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CHALLENGES AND ACHIEVEMENTS OF GREEN AREA LAND USE PLAN IMPLEMENTATION IN ADDIS ABABA CITY ADMINISTRATION: THE CASES OF YEKA SUB-CITY

BY:

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Declarations

The researcher, Belete Alemneh Wondmhunegn, do hereby declare that this thesis is my original work and that it has not submitted partially or in full, by any other person for an award of a degree in any other university/institution. We the undersigned, members of the board of examiners of the final open defense by Belete Alemneh Wondmhunegn, have read and evaluated this thesis entitled Challenges and Achievements of Green Area Land Use Plan Implementation in Addis Ababa City Administration: The Cases of Yeka Sub-City. Therefore, this is to certify that the thesis has been accepted in partial fulfilment of the requirements for the Degree Master of Art in Environment and Sustainable Development.

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Abstract

Urban green areas are an essential component of urban land use plan that give multiple benefits and plays a great role for the livability and sustainable development of urban areas. But the implementation of urban green areas in the cities of developing countries, especially in Africa and Sub-Sahara African countries including Addis Ababa are under extreme pressure. Therefore, this study intended to analyze temporal green area land use plan implementation status in Addis Ababa, the case of Yeka Sub City. The studies assessed the achievements of green area land use plan implementation, plan implementation, follow-up and controlling mechanisms, and identify the key challenges of implementing prepared green area land use plan. To meet the intended objectives of the study both qualitative and quantitative research approaches and techniques were used. Both primary and secondary data were used to conduct research. The finding of the study revealed that the implementation status of urban green areas in Yeka Sub City is deprived. In the ninth master plan from the planned 4230 hectare of land 1915.75(43.72%) were implemented.; while in the tenth structural plan from the proposed 4,020.42 hectare of urban green area plan only 1765.83 hectares were developed/protected. On the contrary both in the ninth and tenth land use plan the percentage of other land uses are increased. The analysis result also shows that the availability of many institutions with clear mandate and legal frameworks, the land use plan and current greenery development activities are the main achievements of green area land use plan implementation. The result of the study revealed that Political interference and lack of political commitment, Poor institutional capacity and coordination, the expansion of unplanned settlements and limitation in applying urban green area planning and implementation principles like, multi-scale planning, participation, applicability and continuity are the major challenges that hinder the implementation of green area land use plan. Therefore, political commitment, reduction of political interference, institutional capacity building, fostering of institutional coordination, integration of urban green area planning and implementation principles and control of unplanned and illegal settlements expansion should be considered to enhance effective urban green area plan implementation.

Key words: *Green area, land use plan, plan implementation, master plan, structural plan*

Acronyms

AAPC	Addis Ababa Plan Commission
AAPDC	Addis Ababa Plan and Development Commission
AutoCAD	Automatic Computer Aided Designing
BPR	Business process Reengineering
CSA	Central Statistical Authority
EMA	Ethiopian Mapping Agency
FDRE	Federal Democratic Republic of Ethiopia
GIS	Geographic Information System
GPS	Global Positioning System
KML	Keyhole Markup Language
LDP	Local Development Plan
NDVI	Normalized Difference Vegetation Index
NMA	National Metreology Agency
NUPI	National Urban Planning Institute
AASBPDA	Addis Ababa Sanitation Beautification and Park Development Agency
UN	United Nations
UNEP	United Nations Environment Programme
YSPDCBO	Yeka Sub City Plan and Development Commission Branch Office
YSUBGDO	Yeka Sub city Urban Beautification and Green Development Office

CHAPTER ONE

1.INTRODUCTION

1.1 Background

Urban are the future home of the world's population. The world's urban population grew from an estimated 0.8 billion in 1950 to 4.2 billion in 2018.In this Period the world's population was urbanized quickly, which grown from 30 percent in 1950 to 55 per cent in 2018(UN,2019). Similarly, Africa is quickly urbanizing continent, remarkably rich in biodiversity. The urbanization of Africa manifests itself in the growth of its mega and small cities. Thus, conservation planning and practice must increasingly consider the direct and indirect effects of urbanization on the continent (Guneralp et al., 2017). Development tendencies in urban areas can affect the environment of particular localities at small scale and, at large scale regionally and globally. Therefore, urban areas need to incorporate responses to all of these factors into their urban planning and implementation. Clean and green cities are more attractive; thus, incorporating the environment into urban planning and implementation not only contributes to global environmental goals, but also generates significant economic and social benefits (Dodman et al., 2013; UN, 2019).

It is well known that urban green area planning and implementation help in Protecting and enhancing biodiversity, improving environmental quality and decreasing the ecological imprint, adapting cities to climate change, and encouraging social cohesion. Green area planning that encompasses both public and private land and intends to provide numerous benefits must engage a diverse set of stakeholders in the planning and implementation process (Pauleit et al., 2017; Herslund et al., 2018). Urban land use plan is seen as a crucial instrument for achieving long-term urban sustainability. The primary purpose of an urban land-use plan is to assure the long-term viability of urban areas. It restricts urban expansion within the intended boundary, conserves ecologically vulnerable areas, assures effective use of existing resources and balanced development, and promotes smart growth through successful implementation of plan (Bulti & Sori, 2017).

The Garden city movement, started in 1898 by Ebenezer Howard in the United Kingdom, is one of the most notable urban planning methods that integrated urban greenery in urban development. The industrial revolution in England accelerated migration to cities in the

nineteenth century, resulting in environmental degradation and capitalism. Howard's goal with the Garden city movement was to mix the advantages of both the countryside and city environments while minimizing their drawbacks. The concept garden city planning was to integrate the environment in urban planning and development activity aimed to reduce the adverse impact of urbanization on the environment (Nabila, 2021).

Since the turn of the century, urban green area planning has grown in popularity around the world. However, among researchers, political players, and practitioners, there is currently no agreement on the idea, planning principles, and/or implementation strategies of green areas. Urban green area land use planning and implementation practice is better in developed countries than developing countries. Planning and implementation practice are virtuous in developed countries, mainly in Europe, North America and parts of Asian countries (Lafortezza et al., 2013; Monteiro et al., 2020; Gelan & Girma, 2021).

Due to the continent's colonial history, most African countries' planning traditions followed the European model (Devas, 1993). Land use planning as a strategic tool for guiding urban dynamics has unique challenges in the Global South, particularly in Sub-Saharan Africa, where immediate action is needed to improve urban and environmental sustainability (Enoguanbhor et al., 2021). Green areas have become the most threatened urban natural ecosystems as a result of fast urban expansion and a high incidence of unplanned horizontal urban growth. In connection to this, Teimouri &Yigitcanlar, (2018) underlined that the practice of urban green area planning and implementation is inadequate in Africa.

Ethiopia is one of Sub Saharan Africa's fastest urbanizing countries. Most Ethiopian cities are unable to achieve the World Health Organization's specified minimal threshold of green space per inhabitant. In Ethiopia including Addis Ababa urban green areas are degraded as a result of poor urban planning and implementation. The implementations of urban greenery practice in Ethiopian urban areas are at infant stage (Ministry of Urban Development and Housing, 2015).
Addis Ababa has changed dramatically in terms of size and demography, finance and economic structure, physical and spatial organization since its founding in 1886. Empress Taitu's spatial development strategy had resulted in the creation of a number of '*Sefers'* around the novelty residences. Settlements were growing begin on high ground and sloppy places, and then spread

outwards from their various focal points. She was the first planner of Addis Ababa (AAPC, 2017).

Modern planning started in Ethiopia, Addis Ababa by Le Corbusier in 1936. Modern municipal services were established between 1935 and 1941 (under the Italian occupation). The Italian master plan mostly resulted in racially segregated settlements like Addis Ketema. A variety of roads and arching bridges, arcade shops in Merkato, and brick and wood residential homes built at the time, particularly around Cassanchis, may still be seen today (AAPC, 2017; Patassini ,2019). The researcher is using the name urban green area land use for both the ninth master plan and the tenth structural plan, because the ninth master plan named it urban green area while, the tenth structural plan assigned a name called Urban green infrastructure. The purpose of integrating urban greenery in land use plan was to promote urban environmental sustainability by providing safe, accessible, pleasant and sound urban environment for urban dwellers.

According to AAPC (2017), environment is an important part of the urban structure, and this broad land use category encompasses a considerable section of the metropolitan area. Protecting and preserving the environment in urban areas is essential for the well-being of both people and the natural ecosystem. By implementing strategies like terracing slopes creating green spaces preserving urban forests and promoting sustainable practices we can create a harmonious and sustainable urban environment for future generations. Green should be planted in sloppy areas and along river banks to prevent landslides and erosion while also reducing river pollution. Most urban areas with slopes greater than 20% are planned for green area land use (AAPC, 2017).

According to the study conducted by Mpofu (2013) & Azagew & Worku (2021), urban green areas development and management in Addis Ababa have been inadequate however; the City Administration was planned for greenery purposes. Although, currently it is not clear that how the prepared plan is being put into practice and key challenges contribute to the poor implementation of the plan in Addis Ababa in general and Yeka sub-city in particular. Thus, the study examines the status, achievements, identifies key challenges of the implementation of green area land use and assess the plan implementation, follow-up and controlling mechanisms to improve the urban environmental sustainability.

1.2 Statement of the problem

In most Ethiopian cities, including Addis Ababa, the urbanization trend has been linked to environmental difficulties. Urban sprawl, solid and liquid waste management, water, air, and noise pollution, illegal settlements, and the loss of open green spaces are all issues that need to be addressed. Addis Ababa's unsustainable urban expansion rate has put green areas under severe strain, putting their ability to perform essential ecological, social, and economic functions in jeopardy. Urban green zones that are well-planned and implemented can supply and preserve a wide range of fundamental ecological, social, and economic functions and values that are essential to human well-being. Addis Ababa is still dealing with a number of urban environmental issues that require further investigation to fully comprehend their implications (Mpofu, 2013).

According to Burby (2003), effective plan implementation is essential for sustainable resource management. Unfortunately, implementation is a much-understudied topic, and the little research reveals that plan implementation has been ineffective. As a result, environmental sustainability becomes among green area land use plan implementation research agenda.

Addis Ababa City Administration has prepared the ninth master plan and tenth structural plan by integrating green areas as the main land use component. Green area land use plan is part of land use plan prepared aimed to protect the environment and sustain development. They also developed strategies and a plan envisages mandatory and optional regulations for permitted and prohibited land uses in the urban area to preserve their green areas. Addis Ababa structural plan document revealed that the adopted standard for the proportion of the built-up area, green area, and street networks are 40%, 30% and 30% respectively (AAPC, 2017). The former plan (the ninth master plan) of Addis Ababa City Administration and the current structural plan proposed most mountainous landscapes, riversides, open space, parks and recreational areas of Yeka sub-city strategically for green areas.

The rate of urbanization and expansions of settlements are high in Yeka sub-city especially, in the mountainous areas, river banks and open spaces though, the prepared land use plan has been proposed such areas for greenery purpose. In the study area green area land uses are converting to other incomputable developmental activities and settlements eventhough the area is the lung

of the City Administration. This shows the implementation of the prepared green area land use plan is not successful; it's unclear how the prepared plan is being implemented.

Research studies conducted on the achievements and challenges of green area land use implementationin was not based on planning principles and in a comprehensive manner; but some related researches have been undertaken, for instance, Mpofu (2013), assessed the institutional, social, financial and economic frameworks within which the Addis Ababa Sanitation Beautification and Park Development Agency (AASBPDA)was managing the green areas of the City of Addis Ababa. The study tries to address green space management success and challenges based on the report and other data from AASBPDA rather than based on the city land use plan and other plan implementer bodies. The implementation statuses of the plan and its implementation mechanisms have not been addressed. The assessment is also not based on the green area planning principles.

Azagew and Worku (2021) also conducted a study on accessibility of urban green infrastructure and future challenges. The study examines the trends of green area, its accessibility to the public and future challenges in Addis Ababa, but the issues of plan implementation, follow-up and controlling mechanisms, and its future challenge with respect to the prepared green area plan principles and implementation strategies have not been discussed. They tried to assess the status of green area development by comparing the ninth master plan with the existing data. It is incorrect to compare the plan which was outdated before seven-year with the current data. Thus, the researcher will fill this gap by comparing the ninth master plan with 2012 updated base map and the tenth plan with the existing reality and 2022 satellite image.

Thus, the rationale behind the study is to fill the research gaps that are not covered and well discussed by the above and other researchers by examining the current status of the implemented and being implementing green areas with respect to the prepared green area land use plan implementation, achievements of plan implementation, follow-up and controlling mechanisms and to identify the key challenges that hinder the implementation of the plan in different directions.

1.3 Objectives of the study

1.3.1 General Objective

The main objective is to study the achievement and key challenges of green area land use plan implementation in Yeka Sub-city.

1.3.2 Specific Objectives

The specific objectives of the study attempte to:

- analyze the status of green area land use plan implementation.
- assess the plan implementation, follow-up and controlling mechanisms.
- assess the achievements of green area land use plan implementation.
- identify the key challenges of implementing prepared green area land use plan.

1.4 Research Questions

- What is the current status of green area land use plan implementation in Yeka Sub City?
- What are the strategies for implementing, follow-up and controlling the prepared land use plan?
- What are the main achievements of green area plan implementation?
- What are the key challenges that hinder the implementation of green area land use plan in Yeka Sub City?

1.5 Significance of the Study

For sustainable urban development and human well-being, urban area is critical. The rate of urbanization is high in Addis Ababa and leading to the expansions of unplanned settlements and other developmental activities that degrade the environment. Yeka is an expansion sub-city exposed to environmental degradation as a result of poor green area land use implementation. In order to develop urban green area properly, it requires an adequate development and management strategy. Though, in poor nations like Ethiopia, the development strategy is hampered by a lack of research and comprehensive knowledge contributions, among other things.

Therefore, the study which deals with the challenges and achievements of urban green area land use plan implementation will have relevance to bring alternative measures in urban

environmental planning preparation and implementations. The study is also, provide or give a clue (information) who wants to conduct further research on the topic and related issues.

The findings which obtained from the study will also provide to have better understanding about urban green area land use plan implementation mechanisms, key factors that hinder the prepared plan implementation and the way how to implementing through urban planning principles. It helps for policy maker to integrate the urban greenery with any urban developmental activities.

1.6 Scope of the study

The scope of the study is spatially encompassing former Yeka Sub City Administration which includes, 13 Woreda Administrations. Thematically, the study focused on the implementation of prepared green area land use plan in relation to the existing situations. Green areas along the street and at individual parcel level are not parts of spatial analysis when the researcher analyze the status of plan implementation.

1.7 Limitation of the study

Due to field work load most respondents from YSUBGDO did not respond questioners on time.Lack of sufficient literatures on the issues of plan implementation ,follow up and controlling mechanisms are the limitation of the study.

1.8 Organization of the thesis

The thesis organized into five chapters: the first chapter is introduction, statement of the problem, objectives of the study, research questions, significance, and limitation of the study. The second chapter discussed about review of related literature. The third chapter comprised description of the study area, research design and methodology. Chapter four is about result and discussions; whereas chapter five is about Conclusion and recommendations.

CHAPTER TWO

2. REVIEW OF RELATED LITERATURE

2.1 Concepts of planning and Environment

A structure plan is legally enforceable long time plan, with explanatory texts, formulated and drawn at the extent of a full urban boundary that lays out the fundamental requirements for physical growth, the fulfillment of which could result in a cohesive urban development in social, economic, and environmental domains(Urban Planning Proclamation No.574/2008).It is a legally binding technical document, as well as an institutional and policy framework, for guiding the long-term development of a city, town, or urban center. Over all the other urban plans, the Structure Plan is the most significant regulating document for a citywide plan (AAPC, 2017).

Master plan is a dynamic long-term planning document that provides a conceptual layout to guide future growth and development. A master plan includes analysis, recommendations, and proposals for a site's population, economy, housing, transportation, community facilities, and land use. Master plan different from structural plan because of its rigidity (https://urban-regeneration.worldbank.org/node/51).

Land use planning is a multifaceted process that includes the development of a land-use plan that comprises a statement of land use issues, goals, and objectives, a summary of data collection and analysis, a land classification map, and a report describing and indicating appropriate development in areas of particular environmental concern (Williams, 2000).

Environmental problems are human and/or natural influences on ecosystems that cause them to be constrained, reduced, or even cease to function. They can be divided into two categories: environmental problems with well-established remedies and problems with new solutions. Urban environmental concerns are dangers to current and future human well-being caused by human-caused physical environment deterioration that originates in or affects urban areas (Dodman et al., 2013). Some of the key environmental problems resulting from urban expansion include:habitat destruction, loss of agricultural land, air pollution, water pollution, biodiversity loss, increased energy consumption, urban heat island effect and waste generation.

Environmental Protection land use is urban green area land use and a major component of urban land use which comprises green area, waste management quarry and water body (AAPC, 2017). According to Losarcos (2010), urban green areas include natural elements in towns and cities that provide an ecological or ecosystem service function. This includes urban elements like green parks, green walls, and green roofs that support biodiversity and connect urban, per-urban, and rural areas, allowing ecosystems to function and supply their benefits.

Green Areas is a network of multipurpose open space in and around towns and cities, including gardens, trees, rivers, woodland, parkland, nature reserves, and urban wild spaces, as well as the access to and through them. These spaces support wildlife and biodiversity, offer opportunities for recreation, access, and leisure time, and help people feel a sense of place (McDonald et al., 2005).

Implementation means the act of using concrete measures to put something into practical effect (Calbick & Gunton, 2003).

Plan implementation is the carrying out, execution, or practice of a plan, a method, or any design, idea, model, specification, standard or policy for doing**.** It is the process by which prepared plans converted into ground reality by the plan implementer.

Urban sprawl is the fragmentation of powers over land use is exacerbated by the decentralization of the urban core through the infinite outward spread of scattered development beyond the urban edge, where low-density residential and commercial growth exacerbates fragmentation of powers (Dodman et al., 2013).

2.2 Urbanization and land use planning

2.2.1 Urbanization and urban Environment

Urbanization refers increase in the proportion of the population living in urban areas. It involves an increase in the number of cities and their size. Urbanization is characterized by a growth in the size and density of urban areas (Uttara et al., 2012). Urban areas are complex. They are referred to as "growth engines" because they create agglomeration and scale economies. Cities also face new issues on a daily basis, compounded by uncontrolled urbanization and population growth, which is becoming a rising source of environmental concern.

The unplanned expansion of metropolitan areas, a lack of congestion and pollution-control measures, and a slow pace of progress and sincerity toward sustainable goals are at the root of urbanization's difficulties (Chauhan & Yadav, 2018).

In worldwide, urban areas have been expanded in size over recent decades. About two thirds of the world’s population will living in urban areas by mid-century. The worldwide urban population is expected to rise by 2.5 billion urban inhabitants between 2018 and 2050; Asia and Africa are nearly account 90% the increase in the global urban population. Urbanization is additionally changing the lives of those living within the rural ranges around cities. Urban areas are important gateways and destinations for internal and global migrants, and migration needs to be integrated into the strategic planning and management of cities and urban systems (UN, 2019).

