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SCHOOL OF GRADUATE STUDIES

**Ethiopian Institute of Architecture, Building Construction
and City Development (EiABC)**

**Urban green space planning, policy implementation
and challenges: the case of Addis Ababa**

A Thesis Submitted to the school of graduate Studies of
Addis Ababa University in the partial fulfillment of the
requirement for the Degree of Master of science In
Environmental Planning and Landscape Design

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Approval

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Declaration

I Shibire Bekele Eshetu, declare that this thesis entitled, “Urban green space planning, policy implementation and challenges: the case of Addis Ababa” and the works presented in the thesis are my original work. I carried out this study independently with the guidance and support of my Research Advisor, Kumelachew Yeshitela (PhD). I confirm that the accessed published data of others are clearly attributed in the thesis and the thesis has not been published or submitted to another examination board to obtain any other diploma or degree.

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Abstract

Urban green spaces play a prominent role to achieve United Nation's Sustainable Development Goals specifically, to make cities and human settlements inclusive, safe and resilient. Urban forestry and greenspaces have less priority in urban planning. Thereby, this research is intended to assess the policy and planning of urban green spaces with their potential implementation status and challenges the planning faces on ground implementation. The general objective of this study is to assess urban green space planning, policy and implementation strategies and challenges that encounter in the implementation process in Addis Ababa. To undertake this research, both primary and secondary data has been used. The primary data was collected through key informant interview, Focus group discussion and field observation. Secondary data has been analyzed from google maps, satellite images and secondary data; literatures review, policy and masterplan analysis of Addis Ababa. The stakeholders and institutional arrangement mapping have been analyzed using engagement of different stakeholders' consultation and multi-criteria analysis. Triangulation method has been used for data validation and analysis. According to Proclamation No. 1712004; Addis Ababa City Master Plan Preparation, Issuance and Implementation the city cabinet can issue a regulation parks and vegetation protection and preservation. Existing policy and proclamations must be supported by legislative regulations and implementation frameworks to provide the basis for concrete action plans. The incentives that are stipulated by the forest policy are not implemented to the required level. stakeholders are involved in the same greenspace development program but operating in different organizational structure. Principles like Multifunctionality, connectivity, green-grey interaction and social inclusiveness are considered in the planning of the greenspace development in the 10th masterplan. Within different catchment radius, the masterplan proposed 8,364 ha of green space in the structural plan of 2017-2027. The challenges in green space planning implementation are weak communication, increase in population and urbanization and lack of proper planning are listed by the key informants. Political commitments, using of new technologies and the existing greenspaces potential are the opportunities which can be scaled up. The greenspace area coverage of Addis Ababa is undulating over time. the housing projects take the lion share of the greenspace reduction. The organizational structure of the city and federal government has some overlapping duties and this can create a delay in implementation and lack of proper monitoring and evaluation. This research has come up with recommendation of establishing platform for discussion Annual and biannual discussions on the implementation of the masterplan. Create systems and forums for public participation in the decision-making process of 'key' issues, and for stakeholder involvement. Furthermore, monitoring and evaluation of projects and activities must be done by multi-institutions and involved bodies.

Key Words: Greenspace, policies, Strategies, Masterplan

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Acronyms

AAEPA: Addis Ababa Environmental Protection Authority

AESCP: Agricultural Extension Service Core Process

CRGE: Climate Resilient Green Economy

EFCCC: Ethiopian Environment, Forest and Climate Change Commission

GBG: Gullele Botanical Garden

GIZ: Deutsche Gesellschaft für Internationale Zusammenarbeit

GSPC: Global Strategy on Plant Conservation

GSPC: Global Strategy on Plant Conservation

GTP: Growth and Transformation Program

IFPRA: International Federation of Parks and Recreation Administration

IPO: Input Process Output

MoUDH: Ministry of Urban Development and Housing

NFSDP: National Forest Sector Development Program

REDD: Reduce Emission from Deforestation and degradation

RGDAA: River Basin and Green Development and Administration Agency

UGI: Urban Green Infrastructure

UMTs: Urban Morphology Types

UPA: Urban and Peri-urban Agriculture

1 Introduction

1.1 Background

Urban green spaces play a prominent role to achieve United Nation's Sustainable Development Goals (SDGs). The purpose of green space strategies is to safeguard the future green spaces, to improve the quality of urban areas especially the neighborhood, make urban areas more attractive and attract more resources and more importantly to improve the livelihood of the local people and attract more tourists (North East Lincolnshire Council 2016). Green space plays a great role in the development of a city where the cityscape grey-green interaction gives the outmost look for landscape. Greenspaces play an important role in contribution towards ecological diversity, environmental sustainability and encounter pollution (North East Lincolnshire Council 2016; Mensah 2015). Green spaces should be treated well among the top priorities of development agenda of urban planning authorities with the allied institutions managing green spaces (Mensah 2015).

Development in Ethiopia will be constrained by physical, policy related and institutional problems (FAO 1988). It has been revealed that urban planning has failed in practice in some developing countries in the world because planning has mostly been overambitious, considering the capabilities of the administrative system to enforce their implementation (Yachori, 2015). The 10th masterplans of Addis Ababa (2017-2027) reveal that, from the foundation of the city; in 1886 to present, Addis Ababa has passed through several challenges in terms of its size and demographics, its finance and economic structure, its physical and spatial organization. The masterplans; like the Italian master plan which is focused on racial segregation, the socialist period repressed investment, economic growth as well as

urban development whereby spatial and physical developments were mere responses to political demands. These masterplans are more focused on physical aspects only with high inconsistency (Gemedda 2018).

The recent master plans, 9th and 10th however, incorporated the socio-economic circumstances in their planning proposal. Addis Ababa City Development Plan (2002-2010), which had developed a strategic Structure Plan to facilitate development in the city, and had initiated a city management reform to improve governance. The current masterplan of the city (2017- 2027) provides the framework for the organization of the city's space that is economically productive and environmentally healthy. The ultimate goal of the plan is to ensure that the city contributes its share in bringing the national economy to the level of middle income countries; and in the process, improve the living standard of the city's residents. Despite that, still the majority of the developments carried out in the city are not complying with the master plan proposals (Gemedda 2018).

In Ethiopia, the 2005 Urban development policy is the first official document to integrate all principles of good governance in its strategy. In subsequent years, the government implemented several initiatives demonstrating its commitment to effective and sustainable decentralization and creating conditions for improving urban governance so that cities become more competitive and productive (Spaliviero et.al. 2017). The urban planning and management are demanding for selecting sites for urban green spaces in context to the ecology, society, and economic activities. Green spaces of Addis Ababa are multi-functional which provides livelihood options and different ecosystem services.

This research is intended to assess the policy and planning of urban green spaces with their potential implementation status and challenges the planning faces on ground implementation. According to Golden (2004), Ethiopia has one of the largest rate of urbanization in the world with 4-5% and its urban population is expected to increase from 15% in 2020 to almost 30% in 2030. According to assessment done by ESD (2003), the peri-urban plantations have been a major source of livelihood for several thousands of families living in the outskirts of Addis Ababa.

1.2 Statement of the problem and justification

With growing urbanization, the pressure on urban green spaces is expected to increase. In 2014, 54% of the world's population were living in urban settings and it is projected to reach 70% by 2050 which will have an implication for the conversion of greenspaces to other urban land uses (Hernandez et al. 2018). Greenspaces in Africa's urban regions is still hardly recognized in policymaking (Roberts et al. 2012). The study conducted by Zakka et al. (2017) found out that the weak legal and regulatory framework in Sub-Saharan Africa region remains very visible and lead to inadequate and greenspace development and management in urban areas. Concerning the urban greenspace policy in Ethiopia, Girma et al. (2019), revealed that though there are policy and legal documents regarding urban green components, quantitative guidelines and standards are non-existent. Furthermore, Purnomohadi (2006) states that legislations, guidelines and standards have an important influence on the planning and implementation of greenspace components. It has been indicated that there is also lack of appropriate green infrastructure approach that well integrates into the planning and governance system of cities (Herslund et al. 2018). As a result, urbanization and the growing cities have been

alleged as major agents in depleting the quality of the environment especially where the grey-green interaction seems to be poor (Pacione 2005). As a policy instrument, urban planning is an intervention tool for governments with the intention of shaping a city to achieve the orderly, aesthetic and healthy layout of buildings and land uses (Turok 2014). Planning in this context favors sound environmental integrity, economic viability and social well-being. Hence, the realization of a sustainable urban development needs integrated planning, a decision-making framework, and a fundamental change in values and perspectives of planning processes (Pacione 2005).

The implementation of some greenspace initiatives in Addis Ababa; the riverside development project and tree seedling plantation campaign has been started, however the planning of such big projects has not been communicated to the public early enough before the project gets started. These types of grand projects need coordination of different stakeholders that are engaged in urban greenspace planning and implementation.

Though there are plenty of challenges that hamper the provision of well-designed urban greenspaces in Addis Ababa, there are potential opportunities that could enhance the environmental, economic and aesthetic value of the city. To realize these greenspace values, urban areas need proper planning for long term and the execution of projects should be integrated in the structural plan of the city and local development plan has to be prepared prior to the execution of projects. This research evaluated the background of such projects and other urban green space project execution strategies and challenges to implement them on the ground. Additionally, the research assessed the institutional arrangements and stakeholders

that take part in policy development, planning and implementation of greenspace design in Addis Ababa.

Urban centers have faced problems such as greenspace allocation based on standards which can be accessible by all social groups without segregation (Tassew and Nair 2014). To achieve development of greenspaces which can fulfil environmental, economic and social benefits, basic principle of connectivity, multifunctionality and social inclusiveness must be considered in the planning. This research evaluated the principles followed in the planning and implementation of greenspace development in Addis Ababa.

1.3 Objectives

1.3.1 General Objective

The general objective of this study is to assess urban green space planning, policy, implementation strategies and challenges in Addis Ababa

1.3.2 Specific Objectives

- To assess urban greenspace policies in planning and the implementation of greenspaces development in Addis Ababa
- To assess institutional arrangements of urban green space planning and implementation in Addis Ababa
- To assess challenges and positive initiatives of greenspace implementation in Addis Ababa

- To assess the principles of urban green space planning in the incorporation of Addis Ababa's masterplan and implementation of the planning principles on the ground

1.4 Research Questions

1. What are the urban greenspace policies and how far is the green space plan and policy being implemented in Addis Ababa?
2. Which institutions are engaged and how is the organization organized for green space planning and implementation?
3. What are the challenges in greenspace implementation and what are the future opportunities that contribute to greenspace development of the city?
4. Which urban green space planning principles are considered and incorporated on the masterplan of Addis Ababa and to what extent these principles are reflected on ground the implementation of the plan?

1.5 Scope of the study

Spatially, the study focuses on Addis Ababa's green space and city parks designated by concerned authority. River side vegetation, street trees, plantation forest, institutional forest and urban parks were covered by this study. Thematically, the study focused on policies related to urban green spaces, the planning and strategies followed to implement the planning of urban green spaces and urban greening policies of Ethiopia. Institutional arrangements and accountability of institutions, tracking loop of information and plans that are executed by different sectoral organizations.

1.6 Significance of the study

This research assessed the policy and strategies Ethiopia is following for urban development and green space design. The booming urbanization and development of the capital city Addis Ababa should be planned well in its green area too. The city is booming with buildings and pavements but the policy and legal frameworks regarding green space should also be given a big emphasis in the city development. The planning and implementation of the current river side vegetation and beautification has been perceived from the policy aspect and legal framework as it might relocate thousands of people residing on the periphery of the river. This research assessed the applicability of policies and strategies in green space design and the institutional arrangements to apply the policy on ground. Furthermore, the research can help as a future reference guide for policy makers and land use planners.

1.7 Organization of the paper

The first chapter of this research provides the background introductory part of the urban green spaces in general and green spaces of Addis Ababa. Based on the introductory leading statements, problem statement of the research is elaborated which leads to the objectives of the research. The scope and significance of the study has been given the last section of chapter one. The second chapter has covered the literature review which concealment basic definition of green spaces, types and functions of urban green spaces. Policies and regulations with respected governance system in general and Addis Ababa's case in specific are presented under this chapter. The third chapter covered the methodology of the research; data

type, data collection technique and analysis are elaborated here. In the fourth chapter, the result of the study has been presented. Here, the results are presented as they are sequenced in the objective and research question part of the study. The fifth chapter discusses the result with other findings in literature. The last chapter six gives a conclusion of the study and recommend further potential study topics and results that has to be considered in planning and implementation of urban green space development of Addis Ababa by responsible institutions and policy makers.

2 Chapter Two: Literature review

2.1 Green Spaces

Green spaces refer to those land uses which are covered with natural or man-made vegetation in the built-up as well as planning areas. In an urban environment, there are some good green areas which are mainly covered with physical or man-made vegetation and can function as ecological balance, playing an active role in the urban environment, landscape, and resident's recreation (Ahmed 2012). Urban greenspace is a part of the physical extent of the city which can contain specific functions. Urban green spaces fulfill a range of different roles, such as social spaces and areas for recreation and cultural purposes. Furthermore, greenspaces have economic and environmental purposes. Indeed, urban greening projects have been undertaken to maintain and increase property values due to their esthetic characteristics and functionality (Lee et al. 2015).

Green space in some cases has assumed the aesthetic role (beautification of urban green space) and sometimes recreation role. Urbanization is increasing recently, and cities are formed that faces different problems. Problems are like rise in population, extending urban sprawls and increasing level of pollution. The urban green space plays a major role in preserving and balancing urban environment and regulating air pollution. Beside the ecological benefits and contribution to positively influence humans' health, green spaces connect different parts of urban landscapes (Włodarczyk 2007).

