

**Evaluation of Urban Land use Plan implementation: A case of structural Plan of Bale
Robe Town, Ethiopia**



Abdulaziz Mohammedhusen Aliyi

A thesis Submitted to

The Department of Geomatics Engineering

School of Civil Engineering and Architecture

Presented in partial fulfillment for the degree of Master's in Geo-Informatics Engineering

Office of Graduate Studies

Adama Science and Technology University

May, 2024

Adama, Ethiopia

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DECLARATION

I hereby declare that this Master thesis entitled “Evaluation of Urban Land use plan implementation: A case of structural Plan of Bale Robe Town, Ethiopia” is my original work. That is, it has not been submitted for the award of any academic degree, diploma or certificate in any other university. All source of materials that are used for this thesis have been duly acknowledged through citation.

Abdulaziz Mohammedhusen Aliyi

Name of the student

Signature

Date

RECOMMENDATION

I, the advisor of this thesis, hereby certify that I have read the revised version of the thesis entitled “Evaluation of Urban Land use plan implementation: A case of structural Plan of Bale Robe Town, Ethiopia” prepared under my guidance by Abdulaziz Mohammedhusen Aliyi submitted in partial fulfillment of the requirements for the degree of Masters of science in Geo-Informatics Engineering. Therefore, I recommend the submission of the revised version of the thesis to the department following the applicable procedures.

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I, the advisor of the thesis entitled “Evaluation of Urban Land use plan implementation: A case of structural Plan of Bale Robe Town, Ethiopia” and developed by Abdulaziz Mohammedhusen, hereby certify that the recommendation and suggestions made by the board of examiners are appropriately incorporated into the final version of the thesis.

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We, the undersigned, members of the Board of Examiners of the thesis by Abdulaziz Mohammedhusen Aliyi have read and evaluated the thesis entitled “Evaluation of Urban Land use plan implementation: A case of structural Plan of Bale Robe Town, Ethiopia” and examined the candidate during open defense. This is, therefore, to certify that the thesis is accepted for partial fulfillment for the degree of Master’s in Geo-Informatics Engineering.

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LIST OF ACRONYMS

GIS	Geographic Information system
GPS	Global Positioning System
SP	structure plan
BCR	Boundary containment Ratio
BSR	Boundary Sufficiency Ratio
FUPI	Federal Urban plan Institute
LUP	Land use plan

ABSTRACT

Land use planning plays a crucial role in guiding the growth and development of urban areas, ensuring their sustainability and livability. It involves the allocation and management of land resources to achieve specific social, economic, and environmental objectives. The effective implementation of land use plans is essential for creating well-organized and sustainable urban environments. Despite having a land use plan in place, it is unclear how effectively this plan is being implemented and key factors influencing its implementation in Robe town, Ethiopia that is experiencing the significant growth. This research examines the extent to which the land-use plan of Robe Town, which functioned from 2009 to 2019, guided and controlled spatial developments during the planning period by measuring the degree to which actual land-use outcomes over a 10-year period conformed to the plan's intention. Proposed land uses in 2009 structural plan were mapped, and actual land uses in 2019 were mapped then, conforming, nonconforming and unfulfilled developments were identified through spatial overlay analysis in a geographic information system environment. The degree of conformance success of the plan over the planning period was explored using two indicators: boundary sufficiency ratio (BSR) and boundary containment ratio (BCR). A descriptive exploratory approach was used to determine potential factors influencing the plan's implementation from the data collected by expert interview. The findings show that the extent of Social service land use shows overutilization, surpassing the proposed area of 246 hectares with actual utilization of 364 hectares (147.9%). Furthermore, manufacturing and storage land use decreased from 566.06ha area to 29.9ha indicating a large non-compliance rate of 94.74%. The findings also demonstrate that although the plan proposed a reasonable area, except for social service, it has failed to guide the spatial location of new developments in residential and manufacturing and storage land use classes. The study also reveals that failure of land use plan implementation in robe town are due to low awareness of the community and lack of participation, weak leadership, poor monitoring and evaluation of plan implementation, lack of boundary demarcation with rural kebeles. To effectively implement future structure plans in Robe town, it is essential to foster community participation and raise awareness about the structure plan among residents to ensure it meets the expected standards. Additionally, the integration of modern technologies such as Geographic Information Systems (GIS) and the deployment of skilled manpower are crucial for enhancing the efficiency and effectiveness of the land use plan implementation in Bale Robe town.

Keywords: Land use plan, urban plan, Plan evaluation, Plan implementation

CHAPTER ONE: INTRODUCTION

1. Background and Introduction

Urbanization is a global phenomenon, with Africa experiencing particularly rapid growth. By 2050, it is projected that 56% of Africa's population will reside in urban areas (United Nation 2018). Eastern Africa stands out as one of the fastest urbanizing regions, with an annual growth rate of 5.35% between 2010 and 2020. This rapid urbanization, however, brings forth numerous challenges, including those related to infrastructure, housing, services, and environmental sustainability (Kamana, Radoine, and Nyasulu 2024). Effective urban planning is essential to address these challenges and ensure sustainable development. However, in regions like Ethiopia, implementation and evaluation of urban land-use plans have been lacking, impeding the realization of desired outcomes (Negeri, Guta, and Erena 2023).

Evaluation of plan implementation in urban areas is crucial for assessing their effectiveness and success, thereby enabling the enhancement of plans and the planning process for future iterations (Oliveira and Pinho 2010). However, evaluation in planning practice is poorly or never performed (Guyadeen and seasons, 2017), and is still underdeveloped (Lyles et al., 2016) although several studies have examined ways of determining whether, and how well, plans have been implemented (Laurian et al. 2010).

Robe town, situated in South Eastern Ethiopia, faces urban challenges indicative of potential non-implementation or inadequate implementation of land-use plans. Issues include incompatible land uses, waste mismanagement, informal housing, illegal land holdings, infrastructure deficiencies, and improper land administration. The Robe land-use plan (RLUP09), which functioned from 2009 to 2019, was implemented with an update in 2019. However, the extent of successful implementation and the factors influencing implementation remain unclear.

The lack of plan implementation is known as “new plan syndrome”; hence plans are continuously redone or updated without regard to the implementation status of the originally prepared plan. The lack of understanding of the degree to which plans are implemented and the determinant of effective implementation has hindered planners for making better plans

(Omer 2015). Often, designing a new plan is considered more advantageous than assessing its implementation, which could reveal its failure (Loh 2011). The assessment of planning implementation has been carried out mainly in advanced economies with limited attention to developing countries, where cities are growing rapidly and the planning systems are marred with complex challenges and deficiencies (Zhang, Zhang, and Liu 2022)

This study utilizes two acknowledged theories, namely the conformance-based approach and the performance-based approach, to assess plan implementation (Feitelson et al. 2017). Given that RLUP09 is a material-oriented blueprint plan with a specific planning period, effectiveness of its implementation is measured by the level of conformity between actual land-use outcomes and plan proposals. Spatial conformity is assessed by comparing proposed land-use plans with actual outcomes (Guo, Hu, and Zheng 2020). The study also explores the level of implementation success through two indicators: boundary containment ratio (BCR) and boundary sufficiency ratio (BSR), enhances the precision of assessing the degree of conformance success (Bulti and Sori 2017). Finally, factors contributing to variations in plan implementation are highlighted, providing valuable insights for urban planning decision-making processes.

1.2 Statement of the Problem

This thesis focuses on Bale Robe, a secondary town in Ethiopia that is experiencing significant growth. Despite having a land use plan in place, it is unclear how effectively this plan is being implemented. There is a need to evaluate the implementation of the land use plan to understand the extent to which the actual land use outcomes conform to the plan's intentions.

Like other secondary towns in Ethiopia, Robe Town is facing a number of urban development challenges, including irregular and uncontrolled expansion of the town, lack of infrastructure, emergence of informal settlements, and imbalance between different land uses. These issues are often indicative of non-implementation, inadequate implementation of land-use plans, or a disparity between plan proposals and actual land-use outcomes (Enoguanbhor et al. 2023).

The first land-use plan for Robe Town, known as RLUP09, was prepared in 2009 and implemented until 2019. This plan was later updated in 2019 to guide the town's development until 2029. However, the persistent urban development problems in Robe Town suggest that the implementation of the RLUP09 plan may have been inadequate or ineffective.

Evaluating the conformance between the designated land-use plans and actual land-use patterns is crucial, as it can provide the necessary information for developing sound management strategies to ensure the effective implementation of urban plans (Loh 2011). Urban planners need to determine whether and how well urban land-use plans have been implemented, as plans and existing land-use do not always perfectly match, leading to areas of non-conformance.

In Ethiopia, the evaluation of urban land-use plan implementation is uncommon (Bulti and Sori 2017). To date, only a few studies have been conducted, such as investigations of factor that hinders urban planning implementation in Nekemte town (Negeri et al. 2023); major land-use conflicts and problems of land-use plan implementation in Sululta Town (Mekonnen 2012) and the challenges of urban land use plan implementation in Dukem Town (Gezahegn 2023). However, these studies did not provide a thorough analysis of the morphological conformity and implementation success of land-use plans compared to actual development.

Addressing these research gaps could have practical benefits for Robe Town, enabling a more coordinated and proactive approach to combat potential problems due to non-conforming developments and informing urban planning policy objectives. Evaluating the implementation of the RLUP09 land-use plan in Robe Town is crucial to understand the extent of successful implementation and the factors influencing it, which can then inform the implementation of the updated land-use plan and future planning processes.

1.3 Objectives of the study

1.3.1 General objective

The general objective of the study is evaluating the implementation of land use plan in Robe town, Ethiopia, during the planning period from 2009-2019 Using conformance based approach and identifying the key factors that have influenced plan implementation.

1.3.2 Specific objectives

- ✓ To assess the morphological conformity of Robe town's Land Use Plans with actual development during planning period (2009_2019)
- ✓ To assess conforming and non-conforming developments in the town over 2009-2019 as compared to the intention of RLUP09
- ✓ Assess the success of plan implementation in guiding and controlling spatial developments during planning period (2009_2019).
- ✓ Identify key factors influencing the implementation of Land Use Plans in Robe town.

1.4 Research Questions

- ✓ To what extent did the actual land-use outcomes in Robe Town conform to the designated land-use plan (RLUP09) during the 2009-2019 planning period?
- ✓ How do conforming and non-conforming developments contribute to the overall spatial structure and functionality of Robe town?
- ✓ How successful was RLUP09 in guiding spatial developments in Robe town during the planning period (2009-2019)?
- ✓ What are the key factors influencing the implementation of RLUP09 plan in Robe town?

1.5. Significance of the study

The evaluation of the land use plan implementation in Robe town is of significant importance for several reasons. First and foremost, it allows for an assessment of the plan's effectiveness in achieving its intended goals and objectives. By scrutinizing the extent to which the plan has been successfully implemented, this research aims to identify areas of success and areas that require improvement, thereby providing valuable insights for enhancing future planning initiatives.

Furthermore, this evaluation seeks to examine the conformance between the designated land use in the plan and the actual land use outcomes in Robe town by analyzing the spatial distribution and changes in land use patterns over a specific time period (e.g., 2009-2019), this study aims to determine the level of alignment between the intended land use designations and the observed land use on the ground.

By identifying any inconsistencies or deviations, this research can shed light on the factors contributing to the gaps between planned and actual land use outcomes.

In addition to assessing conformance, this research aims to explore the factors influencing the implementation of the land use plan in Robe town. Successful plan implementation requires a comprehensive understanding of the major factors that shape decision-making processes, stakeholder engagement, resource allocation, and enforcement mechanisms. By conducting interviews with key stakeholders involved in the planning process, this study will provide insights into the challenges and opportunities encountered during the implementation phase, as well as the strategies employed to navigate them.

The outcomes of this research have both academic and practical implications. Academically, this study contributes to the existing body of knowledge on land use planning by offering a comprehensive evaluation of plan implementation within the context of Robe town. It adds to the understanding of the complexities involved in translating land use plans into tangible outcomes and provides a foundation for further research in this field.

Practically, the findings of this research will inform future planning initiatives in Robe town and provide valuable guidance to policymakers, urban planners, and local authorities. By identifying the strengths and weaknesses of the current land use plan implementation, this study will enable stakeholders to make informed decisions and implement strategies that enhance the effectiveness of future land use plans, foster sustainable urban growth, and address the unique challenges faced by Robe town.

Most importantly, adaptive approach and techniques used in this study provide a basis for monitoring and evaluation of other land-use plan implementation in the region and country as well. Finally, it can initiate further researches on issues in line with Master Plan Implementation in the country and Bale Robe Town.

1.6 Scope of the study

There are some demarcating lines up to which the study extends. These are potential variables, level of detail, and spatial extent which the analysis uses as inputs to produce the aimed result. The RLUP09 proposal is through structural plan (SP) which defines major land-use categories or zones and local development plan which indicates detail land-use to support implementation of SP. The study analyzed the implementation of the plan at land-use zone level using structural plan. Which means the detail specific locality; density, height regulation etc. are not gone through as it takes more time, budget, and detail data's.

1.7 Limitation of the study

This study has its limitation as any type of research done. The main constraints of this research not incorporate all types of land use types and computability of land use pan implementation are not gone through as it takes more time, budget, and detail data

1.8 Organizations of the thesis

This thesis is composed of five chapters. The current chapter presented the background of the study, statement of the problem, objectives, research questions and significance of the study. Chapter 2 presents a review of related literature. The materials and methods used in the study are discussed in chapter 3. Chapter 4 presents the results and discussion of the study. The last chapter presents conclusions drawn from the study and recommendations.