The rate at which Africa enters the "urban age" is predicted to be incomparable. While the continent is still primarily rural, it is one of the world's most rapidly urbanizing regions. Africa's urban population is forecast to more than triple in 40 years, from 395 million in 2010 to 1.339 billion in 2050, accounting for 21% of global urban population projections. Ethiopia is also a country with high rate of urbanization. Due to planning limitations the urban environment of African urban areas is degraded (Guneralpetal et al., 2017).

Urban areas and inhabitants are expanding throughout the Caribbean and other developing regions. Urban areas are both growth engines and concentrated sources of environmental issues. People migrate to cities in search of jobs, entertainment, shopping, and a higher standard of living. At the same time, the environmental infrastructure of works and services is insufficient to meet the increased population and population densities that have resulted. Until solutions for correcting environmental deterioration can be adopted, the inevitable congestion produces environmental dangers and degradation (Williams, 2000).

Ethiopia is a country that is showing high rate of urban growth. Addis Ababa is one of Africa's fastest growing cities and Ethiopia's capital, with a population of over four million people, or about a quarter of the country's total urban population and more than ten times the population of Adama, the country's second largest city (Ministry of Urban Development and Housing, 2015). Rapid urbanization will be one of the crucial features of the 21st century. High rate of Urbanization generates particular environmental challenges; though it also creates chances for

urban development that can contribute to wider goals of improving the quality of life for urban dwellers while attaining high levels of global sustainability (Dodman et al., 2013).

Many environmental problems in cities are the product of poor management, inadequate planning, and a lack of coherent urban policy, rather than urbanization itself. Inappropriate incentive structures, such as the "growth first" policy followed by the governments of many nations in the region, particularly in emerging countries, have considerably aggravated the problem of urbanization. Industrial promotion policies are aimed to offer advantages and incentive packages, such as low taxes, liberal regulations, and subsidized infrastructure, with a focus on metropolitan regions, in order to attract investment. Industrial growth, when paired with insufficient infrastructure, incorrect resource and service pricing, and a lack of institutional mechanisms to enforce environmental protection, hastens environmental degradation in metropolitan areas (Ichimura, 2003).

Conversion of agricultural land and forest, as well as regaining wetlands for urban purposes and infrastructure, is linked to widespread vegetation clearance to maintain urban ecosystems, putting additional strain on neighboring areas that may be more ecologically sensitive. Land subsidence and increased flooding have resulted from groundwater overdraft, especially in the poorest and lowest-lying communities (Ichimura, 2003). Urban sprawl, pollution, and environmental degradation can be harmed by unplanned or poorly managed urban expansion, which is compounded by unsustainable production and consumption practices and a lack of capability of public institutions to manage urbanization (UN, 2019).

2.2.2 Land use planning

Land use planning strategy is a method of defining land for multiple uses in order to achieve a balance of social, economic, and environmental objectives. It’s a method of enhancing urban and environmental sustainability (Enoguanbhor et al., 2021).

Green areas have become the most threatened urban natural environments as a result of fast urban expansion and a high incidence of unplanned settlements. The amount of land available is limited, and more people are competing for it. To avoid conflicts as a result of this competition, clear agreements on how and by whom the available space will be used must be reached. Land use planning is a strategy for promoting the orderly occupation and use of land, as well as the prevention of undesirable developments. Modern land use planning is always focused the

concepts of efficiency, equity and sustainability. For the aim of determining the most appropriate use, it principally relies on an assessment of the land potential and alternative patterns of use including the environmental, social, and economic circumstances that affect that use (Verheye, 2009).

The reasonable allocation of environmental components and socio-economic demands to meet the community's future needs is attributed to land use planning. It is a valuable resource that is assessed to predict the inherent potential of land in order to support various (particular) activities for a long time without deterioration (Bandyopadhyay et al., 2009).

To promote sustainable urban development urban planning is a key instrument to lead the development and growth of urban areas though, challenges and priorities of planning exercises are different (Frank& Mironowicz, 2009). Economic, social and environmental issues are the three dimensions of sustainable urban land use planning and development. Urban areas can use different principles and approaches to put together the environment in urban planning and management (UN, 2019; AAPC, 2017). Thus, the purpose of land uses planning to make urban areas environmentally sound, economically equitable and viable, and socially acceptable.

Source: Beltrao, (2013)

Figure 1: Components of land use planning

Rapid urbanization has pushed governments, lawmakers, planners, commercial developers, civil society, and many other actors to face serious issues that are affecting everyone's lives, as is well acknowledged. Growing population and shrinking living areas are plainly causing urban living standards to deteriorate. It is common knowledge that cities continue to grow rapidly, with much of it occurring in an uncontrolled manner. Furthermore, policies, strategies, plans, and implementation have not kept pace with the speed with which cities are changing. Cities must rethink their spatial design/form, physical planning/infrastructure/housing, and institutional organization matters to handle such enormous population expansion (internal growth and migration).Urban Planning should be understood as a dynamic and multi-faceted process that, to achieve the correct planning solution, requires a robust mixture and combination of considerations such as striking a balance between political considerations, multiple stakeholder needs, and spatial planning objectives and goals. As planning affects society as a whole, an iterative process which actively involves a full range of stakeholders taking the various fields into consideration and incorporating feedback is often the most promising approach (Beltrao, 2013).

Properly planned, implemented and managed urbanization, informed by a long-term consideration of population trends, can help to enhance the welfares of agglomeration while reducing environmental degradation and other potential adverse effects of a growing population of city inhabitants, particularly in low and lower middle-income countries (UN, 2019).

2.3 Main Principles of Urban Green Area Planning

Urban areas can use a variety of principles and approaches to integrate the environment in urban planning and implementation. Green area strategies for urban areas need to be supported by key fundamental principles. The strategies must be supported by governance mechanisms that enable environmental issues to be integrated into the planning process (Dodman et al., 2013).

According to Monteiro et al., (2020); Davis et al., (2015) and Pauleit et al., (2017) the following are the main principles of urban environmental planning:

Connectivity: is essential for maintaining species interactions and variety, as well as natural system values and services. It addresses the physical and functional links between various green areas at various levels and from multiple viewpoints, such as recreation, biodiversity, urban

climate, physical structure and storm water regulation. The purpose of connectivity is to build a well-connected green space network that will benefit both humans and other creatures.

Multi-functionality: It allows a direct link between green areas and a variety of ecosystem services, including provision, regulation, support, and culture. It concerned with the numerous ecological, social, and economic functions, goods, and services that urban green areas can give, as well as the best ways to integrate them to deliver benefits.

Multi-scale planning: urban green that considers links between different spatial scales within and above city-regions. It considers all scales of comprehensive planning. As a result of its flexibility and adaptability green areas can be planned from a building viewpoint (for instance, green roofs) to regional and integrated perspectives; aims at linking different spatial scales within and above city-regions.

Integration: It's about the interactions and connections between green area and other urban constructions, called "grey infrastructures." It considers all connections and synergies between green and grey infrastructures, as well as the landscape interactions with the building environment.

Diversity: -Urban green area emphasizes the amount, quality, and diversity of solutions offered to handle specific issues. The value of blue infrastructures in green infrastructure development is greatly enhanced by the diversity principle.

Applicability: Cities have prepared urban green area plan and have made huge investments in nature-based solutions in urban areas in recent years. In some places, despite the fact that plans have been established and are in place, with bold and ambitious goals and actions, most projects are not accomplished. To avoid these problems, urban green area planning must consider the projects' applicability, adaptability, and implementation, which determines whether the plan is realistic, can be implemented and developed, and whether the remedies presented are adaptable to consider the area or not.

Governance/Social inclusiveness: Describes the cooperation between the government actors and the citizens in the whole planning processes. It is about social inclusiveness aiming to meet the needs and interests of all stakeholders. Integrating the population in the plan preparation and implementation processes is must, because the owner of the plan is the public. If communities

are not integrated, the plan will not succeed which will not be appreciated and supported by the local population and its objectives and goals will not be accomplished.

Continuity: Lack of post-implementation monitoring or empirical measures of results of the ecosystem services and activities that green area projects claim to deliver has been a key shortcoming. To be effective, green area must require frequent budget, management, and monitoring, periodic reports with the evolution of the planned green projects.

In addition to the above according to Davies et al.., (2015) the following are additional principles of urban green area planning:

Strategic: Urban green area planning is based on long-term spatial visions supported by actions and means for implementation however, remains flexible over time. The process is frequently led by the public sector with the collaboration of non-state actors.

Inter- and Trans-disciplinary: Inter-disciplinarily is a goal of urban green area planning, which also attempts to create connections between science, policy, and practice. It is prepared in collaboration with many local authorities and stakeholders, and it integrates knowledge and demands from other disciplines such as landscape ecology, environmental science, geography, geology, sociology, urban and regional planning, and landscape architecture.

2.4 Functions of urban green Area

The significance of green areas has evolved over time to become an essential component of green spaces incorporated into urban planning and design as an investment to improve city dwellers' well-being. Urban green environment has become an important component of urban planning because of its various contributions to citizens' health and quality of living by minimizing the effects of extreme weather conditions and air pollution (Abutaleb et al, 2021).Urban green area provides a wide range of basic environmental, social and economic functions.

2.4.1 Environmental Functions

Green areas are important for nature conservation from an ecological perspective because, they provide habitat for a diverse range of flora and fauna. The mere presence of plants in urban areas improves the visual aspect of the urban environment, helps to prevent climate change, lowers development density, and reduces activity levels in an area. This helps to a more pleasant

and comfortable atmosphere, which is beneficial in both commercial and domestic settings. It helps to improve the quality of the atmosphere by collecting carbon from the atmosphere and rel easing oxygen. It also used as a buffer by absorbing and reducing urban waste and noise pollutions as well as reducing urban flooding problem (Mpofu, 2013).

Cities benefit from ecosystem services ranging from biodiversity preservation to climate regulation are provided by urban green spaces. Urban greening can lower air pollutants directly when dust and smoke particles are trapped by vegetation. Urban green area serves as a breeding ground for plants, as well as a conservation center for soil and water quality. Green spaces in cities help to connect urban and rural communities (Haq, 2011).

Heat, ozone, and ultraviolet (UV) radiation are reduced and air quality is improved in urban green areas. The biggest cooling effects are provided by trees, which provide thermal comfort and relief from heat stress. Green areas of various sizes and types have different cooling benefits when it comes to heat mitigation (Vargas-Hernández, Pallagst, & Zdunek-Wielgołaska, 2017).

2.4.2 Economic and Aesthetic Functions

The overall energy used for heating and cooling in urban areas can be reduced by increasing vegetation cover. It is source of raw materials for local handicrafts and different commercial activities; used as source of income and food. Parks and green spaces of high quality often add economic value to a city by improving the urban landscape (Haq, 2011; Mpofu, 2013).

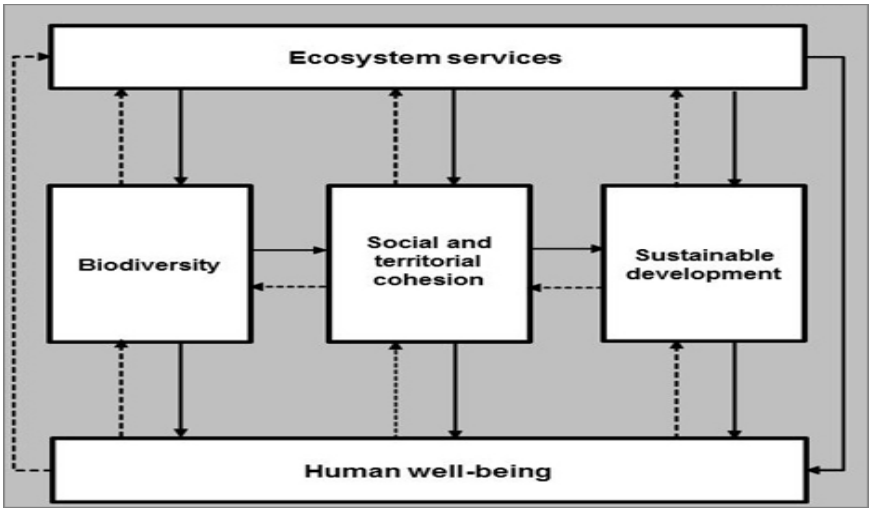
According to the study undertaken by Haq, (2011) aesthetically pleasing and appealing to both inhabitants and investors are areas of the city with ample greenery. One of the causes that drew major foreign investment and aided quick economic expansion was the beauty of Singapore and Kuala Lumpur, Malaysia. It enhances property values and financial returns for land developers.

2.4.3 Social functions

The existence of green areas might stimulate beneficial social interactions that improve health and well-being through cultivating social cohesion. Increased physical activity and social engagement have also been related to favorable health habits and outcomes in green areas (Haq, 2011; Mpofu, 2013; Vargas-Hernández, Pallagst, & Zdunek-Wielgołaska, 2017). Recreational opportunities, aesthetic pleasures, psychological and physical health adjustment, social bonds

enhancement, and educational chances are all provided by urban green areas (Zhou & Rana, 2012).

As shown in figure 2, green areas consist of five main blocks where each of corresponding to a specific function or bundle of functions. Each block is linked to the others, either directly or indirectly, to show the interrelationship between the numerous green area functions and benefits.



Source: Lafortezza et al., (2013)

Figure 2: Urban green area functional framework

2.5 Green area land use planning and implementation practices

Urbanization's encroachment on natural habitats and the expanding demands of urban populations on natural resources has direct and indirect stresses on ecosystems. Because land use decisions are such important determinants of environmental quality, it's critical to implement effective land use controls to combat issues like pollution, the occupation of hazard prone areas, the degradation of wetlands and other coastal resources, and the loss of open space and other cultural resources (Williams, 2000).

Urban green area planning and implementation play a vital role in creating healthier more sustainable and livable cities. It helps tackle issues like urban heat island effect air pollution and loss of biodiversity while also providing numerous benefits to residents such as improved physical and mental well-being social interaction and enhanced quality of life. (Williams, 2000; Beltrao, 2013).

The planning and implementation of urban green area land use plan in developed countries are better than in developing countries. The success of urban planning is a leading indication of city informality. As a result, despite their well-established urban planning systems, developed countries' urban informality is inadequate. In poor countries, however, due to weak planning and governance capacities, a significant and growing part of urban growth is informal (Frank & Mironowicz, 2009).

In developed countries, the implementation of urban green area plans has become standard practice in the more progressive planning departments of cities and regions. Conversely, very little progress has been made in transitional and developing nations in incorporating monitoring and evaluation as important aspects of the urban planning process (Frank & Mironowicz, 2009).

As a significant component, urban green areas can play an important role for sustainable development. To improve existing urban green space facilities and services, and to optimize urban green space policies, multidisciplinary and integrative approaches such as economic, political, social, cultural, management, and planning must be considered. In order to handle a number of issues related with sustainable development, urban greenery planning should be founded on a set of principle. Even if, multi-functionality and connectivity are increasingly recognized in academic discourse, there is a variation in how these ideas are implemented regionally and locally. However, research on urban green area planning is frequently conducted in developed countries, whereas little is known about the incorporation of the principles in developing countries including Ethiopia in current urban green area planning methods (Girma et al., 2019).

In many parts of the developed world, there has been a successful effort to implement the principle of urban green area planning. Urban green area planning principles and practices have gotten increased attention in regions of Europe, North America, and Asia, and green areas are now considered important urban infrastructure (Pauleit et al., 2013).

In the European Union, there is a lot of interest in environmental planning right now, with key concerns about biodiversity and climate change mitigation and adaptation. The European Union started the "GREEN SURGE" cooperation project in 2013. GREEN SURGE's Work Package was tasked with advancing urban green area planning and implementation at the municipal and city regional level in order to more effectively promote urban biodiversity and ecosystem

services toward more resilient and low impact European cities. The GREEN SURGE planning ideas were implemented to some extent in the 20 European cities. The principle of urban green area was extensively integrated and well implemented in Bristol and Barcelona (Davies et al., 2015).

Urban green area planning principles have been implemented at the policy level in only a few nations in Latin America. Brazil and Colombia are two major exceptions. The Brazilian experience with biodiversity offsets shows that they are not only a good financial tool for consolidating protected areas, but they also address the whole impact of infrastructure projects on biodiversity at the landscape level (Quintero, 2012).

Environmental sustainability issues in the Global South, notably in Sub-Saharan Africa, have not been properly addressed by land use planning techniques; example, deprivation of environmentally sensitive areas as a result of unplanned and poorly implemented urban expansion patterns. For instance, as urban growth grows onto land allocated for non-urban development regions, including environmentally sensitive areas, previous and current urban expansion patterns in the Abuja city-region, Nigeria, are inconsistent with land use plans. As a result, many African city-regions' environmentally vulnerable areas are deteriorating. Inconsistencies (spatial conflicts) between urban and regional planning, primarily due to administrative boundary conflicts and a lack of interdepartmental coordination, insufficient money, lack of political will, political intervention corruption, and inadequate legal frame works are key challenges faced in urban green area planning and implementation in Africa (Enoguanbhor et al., 2021; Gelan & Girma, 2021).

The study undertaken by Gelan & Girma (2021) also shows that the implementation and management of urban green areas is often not realized in Sub-Saharan African cities including Ethiopia due to a lack of priorities and resources. Urban green areas are an essential component of city design and development, and are regarded as the "lung" of cities as well as one of the features that reflect the quality of life (Thiloi, Tuan & Gupta, 2016).

The study undertaken by Williams (2000), shows that the need for urban green area planning and implementation in developing country includes: provision safe and healthy housing and other built environments, access to urban environmental infrastructure systems and services, availability of open spaces in terms of well designed and implemented community parks and

other green areas, and provide environmental surveillance and cleaning services for public buildings and outdoor areas. Thus, the need for urban green area planning and implementation in developing countries is multifaceted. It encompasses environmental sustainability improved air quality mitigation of the heat island effect social cohesion and health benefits. By prioritizing the development of green spaces in urban areas these countries can create healthier more sustainable and livable cities for their residents.

The availability, design, administration, and protection of urban green space are at the top of the agenda for improving the quality of local surroundings as part of the "sustainability" and "liveabi lity" of human settlements. The quality of urban green areas is an important aspect in making citi es appealing and viable living environments. Green spaces in cities play a vital part in making cit ies more livable (Baycan-Levent et al., 2002).

To protect urban green spaces, some cities have devised policies and master plans. Trees have been planted along the streets, and houses have been shielded from the streets by several meters of plants and trees. The majority of green space management plans are founded on the principle of equal access and distribution. The master plan of Sophia, Bulgaria, for instance, mandates that recreation for people be built within a specific distance from their residences or within a given number of minutes of walking time. It also promotes collaboration and networking among local communities, residential groups, businesses, and other organizations in the development and improvement of residential open spaces, as well as the revitalization of former industrial districts and other troubled places (Mpofu, 2013).

