without having proper sustainable plan of open spaces. However, this social public open space holds the important function for urban well-being and collective recognition. The increasing population in the city puts a tremendous pressure on the physical, social, and economic environment of towns as well as on the infrastructural service of the town.

Adama town is the second largest city in Ethiopia next to Addis Ababa and is the first largest town in Oromia region. The population growth will increase challenge on environment and the demand for open space requirement especially in the inner part of the town in the coming years. However, the issue of open space design and development as well as making the city clean and green was not given attention with the grade level of the town. According to the country's Environmental policy, every person has the right to live in a healthy environment. But, like every other major urban centers in Ethiopia, Adama Town is far from fulfilling its responsibility to its residents let alone accommodate additional people. The adverse impact of this condition on the overall development of the town in general, and the urban environment in particular is clear and perceivable.

The importance given to open spaces is very weak in all groups of the society including the planners and decision makers. When open spaces are proposed, designed and implemented lacks due attention and considerations. The practice of developing play grounds and open spaces at neighborhood level is also limited with residents preferring to have larger plots, thus dividing the space provided among individuals. In neighborhoods where this is not practiced (where open spaces are reserved for their intended purpose),

the open spaces are decaying and places of garbage disposal creating unhygienic environment thus unwanted spaces. Though in some cases vast open spaces accessible to people at city level are reserved in physical development plans they are not developed/ implemented, in most cases its function is gradually being changed for other activities (Adama is a good example)(RUPI annual Report 2004).FUPI and RUPI in Ethiopia there by in Oromia towns especially in Adama town, have been providing for increasing open space area in their successive plans. However, the implementation of these plans has been far from satisfactory and probably leading to encroachment rather than conservation. This situation leads to many questions that will form the basis of research problem.

Research Questions

- ✚ What looks like the current proportion of open space based on planning standards out of the total area of the land use in the town?
- ✚ Do equitable distribution of open space throughout the whole town?
- ✚ What are challenges in designing and developing public, institutional, private and community open space as per the approved structural plan?
- ✚ Do residents participate in plan preparation, implementation and management of open spaces?

1.3 Objectives of the Study

1.3.1 General Objective

To assess the main challenges of open space design and development in Adama town specifically parks.

1.3.2 Specific Objectives

- To analyze the current proportion of open space based on planning standards out of the total area of the land use in the town.
- To evaluate the equitable distribution and magnitude of open space throughout all areas.
- To identify the challenges in designing public, institutional, private and community open space as per the approved structural plan.
- To evaluate residents participation in the design and development of open space.

1.4 Significance of the Study

This study is expected to give a great insight in understanding the level of open space problem in Adama Town. The findings of the study have theoretical as well as practical significance for the town officials and residents. But also, the study is expected to raise societal awareness towards participating in the design and development process.

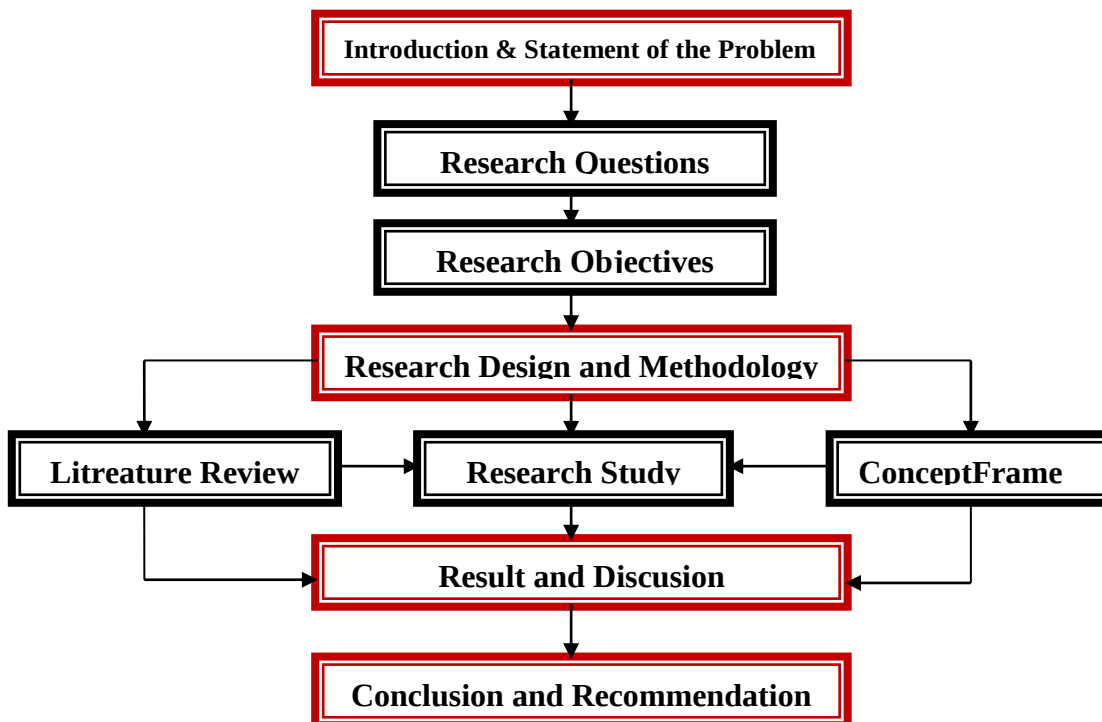
1.5 Delimitation of the Study

This study is limited to the design and development problem of open space in Adama Town specifically parks. This study will mainly concentrate on assessing and analyzing problems associated with design and implementation problem of open space in Adama Town.

1.7 Organization of the Study

This study comprises five parts: These include the introduction, literature review, research design and methodology, Result and discussion the last part is Conclusion and Recommendation.

Figure 1. Flow Chart of the Study



Source: Compiled by the Researcher (2019)

CHAPTER TWO

2. Literature Review

2.1 Introduction

New Urbanism promotes the creation and restoration of diverse, walkable, compact, vibrant, mixed-use communities composed of the same components as conventional development, but assembled in a more integrated fashion, in the form of complete communities. These contain housing, work places, shops, entertainment, schools, parks, and civic facilities essential to the daily lives of the residents, all within easy walking distance of each other. New Urbanism promotes the increased use of trains and light rail, instead of more highways and roads. Urban living is rapidly becoming the new hip and modern way to live for people of all ages.

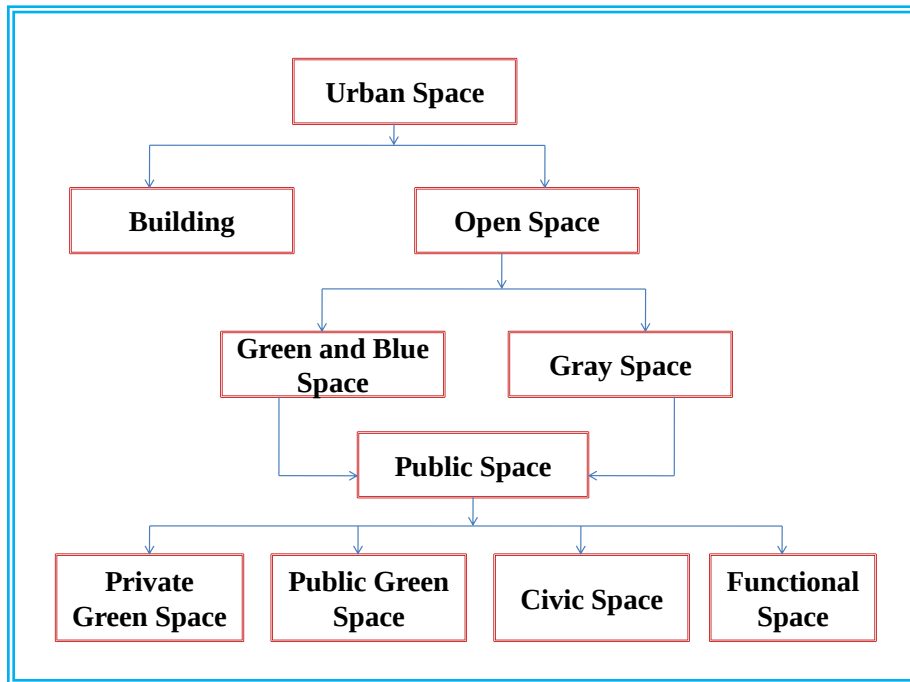
Our quality of life significantly depends on open spaces. They offer facility provision for a wide range of social interactions and provide habitats for flora and fauna. A classification of spaces would be useful in preparing public open space policies and fulfilling structure plan. Public open space (POS) is planned and managed for current and future generations for the purpose of public protection and pleasure of unique values. It has constantly played an important role in improving the quality of life for the urban populations and in supporting urban inhabitants.

2.2 Definition of Used Term

2.2.1 Urban Space

An urban space is the region surrounding a city. Meaning there is a density of human structures such as houses, commercial buildings, roads, bridges, and railways. Urban space is typified by what is called a “city”; a city is a collection of people and institutional structures that promote the efficient interaction between persons and place. Urban space has often increased in population to the point that it serves as a synergistic force for the social construction of the suburb. Ironically, suburbs have decided that the only means for their survival is to mirror urban areas – formal social relationships and complex institutional arrangements (Woolley, 2003).

Figure 2. Shows Graphical Illustration of Urban Spaces



Source: Compiled by the researcher (2019)

2.2.2 Public Space

Public space is a space in a city or any other publicly accessible physical place, in the context of social, political, relations and interpersonal contacts, developed through inclusive processes (Madanipour, 2013). Furthermore the public space is referred to as a space of participation and amicable social behaviors (Mehta, 2014) (Pojani & Maci, 2015).

Figure 3. Shows most popular Public Spaces in the world (Mecca and Singapore)



Source: https://en.wikipedia.org/wiki/Urban_open_space

2.2.3 Urban Open Space

In land use planning, **urban open space** is open space areas for "parks," "green spaces," and other open areas. The landscape of urban open spaces can range from playing fields to highly maintained environments to relatively natural landscapes. Generally considered open to the public, urban open spaces are sometimes privately owned, such as higher education campuses, neighborhood/community parks/gardens, and institutional or corporate grounds. Areas outside city boundaries, such as state and national parks as well as open space in the countryside, are not considered urban open space. Streets, piazzas, plazas and urban squares are not always defined as urban open space in land use planning (https://en.wikipedia.org/wiki/Urban_open_space.)

2.2.4 Open Space

Open space is any open piece of land that is undeveloped (has no buildings or other built structures) and is accessible to the public. Open space can include: Green space (land that is partly or completely covered with grass, trees, shrubs, or other vegetation, but also parks, community gardens, and cemeteries), Schoolyards, Playgrounds, Public seating areas, Public plazas and Plantations along the streets and sidewalks. Kit Campbell Associates (2001). Open space can be defined as land and water in an urban area that is not covered by buildings, or as any undeveloped land in an urban area (Gold, 1980).

2.2.5. Urban Green Open Space

Urban Green Open Space is defined as land that consists predominantly of unsealed, permeable, 'soft' surfaces such as soil, grass, shrubs and trees. It is the umbrella term for all such areas whether or not they are publicly accessible or publicly managed. It includes all areas of parks, play areas and other green spaces specifically intended for recreational use, as well as other green spaces with other origins. Kit Campbell Associates (2001).

2.2.6 Amenity Green Space

Designed primarily for amenity both visual amenity and enjoyment for access and recreation. It consists mainly of publicly owned land but also includes private land, such as domestic gardens, which can contribute greatly to the green fabric of towns and cities. Sub-types of amenity green space are: Parks and Gardens, Informal Recreation Areas, Outdoor Sports Areas, Play Areas. Kit Campbell Associates (2001)

2.2.7. Functional Green Open Space

The primary function other than amenity or recreation, although some of these areas may also be publicly accessible and available for people's enjoyment. The primary functions include farming, horticulture, burial grounds and educational and other institutional use. Access to these green spaces may go hand in hand with the primary function (for example cemeteries, churchyards and allotments) or be by public right of way, or by agreement, for example where school grounds are made available for public use. Kit Campbell Associates (2001)

2.2.8. Linear Green Space

Green space that occurs in association with linear features, especially transport routes such as: - roads, railways and canals, but also rivers and streams. It is a matter for debate whether this category should be considered separately, since these spaces might also be defined as either semi natural habitat, or functional green spaces whose primary function is transport, or incidental green space with a visual amenity function. These spaces are, however, distinguished by their linear character and are often an important part of strategic green space designations such as green links and green corridors and for this reason we suggest that they should be considered separately. Kit Campbell Associates (2001).

2.3 The Role and Concepts of Urban Open Space Planning and Design

2.3.1 The Role of Urban Planning and Design

Urban planning system provides the means encourage good design, not just in conservation areas and other attractive places, but everywhere. Securing good design is central to good planning. The appearance of proposed development and its relationship to its surroundings are relevant to the consideration of urban planning principles.

Urban design is the art of making places for people. It includes the way places work and matters such as community safety, as well as how they look. It concerns the connections between people and places, movement and urban form, nature and the built fabric, and the processes for ensuring successful villages, towns and cities.

Urban design is a key to creating sustainable developments and the conditions for a flourishing economic life, for the prudent use of natural resources and for social progress.

There are many benefits to be gained from thinking coherently about the way places are designed. Some are the traditional concerns of good planning, others are relatively new urbanism concepts.

2.3.2 Urban Planning and Design

Urban design essentially is a process by which quality in the built environment is facilitated. It is the three-dimensional design of a city both at the local and city scales. It deals with the design of new and regeneration of existing settlements. It is the art of place making or city building; the process of shaping the physical setting for life in cities, towns, villages, etc. Urban Design is 'the relationship between different buildings and the streets, squares, parks, waterways and other spaces which make up the public domain; the relationship of one part of a town or city with other parts; and the patterns of movement and activity which are thereby established. In short Urban Design is the complex relationships between all the elements of the built and natural spaces, the nature and quality of the public domain'.

Urban planning and design has proven to be an important element in shaping life styles, solving problems and giving new ways of living in the urban arena. The quality of urban life is one of the big goals that the field tries to reach. Urban open spaces are known to enhance the quality of urban life. So, every city needs these spaces. The planning and design of urban open spaces have been practiced in different parts of the world in different ways. The practice and use of these spaces differed from place to place as well as from time to time. A good approach in the planning and designing of these spaces is to first study the past and current trends of urban open space usage in a place. The existing local culture acts as a guiding element to design a space suitable for the need of the locals.

2.4 The Functions of Urban Open Spaces in Sustainable Cities

We often hear people repeat Aristotle's famous phrase 'Man is by nature a social animal'. Human beings are incapable of being in isolation and need to be in the presence of others. Ardent, H. (1958) argues that "No human life, not even the life of the hermit in nature's wilderness, is possible without a world which directly or indirectly testifies to the presence of other human beings". This need for social interaction requires a place and that lays the basic need for public spaces.

Public spaces are spaces which allows culture to thrive. It can be looked at as a gateway to cultural development in a society. It give an opportunity for people of varied cultures,

backgrounds and races to come together and showcase their culture and at the same time experience new cultures unfamiliar to them. It is a place where cultural and social development is possible. People coming from different cultures have different ways of dressing, different languages, customs, beliefs, ideologies and behaviors. These cultural practices can be shared and experienced by people only in the public realm. It gives rise to an opportunity where development of a new perspective is possible and expands the horizon of cultural and social possibilities like in the Art, music and culinary worlds. "...Public spaces are the primary site of public culture; they are a window into the city's soul" (Zukin, S, 1995).

Public spaces not only play a vital role in cultural development but is also important in the personal development of an individual. It helps in developing personal ideas and values of a particular individual and realizing one's own character and beliefs.

