

Functionality Analysis of Formal-Green Spaces: The Planning and Development Perspectives (The Case of Durame Town, Central Ethiopia)

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Abstract:

Formal green spaces significantly enhance urban living by improving residents' quality of life and serving as hubs for recreation, cultural activities, and social interactions. They also provide economic and environmental benefits. However, these advantages can only be realized through effective planning and development. Inadequate practices such as poor spatial design, insufficient infrastructure, lack of facilities, and ineffective management often leave green spaces underutilized and unable to fulfil their intended purposes. In Durame town, Central Ethiopia region, such challenges have burdened the administration, prompting a study to analyze the functionality of formal green spaces from planning and development perspectives. The research sought to evaluate the planning and development of existing green spaces, identify gaps in proposed plans, assess development progress, and investigate associated challenges. A descriptive survey method was employed, using both probability and non-probability sampling techniques to gather and analyze qualitative data from primary and secondary sources. The findings revealed that ineffective planning practices and insufficient stakeholder investment hinder the functionality of green spaces. The research underscores the need for improved planning and development approaches to enhance the utility of these spaces, benefiting residents, the municipality, and other stakeholders in the town.

Keywords — Formal-Green Space, Planning, Development, Functionality, Durame

1. INTRODUCTION

This chapter introduces the study by discussing its background, the problem that motivated the research, its objectives, research questions, significance, scope, and limitations. It also outlines the organization of the thesis

1.1 Background of the Study

Green spaces are areas within urban environments covered with natural or man-made vegetation, such as city parks, botanical gardens, and street trees [8], [4]. These spaces are integral to urban ecosystems

and play a crucial role in enhancing environmental, economic, and social well-being [9]. Urban green spaces, such as parks and gardens, not only contribute to aesthetic values but are also essential for health and recreation, as emphasized by Ebenezer Howard, the originator of the garden city model [7].

Urban planning involves not only the development of infrastructure, such as housing and transportation, but also the integration of green spaces into the urban landscape. Well-planned

green spaces are critical for bioclimatic comfort and the overall quality of life in cities [3].

Durame Town, located in central regional state of Ethiopia, is the administrative center of the Kembata zone. The town is undergoing rapid growth, driven by its central role in the region. This growth, while creating economic opportunities, has also led to challenges like inefficient use of green spaces, housing shortages, and inadequate infrastructure. This study focuses on functionality analysis of formal green spaces of Durame town; hence, it assesses current status of the existing green areas, the land-use planning and development practices; and offers recommendations for improvement to guide future urban planning.

1.2 Statement of the Problem

It's obvious that urban development plans are intended to solve plan-related challenges and enhance the society of the urban area enjoy cohesive environment. Through appropriate urban-design and planning,; green spaces of urban areas give a number of varied functions for the urban society. Otherwise, in situations where less consideration is given for the issue of open/green spaces, their expected possible functions will never be achieved and the urban communities lose the corresponding benefits.

Functionality of urban green spaces is under a significant challenge in developing countries like Ethiopia. Key contributing factors to poor urban greening include inadequate incorporation of planning procedures in land use plans, inappropriate open space planning models, and poor greenery development. Additional challenges involve insufficient attention from local governments, lack of ongoing maintenance, and management issues such as limited municipal capacity (technical,

institutional, and financial) to effectively utilize these spaces.

Durame Town faces significant challenges regarding the provision and development of formal green spaces. The planning of these spaces does not meet the needs of residents, as many neighborhoods lack such spaces nearby, and the existing green areas face various issues. These include poor topographic locations, insufficient population coverage, and accessibility difficulties. The development of green spaces is further hindered by a lack of commitment from the town's government to invest in these areas. Many formal green spaces are difficult to access due to the absence of paved roads connecting them to other land uses, and as a result, these spaces are often unsafe for public use. In some areas, green spaces have even turned into informal waste dumping sites. Consequently, the potential benefits of these formal green spaces are not being fully realized; and leading the spaces to unfunctionality. Given these planning and development challenges, the researcher has chosen to investigate the situation in Durame Town, located in the Central Ethiopia region.

1.3 Objectives of the Study

1.3.1 General Objective

The general objective of the study is to evaluate the functionality of the existing formal green spaces of Durame town in the planning and development perspectives and suggest valuable recommendations for the concerning bodies.

1.3.2 Specific Objectives

Specifically, the study is going to address the following issues.

- To explore the planning gaps of the existing formal-green spaces in the town's structure plan,
- To assess the current status of the formal-green areas in terms of their development,

- To investigate the major challenges associated with formal-green spaces of the town from the planning/provision and development points of view.

1.4 Research Questions

The following are the main research questions which the study is expected to solve.

1. What planning gaps do occur across the formal-green spaces in the preparation of the existing structure plan of the town?
2. What is the current status of formal-green spaces in terms of their development?
3. What are the major challenges associated with formal-green spaces of the town from the planning/provision and development points of view?

1.5 Significance of the Research

This research provides a general insight on green spaces of Durame town being source of basic information to concerning bodies whenever making decisions on green spaces. Moreover, it can create better situation for public awareness in use and management of open/green spaces. Finally, the study contributes its part as a stock of research to be done on similar topics and so on.

1.6 Scope of the Study

1.6.1 Spatial Scope

Spatially, the research includes the whole administrative boundary of Durame town which is currently 6502.8 hectares where the emphasis is given on planned green areas in SP.

1.6.2 Thematic Scope

The study focuses on the town's formal-green spaces which were purposely planned for public use. In this regard, the planning issue of the green spaces and their development statuses are the thematic areas of the evaluation.

1.6.3 Temporal Scope

The timeframe for this study covers the current trends on formal-green space planning and development within the period of the existing structure plan of the town.

1.7 Description of Durame Town

1.7.1 Foundation and Emergence

Durame's origin can be traced back to the early 20th century. Initially, the town was a small settlement that primarily served as a local trading hub and a center for administrative functions within the Kembata Tembaro zone (currently, Kembata zone). Over time, Durame's strategic location and role as a central point for trade and governance helped it grow into a town. Its early development was driven by both agricultural activities in the surrounding areas and its position along key transportation routes.

The establishment of Durame as an administrative center accelerated its development. As the town grew, its significance in the region expanded, attracting more residents, businesses, and government institutions. This growth was further supported by regional development plans aimed at improving infrastructure, public services, and economic activities in the area.

1.7.2 Naming of Durame

The name "Durame" is believed to have historical and cultural significance within the Kembata ethnic group. While the exact origins of the name are not definitively documented, it is thought to derive from the local language, reflecting either a geographic feature or a cultural reference that was meaningful to the people in the area. In many Ethiopian towns, the naming of settlements often reflects local history, important figures, or geographical attributes.

1.7.3 Formation of the Municipality

Durame was officially recognized as a town and subsequently established as a municipality. The formal establishment of the municipality came with the need to better manage the increasing urbanization and the growing population. As the town developed, it faced challenges related to urban planning, infrastructure provision, and the need for organized governance. The formation of the municipality was intended to address these issues by creating a structured administrative body responsible for planning, development, and public services.

Durame's municipality is tasked with overseeing a wide range of urban functions, from land-use planning to public health and education [22]. Over time, the town's administration has worked to improve the living standards of its residents by focusing on infrastructure development, including roads, water supply, electricity, and sanitation services. Additionally, as part of the municipality's responsibilities, there has been an increasing emphasis on improving urban green spaces, parks, and recreational areas, in line with broader urban planning goals.

1.7.4 Urbanization and Growth

In recent years, Durame has experienced significant growth due to both population increases and urbanization. This has been driven by several factors, including the expansion of regional trade, migration from rural areas, and regional development initiatives aimed at enhancing infrastructure and public services. The town's population has steadily increased, putting pressure on available land, housing, and public services.

As part of its urbanization process, Durame has faced challenges typical of rapidly growing towns, such as housing shortages, inefficient use of green

spaces, poor infrastructure, and lack of adequate public services [23]. Despite these challenges, Durame remains a vibrant and culturally significant town in the region.

1.7.5 Recent Developments and Urban Planning

Durame's urban planning has evolved over time, with various urban development plans being planned to guide the growth of the town. After years of the town's plans with centralized approaches, the first major urban planning initiative for Durame was officially held in preparation of a structure plan in 2012, which outlined the town's development in terms of land use, infrastructure, and public amenities. This plan served as a guideline for managing urban growth and ensuring that essential services were provided to meet the needs of the expanding population.

However, due to the rapid pace of urbanization and emerging challenges, the Urban Development and Construction Bureau (UDCB) of the region revised the structure plan for Durame in 2018. It is currently under implementation. The revision addressed the coming urban challenges in various aspects including that of green spaces and other urban amenities.

1.7.6 Current Challenges and Focus Areas

Despite its development, Durame faces ongoing challenges associated with its rapid growth. These include the underutilization or mismanagement of green spaces, housing deficits, limited public services, and poor infrastructure in certain parts of the town [23]. The need for efficient land-use planning and the proper development of green spaces is a critical concern in the town's planning agenda. As the town continues to expand, it is essential to integrate environmental sustainability into the planning and development process,

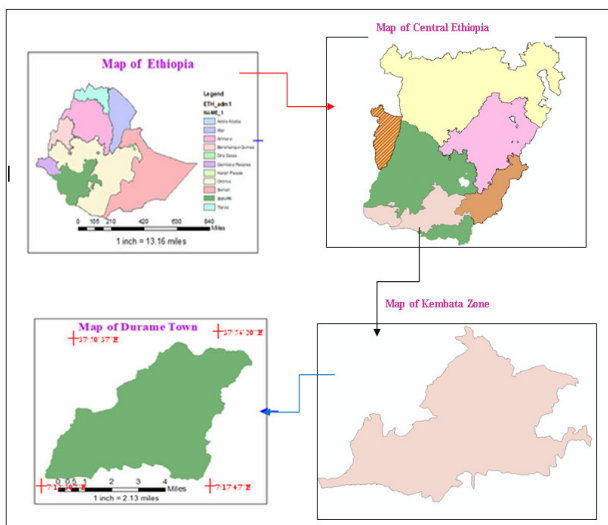
ensuring that Durame remains a livable and healthy environment for its residents.

1.7.7 Location

Durame Town is found in Central Ethiopia Regional State of Kembata Zone at a distance of 286kms from Addis Ababa through Hossana, 352kms through Halaba-Shashemene, and 278kms through Halaba-Butajira. The town is about 55kms far from the regional capital, Hossana and found in Southern direction of the region.