Perceptions of environmental hygiene, security, and safety are other important features. Poorly planned public greenspaces may often be associated with unsavory

activities, such as illegal gambling, homelessness, and prostitution, as well as crime and vandalism (La Ay 2010). Associating greenspaces with such activities may deter key user groups, especially women and children, as well as the elderly (Rosso et al. 2011). The development of urban green space faces several challenges like; it is the lowest priority for governmental strategies and private sectors.

Urban green spaces could be active or passive recreation which has a positive influence for the users (Hernandez et al. 2018). Urban green spaces are public and private open spaces in urban areas primarily covered by vegetation (Ahmed 2012). There are different types of greenspaces and the following section describes different types of greenspaces (Aydemir 2004).

2.1.1 Parks

Parks belong to a vast category of land uses termed as public open places (Sadeghian and Vardanyan 2015). Konijnendijk et al. (2013) also define urban parks as open space areas, mostly dominated by vegetation and water, and generally reserved for public use. These places cover a broad range of purposes in fulfilling the needs and interests of diverse groups, and many subdivisions of the population such as leisure, recreational and educational needs of the young and old, male and female, rich and poor, and of people of varying abilities (Hayward 1986; Sadeghian and Vardanyan 2015).

In addition, a study by US department of Agriculture justifies the significant and increasing value of urban forests as a key component of the urban environment. Benefits include the goods and services produced by urban trees and forests that are valuable to people in which these benefits can vary over space and time

according to changes in the urban environment, its inhabitants, and their needs. As Dwyer *et al.* (1992) the major benefits include, energy and carbon dioxide conservation, Urban hydrology, Noise reduction, Ecological benefits and provide desirable environment, Medical, psychological and local economic benefits.

Even if the environmental and ecological services that urban nature provides plays an important role in social and psychological benefits to human societies, contributing to the quality of life in many ways. According to Chiesura (2004) the international efforts on natural resource conservation and environment concerns are mainly concerned with large, bio-diverse and relatively untouched ecosystems or with individual animal or vegetal species, either endangered or threatened with extinction. Giving much less attention to the type of nature close to where people live and work, to small-scale green areas in cities and to their benefits to people. Resulted from human population growth, urban parks and open spaces are subject to development pressures and are declining in many cities (More *et al.* 1988). According to the authors above, the extent and magnitudes of the many benefits and costs associated with urban trees and forests, as well as the many ties between urban forest resources and the quality of urban life.

2.1.2 Riverine forest/ riverside vegetation

Riverside vegetations grows along banks of a waterway extending to the edge of the floodplain which are also known as fringing vegetation. Riverside vegetation includes the emergent aquatic plants growing at the edge of the waterway channel and the ground cover plants, shrubs and trees within the riparian zone. Characteristically, resulting from fluvial disturbance and

covering numerous different habitat types including channel, channel bank, floodplain and wetland habitats, Riparian plant habitats are temporally and spatially heterogeneous (Capon and Dowe 2007). As a result, these zones are amongst the world's most diverse and dynamic plant habitats and often treated as centers of endemism (Naiman and Decamps 1997).

According to Naiman and Decamps (1997), riparian zones possess unusually diverse array of species and environmental processes. The ecological diversity is related to variable flood regimes, geographically unique channel processes, altitudinal climate shifts, and upland influences on the fluvial corridor. Landscape elements in riparian zone include distinct vegetation types, wetlands, and other land use types with higher soil moisture and nutrient content than neighboring upland systems and this may favor plant biomass production (Megonigal *et al.* 1997).

However, these areas are facing different types of threats. For instance, extensive flooding is nearly always a significant stress on forest productivity as soils become anoxic and toxic ions, e.g. of manganese and iron, accumulate in bio-available forms because of soil microbial processes (Blom and Voeselek 1996). Normal plant metabolic processes like respiration, photosynthesis and nutrient uptake can be restricted resulted from changes in temperature and light during submergence. Hastie *et al.* 2001, stated Mechanical damages to plants as an additional threat, on the other hand Sluis and Tandarich (2004) agree that deposition of sediments associated with flooding may bury seedlings or impede germination of propagules.

2.1.3 Botanical garden

One of the programs in Convention on Biological Diversity, the Global Strategy on Plant Conservation (GSPC) defines Botanical gardens as institutions holding documented collections of living plants for the purposes of scientific research, conservation, display and education. Although the concept of “garden” dates back to the Zhou dynasty in China, the initiation by European universities to study of medicinal plants back in the middle of the sixteenth century lead for establishment of botanic gardens (Avery 1957; Flanagan 2011; Borsch and Lohne 2014; Powledge 2011). Borsch and Lohne 2014 also state these early gardens by their distribution and year of establishment as, in Italy in Pisa (1543), Padua (1545) and Florence (1550); Germany in Leipzig (1580); and the Netherlands in Leiden (1590). Which later expanded to Asia, America and Africa in the seventeenth–nineteenth century as centers of trade where seeds and fruits were brought from distant lands (Chen and Sun 2018).

By 2010, the number of botanical gardens reached 2500 in the world (Golding *et al.* 2010), supporting more than 6 million plants species representing around 80,000 taxa, or about one-quarter of the estimated number of vascular plant species in the world (Jackson 2001; O'Donnell and Sharrock 2017). However, Due to anthropogenic pressures we are losing plant diversity at an unprecedented rate, there is, therefore, an increased need to develop integrative conservation approaches for plants, particularly those threatened plant species in the wild (Li and Pritchard 2009).

2.1.4 Neighborhood green spaces

Communal open spaces are smaller version of public green spaces vacant residential open spaces are potential neighborhood green spaces. These open spaces help build and strengthen ties within communities by bringing people together, including those who may otherwise be separated by ethnic or social background. The spaces are open to all and, when properly designed and cared for can provide meeting places and foster social ties. These open spaces shape the cultural identity of an area, are part of its unique character and provide a sense of place for local communities.

Communally managed open space can provide social benefits as well, encouraging interaction between residents. The presence of open space can increase community-wide quality of life, lead to increased property values, and foster a sense of responsibility for and connection to local natural resources (Wald & Hostetler 2010). Community gardens have a variety of purposes for the people they serve; they unite residents of all ages in fun and productive outdoor activities and facilitate the growth of community solidarity and neighborhood revitalization (Olmos 2008).

2.1.5 Institutional greenspaces

Institutional forest includes forests that are found within the compounds of governmental and non-governmental institutions. Institutional greenspace is a greenspace in an institutional area, including schools and institutional units (Zhao et al. 2010). Institutional greenspaces play an important role in biodiversity conservation and supporting habitat for birds and wild animals (Pauleit et al. 2017). Greenspaces in school yards, churches and other institutions are considered to be

institutional greenspaces which are public greenspaces (Zhao et al. 2010). Institutional forests provide different ecosystem services such as; provision of food in the case of greenspaces in institutional backyard used for urban agriculture practice, regulation of climate and water, and conserve cultural and historical sites (Pauleit et al. 2017).

2.1.6 Street trees

Most experts define street trees as stand-alone trees often surrounded by pavement (Whitlow et al. 1992; Crankshaw 1996; Maco and McPherson 2003). Most of the time street trees are planted within sidewalk or between sidewalk and the road. However, there is no clear indication on how close the tree must be to the road (Steed and Fischer 2007). The planting of different species of street trees, especially species bearing fruit at different times of the year, increases urban vegetal biodiversity and provides food and shelter for many animals, especially birds (Council 2011).

Trees create individual landscapes and contribute shapes, colors and seasonal variability that help define streets and even whole neighborhoods. They also give homes greater privacy and serve as structural elements for creating a diversity of environments (Steed and Fischer 2007).

Street trees make the city more beautiful and increase the value of homes. The shade and microclimate generated by street trees reduces the amount of energy consumed by air conditioning in adjacent buildings and, as a direct result, the cost of air conditioning in homes, especially on the lower floors (Steed and Fischer 2007; Council 2011).

Street trees play a great role in balancing the most developing urban areas and provide benefits such as protection of local watersheds and improvement of storm water management, air pollution reduction and aesthetic beauty (Kadir and Othman 2012). Street trees can absorb the surrounding heat thus decreasing the surrounding temperature. Streets with trees has 60% reduction in street level particulates (a type of air pollution from burning of fuel) as compared to urban street with little or no street trees (Johnson 2009).

2.1.7 Urban Agriculture

Urban agriculture comprises the production, processing and distribution of a diversity of foods, including vegetables and animal products within (intra-urban) or at the fringe (peri-urban) of an urban area. Its main motivation is food production (for personal consumption or sale) and/or income generation (Smit et al. 1996). Urban agricultural production includes aquaculture, livestock and plants. The commonest crops are perishable leafy vegetables. Urban agriculture is one of several food security options for households and one of several tools for making productive use of urban open spaces, treating urban waste, saving or generating income and employment (Smit et.al. 1996; Ali et al. 2005).

Agricultural activity will continue to be a strong contributor to urban households. Currently, differences between rural and urban livelihood households appear to be decreasing. (Ali et al. 2005). City's food supply function is one of the various roles and objectives of urban agriculture that leads to increasing dialogue between urban dwellers, city authorities and farmers. The main challenges for urban agriculture in keeping its multi-functional activities such as cleansing, opening up the urban space, and producing fresh and nutritious food (Akinbamijo et al. 2002; Ali et al. 2005).

In peri-urban areas agroforestry practices are mostly practiced thus, urban agriculture is sharing the burdens of urban forest by supplying biomass fuel and absorbing CO₂. Agroforestry development as an extension package being implemented both in urban and peri-urban areas of Addis Ababa. The agro-ecology of Addis Ababa could allow many cereals, vegetables and fruits (Messay 2013).

2.2 Functions of green space in Urban environment

Maximizing the urban areas resilience towards environmental hazards, natural and anthropogenic disturbances and urban heat island effects can be mitigated through green landscapes of urban areas. Preserving green belt around cities and planting trees in urban open spaces increase the CO₂ sequestration by plants and reduce pollution (Nassar 2013). Furthermore, sustainable cities are proud to have beautiful parks and public gardens and cities must be environmentally friendly and it is important to re-conceptualize existing cities and their systems of infrastructure to be compact, mixed use and polycentric cities (Nassar 2013; Lehmann 2011). Studies revealed that a well developed and managed urban greenspace have an important role in urban sustainability through wholistic benefits in environmental economic and social spheres (Ernstson 2012; Konijnendijk et al. 2013).

2.2.1 Environmental benefit

From an ecological perspective, urban green spaces moderate the impact of human activities by absorbing pollutants and releasing oxygen (Haughton and Hunter 1994), contribute to the maintenance of a healthy urban environment by providing clean air and water (Abizadeh and Zali 2013). Mature trees of urban street trees provide services like shade, thermal comfort, reduction of air temperature and relief

from urban heat island effects (Lawton 2007). According to Hamada and Ohta (2010), the temperature differences between green and non-green spaces are greater during the hot periods of the day. Increased green spaces increase energy flows while decreasing land surface temperature. Thereby, replacing paved yards with urban green spaces reduce the heat-island effect during the summer by moderating temperatures expected with climate change. Increased cover of community-level green spaces is associated with reduced air temperatures (Steeneveld et al. 2011).

Green areas play an important role in protection of natural habitats with the natural life corridors and urban forests. Thereby, they ensure the continuity of species and biodiversity by creating a habitat for natural faunas and floras (Dunnett et al. 2002). Through physical function such as regulation of urban texture and stabilization density of the natural components they contain, greenspaces can highly increase the aesthetic quality of urban environment (Dunnett et al. 2002).

2.2.2 Economic benefit

Greenspaces deliver products such as fruits, energy and compost which can contribute to direct economic benefit to people (Baycan and Nijkamp 2004). The land value of an area close to greenspace has better economic value. According to Luttik (2000), components such as parks and playgrounds increased the value of houses prices by about 28%. Trees contribute in reducing buildings' cost of cooling and heating (Lutik 2000; Baycan and Nijkamp 2004).

2.2.3 Social benefit

Urban Greenspaces create closeness between human and nature. Urban dwellers need some hours to be in peace and silence which gives a way to get away from the urban noises (Abizadeh and Zali 2013). It can be regarded as sites for community spirit, although different types of user groups have different levels of involvement and engagement when it comes to creating, operating, shaping and maintaining urban green spaces. According to Haughton and Hunter (1994), greenspaces enhance cultural life by providing venues for local festivals, civic celebrations and theatrical performances. In many developing countries, trees often have cultural and spiritual values that can assist new urban dwellers in finding their place in cities and towns. The way urban green spaces are used and managed these days can strongly relate to its historical roots of how the values of urban green spaces have been managed and kept for generations (Lehmann 2011).

Urban green areas have positive impact on people's physical and mental health by providing settings for physical exercise, and provide a safe play space for children. Urban greenspace plays an important role in the basic education of schoolchildren with regard to the environment and nature (Baycan and Nijkamp 2004). From a social perspective, appropriate types of green space can offer a greater diversity of land uses and opportunities for a wide range of activities, can help to foster active urban lifestyles, and can be of real benefit to social health.

2.3 Policies, strategies and governance in urban greenspace

Policy makers in the world are dealing with the concern of urbanization and unplanned urban growth. The agenda 2030 of sustainable development is dealing

this challenge through sustainable Development Goal 11, which aims to make cities and human settlements inclusive, safe, resilient and sustainable (Emas 2015). Although the idea of participation in building and planning can be traced back to ancient societies community engagement in the built environment is of more recent origin. A participatory approach advocates actively involving 'the public' in decision-making processes, whereby the relevant 'public' depends upon the topic being addressed. The public can be average citizens, the stakeholders of a particular project or policy, experts and even members of government and private industry. In general, policy processes can be seen as a three-step cycle of planning, implementation and evaluation, whereby a participatory approach may be used in some or all of these steps (Atefeh 2012).