According to AAPC (2017), report the structure plan for green area and development aims at contributing to the livability of Addis Ababa by: ensuring clean environment; providing adequate, accessible, networked and functional green spaces; ensuring sustainable natural resource utilization and management, and reducing exposure to natural disasters.

2.6 Urban green area land use planning and implementation in Ethiopia

Sustainable urbanization necessitates well-planned urban development, strong institutional frameworks, and proactive management and governance measures (Dube, 2013). The allocation of plots for diverse land use functions is one of the ultimate aims of urban plan preparation and implementation. In order to ensure not only consistency but also optimal use of the scarce resource of land, plot allocation for diverse functions should be done in an organized and rational

manner. The development of a logical and consistent set of standards is critical to the smooth operation of any development control system (Ministry of Urban Development and Construction, 2012).

Ethiopia is one of Africa's least urbanized countries, despite its strong urbanization rate. The National Urban Planning Institute (NUPI) plans urban centers in Ethiopia since the Federal Government has a vested interest in land issues; nonetheless, the country's urban centers are expected to be governed by their respective town administrations and municipalities (Ministry of Urban Development and Housing, 2015). The development and management of urban green area in Ethiopia has been uneven, with significant differences between urban areas. Moreover, the development and management of urban green area across the country's urban canters has not been standardized, and the goods and services that well-planned and well-developed urban green area are supposed to provide have not been delivered to the country's urban dwelling communities. Urban environment is the main components of urban land use planning preparation in Ethiopian urban areas even though, the implementation practice is poor (Ministry of Urban Development and Housing, 2015).

According to Mpofu (2013), industrial, commercial, residential, and infrastructural developments, as well as spontaneous and illegal settlements along mountain slopes, river valleys, and other open places, have encroached on Ethiopia’s urban green spaces. He assessed the achievements of green area implementation and management practice in the perspectives of institutional and social aspects. From the institutional point of view, the existing policies and laws were adequate to allow the SBPDA to properly manage the green area. While in the perspective of social aspect, it pertained to the formation of a platform to assist coordination, cooperation, and collaboration in park development, as well as the preservation of the city's natural beauty and urban green management. Illegal settlements and illegal waste dumping are the main challenges hinder urban green area implementation practice in Addis Ababa. The research also revealed that in Addis Ababa city, the organization in charge of green space development was suffering delays in receiving land from the Land Administration Authority.

The fastest growth neighbouring towns is placing a lot of strain on the natural resources of the hinterland, especially ground water and river pollution, due to population growth, increased investment, and construction activity in Addis Ababa. In addition to the core, the plan is

structured so that its good effects benefit places within its immediate economic and social reach, while the plan's potential negative externalities have no influence on the environment (AAPC, 2017).

Following the 1992 Rio Summit in Brazil, Ethiopia took a number of steps to address its environ mental issues, including limiting the negative effects of urbanization on the environment. The government passed a variety of laws to aid in the implementation of Agenda 21 at a local level. This included the enactment of Article 44 of the country's Constitution (1995) which states that the people of Ethiopia have the right to live in a healthy environment. The country also established the Ethiopian Environmental Protection Authority in 1995, and formulated the Ethiopian Environmental Policy in 1997.Addis Ababa city plan commission also integrated the environmental in the plan preparation of the ninth master plan and the tenth structural land use plan.

Due to encroachment by builtup areas such as formal/informal housing development and infrastr ucture expansion, the city's urban green areas are being lost at an alarming rate. Urban parks and other recreational areas are not based on the standards, inaccessible to the city dwellers and unevenly distributed (Azagew & Worku, 2021). AAPC (2017), environmental evaluation report shows that the city of Addis Ababa has seen rapid growth of infrastructure, housing and service centers. This rapid growth has led destruction of vegetation and converting agricultural land into built environment. This has affected adversely the general environment and maintaining ecological balance. The challenge with respect to green frame in Addis Ababa is related to habitat degradation especially in the upper catchment of the city due to wood extraction for fuel and construction purpose resulting in deforestation, and increasing runoff decrease in the size of green areas in the city.

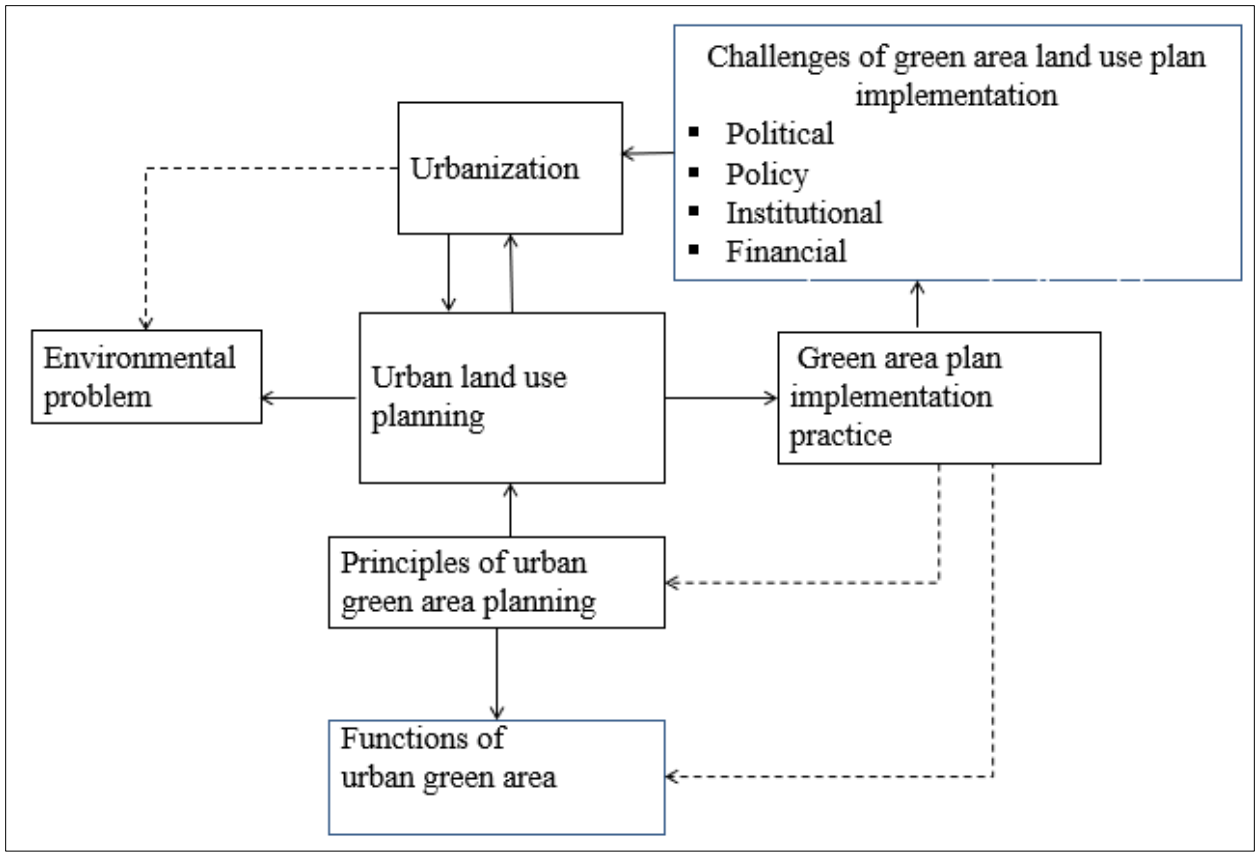
The forest areas in the city are mostly found at the north, northwest, southwest, north east and west part of the city. The total area coverage of urban forest in Addis Ababa is 8148 hectare and is found mostly in the peripheral sub-cities (Yeka, Gulele, Kolfe Keranio and Nifas Silk Lafto). Urban forests in Addis Ababa are managed for maintaining ecological balance as well as to provide economic benefits (AAPC, 2017).

2.7 Conceptual framework

Conceptual model shows the relationship between urbanization, environmental degradation, land use plan/Green area land use plan, Principles of green area land use plan, function of urban

environment, green area land use plan implementation, and challenges of plan implementation. The conceptual framework has been developed based on the review literature. This study is based on Addis Ababa plan City Administration Land use plan/green area land use plan as a core for plan implementation. Environmental degradation in urban and pre-urban areas is as a result of high rate of urbanization (the expansion of unplanned urban areas). Figure 3 shows that high rate of urbanization due to lack of planning or unwise planning, resulting into increasing environmental impacts.

Urban planning is a tool to control unplanned development and protect the urban environment. Urban green area planning is a major component of land use plan that plays a great role for the well- functioning of urban area. Properly planned and implemented urban green area may give many functions to the urban dwellers by reducing urban environmental degradations. If we plan urban areas based on the principles of green area planning it will play a great role for the successful development and management greenery. Urban planning implementation strategies are also essential for plan implementation and management of urban green areas. The implementation of the plan may depend on, planning principles, implementation strategies and factors like; political, financial, institutional and policy frameworks. The following diagrammatic figure shows the conceptual framework of the study.



Sources: Adapted from Petrisor et al., (2016); Lafortezza et al., (2013)

Figure 3: Conceptual framework of the study

CHAPTER THREE

3. METHOD AND MATERIALS

3.1 Description of the study area

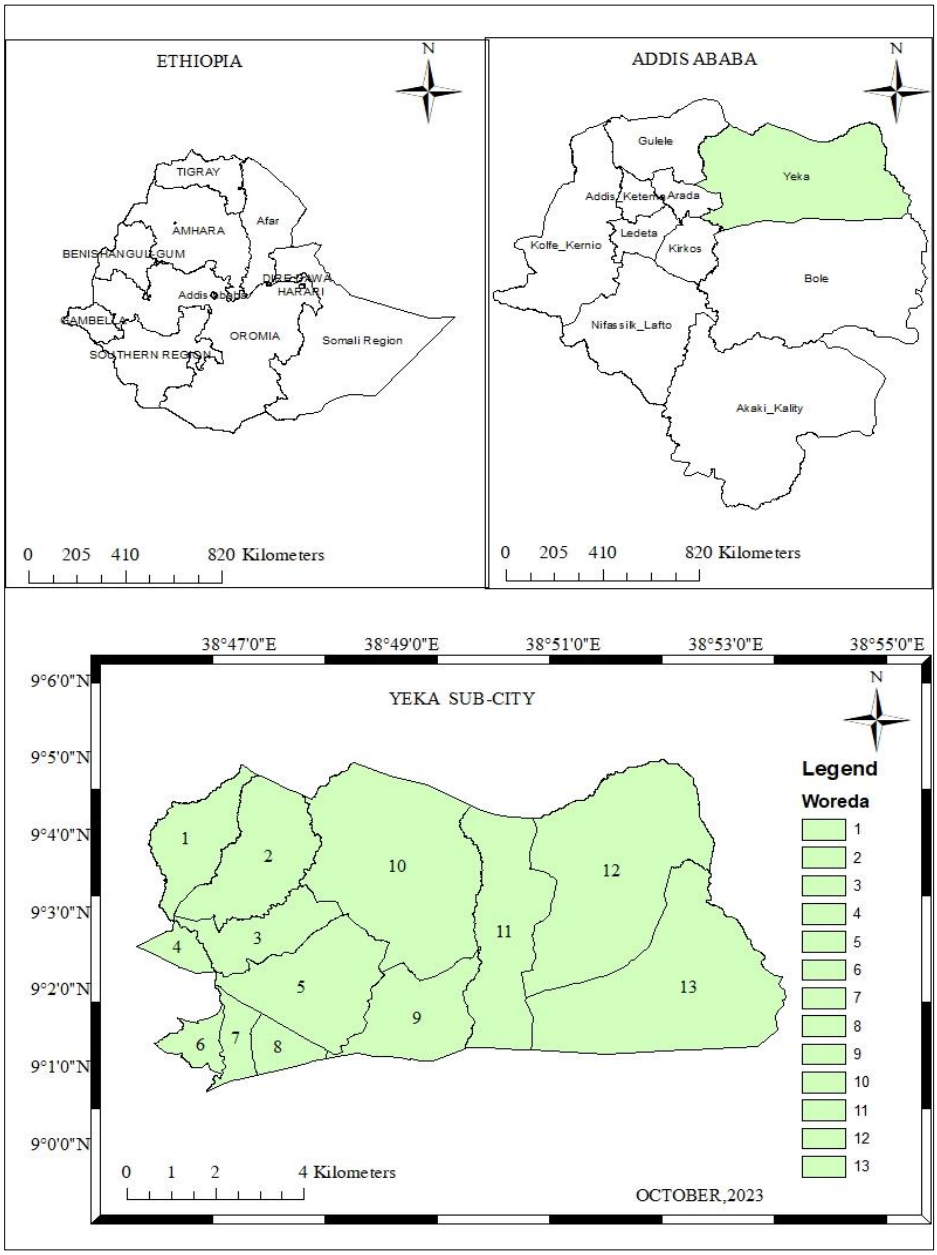
Addis Ababa was originally established in 1886 by Emperor Menelik-II and his wife princess Taitu at Entoto, which later moved down hill to the south by the attraction given to the hot spring, '*Fil-Wuha'.* Addis Ababa is the capital city of Ethiopia and it lies at the foot of Mount Entoto. It is situated in the central part of the country, at an elevation of about 2,400 meters above sea level with the highest elevations at Entoto Hill to the north reaching 3,200 meters and located at 9°1′48″N 38°44′24″E. This makes Addis Ababa one of the high-altitude capital cities of the world.

The climate of Addis Ababa is sub-tropical highland with a continual moderate mean annual temperature of 15.9 °C with average maximum of 22.8 °C and 9.1 °C average minimium. The main rainy season, is from June to early October, and between early March and mid-April, there is short period of rainfall called Belg. The mean annual rainfall is 1,809 mm(NMA,2023).

Addis Ababa's physical attribution is poorly designed, posing a difficulty to the city's environmental development plans. As a result, the city has undergone significant plan changes that have impacted the city's environmental and socioeconomic features. The issue of the urban greenery, in particular, is gaining an increasing amount of attention from urban planners. Although in practice, sustainability, which recognizes the interdependence of environmental, economic, and social equity are remains in question.

Yeka Sub-City is one of the ten Sub-Cities of Addis Ababa City Administration (Figure 4) which is located in the expansion part North East corner of the city. It is among Sub-cities characterized by mountainous landscape where significant parts of the land are planned for green area aimed to reduce manmade and natural disasters. The Sub-City consists of 13 Woreda (district) Administrations covering 8,212 hectares. Parts of the mountainous land are covered with vegetation dominantly by eucalyptus trees, which protecting the lower parts of the city from flood and other environmental problems.

The population of Addis Ababa City Adminstration was 2,687,593 inhabitants in 2007, (CSA, 2007). According to the federal government census agency, Ethiopian Statistical Service report the projected Addis Ababa's 2023 population is 3,945,000, from this the population Yeka sub city is 499,301.



Sources: AAPC and EMA: prepared by the researcher

Figure 4: Location Map of the Study Area

3.2 Research Design

The type of research design chosen is both qualitative and quantitative to meet the objectives of the study. A mixed research method is a method that integrates quantitative and qualitative methodologies in a single study to create a more comprehensive picture of a problem. When both comparative analysis and the creation of components of the study must be completed fully and in depth, mixed techniques are used. The use of mixed techniques allows researchers to transcend the constraints of quantitative and qualitative procedures, allowing them to gather rich data that would be impossible to obtain using either method alone (Almeida, 2018).

Mixed method designs are viewed as preferable in implementation research because they provide a better understanding of research issues than either qualitative or quantitative approaches alone (Palinkas et al., 2011). Thus, the reason for employing a mixed research designs for the implementation status and challenges of green area land use planning is that, to overcome the limitations of quantitative and qualitative methodologies, allowing the researcher to get rich information that could not be obtained using each method alone.

3.2.1 Data Collection and Sources of Data

This study is both qualitative and quantitative research. As a result, it employed a combination of various methods of data collection to obtain both quantitative and qualitative types of data. Both primary and secondary data were collected in order to meet the objectives of the study.

Primary data: data from the required target experts and officials from Addis Ababa Plan and Development Commission (AAPDC), Yeka Sub-City Plan and Development Commission Branch Office (YSPDCBO) and Yeka Sub-City Urban Beautification and Green Development Office (YSUBGDO) has gathered. These data were collected mainly through:

Interviews: Unstructured interview with the key informant's that is, concerned officials and experts (urban planners, environmental planners, landscape planner and other concerned professionals) at City and Sub-City level. The purpose of the interview is to get rich data from knowledgeable officials and experts aiming to answer questions on the issues of achievements of plan implementation, plan implementation challenges and plan implementation, follow up and controlling mechanisms(Table 1).

Questionnaires:Both open and closed-ended questionnaires were employed to meet the objectives of the study. It allows respondents to think about their responses without being interrupted. It collected from persons who know enough about the city's structural plan preparation and implementation to get rich data on issues of the plan implementation, follow-up and controlling mechanisms and to identify the key challenges of implementing prepared land use plan (Table 1).

Table 1: Number of key informant respondants

Institutions	Number of key informants' interviewers	number of key informants' questionnaires respondents	Respondents' field of study
AAPDC	4	7	Environmental science, geology, architecture and urban planning, urban planning and development, urban and environmental Planning, urban planning and design, and urban and transport planning
YSPDCBO	3	5	Architecture and urban planning, urban planning and development,urban and regional planning, and Construction technology and management
YSUBGDO	2	4	Plant science, horticulture, environmental science and geography and environmental studies

Field observation: Observations have been carried out in both natural and artificially constructed environments. It is used to obtain additional data during the study period, collected data specific to the problem under study and plays an important role to collect quality data (Kabir, 2016). Thus, to analyzed plan implementation status field observation is important to fill data gaps that are not addressed by secondary and other primary data.

Data have been also collected by using GPS to fill the gaps of secondary data that aimed to see the status of plan implementation (to compare the existing situation with the implemented land use plan).

Secondary data: Are both the published and unpublished materials. Secondary data includes Addis Ababa City Administration land use plan (ninth master plan and tenth structural plan), structural plan report documents, 2005-line map,2012-line map,2012 satellite image, high-resolution 2022&2023 satellite images, proclamations, laws, directives, BPR documents, manuals, medium and long year socio-economic plans, regulations, guidelines, policy documents, and official reports.

Land use plan, line maps, satellite image/google earth and GPS data were used mainly to analyze the plan implementation status while, the remaining primary and secondary data are mostly used to assess achievement of plan implementation, the plan implementation, follow-up and controlling mechanisms of Yeka Sub-City plan and development commission branch office and to identify the key challenges of implementing prepared land use plan.

Primary data complemented with a review of secondary sources as triangulation of data sources has a number of advantages that no single data could have. Thus, the rationale behind using a combination of various data sources and methods was just to overcome the limitation of one by another.