Its astronomical location is 7°14'N and 37°53'E latitude and longitude respectively. The map below shows the geographic location of Durame town in Ethiopia within the administrative hierarchies of the country.

Location Map



Map_1: Location of Durame Town

Source: Extracted by the Researcher from the SP (2023)

1.7.8 Topography

The topography of Durame town has mixed characteristics. The town has rolling topography bounded by Ambaricho Mountain in the North and consists of small hills and elevated areas. The elevation of the town ranges from 1990-2240

meters above sea level showing a difference of 250m within the boundary (Ibid).

1.7.9 Climatic Condition

The temperature, rainfall, and wind direction records of the town are as follows.

a) Temperature: Durame town experiences mean annual temperature between 14°C and 26°C. The highest temperature record is between January and March and the lowest, between July and September [21].

b) Rainfall: The annual rainfall of the town is 1200-1350mm and reaches up to 2000mm. The highest rainfall is recorded between July and September and the lowest rainfall occurs between November and February. (Ibid)

c) Wind: From November to February wind blows from North-East or North to South with slight deflection to South-East. From March to September, it blows from South-West to North or North-East (Ibid). This implies that the prevailing wind direction of Durame town is South-West to North or North-East.

1.7.10 Population

Based on the 2007 Census conducted by the Central Statistics Agency (CSA), this town had a total population of 24,472, of whom 12,173 were men and 12,299 women. According to the 2013th official population projection of the agency, the population of Durame was 35,100 [20]. In 2018, as the town was expanded and has fold of its previous coverage area more than double (around 9 Kebeles of the surrounding Wereda became part of the town), the population number used for the preparation of Strategic Plan was 100,209. Currently, the number of population representing the town is 120,000.

1.7.11 Current Administration Status

Durame is a town located in Central Ethiopian region. It serves as the administrative capital of

Kembata zone (which is part of the broader the region), Kedida Gamela Wereda, and its its administration as well. It's also seat for Agricultural-Cluster of the central Ethiopian region. The town plays a central role in the governance, economy, and culture of the zone, making it an important urban center in the region. Due to its centrality for the administrative hierarchies stated, the town has strong linkage (in social, economic, political, and other aspects) with zones of the region, the South-Western region and Oromiya region as well. As a result, Durame has potential for further growth and expansion.

1.8 Limitations

The researcher faced several challenges during the study on formal-green spaces in Durame town. Limited access to political leaders due to their busy schedules, uneven coverage of formal-green spaces across kebeles, and a lack of local literature on the topic hindered progress. Additionally, respondents confused "formal-green space" with "open-space," which required extra time for clarification, impacting the study's timeline and budget.

To overcome these challenges, the researcher adjusted by engaging political leaders during their free time and via phone calls, including all formal-green spaces in the study, and expanding the literature review to include studies from other developing countries. Despite time and financial constraints, these strategies helped the researcher move forward with the study.

2. RESEARCH METHODOLOGY

This section of the research-report deals with the methodologies that would help address the research objectives and research questions set for the evaluation of formal-green spaces in Durame town. It contains the research design, method of data

collection, sampling techniques, operationalization framework of the study, and the data analysis and interpretation parts. Moreover, data quality assurance and ethical considerations are included in the section.

2.1 Research Design

2.1.1 Research Approach

Research approaches can be either of quantitative or qualitative in nature. In the case of such studies (to evaluate the planning and development of green spaces) is dominantly qualitative in nature but not limited to it. In order to achieve the expected goal, this study used mixed type approach (both qualitative and quantitative).

2.1.2 Research Type

There are four kinds of research types namely; historical, descriptive, explanatory and exploratory research types. Among them, this research was conducted in descriptive one since it is more appropriate to describe the current situation of the issue of the town (formal-green space status) for analyzing the observed problems.

2.1.3 Research Strategy

Among the different research strategies which are: experiment, survey, case study, grounded theory, ethnography, action research, and etc.), in the data gathering, this research was applied in survey strategy since the study focused more on the statuses of the existing formal-green spaces which need detail assessment of the researcher.

2.1.4 Time Dimension of the Research

Time dimensions of a research can be cross sectional or longitudinal due to the nature of the intended study. Here, the researcher is interested to focus on a one-time description or explanation of formal-green spaces in Durame town; where the planning and development of the spaces were

assessed focusing on the current practical trends of the existing SP of the town. Therefore, the time dimension of this study lies on the cross sectional.

2.2 Method of Data Collection

2.2.1 Data Types and Sources

Generally, there are two types of data; namely, primary and secondary data. The former come from the original source (through observation, interview, or questionnaire) whereas the later are indirectly obtained from different sources such as: published or unpublished documents/materials, images, records, etc. Likewise, this study used the two data types.

The possible data sources for this research were from: primary sources like: selected formal-green areas of the town, purposively selected residents in the town, some officials in government institutions of the town (Municipality, Mayer's office, zonal UDCD, Environment Protection and Forest offices, Women, Children, and Youth Office), and concerning bodies in the regional UDCB. Moreover, among the NGOs, Gogota-Care; Kembata Zone Development Association was involved. On the other hand, files containing different plan related information, maps, records, documents in the municipality, and published and unpublished materials including websites were secondary sources of data.

2.2.2 Data Collection Techniques

In any studies, data which are collected from the primary and secondary sources have their own data collection techniques. In the same manner, the researcher of this study has applied the techniques as their importance. These are discussed below.

i. The primary data collection techniques: these include methods such as observation, questionnaire, interview and focus group discussions. For this

study, all techniques except focus group discussions were employed as described below.

Observation: The observation method which can be in the form of participant and non-participant, is the first one whenever focusing on primary data collection technique. Here, the researcher used the later one to assess the existing situations of the open spaces.

Interviews: The researcher prepared an interview guide questionnaire, verbal (oral) questions and responses have been carried out using face to face interview with different officials. Here, among the three types of interviews, this study used the two: the structured and semi-structured ones so that sample experts from the concerning organizations mentioned above, were interviewed. These interviewees were purposely selected to discuss the issue (the planning and development of formal-green spaces) in the town.

Questionnaires: The researcher also prepared both open and closed ended questionnaires in order to access the intended respondents (households in the town). In order to get proper responses which address on the third research question of the study, these questionnaires were prepared first in English language and then translated into Amharic, which is commonly spoken as that of Kembatigna (the dominant language in the town).

ii. The secondary data collection techniques: As the secondary data collection techniques, the researcher has referred different files in the municipality in search of green-areas' ownership. Additionally, quarter-year's reports which were previously written by urban sanitation management and green development work process were reviewed. Moreover, websites were browsed to get published and unpublished materials relevant to the study.

2.3 Sampling Method

2.3.1 Sampling Approach

There are two types of sampling approaches in sampling methods. These are probability sampling and non-probability sampling approaches. In the case of this study, the researcher applied the two sampling approaches due to the nature of the study.

2.3.2 Sampling Technique

To decide a sample which can provide proper information regarding the study; from probability sampling approach, simple random technique was used whereas from that of the non-probability one, purposive sampling technique was employed as the importance.

Within the temporal scope, dealing with the whole population of the town is difficult. As a result, using non-probability sampling approach of 'purposive-sampling technique', reasonable neighborhoods in the town (considering the three kebeles) were assessed. For ease of generalization of the study, all households who live in residential blocks along the formal-green areas have been addressed. In order to involve households who reside far from the formal-green spaces, simple-random sampling technique was applied.

On the other hand, the population for the study constitutes different bodies in government sectors as stated above. To access them, the same sampling technique (purposive) was adopted due to the study's nature; as it needs the respondents' special understanding and awareness about related issues.

2.3.3 Sample Design

i. Population or Universe

As stated in the first chapter, Durame town has currently a population around 120,000. This is a total population or universe of the town on which the study focuses.

ii. Sampling Frame

From the above figure (universe), the number of urban households is 25,000, which is equal to the ratio of the town's total population to the regional (the case of Central Ethiopian Redion) average urban household size which is 4.8. (HH Durame town=120,000/4.8 = 25,000). Hence, this datum which is derived from the total population is the sample-frame of the study.

iii. Sampling Unit

According to multi-level or hierarchical linear modeling of Kenny (1996), the sampling units include: households, Municipality, Mayor's office, Kebeles in Durame town administrations, Kembata zone Urban Development and Construction Department, Environment Protection and Forest offices, Women, Children, and Youth offices, Gogota-Care (NGO), and UDCB of the South Nations, Nationalities and Peoples' region.

iv. Sample Size

Sampling sizes depend on the types of research design being used, the desired level of confidence in the result, the amount of accuracy wanted and the characteristic of the population of interest (Kothari, 2004). The number of the household in the town is 25,000. However, due to different constraints such as time and finance which can commonly occur, the researcher has selected sample representatives of the households rather than dealing with the total households by considering the level of acceptable margins of error at 7% (93% level of confidence) applying Cochran's sample size determination formula as described below.

If household number, $N \geq 10,000$; then, sample size will be determined by the formula:

$$n_0 = \frac{z^2 pq}{\mu^2} ,$$

Where: n_0 = Desired Sample Size

z = standard normal variable at required level of confidence,

p = estimated proportion of an attribute that is present in the population, and ($q=1-p$)

e = level of statistical significance set

To determine the sample size for the study, the formula applied is Kothari's Sample Size Determination Formula of 2004, which is applicable for a known target population as that of this study. Which is: $n = \frac{z^2 p q N}{e^2 (N-1) + z^2 p q}$ [26]

Where: n : is the sample size for a finite population

N : size of population, which is the number of households

p : population reliability, $p=0.5$ which is taken for all developing countries population and $p + q = 1$

e : margin of error considered is 10% (depends)

Z : $\alpha / 2$: normal reduced variable at 0.05 level of significance ($z = 1.96$).