CHAPTER TWO

2. REVIEW OF RELATED LITERATURE

2.0 INTRODUCTION

Urbanization is a global phenomenon, with Africa experiencing particularly rapid growth. By 2050, it is projected that 56% of Africa's population will reside in urban areas (United Nation 2018). Eastern Africa stands out as one of the fastest urbanizing regions, with an annual growth rate of 5.35% between 2010 and 2020. This rapid urbanization, however, brings forth numerous challenges, including those related to infrastructure, housing, services, and environmental sustainability (Kamana et al. 2024). As a result, urban areas in Africa are characterized by informal settlements, inadequate transportation systems, and limited access to basic amenities. This literature review delves into the evaluation of urban land use plan implementation in Robe town, Ethiopia, examining theoretical frameworks, methodologies, challenges, case studies, and implications for sustainable urban development.

2.2 Challenges of Urban Planning in Developing Countries

Urban planning in developing countries, including those in Africa, is confronted with a range of challenges that hinder effective land use management and sustainable urban development. Limited financial and human resources pose significant barriers to comprehensive planning efforts (Omer 2015). The lack of adequate infrastructure and basic services, such as water supply, sanitation, and electricity, further complicates the planning process. Moreover, the prevalence of informal settlements and the rapid growth of slums in developing country cities present complex social, economic, and environmental challenges that require innovative planning approaches (UN-Habitat, 2016). In addition to resource constraints, governance issues also impact urban planning in developing countries. Weak institutional frameworks, corruption, and limited capacity among planning agencies contribute to ineffective plan implementation and enforcement (Negeri et al. 2023). These challenges are compounded by the dynamic nature of urbanization and the need for adaptive planning strategies to respond to changing circumstances and emerging urban issues.

2.3 Importance of Planning Evaluation

Urban planning is a crucial process for analyzing information, making decisions, and formulating plans of action to achieve relevant goals and objectives for the development of urban areas (Loh 2011). The primary aim of urban planning is to create economically vibrant, environmentally sustainable, socially viable, and spatially integrated cities (Gashu and Gobena et al. 2022).

To assess the effectiveness of urban planning processes and decisions, planning evaluation plays a vital role. Planning evaluation provides a systematic approach to analyze the outcomes and impacts of planning initiatives, allowing planners to determine the extent to which the set goals and objectives have been realized.

There are different types of planning evaluation:

1. a priori or ex ante evaluation: Assessing plans and planning processes before implementation.
2. Ongoing monitoring or formative evaluation: Evaluating the progress and implementation during the planning process.
3. Ex post facto or retrospective evaluation: Evaluating the outcomes and impacts of planning initiatives after implementation.

While outcome evaluation is considered the true test of management effectiveness, ex post facto evaluations of planning outcomes are relatively rare in practice. Most evaluations focus on assessing planning outputs (policies, programs, projects, regulations) rather than outcomes (Laurian et al. 2010). The importance of planning evaluation lies in its ability to provide valuable insights into the strengths and weaknesses of planning strategies and interventions. This knowledge is essential for improving future decision-making, as it allows planners to revise existing plans or develop new approaches to better align with desired outcomes (Berke et al. 2006). Moreover, planning evaluation enhances accountability in the planning process by holding responsible parties accountable for their actions and ensuring that planning processes are conducted in a fair and equitable manner. This contributes to building trust in public managers and institutions. The approach to urban planning has evolved over time, from

addressing the negative effects of urbanization and industrialization to guiding development and achieving urban-rural harmony. The current planning approach is guided by key principles such as being strategic, comprehensive, dynamic, flexible, sustainable, participatory, and equitable (Loh 2011). In general, planning evaluation is a critical tool for assessing the effectiveness of urban planning processes and decisions, and it plays a vital role in improving future planning practices and enhancing accountability in the planning process.

2.5 Urban Land Use Planning and Plan Implementation in Ethiopia

Urban land use planning in Ethiopia faces significant challenges in its execution due to the country's recent rapid urbanization. These challenges are diverse and arise from various factors, including limited land resources and the complex delineation of urban, peri-urban, and rural areas (Girma et al. 2019). Despite legislative efforts, such as the Urban Property Lease Policy of 1993, which aimed to promote mixed-use community development and private investment, Ethiopia's urban planning landscape remains relatively underdeveloped compared to global counterparts. Over the past six decades, Ethiopia's urban planning trajectory has been characterized by fluctuating government priorities (Simie 2011). However, there has been a lack of consistent attention and cohesive service delivery in urban planning (Desalegn, F.E. 2023).

The complex task of defining urban boundaries presents a significant challenge, particularly as urban expansion blurs these distinctions (Hantalo and Dube 2023). The historical influence of foreign entities on Ethiopian urban planning, especially during the Italian occupation and subsequent expatriate contributions, highlights the difficulty of planning without considering local contexts and needs (Desalegn, F.E. 2023). This disconnect between planned interventions and local realities has historically hindered effective implementation. Policy transformations following the political transition of 1974 have greatly influenced urban development in Ethiopia. Changes in governmental policies, such as limitations on private urban development investments, have had an impact on urban growth rates and planning methods (Digafe, Adam, and Shibeshi 2024). The establishment of institutions like the Federal Urban Planning Coordination Office (FUPCO), formerly known as FUPI, in 1987 marked a significant milestone in Ethiopian urban planning (MWUD, 2006). FUPCO's responsibilities included developing urban plans and providing consulting services, laying the foundation for

subsequent regional urban planning institutes. Addis Ababa, the capital and largest city of Ethiopia, is a prime example of the challenges faced in implementing urban land use planning. Rapid population growth has strained infrastructure and services, leading to the proliferation of informal settlements (Desalegn, F.E. 2023). Despite the adoption of the Addis Ababa City Master Plan in 2006, the city has faced numerous obstacles in its implementation, reflecting broader challenges in urban planning and implementation across Ethiopia.

2.6 Experiences on Urban Planning Approaches

Urban planning approaches that are practiced at different times in the urban centers of several countries in the world attested that, it has undergone tremendous paradigm change in response to urbanization and related problems in the urban areas. The change occurred in the planning approach due to the technological advancement and improvement in the way of living style, the cyclical process of urban planning and the recent global trends of decentralization. Thus, the newly invented planning approach would replace the former one. However, all were invented and borrowed from developed countries and adopted in developing countries.

In the contemporary world, three major top-down planning approaches or hierarchies that are widely practiced are city-wide long term urban plan (master plan, development plan, structure plan, etc.), city-wide medium term strategic/integrated development plan, and local development plan (FUPI, 2006). Therefore, urban planning is passed through several stages and complex processes from the traditional planning approach to the current structure planning and integrated development planning approach. These approaches are elaborated in the Ethiopian experience of urban planning practices.

2.7 The Urban Planning Approach in Ethiopia

The Urban Planning Proclamation No. 574/2008 outlines the hierarchy of plans for urban development in Ethiopia, which includes the National Urban Development Scheme, Regional Urban Development Plan, and Urban Plans. The City-Wide Structure Plan (SP) and Local Development Plan (MUDC, 2012) are the two types of urban plans recognized in the proclamation. The Structural Plan is a comprehensive plan that outlines the long-term vision and goals for urban development, while the Local Development Plan provides further detail on the functions, development objectives, implementation strategies, and role of implementing bodies.

The Structural Plan is strongly linked with global and national plans, strategies, and policies, as well as regional plans, sectorial development plans, local development plans, and projects. It indicates the distribution and extent of major land-use categories and contains mandatory provisions for the development of a planning area. The plan sets out the basic minimum requirements regarding spatial developments whose fulfillment would produce a coherent urban development in social, economic, and spatial spheres.

The Urban Plan Proclamation No. 574/2008 acknowledges four levels of plans, namely, the National Urban Development Scheme, Regional Urban Development Plan, City-Wide Structure Plan, and Local Development Plan. The Structural Plan shall be valid for up to 10 years from the date of approval, and it is guided by a long-term (20 years or more) Regional Urban Development Plan. The Urban Planning Proclamation No. 574/2008 also outlines the components of the Structural Plan, which include the magnitude and direction of growth of the urban center, principal land-use classes, housing development, the layout and organization of major physical and social infrastructure, urban redevelopment intervention areas of the urban center, environmental aspects, and industry zone.

In general, the urban spatial planning system in Ethiopia comprises various elements, including city development plans, master plans, land use plans, and structural plans. These components work together to guide the physical development and organization of urban areas in the country. The hierarchy of plans begins with a national urban development scheme, followed by regional urban development plans, and finally urban plans. Within the urban plan, there are city-wide master plans, structural plans, and local development plans (Hailu, Assefa, and Zeleke 2023). The Structural Plan is a comprehensive plan that outlines the long-term vision and goals for urban development, while the Local Development Plan provides further detail on the functions, development objectives, implementation strategies, and role of implementing bodies.

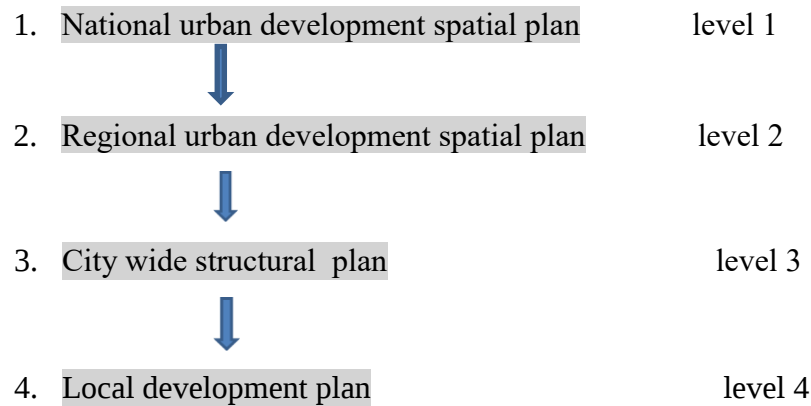


Fig 2-1 Hierarchy of plans in Ethiopian urban planning system

2.8. Concepts and Approaches in Plan Evaluation

Planning evaluation systems branch in two main approaches: conformance-based and performance-based. These two groups encompass diverse evaluation methods that vary in terms of parameters and evaluation processes. This section clarifies the basic principles of these two main approaches, and following sections investigate the parameters of empirically tested models for their applicability.

Most of the studies in planning evaluation literature argue that spatial plans should be evaluated with conformance-based methods, and strategic plans should be assessed with performance-based methods. However, the examined plan can have the characteristics of both strategic and spatial plans; therefore, the question of “what is the type of this plan?” is fundamental before starting the evaluation process(Alexander and Faludi 1989). Bases onto differences between spatial/physical and strategic plans on following characteristics: object of the plan, duration of the interaction, future prediction, time-element, form, and effect (Table 2-1). In this work, the author uses the term ‘project plan in sense of spatial plan.

Table 2-1: Difference between project plan and strategic plans (Faludi, 1989)

	Project plans	Strategic plans
Object	Material	Decisions
Interaction	Until adoption	Continuous
Future	Closed	Open
Time element	Limited to phasing	Central to problem
Form	Blueprint	Minutes of last meeting
Effect	Determinate	Frame of reference

According to Alexander and Faludi (1989), the object of a physical/project plan is material, its future is closed, and its interaction duration ends at the plan's approval. These plans are the detailed outcomes of a limited time frame consisting of multiple stages with limited impact. On the other hand, the object of a strategic plan is the decision, its future is open, and its interaction is continuous. Strategic plans are usually prepared as a policy document or meeting minutes and present a reference framework for the future of a settlement with a problem-focused time management system. The fundamental differences between these two types of plans require an evaluation method that fits the characteristics of concerning plan. Since evaluation is concerned with the "success" of plans, the theories used for plan evaluation should be able to identify how successful plans are. In order to achieve a proper evaluation for different plans, evaluation theories need to be selected based on the nature of plans. Urban plans can be categorized into two types: project-oriented plans and strategic plans (Oliveira and Pinho 2010).

Projected-oriented plans refer to traditional plans which mostly provide blueprints of the designated end-state of the physical environment. On the other land, strategic plans deal with the coordination of diverse actors. Apparently, project-oriented plans are more physical and material while strategic plans are concerned with decisions and more characterized as a dynamic process.

There exists a divergence of approaches proposed in plenty studies to evaluate urban planning implementation and they are generally categorized into two approaches: conformance-based approach and performance-based approach (Feitelson et al. 2017). Selection of approaches to evaluate planning implementation depends on ones understanding of spatial planning.

2.8.1 The Conformance-Based Approach

The conformance-based approach evaluates the level of conformity between the plan and its spatial outcomes. In other words, its concern is whether actual outcomes comply with decisions made in planning process. Additionally, this approach also examines the external factors that impact conformity or non-conformity of the plan and its outcomes. The conformance-based approach assumes that plans' preparation and implementation process are entirely rational, and future development of cities is determined by the plans. Spatial plans act within a top-down hierarchy. Implementing these plans means that policies developed at the top are transformed into operational decisions at the bottom (He et al. 2023). Therefore, conformance-based approach is considered suitable for evaluating spatial plans that are predominantly focused on the realization of pre-determined and definitive goals. This approach concentrates on linkage between the plans and realized spatial development, and the core of this approach is 'compliance' and 'level of conformity' between these two parameters (Loh 2011).

2.8.2 Performance-Based Approach

On the other hand, performance-based approach focuses on role of the plans on urban development and the outcomes that accompany it. The main goal of this approach is to investigate whether the evaluated plan offers a frame of reference for decision-makers. Therefore, it tries to understand how differentiating goals of the sectorial plans and plans on different scales affect urban development. The performance-based approach is a well-fitting method for problem and action-focused strategic plans. Because the implementation process in strategic plans is an interactive procedure that requires the communication and an agreement of all involved actors on the goals and the actions. The main point of strategic planning method is searching for a consensus through negotiation rather than trying to fit urban development into the static design solutions (He et al. 2023).