3.2.2 Sampling Technique and interview guide

For this research the sampling technique that has been used to identify samples for interviews and questioners is non-probability sampling. Purposive sampling called judgmental or subjective sampling method is a type non-probability sampling technique that applied to select key informants from different institutions. This is a non-probability sampling approach that relies on a researcher's knowledge and understanding to pick the required sample from a population for a study (Etikan & Babatope, 2019).

In qualitative research, purposive sampling is frequently employed to identify and select information-rich cases linked to the topic of interest. Purposive sampling is a qualitative research technique for identifying and selecting information rich situations in order to make the most efficient use of limited resources. Thus, it is important to identifying and selecting

individuals or groups of individuals that are especially knowledgeable about or experienced with a phenomenon being studied (Cresswell & Clark, 2011; Etikan & Babatope, 2018).

Therefore, purposive sampling is applied to collect primary data from experienced and knowledgably experts and officials AAPDC, YSPDCBO and YSUBGDO, mainly aiming to assess achievements of plan implementation, key challenges that hinder the implementation of the prepared green area land use plan, and to discuss plan implementation mechanisms.

The purpose of qualitative study is not to represent the population as a whole; rather, the quality, relevance, and insights derived from such studies are more closely related to the information-denseness of the cases that are chosen and the investigative skills of the investigator than to the sample size (Woolfolk & Shaughnessy, 2004).

In Qualitative purposive sampling technique, it's not mandatory for a statistical representative sample. Any number of samples (sample size) can be selected, which can serve the purpose of the researcher. The decisions must be made based on the expected heterogeneity of areas, population groupings, geographical locations, families, and people. Qualitative purposive sampling allows researchers to deliberately select participants who can offer unique insights experiences or viewpoints related to their research questions providing in-depth and detailed exploration of the research topic (Etikan & Babatope, 2018; EFSA, 2007). Thus, the purpose of applied purposive sampling is to get rich data on the topic under studying by selecting well experienced, knowledgeable experts and officials at city and sub city level.

3.3 Data Analysis and Interpretation

Both qualitative and quantitative tools of data analysis have been employed. So as to analyse green area land use plan implementation status in Yeka Sub-City this study examined green area land use status of the ninth master plan (2002-2012) and tenth structural plan (2013-2022) of the last 20 years from 2002 to 2022. The ninth master plan is more general and AUTO CAD file which has been layered and converted to GIS for analysis purpose while, the revised tenth Structural plan is more detailed and included many components of green area land uses. The researcher started with the ninth master plan is because the City Administration has started using computerized and integrated plans since 2002.

The Normalized Difference Vegetation Index (NDVI) is a widely used method for assessing the status of green area by using satellite imagery data (Egorov et al., 2016). NDVI is a technique in

satellite image processing that uses satellite images to characterize vegetation in a given area and also used in many analyses of urban greenery. However, such techniques neglect the various components urban green area land uses (Anguluri &Narayanan, 2017). Thus, to analyze the status of green area land use plan implementation the City Administration land use plan, line map data, data collected through GPS, satellite image and updated high-resolution satellite/google earth image were analyzed by using GIS. 2005 and 2012 line maps are data that shows open spaces ,green areas,parcels and buildings of the Sub City.The tenth structural plan has prepared based of the reference of 2012 line map.

The ninth master plan green area land use plan implementation status have been assessed by digitizing,layiring and quantifying the 2012 line map and satellite image by using GIS.The status of tenth structural plan green area land use plan implementation have been also analyized by changed land use plan layers to KML,online digitization,change KML digitized implemented green area land use to layer,quantified the result through GIS analysis.

To assess the achievements of plan implementation, plan implementation, follow-up and controlling mechanisms and to identify the key challenges of implementing prepared land use plan both secondary and primary data sources integrated and analysed qualitatively. Therefore, data has be organized and entered in to computer system, processed by using GIS, AutoCAD, Excel and word then analyzed and interpreted quantitatively. The data obtained through questionnaires, key informant interviews and field observation analyzed and discussed qualitatively. Finally; the results of the analysis summarized and presented by using tables and figures.

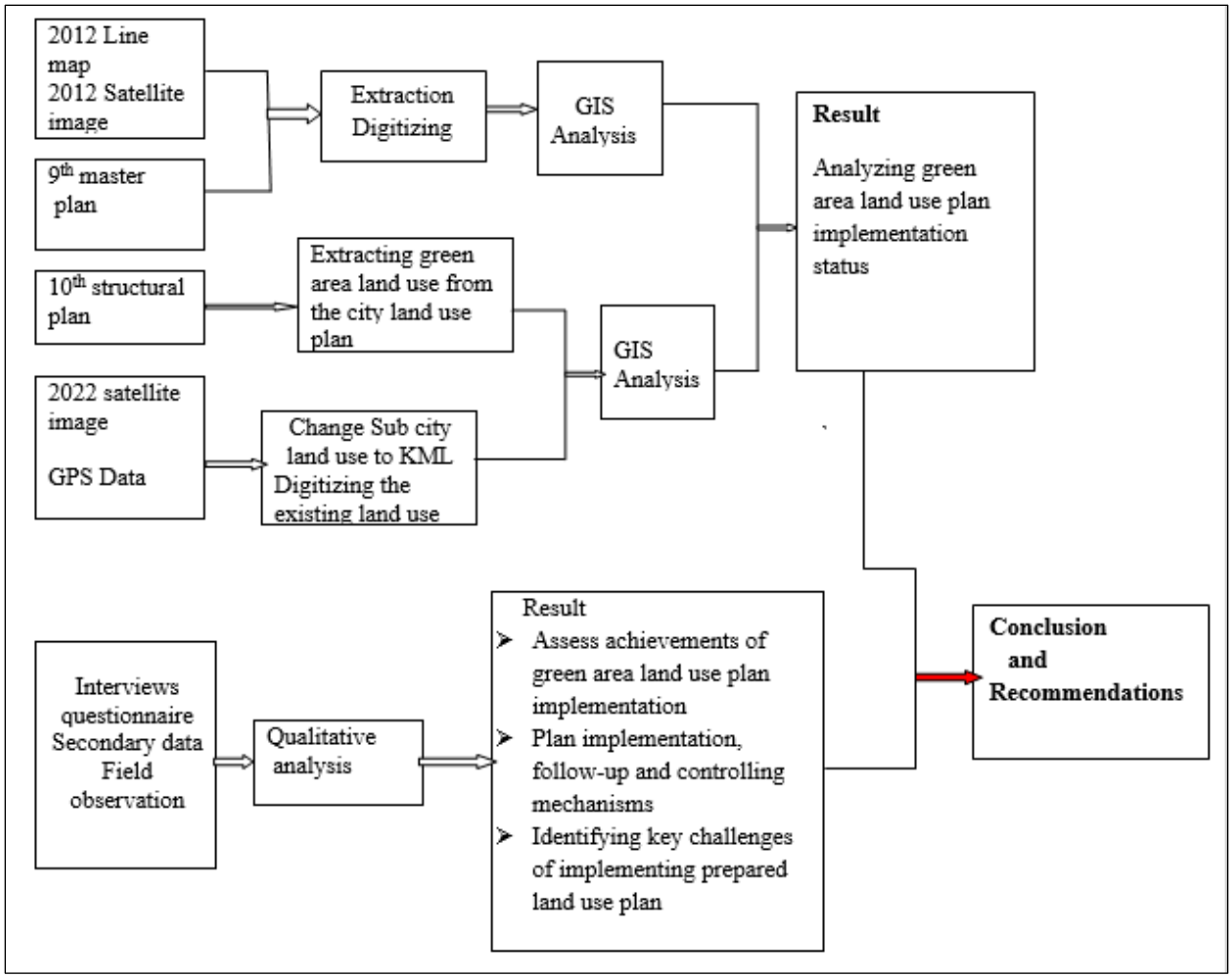


Figure 5: Methodology and work flow of the study

3.4 Ethical consideration

When conducting research, the researcher must take care of the social values, beliefs as well as their culture in order to get the information he/she wants for his research question. The researcher has very conscious while collected data and applying the research ethics from the beginning to the end. Any data collected from different bodies were confidential and serve only to address the research objectives and had not be used for other purpose and also free from any biased.

CHAPTER FOUR

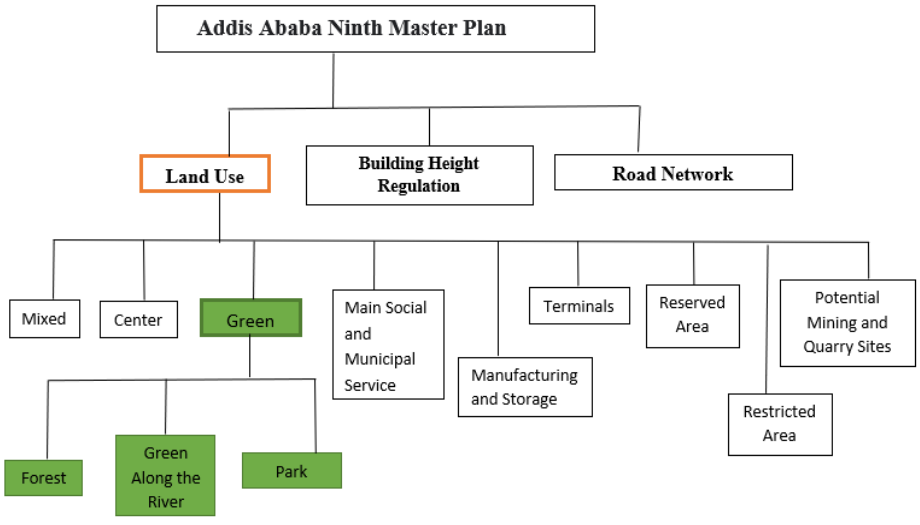
4. Challenges and Achievements of Green Area Land Use Plan Implementation

4.1 Urban Green Area Land Use Plan Implementation Status

4.1.1 Urban Green Area Land Use Plan Implementation Status of the Ninth Master Plan (202-2012)

This plan was prepared and put in to practice in 2002.The City Administration approved the plan by Addis Ababa City Master Plan Preparation, Issuance and Implementation Proclamation No. 17/2004 (Addis Negari Gazeta Proclamation, NO. 17/2004). The master plan was developed to guide the growth and development of the capital city of Ethiopia Addis Ababa. It encompassed various components including a statutory structure plan, an action-oriented strategic development framework and a management reform component.

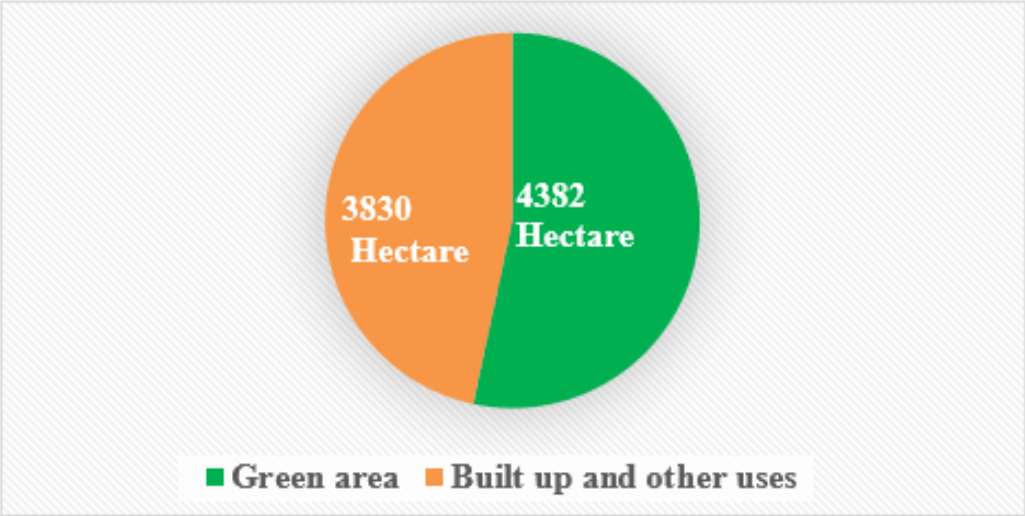
A general framework for the city's spatial growth had been provided by the statutory master plan. Six key urban issues housing, the urban road network and transport, manufacturing industries and large storage facilities, the environment, and inner-city renewal and upgrading had been prioritized in the action-oriented strategic development plans for implementation over a five-year period. Local development plan (LDP) is the key tool to implement the general master plan (AAPC, 2017).



Source: Addis Ababa ninth master plan

Figure 6: General framework of Addis Ababa ninth master plan

As shown in figure 6, the plan incorporated urban green areas as a major component of land use plan. Forest, green area along the river and parks are the components of urban green area land use. As shown on figure 8, the mountainous Parts of Yeka Sub City and areas along the river are proposed for greenery development purpose.



Source: Land use plan of Addis Ababa ninth master plan

Figure 7: Proportion of proposed green area and other land uses

From the total 8212 hectare of land the plan proposed 4382-hectare (53.4%) for Urban greenery and the remaining 3830 hectares (46.6%) for built up and other uses (mixed, center /commercial use, main social and municipal service, manufacturing and storage, terminals, reserved area, restricted areas, and potential mining and quarry site).

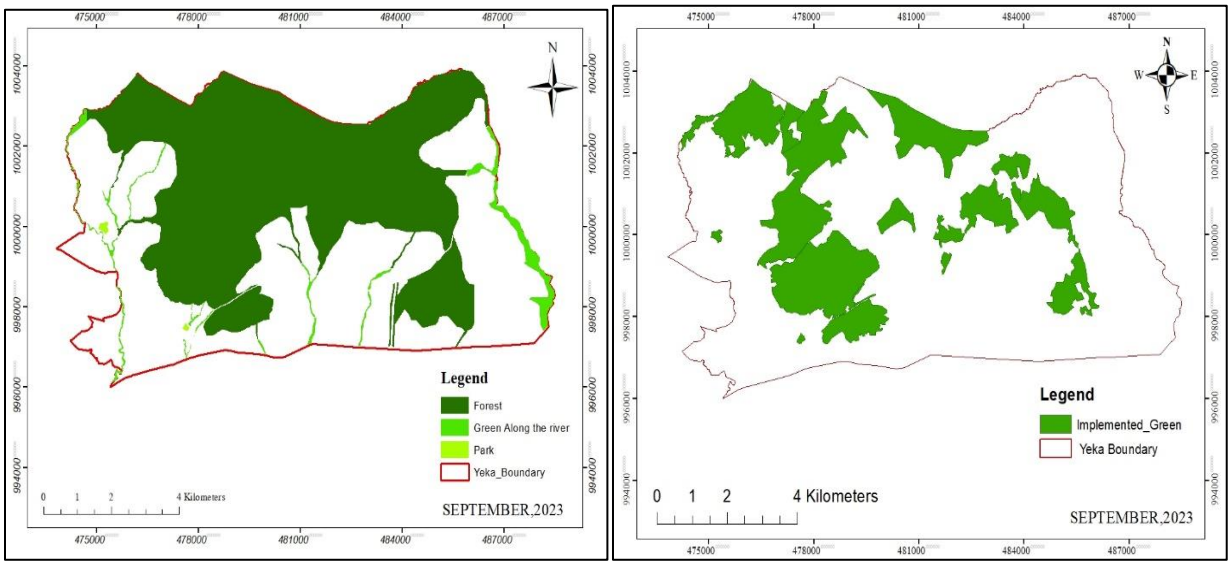
Table 2: Green area land use plan of Yeka Sub City

Land use	Area in hectare	Percentage
Forest	4,093	93.4%
Green along the river	281	6.4%
Park	7.8	0.2%
Total Area of Planned Green area	4,382	100%

Source: Land use plan of Addis Ababa ninth master plan

Table 2 shows that from the proposed major green area components forest accounts, the lion shares 4093 hectare (93.4%), followed by green along the river 281 hectare (6.4%) and park 7.8 hectare (0.2%).

A) Proposed urban green area land use plan B) Implemented green area land use



Source: Land use plan, 2012-line map and 2012 satellite image and extracted by the researcher

Figure 8: Proposed green area land use plan versus implemented green area

Table 3 and figure 8(A&B) revealed that from the planned 4382 hectare of urban green area only 1915.75(43.72%) hectare of land were developed or implemented. The implementation of the ninth master plan green area proposal is below 50%.

Table 3: Proposed green area land use plan versus implemented green area

Land use plan of Yeka Sub City ninth master plan (2002)			Implemented/developed green area (2012)		Percent share from the total land use
Land Use	Area in Hectare	Percent share	Area in Hectare	Percent share	
Urban Green Area	4,382	53.4%	1915.75	43.72%	23.33%
Built up areas and other uses	3,830	46.6%	6,296.25	164.4%	76.67%
Total Area	8,212	100%	8,212		100%

Respondents from Addis Ababa Plan and Development commission noted that even most of the current green areas covered with trees were planted before the preparation of ninth master plan. Thus, the plan was proposed this as green area land use purposefully to preserve and protect greenery from degradation. The study conducted by Mpofu, (2013) and the City Administration line map (2005-2012) shows that the developed urban green areas were highly encroached by the expansion of unplanned illegal settlements.

The findings of Abebe & Megento (2016) also revealed that here has been a decrease in urban gr een spaces in the expansion parts of the city, especially urban forests, and an increase in built-up land use developmental activities.