Applying the formula, the sampling unit is calculated as follows:

$$n = \frac{(1.96)^2 (0.5) (0.5) (25000)}{(0.1)^2 (25000 - 1) + (1.96)^2 (0.5) (0.5)}$$

=> $n = 165.89$. Hence, the sample size is 166

TABLE 1
SAMPLE SIZE SELECTION

N o.	Sampling Frame	Interviewee No.	Sampling Technique
1	Regular Residents ; with different groups and kebeles)	166	Sample size determination formula
2	Kebele Administrations	3	Purposive
3	Durame Municipality	8	Purposive
4	Durame town Mayor's office	3	Purposive
5	Durame town Environment Protection and Forest Office	2	Purposive
6	Durame town Women, Children, and Youth Office	2	Purposive
7	Kembata Zone Urban Development and Construction Department (UDCD)	4	Purposive
8	Kembata Zone Environment Protection and Forest Office	2	Purposive
9	Women, Children, and Youth Department	2	Purposive
10	Regional UDCB	2	Purposive
11	Gogota-Care, Kembata Zone Development Association	2	Purposive
Total		196	

Remember. As green spaces exist in all parts of the town, the population (households) in three major kebeles will equally be assessed depending on the size of the formal-green spaces they acquire. But, for the sake of information quality, there will be a home-to-home assessment within the blocks near formal-green spaces, and a random-household selection will be done for residents far away (approximately greater than half-kms) from the spaces. On the other hand, the sectors (listed in Table:1) are selected due to their organizational duties which are directly or indirectly related to urban-greening. And, the number of officials is decided considering the size of their organization and the work processes and duties they acquire.

2.4 Conclusion

In the methodology sub section of the study, one can easily understand the ways which the researcher used in order to attain the research objectives and research questions set for the evaluation of formal-green spaces in Durame town. As a research design, using both qualitative and quantitative research approaches, descriptive research type was adopted using survey strategy which was focused on one-time description or explanation of formal-green spaces in the town. In data collection, both primary and secondary data were collected in different techniques (observation, interview, questionnaire, reviewing...) from corresponding sources which are appropriate for the study. In sampling method, using the probability and non-probability sampling approaches, the researcher applied more purposive technique of sampling due to the study's nature. In the sample design, the current total population of the town (120,000 people) was considered and 25,000 households (applying Cochran's sample size determination formula in 93% confidence level) were assumed as representative of the whole

population and planned to be addressed in the study. In addition to these, different officials (30 in number) from concerning organizations including NGOs were purposively included to apply interviews regarding formal-green space planning and development practices in Durame town. Lastly, in analysis, interpretation, and presentation of the data, the researcher designed rephrasing and restating methods for qualitative data and descriptive-statistics for the quantitative ones using graphic soft-wares like: AutoCAD and Arc-GIS.

3. DATA ANALYSIS AND FINDINGS

3.1 Introduction

This section examines data on the formal green spaces of Durame town, collected from various sources. The analysis aligns with the research objectives outlined in the first chapter, incorporating the socio-economic characteristics of selected respondents. Despite the broad and complex nature of evaluating formal green space planning, the researcher effectively managed data collection and sources to achieve the study's goals. The section begins with a description of the response rate and respondent backgrounds, followed by an overview of Durame town's planning trends. It then discusses the current status of the town's formal green spaces, focusing on both planning and development aspects. Lastly, it highlights the gaps and problems identified in the planning and development of these spaces.

3.2 Respondents and Response Rate

Qualitative research typically does not adhere to the principle of equal probability in sample selection (Gabrielle Meagher, 1999). The evaluation of formal-green space planning and development in this study involves analyzing the town's comprehensive spatial and socio-economic context, as well as urban planning preparation and

implementation practices. To gather relevant information, the study aimed to include diverse urban community groups.

The researcher intentionally selected respondents believed to have significant roles, contributions, and exposure to the topic. This rigorous selection process focused on individuals with relevant knowledge and experience, drawn from various institutions and social groups/occupations, to ensure meaningful insights into formal-green space planning and development (Refer the table below).

TABLE 2
RESPONDENTS FROM DIFFERENT INSTITUTIONS

Institution/Community Group	Demand	Available	% of Respondents
Kebele Administrations in Durame Municipality	3	3	100%
Durame town Mayor's office	8	8	100%
Protection and Forest Office	3	3	100%
Women, Children, and Youth Office	2	2	100%
Kembata Zone UDCD	2	2	100%
Kembata Zone Environment Protection and Forest Office	4	4	100%
Zone Women,Children, and Youth Department	2	2	100%
Regional UDCB	2	2	100%
Kembata Zone Development Association	2	2	100%
Regular Residents of the town/household/	166	153	92%
Kebele Administrations in Durame town	3	3	100%
Total	196	183	-

Source: Primary Data/Field Survey, 2023

The study targeted 196 respondents, including households and officials from selected governmental and non-governmental sectors relevant to formal-green space planning and development. A total of 30 questionnaires were distributed to officials, selected based on organizational size and work processes, all of whom responded.

For the household survey, 166 questionnaires were distributed equally among the town’s three administrative kebeles, with an additional questionnaire allocated to Zeraro kebele due to its relatively larger planned land coverage. A total of 153 households, representing over 92% of the expected number, responded. Households were selected purposefully and randomly, with those along formal-green spaces prioritized, while others were randomly included.

The overall response rate was 92%, which exceeds the 50% threshold deemed adequate for analysis (Babbie, 2002). This high response rate ensures the data's reliability and representativeness for analyzing formal-green space planning and development in the town.

3.3 Demographic Data

3.3.1 Background of Officials

The relevant educational background and skilled recruits typically give hints about the issues. In the study, the respective sector experts were selected with education level, education background and experiences. Therefore, through interview checklists, the following respondents were accessed.

TABLE 3
BACKGROUND OF THE RESPONDENTS (OFFICIALS)

Educational Background	Educational level		Work Experience in Year			Total
	1 st Degree	Masters	2-3	4-6	>=7	
Urban Planning	5	2	4	2	-	7
Engineering Fields	3	-	2	1	-	3
Climate Change	-	1	1	-	-	1
Economics	3	-	1	1	1	3
Geography	3	-	2	1	-	3
Rural_Devt	1	-	1	-	-	1
Management	3	2	1	2	2	5
Community Devt	2	-	1	1	-	2
Total	20	5	14	8	3	25

Source: Primary Data/Field Survey, 2023

According to table above, 25 experts from respective sectors were participated in responding the questions where 100% of the questionnaires were answered by degree and masters holders of various professions that are relevant to the study. Regarding the work experience, 56% of the officials have experiences of 2-3 years, and the rest (32%) have a 4-6 years’ work experience whereas only 12% of the respondents are with 7 years and above experiences of work. Having the appropriate professions with considerable work experiences, these respondents are considered to provide proper information about the issues under the study.

3.3.2 Household Characteristics

Next to contacting the Mayor of Durame town regarding this study, data collection activity was done from different sources through different mechanisms such as observation, questionnaire and interview. As described in the methodology section of this paper, the three mechanisms were achieved from different sources accordingly. The researcher made contact with 166 respondents to get necessary information regarding the existing formal-green spaces in Durame town. This figure indicates households who reside around the green-areas and whereas the rest share indicates professionals from different offices and other concerning bodies as described in the methodology part of this report.

The respondents’ reply is taken to know their level of understanding in the issue raised, for concluding some ideas and so on.

i. Sex of the Households

In the assessment of demographic characteristics of the respondents, the gender study, as a result, shows that more than 93% of the households are males whereas only 6.9% of them are women. However, this figure doesn’t represent the sex distribution of

the town’s residents; rather, it can only show the sex-share of the households within the town.

ii. Age Distribution

As the characteristics of the residents in the town, the ages of the households were also assessed in different age intervals. The output of the study looks like the following tabular description which is performed in the age interval of seven.

**TABLE 4
AGE DISTRIBUTION OF THE HOUSEHOLDS**

	Age Group				
	15-24	25-34	35-44	45-54	>=55
Number	-	6	70	49	28
Percentage	-	4	46	32	19

Source: Household Survey, 2023

As indicated in the table, most of the residents in the town who cover 46% or 70 in number are categorized under the age distribution between 35-44. Except below the age of 24 years, all age classifications were data sources. This shows that most of the data are gathered from the homeowners as intended. It also indicates that the majority of the respondents is in most active age level and thus can understand about the issue of urban greening in general and formal green spaces in particular.

iii. Family Size

Dealing with the family size of the households, the frequently recorded family size (mode) was 4. The minimum family size was 2 and the maximum, 7. Adding all values responded by the interviewees and then dividing the sum by their number, the average family size of the town’s residents is 5.

iv. Occupation

Assessing the occupation of the residents, more than five kinds of income sources are observed. For more clarity, refer the table below and the chart following it.

**TABLE 5
OCCUPATION OF THE HOUSEHOLDS**

	Govt Employee	Private Employee	Business & Trade	Daily Labor	Other
Number	64	20	57	-	12
Percentage	42	13	37	-	8

Source: Household Survey, 2023

The respondents are of different characteristics occupationally as described in the above table. Most of the residents who gave the information (responded) are government employee who accounts 42% of the total. Additionally, people with their own business and trade activities, private employee and others were the other respondents whose percentage is 37, 13, and 8 respectively. Here, the classification “Other” shows that those households in either of unemployed (no job), retired or who live with agricultural activities.

v. Education Level

As the fact anybody agrees that education level and the awareness of urban greening have a direct relation. If the level of education is high then the awareness about the values or benefits of green areas will be high, which in turn lead to increased contribution for the planning and development of green areas. Illiterates and/or people with lower education level may not understand the planning aim of urban-green spaces whether they are formal or not. Hence, they consider such spaces as solid-waste accumulation/disposing places and use for this and the likes activities. In contrast, literate communities are in better awareness of the issue of formal or informal green areas in an urban system and they exercise the planned land uses accordingly. Therefore, education level of urban society has to be studied whenever dealing with planning and

development of green-spaces. The following table shows education-level of respondents of this study in Durame town.

TABLE 6
EDUCATION LEVEL OF THE RESPONDENTS

No.	Educ. Status	Frequenc y	Percentage (%)	Remark
1	Cannot read and write	-	-	
2	Can read and write	3	2	
3	Grade 1-6	8	5	
4	Grade 7-12	37	24	
5	Diploma and above	105	69	
Total	153	100		

Source: Household Survey, 2023

From the table, one can see that more than 30 percent of the respondents are under diploma level of education which has direct impact on awareness and understanding of the values of green areas. On the other hand, as the table shows, there was no respondent who cannot read and write. 2 percent of the respondents can read and write, and 5 percent lie under grade 1-6 level of education. As a second rank of education level of the respondents, about 24 % of them are in grade 7-12 level where as the highest share which is 69% shows that most /more than half/ of the respondents have diploma and above level of education. This shows that the town has quite a literate community, whose awareness level on urban greening is good.

vi. Living Duration in the Town

Assessing the characteristics of the residents in the town, the maximum duration they lived in the town was studied in five years’ interval (as TABLE 7 shows).