Cities mainly focus on the activities of human life so, it has to accept functions and structure by the natural system to be able to permit their stability. Meanwhile, green space as an essential component of the cities which plays the main role in urban metabolism, and lack of these spaces can create many serious messes in urban life (Atefeh 2012). The urban planning and management are demanding for selecting sites for urban green spaces in context to the ecology, society, and economic activities. In Ethiopia, the 2005 Urban development policy is the first official document to integrate all principles of good governance in its strategy. In subsequent years, the government implemented several initiatives demonstrating its commitment to effective and sustainable decentralization and creating conditions for improving urban governance so that cities become more competitive and productive (UNHABITAT 2017).

Urban green space development is mainly challenged by institutional arrangements and their commitment to apply policies and strategies on the ground. United Nations Department of Economic and social Affairs suggests four pillars towards achieving sustainable urban development. These are: 1) Social development, 2) Environmental protection, 3) economic development and 4) Effective urban governance (Alekseeva et al. 2016)

No sustainability or green growth objectives can be achieved without the active involvement of the cities and regions. Cities are the heart of the transition to the green global economy as key engines of economic growth, job creation and innovation. On the other hand, cities are the major contributors to global warming and environmental problems.

The responsibility and ownership of urban green spaces should not be fragmented between different authorities and different structures to achieve more innovation, efficiency and community involvement. Local authorities develop approaches to engage and involve users through discussion groups, consultations, artistic events, sport activities, ethnic minority background activities, leisure programs, environmental and horticultural activities, community gardens, organic food growing projects, etc. As a result, ideally of a consultative process, local authorities committed to supporting partnerships should consider actively supporting community groups and residents to get involved in specific initiatives and to take responsibility for related tasks in the urban green spaces (Hernandez et al. 2018).

2.4 Principles in Urban greenspace planning

According to Davis et al. (2015), greenspace planning is understood as a process targeted at strengthening connectivity between individual greenspaces while recognizing and supporting their multiple functions and promoting social cohesion. Different scholars presented different principles that has to be followed in designing urban greenspaces. Kambites and Owen (2006), Lennon and Scott (2014), and Hansen and Pauleit (2014) presented four basic principles.

i. Multifunctionality

According to Lennon and Scott (2014), multifunctionality refers to the ability of greenspaces to provide several functions and benefits on the same special area. Thereby, hypothesizing this principle is to combine ecological, social, economic and cultural functions of the greenspace (Pauleit et al. 2017). These functions can be environmental, such as conserving biodiversity, adapting to climate change and carbon reduction and sequestration, social such as access to urban green spaces, healthy living, improved aesthetics, increased recreational space, and a connection to the natural environment and economic, such as supplying jobs, energy saving and raising property prices (Molla, 2015). According to Pauleit et al. (2017), planning of greenspaces for multifunctionality has to be built on understanding of society's demand which has to strive for access to multiple greenspace benefits regardless of socioeconomic benefits.

ii. Green-Grey integration

Green-Grey integration is creating physical and functional integration and coordination of greenspaces with other urban infrastructure (Hansen and Pauleit

2014). Different studies pointed out that storm water management is amongst the prominent function of green-grey integration of urban greenspaces. Furthermore, infrastructures like bike paths, green corridors for natural ventilation and green roofs for cooling are also the benefits that can be entertained from the design principle of green-grey integration (Hansen et al. 2017).

iii. Connectivity

According to Hansen and Pauleit (2014), the principle of connectivity in greenspace design is applied to improve social connectivity (better accessibility), ecological connectivity (dispersal of plants and animals), abiotic connectivity (water and climate regulation). Lennon and Scott (2014), explain greenspace connectivity in different way; which is spatial, scalar and institutional connectivity. Spatial connectivity refers the physical connection of different greenspaces across the landscape whereby this research highly considers the principle of connectivity applied in connection of different greenspaces across Addis Ababa's landscape. Scalar connectivity deals with the need for coordination and consistency among spatial and administrative scales. Institutional connectivity implies, partnerships and cooperation among different administrative organizations and integrated governance should be considered in the planning of greenspaces.

iv. Social-inclusiveness

Social-inclusiveness is a process of ensuring equal opportunities for all society without segregation regardless of their background (Hansen and Pauleit 2014). Urban greenspace plan which fails to fulfil this principle of social cohesion and increase social inequalities. Socially inclusive urban in urban greenspace planning

can help to foster social cohesion and to address questions of equal access to urban green infrastructure and user needs into account (Hansen et al. 2017). The following table elaborates above mentioned designed principles and their contribution to ecological, social and economic benefit.

Table 1: Urban greenspace designing principles and their contribution

Source: (Pauleit et al. 2017; Hansen et al. 2017).

Contributing to	Urban greenspace planning principles			
	Multifunctionality	Connectivity	Green-Grey integration	Social- inclusion
Biodiversity protection	Ecological functions and habitat provision as integral part of planning for multifunctionality	Network for ecological connectivity	Habitat provision, promotion of native plants as co- benefit of green- grey integration	Fostering awareness for biodiversity values

<p>Environmental, ecological footprint and climate change adaptation</p>	<p>Regulating services that improve quality of air, water and soils; enhance climate change adaptation</p>	<p>Connected green structures that enhance natural ventilation and cooling and environmental friendly mobility</p>	<p>Green-grey measures for flood retention, reduction of energy consumption and urban cooling</p>	<p>Inclusion of vulnerable groups in greenspace planning</p>
<p>Green economy</p>	<p>Cost effective urban greenspace solutions by providing multiple benefits in the same space</p>	<p>Promotion of sustainable transport systems and green corridors (walkability)</p>	<p>Reduced cost of grey infrastructure management through combined green-grey systems</p>	<p>Promotion of social and green economy co-creation and management of urban green</p>

<p>Social cohesion</p>	<p>Urban greenspace provision for different demands</p>	<p>Provision of equitable access to urban green areas</p>	<p>Consideration of usability and amenity values of integrated urban greenspaces to promote social cohesion</p>	<p>Empowerment of citizens through collaborative urban greenspace planning, securing the needs and demands of all societal groups</p>
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2.5 Conceptual framework

From the theoretical framework which is detailed in the above literatures reviewed, conceptual framework has been developed. This research is based on the following conceptual framework which based the master plan of Addis Ababa as a central base for greenspace implementation on the ground. Which policy frameworks are addressed and which institutions are taking part in the planning and implementation of the green space is the major concept of this research. The existence of land use policy of the country and greenspace policy plays a prominent role in planning and implementation. Additionally, which principles are followed to plan green spaces and the institutions mandate to apply the principles have been assessed based on the following framework. Though the policies and strategies implicated on the conceptual framework are lacking, the existence and proper implementation has an implication on the city's greenspace development. The straight line connects the direct relation, input and impact on each other while the dotted line represents indirect relation, input and impact on the components of the framework. The framework conceptualizes the implementation of greenspace developments on the ground is basically dependent on what has been incorporated on the master plan and the institutions responsible in executing the plan on ground. So far, the land use policy impacts the urban greenspace policy which further be implicated on the masterplan. External factors such as budget, and stakeholders' engagement in greenspace policy drafting, implementation strategies and related processes are implicated on the implementation of greenspaces at ground level. Figure 2 illustrates the diagrammatic sketch of the conceptual framework of the research.

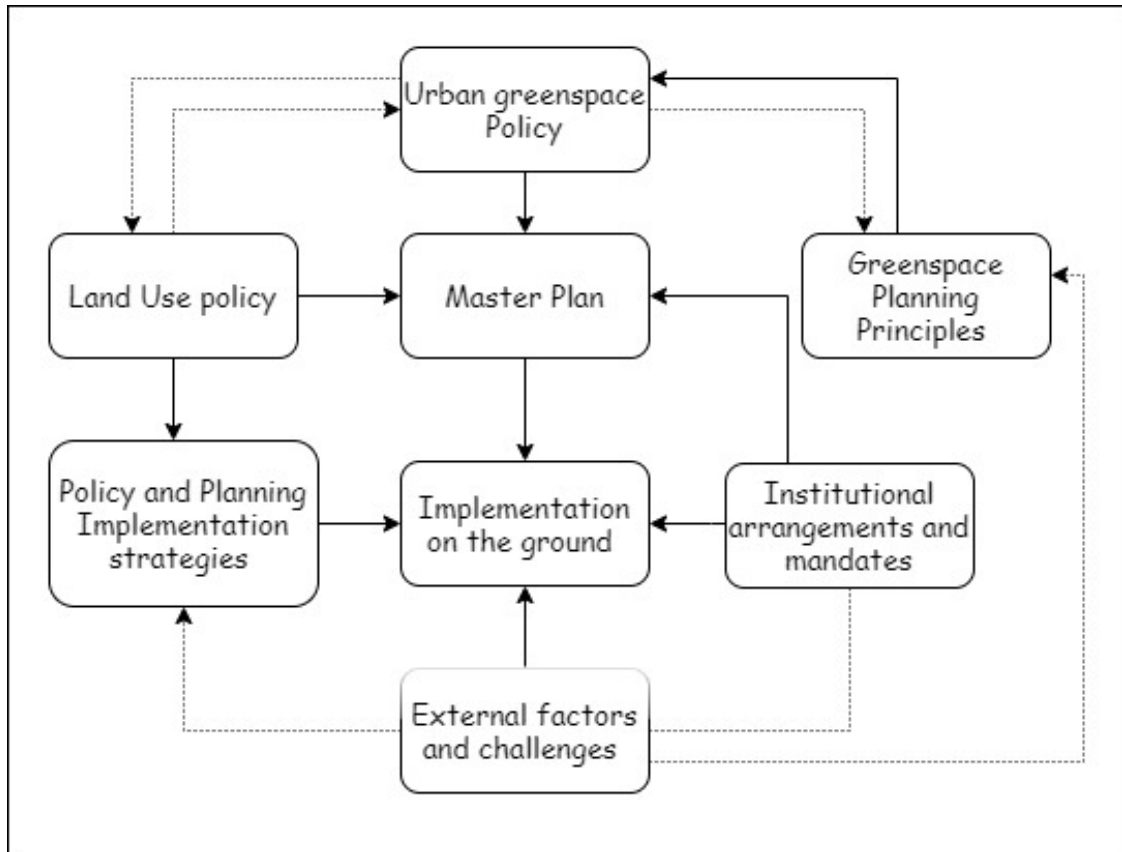


Figure 1: Conceptual framework

(Illustrated by the Author)

3 Chapter Three Research Methodology

3.1 Study area description

3.1.1 Location

Addis Ababa, the capital city of Ethiopia is located between 8° 45' North and 9° 49' within the central part of Ethiopia. Elevation ranges from 3200 m.a.s.l at the highest peak of Entoto to 2200 m.a.s.l.at the lower southern part of Akaki plains. Addis Ababa encompasses 520 km² being the largest city in the country and the biggest city in the world located in a land locked country (World population review 2019).

According to the 2007 census, the total population of the city was 3,384,569 (CSA 2007). Looking back to the population increase of the city, the estimated population as per the year 2019 is 7.8236 Million The population density is estimated to be 5,165 individuals per square kilometer available (World population review 2019). The following figure 1 locates the capital city of Ethiopia, Addis Ababa and figure 2, the green spaces distribution mapped by Rosa et al. (2018).

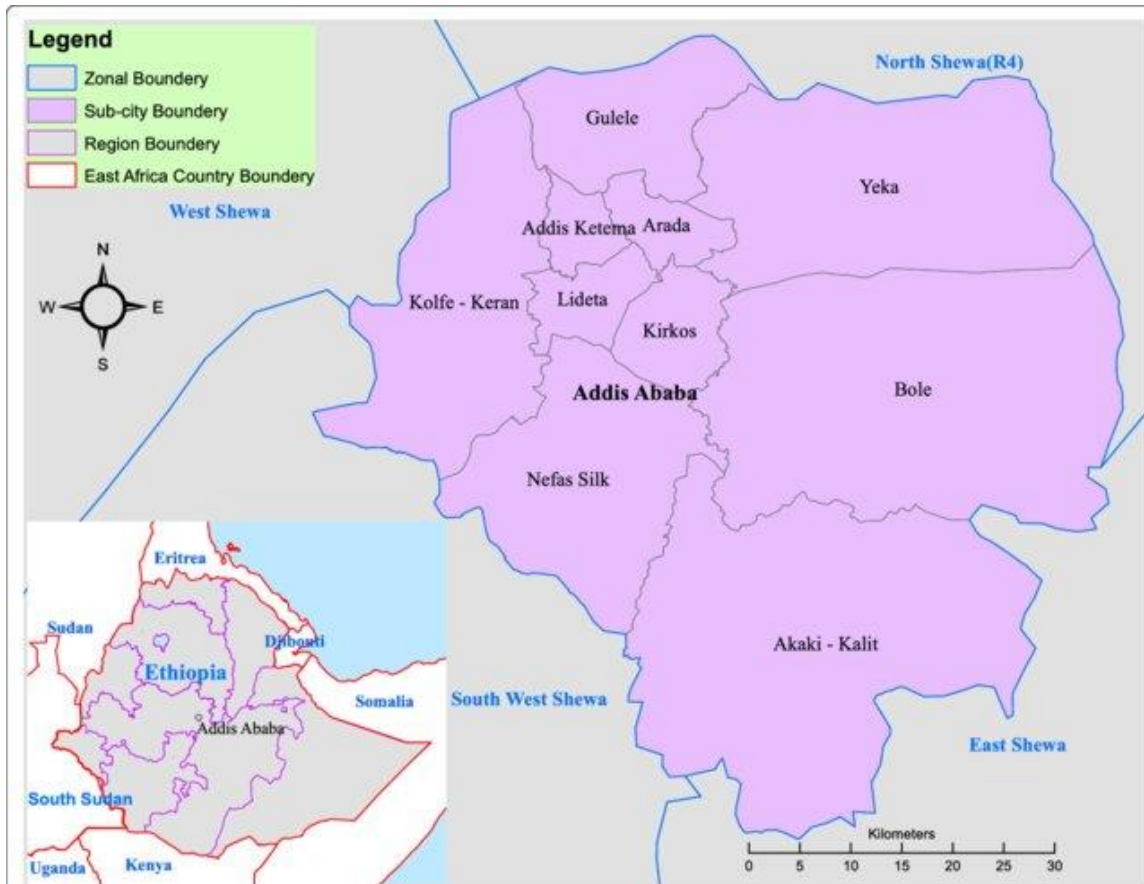


Figure 2: Location map of Addis Ababa

Source: Hassen et al. 2018

3.1.2 Vegetation and green areas in Addis Ababa

Historically, Addis Ababa is covered with natural indigenous vegetation which belongs to Afro-montane forest and woodland (Yeshitela 2015). The natural forest had been dominated by indigenous tree species such as *Juniperus procera*, *Olea europaea* subsp *cuspidata*, *Podocarpus falcatus*, *Hygnia abyssinica* and *Erica arborea* in high altitude over 3,000 m.a.s.l. At the turn of 20th Century, woody vegetations were highly removed due to city expansion and population growth (Kahssay 2016). Woody vegetations were highly exploited by city dwellers and surrounding farmers for fuel wood consumption and construction purpose. Currently, only few patches of natural forest remain and wide expansion of exotic

species especially Eucalyptus. There are few urban parks, riverside vegetation and street trees in the city which are considered as green spaces in addition to the peri urban forest at the outskirts of Addis Ababa (Yeshitela 2015).