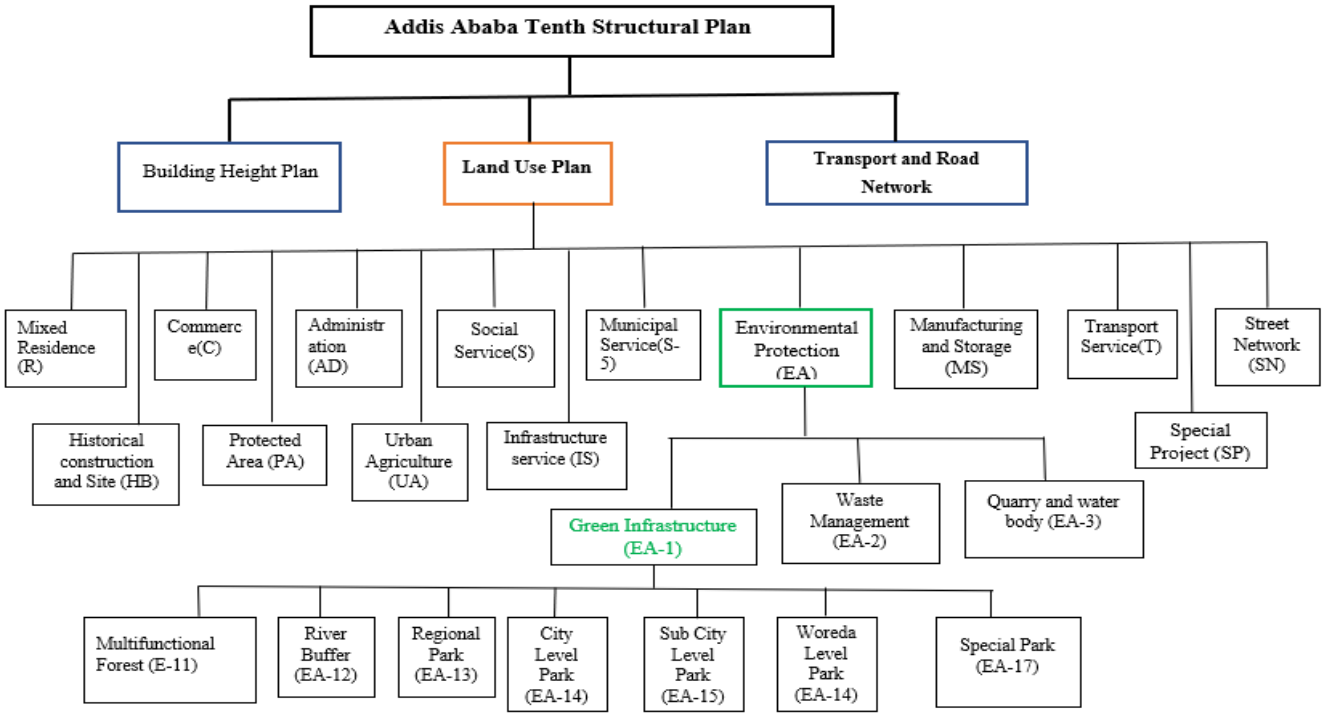
Table 3 revealed that the plan proposed 46.6% (3,830 hectare) of the Sub City land for built up areas and other urban functions but, the result shows that these land use raised to 76.67% (6,296.25 hectare) in 2012. This illustrated that, in the plan implementation period built up areas and other developmental activities were increased while green areas were declined. Azagew & Worku (2021) conducted a study in Addis Ababa point out that the majority of urban green area plans prepared at various periods have not been successful or fully implemented.

The study conducted by Fetene & Worku (2013), supported the above findings. They found the population of Addis Abba city is increasing quickly. As a result of the city's rapid population growth, in the expansion part of the city, there is an increase in built-up areas, an increase in housing, the development of infrastructure, and reorganization of industrial zones. Forests and other urban green area components of Addis Ababa city are disrupting. The plan was aimed to reach the greenery coverage of the Sub City 53.4% (4832 hectare) by the year 2012 but, it was only 23.3% (1915.75 hectare) at the end of planning period. Therefore, we can conclude that the prepared green area land use plan implementation status was below 50% and even the developed green areas were encroached.

4.1.2 Implementation Status of the Tenth Green Area Land Use Plan

According to AAPC (2017), report the City Administration started the revision of the ninth master plan in 2012 by establishing Addis Ababa City Planning Project Office. The City Administration approved the plan by Addis Ababa Structural Plan Proclamation No. 52/2017 (Addis Negari Gazeta Proclamation, NO. 52/2017). The ninth master plan has been in operation

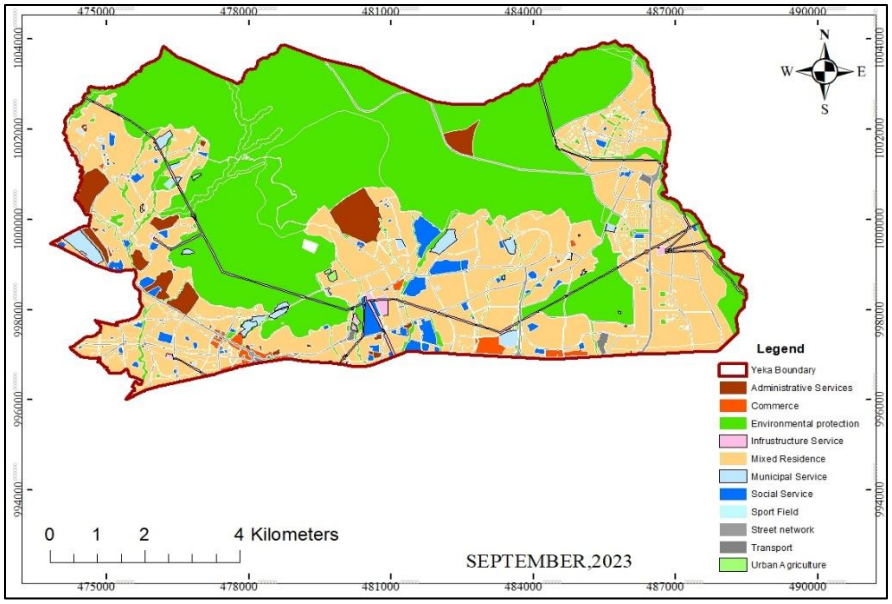
for over a year after the completion of the planning period. The tenth structural plan has been put into practice before approval since the end of 2014. The revised tenth structural plan is more detailed, flexible and has better implementation strategy than the ninth master plan. The plan is composed of 14 major land uses and 75 detailed land uses (AAPC, 2017).



Source: Addis Ababa structural plan

Figure 9: General framework of Addis Ababa tenth structural plan

According to Addis Ababa Plan Commission (2017), report and figure 9 environmental protection land use is among the broader 14 main land use categories which comprised 3 sub land use plans. As clearly stated in land use document and indicated in figure 9 urban green area/green infrastructure land use consists of 7 detailed land uses.



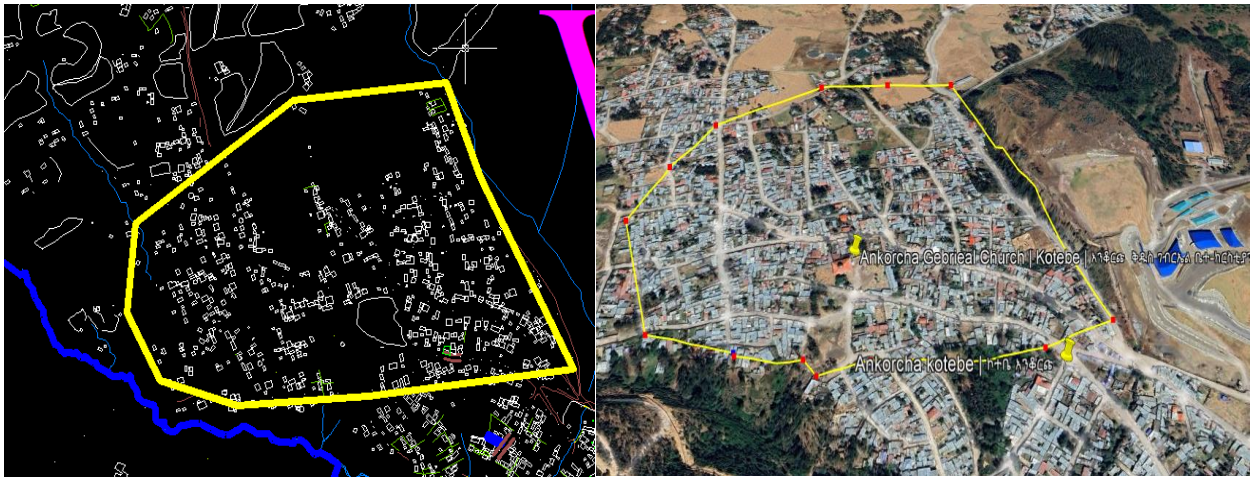
Source: Addis Ababa tenth structural plan land use

Figure 10: Proposed land use plan of Yeka Sub City

Figure 10 shows that the tenth structural land use plan proposed land for different purposes like, administration, mixed residence, commerce, social service, etc. The upper and periphery parts of the Sub City have planned for environmental protection uses mainly for urban green area. As revealed from figure 10 and 12 multifunctional forests ((EA-11), river buffer (EA-12), city level park (EA-14), Sub City level park (EA-15), Woreda level park (EA-16), and special park (EA-17) are urban green area land use in Yeka Sub City incorporated in the study that deliver multiple benefits for urban environment. Table 3 and figure 12 illustrated that, green area land use plan of the tenth structural plan is less than by 361.58 hectare compared to the ninth master plan green area land use plan. This is as a result of poor implementation of the ninth master plan and the expansion of settlements which was partly legalized by the government.

According to Addis Ababa City Administration Parcellation directive, (2014) illegally expanded settlements/houses that can be seen on 2005-line map, were purposely legalized by the government in 2014.

A)2005 line map B) 2023 satellite image



Sources: 2005-line map and 2022 satellite image

Figure 11: Woreda 10 Ankorcha area occupied by settlements

The 2005-line map of the City Administration and satellite image of 2023 clearly revealed that, Ankorcha areas are occupied by settlements. As shown from figure11 (A) white color polygons inside the yellow color are buildings and the remaining space are open areas. But figure 11(B) shows that the remaining open spaces are occupied by settlements. As a result of settlement expansion green area land use plan has changed to mixed residence use specifically for relocation site in the tenth structural plan.

Key informant interview respondents from Addis Ababa Plan and Development Commission noted that green area land uses have changed to mixed residence in the revised structural plan due to, poor implementation of the ninth master plan. Unplanned and illegal settlements are expanded in urban periphery of Addis Ababa in general and Yeka Sub City in particular. For instance, Woreda 10 Ankorcha area is sloppy and occupied by settlements. Buildings and parcels are visible in the City Administration line map of 2005 and 2023 satellite image. As a result, the City Administration has approved and legalized 2005-line map.

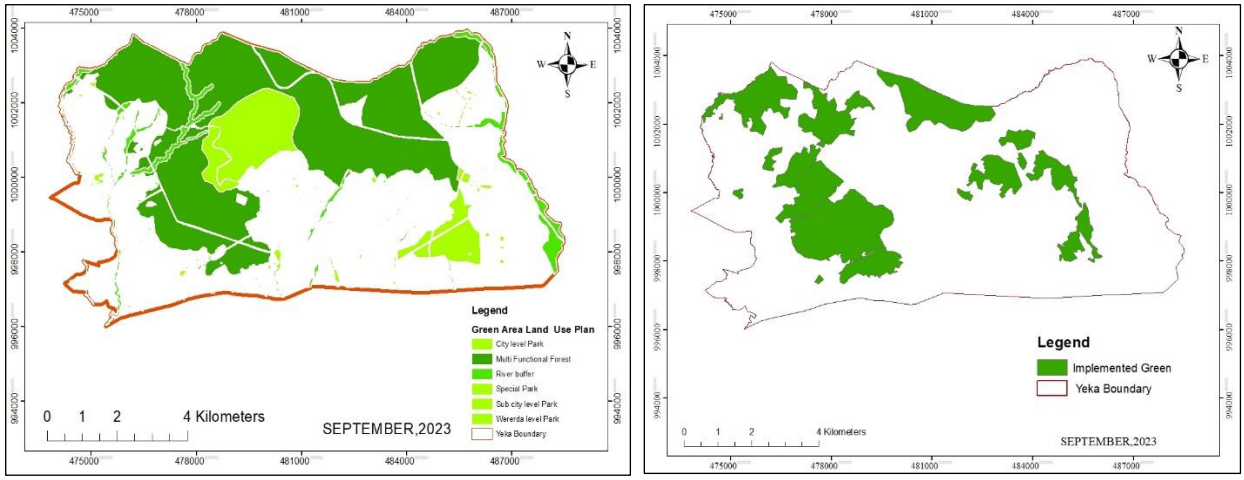
Table 4: Proposed green area land use plan

Types of planned green area	Land use code	Area in hectare
Sub City level park	EA-15	16.45
Woreda level park	EA-16	73.07
City level park	EA-14	201.04
River buffer	EA-12	373.27
Special park	EA-17	481.73
Multi-functional forest	EA-11	2874.85
Total area		4020.42

Source: Addis Ababa tenth structural plan land use

From the total of 8212 hectare of land in the Sub City, 4020.42 hectares are proposed for greenery development. The plan proposed the mountainous northern parts of the Sub City for green area especially, for multifunctional forest. Multifunctional forest is the dominant green area land use in the sub city which accounts 71.5% (2874.85 hectare), followed by special park 12% (481.73 hectare), river buffer 9.3% (373.37 hectare), city level park 5% (201.1 hectare), Woreda level park 1.8% and Sub City level park 0.4% (16.45 hectare)(Figure 11).

A) Proposed urban green area land use plan B) Implemented green area land use



Source: Ground survey and 2022 satellite image and extracted by the researcher

Figure 12: Proposed green area land use plan versus implemented green area

Table 5: Proposed green area land use plan versus implemented green

Green area land use of the tenth structural plan land use			Implemented green Until August 2022		Percent share from the total land use
Land Use	Area Hectare	Percent share	Area in Hectare	Percent share	
urban green area	4,020.42	49%	1765.83	43.9%	21.5%
built up areas and other uses	4,191.58	51%	6,446.17	153.78	78.5%
total area	8,212	100	8,212		100%

Source: Extracted from Addis Ababa tenth structural plan land use, ground survey and 2022 satellite image

Table 5 and figure 12(A&B) revealed that from the proposed 4020.42 hectare of green area land use plan only 1765.83 hectare were developed. As discussed in the implementation of the ninth master plan green area land use the developed green area had been 1915.75 hectare. The result revealed that, instead of increasing the coverage of greenery by managing and implementing the prepared green area land use plan, it reduced from 1915.75 hectare to 1765.83 hectare. That is, the developed green area coverage of the Sub City is currently 149.92 hectare less than it was in 2012.The result clearly indicated that urban green areas are degrading and other developmental activities are expanding in the periphery and river sides of Yeka Sub City. The study conducted by Azagew & Worku (2020), revealed that the city of Addis Ababa urban green areas had been rapidly reduced, while the city's built-up area had been growing concurrently. The current plan has been in implementation for the past 8 years.

As revealed from table 5 and 13, on the contrary of the proposed land use plan built up areas and other developmental activities are increasing rapidly beyond the proposal. The plan proposed 4191.58 hectare (51%) of the Sub City land for built up and other developmental activities by the year 2027 but, now it raised to 6446.17 hectare (78.5%). This study is consistent with the study undertaken in Abuja city-region and Nigeria city where, the implementation status of green area land use plan is poor and inconsistence (Monteiro et al., 2020). On the contrary the study conducted on 20 cities of Europe by Davies et al., (2015), point out that green area land use plan implementation status is increased especially, in Barcelona and Bristol. As indicated in review of

related literature the development and management of urban green area plan status is better developed and implemented in developed countries; while, its management and implementation are poor and not based on the green area planning principles in developing countries. The data collected from YSPDCBO revealed that no river side (river buffer) plan are implemented both in the ninth and tenth plans. On the contrary river sides are being invaded by illegal unplanned settlements.

The data obtained from AAPDC shows that the current implemented green areas mainly multifunctional forests lack proper infrastructure facilities, green amenities, and not accessibility to urban dwellers. To make green areas more accessible and enjoyable, it's crucial to invest in infrastructure and amenities that meet the needs of communities and visitors. This could include adding more seating, bike and walking paths, picnic areas, playgrounds, and water fountains. Improving the overall appearance of green areas, such as by planting more trees and flowers, can also make them more appealing to the eye. Thus, the current revised green area land use plan will be outdated in 2027. But the implementation status is under critical condition. What planned was not implemented in the last 8 years. Planning is the horizon of the future if, properly implemented and managed based on the planning principles.

4.2 Achievements of Green area land use plan implementation

The achievements of green area land use plan implementation have assessed from the viewpoints of the plan itself, institutional and legal framework, and current greenery development perspectives. Before the revision of the structural plan the existing land use of Addis Ababa was examined based on the data collected on July 2012. The existing situations, which were mostly unforeseen by the ninth master plan (such as the increased rate of change and shifting conditions), are also considered (AAPC, 2017)

4.2.1 The Land use plan itself

Both the ninth and tenth plan incorporated green areas as major components of land use plan. They also developed strategies and a plan envisages mandatory and optional regulations for permitted and prohibited land uses in urban green area and other land uses. As indicated in table 6 mandatory/basic regulations part the maximum allowable physical structure footprint is 5% of the total area, the remaining plot (95%) area should be allowed only for greenery development. All land uses except access streets, inspection posts, soil conservation, flood control structures

and other light structures are prohibited in green area land use. Only greenery development and greenery infrastructures facilities are allowed in the proposed green area land uses while, other built up and developmental activities are not allowed (AAPC, 2017). According to the structural plan of land use plan and table 6, the plan also clearly indicated the type of greenery development that will be implemented based the slope/topography. For instance, in multifunctional forest land use agroforestry plant should be planted on a slope of 15%-30% and conservation forestry >30% slope.

Table 6: Prohibited and mandatory land use plan regulation

<table>
<tr><th>Types of land use</th><th>Prohibited use</th><th>Basic/mandatory regulations</th></tr>
<tr><td>Green area (Green infrastructure)</td><td>All land uses except access street, inspection posts, soil conservation structures, walk ways, bike ways, conservation forestry and eco-tourism functions with the exception of infrastructure construction</td><td>Argo forestry on the slope of 15-30%
Conservation forestry on the slope of >30%
The maximum allowable physical structure foot print is 5% of the total area
Only eco-friendly building materials to be used</td></tr>
<tr><td>Mixed residence(R)</td><td></td><td rowspan="5">One tree (2*2) in every 100m² plot area</td></tr>
<tr><td>Commerce (C)</td><td></td></tr>
<tr><td>Administrative service (AD)</td><td></td></tr>
<tr><td>Social service (S)</td><td></td></tr>
<tr><td>Municipal service(S-5)</td><td></td></tr>
<tr><td>Manufacturing and storage (MS)</td><td></td><td>A maximum of 20% of total area could be used for residences, office and business, green area and playgrounds for direct use by the designated function</td></tr>
</table>

Source: Addis Ababa Structure plan land use, 2017

In addition to those planned for green area development in the structural plan, in mixed residence, commerce, administration, social service, municipal service, and manufacturing and storage land uses it is mandatory to incorporate greenery in each single parcel. As indicated in

table 6 the structural plan of the City Administration land use plan set mandatory/basic regulations in mixed residence land uses that incorporates one tree(2meter*2meter) in every 100m2 plot of land. Overall the mandatory incorporation of trees in mixed residence land uses is a proactive measure taken by the City Administration to enhance the environmental aesthetic and social aspects of urban living. By integrating nature into the urban landscape, the city aims to create a healthier more sustainable and livable city for current and future generations.

Plan implementation follow-up and controlling team leaders of AAPDC and YSPDCBO noted that the Construction Permit and Control Offices at Woreda, Sub City and City level must oblige the plot owners to include green areas as per the plan when buildings are approved. The plan implementation follow-up and controlling teams also crosscheck the approved buildings permit with the structural plan, LDP and structure plan spatial framework implementation guidelines and standards. Then the team must confirm that the approved building permit includes green area according to the plan. If it is not permitted according to the plan, it will be return to the institution for correction.

Table 6 revealed that the integration of 4m2 of green areas in every 100m2 plot of land is a mandatory requirement for municipal services, social services and administration services in the proposed major land use plan. This regulation aims to prioritize the inclusion of green area within other land uses to enhance the environmental quality health and well-being of the community.