TABLE 7
LIVING DURATION OF THE HOUSEHOLDS (IN YEARS)

	0-5Yrs	6-10Yrs	11-15Yrs	>=15Yr s
Number	3	12	40	98
Percentage	2	8	26	64

Source: Household Survey, 2023

From the table we can see that among the 153 interviewed households, about 90% of them lived in Durame town for more than 10 years whereas very few households accounting only 10% of the total respondents of the study have under 10 years stay in the town. Having these data it is possible to conclude that most of the respondents clearly know Durame town in general and the nearby green areas in particular. Hence, the data given are closer to reality.

3.4 Results or Findings

3.4.1 Overview of Durame Town Planning Trends

In this section of the research, in order to explore the extent of their functionality, the existing status of Durame town (regarding formal-green space planning and development) is studied in detail. As a result, here, we will see the basic problems and strong sides related to plan preparation and implementation processes from the gathered data. These data were collected through questionnaire, observation and interview with different sectors (Municipality, Town Administration, UDCD, Environment Protection Offices and others).

Assessment of the previous plans of Durame shows that the town’s first plan (Development Plan) had been prepared in 1977 by the Ministry of Urban Development. The source of this information is the text report previously prepared by RUPI in 1999. It also states that Southern Nations and Nationalities Town Planning and Housing Department revised the development plan of the town in 1996. According to the same source, this plan was largely implemented and the town benefitted a lot from it.

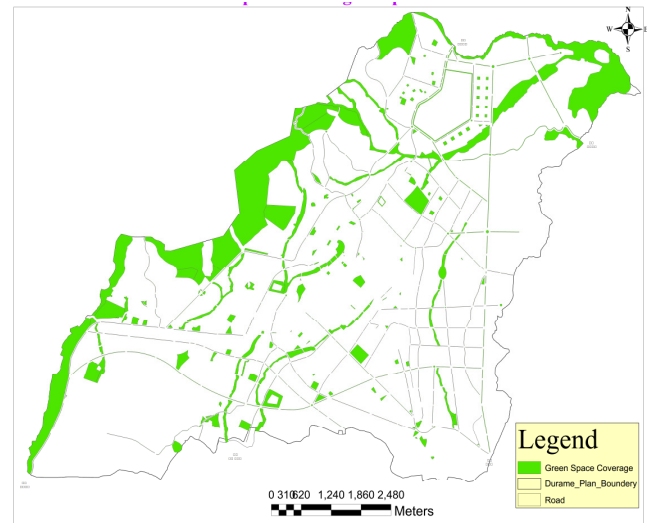
The second development plan of Durame was prepared in 1999 by NUPI (National Urban Planning Institute). This plan was prepared to serve for 10 years and did so. After the expiration of the

second development plan of the town, we find the third one, which is named as Structural Plan which was relatively good in accommodating essential urban-environmental issues elements like green areas. This structural plan was prepared in 2012 by regional private consultants of planning. Besides the structural plan, the team prepared LDPs (local development plans) for purposely selected sites in the town where a recreational and environment issues were best considered (even if 30-30-40% land use classification was not achieved). The urban-development plan serving the town currently is the fourth in the planning history. With some issues to be amended through practice, this plan is the best opportunity of the town for the intended development. This study deals only with one of the urban greening areas which is formal-green space in Durame town giving more emphasis on the planning and development of the spaces according to the existing structure plan so that the practices of the two aspects will be evaluated.

3.4.2 Overview of Green Spaces in Durame Town

Obviously, the provision of urban green spaces is the top priority for a livable city as sustainability of a city largely depends on their availability. The total amount of green spaces in an area is an important indicator of a sustainable urban ecosystem and quantity of life. The distribution of these spaces within a given area is also a very important for measuring their expected impacts [2].

According to the town's structure plan, the distribution (land-use proposals) of the green spaces (both formal and informal) is shown below.



Map_2: Spatial Coverage of Proposed Green Spaces of the Town

Source: *Extracted by the Researcher from the SP (2023)*

The above map clearly shows that the planned or provided green spaces in the existing structure plan. The green spaces consist of both the formal or informal types including the spaces for forest coverage. The total area covered by these spaces is 97.3 hectares (among which 26.5 hectares of land is covered by formal-green spaces).

As the total size of the town is 6502.8 hectares, the coverage of green spaces is below the expected standard of urban greening (30, 30, 40% land use classification) which enforces urban planners to propose 30% of land (from the total size of the town) for green coverage. Meaning, when we divide 97.3 hectares of land by that of 6502.8, we get 0.015. This implies that the coverage of planned-green space in Durame town is only 1.5% (showing 28.5% gap). Hence, the existing structure plan of the town has attained only 5% of the expected green space coverage.

3.5 Discussion and Interpretation

3.5.1 Status of Existing Formal-Green Space in the Town

For successful evaluation of functionality of the green spaces, the research assessed the green spaces in three kebeles of the town, focusing on their planning, usage, accessibility, maintenance, and ecological impact.

i. Formal-Green Spaces in Kasha Kebele

Kasha is one of the three administrative kebeles of the town, in which Durame town was established. It is commonly known as 'Aroge Sefer' which is an Amharic word/phrase used to express 'Old Neighborhood'. In this kebele, we find poor urban-planning practices as the road network, the block arrangements, and the land-use mixity are poorly utilized. As the existing structure plan shows, in the Kebele, the green areas' distribution is very poor.

Meles Park, Formal Green Space in Kasha Kebele: it is the only formal-green space existing in this Kasha kebele getting its name after the name of former Prime Minister, Meles Zenawi, during development of memorial parks in Ethiopia for commemorating him. It is surrounded by residential blocks acquiring total area coverage of 0.35 hectares which is below the standard of public parks which was set by ministry of urban development and construction [10].

According to urban-beautification expert in Durame municipality, at the very beginning, the location of the park was a green area which was unfortunately assigned as a park by decision without considering the size and other comfort dimensions. So, lack of investigation on parks requirements before deciding the place to be the park is one factor for the lack of comfort as officer's indicated. Still its internal part

is not designed to create attractive and walkable surrounding in it.

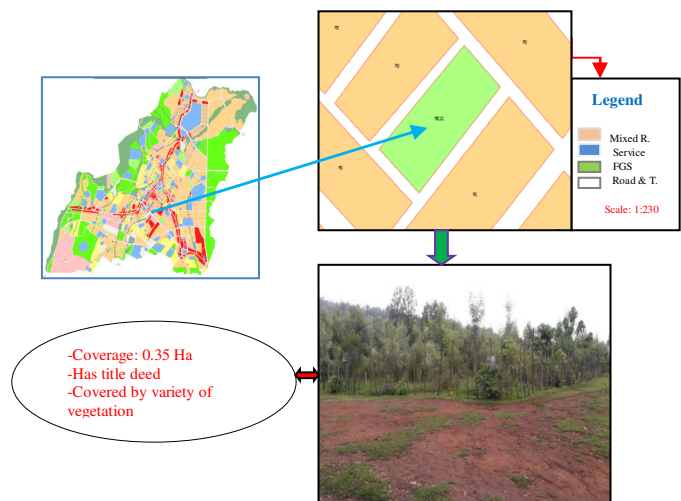


Fig. 1: Meles Park in Kasha Kebele
Source: SP and Field Survey, 2023

ii. Formal-Green Spaces in Zeraro Kebele

Zeraro Kebele is one of the administrative centers of Durame town, which is mostly the central part of the town. In this Kebele, even if unsatisfactory, we can find relatively sufficient number of formal-green spaces than the rest kebeles. One of the proposed formal-green spaces in Zeraro Kebele is 'Leliso Area Formal Green Space'.

Leliso Area Formal-Green Space: This formal-green space is within three residential blocks and a religious institution (Hawariyat-Church). The space has a land-use area of 0.14ha. It is covered by variety of trees whose surrounding is properly fenced. In the four directions, the formal-green space is separated from the nearby blocks by local roads of 8meters wide which are in poor infrastructure (not developed well).

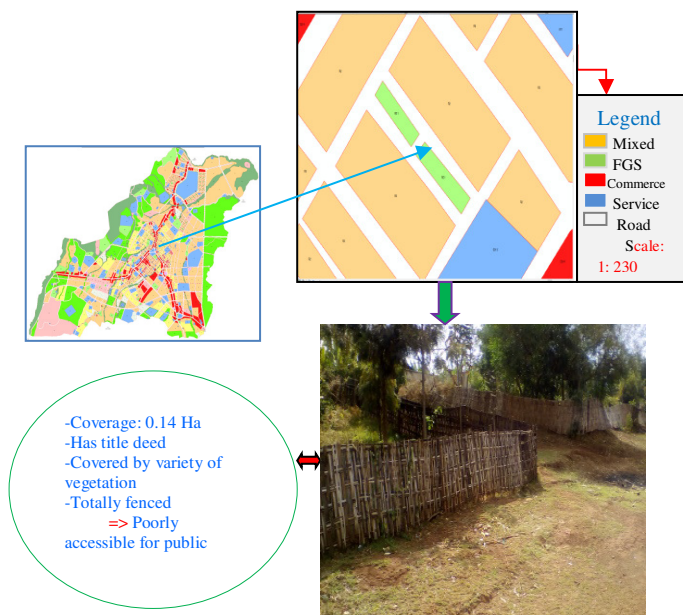


Fig. 2: Lelliso Area Formal-Green Space
Source: SP & Field Survey, 2023

iii. Formal-Green Spaces in Lalo Kebele

Lalo is one of the administrative kebeles of the town. In current status, the kebele more than half part of the spatial coverage of town. This is due to the urban expansion of the town (horizontally) is more in the direction where this kebele is located. For this reason, in most part of the kebele the plan implementation is in the beginning level. Hence, the land-use utilization of green areas (formal and informal) is poor.

a) Hospital Area Formal_Green Space: This green space is located at the back side of Durame Hospital (commonly called Hospital Jerba Arenguede Bota). This hospital area formal-green space is located in between Durame-hospital, manufacturing sites and a residential block. The green space has a total coverage area of 0.24hectares. The landscape is comfortable for recreation if the space is well developed. Currently the place is not developed according to the plan even if it`s considered as an open space. As some nearby residents informed to the researcher there

are trees which still belong to private bodies who were living in the place (before the urban development plan implementation).

b) Stadium (called, Durame Public Entry-Stadium): This is one of the existing formal-spaces of the town. It is the largest stadium in the zone with a coverage area of 3.32 hectares. According to MUDC (2012), the standard of zonal stadium is 11.5ha for population of 300,000- 600,000. Hence, it is beyond the minimum requirement (it is not sufficient to serve 120,000 people of the town). However, Due to the especial consideration by the zone administration for the sport sector of the zone, this formal-green space is under construction; and, serving Durame town administration, woreda and zonal games and matches. As it gets open for public use in day times, the youths enjoy their spare times in playing balls, walking in the compound, sitting and relax themselves. Moreover, it is used as a park because of its locational advantage and lack of comfortable parks in the town. In the formal-green space, we can observe public meetings by the responsible government bodies. Besides, it is also used as congregation place for religious conferences. So, having the extra purposes, this green space is the best robust public-place in the town.