A mixture of both indigenous and exotic tree and shrub species constitute this forest. Large cover of institutional forest is found in embassies, and at the grand and national palaces of Ethiopia, various campus of Addis Ababa University, in the compounds of churches. The Ethiopian Orthodox Tewahedo church has higher biodiversity in Addis Ababa is expected to exist in institutional forest (Herslund et al. 2018). Green space largely covered with grasses are found in military compounds, golf field, church compounds, and airports. During the rainy season, grasses develop on barelands, changing the morphology of the landscape (Yeshitela 2015).

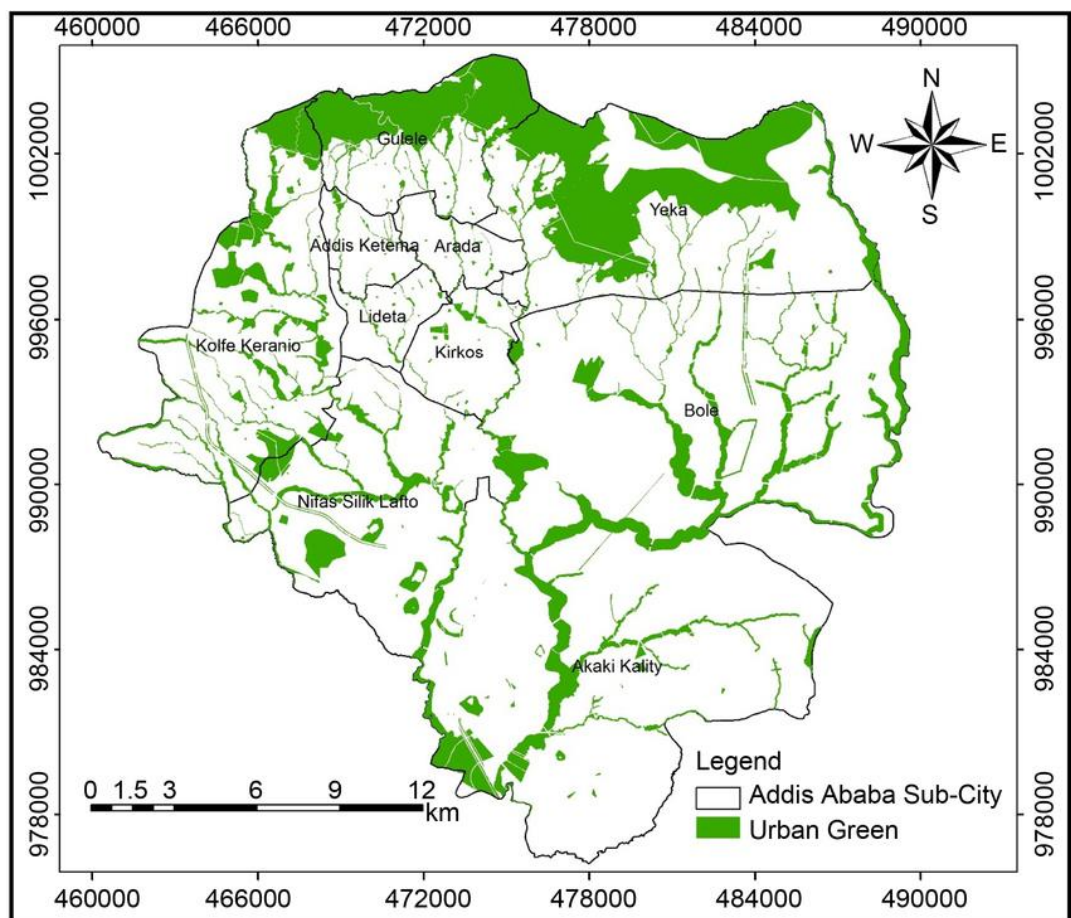


Figure 3: Map of Addis Ababa with existing greenspaces

Source: (Rosa et al. 2017)

3.1.3 Climate

A result from the analysis of 30 years climatic data (rainfall and temperature) indicated that Addis Ababa has experienced both dry and wet climate conditions. The trends from 2005-2010 showed an increasing rainfall well above average and in the 1980s it was almost below average. The total annual rainfall ranged from 929.4mm in 1999 to 1567.9mm in 1993 where the average annual rainfall for the past three decades was 1230.3mm (Kahhsay 2016). Climatic data from the National Meteorological Agency of Ethiopia indicated that the mean annual, maximum and minimum temperature in the city of Addis Ababa between 1981 to 2010 was 23.3 0C and 10.7 0C respectively. Climate change projections (Lindley *et al.* 2015) also indicated no significant changes in the seasonality of rainfall except slight changes in monthly rainfall while seasonal temperatures are projected to increase by 1.5-2°C although differences in temperature and rainfall patterns occur across Addis Ababa depending on elevation and prevailing winds (Lindley et al. 2015).

3.2 Design of the research

According to Yin (2003); case study reserach method provides holistic and meaningful information about the characteristics of real- life events. The reaserch is designed and undertaken as a case study research focused the theme in Addis Ababa. The research is desined to analyze the current status of the city's green space and the policies behind green space planning and implementation in the city. The following figure shows the sequential andinterrelated research technique

employed to achieve the research objectives. The double lines in the diagram scheme shows sequential data linkages made from theoretical frameworks and emperical evidences.

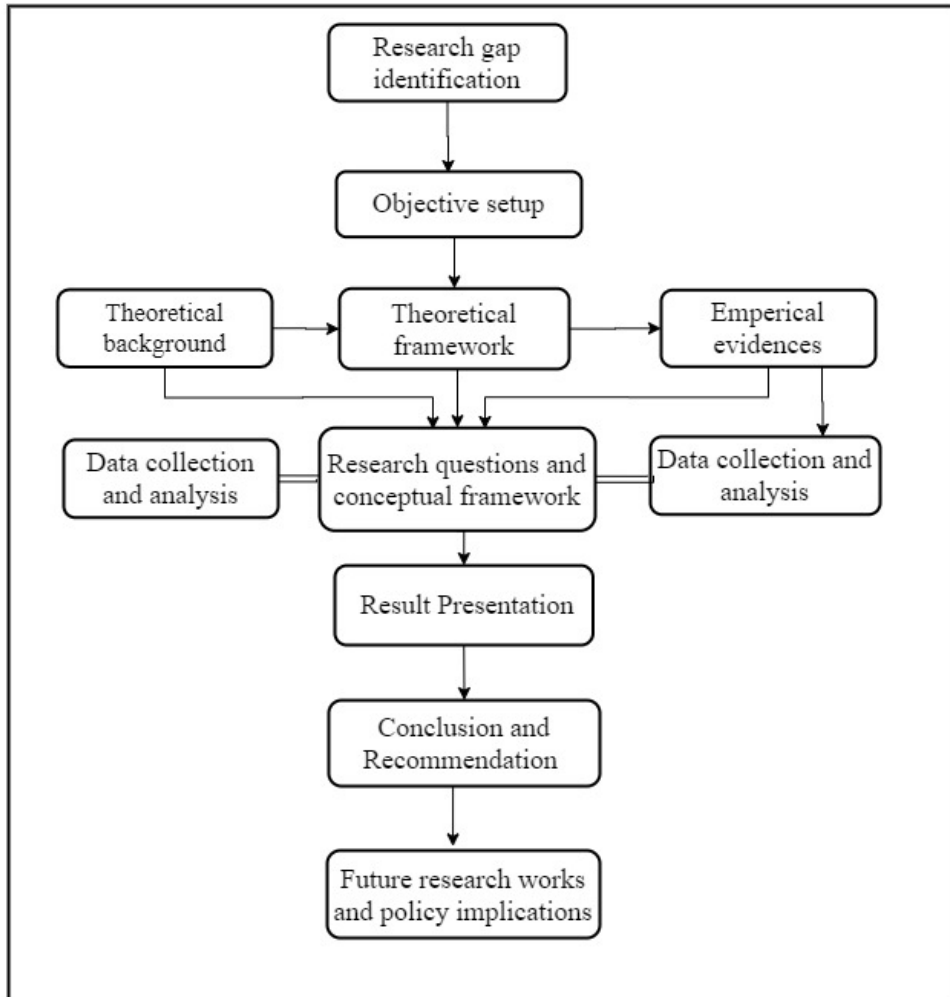


Figure 4: Design of the research

Source: Adapted from Aung (2012)

3.3 Data type and source

Both primary and secondary data has been collected to undertake this research.

The primary data was collected through key informant interview, Focus group

discussion and field observation. Secondary data has been analyzed from google maps, satellite images and secondary data used through literatures review, policy and masterplan analysis of Addis Ababa. Structured and semi-structured questions were developed to answer the research questions regarding the institutional and governance structure responsible for the green space development of the city. The key informants are selected from different government organization whereby representatives from these institutions have participated on the focus group discussion which intends to clarify issues raised by the key informants. Semi-structured question catalogue has been presented for the discussion and outputs summarized qualitatively.

3.4 Data collection technique

Key informant interview from institutions dealing with urban greenspace; both federal level and City of Addis Ababa were approached for the data collection. The institutions were selected based on purposive sampling design and those who are regulatory bodies and implementers of greenspace plans in the city were selected. The key informant interview was started from Ethiopian Environment Forestry and Climate Change and following institutions has been selected following snowball sampling technique adopted from DenBiggelaar (1991). Respective selected institutions had assigned an expert of the interview as a key informant representing the institute. Two key informants from each institution has been appointed for the interview whereby, both administrative and expert view has been included as some of the experts interviewed play administrative role. The interview was held in semi-structured questions raised and the discussion was open for related issues raised by the respondent (See annex I for the issues under semi-structured interview).

Table 2: List of organizations approached for key informant interview

No	Organizations	Roles (Policy, implementation, Support)
1	Ethiopian Environment Forestry and Climate Change Commission (EFCCC)	Policy draft, regulatory body at Federal level.
2	Addis Ababa City Government Environmental Protection and Green Development Commission	Regulatory organization at city level.
3	Addis Ababa City Government Plan and Development Commission	Commissioned to do the structural planning of the city, monitor and evaluate according to local development plan of the city. It also implements greenspace plans developed by planning commission

4	Addis Ababa City Government Farmers and Urban Agriculture Development Commission	Execution of urban Agriculture plan developed by plan and implementation together with departments under sub cities.
5	Addis Ababa River Basin and Green Area Development and Administration Agency	Implementation of policies drafted by Addis Ababa City Government Environmental Protection and Green Development Commission and support (cascade to Sub City level). It also implements greenspace plans developed by planning commission.

The Focus group discussion was held finally after key informant interview. Due to COVID-19 pandemic, the focus group discussion was held in a small group (3 people) from each representative institution. In the FGD, issues related to institutional mandates and accountability has been clarified (refer annex II for the question catalogue used for the FGD). Direct field observation of different greenspaces in the city; Gullele Botanical Garden, peacock Park, Addis-Ethio-Africa Park (ECA park), street trees, riverside vegetation and urban agriculture at different part of the city has been used as triangulation of what has been implemented in greenspace development of the city.