In performance-based approach, aim of the implementation process includes not only putting a policy into action but also multidimensional analysis of the real-world outcomes (Dadashpoor and Heydari 2022). That is, the process is as important as results. When evaluating the performance of strategic plans, it is crucial to set the goals correctly, because it is not possible to assess the success of a strategic plan as a whole. The evaluation would work better if the assessment were done with a limited cluster of goals. In performance-based approach, it is perfectly normal to observe an urban development that does not in line with the plan. However, this does not imply the plan's failure. If the plan has a direct or indirect impact on decisions that resulted in the real-world outcome, the plan's performance can be deemed successful (Ding and Niu 2020).

Performance-based evaluation is well suited to evaluate comprehensive and strategic plans. This approach should correspond to a detailed analysis of the decisions and actions of a number of actors that are supposed to receive the plan messages (Oliveira and Pinho 2010). In this regard, a plan is considered implemented if it is used or consulted in decision-making processes, no need to be strictly adhering to the actual outcome. Departures from a plan may be also considered implemented if they are rational or inevitable.

Table 2-2: two approach of plan evaluation (He, 2015) enhanced with additions by the authors

	Conformance–Based approach	Performance-Based approach
Types of plan its eligible for	Project oriented plan	Strategic plan
Planning process	Rational planning process	Communicative/participative planning process
Planning element	Elements with certainty	Elements with flexibility
Aim	Determining the level of compatibility between the plan and actual development	Examining how the plan guides urban development in the process from its preparation to its implementation
Success criterion	If development pattern adhere to its policies and meet its objectives	Implemented if used or consulted in decision making process, no need to be strictly adhering to the actual outcome
focus	Level of conformity	Utilization capacity
Evaluation element	Outputs	Outcomes and effects
Evaluation method	Qualitatively and quantitatively	Qualitatively

2.9 Factors affecting plan outcomes

Identifying the factors that influence plan implementation is crucial for successful execution. According to (Fehr 2016), plan implementation is a complex process influenced by various factors. Further research is needed to gain a better understanding of these factors and their impact on plan implementation.

Effective plan implementation is essential to achieve desired goals and develop optimal strategies outlined in the plan.

However, planners have limited knowledge of the factors that may affect plan implementation and its effects on the land development process (Berke et al. 2006). Evaluating plan implementation is a challenging task, often relying on subjective impressions rather than empirical assessments Laurian et al. (2004). Nevertheless, studies on plan implementation suggest that meeting certain conditions is critical to achieving success.

For instance, (He 2020) identified three broad groups of variables associated with the degree of implementation of urban master plans: political-institutional factors, attributes of the plan, and urban system factors such as population growth and economic activity.

Laurian et al. (2004) categorized factors influencing plan implementation into internal and external factors. Internal factors include the nature of planning practice, planning limitations in the face of uncertainty, planners' biases and roles, flaws in planning goals, failure to recognize the impact of political agendas on planning decisions, weaknesses in some plans, and the complexity and comprehensiveness of others. Rushemuka (2020) identified plan strengths and weaknesses as factors affecting implementation and considered plan quality as a determinant of implementation. In addition to internal factors, external factors also play a significant role in plan implementation.

Laurian et al. (2010) identified several external factors, including the complexities of local political contexts, the degree of local societal consensus on planning issues, the level of uncertainty and available knowledge about the issues, and support for planning in terms of funding and political backing. Berke et al. (2006) further identified additional factors that influence plan implementation: the characteristics of the plan (i.e., its quality), the characteristics of the planning agency (i.e., its commitment to implementation and capacity to execute the plan), the characteristics of land developers and their interactions with the agency, and the scale of the project.

Bengston et al. (2004) conducted a comprehensive analysis of the factors that affect the implementation of public policies aimed at controlling urban growth. Their study revealed the following key findings: (1) the efficiency of administration and other implementation details; (2) the use of multiple policy instruments; (3) vertical and horizontal coordination; and (4) meaningful stakeholder participation throughout the planning process and implementation are

crucial in determining the effectiveness of urban growth control policies. Meanwhile, Shen et al. (2019) believed that the failure of urban control policies in Beijing can be attributed to: (1) an unrealistic forecast of urban growth; (2) The absence of key stakeholders in the planning and implementation process; and (3) an overemphasis on functional separation.

In the Ethiopian context, Mekonnen (2012) identified the poor implementation of the Sululta land-use plan as being linked to a lack of public participation, as well as a shortage of commitment from officials, experience and disciplinary gaps within the planning team, lack of policy, implementation tools, skilled manpower, and community awareness. Dube (2013) concluded that the limited focus on professional exercise and the lack of community participation were the main reasons for the failure of the master planning implementation in Arba Minch town. According to, Dukale et al. (2012) the major problem in implementing the master plan of Dilla town is associated with the quality of the plan, as well as the shortcomings of the local government implementing bodies (the Dilla municipality and Zonal urban development department). Similarly, challenges such as the absence of an action plan, implementing bodies, and a time schedule that align with the legal framework of the structure plan, as well as poor plan quality, were evident in the implementation of the Gelan town master plan (Simie 2011).

2.10 Review of Empirical Studies

When it comes to evaluating the implementation of urban planning, there is no one-size fits-all approach. Scholars, planners, and urban managers have different perspectives, resulting in various methods for evaluating implementation. Significant effort has been dedicated to this field, with both conformance-based and performance-based approaches being pursued. Technological advancements since the late 1970s have enabled the development of conformance approaches that utilize selected indicators to compare actual outcomes with the original intentions of urban plans. When analyzing land use planning, the theories each offer advantages and disadvantages. The conformance approach is entirely quantitative and focuses on cause-and-effect relationships as well as the objectives and results of a plan. Unlike the performance technique, which is qualitative and uses interviewing and surveying key policy actors or document analysis (Feitelson et al. 2017) which focuses on operational/decision rules without considering cause and effect (Ryan and Gao 2019; Dadashpoor and Heydari, 2022).

However, this study intends to investigate the outcomes and goals of the implementation of the land use plan rather than concentrating on the processes. To determine whether the plan goals and objectives are met, goal- or objective-driven evaluation focuses on this, by placing a strong emphasis on the connection between objectives and results, it is conformance-oriented. It adheres to the rational-comprehensive planning paradigm and is positivist in that it considers that well-designed and implemented interventions have defined aims and produce expected outcomes that can be evaluated by impartial experts (Laurian et al. 2010). The conformance approach focuses on situations where a plan achieves its intended results, but it is not used in decision-making when circumstances change (Hossu et al. 2021). However, critics argue that evaluating plan conformance is essential to avoid bypassing accountability for decision-makers (Limb et al., 2021).

The conformance strategy does not address attribution, but it assumes the existence of clear objectives and measurable outcomes. On the contrary, the theory of performance evaluation may lack specific goals and require extensive data and complex analysis, but it can inform process improvements (Dadashpoor and Heydari 2022). Literature suggests that evaluating plan implementation from Conformance-based evaluation models and measurement methods are widely accepted and employed in various studies (Ryan and Gao 2019; Padeiro, 2016; Bulti and Sori, 2017)

Brody and Highfield (2005) conducted a study in Florida to assess the efficiency of land-use planning and implementation by examining the extent to which wetland development adhered to the adopted comprehensive plans in Southern Florida over a ten-year period. Through spatial analysis, they identified concentrated areas of wetland alteration permits and compared them with the adopted future land-use maps. The results revealed a spatial pattern of nonconformance in wetland development and identified specific socioeconomic, demographic, and geographic factors that influenced deviations from the original spatial intentions of local plans. Tian and Shen (2011) evaluated the implementation of the Guangzhou City Master Plan by determining the accordance and deviation between the land-use plan and physical land use using grid overlays. It was found that, except for areas designated for open space, the level of accordance with the master plan was low. Significant deviations from the land-use plan were

attributed to rapid population and economic growth in Guangzhou. More recent studies have evaluated the implementation of various urban development plans in different cities.

He (2020) evaluated the Shanghai Master Plan: 2001-2020 by comparing the plan with the actual spatial development. The study concluded that the plan successfully guided urban restructuring and peripheral development. However, it also identified challenges such as extra land development, urban expansion on the edge of the central city, and extensive population growth. The degree of planning implementation varied across different variables, locations, and indicators. De Silva (2012) focused on evaluating the outcomes of the Moratuwa urban development plans. Their evaluation method examined the outcomes of action projects within the development plans using a Plan outcome evaluation method. Zhong et al. (2014) conducted an assessment of the implementation of China's National General Land-use Plan (1997-2010) using a combination of conformance-based and performance-based criteria. The study analyzed the outcomes of the plan in relation to planning goals and emphasized the role of decision-making elements in plan implementation. Long et al. (2015) evaluated the effectiveness of the Urban Growth Control Boundary (UGCB) in Beijing. The study compared the planned UGCB with the actual urban boundary using Geographic Information System (GIS) techniques. The findings revealed that the UGCB in Beijing was unable to effectively limit urban expansion due to the presence of numerous developments occurring outside the prescribed boundary.

In the Ethiopian context, Mekonnen (2012) focused on the evaluation of land-use planning and implementation in Sululta town. The study examined major conflicts related to land use and environmental issues in the study area. He identified problems such as proposing incompatible land use in environmentally sensitive areas, as well as the improper use of urban green spaces, dumpsites, abattoirs, industrial development, and quarrying activities during the implementation of the plan. Simie (2011) conducted a study to explore the challenges associated with the implementation of urban planning in Gelan town. The study concluded that the town's structure plan was poorly executed, resulting in irregular and illogical development, as well as incompatible land uses. Dube (2013) analyzed the process and implementation challenges of master planning and land management in Arba Minch. The study primarily focused on evaluating the outcomes of land-use plans. Researchers assessed the degree of

alignment between proposed plans and actual results to determine the level of successful implementation of urban land-use plans. Gezahegn (2023), conducted a study to explore the challenges associated with the implementation of urban land use plan in Dukam town. The study concluded that implementing land use plan in Dukem town can be challenging, due to a variety of factors, including plan violation, informal settlement, and land use incompatibly and lack of community participation.

More recently, Hailu et al. (2023) concluded that the failure of land use plan implementation is primarily linked to the emergence of illegal settlements, a lack of political commitment, corruption, and interference from higher officials, all of which impede proper land use plan implementation.

2.11 Research and Knowledge gaps

Although the studies mentioned above have provided some insights into the issue, the evaluation of plan outcomes should be conducted in a comprehensive manner, taking into consideration the specific physical characteristics of the area, as well as its environmental, socioeconomic, and human aspects. Moreover, the implementation of a plan is a complex process that is influenced by various factors, highlighting the need for further research to fully understand these factors. On the other hand, due to the potential mismatch between plans and existing land use, resulting in areas of non-conformance, urban planners are actively seeking methods to assess the level of success in implementing urban land-use plans. In Ethiopia, the evaluation of urban land-use plan implementation is not a common practice. To date, only a few studies have been conducted on this matter; however, these studies have not provided a comprehensive analysis of the extent to which the land use plan conforms to the actual development in the areas under analysis.

CHAPTER THREE

3. MATERIALS AND METHODS

3.1. Description of study area

Robe is the capital town of Bale Zone. A suffix Weleshe is sometimes used to name as Robe-Weleshe so as to differentiate it from Robe-Dida of Arsi Zone. Robe town lies between $7^{\circ}3'30''$ N to $7^{\circ}10'45''$ N and $39^{\circ}57'38''$ E to $40^{\circ}2'38''$ E. the town is bordered by Shaya kebele in the North, Goba town in the South, Nano Robe kebele in the East and Hora Boqa in the Western direction. The town is located within the administrative Zone of Bale in the Oromia regional state, and 430 kilo meters distant from Addis Ababa to South East direction through Shashamane-Goba/Asela-Goba asphalt road.

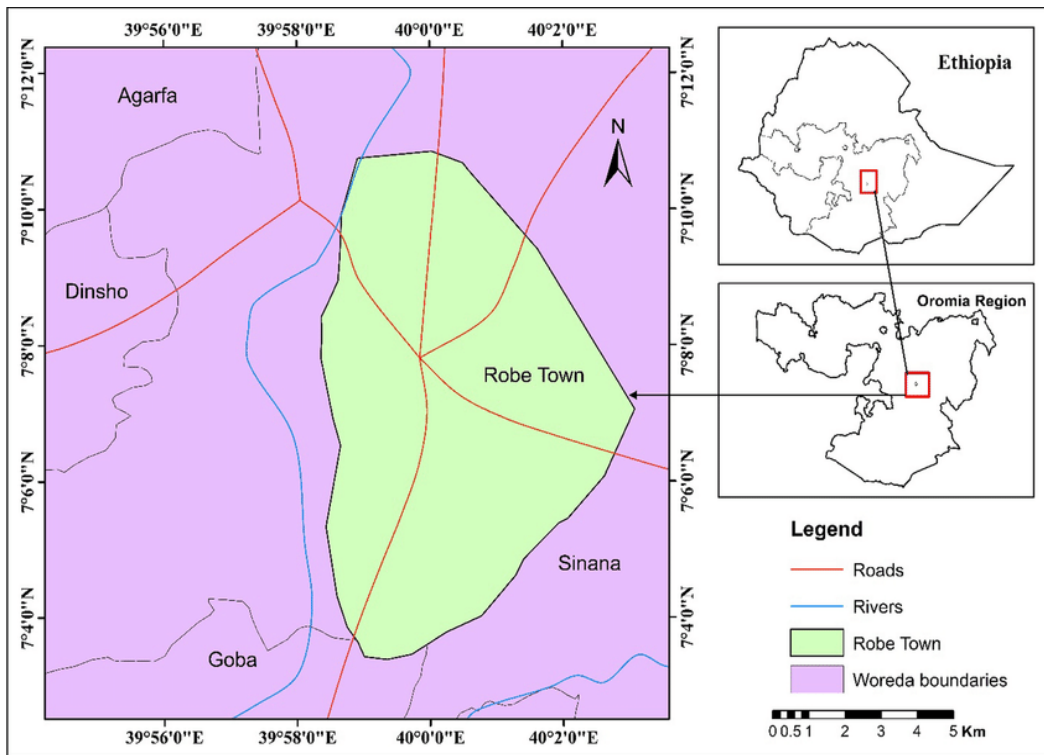


Figure 3-1: location map of the study area (source: Abel et al., 2020)