The data obtained from key informant intervies revealed that green area plan partially reduce the expansion of unplanned settlment and preserving the distruction of multifunctional forests,parks,river sides and open spaces.Both the data obtained from AAPDC and YSPDCBO repondents noted that:

> *"…Although there is a gap in the implementation of the plan, it has contributed to prevent the encroachment of open spaces and the spread of additional constructions due to the fact that they were planned as green areas in the structural plan.Land Development and Administration Office of Yeka Sub-city is preparing the certificate of ownership of the areas planned for green area land use and giving it to the Environmental Protection Office, and Urban Beautification and Green Development*

Office.The plan itself enforcing the office to prepare title deeds and deliver to the concerned bodies."

Thus, the plan itself played a great role in the current developed, managed and protected green areas at different scale. In order to develop, manage and protect green areas, the Office of Urban Beautification and Green Development will receive a certificate of holding title deeds of green areas from the Land Development and Administration Office that prepared according to the land use plan.

4.2.2 Current greenery development

In addition to those areas planned for green areas shade trees should be planted on every pedestri an walkway and road medians and street corridors should be planted with ornamental and shade providing plants. By prioritizing the planting of shade trees and ornamental plants on pedestrian walkways, road medians and street corridors we can create a more sustainable aesthetically pleasing and environmentally friendly urban environment for everyone to enjoy (AAPC, 2017).

Field observation and key informant respondent data revealed that cutting down areas that were previously covered with eculaptus trees and replacing them with native trees is being done on a large scale.Road medians, street sides, plazas and roundabouts are partly covered with trees and grasses. For instance, the road medians from Kebena to Megenagna has planted with trees and grasses. The manager of Yeka sub-city's Urban Beautification and Green Development Office remarked that:

"...we are developing and managing green areas in cooperation with other government offices, religious institutions, non-governmental institutions, investors and local residents. For instance, plazas, road medians, street sides and roundabouts are developed by investors and governments with the help and technical support of Sub City Urban Beautification and Green Development Office. Additionally, during the Ethiopian summer season, areas that were covered with eucalyptus trees were cleared, and replacing by indigenous trees with the collaboration of local communities and governmental institutions. The indigenous tree species that replace the eucalyptus are Koso tree, Wanza, Besana, Olive, Blackwood, Acacia, Cedar, Palm etc."

Source: Field observation, July 18, 2022

Figure 13: Tree planting in Ethiopian summer season in Yeka Sub City Woreda 9 area

Figure 13 revealed that trees have been planted in campaign during Ethiopian rainy season on July 2022 in Woreda 9 mountainous areas. The area where the tree is being planting above was planned for green area development, especially for multi-functional forest. Addis Ababa City Communication Bureau Official page post supported the above findings and they posted that in year 2022 rainy season the City Administration has plan to plant 4 million trees in one day campaign.

Senior officers from Yeka Sub City Urban Beautification and Green Development Office responded that the green legacy initiative campaign program that is currently underway has created a favorable condition for the development urban green areas in accordance with the plan. For instance, during Ethiopian rainy season in the months of June and July, by coordinating with other institutions and stakeholders, it was possible to plant many species of trees in mountainous and desolate areas of the Sub City. All government offices are obliged to plant trees during the rainy Ethiopian months as per the directions given by the city. She also noted that, they are working together with Environmental Protection Office, Waste Management Office, Plan and Development Commission and non-governmental organizations so as to develop, maintain and protect the green areas effectively although our coordination is below the expectation.

Based on data obtained from the key informant questionnaires and field observation, the developed green area at different scale stimulates social interactions, providing aesthetic pleasures, job creation to some communities, reduce pollutions, protecting the environment from degradation, reduce flood hazard and generating income. For instance, the study found that Ferensay and Yeka Park are created job opportunities and generating income for some urban

residents through outsourcing and contracting small buildings and open spaces to enterprises. These parks are not only served as a recreational space but also offering service like showering, restaurants, and wedding ceremonies and photographing. By providing job opportunities stimulating local businesses and fostering community engagement the park has positively impacted the lives of the people in the surrounding area. The study conducted by Mpofu (2013), supported the above findings and found that the developed and managed parks of Addis Ababa had been created job and generate some revenue. As described in chapter two urban green area provides many services to the community. Recreational and aesthetic Functions, environmental functions, social and economic functions the main functions provided by urban green areas (Haq, 2011; Mpofu, 2013; Zhou & Rana, 2012).

4.2.3 Institutional and legal frameworks

An appropriate legal framework and well-functioning institutional arrangements are an essential requirement for an effective urban green area development, management and protection system. This involves the establishment of dedicated departments or agencies responsible for overseeing green area development and management as well as partnerships with relevant stakeholders such as local governments' community organizations and non-governmental organizations. The establishment of institutions focused on urban green areas is essential for effective governance, management and development of these spaces. They provide the necessary expertise resources and oversight required to ensure that urban green areas are protected sustained and enhanced for the benefit of both present and future generations (Mpofu, 2013; Girma et al., 2019).

Currently there are 33 governmental institutions at Sub City level and 45 governmental institutions at city level. All institutions are stakeholders and crucial for the preparation and implementation of green area land use plan. But, Land Development and Administration Office, Construction Permit and Controlling Office, Urban Beautification and Green Development Office, Waste Management Office and Environmental Protection Office are the key stakeholder who are highly interacting and working with Plan and Development Commission for the implementation follow up and controlling of the land use plan with full responsibilities.

A proclamation to provide for the establishment of the executive organs of the Addis Ababa City Government stated that Urban Beautification and Green Development Office at city and Sub

City level are responsible for development and management of green areas. The Bureau have a responsibility and power to develop, manage, preserve and control urban green areas in accordance with the structural plan, local development plan and land scape designs (Addis Negari Gazeta Proclamation, NO. 74/2021).

Table 7: Responsibilities and power of key institutions

Name of institution	Responsibilities and powers institutions	Responsibilities of Plan and Development Commission
Land Development and Management Office	Regularizing plots, preparing land for different purposes and, preparing and disseminating title deeds according to the plan. Notifying prepared plot of land and title deeds to plan and development commission.	Preparing plan, disseminating plan, providing plan clarification, following and controlling the implementation of the plan. Giving feedbacks for plan contradictions and take corrective measure.
Construction Permit and Controlling Office	Permitting constructions according to the plan, Notifying permitted constructions to plan and development commission. Follow up and controlling permitted constructions and take correction measures those who violated the plan.	Preparing plan, disseminating plan, providing plan clarification, following and controlling the implementation of the plan. Giving feedbacks for plan contradictions and take corrective measure.
Urban Beautification and Green Development Office	Develop, manage, preserve and control urban green areas according to the plan.	Preparing plan, disseminating plan, providing plan clarification, following and controlling the implementation of the plan.

Name of institution	Responsibilities and powers institutions	Responsibilities of Plan and Development Commission
Environmental protection office	Improving the development and protection of the ecosystem. Providing license and renewal services for the development of watershed and green areas. Coping with the impact of climate change by implementing a green economy strategy that is resistant to climate change and expanding alternative energy technology.	Preparing plan, Disseminating plan, providing plan clarification, following and controlling the implementation and of the plan.

Sources: Addis Negari Gazeta Proclamation, NO. 74/2021, AAPC (2017) and BPR of institutions

Good institutional arrangements with clear responsibilities are vital for the effective development of urban green area. Table 7 shows that Plan and Development Commission and other stakeholder institutions responsibilities are clearly stated. Institutions have the responsibility to develop, protect and preserve urban green areas according to the prepared land use plan. Addis Ababa Structural Plan Proclamation No. 52/2017 also evidently stated that the above institutions, stakeholders and individuals must preserve and develop green areas in accordance with the structural plan, local development plan, structure plan spatial framework implementation guidelines and standards, plan proclamations, laws and directives.

Therefore, the availability of many institutions, good institutional arrangements, different proclamations ratified by Addis Ababa city council (Structural plan Proclamation No. 52/2017, proclamation to provide for the establishment of the executive organs of the Addis Ababa City Government 74/2021), Addis Ababa City Government Plan Commission establishment proclamation No.48/2016, FDRE constitution , environmental policy, manuals and directives have created its own positive impact for the development ,management and protection of urban green areas in accordance with the plan.

In order to develop, manage and protect urban green area according to the land use plan Urban Beautification and Green Development Office clearly set long and short term goals, mission and

visions in line with its power and duties. Plan and Development Commission also set medium and long-term mission, Vision, green area plan implementation standards and norms, medium- and long-term implementation strategies and 49% the Sub City land are planned for greenery development.

4.3 Plan implementation, follow-up and controlling mechanisms

4.3.1 Plan implementation, follow-up and controlling mechanisms of the ninth master plan

The ninth master plan was implemented by Addis Ababa plan institute at city level and urban planning office at Sub City level. Organizational structure is crucial for the effective preparation and implementation of urban green area land use plan. By establishing good organizational structure urban green area land use planning can be carried out more efficiently with improved collaboration stakeholder engagement and decision-making. This in turn helps create sustainable and well-designed green spaces that enhance the quality of life in urban areas (Mpofu, 2013; Girma et al., 2019).

At City level urban plan institute was under land development and management office and led by a director. There were three teams under plan institute. These are plan preparation, plan implementation and documentation team. Whereas, at Sub City level Yeka Sub City Planning Office was under Yeka Sub City Land Development and Management Office. Plan implementation team under Sub City planning office had been followed up and monitored the implementation of LDP and master plan (appendix II).

Key informant respondents from the former Addis Ababa Plan Institute and the current Plan and Development commission noted that:

> *"…Plan implementation team at Sub City level were checked whether or not building permits, prepared land for developmental activity and title deeds were permitted and done in accordance with the plan, standards, and norms. If buildings and title deeds were not prepared and permitted according to the plan, norms and standards they would return to the concerned institutions for correction measure. The team was tasked and worked with ensuring that the approved construction was carried out in accordance with plans, regulations and standards. Buildings not constructed as per the approved plan will be penalized or demolished as per the law."*

Former Addis Ababa Plan Institute and current Addis Ababa Plan and Development Commission senior experts informed that if illegal constructions are built in green areas and open spaces, a joint task force will be set up and demolished. Experts from YSPDCBO also noted that to develop and protect green areas from encroachment they were also worked with Environmental Protection Office, Land Banking and Transfer Office, Construction Permit and Controlling Office, Tenure Administration and Transition Office, and Urban Development and Renewal Office. But as a result of poor implementation strategy, monitoring and evaluation the implementation of green area plan was not successful.

At city level the team had been follow up, control and audit the developmental activities permitted at city level. Former team leader of plan implementation team at city level responded as follows:

> *"...we provide support and monitoring activities for sub-cities and give constructive feedback for gaps related to green area land use plan implementation. we had also followed up and controlled the implementation of large city level projects that had been prepared and permitted at city level. As is the case with sub-cities, if there are any incorrect implementation, they will be return for corrections. we will follow up to make corrections based on the feedback. There were two ways of plan implementation follow up and controlling mechanisms. The first one was office level follow up and controlling mechanism while, the second was by collect data through field observation. We faced check and balance problem due to it was under Land Development and Management Office."*

4.3.2 Plan implementation, follow-up and controlling mechanisms of the tenth structural plan

The organizational structure of Addis Ababa Plan and Development Commission is quite different from Addis Ababa plan institute. Addis Ababa City Government Plan Commission was established by Proclamation No.48/2016 on December 10,2016. The name Plan and Development Commission has been re-established by amendment proclamation No. 64/2018. As stated in the establishment proclamation the commission was organized in a better mandate and man power structure than the former plan institute (appendix III).

AAPDC and YSPDCBO five year strategic and annual plan revealed that plan implementation follow up and controlling team mainly focus on three objectives. These are follow up and controlling the implementation of plans provided by institutions, improving the proper follow up and controlling mechanism of spatial plan implementation through field observation and Conducting audit work on the correct submission of permitted constructions, title deeds and prepared parcellations for various developmental activities to the Plan and Development Commission. Both primary and secondary data were used to check the implementation of green area land use plan.

At city level Environmental Condition Plan Implementation Follow Up and Controlling Team has 1 team leader and 4 experts. The team has organized to follow up and controlling the implementation of city level park, Special park, national park and multifunctional forests. While, at Sub City level the team has comprised of 1 team leader and 7 experts including 2 environmental experts. Woreda level Park, Sub City level park, and river buffer are following up and controlling by Sub City plan implementation team.

The data obtained from different experts and the BPR documents of AAPDC revealed that the institution has comprised with human resource having different field of studies. Urban planning, architecture, landscape planning, environmental planning, engineering, sociology, geography and environmental studies, demography, economics, law, geology, environmental science etc... are required disciplines aimed to successfully implement the prepared land use plan.

As discussed in the review literature interdisciplinary and trans disciplinary is the main principles of green area land use plan and implementation. Green area plan implementation integrates knowledge and demands from different disciplines. Proper urban green area plan

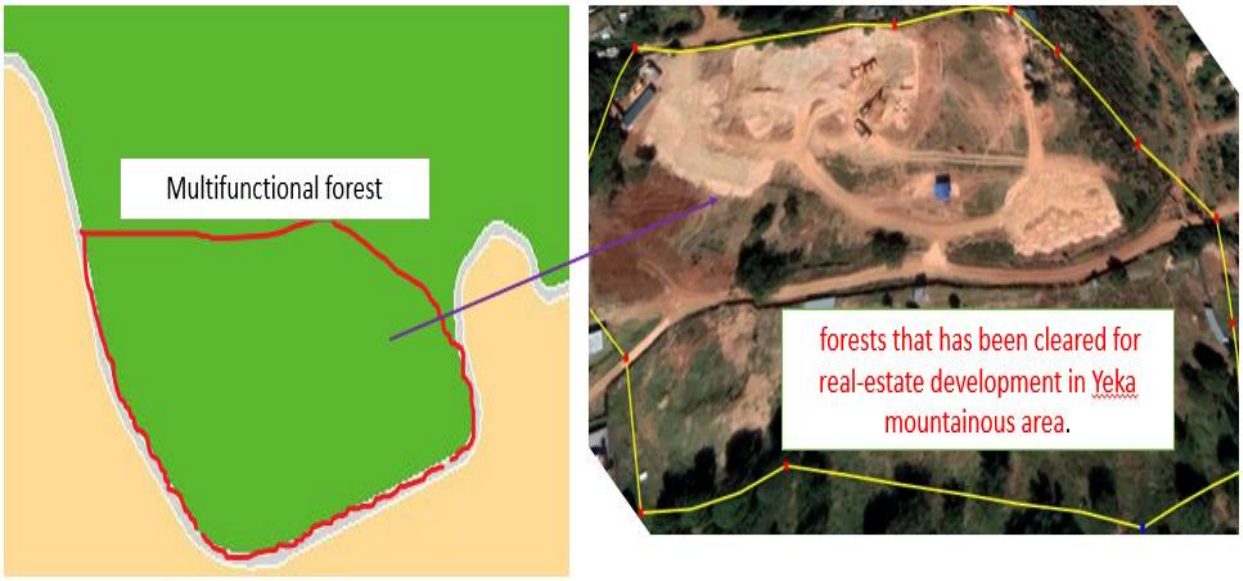
preparation and implementation requires different disciplines from different field of studies to make urban areas environmentally sound (Davis et al., 2015; Pauleit et al. 2017).

Plan implementations follow up and controlling mechanisms are similar at city and Sub City level even though, organizational structure is different. The sentiments of the key informant respondents of AAPDC and YSPDCBO on the implementation mechanisms of the plan were consistent and can be summed up and presented as follows:

> *"…term of reference (TOR) preparation, checklist preparation, data collection, interpret the collected data, preparing report, presenting the report to the concerned stakeholders, disseminate the report to the concerned body to correct the incorrect ones, follow up the correction according to the feedback(report), controlling measure (take correction measure if not corrected according to the feedback). Data interpretation is mainly focus on analysis and triangulates the collected data with structural plan, local development plans, land scape designs and structure plan spatial framework implementation guidelines and standards. Identification of the responsible institution for plan violation is parts of the report. Present the report to the concerned stakeholder and responsible institutions and incorporating comments, then disseminate the report to the concerned body to correct the incorrect ones and follow up whether they are correcting according to the feedback. If not corrected based on the feedback take correction measures."*

All respondents from AAPDC and YSPDCBO institutions responded that during the follow up and controlling process they faced plan violation. For instance, in Woreda 9 nearly 4 hectare of developed multifunctional forest (EA-11) had been deforested for real-estate development purpose (figure 14). The site was planned for green area both in the ninth and tenth land use plan and preserved until 2021.But the land use had been violated and the existing forest had also cleared in 2021.

Senior spatial planner from AAPDC noted that forests were cleared as a result of a single letter written by higher officials at city level. The theme of the letter was that the structural plan land use multifunctional forest has been changed to low density mixed residence, and notified to institutions to provide services accordingly.



Source: Land use plan of the tenth structural plan Source: April 10, 2023 satellite image

Figure 14: Plan violation in woreda 9 mountainous area around Abune Aregawi Church

Another plan violation finding reported by Yeka Sub City plan implementation follow up and controlling team is found in Woreda 13 in front of CMC square 1.38 hectare of green area land use illegally occupied by the ongoing construction of high rising real-estate. Figure 15 and data obtained from field observation revealed that woreda level park (EA-16) land use has occupied by the ongoing high rising real-estate buildings. The team has notifying the violation of land use plan to the concerned body to take correction measure, and the case is investigating by senior experts and higher officials at city level. But correction measures have not been taken rather than the real-estate has negotiating with higher officials to change the land from green to mixed.

Sources: Filed observation July, 2023, land use plan of the tenth structural and satellite image of 2023

Figure 15: Green area plan violation in woreda 13 in front of CMC square

Thus, the opinions of all respondents are almost similar and they agreed that plan implementation follow up and controlling team has working for the proper implementation of green area land use plan but, due to limitation in plan implementation follow up and controlling regulations, manuals and directives make the controlling mechanism difficult and poor. Appropriate legal frameworks are crucial for the development and management of green areas according to the prepared plan. It is clear that an adequate legal framework is required in order to implement urban green area land use plan effectively (Girma et al., 2019).

4.4 Key Challenges of Implementing Prepared Green Area Land Use Plan

As discussed in 4.1.1 and 4.1.2 the implementation status of both the ninth and tenth green area land use plan are poor. While institutions were working to develop, manage and protect green area effectively according to the plan they encountered a number of challenges that make the

implementation status ineffective. Thus, the following are the key challenges that hinder the implementation of the ninth and tenth green area land use plan in Yeka Sub City:

4.4.1 Political interference and lack of political commitment

Urban planning by itself is politics and plays the main role in the implementation of urban green area land use plan.Currently, urban planning can be characterized as a technical and political process that addresses issues such as human welfare, land use regulation, urban environment design, and the preservation and improvement of natural processes.Political decisions are the core for the well-functioning and development of urban greenery (Monteiro et al., 2020 ; Enoguanbhor et al.,2021; Gelan&Girma,2021).