Table 3: Reviewed documents dealing with urban greenspace policy in Ethiopia and Addis Ababa

Documents reviewed	Source of document (Organization/Available at)
Urban Planning Proclamation no 547/2008	https://www.ethioconstruction.net/sites/default/files/Law/Files/Urban%20Planning%20Proclamation%20No.%20574-2008.pdf
Structural plan of Addis Ababa (2002-2012)	Plan commission
Structural plan of Addis Ababa (2017 - 2027)	Plan commission; https://c40-production-images.s3.amazonaws.com/other_uploads/images/2036_Addis_Ababa_Structural_Plan_2017_to_2027.original.pdf?1544193458

Forest Regulation of Ethiopia (Final draft prior to approval)	EFCCC
Ethiopia's Climate Resilient Green Economy	Federal Democratic Republic of Ethiopia, Climate Resilient Green Economy Strategy, 2011 by UNDP
The Urban Greenery and Beautification strategy	The Urban Greenery and Beautification strategy, 2015, River Basin and Green Area Development Administration Agency.
Environmental Policy of Ethiopia	http://extwprlegs1.fao.org/docs/pdf/eth133155.pdf
Environnemental Protection Organs Establishment proclamation, Proclamation No. 295/2002	http://extwprlegs1.fao.org/docs/pdf/eth44280.pdf
Growth Transformation Program of Ethiopia I	http://extwprlegs1.fao.org/docs/pdf/eth144893.pdf
Growth Transformation Program of Ethiopia II	https://www.greengrowthknowledge.org/sites/default/files/downloads/policy-database/ETHIOPIA%29%20Growth%20and%20Transformation%20Plan%20II%2%20Vol%20I.%20%20%282015%2C16-2019%2C20%29.pdf

The evaluation of the implementation of green space policy followed the methodology followed by Alekseeva et al. (2016) to evaluate the greening practices. This is made through the analysis of various indicators reflecting the quality and extent of urban greening made in the city. In this research, the practice and implementation of urban green spaces in Addis Ababa has been evaluated based on the practicability of the structural plan of Addis Ababa regarding the green space development and to what extent the plans have been executed. The urban greenery status indicators that have been assessed are the ecological distribution and social inclusion of the greenspaces in Addis Ababa.

3.5 Data Analysis

The collected data were subject to both qualitative and quantitative analysis using descriptive statistics by using excel. The collected data and reviewed documents were presented by using, tables, graphs and descriptive texts. The stakeholders and institutional arrangement mapping have been analyzed using engagement of different stakeholders' consultation and multi-criteria analysis. The collected data from key informants and FGD has been triangulated with the documents and ground observation for data validation and analysis.

Document review of policies as a major contributor in planning and implementation of greenspace was analyzed by using IPO (Input Process Output) model adopted from (Auch et al. 2014). Auch et al. (2014), used the IPO model to analyze contribution of policies and regulations in Protected Areas management. Similarly, this model is employed to analyze the inputs provided to develop greenspace of the

city, the process taking place and the expected output. The performance and processing systems that assume inputs are transformed by internal system process to generate results (outputs). The model involves three processes; governance and steering process, core process and auxiliary process. As this paper deal with the governance of green spaces implementation in Addis Ababa which is the major challenge on the execution of planning, the model is used to analyze the policy documents as the inputs and greenspace development as output and the processes undergoing with institutions and stakeholders.

4 Chapter Four Results

4.1 Urban green space policies and implementation

Urban Planning Proclamation no 547/2008 has a scope to be applied to all urban centers throughout the country. This proclamation is aimed to achieve an objective of establishing a legal framework in order to promote planned and well developed urban centers. One of the plans recognized under this proclamation is the structural plan. Among the issues that the structural plan has to cover principal land use classes and environmental aspect whereby the greenspaces can be dealt within these two themes in the structural plan. Furthermore, the structural plan (2017- 2027) has come up with description of existing greenspaces and further development of the greenspaces, and establishment of new parks. However, there are some urban greenspace projects being implemented which are not included in the masterplan of 2017-2027.

Environmental Policy of Ethiopia (1997) has a sectoral policy framework on Forest, Woodland and tree resources. Under this sub section, the urban forestry is overlooked and the policy gives due emphasis for forest lands and partially peri-urban forests. Under sub section; Human Settlements, Urban Environment and Environmental Health, the policy has clearly set planning and creating of greenspaces within urban areas, including community forests and woodlands for fuel wood as well as for recreational amenity, providing habitats for plants and animals and ameliorating urban micro climates. According to the key informants from Addis Ababa Environment Protection and Green

Development Commission, the policies are rather in the air which lacks regulation and standards to play a key role for the enforcement of the policy.

Forest Development Conservation and Utilization Proclamation No. 1065/2018 has given a recognition for urban forests (roadsides, riverside, parks and other greenspaces) while the respective regulation on Forest Development Conservation and Utilization excluded the urban forestry part. To maximize the need of urban society, the Ministry of Urban Development and Housing (MoUDH) prepared the Climate Change-Resilient Urban Green Development Strategy as a road map to fulfill the urban population need in the area of urban green infrastructure service provisions. The MoUDH in collaboration with Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) has developed the Ethiopia National Urban Green Infrastructure standard which aims at setting the basic minimum standard requirements for Urban Green Infrastructure (UGI) development and management.

The UGI standard was developed based on the experiences of international and national cities in UGI development and management. This urban green infrastructure standard provides the basic minimum requirements to be achieved in the design, implementation and operation of urban green infrastructure. World Health Organization (WHO) recommended standard to have 9 square meters of greenery per person in an urban setting.

National Urban Green Infrastructure standard of Ethiopia also proposed 15m² public green open spaces per capital within the city boundaries and every resident to live within 500 meters from a public green open space of a size of

at least 0.3 hectare (MUDH 2015). However, even though, the standard has proposed they have never been implemented accordingly in the city.

This research used the IPO model to evaluate significance role of the policies at federal and Addis Ababa City level to manage the existing greenspaces and establishment of newly proposed greenspaces in the city. The model has indicated the three processes that the policy inputs must undergo to deliver the output which is the greenspace plan execution on the ground.

What is indicated as an input below are the major policies which can contribute the greenspace plan of the city. Other inputs like human resource is not included in the analysis as the model was developed to show the role of policies in the greenspace plan implementation regardless of other inputs in this specific case.

In the green space development of Addis Ababa, the major inputs are supplied by the federal government and the city government. Policies and planning documents prepared at both city and federal level are the guiding principles to implement the greenspace plan of the city and manage the existing greenspaces. As illustrated diagrammatically in the figure 5 below, three processes are undergoing to deliver the output. These processes are:

- i. **Governance and steering process:** Under this process, the actors and stakeholders who are responsible in greenspace planning and implementation go through task appointment and setting accountability. Though all actors have their own mandates and accountability, mandate conflict can arise due to clear reporting line. Conflict of interest between different sectors in the city have conflict of interest and lack of clear communication system between overlapping conflicting sectors.

Managing the governance and steering process directly contributes to the core process as multi sector involvement is required in masterplan preparation and development. The planning commission which is responsible to develop the masterplan has to work together with other stakeholders and should be accountable for the city government.

ii. Core process: the core process in the city's green space development and implementation is development of the master plan and other local development plans. Managing the core process plays a great role to attain the desired output.

iii. Auxiliary process: Under the auxiliary process, activities like research and investigations, land use planning and consultations, and guiding principles produced at federal and city level are managed and checked. The auxiliary process directly contributes to the Core process which is development of the masterplan and local development plan.

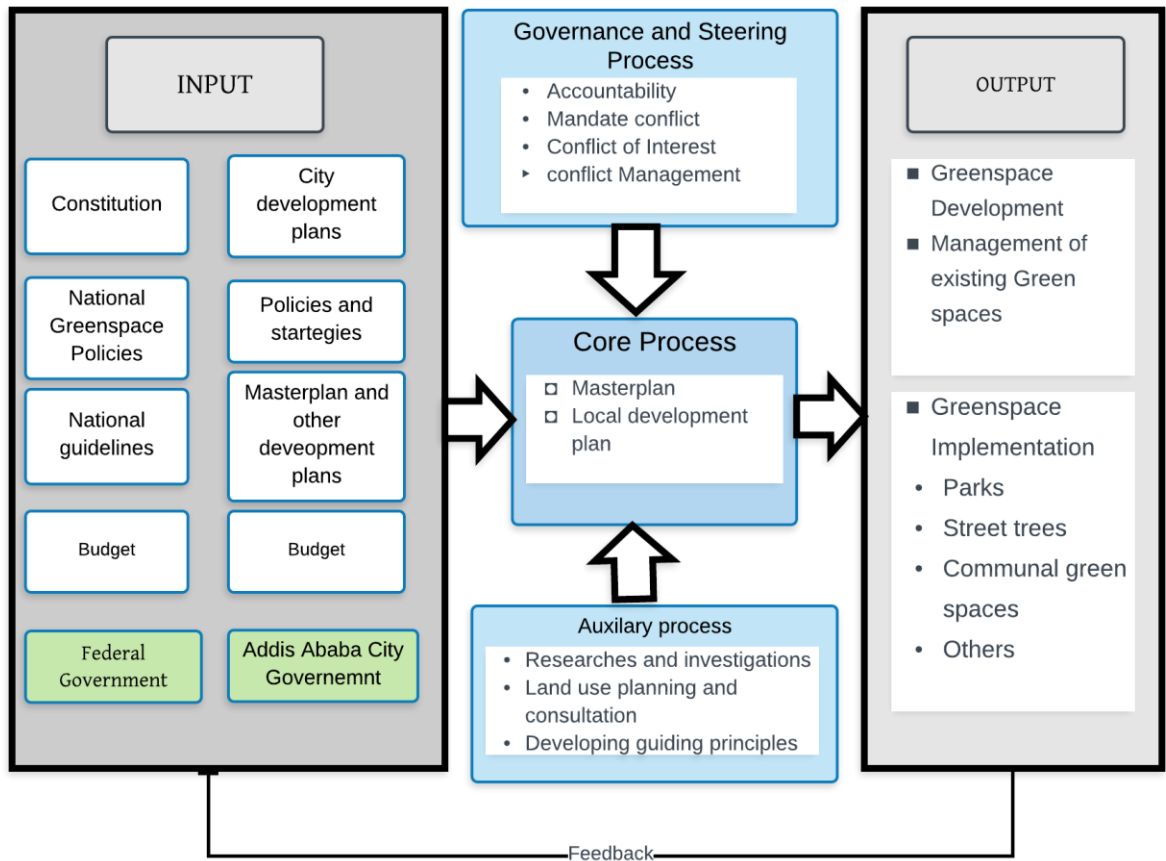


Figure 5: Input Process Output analysis of Addis Ababa's greenspace

Adopted from (Auch et al. 2014)

4.2 Institutional arrangements for green space planning and implementation

The city government; sectors which are directly involved in green space planning and implementation of the city is organized as it is illustrated in the figure 6 below. All the information and direction is headed by the City Mayor. As this organogram is developed from the organizational structure of the city mayor available on the city administration homepage.

Ethiopian Environment, Forest and Climate Change Commission (EFCCC), A federal institute is directly accountable to the Prime Minister office while the institutions responsible on the greenspace planning and implementation of Addis Ababa are answerable to the City Mayor. The three commissions selected for the key informant interview, Farmers and Urban Agriculture Commission, Addis Ababa city Environmental Protection Green development commission and the City Government Plan and Development commission acts on policy drafting, planning and implementation of the city's greenspace development. River Basin and Green Development and Administration Agency is directly accountable to Addis Ababa city Environmental Protection Green development commission which is responsible for implementation of greenspace plans like parks, riverside greening, street trees and squares of the city. They cascade the administration of River Basin and Green Development and Administration Agency to sub city and woreda level for implementation of greenspace development. On the other hand, the sub cities are directly answerable to the Mayor which could make the line of communication and coordination delicate. Furthermore, linkage between the federal organization; such as EFCCC and the Addis Ababa Environment and Green Development Commission, both deal with environment and greenspaces but the organizational structure of the two organizations and their coordination is frail.

As per the interview with the key informants and discussions made, the organogram has been framed in different ways and this was due to clear communication when institutional reshuffling is taking place. The following organogram is developed (Figure 6) through triangulation method with the existing organizational structure of the city administration. Based on the proclamation of establishment of institutions

and their line of accountability, the organogram is developed targeting the institutions which have been approached for the key informant interview of the research and play an important role as regulatory and implementers of greenspace development of Addis Ababa in one or another way. The Federal institute, EFCCC has not been included in the following organogram as it is a federal institute and directly answerable to the office of the Prime Minister. Though it has a big regulatory role for the country as a whole and for the city in particular, the linkage and communication with the city's institution presented on the organogram is fragile as a result, it not be placed among the city's institutions.

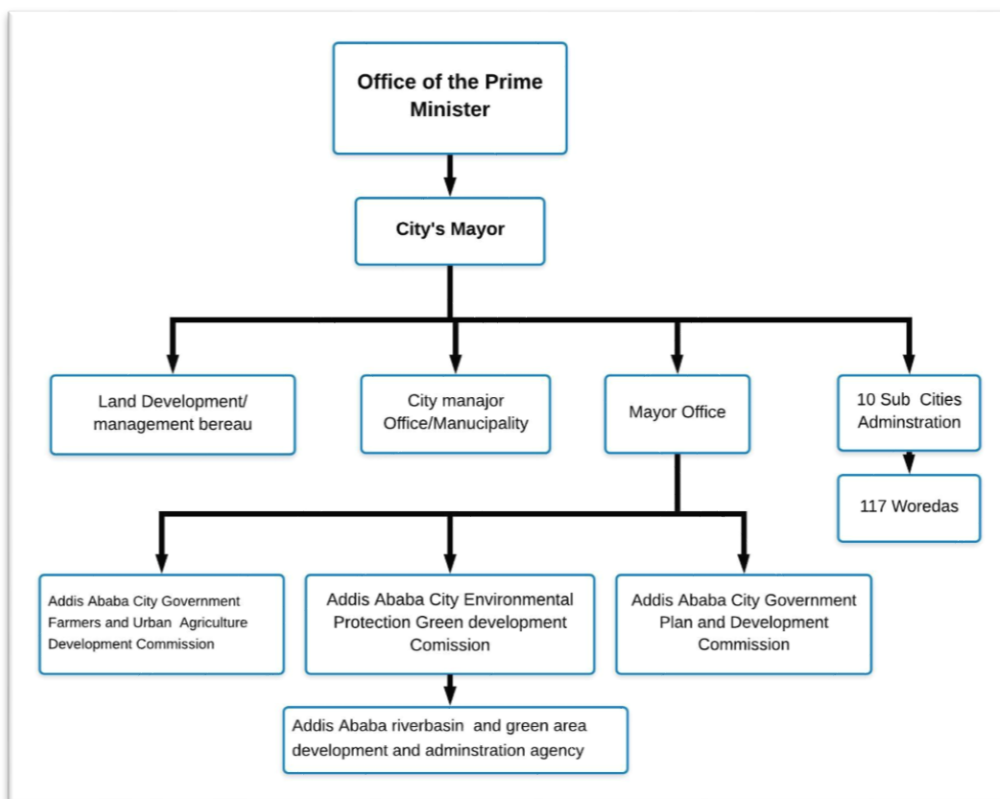


Figure 6: Organizational structure of actors in greenspace development of Addis Ababa

4.3 Challenges of green space implementation and current positive initiatives

The key informants were asked to list the challenges that greenspace planning and implementation is going through and the possible positive initiatives in the implementation of greenspaces in Addis Ababa. Accordingly, the listed challenges and opportunities are presented under this section. The listed challenges are categorized and summarized by the researcher as institutional, political, social and economical and presented in table 4. Similarly, the opportunities are listed by the respondents and document reviewing of current project initiatives of greenspaces in Addis Ababa and presented in descriptive texts under section 4.3.2.