Robe town was established in 1931 G.C by the Geda of Abba Bokku Kimo Damboba. In the time there was a serious drought and the ‘Kalus’ (spiritual fathers) pray to God, and then the rain was raining. So that, they said ‘Robe Roba Torbani’ which means ‘raining for the seven days. And later the name ‘Robe’ was given to the town. There is no any written document on the historical development of the town. But oral traditions justified that the area currently called Robe had been inhabited by agricultural people of seven kinfolds, namely: Kato, Hadaro, Adoshe, Kere, Ilu, Kacho and Zeyibela, which later grown to establish Robe town. The town was get its legality as municipal town in 1955 and considered as reform town in 1996. Now the rank of the town is Secondary ‘A’. The town is characterized by informal settlements especially on the periphery until the new development plan was prepared in 2012. Today, Robe town has the area of 9411 hectares. According to 1994 population and housing census of central statistical Agency (CSA) of Ethiopia the total population size of the town was 21,516 of which 10,462 was male and 11,054 was female (CSA 1998).while the population of the town in 2007 census report was reached 44,382. From this population 22,543 was male and 21,839 was female (CSA 2008). According to 2013 population projection of CSA, the total population of robe town in 2017 was about 72,269 of which 36,746 were male and 35,523 were female (CSA 2013).The population growth rate of the town is 6% per year (Abel Balew et al., 2020).The town is the capital City of Bale Zone of Oromia since 1985 E.C. (Robe town profile, 2013). It is one of the fast growing administrative and business centers endowed with hospitable climate and plain topography. A number of tourists pass through it from different corners of the world, to visit the nearby tourist attraction sites like Sof-umer cave, the shrine of Sheik-Hussein, the jungle of Harena-Buluk and Bale mountains national park.

3.1.2. Topographic, Climatic Conditions and Location of the Study Area

Topographically Robe town has an average altitude of 2560 meters above sea level and is characterized by flat topography which is covered with black and grey soil and potential for mixed land use activities such as settlement and urban agriculture. The land feature of the town is completely different from the mountainous nature of Bale zone administration by its flat plateau topography (Robe town administration, 2017).

The town falls under Weyna-Dega (sub-tropical) agro-ecological zone. The mean annual temperature of the town is 14.9°C, the absolute maximum temperature occurs from January to March and the absolute minimum temperature occurs from October to December. The town is characterized by 2 (two) rainy seasons: June to September summer rainy season and March to May and the annual rain fall of the town ranges between 800mm to 900mm. (NMA, 2013, Robe office).

3.1.3. The Socio Economic, Cultural and Demographic Situations of the Town

The town under study is known by its agricultural product market and agro-industry products. Most of the residents are engaged in trade and services (67%) a lot of people are also engaged in mixed agricultural activities (Robe town's administration, 2017). Like other secondary towns of the region, livelihoods of populations of the town depends on commercial activities like household petty economic activities, and retail and whole sale trades. Moreover, it includes small flourmills factories, ordinary garages, limited hotels and restaurants, pension, shops, cultural food and alcoholic drink houses as well as street vendors (Getachew, 2015). These economic activities have inter- urban rural linkage with the surrounding areas. As an input, the rural population brought an agricultural product like: wheat, teff, barely, maize, vegetables, livestock and their products; fuel wood and the products of wood to the town. In exchange, the town's populations distribute and provides: industrial products like flour, macaroni, spaghetti, biscuit; hotel and restaurant services, secondary and higher level education, transport, banking, health and court services as well as agricultural inputs (Getachew, 2015). The town has a government university, two technical and vocational training colleges, and two teachers training colleges, two preparatory and secondary high schools, seven elementary and second cycle schools and eight KGs. There is also a hospital, two health centers, six private clinics and nine pharmacies of which two are private health centers. The town has two large and known weekly open markets called Donsa and Kibtate which help the exchange of huge agricultural products, industrial products and other commodities between the residents of Bale zone themselves and other citizens from different parts of the country's that, the town is the known center of agro-industry products in the region.

3.2. Research approach

In this study, a mixed methods approach was utilized to ensure a holistic understanding of the research problem. Specifically, qualitative methods such as field observation and interviews were adopted to obtain rich, contextual insights into land use dynamics. These methods facilitated direct interaction with stakeholders, allowing me to comprehend their perspectives and capture nuanced information that may be missed by quantitative data alone. Additionally, quantitative methods, including secondary data collection from literature reviews and geospatial datasets, provided numerical and measurable data for analysis. This combination ensured a comprehensive exploration of the research topic.

3.3 Data Sources and Acquisition Techniques

3.3.1 Data sources

For this study both qualitative and quantitative data were collected from both primary and secondary data sources. The reason for using both quantitative and qualitative data types is to gather reliable data and to increase the validity of data and findings. By collecting primary data through field observation, interviews and also some secondary data was collected through literature review, while others are geospatial datasets that were collected from Robe land management office. Existing land use data were collected using digital orthophoto of the town as of 2019. proposed land use by the plan were extracted from structural plan map of RLUP09

Table 3-1 Description of data used in study

S/N	Data	Source	Year	Purpose
1	Proposed land use	Structural plan map (.dwg)	2009	To extract proposed land use of 2009
2	Land use as of 2019	Google earth image and Orthophoto (40cm)	2019	For verifications and To extract actual land use of 2019

Source: manipulated by researcher 2023

3.3.2 Software and Equipment

Table 3-2 Software and equipment used

Software	Purpose
ArcGIS	for data processing, analysis and preparation of output maps
Google earth pro	For verifications of different land use development
Mendeley desktop	For generating citation and references in APA styles
Microsoft word	For compositing final thesis writing

3.4. Data Acquisition Methods

3.4.1 Proposed Land Use Map

In this study, I adopted the conformance-based approach to assess the extent to which the land use plan and actual land use outcomes match in the town of Bale Robe, following several steps. First, I extracted the spatial land use data for the town of Bale Robe in a GIS. I obtained the structural plan map of the Town of Robe from the Robe Land Management Office and converted the AutoCAD land use plan into GIS format. Extracting a land use map from a DWG (AutoCAD Drawing) format involves converting the vector data into a GIS-compatible format, and then extracting and classifying land use information. Next, I imported the converted map into a GIS environment and subsequently georeferenced it/checking for coordinate system to enable better analysis based on the UTM Projection system (Adindan UTM zone 37N) Datum. Thereafter, I digitized the proposed land uses on the Structural plan in a Geographic Information System to extract selected proposed land uses as provided for in the structural plan. This data formed the basis for the assessment of land use activities being implemented on the ground.

3.4.2 Actual (Existing land use map) as of 2019

After extracting the land uses on the structural plan through on-screen digitizing, physical developments as of 2019 were digitized from digital orthophotos with a spatial resolution of 40cm acquired in 2018. Topology was created and applied to the datasets, and digitization errors were corrected. Similarly, non-spatial data were collected during spatial data collection in 2023, supported by simple interview questions to trace back information on land use as of 2019.

3.4.3 Variables and Indicators

The conceptual framework for the Structure Plan of the City identified elements that have direct and strong impact on the development of the town. The plan was mainly focused on four framing elements: Commercial, Residential, Social Services, and Manufacturing and storage. Hence, the present study selected these as variables and explained under since they are significant to demonstrate the conformity of actual land-use outcome with plan intention.

1. Residential: Housing expansion area was proposed to accommodate fast growing population in the City. The proposal is mainly at periphery areas focusing to the north and south. Some parts of vacant areas within the City boundary are also proposed to be used for new housing construction.

2. Social service: Location and spatial distribution of social services were proposed in such a way that to be integrated with hierarchy and size of centers to provide social services in the deprived parts of the City. Moreover, it identifies their density in different locations to ensure balanced development and to provide uniform services.

3. Commercial: Commercial land use was among one of the major issues tackled during structural plan preparation of the town. Hence, evaluating the conforming and deviation of this land use development was interesting.

4. Manufacturing and storage: An industrial development was the most important target of the RLUP09. Lands for industrial use were proposed at different parts of the periphery Kebeles. Locations of Sites for manufacturing and warehouses were mainly intended to decentralize activities and minimize the need for transportation and also bring about balanced development. Each variables was measured through different indicators (table 3-3)

Table 3-3: Indicators of selected variables for evaluation RLUP09 implementation

Variables		Indicators of conformity	
Main	sub-variables	quantitative	morphological
Residential	Residential	Area	Spatial distribution
Commercial	Commercial	Area	Spatial distribution
Social service	Education	Area	Spatial distribution
	Health		
	Religion		
	Cultural		
Manufacturing and Storage	Factory, warehouses, garage,	Area	Spatial distribution

Source: authors' manipulation, 2023

3.5 Framework for Evaluating Implementation of the Plan.

3.5.1 Conformance based Evaluation

A conformance based approach was adopted to assess the degree of alignment between planned land use activities and actual on the ground outcomes. This approach involved extracting land use data from structural plans and digitizing proposed land uses using GIS tools. The comparison between proposed land uses and observed land use activities allowed me to identify discrepancies, analyze factors contributing to non-conformance, and recommend strategies for improved land use planning and management.

RLUP09 is a blueprint plan focused on materials, with a clear vision of the desired end state (such as the amount of proposed construction land and reserved open spaces for future development). In other words, the plan sets boundaries for the future. The plan is also time-limited, with its effects starting upon approval and ending at the conclusion of the planning period. Given that RLUP09 incorporates several features of project plans, the theory of planning conformance is considered the most suitable approach for guiding the evaluation in this study.

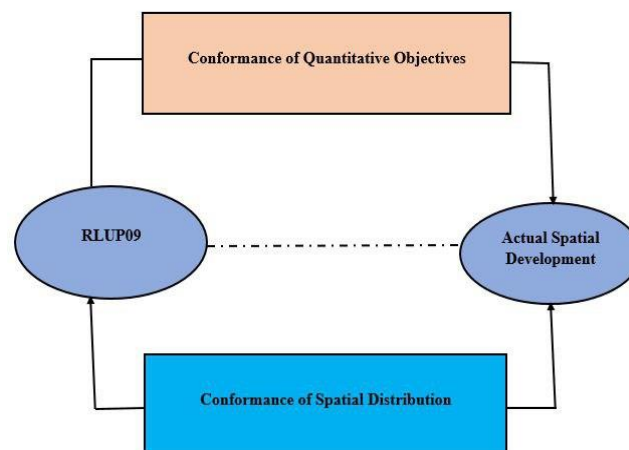


Figure 3-2 Analytical framework (source: manipulated by author, 2024)

3.5. Methods of Data Analysis

3.5.1 Remote Sensing and GIS Analysis

Remote sensing and Geographic Information System (GIS) analysis are widely used methodologies for assessing the implementation of land use plans. These tools provide valuable spatial data and information that can assist in monitoring changes in land use, evaluating the outcomes of the plan, and informing decision-making processes. Remote sensing involves the use of satellite imagery or aerial photographs to collect data on land cover, land use, and changes over time. By comparing current land cover data with baseline information, planners can assess the extent to which planned land use changes have been implemented and identify areas where non-compliance or unexpected changes have occurred (Alfasi, Almagor, and Benenson 2012). Remote sensing also allows for the identification of specific land use patterns, such as urban expansion, agricultural intensification, or deforestation, which can inform the evaluation of plan objectives and policies.

GIS analysis complements remote sensing by providing a framework for spatial data management, analysis, and visualization. GIS allows planners to overlay and integrate various layers of spatial data, including land use maps, infrastructure networks, and environmental factors. Through the application of GIS analysis, planners are able to examine the spatial relationships between land use patterns and plan objectives, evaluate the accessibility of different land uses, and identify areas of conflict or synergy between them (Mabaso et al. 2015). GIS also has the capability to support scenario modeling and impact assessments, enabling planners to explore various land use scenarios, assess their potential outcomes, and provide valuable insights for decision-making processes.

The integration of remote sensing and GIS analysis in the assessment of land use plans offers several advantages. Firstly, it provides objective and quantitative data that can support evidence-based decision-making and reduce subjective biases. Secondly, it allows for large-scale and systematic assessments, covering extensive geographic areas and long time periods. Thirdly, it facilitates the visualization and communication of complex spatial information, thereby enhancing stakeholder understanding and engagement (Nyiransabimana et al. 2019). Finally, remote sensing and GIS analysis can be cost-effective in comparison to traditional field surveys, as they offer rapid and comprehensive data coverage.

However, it is important to acknowledge certain limitations and challenges associated with remote sensing and GIS analysis. These include the need for technical expertise and access to appropriate software and data, potential errors and uncertainties in remote sensing data, and the reliance on land cover proxies that may not account for all aspects of land use (Rashed et al., 2013). Additionally, remote sensing and GIS analysis should be complemented with other methodologies, such as field surveys, interviews, and socioeconomic assessments, in order to capture qualitative and contextual information that cannot be obtained solely through spatial analysis.

3.5.2 GIS Spatial Overlay Analysis

Morphological conformance assessment, which compares proposed land-use plans to actual outcomes, is a well-established method for assessing urban plan implementation (Shen et al. 2019). This involves using spatial overlay analysis to detect areas of conformance, fulfillment, and nonconformity (Li et al. 2022). It was carried out to determine the conformity of existing development within the growth boundary to that of the plan proposal. In this regard, actual land-use outcomes from 2019 were spatially overlay with maps of suggested variables in RLUP09. This helped to distinguish three types of developments: conforming, nonconforming, and unfulfilled using similar approach in (Bulti and Sori 2017) which define conforming, nonconforming and unfulfilled developments as the following:

Conforming: if the usage of land in 2019 is consistent with the proposed land use.