Urban open spaces fulfill many functions in urban context that benefits people's quality of life. There is therefore a broad consensus about the importance and value of urban open spaces in cities towards planning and constructing sustainable or eco cities of 21st century. Steadily growing traffic and urban heat, especially in the developing countries is not only damaging the environment but also incur social and economic costs. Today, international efforts have been made to work towards the goal of sustainable development. Constructing sustainable cities are considered as one of the major goals. However, there are neither widely accepted definitions of sustainable cities nor any good indicators to measure the degree of sustainability of an urban area. Nevertheless, it is strongly believed that a high quality of life is the necessity of developing a more sustainable city. (Chiesura, 2004) The satisfaction, everyday experience and the perception of the citizens are some of the key factors to determine the urban livability. (Beer, 1994) These factors in turn depend on the economic, social, and environmental qualities of a city. Since the functions of urban parks today can help improve all these three qualities, well-planned urban parks are now considered as the key component of sustainable cities. The benefits of building an urban open Space are described as follows:

2.4.1 Environmental and Ecological Benefits

With all the hard-surfaced buildings densely constructed within an area, there is a distinct climatic difference between the rural environment and the city environment. Such difference can significantly change the temperature, rainfall pattern, humidity, and

wind speed in the city area. Unlike vegetation, which can convert solar energies into food, the large areas of concrete rooftops absorb and trap all the solar heat. Also, the impedance of buildings will greatly reduce the wind speed thus the ventilation of the city. These cause the heat island effect that the city area will be around 1.1 to 6.5 °C higher than the nearby rural area, depending on the location and structure of the city. (Santamouris, M., 2001) Also, the humidity will be lower due to the increase rate of evaporation.

Building urban open spaces within the city fabric can alleviate this effect by providing ecological services to the city. The vegetation such as trees not only converting solar energy into sugar, they can also act as shading shelters to users and improve air circulation. The water bodies such as ponds and fountains inside the open spaces can also cool down the nearby area and reduce the fluctuation of temperature during daytime and nighttime because water has a high specific heat capacity to store more heat. Other than the heat island effect, the vegetation and water bodies inside a properly designed urban open spaces can serve as a temporary water reservoir during heavy water rainfall. Precipitation can infiltrate directly into the permeable ground, which can reduce the stress to the water pipeline system. Water stored will slowly be evaporated back into the atmosphere, which increases the humidity of the nearby area. (Sadeghian and Vardanyan, 2013)

Air pollution and noise pollution are very common in the city. Harmful chemical particles such as carbon monoxide, sulphur dioxide and nitrogen oxides are usually emitted from vehicles, factories and construction sites. These emissions can seriously affect the respiratory systems of the citizens, especially for children and elders. Researchers have revealed that urban open spaces can effectively reduce the level of air pollution down to 15% of the original. (Bolund and Hunhammar, 1999) The vegetation in the urban parks is also identified to have beneficial effects on the air quality in the city. (Yang J *et al.*, 2005) Suspense particles and dusts will be absorbed by vegetation or partial dissolved into the water bodies in the urban parks. For the noise pollution, its level mainly depends on the distance, number and the intensity of the sources. (Sadeghian and Vardanyan, 2013) Noise pollutions are mainly caused by heavy traffic and construction sites and loud noise with high duration can cause stress to

affected citizens. Dense vegetation and shrub planting inside the urban parks may screen out the noise pollution to a certain extent. However, the major function of the urban parks is to help reduce the psychological attributes of sound rather than the physical measurements of the perceived noise. Biodiversity in the city area is greatly reduced due to the massive destruction of natural habitats. Urban open spaces can provide a potential habitat for wildlife and at the same time conserve the quality of natural resources such as soil and water. In this context, networks are usually set up to further help maintaining the biodiversity in a wider scale. The linkage and the connectivity of these urban parks are vital and will be discussed in the later section.

2.4.2 Social and Psychological Benefits

One best-known function of urban open spaces is to provide citizens a place for different everyday outdoor activities. They can become the playgrounds for children or the training fields for sports teams. Families can enjoy other passive activities such as leisure walking, playing with pets, chatting and picnicking etc. When people are exposed to the natural environment, their immunity system can be boosted and their stress will be rapidly reduced as well. Researches has also been studied that patients recovers faster after surgery when they are staying in a room having a view of a natural setting.

(Ulrich R., 1984) It is no doubt that urban open spaces can contribute to health of the users as the World Health Organization has defined the term health as ‘a state of complete psychical, mental and social well-being and not merely the absence of disease or infirmity’. (World Health Organization, 1989) In the long term, urban parks can reduce the expense of public health. (Thompson, C. W., 2002) Other community events can also be organized in the urban parks as well. They can contribute to wider urban policy objectives such as providing job opportunities and help youth development. (Walker C., 2004) For instance, urban agriculture has become a new popular trend in the worldwide. Also, urban open spaces are usually the first experience of nature to children. Well-designed urban open spaces can increase the environmental awareness of members of the public as well. Urban open spaces also bring positive benefits to the local community. The aesthetic value of these urban parks can contribute to positive attitudes and social norms to the neighborhoods. (Sadeghian and Vardanyan, 2013) Research also suggests that the close access to public open spaces by the community members can reduce the level of violence, crime, and disorders in the

neighborhood. This is because public open spaces allow people expand their social networks through engaging in highly social interactions. (Kuo and Sullivan, 2001)

2.4.3 Economic Benefits

Aforementioned, the urban open spaces reduce the heat island effects and reduce the fluctuation of air temperature. This can be seen as an effective way to reduce the cost and amount of energy being used in the city. As a study in Chicago has suggested that up to 10% of the total energy for air conditioning can be saved if 10% more trees are planted in the city. (Sorensen *et al.*, 1997) Pollution controlling can reduce the cost to tackle the pollution. This indirectly reduces the total healthcare expense because people should be healthier and less likely to have psychological and respiratory problems caused by noise and air pollutions.

Beside, urban open spaces can boost the property value of the buildings in the area. To enjoy an aesthetically pleasing natural view, investors and residents are more willing to pay for a higher price in order to live or work next to natural landscapes. According to a research, urban greenery in Singapore and Malaysia has even increased 5 to 15% of the financial returns for the land developers. (Sadeghian and Vardanyan, 2013) Other reports has revealed that the home value of building one block next to the Central Park in Manhattan, New York City rose more than 115% in the last decades, comparing to only 54% increase in other areas of Manhattan. (Jason S, 2010) Urban Park can be used as a place to generate profit as well. For example, in China, certain types of trees, herbs and crops are grown and selectively harvested as timbers from time to time. Fishes in the pond are caught and sold to the market three times a year. Such productively use of the natural resource in the urban parks somehow helps reduce the park expenses. (Cranz, 1997). Recently, there has been an increasing attention to urban ecotourism. Other than memorial parks or other urban parks with special history such as the Hyde Park in London and Parc Guell in Barcelona, a well-designed urban park can also become the natural resting places for urban travelers and even a symbolic tour hotspot for the city. They can as well help promote ecotourism, which is defined by the international Urban Ecotourism Conference in 2004 that ecotourism aims at conserving cultural and natural heritage while educating the visitors in the city environment. (Sadeghian and Vardanyan, 2013). Generally urban open spaces have the following functions:

Recreational; (it can provide opportunities for a variety of outdoor activities for people of all ages);

Figure 4 shows Recreational Open Space



Source Internate (<http://www.anfaaltinpark.com.tr/>)

Stress relieving; (open space can help to restore people physically and psychologically by reducing stress, improving moods, and even lowering blood pressure)

Aesthetic; (Trees, flowers, and other green vegetation offer beauty and aroma to the built environment);

Habitat Protection; (Urban open space networks can sustain complex ecosystems); Air oxygenation;

Economic; (Parks, greenways, and other open space can significantly enhance property values)

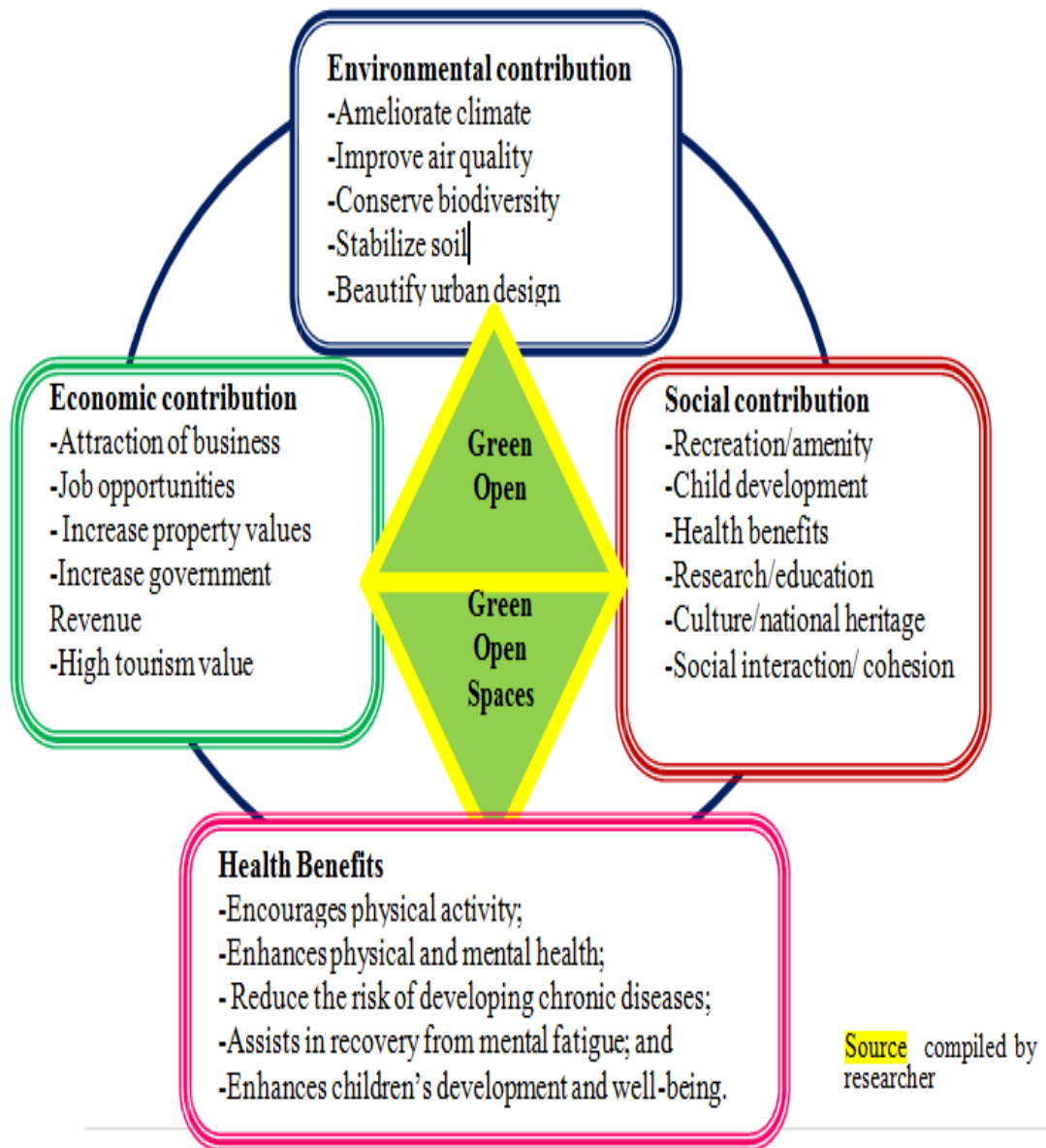
Figure 5. Shows Central Park in New York



Source Internate (<http://www.anfaaltinpark.com.tr/>)

Contributions of Open Space for the Urban Fabric

Figure 6 Shows Contributions Of Open Spaces



2.5 Types of Open Space

There are seven major types of open space are urban agriculture; parks and gardens; recreational space; plazas; streets; transport facilities; and incidental spaces. More Over, open spaces within each are further categorized by: a spatial scale continuum, city-wide, intermediate, and individual building.

Table 1. Shows Type and Categories of Open Space

	City	Intermediate	Residence
Transport Facilities	Harbour, Airport, and Train station parking	Transit stations, City gate areas	Driveways, parking areas
Streets	Central boulevards	Street space	Pedestrian alley, paths
Plazas	Large formal plazas	Smaller neighbourhood plazas	Interior courtyards
Recreational space	Stadium, Green belts and beaches	Sport facilities, playgrounds	House yard, Play space
Incidental space	Natural features and semi-wild areas	Empty lots, Transit borders	Marginalized space between buildings
Parks and gardens	Major formal parks and Garden space	Institutional gardens, small parks, cemeteries	Household gardens
Urban Agriculture (Food production Areas)	Orchards and agricultural fields	Grazing commons, community gardens	Kitchen gardens, small horticulture
Key			
	Gray Space		
	Green Space		
	Green/Gray Spaces		

Source: Stanley et. al, 2012

2.5.1. Streets

Streets function as pedestrian and vehicular corridors as well as crucial locales of social interaction, political demonstration, ritual, recreation, economic production, and trade. At *city level* the streets are monumental boulevards for transport, but have also a symbolic meaning, political display, and economic activity attached. At *intermediate level* the streets are beside transport corridor, the cultural and functional heart of urban open space and home to a diversity of uses. In informal settlements in developing countries the transportation is forced to share the streets with a variety of household, social, recreational and economic activities due to the lack of planned open space. At *residence level* streets are alleys or pathways, which are too small for large vehicular transportation or multipurpose commercial activity. These streets are sort of a transition zone between the private sphere of the household and the public sphere of the street, where more intimate and social neighbourhood interactions can occur and access is dictated by informal social norms.

2.5.2. Plazas

Plazas are defined as intentionally established open space framed by buildings on most sides and usually hard surfaced. At *city level* the plazas are large and often planned by government or religious authorities. The plazas are distinctive at the city scale due to their centralized position, large size, and associated with major civic or religious buildings. Typically they are used for multiple purposes, such as central events, military assemble, local trade, and social interaction. At *intermediate level* the plazas are qualitatively different because of their smaller scale, relative abundance, as well as more localized uses. They exist in local neighbourhoods and are quite common in a variety of cultures, but relative sizes and positions are contextually different in each case. At *residence level* exists the smallest plazas, which are courtyards, normally private or semi-private for residents.

2.5.3. Recreational Space

It includes functionally specialized green and grey spaces designed or used for leisure activities, such as sports or exercise. At *city level* the urban greenbelt, often semi-wild represent this scale. Often the areas are built upon vacant agricultural land and are greenbelts surrounding the city. These belts may function as recreational spaces but also function as buffers between residential and industrial zones. Also beaches and stadiums are common recreational spaces at this scale, whereas stadiums are separated from parks or large formal plazas as they are planned to be specialized for recreation and viewing. At *Intermediate level* recreational spaces besides multi- purpose neighborhood places, such as streets, plazas, and empty lots, are multiple ball courts in the neighborhoods. At *residence level* residential spaces are individual gardens and courtyards that tend to accommodate family recreation.

2.5.4. Incidental Space

Incidental space also referred to as marginalized or amenity space, is defined as any green or grey space located on the margins of other spaces or buildings that is either ignored or not intended for a specific use other than safety, visual amenity, or physical separation.

At city level the incidental spaces are either planned or unplanned semi-wild or natural open spaces. The semi-wild spaces are sometimes wildlife habitats or green buffers in an

urbanized environment, and become easily dumping grounds for waste or spaces of social deviance. At *intermediate level* the incidental spaces are of smaller scale and are somehow leftovers at the base of high-rise buildings or function as separation between buildings. These spaces are sometimes also planned for particular reasons. Some of the incidental places are, for example, found along transportation corridors such as highways and railroads, being an aesthetic, safety corridor between traffic and housing. At *residence level* space around dwellings and commercial buildings can be seen as anonymous, incidental space, but it is hard to determine where purposive space stops and incidental space begins.

2.5.5. Parks and Gardens

Parks and gardens are defined as partly landscaped, mostly green areas intended for social and recreational activities as well as aesthetic or display purposes, although historically these functions have been intertwined with food production. At *city level* gardens and parks are the ones surrounding the central state institutions and have been significant source of open space in urban history, ranging from enclosed spaces to fully public spaces serving as spaces for social interaction and recreation. At *Intermediate level* smaller parks and gardens at the neighbourhood level have surrounded religious buildings or civic institutions, and at *Residence level* the degree of focus on green space associated with residences has varied across different societies, but kitchen gardens providing foods, condiments, and medicines have a long history.

2.5.6. Urban Agriculture (Food production areas)

Food production areas are green spaces utilized predominantly for crops and livestock. They are at *city level* often patterns of “leapfrog development” driven by rapid urban growth, which thereby have created an unplanned mosaic of older farmland and newer residential developments within the metropolitan boundaries, often referred to as peri-urban areas. At intermediate level the food production areas are common in many contemporary cities as small community gardens, showing a new ideological focus towards urban sustainability, local farming and organic foods. In lower income neighborhoods in developing countries the food production areas at intermediate level and residential level represents a critical supplement to household income and nutrition rather than being motivated by ideological reasons (Stanley et al., 2012).