Fig. 3: Durame Stadium
Source: SP & Field Survey, 2023

3.5.2 What did Respondents say about Formal-Green Spaces of the Town?

i. Households’ Responses on the Study

The researcher prepared a household-level questionnaire across three kebeles in the town to explore community involvement in planning and developing green spaces. The table below summarizes household responses to key questions on formal green spaces.

**TABLE 8
SUMMARY OF HOUSEHOLD RESPONSES**

Issue/Question		Frequency	Percent
Were you even informed about structure plan of the town?	1. Yes	104	68
	2. No	49	32
	Total	153	100.0
If yes, in which planning stage?	1.Before plan preparation	14	13
	2.During plan preparation	25	23
	3.During plan-implementation	65	64
	Total	104	100.0
Do you use green areas in the town?	1. Yes	57	37
	2. No	96	63
	Total	153	100.0
If yes, when?	1. Monthly	11	20
	2. Weekly	8	10
	3. Frequently	2	3
	4. Sometimes	36	67
	Total	57	100.0
If no, why?	1.Its planning problem	2	2
	2. Its poor development	38	40
	3. Inaccessibility	24	24
	4. Waste accumulation on	13	14
	5. Other (totally fenced)	19	20
	Total	96	100.0
What is your feeling about the green areas from planning point of view?	1. Adequately distributed	-	-
	2. Medium distribution	11	7
	3. Not adequate distribution	142	93
	Total	153	100.0
How do you evaluate the planning and development practices?	1. Highly participatory	-	-
	2. Moderately participatory	-	-
	3 Less participatory	129	84
	4. Not participatory at all	24	16

	Total	153	100.0
Are the concerning bodies creating awareness on green areas?	1. Yes	92	60
	No	61	40
	Total	153	100.0
How is the service delivery regarding the green-areas?	1. Free service	153	100
	Not affordable price	-	-
	Total	153	100.0

(Summarized in SPSS, 2023)

As we can see from the above table, the residents of the town know about structure plan of the town since 68% of them responded that they were previously informed about the plan. But, from this figure, most respondents (64%) agree that the concerning bodies were giving them awareness of urban development plan during implementation phase of the planning. This implies that the residents do not fully participate in the initiation and preparation phases of planning which results in poor understanding of importance and use of planned land uses including formal-green spaces. In exploring more information on the participation level of previous land use planning practices (structure plan and LDPs), the response of more residents was laid on “less participation” as 84% of them (129 in number) said that the trends of planning and development of urban development plans was not participatory in intended level. Even, 16% of the households agree as it’s not participatory at all. However, this study shows that most of the residents know about green areas of the town; but, do not use them accordingly. As many of them conclude, during plan preparation, green spaces were unevenly distributed in the town. That’s why 93% of the respondents who use the formal-green spaces for different activities responded that their provision is inadequate. In contrast, from a total of 153 households who were target of the study, 63 respondents (96 in number) do not use the formal green spaces in Durame town because of different factors

associated with the spaces such as: the planning problems of the green spaces, their poor development, their inaccessibility, waste accumulation on the sites, and other related challenges. Among these, most respondents (40%) said that the formal-green spaces are poorly developed; hence, the preference to enjoy on the spaces is too weak. Even, those respondents who are familiar with the green spaces, do not use them frequently, monthly, or weekly due to the planning and development constraints of the spaces. It's for this reason that 67% of respondents said as they use the green-spaces only 'sometimes'.

In assessing distance from their residences, 49 household respondents of this study can get a formal-green space under a radius of 0.5km, 33 respondents get within 0.5-1km distance, and 30 of them have the access within 1-2km whereas the rest with the highest share is 51 respondents who cannot get the green-spaces under 2km within the town. In the study of the approximate time (on foot per minutes) that enhance the residents get a formal-green space starting from their residences, 25% residents can get walking for less than 5 minutes, 15% in walking for 5-10 minutes, and 19% residents can get a formal-green space walking for more that 10-30 minutes. Most of the respondents (44%) can get a formal-green space walking for more than 30 minutes from their dwelling. But, as the standard, communal green spaces (including formal-green spaces) should be situated in locations that can be accessible to every inhabitant within 500m distance from their residence and they should be reachable by walking not longer than five minutes according to the 2016-Manual of development of amenity green space in residential areas which was prepared by ministry of urban development and construction. Hence, the study shows that that the formal-green spaces are

unevenly distributed or their provision couldn't consider the spatial coverage of the town which in turn resulted in inaccessibility of these land-use types for the public use.

Discussing the awareness level on formal-green spaces, most of the respondents (60% of the households) agree that the concerning bodies of the town administration are creating awareness on use of the green areas. This much households responded that they attend meetings concerning green areas of the town where as the rest do not. As the information got from those attending the meetings, the focus issue is more on development of the green spaces in: planting trees, protecting the existing trees, protecting the field from damp, fencing the surrounding of the green areas, and using the places for recreation. For this reason, nowadays, the residents are acquiring sense of ownership on spaces which are left open; and, got ready to protect plan violations on these spaces (if any). Regarding the service delivery of the green spaces all of the respondents agree that the open spaces are free (open for public use); even though there are still such spaces which are not totally cleared from private ownership.

Lastly, the respondents said that the importance of green spaces in urban areas is expressed in different aspects (environmental, ecological/natural conservation, aesthetics, and recreation). And, as a suggestion, to enjoy these benefits, they pointed their fingers on the concerning bodies to involve them in the planning practices of urban development plans including green spaces' planning and development. Moreover, for the sustainability of the green areas in their locality, they expressed their commitment to protect plan violations (in any aspects) along the land uses.

ii. Responses by Professionals in Different Sectors

The study reveals that the planning and development of formal green spaces in Durame town face numerous challenges, as highlighted through interviews with 30 purposively selected respondents, including experts and governing bodies from various sectors. These individuals were chosen based on their relevance in their current positions, work experience, and fields of study, ensuring their input would enrich the study. Their responses underscored critical issues in both the structure plan's formulation and its implementation, particularly regarding the integration of green spaces as a vital component of urban land use.

According to the majority of officials, the challenges stem from various factors, including poor planning procedures adopted in the past, weak implementation strategies, limited government commitment, and financial constraints. Urban planning experts at the town and zonal levels noted that while the current structure plan attempts to account for green and recreational spaces, these areas are unevenly distributed within the town's boundaries. They also highlighted a significant gap between the proposed green spaces and those realized, attributed to the municipality's inability to acquire or manage the designated areas effectively. Even the green spaces under municipal ownership fail to meet their intended purposes due to inadequate facilities and poor management.

Efforts to address these shortcomings are underway, as noted by planners and experts. The urban development and construction department of Kembata zone has taken steps to improve the planning and development of green spaces by collaborating with various stakeholders, including the zonal environment protection and forest offices,

Durame municipality, the youth and sports office, Gogota-Care Development Association, and Durame town administration. These bodies are involved in preparing national development plans (NDPs), approving land use plans, and adopting strategies to implement them. However, despite these efforts, the study found that the responsibility for green area planning and development largely rests with the municipality, which faces significant challenges in fulfilling this task.

Interviews with experts in urban sanitation management and green development at the municipality revealed that the institutional capacity of the town's administration is insufficient to support formal green space planning and development. The lack of skilled professionals, such as urban planners, urban engineers, and landscape architects, further exacerbates the problem. The municipality has only four experts with bachelor's degrees working in urban beautification and sanitation, which is far from adequate. Moreover, the budget allocated for green space planning and development has been non-existent over the past five years, limiting the scope of work in this area. Maintenance of existing green spaces is carried out sporadically, typically at the end of each fiscal year.

The study also highlighted poor commitment from government bodies and limited community awareness as significant barriers. While community involvement is essential for the success of green space initiatives, it remains minimal in Durame town. Efforts to educate residents on the importance of using, developing, and protecting green areas need to be intensified. Experts noted that without successful structure plan implementation, it is unrealistic to expect substantial progress in the development of green spaces. They emphasized that the current green spaces provided in the structure

plan are inadequate and stressed the importance of working towards the full realization of the proposed areas to meet the needs of the urban population.

An interview with an expert from the Environment Protection and Forest Office further highlighted the challenges of limited financial resources, weak government commitment, and poor implementation strategies. However, the expert appreciated the efforts of organizations like Gogota-Care, which have been instrumental in advancing urban greening initiatives. The office regularly conducts Environmental Impact Assessments (EIA) across the zone, including in Durame town, to support environmental protection efforts.

In conclusion, the study demonstrates that the planning and development of formal green spaces in Durame town are fraught with challenges but not without potential for improvement. Stakeholders need to enhance planning procedures, allocate adequate resources, recruit and train professionals, and engage the community more effectively. The commitment of municipal and zonal government bodies must also be strengthened to ensure the successful implementation of green space initiatives, ultimately contributing to a more sustainable and livable urban environment.

iii. Responses by Governing Bodies

The study further revealed several pressing challenges and ongoing efforts related to the planning and development of formal green spaces in Durame town, as shared by key stakeholders, including the mayor, the municipality manager, and representatives from youth and women affairs. The structure plan of the town, prepared in 2018, was identified as a critical factor contributing to the current issues. Many governing bodies agreed that its implementation is fraught with challenges,

leading to a lack of planned neighborhoods, failure to clear public spaces from private ownership, and difficulties in developing and maintaining formal green spaces.

The mayor of Durame town highlighted the administration's efforts to raise community awareness regarding the importance of green spaces. He emphasized that this issue is one of 17 core urban development agendas regularly discussed by the administration. According to him, the existing formal green spaces across the town's three kebeles are well recognized by the government bodies, ensuring their significance is addressed collectively. As a notable achievement, the mayor reported that the administration had collected over 22,000 ETB in just six months from initiatives aimed at protecting these areas, including measures to control the illegal entry of animals into green spaces like formal parks, informal spaces, and street medians.