Unfulfilled: if the use of a piece of land as of 2009 and 2019 are consistent, but different from plan proposal for the variable, then the Plan is not yet implemented. But it might or might not be implemented in the future.

Nonconforming: if the actual land-use as of 2019 is different from both that of 2009 and plan proposals. Field investigation was carried out for the purpose of collecting further detailed information of nonconforming developments.

3.6. Assessment of Degree of Conformance Success

The level of conformance between actual physical developments and the anticipated extent in the land-use plan was assessed using quantitative conformity. This review used two basic indicators developed by (Han et al. 2009): the boundary containment ratio (BCR) and the boundary sufficiency ratio (BSR), which has been widely used in comparable studies (Hailu et al. 2023; Bulti and Sori, 2017).

3.6.1 Boundary Containment Ratio.

The boundary containment ratio was used to determine the extent to which actual land use results in 2019 deviated from the Plan's planned land-use. In this aspect, if the plan is to be deemed effective in controlling the specific variable development, there should be fewer nonconforming developments than conforming ones.

BCR is calculated as the ratio of the area of nonconforming developments to the area of conforming development (Equation 1). The higher value of BCR indicates limited implementation and vice versa.

$$BCR_i = \frac{\text{nonconforming developments}}{\text{conforming development}} \quad (1)$$
$$BCR_i = (NC_i) / (C_i)$$

Where	BCR=0	complete effectiveness
	0< BCR <1	limited effectiveness
	BCR≥ 1	complete failure

Where; BCR_i is the boundary containment ratio, NC_i is a non-conforming area, and C_i is a conforming area of i^{th} land class category.

The value of BCR indicates how closely actual urban land use matches the proposed land use in the plan. A BCR of zero indicates perfect alignment, while a value between zero and one suggests limited effectiveness. A BCR greater than or equal to 1 indicates a failure in implementing the land use plan, with actual urban land use exceeding the planned allocation.

3.6.2. Boundary Sufficiency Ratio

On the other hand, Boundary sufficiency ratio was used to define the total possible increase of developed land for selected variable. In this case, in order to achieve effective containment, total developed land of selected variable should be less than or equal to total area of proposed land for the variable in RLUP09 at the beginning of planning period. In other words, the area of actual total development of the variable should not be more than area of proposed for the variable. It was measured by the ratio of total area of actual developments to area of proposed land in RLUP09

$$BSR = \frac{\text{Total development of the variable from 2009 to 2019})}{\text{proposed area for the variable in RLUP09}}$$

Or

$$BSR_i = (TD_i) / (PA_i) \quad (2)$$

Where; $BSR > 1$, proposed area is not sufficient to accommodate new development

$BSR \leq 1$, proposed area is sufficient to accommodate new development

BSR is inversely proportional to sufficiency of the size of proposed area.

Where BSR_i , is the boundary sufficiency ratio, TD_i is the total development area, and PA_i is the proposed area of an i^{th} land class.

- A high BSR value indicates an insufficiently planned area for development.
- When BSR is less than or equal to 1, it means the planned area is enough for development.

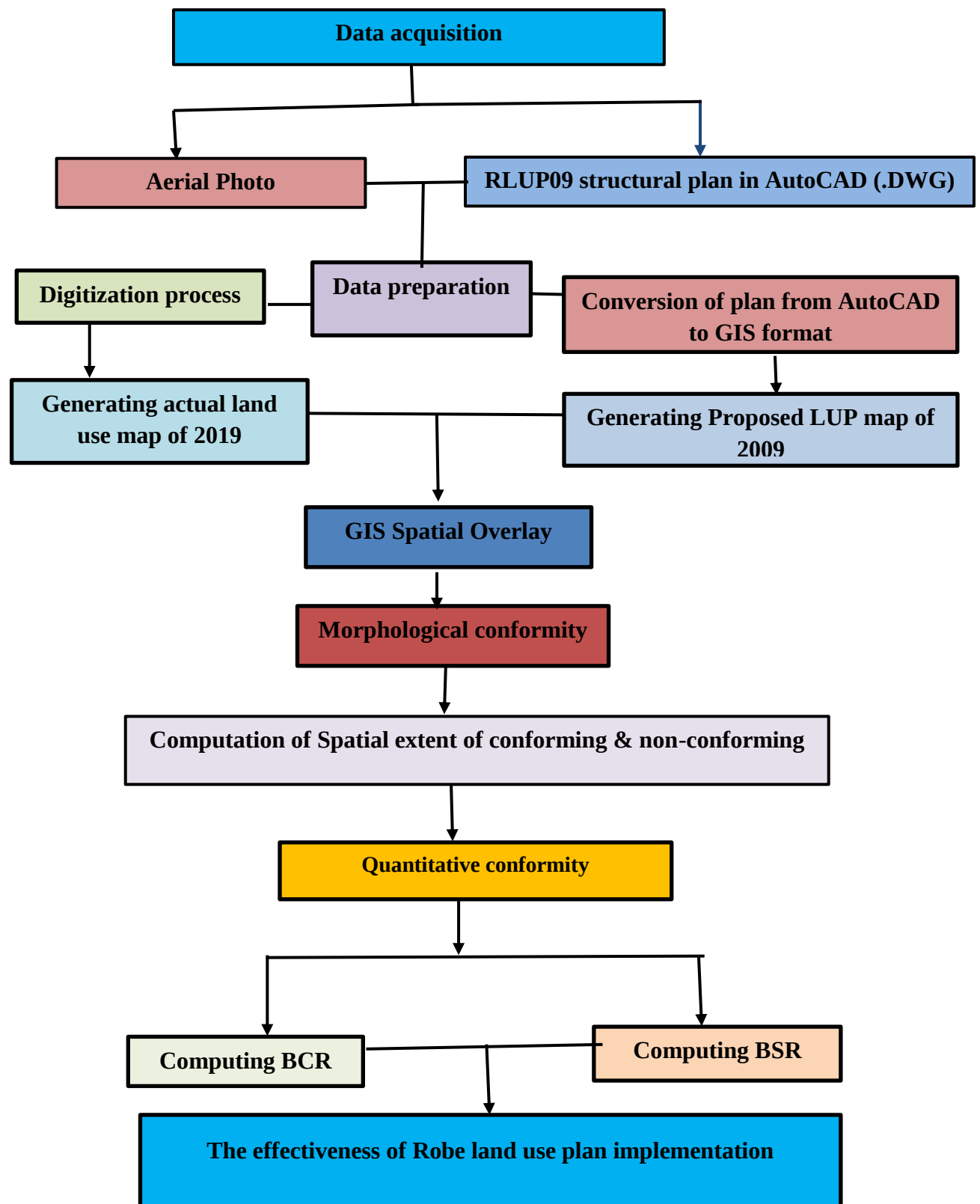


Figure 3-3: Flow chart of data analysis process (source: manipulated by author, 2024)

3.7. Descriptive Exploratory Approach.

Data utilized for examining potential factors influencing plan execution were gathered through expert interviews. This strategy is extensively used in studies similar to the current study (Ryan and Gao 2019). Using the conformity assessment results as a foundation, experts from the Robe town administration were interviewed in this study to better understand the elements that likely influenced RLUP09 implementation. Experts with at least fifteen years of experience in town administration were selected for the interview. This helps ensure that responders were exposed to the plan for at least half of the planning time. Although more than twelve (12) experts were invited to the interview, only nine (9) were able to attend. The participants were divided into two departments: five experts from land administration and development and four from construction. Open-ended, semi-structured interview questions were employed. During the interview, many instances of nonconforming and unfulfilled locations were chosen, and respondents' reactions were documented on field notes. Furthermore, information regarding the availability of infrastructure and services gathered during field trips served as a support. Finally, the acquired data was evaluated using a descriptive exploratory technique.

CHAPTER FOUR: RESULTS AND DISCUSSIONS

4.1 Proposed land uses by RLUP09 and Actual outcome area in 2019

4.1.1 Proposed land uses by RLUP09

Land use plan of Robe town functioned from 2009 to 2019 contains nine land use types. This research examines four major land uses that are: Residential, Social service (administration and service), Commercial, and Manufacturing and storage. Figure 4-1 shows reclassified land uses proposed by RLUP09 and the expected maximum spatial extents of each land use type in the ending year of planning period (i.e., 2019) is computed and summarized in Table 4-1.

According to the land use plan from 2009, physical structures such as residential, commercial, social services, and manufacturing and storage were allotted 4058ha, 255.16ha, 246ha, 566.06ha respectively, which accounts about 63.9% of the total area proposed for the town. However the actual land use extents were 1034ha, 94.5ha, 364ha, and 29.9ha respectively. The plan proposed significant area for residential and manufacturing and storage. This could be the town under study is known by its agricultural product market and agro-industry products, whereas provision of large area for residential can be related with expected rapid urbanization due to high emigrants from surrounding rural area to the town.

Table 4-1 spatial extents of proposed urban land use in Robe town by RLUP09

Land use categories	Proposed land use plan (RLUP09) in Hectares(ha)	In (%)
Residential	4058	50.57
Commercial	255.16	3.18
Social services	246.25	3.07
Manufacturing and storage	566.06	7.05

Source: Robe town proposed
structural plan of 2009

4.1.2 Actual land use of Robe town in 2019

Figure 4-1 shows the actual land uses in Robe town as of 2019 ending year of the RLUP09 and proposed land use in 2009 plan. table 4-2 gives information about the spatial extents of land use classes computed in hectares as well as the percentages increases or decreasing in the planning period. The figure shows four land use categories.

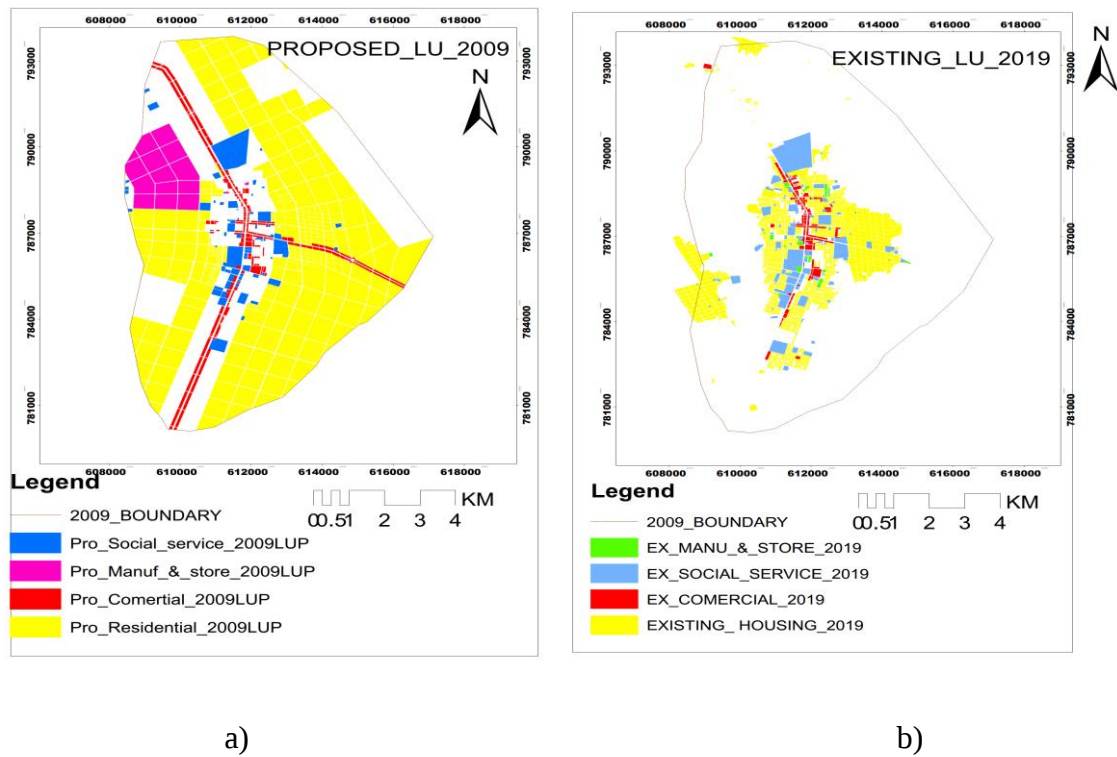
The figures reveal that residential and commercial developments during planning period was significantly occurred adjacent to planning boundary in direction of northern parts of the town and north-west of the town.

Table 4-2: spatial extents of existing land use in Robe town as 2019

Land use categories	Existing land use of 2019 in Hectares(ha)	In (%)
Residential	1034	25.5
Commercial	94.4	37.01
Social services	364	147.29
Manufacturing and storage	29.9	5.28

Sources : GIS analysis

The study calculated the percentage share of each land use category in the land use plan and actual land cover to compare the land use plan of 2009 and the land cover of 2019(Fig 4-2). The results of GIS overlay analysis conducted for this study show that there is a widespread lack of compliance between the proposed land use plan in 2009 and actual land use in 2019 in Robe town.



Figures 4-1: Proposed land uses and actual land uses in Robe town (a) 2009 and (b) 2019

4.2 Comparison between the land use plan of 2009 and the land cover of 2019

The study calculated the percentage share of each land use category in the land use plan and the actual land cover to compare the land use plan of 2009 and the land cover of 2019 (Fig. 4).

The results of the GIS overlay analysis conducted for this study show that there is a widespread lack of compliance between the proposed land use plan in 2009 and the actual land use in 2019 in Robe town. This non-compliance accounts for approximately 47.84 % of the total proposed area of the town. Non-conforming developments are observed in all categories of land use.