Stanley et al. (2012) emphasize that the spatial scale of any specific open space is clearly related to its size, function and urban context, but moreover, it is defined in terms of the

cultural importance. Stanley et al. give the example that a garden may be small in size, but due to the society-wide importance of the sponsoring institution, it is important at city scale.

2.6 Challenges and Constraints of Public Spaces

As important as public spaces are, they are also faced with innumerable constraints. Designing and maintaining a public space is highly challenging. Public spaces need to be protected against various impediments such as crime, misuse, deterioration, violence and climate. Among all, the safety of the users of public spaces is the key challenge. The assurance of the feeling of safety is a precondition for public space to be utilized to its highest capacity. As seductive as the experience of the 'other' can be, it can be equally or more controversial in nature. "...Public domain experiences occur at the boundary between friction and freedom. On the one hand there is always the tension of a confrontation with the unfamiliar; on the other, the liberation of the experience of a different approach" (Hajer, M. and Reijndorp, A, 2001).

2.7 Challenge of Urban Development Plan Implementation in Developing Countries

Journal of Environmental Protection, (2011). Urban development planning and management in developing countries is the responsibilities of municipal/local, states/regional and central governments. Implementation of urban development plans faces serious hindrances. They range from political to economic, financial to institutional and from physical to socio-cultural problems. This paper identified the following problems of the implementation process:

Ineffective policies guiding urban development plan implementation

Policies for executing physical urban development plans and plans have been characterized by failures. Careful assessment and review of some of these policies reveals a variety of troubling evidence that many urban land policies promulgated by government are ineffective and, perhaps more alarming, they sometime cause some significant harmful effects on social welfare and economic productivity.

Unsuitable urban physical planning methodology

The physical planning of most urban areas is being carried out through the preparation of urban master and structure plans to guide development of various land uses. The comprehensive planning approach adopted by the majority of planners in developing countries, based on the traditional paradigm of “survey-analysis-evaluation-plan-implement” is based on technocratic, time-consuming, and rigid procedures.

Excessive delays in approving urban physical development plans

Proposed development plans and proposals require approval by planning and local authorities before their implementation according to planning regulations. This has been reported to take unnecessary long period of time thus delaying developments in most of the local authorities in Africa and Asia. In most cases, developers have had to go ahead with their developments with no regard for submitted plans and considering proposed land uses.

Urban planning regulations places much emphasis on control rather than on guidance of urban development

Most planning regulations and standards in developing countries have been considered to be too static and inflexible like some existing development control codes, the building and zoning regulations. The various acts and statutes for regulating urban development are too rigid and outdated and not conforming to the countries' current social, economic and political circumstances.

Urban political instability and interference in implementing urban physical development plans proposals

Political interference is not uncommon in the local or municipal authorities in developing countries. This interference in the urban development control system has limited the local authorities' ability to fully regulate and control development. High demand for land parcel in cities has also led some authorities to overlook the standards required for various uses and abuse of proposed land uses especially open spaces.

Inadequate awareness of planning activities and public participation

The extent to which people are aware of the existence of planning activities and regulations is important because it partly determines the extent to which people will

comply with these regulations. Lack of public participation and awareness of urban development plans and planning legislations lowers the chance of successful implementation of the plan and the degree of compliance with the required regulations

2.8 Understanding Open Space Standard

Open space as a ventilation space in a city is a determining factor of the health of the community. An open space standard includes a needs-based assessment that considers population numbers, density, demographic profiles, and recreation preferences. Shah Md.Atiquel Haq (2011) stated that, based on the studies of different cities, different researchers provide some guidelines to evaluate the nature of open spaces. Firstly, one of the main factors in determining the nature of open spaces is their quantity in the city. Secondly, existing qualities like activities and experiences, and perceived benefits to the users determine the utilization of open spaces. Thirdly, the functionality of those open spaces is equally influenced by the location and distribution (accessibility) in the whole city. Accessibility standard, quality standard and quantity standard.

2.8.1. Accessibility standard

The accessibility standard refers to how close people should be to their nearest publicly usable open space. So, accessible green spaces are defined as places available free of cost to the people, and are mainly utilized by target users living in the catchment area. International research into the impacts of green space on health and on wider quality of life shows that having green space within a 5-min (400 m) walk of home is a strong indicator for health and quality of life benefits.

Accessibility and linkage is given due consideration in this research among the four quality of POS. Because the dimension of accessibility is not determined by only in quantity (per capita) but also it can be determined by proximity (distance), the variety of user experiences and other social factors as different study revealed. Therefore, as a UN habitat report implied, the potential of POS to fulfill its role of equity can be best fulfilled by correcting imbalances in the supply, quality and distribution of public spaces in different sections, neighborhoods and settlements of the city/town (UN habitat, 2015).

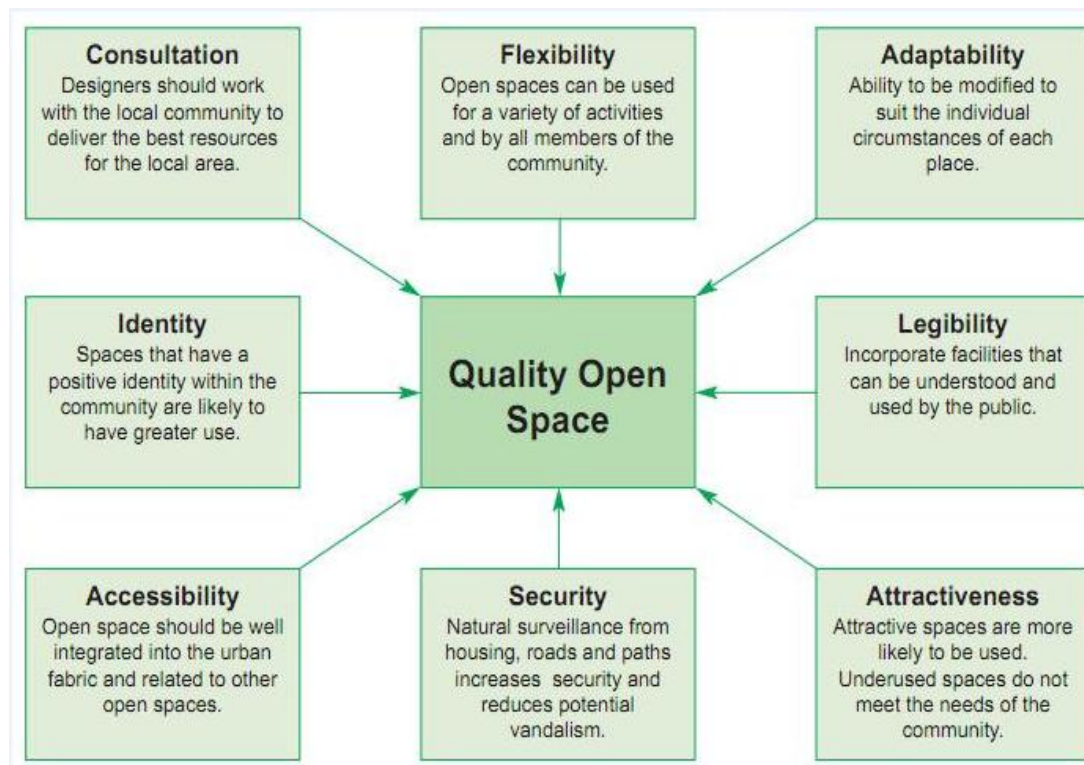
2.8.2. Quality Standard:

The quality standard is a matrix that identifies what infrastructure or landscape features are appropriate and suited for open spaces that satisfy the users. All publicly usable open spaces score ‘good’ or better on the locally used quality assessment.

Principles for Good Quality Public Space

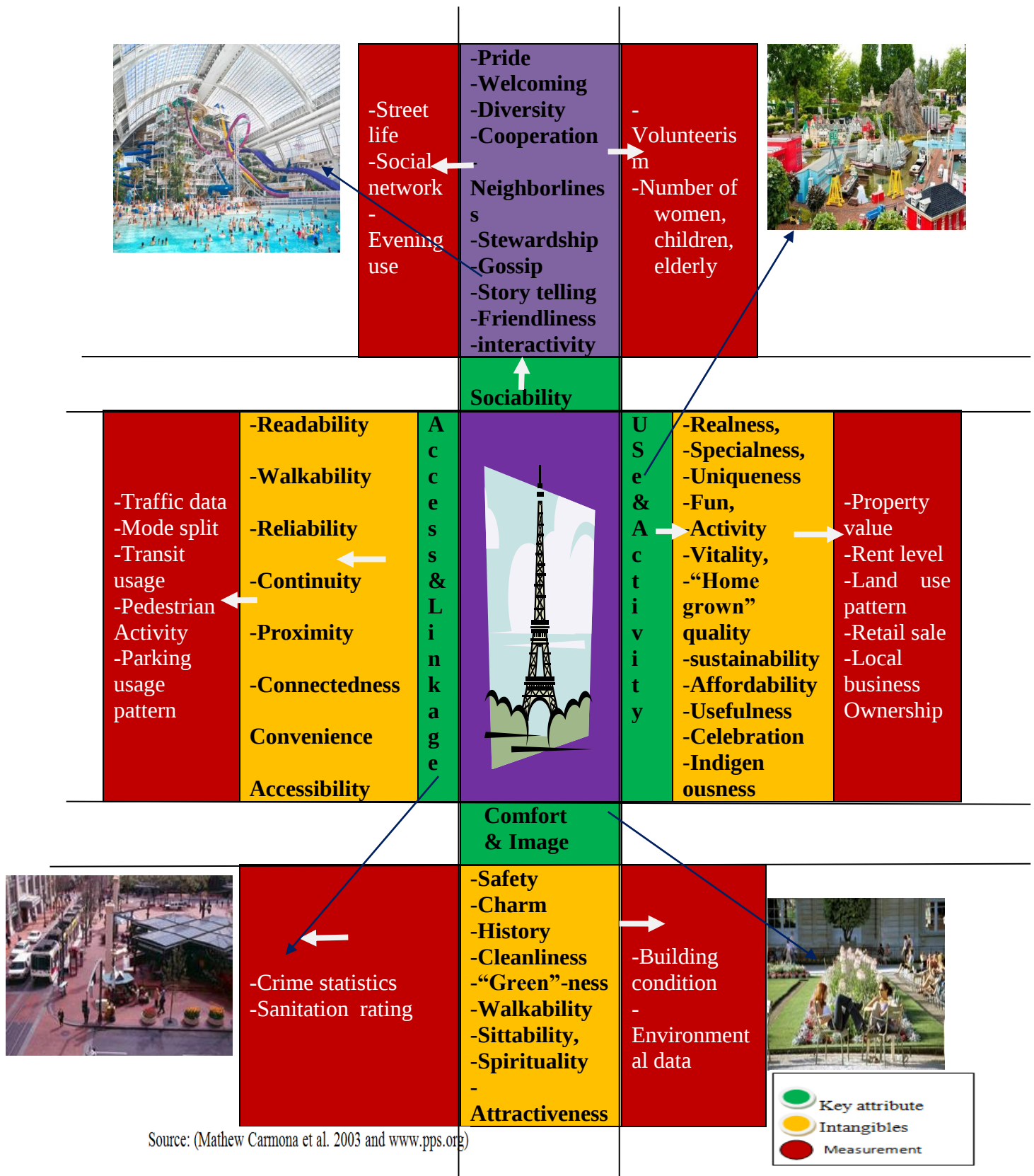
Just like as the necessity of planning, it is equally important to know the principle of good quality POS. Hence in this thesis, the principles are adopted from QPS Sub Group: Leeds Chamber Property Forum (2008) to suggest the stakeholders after intensively evaluating study places benchmarking the principles and the quality measurements of this thesis. So the principles to good quality POS stated as: provide a context and venue for social interaction; design primarily for the pedestrian; design the space as ‘an outdoor room’; create a clear and lively relationship between indoor and outdoor uses; cater for different users, provide an inclusive not exclusive place; plan a 24 hour space, key elements must be robust and attractively designed ; provide options for shade, shelter and security; not one space but many; and ensure the space becomes of the existing urban hierarchy.

Figure 7. Shows Quality Measures of Open space



Source: Compiled by the Researcher (2019)

Figure 8. Shows Place Diagram for Measuring Quality of any POS



Among different researchers on quality of POS, PPS is an internationally known organization which developed the place diagram as a tool to help people in judging quality of any place, good or bad. To make the diagram understandable, different colors are used in this research as indicated above. Assume that the purple color in the above diagram (in which land mark is placed) is a certain public square that is available in a study town. So it is possible to evaluate that place according to the four attributes in the green box. In the yellow box next to green are an intangible of qualitative aspects by which to judge a place; the next outer red boxes shows the quantitative aspects (variables) that can be measured by statistics.

2.8.3. Quantity Standard

The quantity standard also varies with locality. Quantity is based on existing open space provision. All settlements/neighborhoods should have equitably distributed publicly usable open space one hectare per 1000 people (OUP 2003).

2.9 Empirical Experiences of Open Space Design and Development

2.9.1 International Experience

An early purpose built Public Park was Derby Arboretum which was opened in 1840 by Joseph Strutt for the mill workers and people of the city. This was closely followed by Princes Park in the Liverpool suburb of Toxteth, laid out to the designs of Joseph Paxton from 1842 and opened in 1843. The land on which the Princes Park was built was purchased by Richard Vaughan Yates, an iron merchant and philanthropist, in 1841 for £50,000. The creation of Princes Park showed great foresight and introduced a number of highly influential ideas. First and foremost was the provision of open space for the benefit of townspeople and local residents within an area that was being rapidly built up. Secondly it took the concept of the designed landscape as a setting for the suburban domicile, an idea pioneered by John Nash at Regent's Park, and re-fashioned it for the provincial town in a most original way. Nash's remodeling of St James's Park from 1827 and the sequence of processional routes he created to link The Mall with Regent's Park completely transformed the appearance of London's West End. Liverpool had a burgeoning presence on the scene of global maritime trade before 1800 and during the Victorian era its wealth rivalled that of London itself.

The form and layout of Paxton's ornamental grounds, structured about an informal lake within the confines of a serpentine carriageway, put in place the essential elements of his

much imitated design for Birkenhead Park. The latter was commenced in 1843 with the help of public finance and deployed the ideas he pioneered at Princes Park on a more expansive scale. Frederick Law Olmsted visited Birkenhead Park in 1850 and praised its qualities. Indeed, Paxton is widely credited as having been one of the principal influences on Olmsted and Calvert's design for New York's Central Park of 1857.

Figure 9. Shows New York's Central Park



Source: https://en.wikipedia.org/wiki/Urban_open_space F.L. Olmsted, (1870)

As mentioned earlier, cities like Barcelona, Copenhagen and Melbourne with their imaginative public space policy have managed to become pioneers in urban regeneration standing as an example to inspire other cities in the world to pay attention to the quality of the public realm. Explicitly in the case of Barcelona, successful regeneration of the urban space was achieved through a change in new public space policy.

Figure 10. Shows Placa dels Paisos Catalans, Barcelona



Source: https://en.wikipedia.org/wiki/Urban_open_space

Another unique example of how a museum is developed into a public domain is The British Museum at Great Russell street, London. Although it is a museum and not a typical typology of a public space like a park or a square it has certain characteristics of such public spaces. The British museum not only behaves as an attraction for tourists but is also utilized by the locals to commute between the 2 streets it is located between.

Figure 11. Shows image of Atrium of The British Museum



Source: https://en.wikipedia.org/wiki/Urban_open_space

Experience from Developing Countries

The best experience taken from Developing countries especially from Africa Is Kigali, the capital of Ruanda which is clean and green city which was designed and developed with the commitment of political leaders and full participation of the community at large.

2.9.2 Experiences of Local Context

Hwassa and Bahirdar: Even though there is no wide experience of good POS in urban of Ethiopia, some cities have a good beginning of developing POS. Because of the presence of natural lakes and the city's stake holder's good effort on their streetscapes and Public Square, Hawassa and Bahirdar cities are becoming attractive cities and tourist destinations. The following, the cities' center images are the winner's images during the photo computation of city day, (MWUD, 2009) which shows a little local experiences of the two cities.