However, the municipality manager pointed out that historically, community participation in land-use planning was negligible, particularly before plan preparation. This lack of engagement negatively impacted the development of formal green spaces. Recognizing this shortfall, the municipality has recently shifted to a more inclusive approach by involving town residents in neighborhood-level discussions during the planning stages. These efforts aim to gather valuable community input for land-use development plans (LDPs) and their implementation, fostering stronger collaboration and ensuring better outcomes.

Interviews with officials concerned with youth and women affairs provided additional insights into the challenges and opportunities surrounding green space planning. They noted that the town currently has three formal green spaces, including two green areas and the Meles Park. Despite the inclusion of

many green areas in the structure plan, implementation challenges have restricted the focus to maintaining spaces already under partial development, primarily in the central parts of the town. The Youth League Coordinator of the town lamented that discussions on green areas have become seasonal rather than continuous. As an example, he noted that Meles Park was once a thriving space for community gatherings, especially for the youth, thanks to the presence of a dedicated guard employed by the municipality. During that time, the park effectively served its purpose as a venue for social interactions and recreation. Unfortunately, due to diminishing attention from responsible bodies, the park has deteriorated and no longer meets public expectations.

The Zonal Youth Federation President added that the challenges of green space development are not only rooted in poor commitment and resource allocation but also in flaws within the town's land-use planning practices. He highlighted instances where green spaces, both formal and informal, were poorly sited due to topographical constraints. He acknowledged ongoing discussions within youth-focused sectors across the zone about improving green spaces for urban youth. These discussions stress the need for better planning and collective action among all stakeholders to manage, develop, and maintain urban green spaces effectively.

In conclusion, the findings emphasize that while some progress has been made, significant obstacles remain in realizing the intended purpose of formal green spaces in Durame town. The lack of consistent community involvement, weak implementation of the structure plan, and insufficient attention from responsible bodies continue to hinder progress. To overcome these challenges, a coordinated effort involving

government agencies, community members, and other stakeholders is essential to ensure the successful planning, development, and maintenance of green spaces for the benefit of the town's residents.

iv. Responses by NGO

The researcher successfully engaged with an important local organization, Gogota Care, Kembata Zone Development Association, which plays a significant role in urban greening initiatives. Established by the zonal community, the association has been dedicated to addressing development needs through active community involvement, with a strong focus on environmental protection.

The organization's report indicates that both Durame municipality and the Zonal Urban Development and Construction Department actively involve Gogota Care in various development projects, including urban plan preparations. Representatives of the association frequently participate in meetings and discussions about urban green spaces, emphasizing that challenges related to greening are expected to be addressed in the near future.

Moreover, the organization is currently undertaking to support urban greening efforts. As many officials involved in the study have noted, the organization manages a site where a variety of ornamental trees are produced. These trees are distributed freely to zonal towns, including Durame, to assist in the development of both formal and informal green spaces. The organization's efforts are already making a tangible impact on the town's greening initiatives, with allocated budget funds; there are plans to develop formal green spaces in towns of the zone including Durame. These spaces will be designed to ensure that they are functional and meet

the needs of the community, addressing the challenges that have stemmed from poor design and planning in the past.

3.5.3 Analysis on the Formal-Green Space Planning and Development Practices

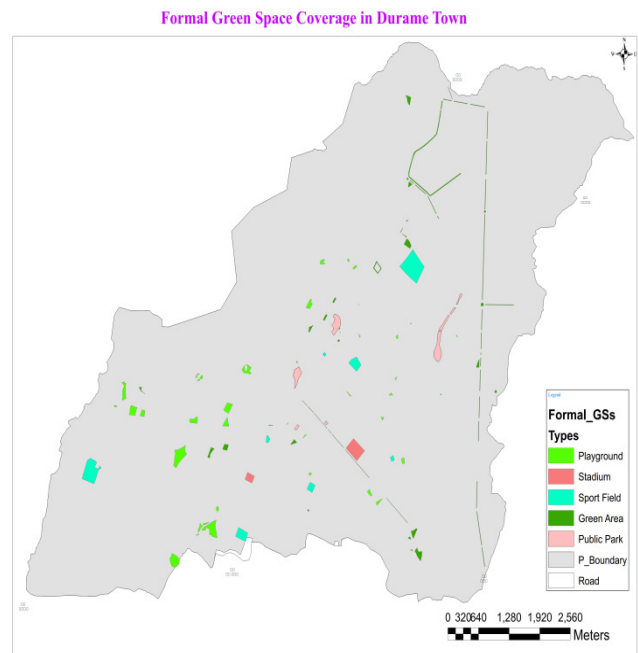
In this section the issues of formal-green spaces in Durame town will deeply be assessed to examine the practices of their planning and development. The study intentionally focuses on the existing formal-green spaces in the town; which are: playgrounds, stadium, sport fields, green areas, and public parks. The two aspects are elaborated below.

A. Planning Aspect of Formal-Green Spaces

As discussed in the objective section of chapter one, regarding the evaluation of planning aspect, the interest of the researcher has undertaken the study in spatial distribution of the formal-green spaces in the town so that to evaluate the coverage area by the green spaces, accessibility (spatial), per capita green space standards, and population threshold issues of the green spaces.

i. Coverage of Formal-Green Spaces in the Town

Urban green spaces play a vital role in the ecological and environmental functions of cities. Understanding this role is crucial for urban green space system (UGSS) planning. Current urban planning often overlooks the importance of natural spaces and processes, leading to spatial structure issues in green spaces [6]. To assess the spatial coverage of formal green spaces, one can analyze the distribution of green-space land uses, the per capita green space needed, and the population threshold for utilizing these spaces. A map showing the distribution of formal green spaces in the town's existing structure plan is referenced below.



Map_3: Spatial Distribution of Formal-Green Spaces

Source: Extracted by the Researcher-From the SP(2023)

In tabular expression of the above map, the following table presents the planned formal-green spaces of the town (in terms of quantity and their coverage area).

TABLE 9
 PROPOSED FORMAL-GREEN SPACES IN THE TOWN

No	Land-Use	Land-Use Code	Quantity		Area in Ha.	
			Proposed	Existing	Proposed	Existing
1	Playground	RE11	42	1	29	0.53
2	Stadium	RE12	3	1	10	3.32
3	Sport Field	RE13	9	-	35	-
4	Green Area	RE21	62	4	17	1.03
5	Public Park	RE22	9	1	15	0.35
Total			125	7	106	5.23

Source: Field Survey, 2023

i. Planning Gap of the Formal-Green Spaces

Having the map and tabular representation of formal-green spaces in Durame town (as shown above), the following planning gaps could be observed.

a). Catchment Area and Threshold Population

To deal with the catchment areas by formal-green spaces, the coverage size of the town (6502.8 hectares) and the current urban population (120,000) are the best indicators (independent variables). Here, using the Ethiopian standards of formal-green spaces, evaluation was done on the sizes of the spaces (as expressed in the table below).

TABLE 10

FORMAL-GREEN SPACE STANDARDS & PLANNING GAPS

R. No.	Formal Green Space	Expected Minimum	Minimum Standard	Population of the Town	Minimum Expected	Existing (Ha)	Planning Gap
1	Playground	5000	0.3	100,209	6	0.53	5.47
2	Stadium	30000	11.5	100,209	11.5	3.32	8.18
3	Sport Field	1250	0.1	100,209		-	8
4	Green Area	-	-	100,209	-	1.03	-
5	Public Park	-	-	100,209	-	-	-

Source: Developed by the Researcher

The expected sizes of the formal-green spaces are taken from the current standards for the land-use planning of Ethiopia i.e manual of NUGISs (National Urban Green Infrastructure Standards) set by the ministry of urban development and housing. As the table shows, currently the town has much gap in using the formal-green spaces. While the existing playground and stadium require additional 5.42 and 8.14 hectares of corresponding land; whereas as the town currently lacks sport field within the radius of plan implementation, it needs 8 hectares of the land to fulfil the standard. On the other hand, as the researcher couldn't get the national standards of green area and public parks per serviced population, evaluating the gap in such manner was difficult. However, applying the minimum size of the spaces (green area and park), the gap was identified.

According to the NUGIS, the minimum size of green area within residential blocks should not be less than 0.3 hectares whereas public parks in city level should acquire coverage of 0.5 hectares. Having this in mind, the researcher identified the corresponding gaps. Among the existing formal-green spaces in the town which were planned as green areas, the only Fullasa-Area FGS fulfills the standard as its size is 0.37 hectares. The rest existing green areas are below the standard. Regarding the public parks, the only existing park with 0.35 hectares coverage is 'Meles Park' which is also below the standard.

b). Per Capita Green Space

Different studies show that understanding on relationship between the urban population and the amount of green spaces is particularly important for the evaluation of their functionality whereas the quantification of urban green spaces are green space ratio, green space coverage and green space area per capita.

It's obvious that per capita green space is the area (m²) of accessible green spaces available per city inhabitant which is one measure of the quality of life in cities. According to [17], as international standard, 9 sq. m of a green space is a minimum benchmark per person and that of our continent, Africa is 7m² per person.

In this regard, we can calculate the per capita green space gap (if any). As stated earlier, the total size (coverage area) of the formal-green spaces is 26.5 hectares. It's this much hectares that we are going to check whether it is enough or not for the total population of Durame town (120,000). Multiplying the population size by the international constant of per capita green space needed (9m² per inhabitant), we can get the following figure.

- ⇒ $9 \times 120,000 = 1,080,000 \text{m}^2$. This is the per capita green space needed for the 120,000 population of the town. Converting the m^2 into hectares, the minimum size of formal-green spaces to serve the stated population (dividing $1,080,000 \text{m}^2$ by 10,000) is 108 hectares. This implies that to meet the WHO standard, Durame town currently needs an additional 81.5Ha of publicly accessible green spaces.
- ⇒ Applying the same calculation with that of the African per capita green space standard, we can find that the town needs 57.5 hectares of urban green spaces.

C). Accessibility

According to [15], access is mainly measured as a physical distance or travelling time from a residential house to a green space and further elaborated the UK standard that everyone should live within a distance not more than 300meters from nearest green area of at least 2Ha in size. Thus, the full benefits of green spaces are considered for the determination of per capita green space (ORAAMP, 2000) in [17].