Table 4-3 also reveals that the residential, commercial, and manufacturing and storage land use, which was planned to cover 4058ha, 255.16ha, and 566.06ha respectively in 2009, only covered 1034ha, 94.4ha, and 29.9ha area in 2019 respectively. However, during the same period, the social services land use increased from 246ha to 364 ha area, indicating over utilization and a least non-compliance rate of 47.92 %.

Furthermore, manufacturing and storage land use decreased from 566.06ha area to 29.9ha indicating a large non-compliance rate of 94.74%, whereas the residential land use had a non-compliance rate of 74.52% area indicating a significant noncompliance next to manufacturing and storage land use. In addition although, commercial land use had a noncompliance rate of 63.01ha area which was the 3rd ranked in deviations from the plan. It is crucial to note that, in comparison to the allocation in the land use plan from 2009, the actual land use in 2019 saw a considerable decrease in the amount of residential and manufacturing and storage land uses by 3560 hectares. In addition, although not specified in the land use plan, an additional 118ha were utilized for social services land use.

Table 4-3 Comparison between the land use plan of 2009 and the land cover of 2019

Land use categories	Proposed land use plan (RLUP09) in Hectares(ha)	In (%)	Existing land use of 2019 in Hectares(ha)	In (%)	Deviation in (ha)	In (%)
Residential	4058.12	50.57	1034	25.5	-3024	-74.52
Commercial	255.16	3.18	94.4	37.01	-160.76	-63.01
Social services	246.25	3.07	364	147.82	118	47.92
Manufacturing and storage	566.06	7.05	29.9	5.28	-536.16	-94.74
Total	5125.59	63.87	1522.3	29.69	3838.92	47.84

Source: GIS overlay analysis by author, 2024

4.3. Morphological Conformity Assessments

The evaluation of land use plan implementation within the town reveals a complex scenario characterized by varying degrees of effectiveness and challenges across different land use categories. The study focused on four selected land use categories: Residential, Commercial, Social service, and manufacturing and storage which collectively represent approximately 63.9% of the total proposed area for different land uses in the town.

4.3.1 Residential

The structural plan proposed 4058 hectares or 50.6 % for residential land use, while the actual residential land use discovered under this analysis at the end of the planning period was 1034.4 hectares representing only 12.9% of the total proposed area for the town. The geospatial analysis result of the residential land use type study in Robe town revealed a deviation of 3024 hectares from the structural plan in 2019 indicating a significant non-compliance rate of 74.5 %. The general area of residential land-use implementation was less than anticipated in the town's structural plan. In terms of deviation from the plan, the residential land-use area came in the 2nd. The following map depicts the difference between the actual and the planned results.

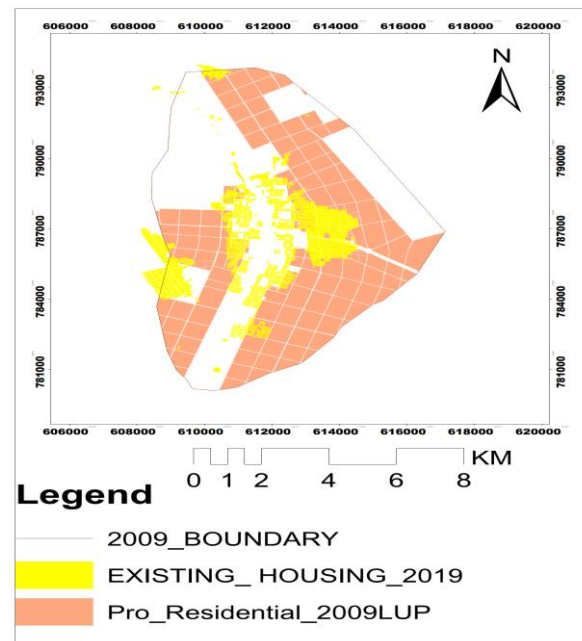


Figure 4-2: Proposed residential vs. actual residential development as of 2019

A residential development was one of the main planning issues for RLUP09. Accordingly, new housing development areas were proposed predominantly 4058.2ha at the northern and south eastern parts of the Town. This area caters for land requirement of housing. The result of spatial overlay of proposed land-use and spatial mapping of actual residential developments as of 2019 is depicted in Figure 4-6. It demonstrates that despite of undeveloped reserved land area exists; significant non-conforming residential developments are occurred at town center, south-east, north-west, and northern part of the Town.

Further spatial analysis conducted in this study reveals that spatial extent of nonconforming and unfulfilled land-use occupies 592.6ha and 3024ha, respectively. The percentage of nonconforming residential development as compared to the total residential development is found to be 57.25%. This implies that a significant portion (57.25%) of the residential development does not align with the planned use. The conformance rate of 42.75% indicates that 42.75% of actual residential developments aligns with the planned residential land use from the 2009 plan. This rate suggests that less than half of the developed residential area conforms to the designated land use plan. Results in Figure 4-3 show that residential development was not fully covered the reserved area.

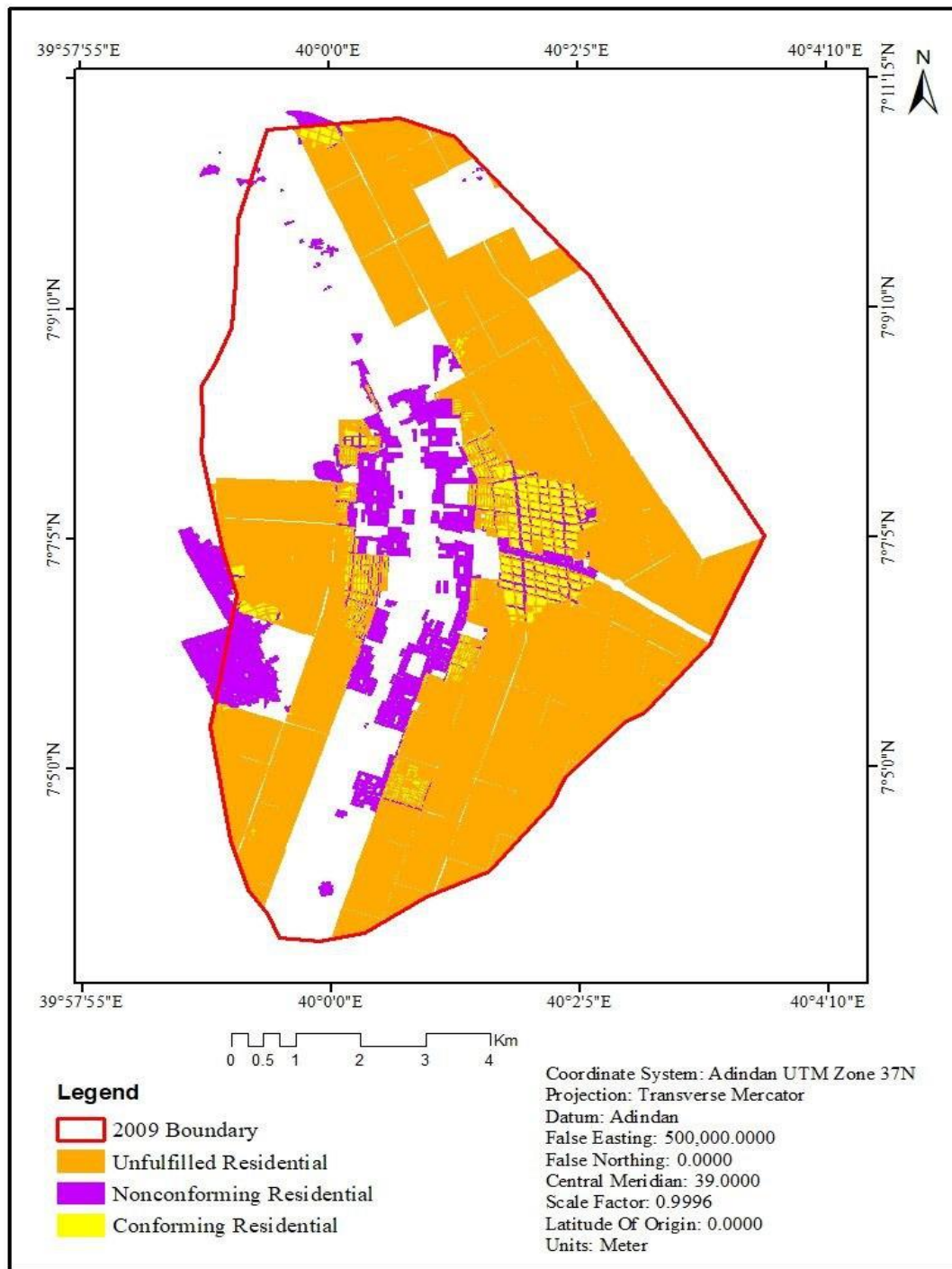


Figure 4-3: spatial distribution of conforming, nonconforming and unfulfilled residential developments compared to RLUP09

The results also indicate that new residential developments along the main road, south west and the northern parts of the town were unplanned. These nonconforming developments are identified in an area having better infrastructure developments. On contrary, proposed land for residential developments has not fully utilized. Mainly large area of reserved land but not yet developed was identified in south-east and north-west parts of the town. Field observation reveals that these areas are mainly characterized by low infrastructure developments. Overall, large percentage of nonconforming residential is found in the central parts of the town, south west, and northern parts of the town. These nonconforming residential developments also include some adjacent nonconforming developments.

4.3.2 Commercial development

Commercial land use development was another main planning issue for RLUP09. Results of spatial overlay of proposed land and actual development (Figure 4-8), shows that non-conforming developments identified mainly at central parts, south-east and northern parts of the town following the main road to Shashamene-Finfinne and at joint road with Ali-Gasera to Robe town. Unfulfilled commercial developments are also distributed in eastern parts, along a road to Goro-wareda, southern parts, and Northern parts of the Town.

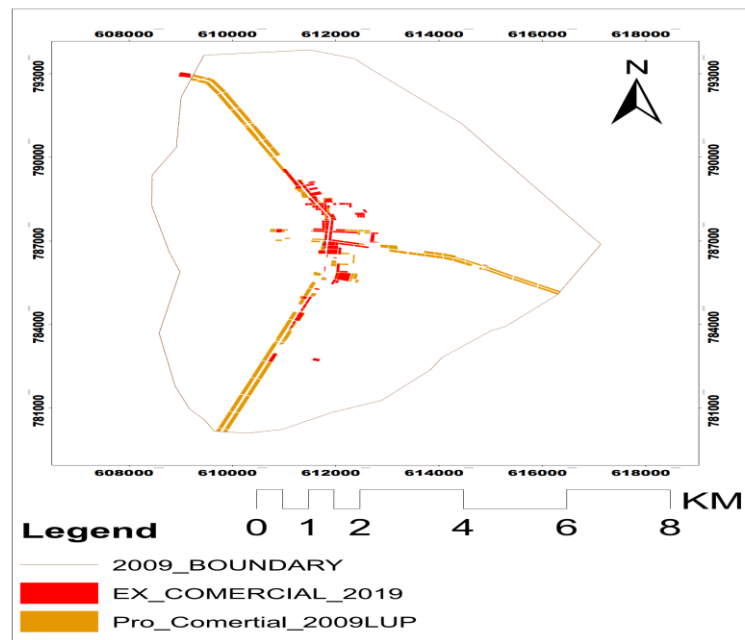


Figure 4-4: proposed commercial land use vs. actual outcomes in 2019

Commercial land use exhibits moderate conformity, with 60.81% of actual commercial land use were conformed to the proposed plan. However the land use plan proposed 255.01 hectares for commerce land use, while the actual commerce land use identified under this analysis at the end of the planning period was 94.43 hectares (37.02% of the proposed area) suggests underutilization or delays in development. The geospatial study of the commerce and trade land-use type revealed deviations of 160.76 hectares from the structural plan. According to the geospatial analysis, there was a discrepancy between the present use and the plan. It revealed that the town's structural plan was implemented lower than the proposal of commerce and trade use. The land-use area for commercial were ranked 3rd in terms of deviation from the plan.

Further spatial analysis conducted in this study reveals that spatial extent of deviation/nonconforming and unfulfilled land-use occupies 37.08ha and 160.76ha, respectively. The percentage of nonconforming commercial development stands at 39.27%, highlighting areas requiring attention and adjustments, whereas 57.4ha of actual developed area conformed to proposed plan. A significant portion (63%) remains unfulfilled, indicating potential for growth and development within commercial sectors.