Figure 12 Shows Hawassa City Streetscape and Bahirdar City Square



Source: MWUD, 2009

Hawassa, its streetscape and specially the areas around the lake served as a park where the Guereza and Vervet monkeys. One of the biggest attractions of the lake is the chance to see exotic bird's live side by side and wild hippos in their natural habitat. From chairs placed at the lakeshore, people can examine the entire lake while relaxing; the view and the atmosphere were all perfect. It truly gives the feeling of a vacation for visitors (Source:<http://addisababaonline.com>)

Figure 13 shows Hwassa city square



<https://www.google.com.et/search?q=Awasa+city+square>

2.10 Different Open Space Standards

There are two types of sport facilities: community facilities and formal sport facilities. These facilities are established at different levels to provide recreational space for people. The proportion of land used for recreation and sport facilities as proposed in most urban centers of Ethiopia varies from 2 to 8 percent and it exceeds 10 percent in some urban centers that have recreation dominating function. MoUC (2012).

Table 2. Presented below provide standards of sport facilities

S/ N	Level of Sport Facilities	Space Requirement	Catchments Area	Served Population	Location
1	Play lot (Residential cluster)	0.1-0.2ha	120m radius	1,250-1,750	Center of catchment area with in residential areas at neighborhood level Not adjacent to collector roads
2	Playground (Residential)	0.3-0.42 ha	400m radius	5,000-7,500	Within the catchment area in residential areas at neighborhood level
3	Kebele level foot ball	8064 m ²	1km radius	5,000 - 10,000	Within catchment area kebele boundary, Outside centers of urban centers
4	Woreda level	11935 m ²	Woreda	60,000- 120,000	Within the woreda boundary
5	Regional level football/ stadium	11935 m ²	Administrative zone or Sub-city	300,000- 600,000	---
6	Regional level football/ stadium	13120 m ²	City and region	---	--
7	National level football	40,000 m ²	National and international	-----	It can be located outside the urban boundary

Source: MOUC (2012)

Table 3. Plot size standards for zonal level sport and recreational facilities

S/N	Types of sport and field	Size (m)	Area in m ²	Remark
	Football field	70 ⁺⁷ X 105 ⁺⁵⁰	11935	-Reserve 7.6m and 12m for referees and viewers respectively - Provide lane of 1.22m between the football field and viewer's sites -Reserve additional area for free movement
	Athletics	400m of 8 lanes	4100	
	Basketball	15 ⁺¹⁸ X 28 ⁺¹⁵	1419	
	Volleyball	9 ⁺¹⁹ X 18 ⁺¹⁶	952	
	Handball	20 ⁺¹⁵ X 40 ⁺¹⁵	1925	
	Ground Tennis	23.77 ^{+16.23} X 10.97 ^{+9.02}	800	
	Swimming pool	25 X 17	425	
	Tennis Table	7 X 14 X 8 places	784	
	Gymnasium	-----	4925	
	Walkway, green & parks	-----	85815	

Source: MOUC (2012)

Recreational standard Local experiences-park

According to (MoUC, urban green infrastructure development strategy (2014) Depending on its objective urban park can be divided in to four; Recreational park: for recreational purpose; botanical garden: for research and ecosystem balance; zoological park: the ecosystem of wild life endemic animals' conservation and cultural and historical park: for cultural and historical conservation. According to area coverage and catchment population, urban park can be divided in to four. The following table illustrates this fact.able

Table 4. Local park standard area and catchment radius

No	Type of parks	Area in(ha)	Catchment radius(m)	Remark
1	Local Area Park	< = 1.2ha	500m-1000m	Not expect facilities fulfillment
2	Neighborhood Park	< = 4ha.	1000m-1500m	Different facilities should be fulfilled
3	Sub city park	Up to 8ha.	1500m-2000m	On mixed use development. Different facilities should be fulfilled
4	Metropolitan park	>8ha	> 2000m	on mixed use development Different facilities should be fulfilled

Source: (MoUC, 2014)

2.11 Research Gaps

According to UN habitat (2015), “Making public open space is a good way to offer advocates on public space at the international, national, local/city and community levels sound arguments to strengthen their efforts in seeking the improvement of the quantity, quality and distribution of public open spaces in cities”. Also the same source revealed, the potential of POS to fulfill its role of equity can be best fulfilled by correcting imbalances in the supply, quality and distribution of public spaces in different sections, neighborhoods and settlements of the city/town. From this current report, it is understood that, in the world wide, there is a calling of research on the issue of “Designing and developing quality POS”, but not only on the issues of quantity as different studies concentrated. Therefore, the related studies that have been done in relation to POS are forwarded to see some gaps. For example, Kumlachew Tsegaye (2007), Critical Assessment on the Current Operation of Planned Public Open Spaces in Addis Ababa’s Urban Environment; Anwar Kemal (2013), Revitalization Of Jugal Through Public Open Space, Harar ; and The Structural Plan report (2003) of Adama Town itself are some of them which are important in line with their topic characteristics.

2.12 Lesson Learned from Literatures

Now that the value of open spaces and the importance of urban planning and design in creating Open space has a crucial part of the study, it is vital to remember that the design approach for creating these open spaces should be very site specific. Each open space has its own inherent meaning and use. The design of one open space cannot simply be imitated and plugged into another just because it is functioning successfully in that particular place.

Thus, beside many challenges in developing open spaces, the planning and design of parks and recreational facilities need strong attentions, application and consideration of design principle and standards. Without applying those principles and standards, the realization of well- designed, organized and developed open space is very difficult. Any planning and designing of open space should base itself on the interest, preference, and culture of the society/ community for which it is designed so participation in planning is critical. Planning together for shared vision with community and other stake holders is necessary. Planning for open space is to enhance the quality of life of citizens by meeting the highest priority needs of present and future populations of the town.

2.13 Policy and Legal Frame Work

The issue of urban environment and open space lacks clear and influential policy frame hasn't been framed despite the issue currently becoming the global issue. On the other hands, there is also no clear and direct policy on how to manage urban open space and greenery in urban centers whether at federal, regional or local administration levels. Similarly, there are no any clearly stated legal frames or norms in the green development and management of Adama city administration.

2.13.1 Policy Issues

The EPE's (1997) overall policy goal can be summarized as improvement and enhancement of the health and quality of life of all Ethiopians, and the promotion of sustainable social & economic development through the adoption of sound environmental management principles.

2.13.2 Legal Frame Work

The Constitution of FDRE (1995) contains a number of articles relevant to environmental matters in connection with development projects, as well as to the environment in general. Article - 43 gives the right to people to improved living standards and to sustainable development. Article - 44 states that all persons have the right to live in a clean and healthy environment. The new Land use classification standard of Ethiopia 30% open Space and Greenery, 40 % Built Up area and 30 % streets and Parking.

Table 5 Land Use Proposal Classification Legal Frame Work

No	General Land Use	According to old by Classification MWUC(2012)	According to the new Land Use Classification strategy (30, 40,& 30)
1	Housing	40-50	16 – 20
2	Commerce	7-20	2.8 – 8
3	Service	10-20	4 – 8
4	Administration	3-7	1.2 – 2.8
5	Manufacturing	10-15	4 – 6
	Built Up (Solid)		40
6	Environment	15-20	30
7	Road and Transport	15-25	30
	Open Space		60
Total Land Use		100	100

Source: OUPI 2018, Adopted from Land Use standard 2012

CHAPTER THREE

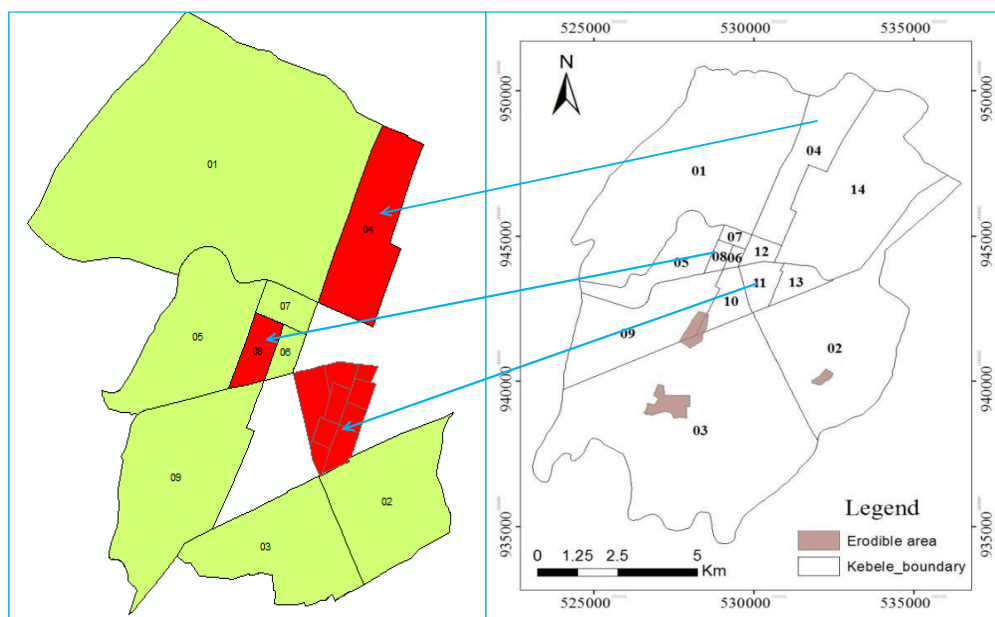
3. Research Design and Methodology

3.1 Population and Sampling

According to CSA (2007) Adama branch report the population of Adama town is 220,212.. For this study both random and non-random sampling is used. From random sampling, area random sampling that is cluster random sampling is preferable because these populations are distributed in eighteen geographic boundary kebeles and to get a list of the members of population is difficult. Therefore for this study three (3) kebeles are randomly selected which is Oda kebele (Kebele08), Barecha kebele (kebele11) and Tedecha Arara Kebele (Kebele 04) .From each kebele 15 household sampling units totally 45 sample households were selected randomly. Since, the study was more dependent on assessing the proposed structural plan (Designed LDP), detail observation of existing land use and current built up area and open Spaces on the ground and satellite map of the town is used.

On the other hand purposive non random sampling is employed to discuss with municipal and land development and management office officials regarding the proposed and developed open spaces in the town.

Figure 14. Shows Sample Kebeles



Source: Compiled by the Researcher (2019)

3.2 Data Gathering Techniques and Methods

Instruments employed to collect data was selected on the nature of the data required and the sources available. Thus, for this study, to assess urban planning and design elements the data collection instruments employed were observation, interview questionnaires from sample residents, key informant interview and review of official records, different plans and reports in order to obtain both primary and secondary data.

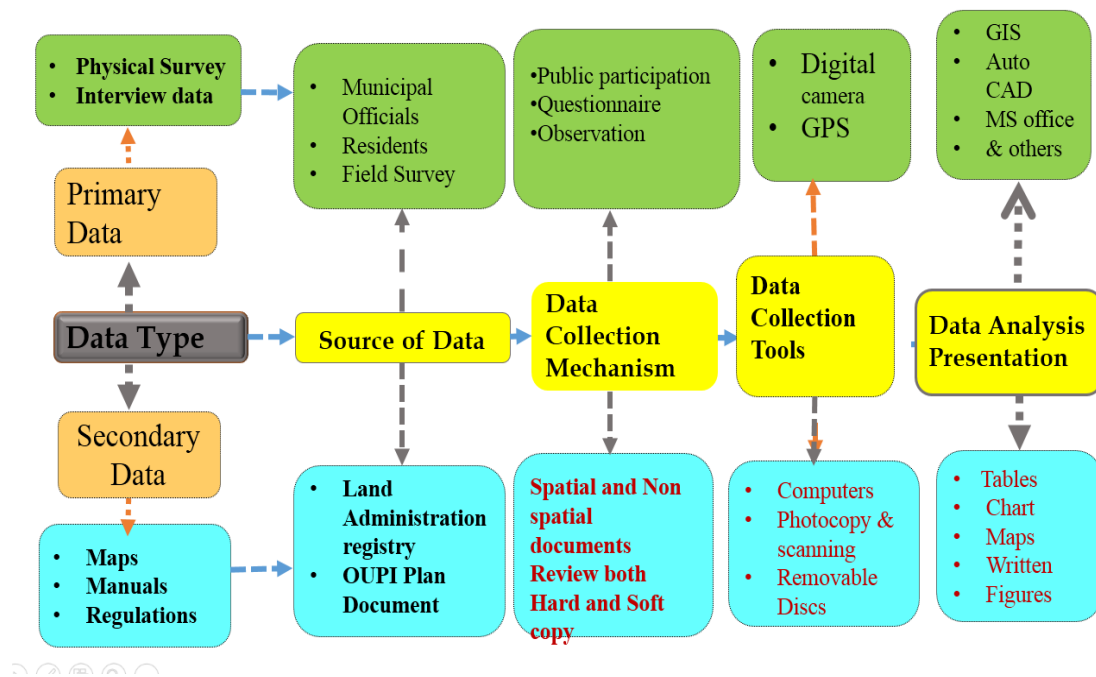
But also, key informant interview was used to collect data from the officials in the sample offices. The selection of the key informant interviewees was based on their close linkage to the land use issues, open space design and accountability to the preparation of land use planning, its implementation and decision making power.

Collected Data

Due to the multifaceted nature of this research, a four stage methodological approach was adopted for the data collection. First structural plan document was reviewed and compared with existing condition of the town. Next, a series of semi- structured questionnaire was distributed for end-users and informed the development of a paper-based questionnaire to capture the perceptions and attitudes of the local population towards their open space. This was followed by detail observation study to provide information on how the space is being used. Finally, the spatial structure of the case study was showed using maps, photos and figures.

For this study both primary and secondary data are collected on the basis of urban design principles and open space standards. The collected raw primary data includes questionnaire from sample residents, municipal and land officials, and up dated maps and photos from detail field survey by researcher and responsible official from town's land administration officials.

On the other hand, secondary data were collected from Adama town Municipality department of sanitary and city beautification, land Administration office and Oromia Urban Planning and Institution. These data's include: Both spatial and non- spatial structural plan document in the form of map and text with different software formats like word, Pdf, Auto Cad, and GIS.

Figure 15 Shows Data Collection Technique and Methodology of the Study

Source: Compiled by the Researcher (2019)

3.3 Research Design Procedures

The aim of the research is to assess the problems associated with open space development in the town. The research design procedure follows several stages; it begins by developing research topics on line with setting research variables and comprises background, definition, theories and concepts of open space, challenges in plan implementation. In the second stage synthesis the existing open space throughout the town based on town's land use plan. The third procedure has field surveys and data collection. Fourthly, descriptive and inferential statistical analyses on community's responses towards open space infrastructure was applied. Lastly, conclusion, documentation of the research findings of the open space attributes and design values for enhancing community's health and recommendation of study has carried out.