4.3.1 Challenges in greenspace development of Addis Ababa

The challenges that are mainly noticed and communicated by all key informants has been summarized in four categories which are Institutional, Political, social and economic challenges. Table 4 summarizes the key points which are further elaborated under this section.

Table 4: Challenges in greenspace planning and implementation

Category	Description
Institutional challenges	<ul style="list-style-type: none"> • Conflicting roles of institutions among federal and the city • Miss-communication of institutions • Frequent institutional rearrangement • Lack of law enforcement

Political challenges	<ul style="list-style-type: none"> • Political commitment • Politicizing professional commitments
Social challenges	<ul style="list-style-type: none"> • Lack of awareness of the society regarding green spaces • Green space encroachment
Economic challenges	<ul style="list-style-type: none"> • fuelwood and timber harvest • conversion of designated green space into built up area • Budget allocation

i. Institutional Challenges

According to the Key informants, institutional challenges are stated as the major challenge of implementing green space policy and the planning on the ground. Inclusion of institutions in the planning process of greenspace plan is vital even though their direct contribution to the implementation is very low. Wholistic institutional engagement in the plan preparation is has been a challenge to the greenspace development plan and implementation of the city. Segregated plans by different institutions who are implementing the master plan of the city will not realize the milestone of the other institutions executing implementation on the same site.

Institutions' frail communication on the activities are realized on the ground. to mention as an example; green spaces established on different round-about and street trees have been removed by the Ethiopian Road Authority. According to River Basin and Green Areas Development Agency, seven (7) roundabouts have been demolished after green area development has taken place. this shows that there is

week communication between institutions which have distinctive roles but executing their plan on the same area. Additionally, Ethiopian Electric Power Corporation's action on the road side trees are not well managed thereby, there has been street trees removal without pre-notice to the respective organization. As per the discussion with all key informants has mentioned the miss-communication among institutions as the major challenge in green space development of the city.

Frequent institutional re-arrangement is one of the challenge that can further grow to conflicting roles between organizations. As it is discussed under the section 4.2 above, the organizational structure is not communicated as of the updates which created a controversial accountability loop with the employees in the organizations.

The other challenge which is discussed under institutional challenge is conflicting roles between institutions. During implementation of green space development, the respective institutions will not be consulted for specific inquires. When green spaces are implemented, species selection is one of the major and important aspect and for such activities research institutes have to be involved whereas such consultations are hardly done; rather the availability of seedlings at a time of planting and fast-growing species are selected.

ii. Political Challenges

Urban forestry should be implemented based on studies and planned in a long-term. politicizing forestry especially in urban areas could distort the city's plan and ruin the long-term plan of the city. The new green legacy led the Prime Minister initiated tree campaign to plant 4 billion seedlings in the rainy season of 2019 has brought more than one million seedlings distributed to Addis Ababa City by River basin and green

areas development administration agency. this specific campaign is positive initiative whereas it a challenge at the same time. Urban forestry needs a long-term plan; rather the tree campaign made in the rainy season is it is targeted to reach the planned 4 billion seedlings which was planned months ahead of planting. Such urban forestry tree campaign need to be done based on prepared plans specially to prepare the needed seedlings; species and to match the species with the appropriate sites. The planning also didn't consider the management of urban forestry which is a big challenge in the city like Addis Ababa where street vendors are destroying the seedlings. Additionally, as it is seen from the picture below, the seedlings are not planted in a predesigned spacing rather, it is random planting of available species and this will destroy the aesthetic value of the street trees in urban landscape.

Seedlings were distributed to all Sub cities but the plantation areas were not planned in advance. Figure 8 shows that the seedlings are planted on the road median which is not planned to be a median rather, it was designated for extension of the rail way on the master plan of the city. It is obvious that these seedlings will be uprooted in the near future for the designated purpose. This shows that political engagement to receive a public hearing is a challenge for planning and implementing greenspaces without contradicting with the masterplan.

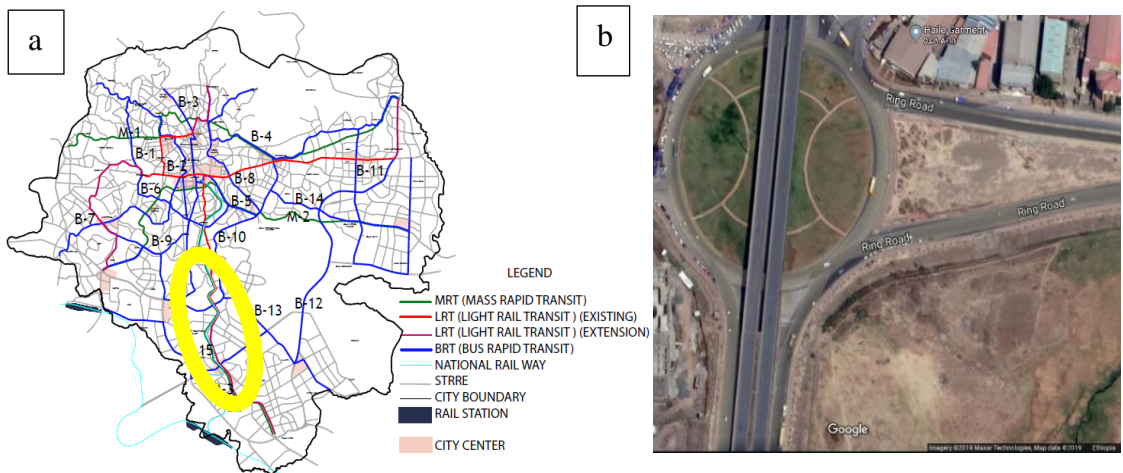


Figure 7: (a) planned rail way on Masterplan of Addis Ababa (2017-2027) (b) Aerial photograph where extension is planned



Figure 8: Street tree plantation made in 2019 through campaign on area designated for railway extension on the masterplan (Haile Garment to kality road)

iii. Social Challenges

Lack of societies' awareness regarding greenspaces in addition to the tremendous urbanization taking place in the city contribute to communities encroaching the greenspaces. The urban population settlement critically reduces the existing green space as people move to the periphery in the expense of losing the green areas (peri-urban forest areas). Addis Ababa has grown in the last three decades and this land expansion has happened in the expense of the loss of the green spaces in the periphery of Addis Ababa.

Figure 8 below shows the penetration of urban extension in the peri-urban forest area of the city. Similarly, figure 9 shows that the urban population is moving towards the South part of the city and agricultural fields around Kality are highly converted to residential area. The infrastructure development; the high-way is passing through the area and newly constructed condominiums are one of the reasons for the expansion of the city in agricultural greenspace of the area.



Figure 9: Encroachment to peri-urban forest of Addis Ababa

Photo by Shibire Bekele, 2020



Figure 10: Encroachment of urban agriculture land in the South West part of the city

iv. Economic Challenges

The economic development of city residents has a direct and indirect impact on the greenspaces of the city. As per the discussion with the key informants, the riverside of Addis Ababa is encroached illegally by the poor whereby river buffer development is challenged by the economic situation of city residents. Furthermore, the city dwellers of Addis Ababa are engaged in fuelwood collection from the greenspaces of Addis Ababa especially the plantation in the north part of the city is facing this problem.

4.3.2 Initiatives of green space development in Addis Ababa

i. Political commitments

The media coverage on Addis TV regarding the city's green infrastructure is a great opportunity to create awareness on the protection and management of the developed green spaces of the city. Such TV programs play a great role in the expansion of individual green areas or communal gardens in addition to managing the existing green spaces. This has been mentioned by all key informant interviewee as a great opportunity for green space development in the city and creating Environmental awareness.

Political will and initiations from the Prime Minister and the City Mayor to work on river side vegetation and develop green infrastructure. One of the mega project on greenspace development of Addis Ababa is the riverside project. The project aims to enhance the well-being of city dwellers by mitigating river flooding and through the creation of public spaces and parks, bicycle paths and walkways along the riversides. This project will run along two of the largest rivers of the city, stretching a total of 51 kilometres, all the way from the mountain of Entoto through to Akaki River. It also aims to improve the well-being of inhabitants and realise the country's aspiration of building a green economy through the expansion of green spaces and converting solid waste dropped into the rivers to usable materials. The public parks that will be developed through this project will have lanes dedicated for bicycle riders, pure water and solar energy supply and recreational areas. The Addis Ababa River Side Project (Sheger project) is an initiative of Prime Minister Abiy Ahmed of Ethiopia. It aims to face-lift the image of the city and properly utilise the potential of the capital (Addis Herald March 13/2020)

The river side development project will run along the two biggest rivers in Addis Ababa stretching 23.8kms and 27.5kms respectively all the way from the mountains

of Entoto through to Akaki river. “The project essentially aims to lift the image and potential of the capital. With the goal of creating many jobs in the project phase, it also aims to create riverside economies, increase urban tourism, and provide the city’s residents with areas of respite,”



Figure 11: Sheger river side development plan and Aerial photo

ii. New technologies in urban greening

New technologies introduced to transplant big trees in the city is one of the biggest initiative taken by the prime minister office in addition to the riverside development explained above. The picture below shows the trees that are uprooted from different parts of the country and collected at Arat Killo for planting it in the palace replacing eucalyptus.



Figure 12: Trees uprooted from different parts of the country and collected for plantations in Addis Ababa

Photo by (Shibire Bekele 2019)

iii. Potential of Urban and Peri-urban agriculture

The Addis Ababa City Development Plan (2002-2012) had indicated that the livelihoods of 51,000 families in Addis Ababa were associated with farming. It argued that urban and peri-urban agriculture (UPA) should be encouraged, especially in the south-eastern part of Addis Ababa. It proposed horticulture development along riverbanks and livestock production on the peripheries. Overall, 13.82% of the city's land area (7,175 ha) was delineated as agricultural land. However, other than this reference, UPA was not featured in the planning tools for regulating the actual implementation of the plan (i.e., Strategic Development Framework, Strategic Development Action Plans; and Local Development Plans).

Existing urban agriculture and their respective area is indicated by the following pie chart. As illustrated below, Akaki kaliti subcity has the largest share of urban green space whereas subcities like Addis Ketema, Lideta, Arada, Gullele and Kirkos subcities practice insignificant area coverage of urban agriculture.

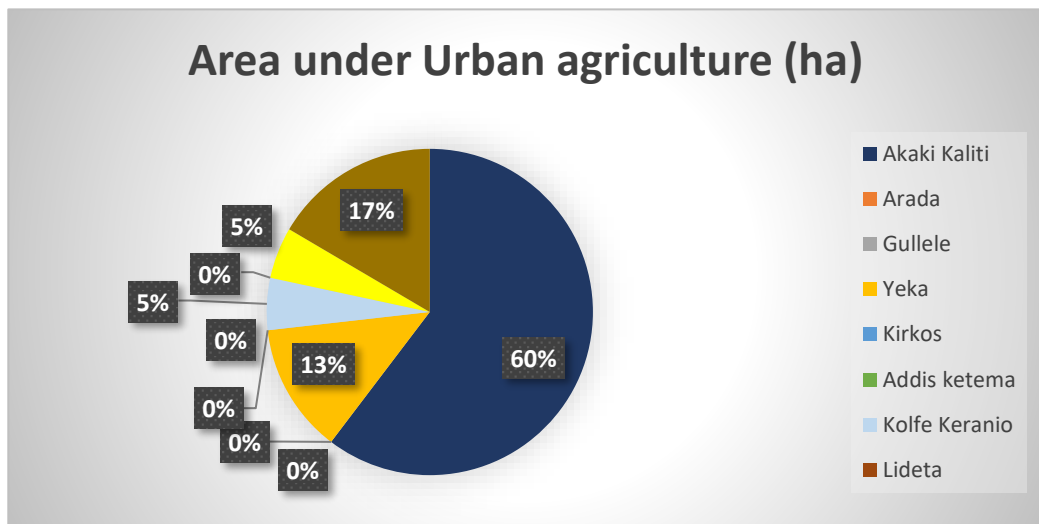


Figure 13: Urban agriculture area coverage at sub city level

Source: Structural Plan of Addis Ababa (2017 – 2027); Addis Ababa Urban Agriculture Commission



Figure 14: Figure 13: Urban agriculture practice riverside (left) and along railway around Gottera (right)

iv. Existing Greenspaces and their potential for recreation

There are greenspaces in the city which can be taken as a base for building up on the existing greenspaces and open spaces. There are also initiatives at local administrative level, woreda and local community which take the leading role in protecting open areas and change abandoned lands to green areas. The following pictures are taken from different parts of the city involving potential greenspaces that could be scaled-up and improved.