In the case of Ethiopia, as the standard, communal green spaces (including formal-green spaces) should be situated in locations that can be accessible to every inhabitant within 500m distance from their residence and they should be reachable by walking not longer than 5minutes according to the 2016-Manual of development of amenity green space in residential areas which was prepared by ministry of urban development and construction. As discussed in 'Household Response' session of this study-report, only 49 respondents which means, only 32% of the total target households can get a formal-green space below a radius of 500m whereas the dwelling of 68% respondents is within a

distance more than half kilometers in relation to the nearby formal-green space. In time aspect, most of the respondents (44%) can get a formal-green space walking for more than 30 minutes from their dwelling. Hence, the study shows that the formal-green spaces are unevenly distributed or their provision couldn't consider the spatial coverage of the town which in turn resulted in inaccessibility of these land-use types for the public use.

B. Formal-Green Space Development Practices

According to [14], urban green areas are significant for daily lives of everyone including old people, children, workers and unemployed people living in the city because these people make use of these places and give meaning to them in different times and for different purposes. Therefore, in urban areas, the development issue of green spaces including the parks is mandatory. The only provision of such land-uses is nothing if the spaces lack: development through appropriate design, function, accessibility, operation and continuous maintenance. These are the key issues to evaluate the development of the formal-green spaces.

As we could understand from the discussions which were done in the previous sections, most of the proposed green spaces were not developed (even the majority of such land use spaces are still under private ownership. This is because of the poor consideration given by the municipality and the town administration to implement the existing structure plan of the town. For this reason, in this study, the assessment of the development aspect of formal-green spaces focused on the existing formal-green spaces which were discussed under 'Status of Existing Formal-Green Space' section.

i. Physical Appearance

Having a site observation checklist, the researcher visited each of the existing formal-green spaces in the town. The physical observation was done on the assessment of vegetation coverage, accessibility (routes), and the security issue as discussed in the table below.

TABLE 11

PHYSICAL APPEARANCES OF FORMAL-GREEN SPACES

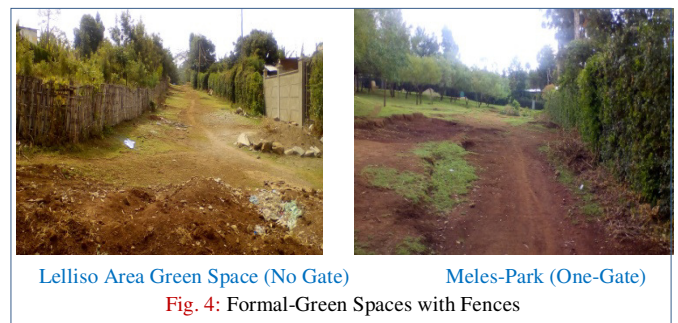
No	Formal Green Space	Type	Vegetation Coverage	Infrastructure (access)	Security
1	Lelliso Area GS	Green Area	Very Good	Good	Fence only
2	Hospital Area GS	Green Area	Poor	Good	-
3	Meles Park	Park	Very good	Good	Fence, Entrance
4	Durame Stadium	Stadium	Good	Good	Good

Source: Field Survey, 2023

As discussed earlier (in ‘Current Status Section’), the hospital-area green area is not totally cleared from the private properties. Hence, as the table shows, the municipality couldn’t plant any trees on the site. Lelliso green area and the park have relatively better appearance in their vegetation coverage. Regarding the access roads to them, during the study no space is directly connected with paved road surfaces (asphalt, cobblestone, and so on). But, those green-spaces explained as ‘good’ in the above table are the spaces with relatively in better locations that have connecting roots nearby so that the public can easily access them.

In other field observation, the researcher has found that only two of the green spaces acquired fences along their planned area whereas the other lack. Among these, the green-space in Lelliso-Area violates the publicness of the land use as no one is using the space. The beneficiaries of this space are the nearby residents whose homes are along the green space. On the other hand, even if the space is not well designed, Meles Park is relatively in a

good position to serve the urban societies and the surrounding as well. According to experts in Durame municipality, the surrounding of the park is fenced for security purpose and will be open whenever needed as it has one gate. Even during the observation of this study, the gate of the park was closed and the researcher assessed the site moving along the nearby roads. But, this is not the appropriate way of using parks in urban areas. Formal-green spaces are places with full responsibility of the public where they are able to use it for enjoying/refreshment, relaxing, and passing their spare times. Therefore, the security fences are recommended only for protection of animal-entry.



Source: Field Survey, 2023

ii. Designs of the Formal-Green Spaces

The evaluation of urban green spaces has to be centered on a variety of available quality and with a proper standard, to accommodate future changes. Within this framework, planning authorities should adopt a strategic approach for the strong protection, and resist new development opportunities, to ensure accessibility, and provide good quality green space and recreational facilities [1].

According to the 2015- NUGISs (National Urban Green Infrastructure Standards) manual set by the ministry of urban development and housing which shall be applied across Ethiopian cities, and towns, public green open spaces should be connected (1)

with each other to create one large UGI (urban green infrastructure) network within the city, and (2) with green and nature in the urban fringe and outside the city. Corridors which connect green spaces throughout the city raise the value of the urban ecological system. Existing natural / water / topographical characteristics of the area should be used as starting points to guide the planning of the network and the location of the green open spaces.

As we can see the formal-green spaces of Durame town which are under the study, there is no connection of them either with each other or with other green spaces so that the idea to create one large urban green infrastructure couldn't be accomplished. On the other hand, dealing with the design aspect of the green spaces, according to the 2016 manual of ministry of urban development and housing on 'Development of Amenity Green Space in Residential Areas', the elements of a design together create a unified view and the aim of a well-designed landscape is to attract the attention of viewers.

To attain the intended aims, the designs of urban green spaces should be characterized by: Green components such as: trees, ornamental shrubs, and perennials that are woody plants that provide aesthetic, ecological and economic benefits to the surrounding communities and Gray components such as: the seats, litter bins, lights and facilities such as playgrounds as the same manual states.

Among those formal-green spaces of Durame town with vegetation coverage, the issue of green and gray components is not fully satisfied. This is because of the trees being planted on green space sites were not tested in this manner whether they provide the expected functions or not. Moreover, as a gray component, currently none of the spaces under the study has seats, litter bins, lights and other facilities.



- Lack of variety trees,
- Haphazard plantation of the trees,
- Irregular spacing of trees,
- Wilting of grasses,
- Lack of seats,
- Lack of litter bins,
- Lack of lights,....
- Lack of infrastructure...

Fig. 5: Example of Poor Design of Formal-Green Space

Source: Field Survey, 2023

However, interviews done with various government officials during this study show that the above weak designing practices of the existing formal-green spaces will be managed in near future as the zone administration is currently with practical agendas which are in line with creating a 'Green-Garden Environment' for Kembata zone.

i. **Operation and Maintenance**

The concepts discussed above (provision and design of formal-green spaces) are not the only/satisfactory issues whenever dealing with the spaces. Green space provision (the land-use plans) without proper design of the spaces is nothing rather than simply being an open space. In the same manner, operation and maintenance are interrelated terms. As a concept, an operating green space is an active space (currently), and may not serve in some futures. The effectiveness of operating green space needs continuous maintenance of the space for the success of the intended aim. In this regard, as the field observation of this study in Durame town shows, there are two formal-green spaces with no operation at all (Fullasa & Hospital-Area green spaces). On the other hand, as a limitation in maintenance, the residents of the town were complaining on the poor management of Durame

municipality raising the current status of College Area formal-green space which is shown in the following figure.



Fig. 6: Unmaintained College Area Formal-Green Space
Source: Field Survey, 2023

Most of the household respondents (92%) definitely know this green space and they said that ‘before two years ago, the space was relatively a good recreational site with seats, green landscaping, and shadowing trees’. At those times, most people especially the youth were recreating, enjoying, and studying books on the site, as the respondents said. But, currently, the space is under risk, even losing its natural greenness. The broken seats, the gray landscape feature and wilting of trees need proper and continuous maintenance so that the common recreational activities by the community will occur back there. In further assessments of the development aspect of the formal-green spaces of Durame town, the root causes were various starting from the land use plan preparations (during the existing structure plan preparation).

3.5.4 Major Challenges Associated with Formal-Green Spaces

As one of the objectives of this study was investigating the major challenges associated with planning and development of formal green spaces in Durame town, the researcher has tried to set

various problems which the concerning bodies (varied group of the town residents, the experts in government sectors, government officials, and NGO representatives) are currently facing on urban greening in general and formal-green spaces in particular. The following are among these challenges.

a) Problems associated with Planning Activity

Structure plan of a specific locality passes through three interconnected phases; namely, preparation, planning, and implementation, monitoring and evaluation phases. Each of these phases has its own procedures to be applied where failure to properly encompass them will result in failure of the intended urban planning. Having this fact, the exploration of the planning gaps of formal-green spaces in Durame town shows that during the existing SP preparation, the extent of stakeholders’ participation in each phases was poor. Majority shares of target respondents of this study agree that especially before plan preparation of SP (in initiation/preparation phase), community interests were not asked to propose land use plans including that of formal-green proposals. For this reason, the green space planning in the town is characterized by: uneven distribution of the spaces, its impossibility to attain the per capita green space standards and population thresholds, and the availability of sub standardized proposals of formal-green spaces.

b) Insufficient Institutional Capacity

As discussed in the finding session of this report, among the 106hectares of formal-green spaces proposed in the structure plan of the town, only 5.23 hectares of the spaces is implemented and publicly known. As the root causes for this challenge, the insufficient institutional capacity is

seen as the major issue. Regarding the structure planning activity, the implementation is still below half of the coverage of the town due to such challenges which need the municipality to finance the infrastructure provisions and compensation for resettlement. On the other hand, the municipality and the town administration couldn't fulfil the need gaps of experts of relevant professions. At the time of this study, there were only four experts of bachelor degree with professions geography, rural development, sociology, and pure management. Even though these professions are relevant to the issue of urban greening in some aspects, other remaining fields such as urban planning, urban engineering, landscape architecture and the likes are needed more in the planning aspects of urban greening. As another gap of the municipality, the facilities/equipments which enhance the development of formal-green spaces are also poor.

c) Limited Awareness of the Concerning Bodies on Green Spaces

The multi functionality of formal-green spaces for a specific locality can only be achieved through active involvement of the concerning bodies in the planning and development of the practices. In the case of Durame, from the past trends, all the concerning bodies (governing bodies, experts, and the residents) were found with poor awareness. Government bodies of the town administration including the manager of the municipality need to invest more on other land uses rather than developing green spaces. On the other side, instead of taking measures on the weak practices of urban greening, the experts of the urban sanitation management and green development work process of Durame municipality were focusing on other sectoral tasks as no budget was allocated for the issue of green space planning and development. In

communities' perspective, as discussed in previous sections, some formal spaces are serving the nearby dwellers informally as they use it for dumping wastes and accumulation of private properties. These are among the poor awareness expressed on the concerning bodies.

d) Challenges occurred on Strategic Plan Implementation

The challenge associated with implementation of the existing structure plan of Durame town is the core burdens of the municipality and the town administration as well. Most of the time, the preparation of NDPs doesn't meet the intended purpose as it commonly fails to be implemented because of its poor planning and the limited budget of the administration. As a result, the land uses including that of green spaces are still occupied by private dwellers which need high costs for clearing the sites and for the relocation the settlers. The government bodies didn't set implementation strategies to ensure the wellbeing of the practice. These challenges are found affecting functionality of the formal-green spaces in the town.