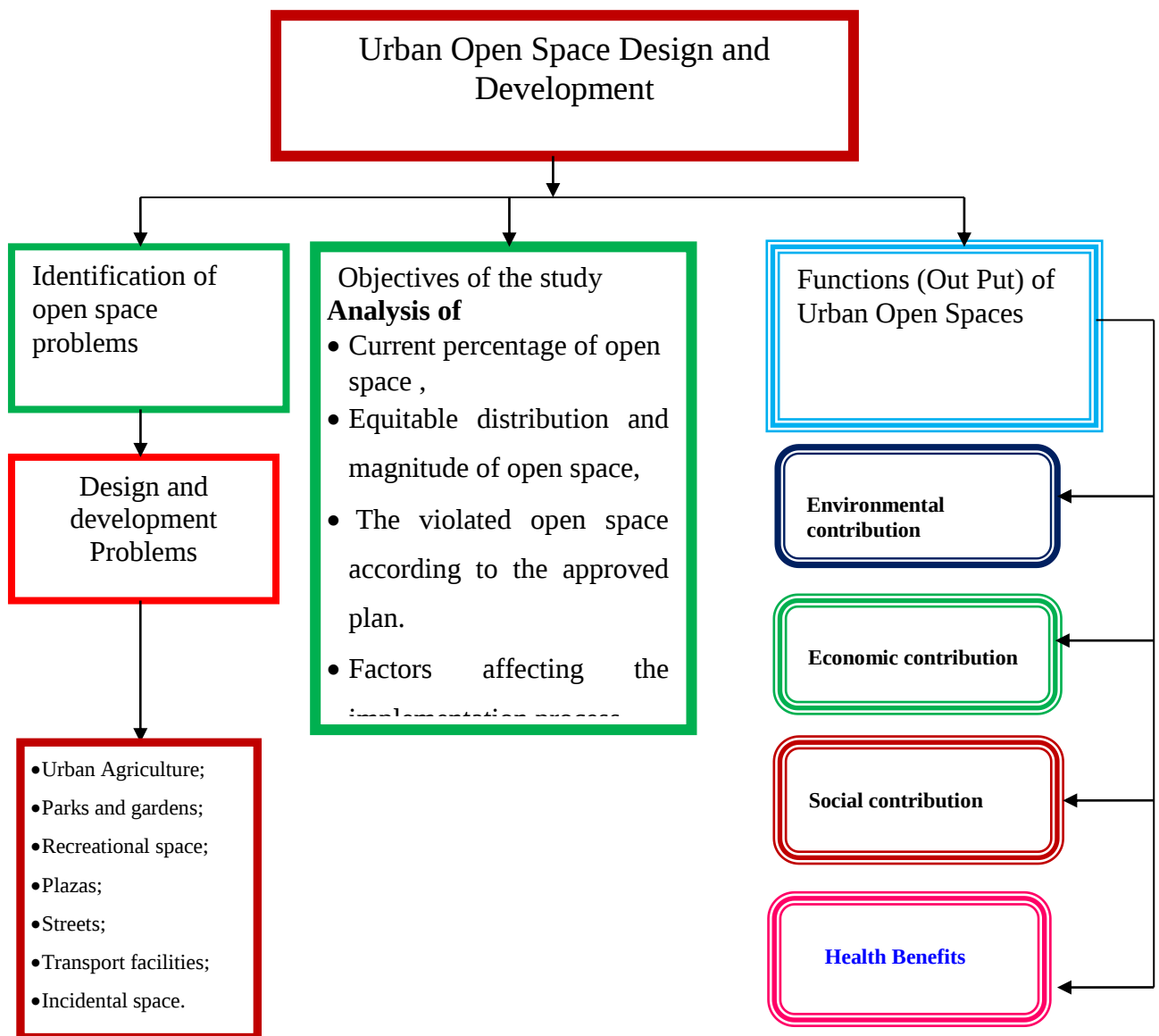
3.4 Method of Data Analysis

The first stage of the data analyzed by reviewing the land use plan document of Adama town is to obtain back ground information and to identify the extent of consideration for open space issues during plan preparation and implementation as a whole. Then,

comparison was made between the plan document, the planning standards and the actual existing process of the implementation in the town.

Depending on the nature of the information gathered both quantitative and qualitative approaches will be employed. The data will be presented in pie charts, graphs, tables and different maps and will be analyzed with simple statistical models such as average, frequency and percentages were applied.

Figure 16. Shows Conceptual Frame Work of Open Space Design and Development



Source: Compiled by the Researcher (2019)

CHAPTER FOUR

4. Result and Discussion

4.1 Background of the Study Area

Adama town is an old town in Ethiopian standard. Its establishment dates back to and connected with the construction of Ethio-Djibuti railway station depot in 1916 G.C. Its establishment and development had been influenced by conducive economic, social and geographical conditions.

4.1.1 Location

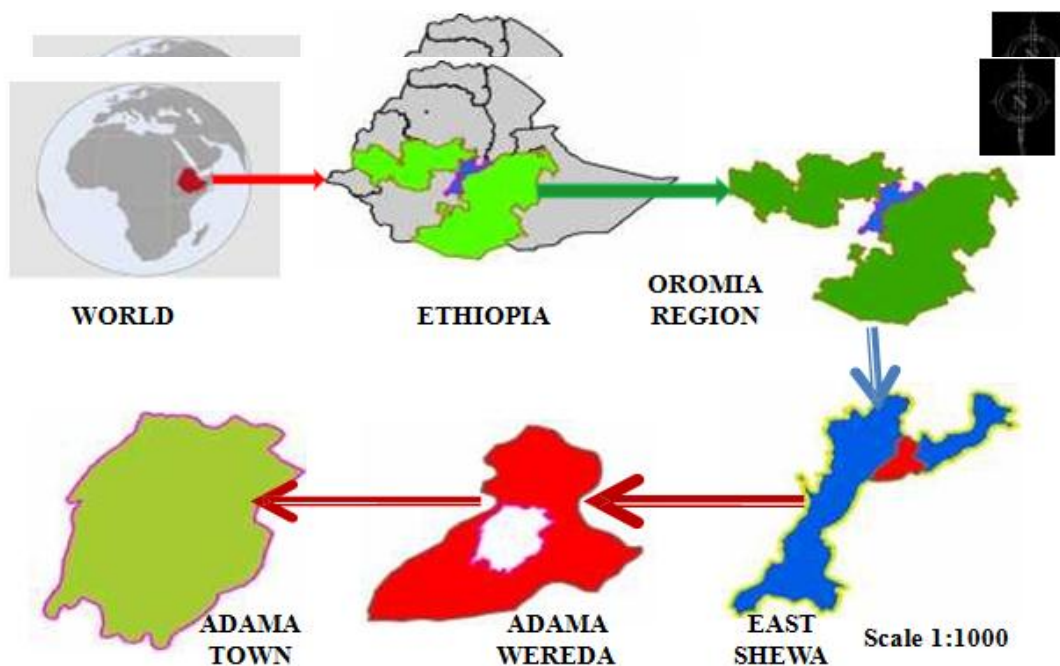
Absolute location

It is the best way of expressing any location as it is utilized both direction and latitude and longitude points. Accordingly, Adama is located within grid references point that stretches between $8^{\circ} 35'00''$ to $8^{\circ}36'00''$ North latitude and $390 11' 57''$ to $390 21' 15''$ East longitude. (OUP, 2009)

Relative Location

Adama town is located at 100 kilometres far from Addis Ababa, on the southeast along the main road to Harar. The location of Adama is clearly indicated by the map below.

Figure 17. **Location Map of the Study Area**



Source Compiled By the Researcher (2019)

4.1.2 Climatic Condition of the Site Rainfall

The climate of Adama is generally characterized as tropical with its temperature intensified by the topography of the Rift Valley. The months with the highest mean rainfall are July, August and part of September locally identified as the wet season, measuring 200mm, 210mm and 102mm respectively. Beside July – September period, there is a small rainy period during the months of mid-March until mid-May, accounting rain volume of 45 and 60 mm. The annual rainfall is in average about 800mm. Intensity and variability of rainfall are high (OUPi, 2009).

Temperature

The monthly mean maximum temperature occurs in the months of April and May (30.0 and 30.4°C respectively); the minimum is in the months of November and December (10.7°C each). While the mean monthly minimum temperature ranges for the lowest from 10.7°C in November and December to the highest 15.2°C in June. More specifically, the mean annual temperature over the central part (about 90% of the area) ranges between 20 and 23°C. (OUPi, 2009).

Wind direction

According to the information we obtained from the Ethiopian meteorological Agency Adama branch, the wind direction of the town during dry season (i.e. October to December) is from East to West with the speed of 14Km/hr. This causes great dust every year and the soil subjected to the direct action of wind erosion. This situation leads to a very strong speed of wind on paved roads for the installation of alternative energy source, wind turbine, on the skirt of the city. Wind direction is important for determining building arrangement and its openings. (OUPi, 2009).

Sun direction

The sun orientation commonly follows East - West line with small deviation relative to the whole Adama. Sun direction is also important to determine the building arrangement and its opening. (OUPi, 2009).

Hydrology

The analysis of surface, sub surface water and the draining pattern as well as catchment's area is important for hydrological analysis. So as the results obtained from the slope analysis indicate most of the site is flat, but the study area was subjected to flood from upward catchment area every year. (OUPI, 2009).

4.2 Socio Economic Analysis of the Town

4.2.1 Demographic Analysis

The majority of the population of Adama live in areas where the physical condition has deteriorated significantly with the associated degree of lack of basic facilities. In the sample kebeles the majority of households are kebele house residents and low income households. The provision for and access to open public spaces has also a demographic dimension. Since public open spaces, offer a space for expression of diversity and equality, the planning process of such places should involve all stakeholders regardless of their socio-economic and cultural backgrounds.

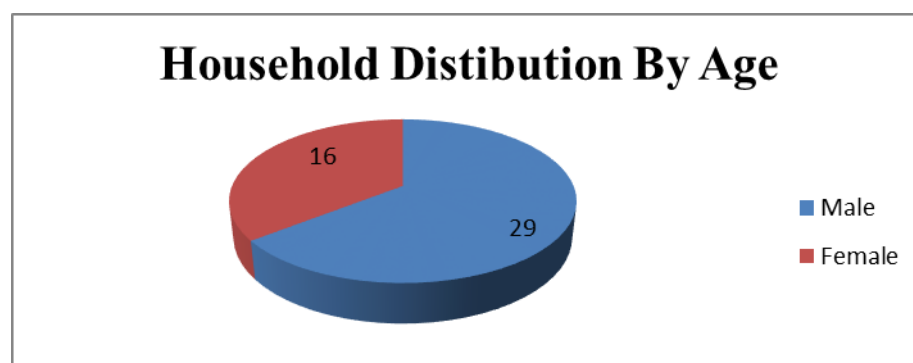
Distribution of Household Heads

Table 6. Shows Gender of the Household Heads

Sex	Frequency	Percentage
Male	29	64.4
Female	16	35.6
Total	45	100.0

Source:- Own Survey 2019

Figure 18. Shows Household Distribution by Age



The above table indicates that the majority (64.4%) of the sample households are male and the rest households are female lead households.

Table 7. Age Distribution of Households

Sex	Age Range				
	18-30	31-45	46-60	>60	Total
Male	8	13	5	3	29
Female	4	7	4	1	16
Total	12	20	9	4	45

Source: - Own Survey 2019

From the above data 44.44% of the household's age lie down between 31-45 age and 26.7% of respondents age lie between 18-30 which was productive age.

Table 8. Shows Educational status of Respondents

Educational Status	Frequency	Percentage
Above 12	8	17.8
High School	17	37.8
1-8	9	20
Read and Right	7	15.5
Illiterate	4	8.9
Total	45	100

Source: - Own Survey 2019

The sample population which represents 37.8 (17) of the total respondents educational status were at high school level. Those who can read and write constitute 15.5%.

Respondents with class 1-8 represent 20% of the total respondents.

Participation in plan Preparation and Open Space Development

Table 9. Household Participation in plan Preparation and Open Space Development

House Holds	Participate in Plan Preparation		Implementation	
	Yes	No	Yes	No
Male	2	27	7	22
Female	-	16	3	13

Source: - Own Survey 2019

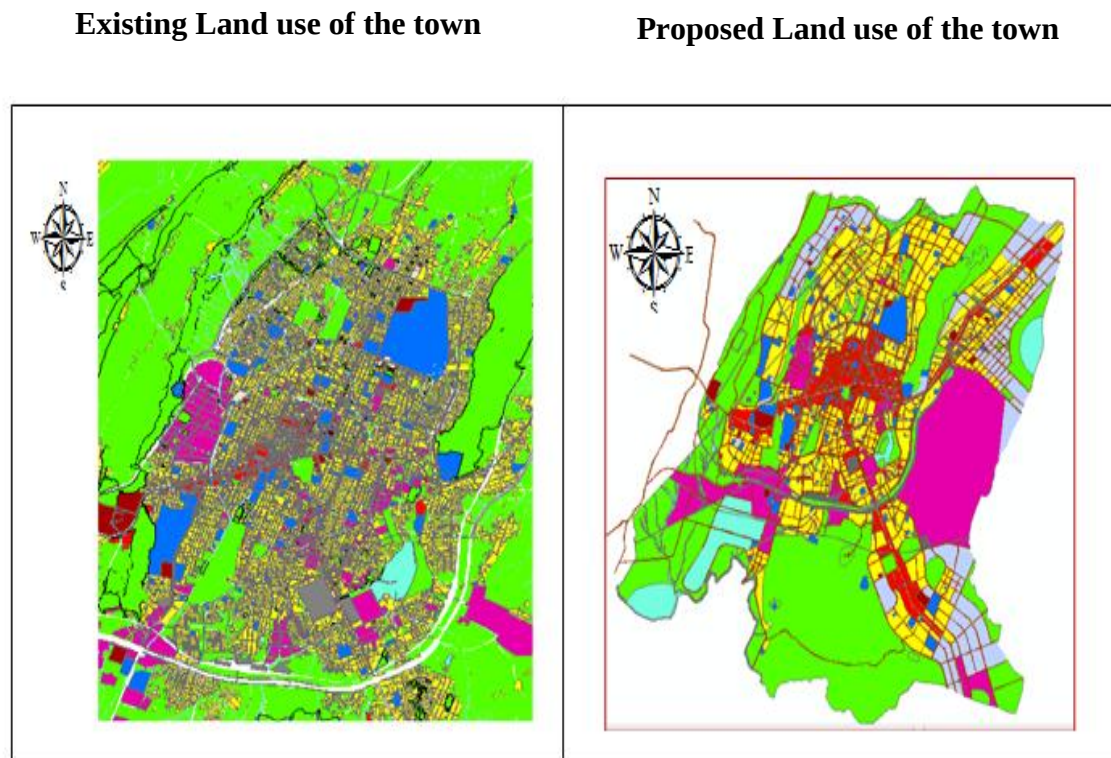
The majority of the sample respondents argue that they didn't participate in both plan preparation and development of any open space. From this it is possible to infer that the majority of residents didn't participate in plan preparation of any open space development. But also the respondents replay that there is no any playground for children in a walking distance from their residence.

4.3. Analysis of Open Space Development

4.3.1 Analysis of Existing Land Uses in Each Kebele

The existing land use in the three sample kebeles indicate that there is no open space provided for the residents except streets. This implies that there is no any green open spaces for the community which provide space for social recreation, relaxation, restoration and contact with nature and offers opportunities for leisure activities. Moreover, public services that many people use on a daily basis, that impact on our sense of quality of life and on our physical and psychological wellbeing, that are available free to all regardless of their demographic characteristics and socio-economic status in Adama town is beyond the reach of residents.

In addition the proposed land use didn't proposed public open spaces in the inner built up areas of the town to address by revitalization programs. The plan also propose open spaces especially parks at the periphery, and expansion direction of the town.

Figure 19 Shows Existing and proposed Land Use of Adama Town

Source Adama Town Land development and Managment Offices (2019)

Table 10 Major Land Use Classification Legend with respect to their Coding and Color

NO	Land Use Classification	Code Used	Color
1	Social Services	SS	Blue
2	General (Market) place	CM	Red
3	Mixed Land Use & Built up area	MLUB	Yellow
4	Farm Land	FM	Light Blue
5	Open Space (Informal and Formal Green)	IG	Green
6	Water Body	CP	Light Green
7	Housing Expansion Area	HE	Orange
8	Manufacturing & Storage	MS	Purple
9	Streets and Transport Terminals	TT	Grey
10	Administration	AD	Dark Red

Source: Adama Structure Plan Map (2019)

Table 11 Comparison of Existing Land Use and Proposed land Use of Adama Town

No	General Land Use	Existing Land use		Proposed Land Use		Total Area	
		Area (Ha)	%age	Area (Ha)	%age	Area (Ha)	%age
1	Residence	2594.57	19.41	410.56	2.35	3005.13	9.74
2	Commerce and Business	107.35	0.80	0.00	0.00	107.35	0.35
3	Service	515.40	3.86	18.48	0.11	533.89	1.73
4	Green, Open Space/Reserved Areas, Recreation and Environmental Sensitive Area	7479.40	55.96	16015.83	91.53	23495.23	76.12
5	Administration	120.24	0.90	28.73	0.16	148.97	0.48
6	Industry and Manufacturing, Ware House, Depots and Workshop	518.85	3.88	29.99	0.17	548.83	1.78
7	Road, Transport, Utilities and Infrastructure	1625.85	12.16	220.51	1.26	1846.36	5.98
8	Others (Water Bodies, Under Construction and Gorge)	404.85	3.03	774.75	4.43	1179.61	3.82
Total		13,366.52	100.00	17498.85	100.00	30,865.37	100.00

Source: (OUP, 2018) and Computed from the existing and proposed land use of the town

According to both land uses classification open spaces and streets proportion/ percentage out ways the total land use budget which is by far beyond the maximum threshold set particularly for these land use categories (open space and greenery 30% and Street and parking 30%) in sum that should have been 60 present as per the standard which is set for Ethiopian towns Land Use Classification during Structural Plan Preparation (*30% Open space and Greenery, 40 % built up area and 30% street and Parking*). But, the detail of this classification indicates that the majority of open space is proposed at the periphery and expansion area having a function of agriculture and green belt for environmental sensitive area edging the mountain. This implies that the inner part of the town lack due consideration in allocation and distribution but also in designing and developing open spaces. On the other hand, street and parking land use budget is below the minimum standard (30%) which is 12.16% and 5.98% both in the existing and proposed land uses respectively.