The implementation of urban green area requires good political commitment and leadership that shape and coordinate institutions to develop, manage and protect effectively. The implementation of urban green area land use plan lacks political commitment in Addis Ababa in general and in Yeka Sub City in particular. Most politicians are not committed to implement urban green area land use plan as a result of corruption, limited experience in the field and little knowledge about green area land use plan and implementation. Data obtained from AAPDC key informants interview summarized as follows:

> *"...although most of the institutions at city and sub-city level are led by the political cabinet, they pay little attention to urban green area land use plan implementation. On the contrary as a result of shortage of land for other developmental purpose most politicians are enforcing the Mayor and city cabinet to change green area land use and open spaces to mixed residence. Higher officials from the federal to city level pay high attention to grey developments and interfere on the mandate of Plan and Development Commission and enforce to change land uses from green to mixed residence. Moderately Land Development and Administration Office prepares land for a variety of uses in accordance with the top management's orders rather than the plan. A professional/team leader/director who resist the land use change has considered as a barrier of development by politicians and leaders."*

The study conducted by Mensah, (2014), on urban green spaces in Africa, found that lack of political commitment and leadership are the factor that hinders the development and management of urban green areas in African Urban areas. The development and management of

urban green area in the emerging towns of Oromia Special Zone surrounding Addis Ababa are influenced by higher officials at both the federal and regional levels (Girma et al., 2019). The study undertaken by Tomas (2013), in Addis Ababa identified that lack of political will to put the planned parks into action as the primary cause of the undersupply of urban parks in the city.

Key respondents from YSUBGDO also responded that most Sub City leaders considered green area development and management as a one-time campaign work. That is planting trees in a campaign during Ethiopian summer season rather than integrating greenery agendas on their annual plan. Developed and newly planted green areas have been cleared by the order of higher official without notifying issues to Environmental Protection Office, and Urban Beautification and Green Development office. Sometimes politicians and leaders are enforcing us to develop and manage urban green areas in accordance with the directions from higher level leaders, rather than the plan.

The above findings are aligned with the study conducted in African urban areas. Lack of political commitment and political intervention are obvious obstacle and the key challenges faced in urban green area planning and implementation in Africa (Enoguanbhor et al.,2021; Gelan&Girma,2021). On the contrary as discussed in the review literature the development and management of urban green area in developed countries are effective due to, good political commitment, positive interference of political leaders and the applicability of bottom up urban planning approach.

4.4.2 Poor institutional capacity and coordination

These challenges have assessed from the viewpoints of organizational structure, manpower, institutional integrations, corruption and legal frame works. Effective urban green area planning and implementation demand skilled professional man powers from different disciplines such as urban and regional planning, landscape architecture and landscape ecology. The availability of adequate, experienced and skilled man power is the prerequisite for the development and multifunctional services urban green area (Pauleit et al., 2017; Girma et al., 2019).

The BPR document of Addis Ababa Plan and Development Commission revealed that the position of institution in general and different teams in particular requires skilled and experienced experts from different disciplines. The minimum required qualification is first degree. But, the findings of this study show that both at Sub City and city level all position were

not covered with skilled and experienced manpower. For example, at city level Environmental Condition Plan Implementation Follow Up and Controlling Team requires 4 experts and 1 team leader but only 1 team leader and 1 expert are available. On the other hand, in YSPDCBO Plan Implementation Follow Up and Controlling Team among the required 13 positions, only 6(46.2%) are fulfilled and the remaining 7(53.8%) positions are vacant.

While Yeka Sub City Urban Beautification and Green Development Office organizational structure lacks multidisciplinary. For instance, the discipline of urban and regional planning, land scape planning and architecture were not included in the required man power. The data obtained from this institution on the issues of required and available skilled man power is summarized as follows: -

> *"…we faced a problem of easily understand and implement the urban green area land use plan as a result of lack of skilled experts in the field of urban planning and related disciplines. The organizational structure by itself is not conducive to develop urban green areas in according to the plan and planning principles. Most experts are from the disciplines of plant science, horticulture and environmental science. But, these experts have no knowledge of GIS and AutoCAD although, the land use plan was prepared and operating with GIS and AutoCAD software. Limited awareness or knowhow about green areas, lack of skilled and experienced man power on the required position is another difficulty that hinders the implementation of the plan effectively."*

The above finding shows that the organizational structure of Plan and Development Commission is suitable and workable. But, Shortage of skilled manpower on the required vacant position is the key challenge that hinders the implementation of the plan. While Urban Beautification and Green Development office faces both organizational structure problem and shortage of skilled manpower. According to the study conducted by (Mpofu;2013, Girma et al., 2019; Azagew& Worku, 2021). Lack of skilled manpower and poor organizational structure make the development and management of urban green areas more difficult.

Corruption is another institutional challenge reported by key informant respondents that hinder the implementation of the plan. Corruption substantially impairs the operation of the land market, decreases the effectiveness of allocating land resources, and threatens the viability of urban growth. The data obtained from key informant respondents and structural plan summery

report revealed that the structural plan proposed 30% the city for green area development aimed to the city attractive, livable and environmentally sound. Nonetheless, land is the scarce resource in Addis Ababa and the demand of land is high. High value and demand of land resulted the scramble of green areas. Green areas have been changed into mixed use for the rich, not the poor. Grand and networked corruption from the higher-level leaders to lower level leaders and experts affected the implementation of urban green area land use plan. Green area land and use changes are carried out by a well-organized network of investors, brokers, experts, and leaders at different levels.

Kefale (2017), study undertaken in Addis Ababa revealed that as a result of scarcity and high value of land the development of urban green area are hindered by corruption. Corruption is the main challenges faced in urban green area planning and implementation in African countries (Enoguanbhor et al., 2021). The Land Development and Administration Office, the Planning and Development Commission, the city and federal leaders should have positively impacted the implementation of the green area land use plan properly, but they were hindered by their participation in corruption. Mpofu (2013), undertaken a study in Addis Ababa indicated that Conflicts of interest and overlap in responsibilities made it even more difficult to enforce laws and regulations.

Lack of coordination between sectors to develop, manage and protect the green areas according to the plan is another bottleneck. Although, the power and responsibility of institutions to work together for a common purpose is explicitly stated in proclamation No. 74/2021, they did not being working in coordination as per the proclamation. For example, Land Development and Administration Office do not prepare a title deed of the land planned for green use in time and does not deliver for Urban Beautification and Green Development Office.

All respondents noted that: -

> "…*weak coordination between institutions, sub-cities, City Administration, the local communities, private sectors and non-governmental organizations is the key challenge of urban greenery development and a common trend in the implementation of urban green area plan. Although institutions have been signed external interface to work cooperatively to achieve a common goal as per the plan, there is a gap to put it into practice. Most institutions are working in isolation, which makes the status of*

implementation weak. For instance, the interaction between Plan and Development Commission and Urban Beautification and Green Development office is weak. As a result, they do not know all land planned for urban green areas."

Respondent from Urban Beautification and green Development of responded that I do not know the role of plan and Development Commission on the development of urban green areas. Thus, weak vertical and horizontal coordination among institutions to develop, manage, follow up and controlling the implementation of urban green areas played a crucial role in the poor plan implementation status.

Lack of adequate legal framework to take legal measure those who violated the plan is also the challenge that hinders green area land use plan implementation. Respondents from plan implementation follow up and controlling team at city and Sub City level noted that there is no plan implementation, monitoring and inspection regulation. After follow up the implementation of the plan, controlling is the final stage. The main purpose of controlling is to correct the incorrect once and reduce plan violation by taking legal measures. Plan implementation, monitoring and inspection regulation is a key to take legal measures. Due to this regulation gap the legal actions have not taken on those violate the plan and Structure Plan Preparation and Implementation standards.

In Africa, urban green areas planning and implementation is hampered by lack of integration among institutions and inadequate legal frameworks (Enoguanbhor et al.,20210). The study conducted in Addis Ababa by Mpofu (2013) and Girma et al., (2019) supported the above findings.

4.4.3 Limitation in applying urban green area planning and implementation principles

Planning and implementing urban green areas according to the principle of urban green area planning plays a vital role in the effective implementation of green area land use plan. But the principles of urban green area planning are insignificantly integrated in developing countries while developed countries are integrated and practiced in a better way (Dodman et al., 2013, Davis et al., 2015, Pauleit et al., 2017; Monteiro et al., 2020).

4.4.3.1 Multi-scale planning

Multi-scale planning in urban green area involves considering and integrating various levels of planning from local to regional scales. It recognizes the interconnectedness and interdependencies between different spatial scales within and beyond the city. It can be planned from building viewpoint, to a more regional and integrated perspectives (Davies &Lafortezza,2017; Monteiro et al., 2020).

The study area is partly boarded by Oromia Regional State. From 13 woredas 8 of them are bordered by Oromia Special Zone surrounding Addis Ababa. Almost all areas bordered by Oromia Region is mountainous, as result both the ninth master plan and tenth structural plan has been planned for urban green area dominantly for multifunctional forest. The land use plan of the tenth structural plan revealed that the plan integrated urban green areas from Parcel (individual plot level) to large plot of land at city level. But the plan has not been considered the link with the surrounding villages and towns of Oromia.

The data obtained from AAPDC revealed that the plan of Addis Ababa was prepared by integrating the principle of multi scale planning. The first name of the plan was Addis Ababa Integrated Master Plan. Experts and officials at different level from Oromia regional state had participated in the preparation of the plan. But, the plan was dropped by the Oromia administration in January 2016 before approval as a result of violently suppressed anti-government demonstrations that had broken out. The opponents considered the integrated master plan as the boundary expansion of Addis Ababa city. But, the purpose was to apply the principle of multi scale planning and developing Addis Ababa and the surrounding Oromia Special Zone areas through cooperation. Thus, due to antigovernmental protest the plan did not integrating the principles of multi scale planning and the name of the plan has changed to Addis Ababa structural plan. Key informant respondents from YSPDBO also said:

> ***'…****the plan does not integrate and consider the neighboring areas of the Oromia Special Zone. The border issue has not been resolved. The Oromia regional state rising the question of ownership especially in Woreda 1 and 2. As a result green area found near to the boundary are cleared and occupied by unplanned settlements. For instance, in the last few years, planned and developed green areas in the upper parts of Woreda 1 and 2 have been cleared, and occupied by unplanned settlements legally and illegally. The issue*

cannot be resolved by Plan and Development Commission. Due to security problem, it is difficult for us to follow up and controlling the implementation of the plan. The destruction of planned and developed green areas in the upper parts of the Sub City exposed the down settlements to the risk of flooding."

Generally, the inapplicability of multi-scale planning in general and boundary issue between Addis Ababa and Oromia regional state in particular make difficult to develop and manage urban green areas in accordance with the plan. The above finding shows that green areas are converting to settlements as result of lack of all scale of comprehensive planning and poor cooperation between Addis Ababa City Administration and Oromia regional state.

Source 2012-line map and 2023 satellite image

Figure 16: The expansion unplanned settlements on green areas in Ferensay Woreda 1 and 2

From figure 16 the red line overlapped to the satellite image is 2012-line map and the remaining buildings are constructed after 2012.The above unplanned new settlement are found in Ferensay area woreda 1and 2 above Gurara Kidane mehret near to the boundary of Oromia special zone Surrounding Addis Ababa. As revealed from the figure 16 not only proposed green area land use

plan but also developed green areas have been cleared and occupied by new settlements. This makes the development and management of urban green areas worse.

4.4.3.2 Governance/Social inclusiveness

Participation and Collaboration between residents and government actors throughout the whole planning process is the backbone of urban green area development and management. The goal of social inclusion is to serve the needs and interests of all parties involved and enhances the effective ness of urban green area implementation according to the plan and encourages public stewardship for urban greenery (Davis et al. 2015; Pauleit et al. 2017, Monteiro et al., 2020). According to data obtained from key informant respondents limited public involvement in the planning and implementation of urban green area hinders the development and management of green area in Yeka Sub City. Due to limited community and other stakeholders' participation and communication in the whole planning process the role is insignificant. Respondents from AAPDC who was participated in the preparation of tenth structural plan noted:

> *"…we prepared the plan with limited public and stakeholder participations. The plan was prepared by planning project office experts at city level without integrating the deep consent of the local communities and other stakeholders. Experts and leaders from Urban Planning Office, land Management and Administration office and other institutions were given a presentation of the plan after its preparation and completion in 2016. These experts and leaders presented the final plan to the local communities at each Woreda level for one day. The owner of the plan is the public, but we planned and implementing with limited participations of the owner. Therefore, limited involvement in the whole planning process hindered the development of urban greenery."*

Former Yeka Sub City Urban planning and current YSPDCBO senior expert respondent that not only the local communities but also highly concerned institutions were insignificantly participated. Local communities and other stakeholders limited knowledge about green area land use plan and implementation process highly influenced the implementation green area land uses. Limited Public and other stakeholders' participation in urban green area land use plan and implementation is a challenge that hinder the development of urban greenery in Africa (Mensah,2014; Enoguanbhor et al.,2021). On the contrary the principle of public

participation was widely integrated and well implemented in developed countries like Bristol and Barcelona (Davies et al., 2015).

The data obtained from Urban Beautification and Green revealed that urban green areas were found in the city plan document, rather than on the mind of the local community, governmental and non-governmental organizations. Our office in general and the local communities, governmental and non-governmental institution in particular are not well aware about urban green area plan and implementation. As a result of limited awareness different stake holders have been given little attention for the development and management of urban green areas.

4.4.3.3 Applicability and Continuity

The City Administration of Addis Ababa have prepared urban green areas land use plan both in the ninth master plan and tenth structural plan. According to the tenth structural plan land use plan and summery report document the plan have set an implementation strategy. The implementation strategy includes the time frame and budget for the implementation of the plan. A strategic plan has been prepared to develop green areas within a period of five and ten years. The amount of money needed and sources finance to implement the Structural Plan has been determined. The estimated overall cost to implement the Structure Plan is Birr 881 billion. Out of this, 13% has been allocated to protection of the environment (Urban green area, waste management and Quarry and water body).

But the data obtained from both AAPDC and YSUBGDO revealed that finance is identified as one of the major obstacles behind poor development and management of urban green areas. According to the data obtained from key informant interviews, the City Administration in general and Yeka Sub City in particular lacks sufficient finance for the development and management of urban green area in accordance with the plan. Even the proposed amount and sources of budget for urban green area development is not known by the concerned sectors including Urban Beautification and Green Development office. The City and Sub City Administration allocated low amount of budget for urban green area development and give high priority to other development activities like, housing and infrastructure even though, the land use plan proposed 49% the Sub City for urban green area development. As a result of very limited budget green areas have not been developed as per the proposed plan. Gelan&Girma (2021) found that in Sub-Saharan African cities including Addis Ababa the development of urban green area is not often realized due to resource constraints. The strategic land use plan to develop urban

green areas within five and ten years cannot be implementable. For example, senior team leaders from AAPDC said:

> *"…Strategically the implementation period of the plan has divided by five years. But the implementation strategy did not consider the existing reality and the capacity of the city. The green area plan implementation of the ninth master plan was poor as a result of poor implementation strategy. The tenth structural plan did not extracted lessons from the gaps of the ninth master plan. In addition to financial constraints the plan by itself is unrealistic and not implementable. For instance, in Woreda 13 many fragmented woreda level parks have been proposed on the newly developed legal settlement.''*

According to Girma et al., (2019); Monteiro et al., (2020); Enoguanbhor et al., (2021), urban green area plans have been prepared by a number of municipalities with bold and ambitious goals but, majority of projects fail to be completed as a result of unrealistic of the plan and financial constraints. Inadequate post-implementation follow up and controlling has been a major challenge of implementing green area land use plan. The findings of this study indicated that Poor follow up and controlling mechanisms, lack of periodic reports, lack of plan evaluation and not updated the plan with new information are the major obstacles to develop and manage urban green areas. Thus, the plan has no well-integrated the principles of continuity. The study undertaken by Mpofu (2013), and Girma et al., 2019) conducted in Addis Ababa and Oromia Special Zone Surrounding Addis Ababa respectively supported the above findings, and they found that poor monitoring and evaluation of plan are the major barrier of urban green area implementation. According to Monteiro et al., (2020), absence of post-implementation monitoring or practical measurements of the results and benefits of urban green area are the challenge that hinder the implementation of urban green area land use plan.

4.4.4 The expansion of unplanned settlements

Settlements are expanded in the upper mountainous areas of Yeka Sub City. As we understood from 2005 and 2012 line maps the expansions of unplanned illegal settlements have been a critical challenge in the development of urban green area in Yeka Sub City. As revealed from table 2 and 4 before 8 years the developed green area coverage of the Sub City was 1915.75 but, currently it has reduced to 1765.85 hectare, as a result of the expansion unplanned settlement.The city of Addis Ababa has experienced fast horizontal expansion. Squatter settlements have emerged and are continuing to grow as a result of this trend, which is also

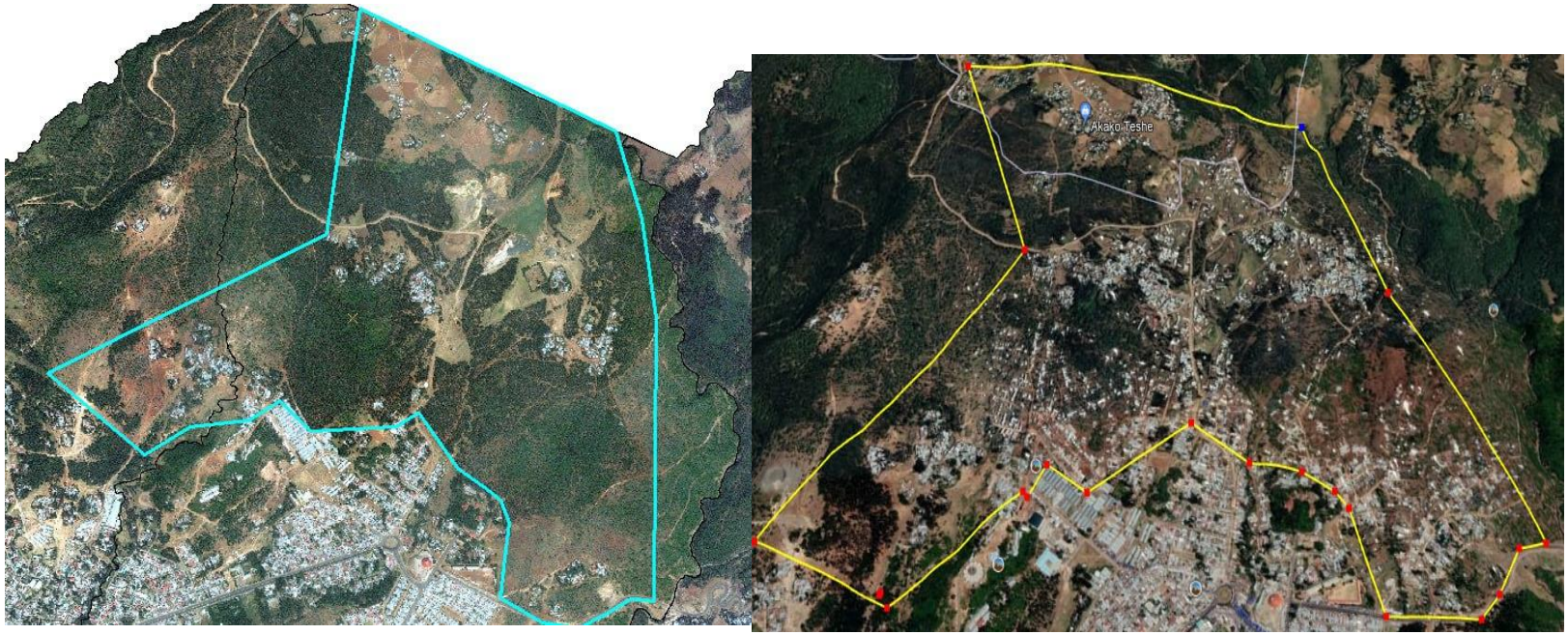
largely affected by unplanned expansion. Existing squatter settlements and open areas are being converted to new houses (Abagissa, 2019).