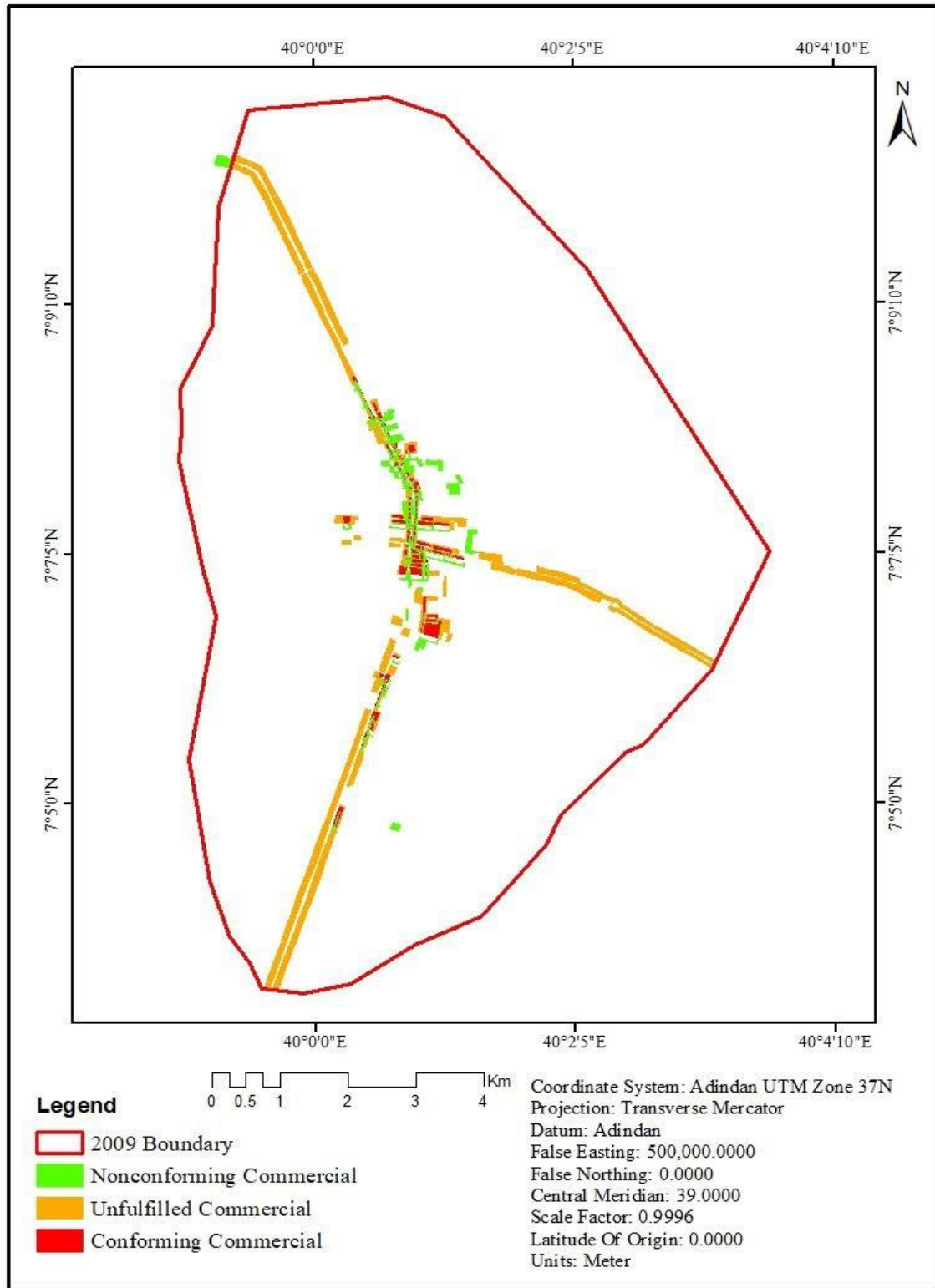


Figure 4-5: spatial distribution of conforming, nonconforming and unfulfilled commercial developments compared to RLUP09 (source: GIS overlay analysis by authors)

4.3.3 Social service

Social service land use shows overutilization, surpassing the proposed area of 246 hectares with actual utilization of 364 hectares (147.9%) compared to the total developed proposed area of social service.

The service land-use proposal in the structural plan was 246.25 hectares, but the actual service land-use found under this study at the end of the planning period was 364.4. The geospatial analysis indicated that the deviation levels for service correspond to 118 hectares from the proposal of the structural plan. It consumed beyond land allocated in the structural plan to fulfill the demand of the community. The result showed that the least level of deviation from the structural plan. The service land-use deviation study also identified that service land-use consumed land outside the town's planning boundary. The service land-use area was the 4th in its deviation from the plan. Social service sites were proposed using equitability, efficiency, centrality, and accessibility issues as the main principles. The aim was to optimize service providing to the community. The following map depicts the difference between the actual and the planned results.

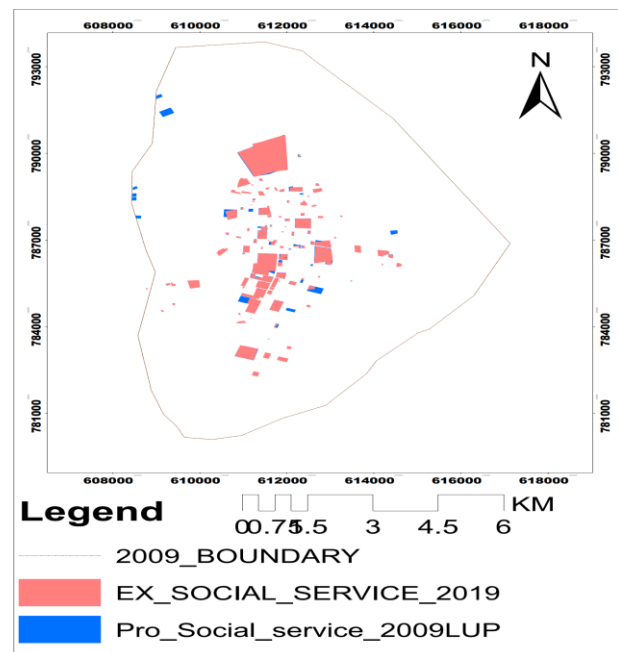


Figure 4-6: proposed social service land use vs. actual outcomes in 2019

However, the spatial overlay analysis result (Figure 4-7) shows that the least non-conforming developments are occurred at different parts of the Town, particularly at central and north-east parts. In contrary majority of proposed land at north-west and southern parts of the Town are not fully utilized. Further spatial analysis using the results summarized in Table 4-6 reveals that over utilized land covers 118ha, whereas 108.84ha of social service developments is unplanned, which resulting in a nonconforming increment of 29.9% which has a share of total social service land use developed (364.12ha) during the planning period. This indicates an increase demand for land to accommodate public service developments.

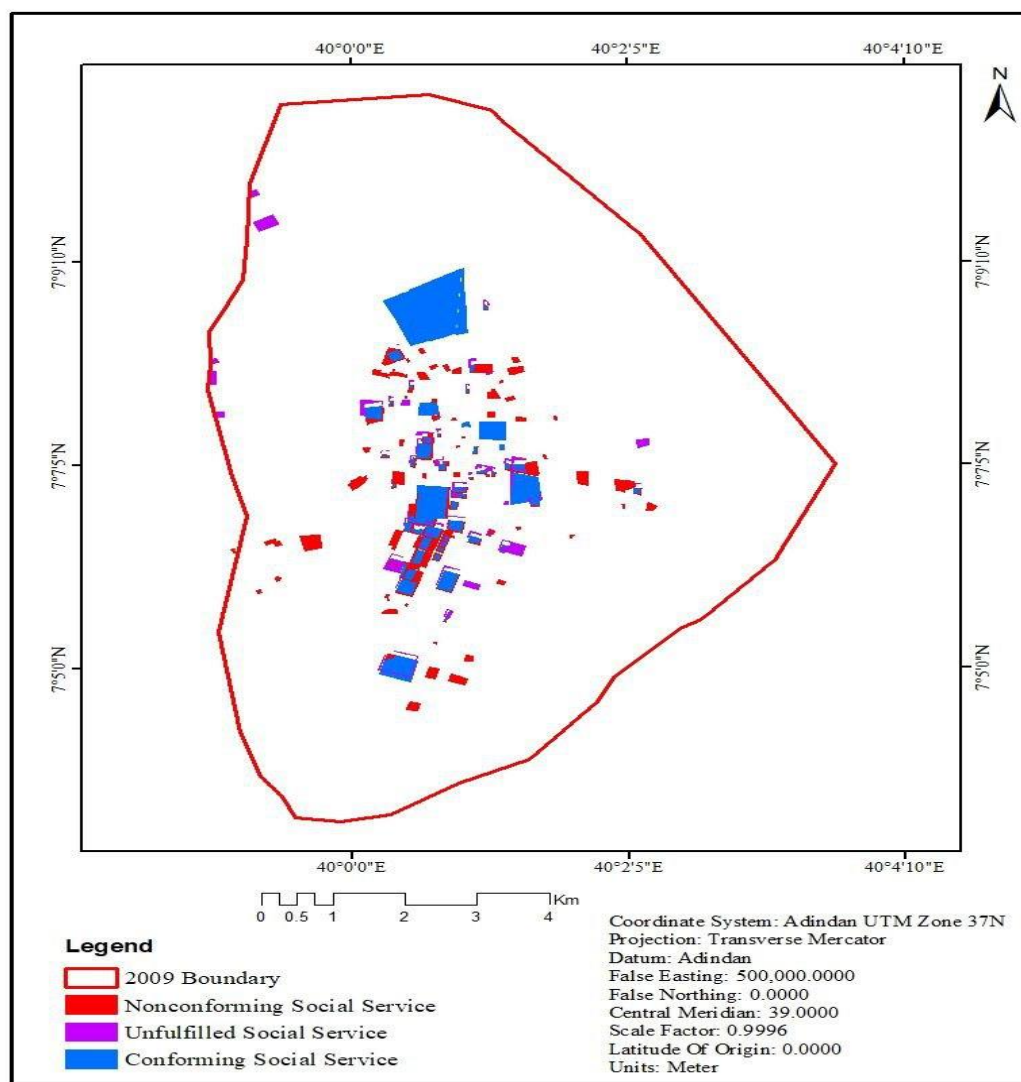


Figure 4-7: spatial distribution of conforming, deviation and unfulfilled social service developments compared to RLUP09 (source: GIS overlay analysis, 2023)

4.3.4 Manufacturing and storage

The manufacturing and storage land use faces significant challenges, with minimal actual implementation of (5.28%) compared to the proposed area 566 hectares. Conforming areas are negligible, only (6.59%) of actual manufacturing and storage development was aligned to the proposed plan, indicating major discrepancies or delays in manufacturing and storage developments. Manufacturing and storage is also one of the main planning issues for RLUP09. It was mainly intended to decentralize activities and minimize the need for transportation and also bring about balanced development. The manufacturing and storage land-use proposal in the structural plan was 566.06 hectares. Still, the actual manufacturing and storage land-use found decreasing under this study at the end of the planning period was 29.9 hectares. It experienced a negative nonconformity, of 93.31% of the actual manufacturing and storage developments were non-confirming to the proposed land allocated in 2009 land use plan. The following map (figure 4-8) depicts the difference between the actual and the planned results.

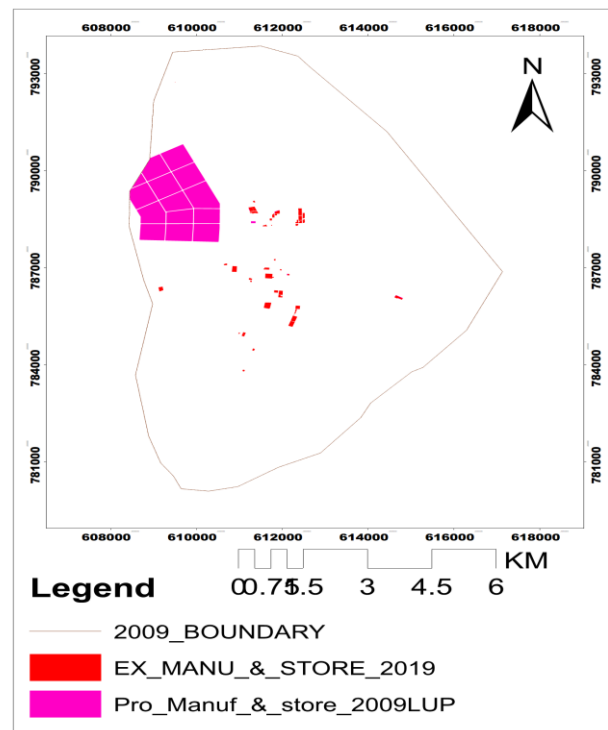


Figure 4-8: proposed manufacturing and storage land use vs. actual outcomes in 2019

However, spatial overlay of proposed land and actual development (Figure 4-9) shows that non-conforming developments identified mainly at north-east and central parts of the proposal of the plan, 536.16ha reserved land is not yet developed resulting 94.73% of proposed area remains unfulfilled, emphasizing the urgent need for targeted efforts to stimulate industrial growth and developments.