Table 12 Detail Open Space and Environmental Existing Land Use Class

No	Details of environmental Land Use Category	Code	Area in (m ²)	Area (Ha)	%age
1	Open spaces	EA-1	5222455.57	522.25	6.95
2	Urban agriculture and horticulture	EA-2	1091429.80	109.14	1.45
3	Quarry and mineral site	EA-3	2167682.29	216.77	2.88
4	Solid waste	EA-4	83013.70	8.30	0.11
5	Liquid Waste	EA_5	0	0	0
6		EA-6			
	❖ Buffer	EA-61	80284.92	8.03	0.11
	❖ Road side green	EA-62	22713.71	2.27	0.03
	❖ Nursery	EA-63	36254.10	3.63	0.05
	❖ Mountain green frame	EA-64	14342282.60	1434.23	19.08
	❖ Parks	EA-65	69069.53	6.91	0.09
	❖ Botanical garden	EA-66	0	0	0
Subtotal			14550604.86	1455.07	19.36
7	Cemetery	EA_68			
	a. Orthodox Cemetery	EA-681	286497.86	28.65	0.38
	b. Protestant Cemetery	EA-682	96900.48	9.69	0.13
	c. Catholic Cemetery	EA-683	11733.53	1.67	0.02
	d. Muslim Cemetery	EA-684	110211.58	11.02	0.15
	e. Municipal Cemetery	EA-685	0	0	0
	f. Others Cemetery	EA-696	4932.27	0.49	0.01
Sub total			515275.72	51.52	0.69
8	Conservation areas	EA-7	32142.37	3.21	0.04
9	Sport and recreation	EA-8			
	a. Play lot	EA-81	7272.47	0.73	0.01
	b. Neighborhood play ground	EA-82	13502.17	1.35	0.02
	c. Sport field	EA-83	9862.47	0.99	0.01
	d. Gymnasium	EA-85	0	0	0
	e. Stadium	EA-86	150138.61	15.01	0.20
	f. Sport & Recreation	EA-88	11794.68	1.18	0.02
Total			192570.4	19.26	0.26
10	Farm Land	EA_9	48925212.02	4892.52	65.08
11	Vacant Land	-	2380729.93	238.07	3.17
Total			75174378.91	7517.44	100.00

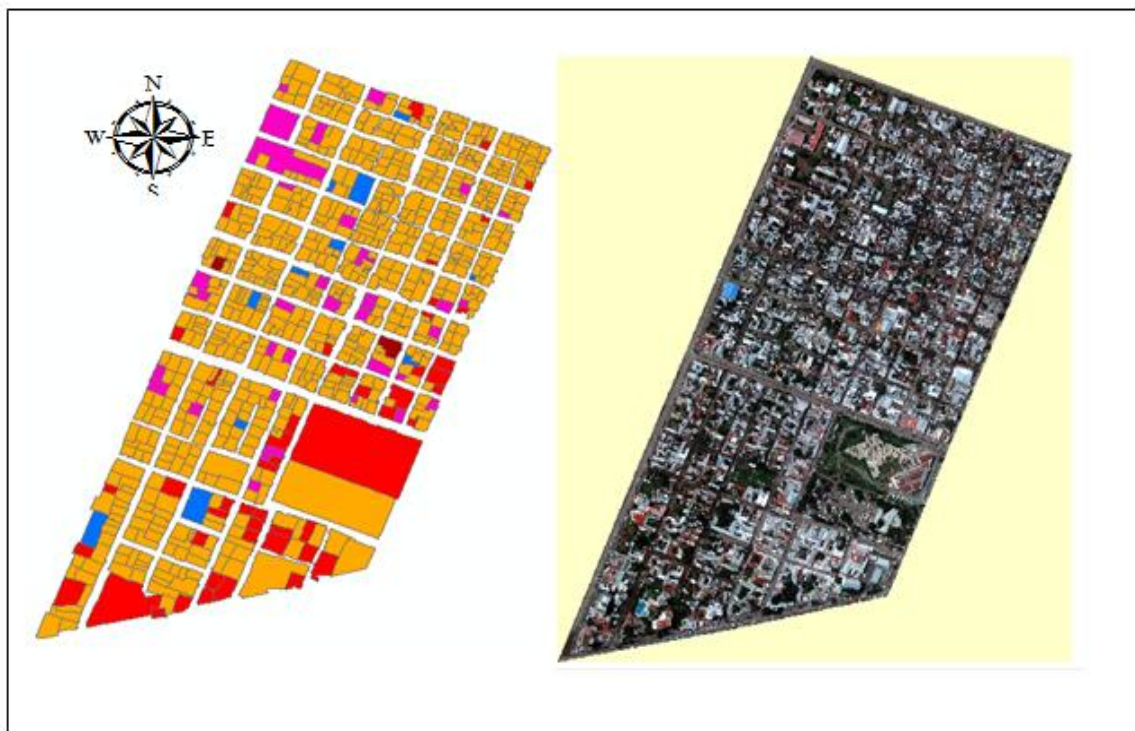
Source: (OUPi, 2018) and Computed from the existing and proposed land use of the town

Figure 20 Existing Land Use of Tedecha Arara (Kebele 04)

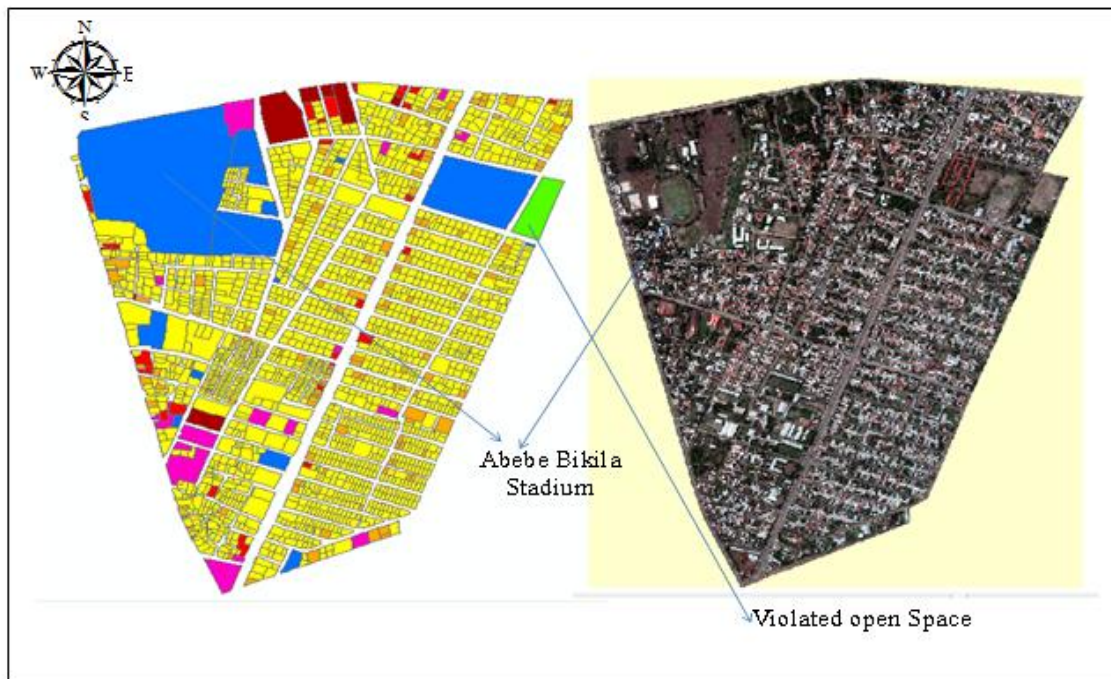


Source Adama Town Land development and Managment Offices(2019)

Figure 21 Existing Land Use of Oda Kebele (Kebele 08)



Source Adama Town Land development and Managment Offices(2019)

Figure 22 Existing Land Use of Berecha Kebele (Kebele 11)

Source Adama Town Land development and Managment Offices(2019)

In the sample kebeles there is no standardized open space provided in accordance with standard like recreational center, square, parks, and playground etc. Lack of open space is manifested both outside and inside individual compounds but also there is no any well designed public open space and greenery in the area. In other words the existing land use indicates that the majority of the sample kebeles have no open space, which is the built up area out ways the void space. In general the existing and the proposed land use analysis shows that there is no adequate open space provided according to the Ethiopian land use standard (30% Street and Parking 40% Built Up Area and 30% Open space and Greenery) throughout the town especially the inner parts of the town, they give due attention for the built up area. As a result of this the solid space (Built up area) fully dominated inner parts of the town both in the proposed structural plan and existing condition.

4.3.2 Analysis of Existing Open Space by Type

Open space in urban environments provide many advantages: formal and informal sport and recreation, preservation of natural environments, provision of green space and even

urban storm water management. Thus, green space must be a key consideration in urban planning if the health of a city and its people are both considered important.

Based on this, the existing open space development of the town analyses is according to the type of open space which is urban agriculture; parks and gardens; recreational space; plazas; streets; transport facilities; and incidental spaces.

4.3.2.1 Urban Agriculture

Urban agriculture is not new, and town life divorced from urban food production is a recent development. In Adama town, most urban agriculture has been carried out by individual families, organized on either a household or neighborhood level at the periphery of the town, proposed parks and in some parts along river gorges they cultivate vegetables in a very small scale. In the sample, kebeles there are some enterprises have nursery site for the sale of seedlings of different plant species which utilize for shading, and aesthetic purposes. I have not found any example of governmental organization which involve on urban agriculture at a large scale.

4.3.2.2 Parks and Gardens

Parks and gardens are defined as partly landscaped, mostly green areas intended for social and recreational activities as well as aesthetic or display purposes. One of the important factors for the development of park is ensuring accessibility by all. Accessibility in this case has two perspectives; one is centrality and the other is affordability. In the former case, accessibility is measured in terms of transportation cost, time and convenience to easily reach a park from every neighborhood, by the handicapped and the challenged. The latter one implies accessibility to low- income group of the society i.e. fees that may be imposed for some park activities or entrance fee should consider the capacity of low-income residents to afford it or other mechanisms should be introduced (e.g. free entrance days; labor for entrance of certain park activities). Ensuring that parks are accessible to all sections of the society is the fourth step in the park development process.

There are only two public park giving service in the town. The first park covers an area of not more than half a hectare, which is located at Geda(Derartu) Square (formal and informal green to population at present is 0.15m² per person: excluding agricultural and expansion area) and the second park is Located Goro kebele near Medihaynalem

cemetery having a total area of 16 hectare from which around 6 hectare of land is invaded by squatter settlements. The rest 10 hectare is developed and opened for the general public. This park has seen to be a good start for the town administration to expand open space and greenery development in other kebeles. But, the park didn't incorporate all types of recreational activities.

Figure 23. Shows Geda square Public Open Space



Source Own Survey (2019)

Figure 24. Shows the newly Developed Public Park in Goro kebele



Source Own Survey (2019)

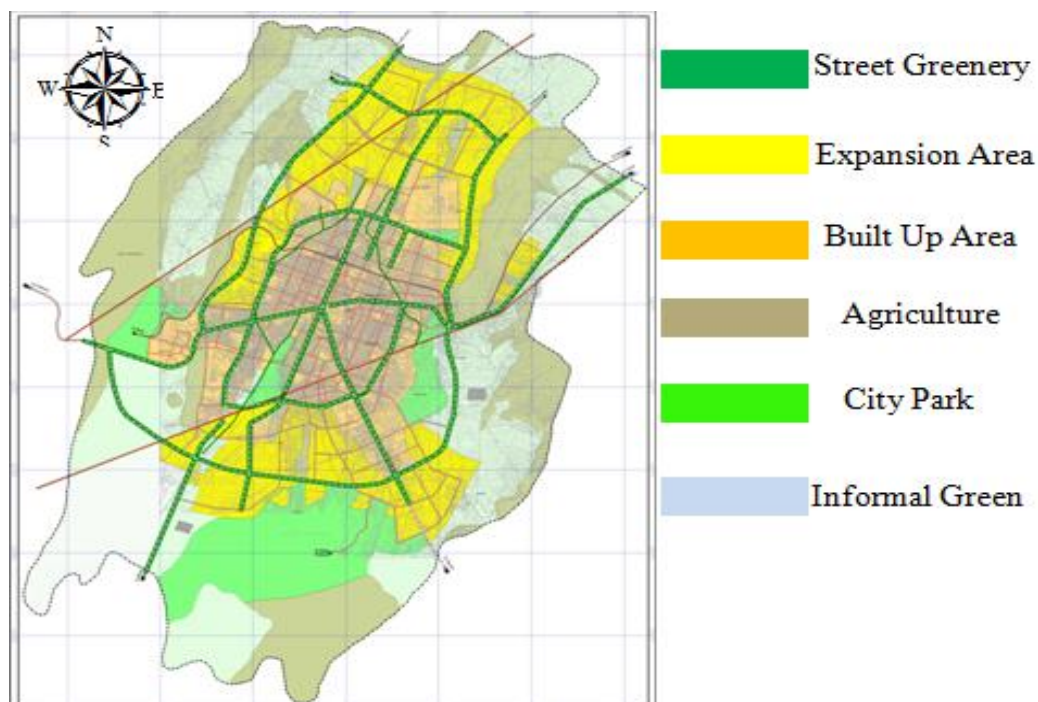
Though large tracts of land were proposed as city parks in 1995 Master plan none of them is implemented, actually parts of the areas were allocated to different uses. In addition, the Town Administration in cooperation with Regional urban Planning Institution in 2003 prepared a revised structural reserves (confirms) the proposals of 1995 Master plan with some improvements and proposes additional parks. But still, the area is not developed and open to the public. In contrast the area is invaded by informal/ squatter settlements.