Similar results from earlier studies were reported. For instance, AAPC (2017) environmental evaluation report shows that the city of Addis Ababa has seen rapid growth of infrastructure, housing and service centers. This rapid growth has led destruction of vegetation and converting agricultural land into built environment. This has affected adversely the general environment and

maintaining ecological balance. The challenge with respect to green frame in Addis Ababa is related to habitat degradation especially in the upper catchment of the city due to wood extraction for fuel and construction purpose resulting in deforestation, and increasing runoff decrease in the size of green areas in the city.

2018 satellite image

2023 satellite image



Source: 2018 and 2023 satellite image

Figure 17: Conversion of green area to unplanned and illegal settlements

From figure 17, the 2018 satellite image circled in light blue color shows that the upper part of woreda 1 and 2 was forested, open space, and occasionally houses were built. But as revealed from 2023 satellite image almost all green areas and open spaces are converted to new settlements. For the last five years green areas are geometrically declined and unplanned and illegal settlements are dramatically expanded. Fetene & Worku (2013), the study undertaken in Addis Ababa supported the above findings. The Teimouri &Yigitcanlar (2018), also found that the practice of urban green area planning and implementation is inadequate in Africa as a result of the expansion and a high incidence of unplanned horizontal urban growth.

CHAPTER FIVE

5. CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

Comprehensive Urban green area planning and implementation is decisive for the sustainable development of urban areas. The studies conducted Previously on urban green area issues in Ethiopia were not comprehensive and assessed with respect to the land use plan. Thus, this study analyzed plan implementation status, assessed achievement of plan implementation, strategies of plan implementation and identified challenges that hinder the implementation of the plan aimed to effectively develop urban green area in accordance with the land use plan.

Based on the finding of the study the implementation status of both the ninth and tenth green area land use plan are poor. In the ninth master plan from the proposed 4,382 hectare of land only 1915.75 were developed. In the tenth structural plan from the planned 4,020.42 hectare of land only 1765.83 are developed. The implemented green area is less than by 149.92 hectare compared to the ninth master plan. On the contrary the proposed plan on other developmental activities are dramatically increased beyond the proposal. The study of the result revealed that the availability of many institutions with clear mandate and legal frameworks, the land use plan itself and current greenery developments activities are the main achievements of green area land use plan implementation. The findings of the study also revealed that the plan implementations follow up and controlling mechanism are takes place at field and office level. From TOR preparation to report preparation, presenting the result to the concerned body and controlling (take correction measures) according to report are the mechanisms of plan implementation applied in Plan and development commission at city and Sub City level. They faced plan violations and unable to take corrective measures due to lack of plan implementation, monitoring and inspection regulation.

Political interference and lack of political commitment, Poor institutional capacity and coordination, the expansion of unplanned settlements and limitation in applying urban green area planning and implementation principles like, multi-scale planning, participation, applicability and continuity are the major challenges that hinder the implementation of green area land use plan in Yeka Sub City. Problem of organizational structure especially in YSUBGDO, lack of skilled man power, corruption, and lack coordination between governmental institutions,

limitation legal frameworks like regulation and other stake holders are the institutional obstacle that make the development and management of urban green area difficult.

5.2 Recommendations

Urban green area planning and implementation are practicing in Ethiopia in general and in Addis Ababa in particular. The findings of this study revealed that the implementation status is insignificant however the area is the lunge of the city and its role is high in balancing temperature and protecting the city from flood hazard. Thus, based on the findings of this study the following are possible recommendations that promote effective implementation of the plan:

- Political commitment and reduced political interference: urban green area planning and implementation is both technical and political process. So, political leaders and policymakers at Federal, City, Sub City and Woreda level should prioritize the development, management and protection of urban green areas according to the plan and ensure that these areas are protected from unplanned development or encroachment. Political leaders must be willing to invest in green areas and support initiatives that promote sustainability and environmental protection. Decisions concerning land use change should be made based on legal frameworks and scientific evidence and input from relevant experts, leaders and stakeholders, rather than political considerations.
- Build Institutional capacity and coordination: urban green area land use planning and implementation needs strong institutions and sectoral integrations. The finding of the research revealed that organizational structure, manpower, institutional integrations, corruption and legal frame works are barriers that hinder the implementation of urban green area. Thus, developing good organizational structure, provide skilled and experienced man power from different disciplines, Foster communication and collaboration between institutions reduce corruption by establishing a transparent and accountable system and providing plan implementation regulation and directive are critical for the implementation of urban green area effectively.

  Plan and Development commission, Urban Beautification and Green Development Office, Land Development and Management Office, Environmental Protection Office, Construction Permit and Control Office and Waste Management Office at City and Sub City level should Foster communication and collaboration by develop a shared mission and vision, create

cross-functional teams, establish clear communication channels, foster a culture of collaboration, use technology to facilitate integration and monitor and evaluate progress to develop and manage urban green areas according to the plan.

- Integrate urban green area planning and implementation principles: in order to develop and manage urban green areas sustainably and in accordance with the plan institutions should integrate the principles of urban green areas in the whole planning process like, governance/social inclusiveness, multi-scale planning, applicability and Continuity. Local communities, civil society, governmental organizations and none governmental organizations should involve and participate in the whole planning process. Plan and Development Commission and Urban Beautification and Green Development Office should integrate the opinions of the stakeholders in planning and implementation period and keep in work with stakeholders as well as create awareness at different level. Prepare detail plans, designs and set clear implementation strategies as well as develop good monitoring and evaluation strategies. The plan should prepare by integrate the surrounding Oromia special zone rural and urban areas in collaboration with the regional government.
- Control the expansion of unplanned and illegal settlements: **i**n order to reduce the expansion of illegal settlement the City Administration should implement effective urban planning policies. This includes zoning regulations, property registration, developing good land banking and codified base map preparation system.
- Land Development and Administration Office should prepare and deliver title deeds of urban green areas to Urban Beautification and Green Development Office. Environmental Protection Office should protect and take legal measures those who destruct developed green areas. Construction permit and building control office and Code Enforcement Office from city to woreda level should protect the expansion of illegal settlements on urban green areas through effective follow up and controlling mechanism. Plan and Development Commission should timely follow up, monitor and evaluate the implementation of the plan and take legal measures those who violated the plan.

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Appendixes

Appendix I

Semi structured Questioners for Key informants (Addis Ababa Plan and developmental commission, and Yeka Sub city Plan and developmental commission Branch Office respondents)

- Age of respondents..... Sex.....
- Educational background

a. Diploma ☐ b Degree ☐ C. Masters ☐ d. PHD ☐

- Field of Study.....
- Your work experience on urban green area land use plan and implementation, and related issues.....
- Position on your institution.....

1.have you ever been involved in the preparation and implementation of the ninth and tenth land use plan?.....

a. yes in both plans b. only in the ninth c. only in the tenth

2. Do you think that there is community participation in planning and implementation of urban green area? A. yes b.no

3. If your answer to question number 2 is yes, what are the main roles of the community?

4.What are the main achievements of the implementation of green area land use of the ninth master plan and tenth structural plan?

5. Was the prepared plan coordinated with neighboring urban and rural areas?

6.Do you think that the prepared green area plan was based on green area planning principles?

a. yes b.no

7. If your answer to question number 8 is yes, what are the green area planning principles that were applied in the preparation of the planning process?

8. How do you follow-up the implementation of the prepared green area land use plan?

9. How do you control the implementation of the prepared green area land use plan?

10.Have you facing green area plan violation when you follow up and controlling the implementation? a. yes b.no

11.If your answer to question number 10 is yes, what correction measures have you taken?

12.Do you think that plan implementation follow-up and controlling legal frameworks are sufficient and workable?

a. yes b.no

13. If your answer to question number 12 is no, what are the gaps related to legal framework?

14. Does the plan have a clear implementation strategy? A. Yes b.no

15. If your answer to question number 14 is yes, what are the implementation strategies?

16. What is your recommendation for the successful implementation of green area land use plan?

Semi structured Questioners for Key informants (Yeka Sub City Urban Beauty and Green Development office respondents)

- Age of respondents..... Sex.....
- Educational background

a. Diploma ☐ b Degree ☐ C. Masters ☐ d. PHD ☐

- Field of Study.....
- Your work experience on urban green area land use plan implementation, and related issues.....
- Position on your institution.....

1.have you ever been involved in the preparation and implementation of the ninth and tenth land use plan?.....

a. yes in both plans b. only in the ninth c. only in the tenth

2. Do you think that there is community participation implementation of urban green area?

a. Yes b.no

3. If your answer to question number 2 is yes, what are the main roles of the community?

4.Are you developing urban green areas according to the plan?

5. If your answer to question number 4 is no, how do you select and develop green areas?

6.Are you working in collaboration with Yeka Sub City Plan and developmental commission Branch Office and other concerned bodies to implement the plan properly?

7.What are the main achievements of the implementation of green area land use of the ninth master plan and tenth Structural plan?

8. Do you have a clear green area development implementation strategy? a. Yes b.no

9. If your answer to question number 8 is yes, what are the implementation strategies?

10.What is your recommendation for the successful implementation of green area land use plan?

Questions for key informant interview (Addis Ababa Plan and developmental commission, Yeka Sub City Plan and developmental commission Branch Office and Yeka Sub City Urban Beauty and Green Development office respondents)

- Age of respondents..... Sex.....
- Educational background

a. Diploma ☐ b Degree ☐ C. Masters ☐ d. PHD ☐

- Field of Study.....
- Your work experience on urban green area land use plan implementation, and related issues.....
- Position on your institution.....

1. What is the role of your institution in the implementation of green area land use plan?

2.Do you think the prepared green areas plan are developing according to the plan and planning period?

3.how do you see Political commitments to implement green area plan?

4.What are the major challenges that hinder the implementation of green area land use plan?

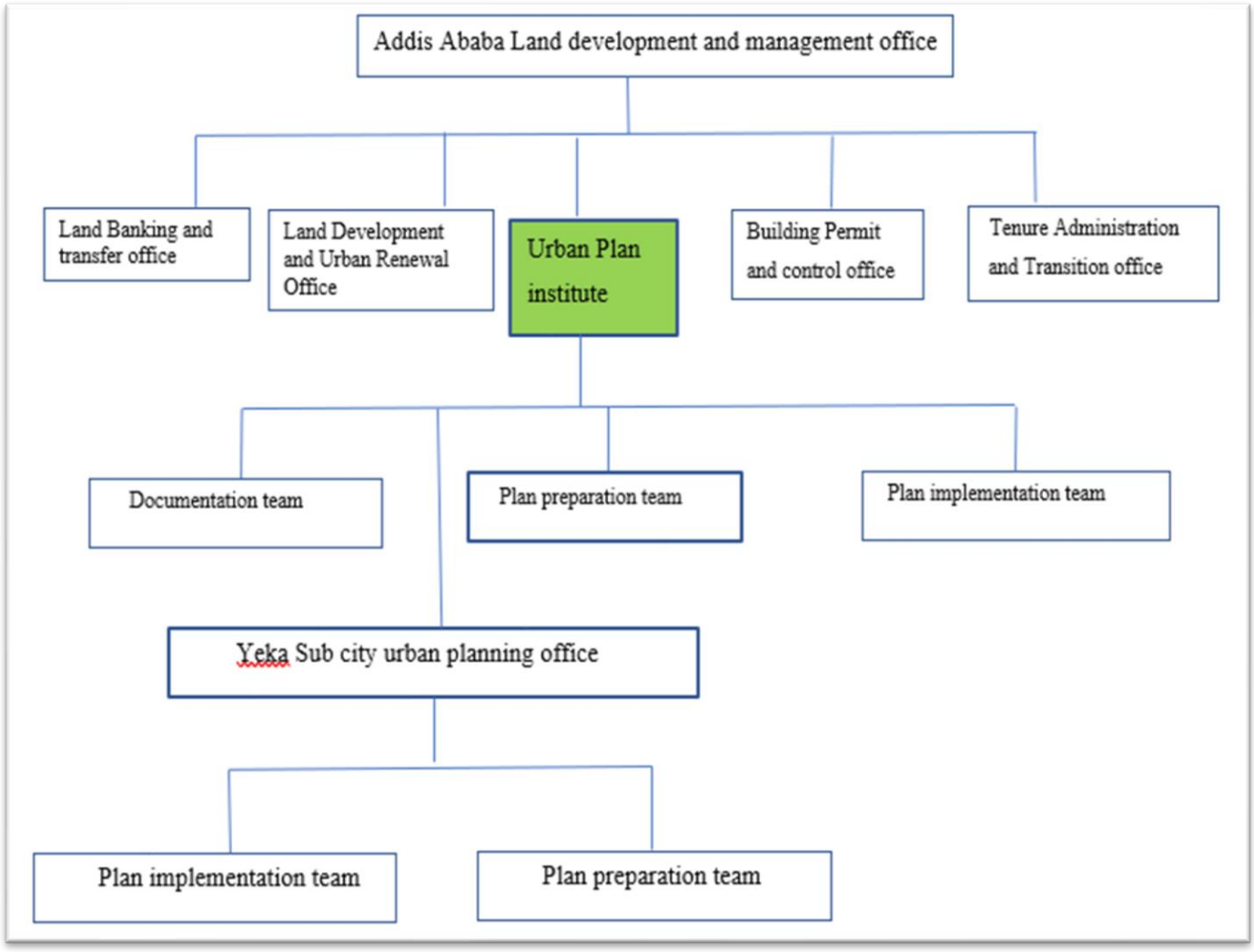
5.How do you see the interaction and coordination between plan implementer body and your institution?

6.Does the plan implementer body implement the plan according to the plan and planning related legal frameworks?

7.Who is responsible for implementation failure?

8.What is your recommendation for the successful implementation of green area land use plan?

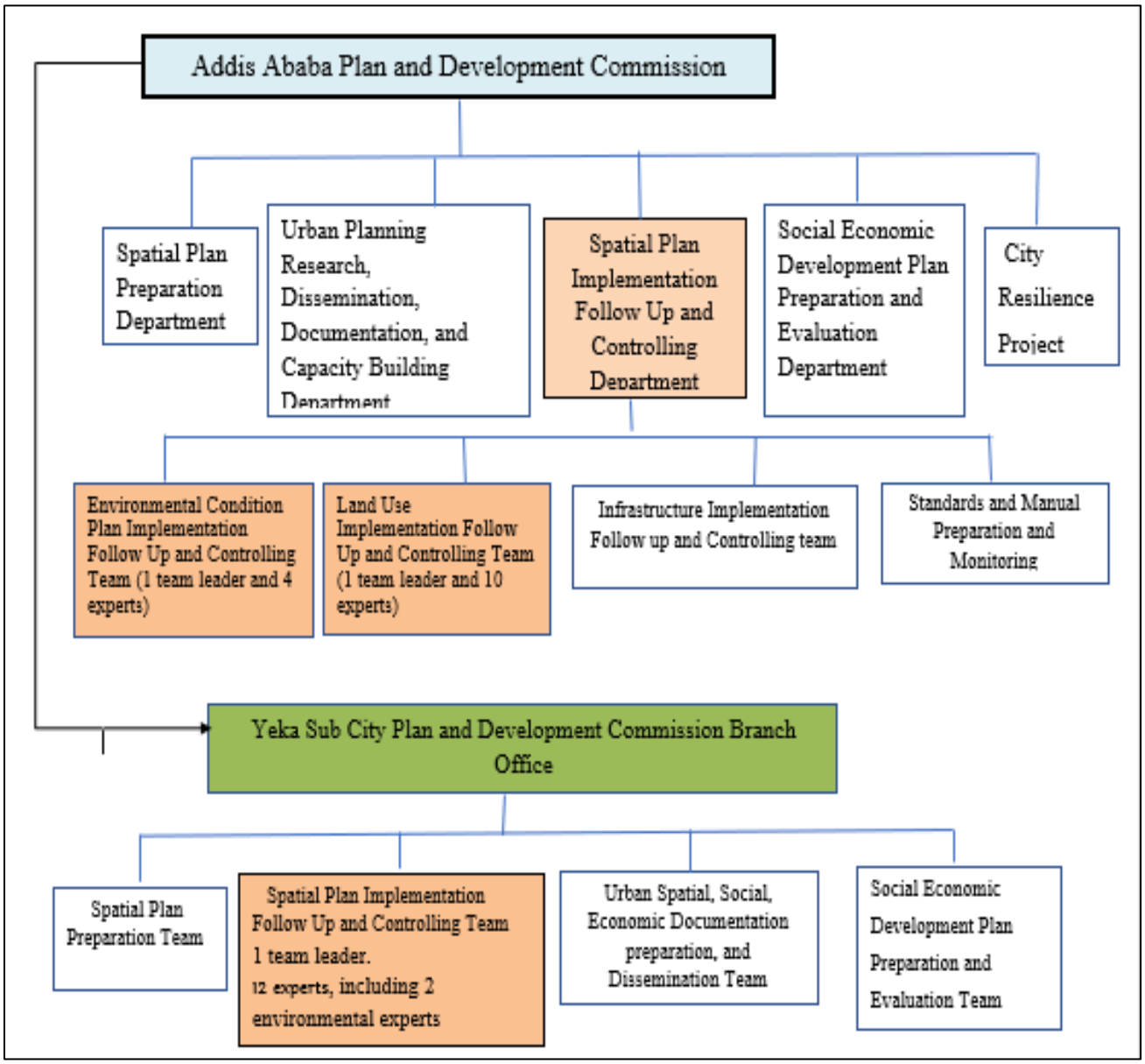
Appendix II



Source: Addis Ababa Land Management and Development Office BPR,2011

Figure 18: organizational structure of Addis Ababa Land Development Office

Appendix III



Source: AAPDC BPR, 2018

Figure 19: Organizational structure of Addis Ababa Plan and Development commission