Figure 15: Private greenspace owned by Tropical garden in kirkos Sub city near peacock park

(Photo by: Shibire Bekele 2019)



Figure 16: Kebena Riverside vegetation around German embassy
(Photo by: Shibire Bekele 2019)

These pictures are from Kebena river near German embassy; the river vegetation could have been enhanced well as the picture on the left side is bordering the embassy. During key informant interview with River Basin Development Authority, there is a mechanism to outsource some green spaces to institutions to develop it better especially squares. This mechanism should be upscaled to other green spaces like river side vegetation development. In this regard, institutions like embassies, schools and churches should play their role as these institutions have played a great role in institutional forest development in urban areas.

The outskirts of Addis Ababa is well covered by vegetation on Mount Entoto and Gullele Botanical Garden covering large area. Figure 16 shows the green space coverage of Gullele Botanical Garden as compared to small patches of green corridors in the city. Furthermore, the available green space which are the remnant

woodlands; Figure 17, around the outskirts of Addis Ababa can be seen as an opportunity to develop the existing green spaces. Capitalizing the existing large greenspaces and small patches of greenspaces in the city can enhance the availability, accessibility and use of the greenspaces of the city.



Figure 17: Juniperus forest in Gullele Botanical Garden

(Photo by Shibire Bekele 2020)



Figure 18: Remnant woodlands around Kaliti; South-west of Addis Ababa
(Photo by: Shibire Bekele 2019)

4.4 Principles integrated in greenspace planning and Implementation of the Principles

4.4.1 Principles in planning documents

Data from document review and analysis were analyzed by using content analysis (Krippendorff, 2013; Roe 2006) in which explicit references to various terms of greenspace planning principles were identified and implicit references which is identifying related concepts, e.g. accessibility, ecological, social and economic functions other related terms on the same spatial area are used to analyze the principles integrated in the masterplan.

As per the discussion with the key informants, different principles in green space planning has been considered through following the principles during the planning phase though implementation is challenging. Multiple benefits and functions provided by different green spaces have been taken into account during the preparation of different planning documents, which are related to greenspaces. The following documents integrated the greenspace planning principles. through the documents, principle of multifunctionality, green-grey integration, connectivity and social-inclusiveness are explored weather they are explicitly or implicitly indicated in the policies and regulations.

- i. The Environmental Policy of Ethiopia, which was formulated in 1997, explicitly particularized the objective to plan and create green spaces within urban areas that provide recreational activities, habitats for plants and animals and ameliorate urban microclimates.
- ii. The Urban Greenery and Beautification strategy, which was formulated in 2015, has an objective to develop green spaces, which reduce environmental degradation, pollution, urban floods, and which promote environmental sustainability in the urban area.
- iii. The Ethiopian National Urban Green Infrastructure Standard, which was formulated in 2015, has an objective to create ecologically well-functioning, aesthetically pleasing, and socially beneficial green spaces in cities and provide suitable, sufficient and ecologically viable green spaces for recreational, social, economic and environmental needs of the community.

- iv. The Green Infrastructure Based Landscape Design Supporting Manual, which was developed in 2011, also proposes to develop street tree plantings for shading, mitigating the urban heat island effect, reducing runoff and sequestering carbon.

From the above-mentioned policies and regulations, principle of Multifunctionality is implicitly mentioned under (i, ii and iii) while The Ethiopian National Urban Green Infrastructure Standard, formulated in 2015 (iii) has explicitly indicated the principle of social-inclusiveness. The Green Infrastructure Based Landscape Design Supporting Manual (iv) has implicitly indicated the principle of connectivity and green-grey integration. is which can further develop to a principle during planning of greenspace development project and implementation on the ground.

Based on a discussion with key informants, the planning of green space development follows the basic principle of green infrastructure development though the implementation of the planning is not satisfactory so far.

4.4.2 Principles integrated in the masterplan and implementation

Multi-functionality: creating networked multifunctional green space development and management of recreational and special function parks are proposed on the masterplan of 2017- 2027. Within this master plan, a total of 2730 ha recreational parks are proposed in Addis Ababa at the City, Sub-city and Woreda levels. Several neighborhood level parks to be located within 300m radius are also proposed to provide recreation and other social services. Additionally, special function parks which are primarily established for conservation, education, research and recreation are designated under multi-functional green space. Among the existing green

spaces, Gullele Botanical garden and peacock zoological park are designed to meet the need for conservation, education, research and recreation. The 10th masterplan has integrated the multifunctionality principle implicitly and proposed development and management of multifunctional green space.

Connectivity: the principle connectivity is addressed on the river side vegetation development. Greening river buffer and the river side project launched by the initiative from the Prime minister on February 2019 is an indicator of the will to integrate ecological, economic and social connectivity principle on green space development. Key informant from Addis Ababa Environment and Green Development Commission has explained that currently, Addis Ababa is following a linear greenspace development strategy which has been greenbelt formerly. city green space design has been changed from green belt to linear green space development. The green belt strategy was designed based on an idea of surrounding the city by green spaces which will help to segregate the urban and peri-urban part of the city. Nevertheless, this strategy has been a challenge to greenspace protection as encroachment to the green belt increased as the population of the city increases and greenspace encroachment can further create an opportunity to easily to penetrate in to the peri-urban area designated as greenbelt of the city. Relatively the current strategy of linear greenspace development can highly contribute to achieve the principle of connectivity.

The 10th masterplan has integrated the connectivity principle while proposing rehabilitation of river buffers: which can provide up to 50m wide buffer along river courses as the situation allows. River buffers should be developed in such a way that they provide multiple functions that include (a) Conservation forestry on slopply areas

with perennial vegetation (b) Vegetable and fruit tree production on gentler slopes (c) Recreational park development on gentle slopes. In the aerial photograph presented in Figure 19, riverside vegetation, urban agriculture on the riverside and recreational park can be observed. The network among these greenspaces are connected through the riverside vegetation and this corridor of the river can be well maintained with a clear buffer zone to enhance the multifunctionality and connectivity of the different greenspaces.



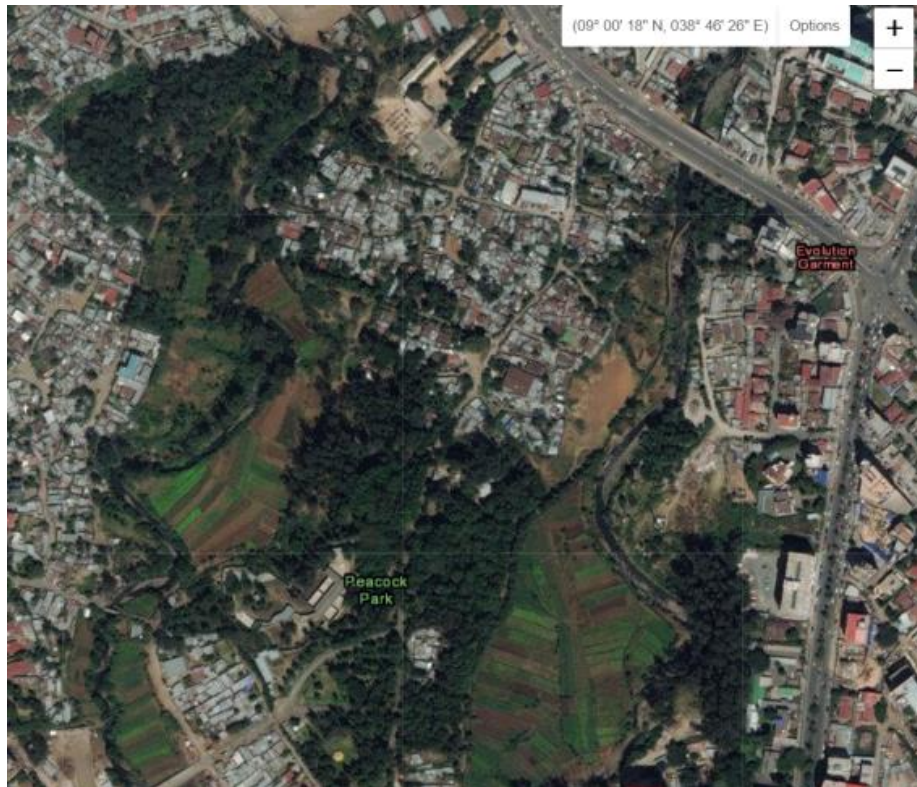


Figure 19: Aerial photograph of Addis Ababa's green space

Green- Grey integration: Consider structural and functional connections between different green spaces at different level and from different perspectives e.g. recreation, biodiversity, urban climate, storm water management, etc. The street tree plantations and squares of green spaces which are implemented so far are can be taken as a master piece of the principle implemented on ground. This principle has been integrated on the policy of sparing 30% of the land for greenspace during execution of large projects and buildings which is hardly implemented on ground and there is no accountability system in the process.

According to the data acquired from River Basin and Green Development and Administration Agency, there are 18 recreational parks in Addis Ababa, ranging in size from 647 to 142,796 ha. In Lideta sub city; urban renewal site, 4.3 ha of recreational parks and additionally in this sub city, close to Immigration office, 0.7

ha of recreational park has been developed recently. In the Basha Wolde Chilot urban renewal site in Arada subcity, 1.17 ha of land has been designed for the development of recreational parks. In Nifas Silk-Lafto sub-city at the Nations and Nationalities square, 30.5 ha green space and ECA park in Kirkos sub-city 5.2 ha of recreational park is developed and opened for public in 2019. The above-mentioned data has been an aggregate result from the river basin and green development agency and the city's environmental protection and green development commission. The development of these green spaces in the city potentially increase the green-grey interaction of the city as the city is congested with buildings and pavements especially where these greenspace developments undergone in heart of the city.



Figure 20: Recreational area in Peacock park (left) and Gottera ring road (right)
(Photo by: Shibire Bekele 2019)

Social inclusiveness: the availability of the green spaces to all part of the society which can be used by children, youth and elders has to be integrated in the planning to address this principle. Affordability and accessibility by all; which gave a due attention to be accessible by disables should be incorporated. Parks which are designated for all social groups and affordable can also be exclusive to part of the society due to lack of law enforcement. Parks like Peacock and Behere tsige are

week to enforce law of chewing Khat in the park which can create social segregation among different groups of the society on the accessibility. Table 5 shows the proposed parks which has to be developed during the 10th masterplan time span (2017-2027). the achievement of this plan directly contributes to fulfilling the social-inclusiveness principles as accessibility of greenspaces would potentially increase.

Table 5: Proposed parks to be developed as a standard in the 10th master plan of the city

Park	Size (ha)	Catchment radius	Area (ha)
City park	>10	10km	2437
Sub City park	1-10	5km	237
Woreda park	0.3-1	1.5km	56
Neighbourhood park	<0.3	0.3km	90
Total			

Source: Addis Ababa master plan (2017-2027)

Furthermore, the proposal of recreational park development targets at increasing the current per capita green space to at least 5 m² per person in 10 years and 9 m² per person in 25 years. The society will be able to access the greenspaces without social segregation if the proposed greenspaces in the master plan are realized on the ground. As shown in Table 5, the 10th masterplan of Addis Ababa proposed 2730 ha of recreational parks from Woreda to city level. This will make total accessible green area of 5700 m². If 40% of this total area is developed in 10 years, the per

capita accessible green area becomes 5.2 m². Development of all accessible green area in 25 years results in a green share of 8.9 m² per person.

Table 6: Proposed greenspace per capita share of Addis Ababa on the 10th masterplan (2017-2027)

Greenspace type	Area coverage (ha)	Remarks
Recreational park	2,730	80% of Gullele botanical garden and 90% Addis zoopark will be accessible
River buffer	4,500	50% will be accessible
Neighbourhood parks	90	Communal greenspaces of condominiums

Source: Plan Commission, 2019

5 Chapter Five Discussion

5.1 Urban greenspace Policies and Implementation

Economic development will continue to bring with it urbanization, greater population density in urban settlements, and correspondingly, increased demand for green infrastructure. Strategies to improve the standard of urban green infrastructure in Ethiopian cities has been set as a national priority. As per the proclamation no 547/2008, the guiding principle of urban development projects must be guided by structural plan. Policies are vital to bring a rational decision on greenspace development. This study revealed that the policies are rather on the paper; interpretation of policies further to regulation and standards and ground implementation is lacking. Similarly, National Forest Sector Development Program (NFSDP) (2018), has indicated lack of harmonization between infrastructure development and conservation policies as a challenge in urban greening and biodiversity conservation in urban centers.

The revised plan had given good emphasis to recreational facilities, it had proposed different hierarchies of various recreational facilities including sport fields, galleries, and youth centers. However, the existing spaces and facilities are not sufficient in number to serve the existing population. The data acquired from the current masterplan shows in the coming 10 years, the accessible greenspace per-capita would be 5.2m² which is below the recommendation by WHO. In addition, the available facilities are not well distributed. They are concentrated in the older parts of the city. Due to poor planning and poor attention given to the proposed norms and standards, these facilities and open spaces are inaccessible, or are not located

near residents. This research revealed that the greenspace area designated in the masterplan (2017-2027) and area coverage of greenspace in 2018 is much less than what it has been previously. According to this structural plan (2017-2027), the current green coverage of the city is 37% of the total area of the city. This does not mean the existing green cover has been well protected.

5.2 Institutional Arrangements

The institutions and actors in greenspace planning and implementation has been clearly identified and mandated according to the new structural plan. The organizational structure is lacking some of key actors that are mandated for implementation of greenspace plans. Ethiopian Environment and Forestry and Climate Change Commission has established urban Forestry directorate. This implies, the EFCCC is engaged in urban forestry where the link with similar city Government institution is not clearly defined.