Table 13. Location and area coverage of proposed public/city park

Proposed City Park	Area coverage	Location
Dembela City park (Dembela plain)	85.1	Irecha Kebele
Migira Park (Migira plain and ridge)	115.4	Migira Kebele
Community park (College park)	18.4	Kebelle 3
Boku zoo	907	Boku kebele
Ketchema garden	155.8	Kechema

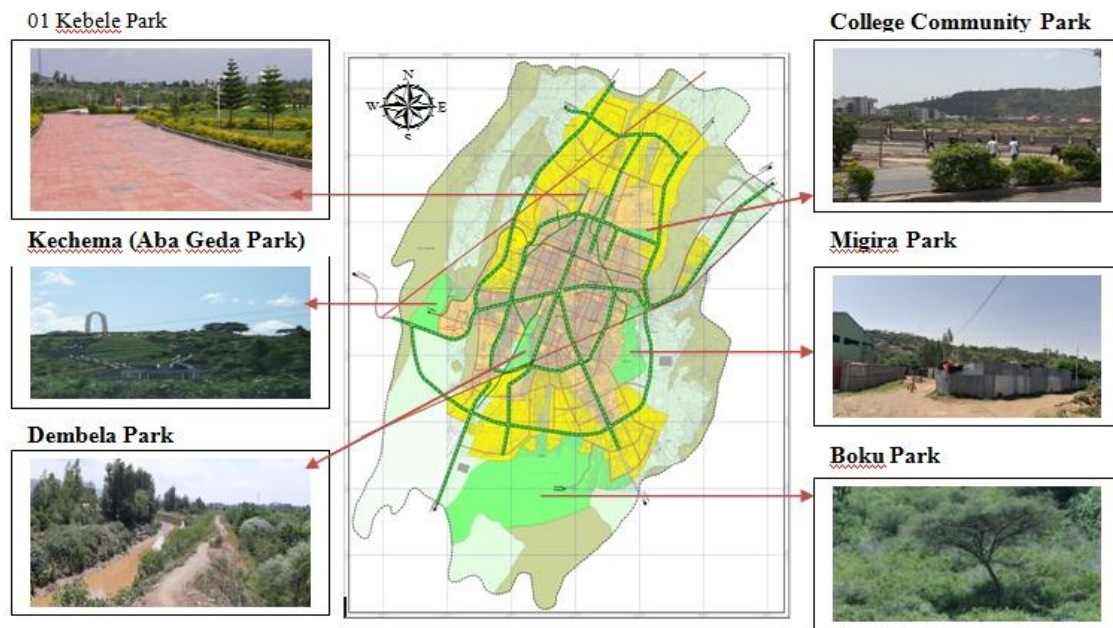
Source OUPI (2003)

Figure 25. Shows Map of Proposed Parks



Source OUPI (2003)

Figure 26. Shows Existing Condition of Proposed Parks



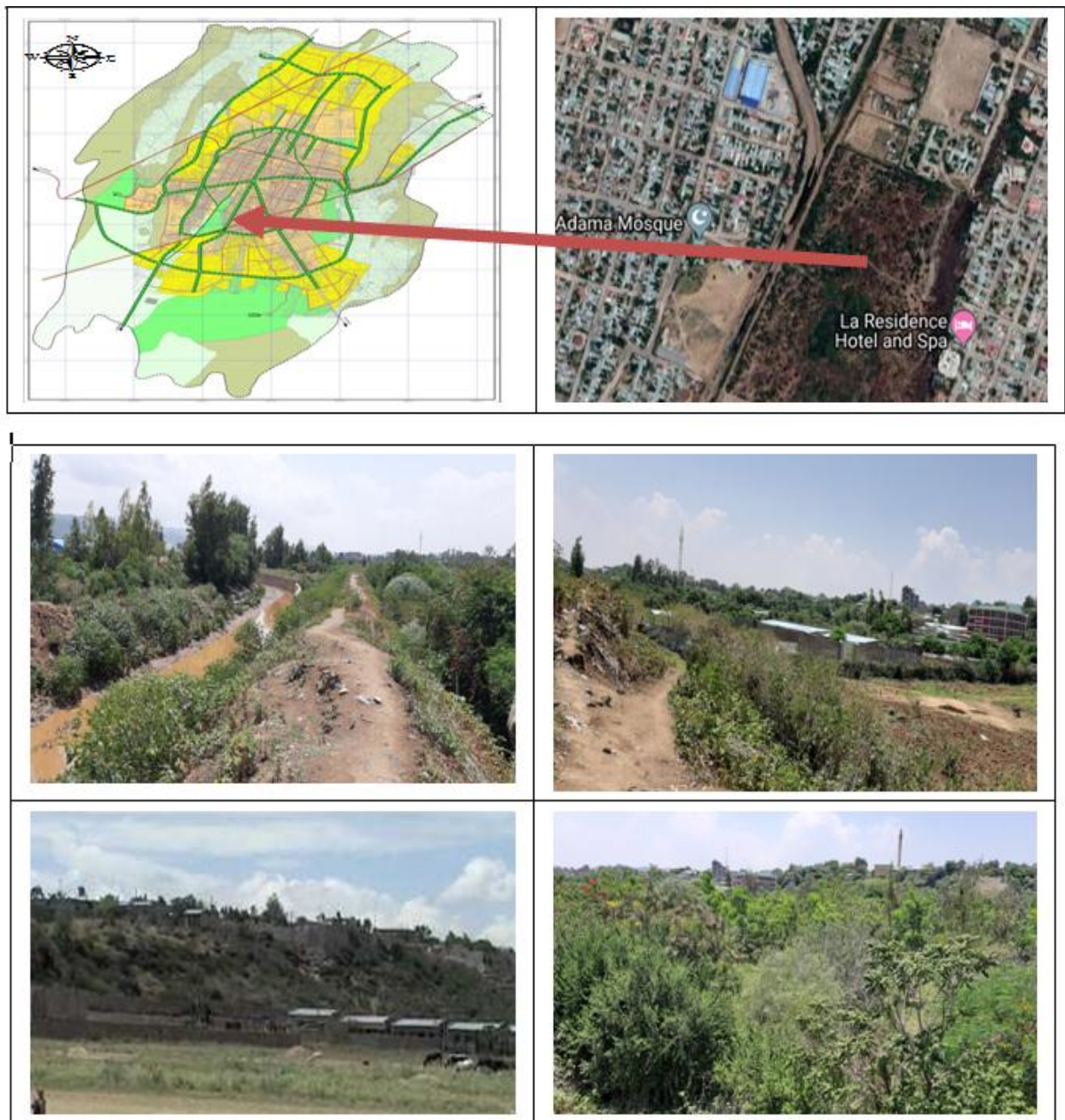
Source OUPI (2003) and Own Survey (2019)

4.3.2.2.1 Dembela Park

Proposed Dembela Park is located at Irecha kebele (kebele 09). The area also located in a flood prone area of the town and bounded by seasonal river at the west and some plantation is existed. An important storm water (drainage) line serves as a boundary from the west. This same drainage channel separates the park site from the proposed area for urban agriculture. A cliff bound the east side of the proposed park site. On this side, within the boundary of the site, there are formal and informal settlements and illegal expansion of property lines as a result of implementation failure. This is as a result of limited implementation practice and poor enforcing mechanism of the responsible bodies.

Though the site is located at the center, at present it is only accessible from northern part. The drainage channel (which is as deep as 4-8 m) that crosses the town from north to south in the west direction and the cliff on the eastern side is the major accessibility constraint to the proposed park. The park still not developed well and exposed for encroachment by squatter settlements. On the other hand there is an agreement with Adama Science and Technology University to design and develop the park as botanical garden in partnership with town administration.

Figure 27. Shows the Existing Dembela Park



Source: Own Survey (2019)

4.3.2.2 Migiraa Park

Migira Park is located the south east of adama town in Dabe Soloke sub city and Migira kebele. As Dembela Park, Migira park also highly susceptible to flood and squatter settlements. Most part of the proposed area invaded by informal settlers and informal urban agriculture. In the area some settlers argue that they hand over the land as small scale enterprise for raring pig, fattening, and urban agriculture and within time they converted the area to residence. This indicates they convert the proposed land use from to residence. Other settlers argue that they buy from small scale enterprises for residential

purpose. Since, the site is flood prone area these informal settlers are in danger especially during rainy season. to minimize the flood risk ,the town administration developed a dam and create artificial pond to minimize the flood hazard in the surrounding area but also in the town.

Figure 28. Shows the Existing Migira Park



Source: Own Survey (2019)

4.3.2.2.3 Community Park (College Park)

The proposed community park is located in front of Adama Science and Technology University (ASTU). The park is already allocated for the university to develop and manage the park. But, the university didn't develop the park in contrary it uses for different construction purposes like biogas plant and other structures which distract the aesthetic value of the area.

Figure 29. Shows the Existing College Park



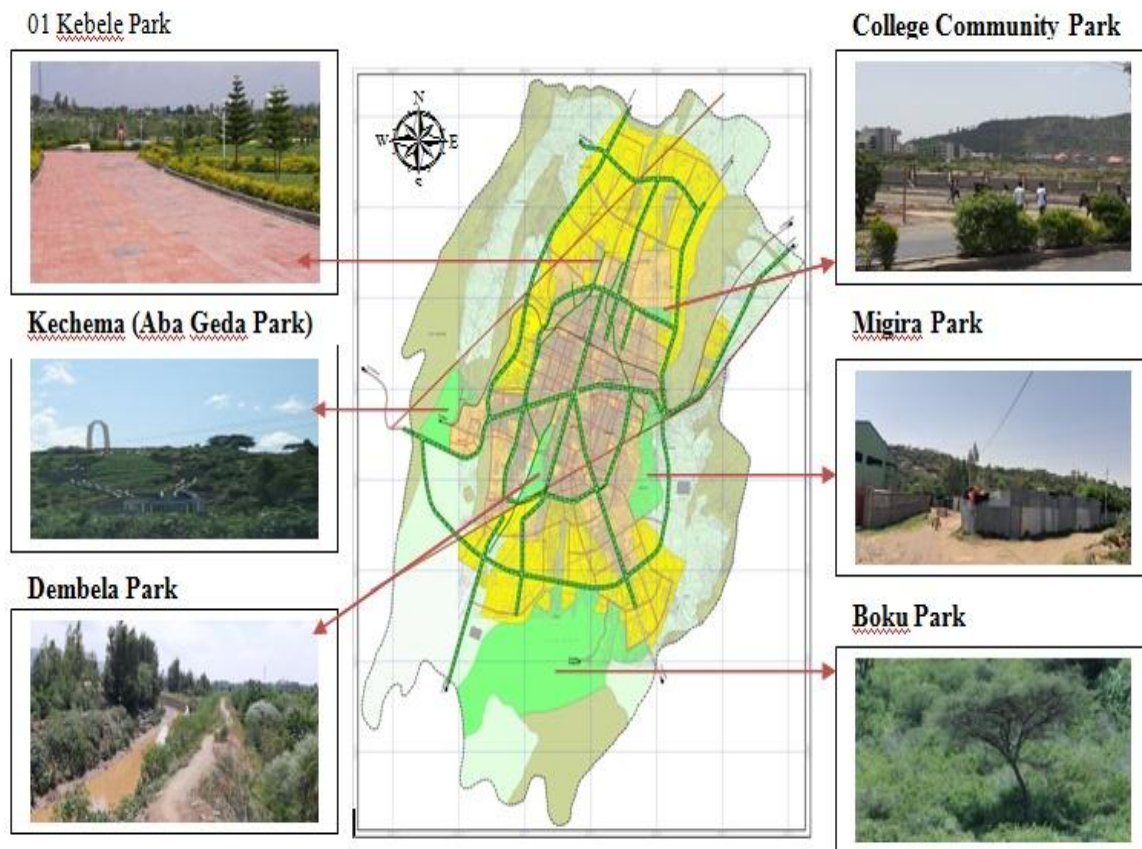
Source: Own Survey (2019)

4.3.2.2.4 Kechema and Boku Park

Both Parks are located at the periphery and expansion direction of the town. Kechema Park is closely located with Aba Geda Hall at the entrance of Adama town from Addis Ababa. Kechema green frame is located on west part of Adama city and cover 155.8 ha of land. Its western part is called as Sire Aba-Bune in which its eastern part facing the city is covered with dense natural shrubs and grasses.

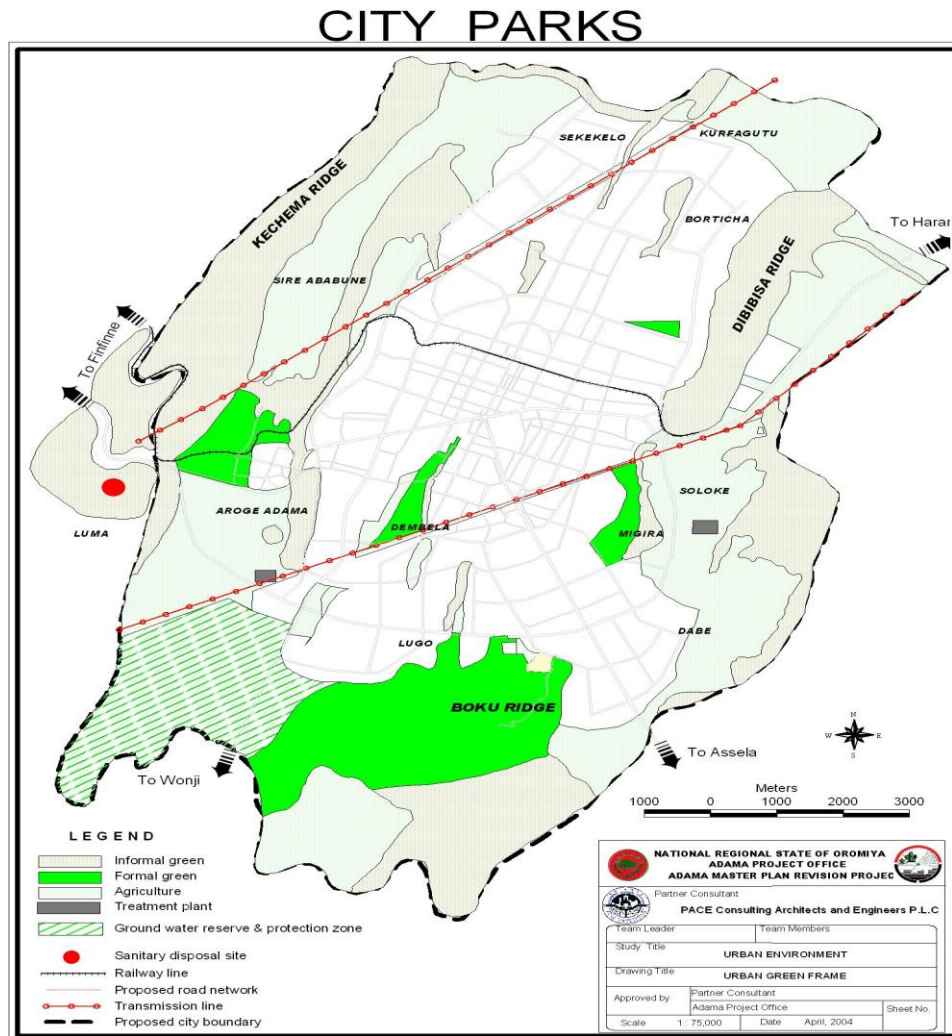
Its part nearer to city is called Giko, which covers large area extends along south-north from middle towards north. It is protected natural forest and well developed landscaped open space in the compound of Aba Geda Hall. But, this park also exposed to squatter settlement at south north direction along the Express way.

Figure 30 Shows the Existing Parks and their Challenges



Source OUPI (2003) and Own Survey (2019)

Baku is located south of the city and covers around 907 ha. Boku is supposed to be developed into Adama Zoo Park because it is the home for several diversified flora and fauna; also by virtue of the land feature. Moreover, as the express way passes near the area; it is accessible for urban residents and outside comers thus provides good aesthetic value. The problem is lack of water for wildlife to drink, because there is no any water body in the area. In addition to the natural regeneration, the open areas are enriched with exotic plant species mainly with *Acacia saligna*. The popular Boku hot springs are found in this green frame. The enriched plantation, natural flora and fauna together with dense grass coverage is creating green environment. Like other parks Boku also exposed to squatter settlement at the entrance of the park and also exposed to deforestation for fire wood purpose. The park lacks proper management from the concerned government bodies and town administration.

Figure 31 Map Shows the an Developed and Violated Proposed Parks

Source OUPI (2003)

In Adama town, the importance of greenery was not recognized till very recently which was reflected with tree plantation activities particularly on the peri-urban areas of the town.

4.3.2.3 Recreational Spaces

Recreational space involves functionally specialized green and grey spaces designed or used for leisure activities, such as sports or exercise. In many cases, spaces defined solely in terms of recreation are modern in origin. Currently, in Adama town there is scarcity of recreational activity which was accessible to all group of residents freely and at affordable prices. Such recreational green spaces include: playgrounds, tot lots, stadiums, sports arena, golf courses, picnic sites, swimming pools, etc

a. Stadiums

Stadiums utilized for the public viewing of ceremonial, sporting, or other cultural events are common to various historical urban cultures. Such spaces are delineated separately from parks or large formal plazas because they are functionally specialized for recreation and viewing. Adama town have only one stadium which is Abebe Bikila stadium located at the center of Adama town at about 200m distance from the main square called “Geda” square. Currently, it is accessible only from Assela road, from the western side of the stadium with two gates. These two gates are serving not only the stadium, but also other sport facilities around the stadium.

The existing stadium was a small one accommodating a very small number of spectators. On the other hand, there is an issue of its current location, especially, in relation to the surrounding development and compatibility questions. It is located adjacent to the main square of the city, being surrounded by residential houses, religious institutions, government offices and the planned large cultural center.

Figure 32 Shows Existing Stadium of the Town



Own Survey (2019)

b. Playgrounds

The existing town of Adama is a compact type with an outward expansion in almost all directions by developing a high shortage of playgrounds at the center of the town.