3.5.5 Core Findings of the Study

The functionality study of formal green spaces (in planning and development perspectives) in Durame town has reached on some findings.

As the first focus of the study, **the planning gaps** identified are:

- Adoption of inappropriate urban planning approaches; i.e the preparation, planning, and implementation phases of the existing structure plan were poor in stakeholders' participation.
- As the land use planning indicates, in the town, five percent of the Urban-Greening Goal of the country is attained.

⇒ As the green space coverage in the existing SP is 1.5% of the total size of the town, the current 30, 30, 40% land use classification of Ethiopia is not attained.

- The town needs 81.5 hectares of additional formal-green space to meet the WHO standard of per capita green space.
- Spatially unevenly-distributed green spaces resulted in inaccessibility for users.
- Availability of sub-standardized sizes of the green-spaces,

Regarding the specific aspect, '**formal-green space development**' the study shows that:

- The emphasis of the government bodies (previously) to invest on such land uses was poor; which resulted in presence of more undeveloped green spaces in the town,
- Lack of appropriate design along the formal-green spaces (weak attractiveness of the spaces for users due to improper 'Green' and 'Gray' components of urban design),
- Poor functionality of the proposed green spaces to meet their planning aim,
- Poor management and maintenance of the formal-green spaces (by the concerning bodies) were the drawbacks.

The major challenges associated with the green spaces which the town currently faces are:

- Poor commitment of the responsible government bodies in the planning activity,
- Insufficient institutional capacity of the municipality to develop and to manage the green spaces,
- Frequent replacement of the governing bodies in the municipality and the town administration are also found challenging.

4. CONCLUSION & RECOMMENDATIONS

4.1 Conclusion

The study examines the functionality of formal green spaces in Durame town, focusing on key public spaces such as Meles-Park, the Hospital Area, Lelliso Area, and Durame Stadium. Through interviews, field observations, questionnaires, and document reviews, the research identified significant challenges and opportunities within the town's green space initiatives.

The evaluation revealed that poor adherence to urban planning procedures has been a critical issue. Community participation during the preparation, planning, and implementation phases of structure plans was minimal, leading to proposals that did not reflect the needs or preferences of local residents. Green spaces were planned in isolation by the planning team, resulting in unstandardized block sizes, limited accessibility, and low user preference for these areas.

The development of green spaces has also been hindered by poor infrastructure provision, inadequate maintenance, and a lack of essential facilities. While Durame Stadium showed some progress, with ongoing construction and relatively better conditions, other spaces failed to meet expected standards. Facilities like seating, lighting, and waste bins were lacking, and vegetation in these areas was poorly organized, falling short of ecological and aesthetic norms.

Institutional challenges further compounded the issues. The town administration and municipality demonstrated limited capacity—technical, institutional, and financial—to properly manage and develop green spaces. Coordination among stakeholders was weak, and awareness of the importance of green spaces remained low among responsible bodies.

Despite these setbacks, the study highlighted a positive initiative—the seasonal political agenda of "Creating Green Zone." This program aims to develop green spaces across zonal towns, including Durame, with a focus on implementing urban development plans effectively.

In conclusion, while Durame town faces significant challenges in the planning and development of its green spaces, these issues can be addressed through improved community involvement, stronger institutional capacity, and better adherence to urban planning standards. The "Creating Green Zone" initiative represents a step in the right direction, offering hope for a more sustainable and inclusive approach to green space development.

4.2 Recommendations

The researcher highlights various challenges in assessing functionality of formal-green spaces and provides recommendations to enhance their planning and development in a proper manner. Some of the measures include:

i. Planning activities should be exercised properly: Effective development planning starts with assessing existing conditions to address stakeholder needs. Durame town's green space challenges require a participatory approach, involving diverse community groups. Revising the structure plan to ensure equitable green space distribution and incorporating 81.5 hectares of additional green spaces will address accessibility issues and improve per capita coverage.

ii. The institutional capacity of the municipality should be improved: Durame town faces challenges in developing green spaces due to poor institutional capacity, including a lack of skilled manpower, financial resources, equipment, and a strong legal framework. The municipality struggles

with limited staff and funding. To address these issues, the town administration should enhance municipal finances, hire skilled professionals, provide regular training, and improve revenue through better tax collection methods.

iii. The awareness level of the concerning bodies should be increased: In Durame town, past greening efforts have lacked implementation. To succeed, the administration must raise awareness about the importance of green spaces, allocate sufficient resources, and prepare identified green areas for public use. Informal activities like encroachments and waste dumping should be managed, and illegal constructions must be controlled. These steps will help ensure the success and sustainability of urban greening.

iv. Implementation strategies should be established in town level: As repeatedly stated in this study, more of the challenges associated with developing formal-green spaces were resulted from the poor implementation of the existing structure plan. As one of the contributing factor to these challenges, previously, there was implementation strategies specifically set for the planning activity. Hence, having this finding, the researcher recommends that the responsible bodies (political leaders, experts, representatives of various groups of communities) should commonly develop strategy which enhances the wellbeing of the SP implementation. Additionally, action plans must be prepared based on the priority of the problems and the available resource in order to facilitate implementation process regarding to development of the green spaces.

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- [14] Serap Yilmaz & Sema Mumcu. (2016). The role of urban green spaces in sustainable urbanization. *Journal of Environmental Planning and Management*, 59(3), 523-531.
- [15] Sotoudehnia, F., & Comber, A. (2011). Evaluating accessibility to green space in urban areas using GIS: The case study of Bristol, UK. *Urban Forestry & Urban Greening*, 10(3), 204-215.
- [16] Sporn, A. W. (1985). *The Granite Garden: Urban Nature and Human Design*. New York: Basic Books.
- [17] Tekle, A. (2016). Evaluating urban green space standards and their adaptation in Ethiopia. *Ethiopian Journal of Urban Studies*, 2(2), 45-57.
- [18] WHO (World Health Organization). (2003). *Health and environment in sustainable development: Five years after the Earth Summit*. Geneva: WHO.
- [19] Central Statistics Agency (CSA). (2007). **Population and Housing Census Report of Ethiopia**. Central Statistics Agency, Addis Ababa, Ethiopia.
- [20] Central Statistics Agency (CSA). (2013). **Population Projection of Ethiopia: Statistical Report**. Central Statistics Agency, Addis Ababa, Ethiopia.
- [21] National Meteorological Services Agency. (2006). **Climate Data Analysis for Ethiopia**. Addis Ababa, Ethiopia: National Meteorological Services Agency.
- [22] Southern Nations, Nationalities, and Peoples' Region (SNNPR) Regional Urban Development Strategy. (2015). **Regional Development Strategy for Urban Areas**. SNNPR Urban Development and Construction Bureau, Hawassa, Ethiopia.
- [23] World Bank. (2016). **Ethiopia Urbanization Review: Urban Institutions for a Middle-Income Ethiopia**. Washington, DC: The World Bank.
- [24] Urban Development and Construction Bureau (UDCB) of SNNPR. (2018). **Revised Structure Plan of Durame Town**. Southern Nations,

REFERENCES

- [1] Balram, S., & Dragicevic, S. (2005). Collaborative GIS for spatial decision support and visualization. *Collaborative GIS: Opportunities and Challenges*, 1-16.
- [2] CABE Report. (2010). *Green spaces: The benefits for communities and the environment*. London: CABE.
- [3] Cetin, M. (2015). Using GIS analysis to assess urban green space in terms of accessibility: Case study in Kutahya. *International Journal of Sustainable Development & World Ecology*, 22(5), 420-424.
- [4] Elizelle Juaneé Cilliers. (2015). Evaluating the quality of urban green spaces in planning. *Urban Ecosystems*, 18(4), 569-586.
- [5] Howard, E. (1898). *Garden Cities of To-Morrow*. London: S. Sonnenschein & Co.
- [6] Hough, M. (1984). *City Form and Natural Process: Towards a New Urban Vernacular*. London: Routledge.
- [7] Jennifer R. Wolch, Byrne, J., & Newell, J. P. (2014). Urban green space, public health, and environmental justice: The challenge of making cities "just green enough." *Landscape and Urban Planning*, 125, 234-244.
- [8] Manlun, Y. (2003). Urban green space planning and its impact on urban environment. *Journal of Environmental Science and Policy*, 6(3), 201-208.
- [9] Mensah, C. A. (2014). Urban green spaces in Africa: Nature and challenges. *International Journal of Ecosystem*, 4(1), 1-11.
- [10] Ministry of Urban Development and Construction. (2016). *Manual of Development of Amenity Green Space in Residential Areas*. Addis Ababa, Ethiopia.
- [11] National Urban Planning Institute. (1999). *Urban Planning Standards in Ethiopia*. Addis Ababa: NUPI.
- [12] NUGISs. (2015). *National Urban Green Infrastructure Standards Manual*. Addis Ababa: Ministry of Urban Development and Housing.
- [13] ORAAMP. (2000). *Open Recreational Area and Amenity Management Plan*. Addis Ababa: Ethiopian Urban Management Institute.
- Nationalities, and Peoples' Region, Urban Development and Construction Bureau.
- [25] Strategic Plan (SP). (2023). **Durame Town Strategic Plan**. Prepared by the Urban Planning Office of Durame Municipality, Southern Nations, Nationalities, and Peoples' Region.
- [26] Kothari, C. R. (2004). *Research Methodology: Methods and Techniques* (2nd ed.). New Age International Publishers.

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