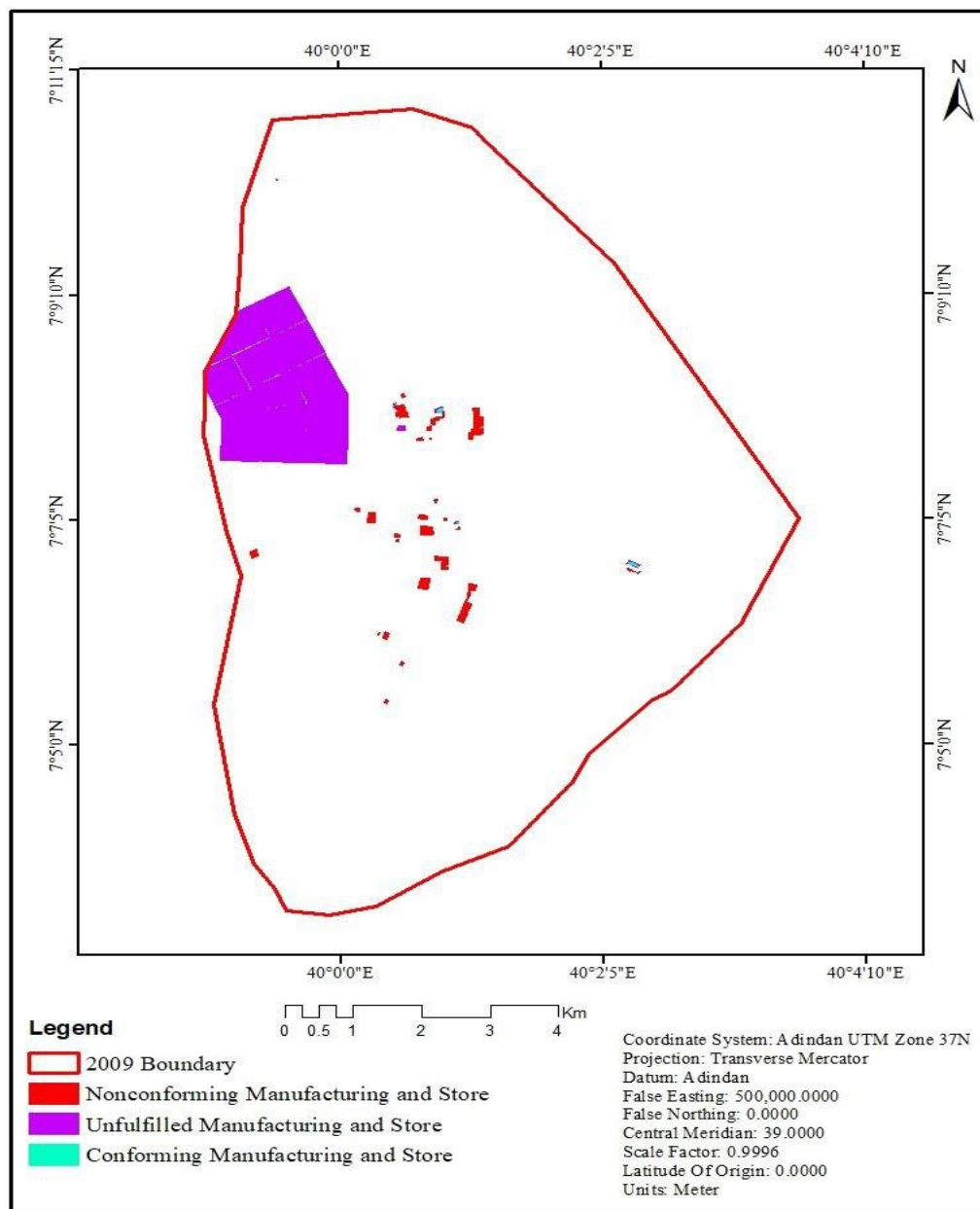


Figure 4-9: spatial distribution of conforming, deviation and unfulfilled manufacturing and storage developments compared to RLUP09 (source: GIS overlay analysis, 2023)

Results demonstrate that more non-conforming industrial developments mainly warehouses are identified in Oda Robe kebele and around Ceffe Donsa kebele. The large area resulted as nonconforming developments in kiftete kebele were Yetabebart flour factory and warehouses along main road which was planned for commercial land uses in 2009.

Jara Gidejo and Waltai Duga flour factory was among authorized nonconforming manufacturing and storage developments. This area was supplied for local investor for investment by the decision of town administration. Conversely, 536.16ha of land is not fully utilized which results unfulfilled developments distributed in western parts of the town. This large area has no better infrastructures, and yet not utilized up to the end of planning period. Manufacturing and storage land-use area was ranked first in its deviation from the plan.

The result showed that the town administration hasn't played an important role in expanding industries and related activities. These could be most of the nonconformity developments were exist before plan preparation and planned for residential purpose without considering the existing situations during plan preparation.

4.5. Degree of Conformance Success

4.5. 1. Quantitative Conformity

The implementation of RLUP09 was measured in terms of quantitative conformance. To examine the effectiveness, the values of selected indicators were computed: BCR and BSR.

The results summarized in Table 4-8 give information on the computed values of selected indicators for the assessment of the degree of the conformity success of developments in Robe town from 2009 to 2019. Four variables were examined: Residential, social service, Commercial, manufacturing and storage. Detail analysis reveals that the computed value of BSR of Residential, commercial and manufacturing and storage developments are 0.25, 0.37 and 0.05 respectively; indicating RLUP09 was planned encompassing area large enough to accommodate all new developments. However, computed boundary sufficiency ratio (BSR) of social service land use is greater than >1 , which implies the inefficiency of the allocated areas for these land uses.

On the other hand, the plan has met difficulties to guide and control spatial developments. Detail analysis reveals that the computed value of BCR of commercial and social service developments are 0.65 and 0.36 respectively; indicating RLUP09 has limited effectiveness in controlling the spatial location of newly commercial and social service development. However, two land use classes: residential and manufacturing and storage, BCR has been found greater than one which is, 1.34 and 14.2 respectively. These values greater than (>1) suggests, the complete failure of the plan to guide spatial development of proposed land uses. This implies the ineffectiveness or complete failure of the 2009 Robe town land use plan implementation in controlling spatial developments of proposed land uses. Degree of planning implementation also varied between measuring variables, locations and indicators (He 2020).

Table 4-5: Conformity between land use plan of 2009 and 2019 land cover/actual outcomes as per proposed plan

Land use category	Conform (ha)	Conform rate (%)	Unfulfilled (ha)	In (%)	Nonconforming (ha)	Non-conformance rate (%)	BCR	BSR
Residential	442.12	42.75	-3024	-74.52	592.6	-57.25	1.34	0.25
Commercial	57.40	60.81	-160.7	-63.02	37.08	-39.28	0.65	0.37
Social service	255.16	70.10	+118	32.42	108.84	29.9	0.43	1.4
Manufacturing and storage	1.97	6.59	-536.16	-94.73	27.9	-93.31	14.2	0.05

Source: GIS, and quantitative results, 2024.

Thus, 2009 Robe land use plan were not properly implemented, and all the land use categories were in non-conformity with actual land cover. In general, the findings reveal that there are significant new developments occurring side of proposed area, indicating limitation of RLUP09 in controlling spatial location of new residential developments. Moreover, it shows complete failure in guiding the developments of manufacturing and storage followed by residential developments. The findings of this study is inconsistent with that of (Bulti and Sori 2017) that looked into the implementation of Adama city structural plan and noted that limited effectiveness of the plan in controlling spatial distribution of land uses. The disparity between the present study and that of (Bulti and Sori 2017) could be the level of urbanization, spatial planning, and level of management. The findings also contradict with the result of study conducted in Mutare, Zimbabwe (Mabaso et al. 2015), According to his study, the overall compliance rate was 95.94%, demonstrating the possibility of effective land use plan implementation. However, it also revealed some instances of non-conformity in land usage within the city. Non-conforming development areas are spatial indicators of urban and suburban sprawl (Brody and H2ighfield 2005).

Based on these evidences, it is enough to conclude that RLUP09 has failed to play its role in guiding and controlling spatial development of Robe town. In spite of the morphological deviation, the total area of new developments occurring during 2009-2019 has not exceeded the area allowed by RLUP09 except social service, which at least shows that the size of reserved land was reasonable. The values of both indicators underline that even the most well intentioned spatial planning designs cannot guarantee conformity or prevent the adverse impacts of sprawling growth patterns.

4.6 Factors influenced implementation of RLUP09

A range of interview questions were employed to investigate the possible factors that impacted the implementation of RLUP09. The questions specifically focused on identifying the primary reasons behind unfulfilled developments, whether nonconforming developments are lawful or informal, and what considerations brought nonconforming developments to the location where they are occurred. By asking these questions, investigators were also able to determine why illegal houses are so expanded even outside the plan boundary during planning period.

In this regard, the participants were invited to reflect on the possible causes of unfulfilled and non-conforming developments identified in the northern and southern parts of the Town. According to the respondents, the boundaries of urban and rural villages were not clearly demarcated and compensation was not paid for the nearby farmers due to lack of budget, which will result in illegal housing practice, making it difficult to develop the land. This is the main reason why the large area proposed for residential purpose were left unfulfilled or undeveloped. This findings is compliment with the study conducted by (Mulugeta and Zewditu, 2018) about existing structural implementation situation in Injibara town reported the structural plan of the town was poorly implemented mainly due to lack of budget to pay compensation for farmers.

More ever, Robe town has expanded to the four directions, so according to the interview respondents while the contemporary housing is settled to nearby the boundary of local kebeles. According to Robe town land development and management office (RTLDMO) because of high emigrant and population growth to the town there is high land demand and generate housing shortage problem in the town. It result for squatting problem that shown in the town. The respondents agree that the limited availability of basic urban infrastructure (e.g., roads, water supply, and electricity) in these areas has slowed projected residential, social services, manufacturing and storage expansions. These limitations were also confirmed during the study's field observations.

The participants were also asked about how often implementation of RLUP09 was evaluated during planning period. The respondents feel that evaluation of land-use plans is unusual in Robe Town, and they are certain that RLUP09 implementation has not been assessed. They also revealed that the major causes were due to a lack of initiation, which necessitates professional dedication. Moreover, they feel that less attention paid to monitoring of the plan implementation has led to failure to transfer undeveloped land to potential developers in timely manner and ensure balanced development in planning period. Through regular monitoring and evaluation of implementation of the Plan, it would have been possible to identify unplanned developments and take measures to stop the construction in a timely manner. When asked for formality of manufacturing and storage developments, Jara Gidejo and Waltai Duga flour factory located at north-east part of the town as a nonconforming, the

experts confirmed that the land was formally supplied by the town administration. According to RLUP09 proposal, this area should only be used for residential purpose; however, it has been supplied for construction by management decision which entails some reasons. In this regard, the participants agree that there was a belief that attracting developers through land supply was an effective way to maintain a rapid economic growth. Therefore, when development projects come to Robe, the town administration would satisfy the site selection proposed by developers as much as possible, even area outside of urban growth boundary was chosen. In accordance with this findings, (Bulti and Sori 2017) reported that nonconforming developments in Adama city was due to unsupported political leadership which is the most essential reason that leads to deviation between plan and outcomes. Especially ones with large economic added-value showed their interests in the town, investors were almost free to select any sites they needed regardless of the limit of urban growth. In order to retain the investment, the Town Administration ultimately accepts their applications. Considering the potential economic values of the developments to the town the area was supplied to developers based on management decision. This shows political leadership influences on plan implementation which is consistent with findings, of (Gezahegn, 2023) reported the land use plan of Dukem town was poorly implemented mainly due to absence good leaderships.

Absence of regular evaluation and monitoring had also contributed to poor implementation of RLUP09. The results show that despite the developments outreached the UGB, proposed area had not been fully utilized. Through regular monitoring and evaluation, it would be possible to identify, where and why delays of developments occurred and propose practical solutions for improving the implementation of the plan as well as for insuring balanced development. In accordance with this finding (Simie 2011) reported the structural plan of Gelan town was poorly implemented mainly due to absence of monitoring, evaluation, and updating taskforce.

Combined with political leadership influence, absence of commitment of officials significantly affected effective implementation of the Plan. In line with the findings of this study, (Mekonnen 2012) claimed that authorities' commitment was a main factor in the poor planning and implementation of the Sululta town land use plan. Zhong et al. (2014) found that political leadership influence was one of the factors that influenced China's general land-use plan implementation.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

This research evaluates the level of Robe town land use plan implementation by measuring the conformity between actual land use and plan proposal. The value of the study can be explained in different ways. First, morphological conformity assessment provides spatial distribution of conforming, nonconforming, and unfulfilled developments. There are significant new developments occurring outside of proposed area, indicating limitation of RLUP09 in controlling spatial location of new developments. The computed value of BCR of Commercial and social service developments are 0.65 and 0.36 respectively; indicating RLUP09 has limited effectiveness in controlling the spatial location of newly commercial and social service development. However, two land use classes: residential and manufacturing and storage, BCR has been found greater than one which is, 1.34 and 14.2 respectively. These values (>1) suggests, the complete failure of the plan to guide spatial development of proposed land uses. This implies the ineffectiveness or the failure of the 2009 Robe town land use plan implementation in controlling spatial developments of proposed land uses. While the allocation of land use categories based on the BSR seems sufficient, the utilization, especially for manufacturing and storage, remains minimal.

In another hand, the value of BSR for Residential, 0.25 ; Commercial 0.37; social service, 1.4; and manufacturing and storage, 0.05. The value of BSR is high in social service indicating the inefficiency of the proposed area to accommodate the new developments within planning period. The findings show that, the extent of Social service land use shows overutilization surpassing the proposed area of 246 hectares with actual utilization of 364 hectares (147.9%) compared to the total developed proposed area of social service. The analysis reveals a significant lack of compliance between the proposed land use plan and actual land cover in Bale Robe town. Non-conforming developments are observed across all land use categories, with deviations from the plan ranging from 47.84% to 94.74%. The study also reveals that failure of land use plan implementation in robe town are due to low awareness of the community, weak leadership, poor monitoring and evaluation of plan implementation, insufficient land supply for residential house, lack of boundary demarcation with surrounding rural kebeles.

5.2 Recommendations

Although this study provides important information on the implementation of Robe town Land-use plan and major influencing factors, the results should be considered only an initial step towards understanding the links between urban land-use plan and its implementation. Hence, further researches are needed on several fronts. to begin with this study explored only one approach, which alone is not sufficient.

- ✚ Future Researchers should undertake a comprehensive, nationwide assessment of urban land use plan implementation across Ethiopia. This would involve selecting a representative sample of cities and towns, analyzing the degree of conformity between planned and actual land uses, and identifying the key drivers and barriers to successful implementation. Such a broad, comparative study would provide critical empirical evidence to inform land use planning policies and practices at the national level.
- ✚ To enhance the implementation of Robe's urban land use plan, the research suggests strengthening participatory mechanisms throughout the planning and implementation stages. This could involve establishing regular consultation forums that bring together local residents, community groups, private sector actors, and other key stakeholders. Incorporating diverse perspectives and local knowledge would help ensure the land use plan better reflects the needs and priorities of the Robe community, thereby increasing buy-in and support for its implementation.
- ✚ The research recommends assessing the current strengths and weaknesses of Robe's planning institutions, and then developing tailored capacity building programs. This could include:
 - ✓ Providing targeted training to urban planners and local officials on Plan formulation, implementation, and monitoring
 - ✓ Ensuring access to analytical tools, geographic information systems (GIS), and Cadastral system (up-to-date data) to support evidence-based decision-making

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