Allocation of land resources in the planning document and implementation on the ground is highly associated with institutional arrangements (Wang and Chan 2019). Moreover, this research revealed that institutional mandates clarity and coordination between responsible actors is lacking. This research has found, there are actors which are responsible and mandated for similar tasks in relation to urban greenspace planning and implementation and accounted under different reporting lines. This system should be harmonized better and should be coordinated with federal institutions working with the same mandates. This can reduce damages arising due to conflict of interest and weak communication among stakeholders.

5.3 Challenges and Opportunities

According to the data collected from the city's Environment protection and green development commission, the city is growing horizontally due to the population growth and new housing projects. According to the key informant interview it has been discussed that the city is penetrating towards the greenspaces and peri-urban forest areas. This has created deforestation and change in the land use of the area. Among the challenges mentioned, the fast-growing urbanization, failure to implement structural plans according to the planning and weak institutional harmonization are mentioned by key informants from different institutions. Similarly, Kahssay (2016) mentioned the above issues as the challenges and moreover, criticizes inappropriate political interventions and lack of professionals in the sector.

In Addis Ababa, the green spaces are categorized into field crop, vegetable farm, public recreational parks, riparian vegetation, plantation forest, institutional forest (mixed forest), street plantation, and grassland. According to Kahsay (2016), Addis Ababa's green space assessment in 2006 revealed that the Northern part of the city was dominated by forest vegetation whereas the Southern part of the city was dominated by crop and vegetable farms. The central part of the city is predominantly a built-up with higher density of residential area. This type of greenspace development segregates the types of green space accumulated in one area. The recreational parks should be close to residential and accessible to all societal groups inclusively.

According to Yeshitela (2015), in 2011, field crop field constitutes about 65% of the total green space of the covering 14,578 ha of the land. In 2014, this green space

has been reduced to 9835ha due to land conversion to residential area (condominium) and manufacturing and storage land uses. In 2018, 5476ha of land has been converted from green space; specifically crop land to other land uses in three years (Yeshitela 2015). According to the 10th structural plan of Addis Ababa; (2017), the urban agricultural landscape passed through different changes resulting in huge conversion of land uses. The agricultural land area coverage has declined from 38% to 13.87% in the last 10 years. 7,175ha of land has been converted which makes significant greenspace conversion to other land uses. For this huge change, the structural plan condemns the expansion of housing projects and reshuffling the organizational structure of the urban agriculture unit are the major challenges.

According to the key informant interview from Addis Ababa City Government Farmers and Urban Agriculture Development Commission, the large-scale housing projects claimed agricultural land and greenery sites proposed around Jemo and many other peripheries of the city. The other challenge was a gap between planning and implementation; technical advice was not sustained throughout plan implementation. The re-organization of the urban agriculture unit of the Addis Ababa City Government underwent various structural changes during the last 20 years. Concurrently, its name changed from Agricultural Development Bureau, Agricultural Office, Agricultural Department and Agricultural Extension Service Core Process (AESCP) governed under Bureau of Trade and Industry. This indicates that the organizational structure of the sector was shrinking in terms of mandate, resource allocation, institutional capacity and service coverage, rendering it unable to effectively expedite its responsibilities. Recently, the name is changed and currently

known as Addis Ababa City Government Farmers and Urban Agriculture Development Commission which is directly accountable to the city Mayor.

The Addis Ababa City Development Plan (2002-2012) had indicated that the livelihoods of 51,000 families in Addis Ababa were associated with farming. The shrinking of this land use has an implication on those who depend their livelihood on this land use. The city's unemployment rate is high at 23% and 28% of the population lives is below the absolute poverty line. A double-digit inflation rate hitting a high at 38% during the past two and three years and life has increasingly become too expensive (Kassa 2012). Thus, Addis Ababa City Government Farmers and Urban Agriculture Development Commission has to work on at least conserving the existing urban agriculture and it has to be encouraged especially, in the south-eastern part of Addis Ababa.

According to Kahssay (2016), the analysis of land cover revealed that agriculture became the most dominant category covering a total area of 19,639 hectares (38%) followed by residential with area coverage of 16,569 hectares (32%) showing these two land use categories alone covered 70% of the total land. Vegetation (15%), bare land (9%), industry and business (4%) and transport (3%). This study revealed that there are plenty of opportunities for greenspace development of the city and there are projects started currently which is encouraging. The existing greenspaces in different parts of the city can be a showcase to widely implement the plans outlined on the structural plan. The rapid urbanization in Addis Ababa and the horizontal growth of the city has been found to be one of the challenges pointed out in this study. Similarly, Herslund et al. (2018) revealed that the city's urban forest has

significantly deteriorated due to the high rate of deforestation, largely attributed to increasing population growth combined with rapid urbanization.

Addis Ababa city is endowed with diverse woody plant species found scattered across different land uses including major streets, public parks, household premises and church-yards. The plant species across the different land uses are comprised of both exotic and indigenous tree species with a higher proportion of exotics. The different forested landscapes of the city support various species of mammals, birds and insects. Entoto Natural Park and escarpment, which lies in the northern part of the city, is among the Important Bird Areas of Ethiopia (EWNHS, 2012). Gullele Botanic Garden, a pioneer botanic garden in Ethiopia, also hosts a number of bird species. The different conservation areas such as public parks, botanic gardens and plantation forests support diverse species of insects. Research reports show that there are 18 families of insects in Ankorcha forest, 25 in Sheger park (Girma et.al. 2019) and 64 in Gullele botanic garden (Fasil, 2010). Various conservation efforts have been made recently to safeguard this biodiversity. These include the establishment of AAEP, GBG, Ethiopian Heritage Trust and public parks in the city (Herslund et al. 2018). Apart from this, the newly developed strategic spatial plan of the city duly considers possible urban green infrastructure with forest, river buffer vegetation, recreational parks and urban agriculture as the major components.

5.4 Principles and implementation

Connectivity: The 9th Master Plan (2002- 2012) also calls for the delimitation and demarcation of a 100-meter wide vegetation buffer on both sides of streams. By creation of a city-wide network of protected areas for multiple use, e.g. for vegetable

gardening, fruit tree cultivation, water protection, recreational use, wildlife corridors, living conditions in Addis Ababa could be improved. Yet, the overall potential is not known, many of these areas are already used for other purposes, and no institution has a clear mandate for managing these areas, let alone experience in the rehabilitation of riverside vegetation and alluvial forests (Horst 2006). Similarly, Kahssay (2016), stated that the proportion of green areas has decreased and the violation on green spaces was large scale and had unfortunately also been done by the public sector. Such proposals as riverside development was not implemented, new parks were not successfully developed, and urban agriculture is practically none existent (Kassay 2016; Herslund et al. 2018). As the riverside buffer vegetation during the 9th masterplan time span was not executed, the 10th masterplan proposed to undertake the riverside vegetation and proposed the grand Sheger project and this is being implemented.

Multifunctionality: According to information obtained from the key informants, green spaces planned in the study area were not considered as parts of a large network and connectivity was not the objective in their planning process. As a result, there is a highly fragmented green space system in the study area as confirmed by key informants. It is a good indication that in the structural plan, the upper catchment of the city is more of multifunctional which contributes highly to reduce flooding of the downstream. A buffer zone of 30m on each river side should secure also recreational areas for the residents nearby rivers (Herslund et al. 2018). This by itself can also address multifunctionality and the social inclusiveness principle additionally as most of the river side residents can easily access the recreational parks at the tip of their finger. Studies show that social inclusiveness enhances

effective management of green infrastructure and promotes community stewardship for green infrastructure components (Enger 2005; Girma et al. 2019).

Social inclusiveness: The results of the document analysis indicate that current green space planning practices, have considered the issue of social inclusiveness in different ways. For instance: community participation in planning which is an essential element of social inclusiveness and an essential process for identifying community need and interests and for matching plans with them was very weak (Girma et al. 2019). In addition, the planning process lacked adequate accountability to the community while the plans lacked statutory status and mandatory implementation requirement making the community for influencing urban development.

As per the long-term vision of Ethiopia for growth and transformation, the 10th Structure Plan for environmental protection 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.

Furthermore, succeeding urban greening strategies focused on developing and managing the designed greenspaces can fully attain the planning principles of multifunctionality, connectivity, green-grey integration and social inclusiveness (Herslund et al. 2018; Girma et.al. 2019).

Green-grey integration: this research showed that the green spaces of the city has been segregated in different parts of the city; mainly in the northern parts with good high vegetation cover whereas the city centre is mainly grey infrastructure. As it has been presented in the result part above, the newly developed greenspaces; parks and street trees contribute highly to the achievement of including the green component and align well th green-grey integration in the city planning. According to Kahsay (2016), Addis Ababa's green space assessment in 2006 revealed that the greenspace typologies are segregated in different parts of the city. Most of the greenspaces are predominantly found on the Northern part of the city and the Southern part occupied with urban Agriculture. The street trees and park avenue in the city centre could be the preferred greenspace development to ensure the green-grey integration of the city. The greenspaces in the city centre is not well distributed to all parts of the city and street trees which makes a great contribution to city's greenspace design is not well documented in the case of Addis Ababa.

6 Chapter Six Conclusion and recommendation

6.1. Conclusion

Policies regarding urban greenspace development is well articulated having a strong base on the constitution. CRGE and GTPI and GTPII are believed to be among the strategies contributing to the greenspace development of the city nonetheless, the documents focus on general forest development and conservation which lacks the concept of urban forest development and implementation strategy. Regulations and directives are not clearly drafted by responsible bodies and law enforcement is hardly applied on the greenspaces.

From the IPO model employed, this research has come up with a conclusion that a well designed and implemented urban greenspace needs a well defined coordination among the segments of policy, strategies and the sectoral engagement for a common objective.

The organizational structure of the city and federal government has some overlapping duties and this can create a delay in implementation and lack of proper monitoring and evaluation. Furthermore, frequent organizational restructuring and reshuffling is a major challenge to implement planned greenspace projects and keeping track on monitoring of activities.

In the 9th master plan of Addis Ababa; 2002-2012, the greenspace planning does not follow any planning principles. It is an important step forward that the 10th master plan has incorporated greenspace planning principles like multifunctionality, connectivity and inclusiveness. This study revealed that the started projects which fulfils the planning principles like the Entoto project, the riverside project and

recreational parks in neighborhoods will play a great role in the fulfillment of planning principles.

6.2. Recommendation

- Platform for discussion: annual and biannual discussions on the implementation of the masterplan. Create systems and forums for public participation in the decision-making process of 'key' issues and involve concerned stakeholders. The result of this research has indicated that there are projects which are executed on the same area without coordination among the involved stakeholders. Projects have to be communicated and discussed among the stakeholders and representatives from the wider public. This will raise the awareness of the society about the green developments taking place in the city and contribute for its realization on ground. Thereby, tasks can be coordinated in a better way if forums are organized for a discussion.
- Creating a strategic institution of technical committees to the integrated implementation of the masterplan and its revision. the establishment of the national planning council and planning commission oversees the monitoring of plans based on quarterly reports but, the technicality of the implementation of projects on the ground can be fulfilled if technical committees from concerned institutions can be established for the monitoring and revision of plan. Furthermore, monitoring and evaluation of projects and activities must be done by multi-institutions and involved bodies. As the result of this research indicated miss-communication and conflicting roles of institutions can be solved by coordination of stakeholders engaged in greenspace planning and implementation.

- Institutional relationships among policy making, planning, implementation and monitoring and evaluation bodies of the city government must be defined. Moreover, the city government should coordinate implementation of the green space with federal government. the implementation of the green legacy in Addis Ababa have not been well aligned with the city plan in the 2019 planting campaign this kind of frail coordination of planning made at the Federal level should go hand in hand with the city plan.
- Create accountability loop that involves policy makers, planners, decision makers and law enforcement at different levels from woreda, sub city and city government levels. the accountability loop can be created by establishing the technical reviewing and overseeing committee establishment recommended above. the accountability loop can help to share responsibility on projects execution among engaged stakeholders and promote transparency whereby, it opens the door for the wider public to be part of the implementation process.

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Annex

Question catalogue for Key informants

1. Which institution has the role to plan and implement urban green policy (directly involved)
2. Which other institutions support and indirectly involved in urban policy planning and implementation
3. How does the institutional arrangement look like and what is your position? Policy maker, decision maker, implementer or support?
4. Have you ever faced challenges due to institutional arrangement and its complexity? that can have a right to manage and implement similar activities like your department?
5. What are the major bottlenecks that challenge the implementation of green space policy
6. What was planned for Addis Ababa's green space and how far is the implementation?
7. What are the targets of Addis Ababa's green space design? (the purpose) and can it be prioritized?
8. Are the principles considered in the green space plan of the city? If so which one is among the top priority (multifunctionality, connectivity, green-grey interaction, and social cohesion)
9. Does your institution contribute to urban green space development, policy and implementation? If so what are the major challenges you are facing?

10. How do you link the implementation of Addis Ababa's green space policy with SDGs and what is the contribution of your institution to this?
11. What do you recommend for policy makers to consider Addis Ababa's green space among the top priority to achieve SDGs
12. What are the links between different policies we have (CRGE, GTPI, GTPII) regarding urban green space?
13. What is your view regarding Addis Ababa's development in green space? Expansion or shrinking? What are the reasons for that?
14. What do you think as an opportunity to develop green space of Addis Ababa?
15. Do you have urban green infrastructure policy manual; guidelines; standards and way of implementation manuals and checklists in your offices?

Question Catalog for Focus Group Discussion (FGD)

This focus group discussion should be conducted at the institutions to triangulate the collected data prior to preliminary results

1. How do you see the master plan of Addis Ababa concerning urban green space implementation and what are the shortcomings of the plan?
2. Which institution has the lead to follow-up whether the plan is implemented accordingly or not? Which institutions contribute for the follow-up in implementation?
3. Is there a synergy between institutions in urban green space policy development and its implementation?
4. If there is no synergy, why is that? what are the ways (solutions) to connect the institutions?