As a result, children, youths and other social classes choose other option of recreational activities which is pool, playing cards with the consequence of gambling, alcoholism, and juvenile delinquency.

In addition, swimming pools, sports arena, golf courses, picnic sites, and other recreational activities are not existed in the town attention should be taken by the municipality to full fill these recreational activities in the future to address the public at large.

c. Greenery

Green spaces constitute a major environmental resource of urban landscape. Green space consist of outdoor spaces which have some amount of vegetation and mainly found in semi-natural areas. Indicators of green space accessibility take into account the distribution of the population (individuals, households or communities) in terms of their proximity to green space. They may also include consideration of whether the green space is publicly accessible, and if so, where are the access points and routes located.

In Adama town there is a high degree scarcity of well designed and developed green open space which fit the requirement of ever increasing population and urban heat island especially in residential areas, commercial areas and buildings, cemeteries and religious places, social institutions and in administration compounds.

Residential Neighborhood

The degree of emphasis on green space associated with residences is quite different between residents. In Adama town especially in the sampled kebeles there is a high rate of scarcity on well-designed greenery space but also properly developed greenery in residential neighborhoods which was not accessible to the distributed population in equitable manner.

Schools, Administration Compounds and Higher Institutions

Schools and higher institutions that have recreational lawn areas, gardens, trees, and other flora reflect a commitment to providing students, staff, and the neighborhood with attractive, aesthetic, and nurturing green space and to promoting greater physical activity by students.

Figure 33 Shows Sample Landscaped greenery in the University Vicinity



Regarding Administration Compounds most of them fail to allocate land for greenery and planting trees to mitigate urban heat island. The only designed and landscaped administration compound is Aba Geda Hall at the entrance of Adama Town which magnify the image of the town.

Figure 34 Shows Aba Geda Landscaped Greenery at the Enterance of Adama Town



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4.3.2.4 Streets

The streets are beside transport corridor, the cultural and functional heart of urban open space and home to a diversity of uses. In Adama town a grid iron pattern of different types of hierarchy street network are existed. The Existing street network have a verity of problem such as:

- Problems of reserving planned right of way of roads i.e. encroaching and narrowing of road space.
- Street trees Plantation existed only on the main streets mostly on the median without considering pedestrian walk ways

Figure 35. Shows Sample Street Plantation Only along the Median



Source Own Survey (2019)

- Poor Hierarchy of existing roads and surface material that is the existing sub arterial streets utilize beyond their capacity and highly congested by Bajajs.
- Blockade and narrowing of roads (illegal fencing and construction) that is Misuse of roads
 - Street vending and related activities
 - Dumping of garbage on roads
 - Storing broken items and displaying commercial goods on road spaces
 - Improper parking of vehicles and garage works

Figure 36. Shows Blocked and Misused of streets



Source Own Survey (2019)

- Shortage of properly paved roads and access ways.
- The majority of street network lacks pedestrian walk ways, street furniture, street sign, on street and off street parking
- Lack of proper construction and maintenance (sub-surface, surfacing, drainage provision) and also dusty pavement for heavy traffic roads.
- At the residence level, streets are alleys or pathways, which are too small for large vehicular transportation or multipurpose commercial activities. These streets are sort of a transition zone between the private sphere of the household and the public sphere of the street, where more intimate and social neighborhood interactions can occur and access is dictated by informal streets.

Figure 37 Shows Poor Quality of Roads in terms of Surface Material



Source Own Survey (2018)

4.4 Challenges of Open Space Development in Adama Town

The data compiled by (Oromia Urban Planning Institution 2003) and interview with municipality officials indicate that inadequate provision of open space is the result of the following factors:

1. Pressure of Urbanization

The rapid urbanization in Adama town was found to have resulted in excessive destruction of urban natural environment such as green spaces. This was manifested in the sprung up of many informal settlements (slums) and urban sprawl taking place on lands reserved for green spaces (such as urban forest, parks, gardens and outdoor sport areas) and streets to absorb the high urban population.

2. Fail to Implement Successive Structural Plan of the Town

Lack of enforcement, follow up and monitoring of plan implementation process by the concerned body has resulted in violation of proposed open spaces for different uses such as for informal and formal housing, for street vending and religious institutions. This is as a result of weak institutional capacity, skill and knowledge gap among experts, financial capacity and Lack of implementation strategy.

3. Inadequate awareness of planning activities and public participation

Lack of public participation and awareness of urban development plans and planning legislations lowers the chance of successful implementation of the plan and the degree of compliance with the required regulations.

4. Social-economic and Political Challenges

The town administration gives little or no attention (priority) for green spaces provision and development because, matters of poverty reduction and provision of social amenities such as, social service provision and storm water management but also major emphasis was given for creating more jobs to alleviate unemployment takes the top priorities in the town.

5. Absence of Strong Open Space Standards

Firstly, one of the main factors in determining the nature of open spaces is their quantity in the city. Secondly, existing qualities like activities and experiences, and perceived benefits to the users determine the utilization of open spaces. Thirdly, the functionality of those open spaces is equally influenced by the location and distribution (accessibility) in the whole city.

In general the only public spaces available are the streets, street joints, unplanned left-over spaces which are usually reserved for future building projects and one Geda square which are not enough for the population of the town. The low attitude towards open public space in the town, both in the public and private sector, has resulted in the diminishing of existing open spaces as well. With this, the main breathing spaces of the town are extinct. The priority given to the issues around urban open space is very low. This may be due to the low economic status of the country. Most part of the town's budget for planning and development goes to the physical infrastructures throughout the town. But, the town also needs proper urban open spaces and green parks in all kebeles in accessible distance. The administration should also pay the needed attention to the existing open spaces which are facing many problems at the moment. To name a few, most of the places especially the parks are unplanned or left over spaces, there are no facilities in these spaces and since the general attitude towards them by the public is low, they are used as garbage disposal areas but also encroached and violated by squatter settlers. The fact that little concern is given to these parks and the idea of them being ownerless makes them inappropriate for many of the needed functions they could give to the public.

CHAPTER FIVE

5. Conclusion, Recommendation and Limitation of the Study

5.1 Conclusion

Open spaces are the one public service that many people use on a daily basis, that impact on our sense of quality of life and on our physical and psychological comfort, and that are free and available to all regardless of their demographic characteristics and socio-economic status. The importance of green open spaces for any community is that they provide a space for social interaction, relaxation, restoration and contact with nature and they offer opportunities for leisure activities of the community and they are direct expressions of governmental and municipal policies and investments.

In this study the major finding is high degree scarcity of well designed and developed green open space which fit the requirement of ever increasing population in Residential areas, and commercial buildings as a result of absence of a land use (re)mixing strategy, weak development controls and absence of quality infrastructure in existing open spaces. In addition, pressure of urbanization, high rate of turnover among political appointees, lack of tradition and absence of outsourcing the design and development of open spaces as per approved structural plan, lack of specialized and experienced man power, lack of evaluation and monitoring of plan implementation process; socio-economic and political challenges, are the main factors for the failure of open space design and development in the town.

Therefore, the provision for and the access to open public spaces has also a democratic dimension. Since public open spaces, offer a space for expression of diversity and equality, the planning process of such places should involve all stakeholders regardless of their socio-economic and cultural backgrounds. Moreover, effective urban planning, and urban open space management in particular, require proper data on urban open spaces. The potential of urban open spaces to provide benefits to urban inhabitants (ecosystem services) depends on whether they are managed as a comprehensive system of urban green infrastructure, or as isolated islands falling under the responsibility of different stakeholders.

Major Findings

- ◆ In Adama town the main identified challenges of open space design and development as per approved structural plan are: high rate of turnover among political appointees especially the mayor and municipal officials, lack of tradition and absence of outsourcing the design and development of proposed open spaces, lack of specialized and experienced man power, lack of enforcement, follow up and monitoring of plan implementation process; due to pressure of urbanization Socio-economic and political challenges leads encroachment of proposed parks by squatter settlements.
- ◆ There is very low percentage of different types of open space distribution throughout Adama town especially in the inner parts of the town. It is identified that almost all open spaces are proposed and practiced at the periphery and outside the town with the aim of agriculture and protection of environmental sensitive areas.
- ◆ Inadequate awareness of planning activities and public participation in open space design and development;
- ◆ A high level shortage of equitable distribution of well designed and developed green open space in terms of quality, quantity and special accessibility which fit the requirement of ever increasing population throughout the town.
- ◆ There are only two public parks giving service in the town. The first park is located at Geda (Derartu) square as incidental space and the second is small formal park located in Goro kebele;
- ◆ The proposed public parks through successive plans fails to achieve and they are still violated by squatters;
- ◆ Adama town had only one small stadium which is Abebe Bikila accommodating a very small number of spectators ;
- ◆ The majority of existing green open spaces are only along the main streets, school yards, universities, and some private recreational areas and
- ◆ Lack of play fields, playground, play lots and other recreational activities may lead youths for alcoholism, chewing chat, and juvenile delinquency.

5.2 Recommendation

- Open spaces especially green spaces should be treated and take attention as top priorities by Adama town municipality in terms of design, development and management.
- In order to serve the residential community, the Adama town Municipality will need to continue to explore several strategies for adding new public greenery, play fields, new parks, enhancing existing parks, and improving accessibility to open space resources;
- The town municipality should use public streets as greenways that connect Central neighborhoods to the river front and other major parks; and consider street greening initiatives and improvements to street connectivity, road design and traffic management that will increase the neighborhood walkability.
- The town administrators should give emphasis in exploring an increase in park development, swimming pools, sports arena, golf courses, picnic sites, and other recreational activities for the general public;
- The municipality should Encourage the provision of private open space and recreation facilities in high density residential projects, mixed use projects and employment centers in the vicinity of main corridors to meet a portion of open space and recreation needs of residents, employees and visitors ;
- OUPI and Adama Town Administration should ensure that the design of public streetscapes supports active use of the public realm by providing adequate space, appropriate lighting to accommodate safe nighttime use, street tree planting that provides appropriate seasonal microclimate benefits;
- The town's municipality should consider factors that affect the effectiveness of open space during open space development such as :distance of residents from a green space, ease of access, size of the green space, connectivity to residential and commercial areas, and Multi-use – the wider the range of amenities (e.g. children's play area, quiet garden with seating, playing areas for team games and picnic areas

5.3 Limitation of the Study

The major limitations of the study were mainly lack of documented information on the subject of urban open space. Which are the concerned officials with the subject matter are delegated and assigned recently and do not have any such documentation. The fact that the concern for urban open space in urban planning and design is recent has created a lack of specific official body to get information from. On the other hand shortage of time during data collection and lack of recent satellite image are the main challenges encountered during the study. Even if the above mentioned problems were confronted, I have tried to reduce the limitations of the study by using different methods like verifying the data gap by thoroughly observation and persuading the respondents.

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APPENDICES

Appendix 1. Open ended Questionnaire for sample Households

Dear Respected Adama Town Residents

This questionnaire and interview is prepared for the assessment of Problems on Open Space Design and Development, with respect to the town structural plan and planning standards in Adama Town. The study is conducted for academic purpose for partial fulfillment of Master's Degree (MSC) in Urban Planning and Design in Adama Science and Technology University. Since the study is conducted for academic purpose you are requested to give your genuine answer openly.

1. Educational Status_____
2. Age of the house hold_____ Family size_____ Average Monthly Income _____
3. Do you participate in plan preparation? _____

4. Have you ever participate in open space development in your neighborhood?

If you participate when and where?

-
5. Do you know the violated open spaces in your kebeles?

-
6. If they are violated, who violate the open spaces?

-
7. Is there any well-developed park or recreational area in your area with a walk able distance?

-
8. In which recreational area you and your family recreate?

-
9. Is there any children play field in your neighborhood?

If there is no any play field in your neighborhood, where do your children entertain?

Appendix 2. Interview Questionnaire for Municipal Officials

Dear Respected Municipal and Land Administration Officials

This questionnaire and interview is prepared for the assessment of Problems on Open Space Design and Development, with respect to the town structural plan and planning standards in Adama Town. The study is conducted for academic purpose for partial fulfillment of Master's Degree (MSC) in Urban Planning and Design in Adama Science and Technology University. Since the study is conducted for academic purpose you are requested to give your genuine answer openly.

1. Does the existing open spaces meet the existing population of the Adama town?

2. Are there any well-developed public open spaces accessible to all groups of public in a walkable distance like parks, public recreational areas, and play fields? Especially the proposed five parks (Dembela city park = 85 ha, Migara city park=115.4 ha, College community park=18.4ha, Boku zoo=907 ha, Ketchema garden=155.8 ha)

2.1. The current status of these parks

a, Dembela city park = 85 ha

b, Migira city park=115.4 ha

c, College community park=18.4ha

d, Boku zoo=907 ha

e, Ketchema garden (155.8 ha)

2.2 What is the town administration and municipalities plan to develop the violated parks by squatter settlements?

3. Does the prepared plan incorporate open space requirement of the town according to the standard?

4. Do you know the violated open space in the town?

If there is a violated open spaces who was responsible?

who violate the open spaces?

5. Do you know the reason of the violated open spaces in the town?

-

6. What weakens the follow up and monitoring of plan implementation problem?

7. Why does the town administration didn't give due attention in the design and development of open space in the town?

8. Do the town administration participate in planning, development, and monitoring of open spaces?

Appendix 3. Schedule of the Project and Cost Breakdown

4.1 Schedule of the Project

Table 1(a) shows Schedule of the Project

No.	Activities	Time frame
1	Selecting topic for Research Proposal	Up to February 15
2	Preparation of the proposal	Up to February 15
3	Review of proposed plan, documents, and Aerial Photos and make reconnaissance survey of sample kebeles and set how can select sample households	Up to February 30
	Preparation of questionnaires and interviews	
4	Field work (Distribution of Questionnaires and interviews)	Up to March 15
5	Detail observation of implemented open space with proposed plan in sample kebeles	Up to March 30
6	Making key informant interviews	Up to April 15
7	Data Analysis and Interpretation	Up to April 30
8	Finalizing the research output	From May 1 Up to June 9/2019
9	Presenting the research output for the concerned body	On June 9 /2019
10	Incorporation of comments and suggestions given from the concerned body and submission to the concerned body	From June 10 up to 16/2019

Source: Prepared by the Researcher 2019

Table 1(b) shows Schedule of the Project

No	Activities	Time Frame (Feb 1-June9/2019)							
		February	Feb 1-15	Feb16-30	March1-15	Mar16-30	April 1-15	April 16-30	May 1-Jun 9
1	Selecting topic for Research Proposal								
2	Preparation of the proposal								
3	Review of proposed plan, documents, and Aerial Photos and make reconesense survey of sample kebeles and set how can select sample households								
	Preparation of questionnaires and interviews								
4	Field work (Distribution of Questionnaires and interviews)								
5	Detail observation of implemented open space with proposed plan in sample kebeles								
6	Making key informant interviews								
7	Data Analysis and Interpretation								
8	Finalizing the research output								
9	Presenting the research output for the concerned body								
10	Incorporation of comments and suggestions given from the concerned body and submission to the concerned body								

Source: Prepared by the Researcher 2019

4.2 Cost Breakdown of the Project

Table 2; Proposed Financial required for the Study

No	Description	Quantity	Unit price	Total cost
			Birr	Birr
1	Stationeries and printings			
	Paper	4 Pack	200.00	800.00
	Pen/BIC	25pcs	6.00	150.00
	Pencils	1pack	3.00	36.00
	Eraser	6	5.00	30.00
	Flash Disk 4GB	1	250.00	250.00
	CD-RW	4	25.00	200.00
	Plastic Binder to handle data	6	15.00	90.00
	Final Thesis Report Binding	6doc	15.00	90.00
	Photocopy	500 pages	1	500.00
2	Printing (ordinary)	600 pages	2	1200.00
	Color Printing	80	10.00	800.00
3	Secretarial Service charge	90 pages	5.00	450.00
4	Researcher's per diem (only for Lunch)	45 days	170.00	7,650.00
5	Enumerators' fee	5 men for 6 days	300	9,000.00
6	Transport (taxi or Bajaj)	5 men for 6 days	50	1500.00
7	Contingent cost		10%	2,274.6
				Total Cost = 25,020.6

Source: Prepared by the Researcher 2019