Riverside Development: the case of Lah river in Finote Selam town, Amhara Region

Fekadu Andualem Atalay

A Thesis Submitted to

Department of Architecture, Urban Planning and Design

School of Civil Engineering and Architecture

Presented in Partial Fulfilment of the Requirements for the Degree of Master's in Urban Planning and Design

Office of Graduate Studies

Adama Science and Technology University

Adama, Ethiopia

July, 2020

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Approval of Board of Examiners

We, the undersigned, members of the Board of Examiners of the final open defense by **Fekadu Andualem** have read and evaluated his thesis entitled "**Riverside Development: the case of Lah river in Finote Selam town, Ethiopia**." and examined the candidate. This is, therefore, to certify that the thesis has been accepted in partial fulfillment of the requirement of the Degree of Master's in Urban Planning and Design.

Advisor	Signature	Date
Chairperson	Signature	Date
Internal Examiner	Signature	Date
External Examiner	Signature	Date

Declaration

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

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

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Signature: _____

Date of submission: July 10, 2020

Advisor's approval sheet

To: **Urban Planning and Design Department**

Subject: **Thesis Submission**

This is to certify that the thesis entitled **"Riverside Development: the case of Lah river in Finote Selam town, Ethiopia".** submitted in partial fulfillment of the requirements for the degree of Master's in Urban Planning and Design, the Graduate program of the department of Urban Planning and Design, and has been carried out by Fekadu Andualem Atalay Id. No PGR/18036/11, under my supervision.

Therefore, I recommend that the student has fulfilled the requirements and hence hereby he can submit the thesis to the department.

Yared Girma (Ph.D.)	_____	_____
Name of major Advisor	Signature	Date

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ACRONYMS

AAEPA	Addis Ababa Environment Protection Authority
ANRS	Amhara National Regional State
CAD	Computer Aided Design
CSA	Central Statistical Agency
EPA	Environmental Protection Authority
GIS	Geographic Information System
LDP	Local Development Plan
NDP	Neighborhood Development Plan
NUPI	National Urban Planning Institute
RS	Riverside
RSD	Riverside Development
SP	Structure Plan
UGI	Urban Green Infrastructure

ABSTRACT

Riverside development refers to any development along a riversides and water bodies. Riverside developments have several advantages; such as to improve the environmental condition and water quality, providing opportunities for tourism, improve social services, and increase social interaction of the society. Therefore, this study attempts to evaluate the planning, and implementation SP specifically along Lah river and to provide recommendations which address the challenges. The study used a structured open-end and close-end questionnaire, interviews with integration survey data to achieve the intended objectives. 359 respondents are selected using systematic random sampling method and 25 professionals are nominated purposively from different concerned sectoral offices. The finding of the study shows that structure plan is not implemented, due to poor preparation of SP concerning to the local context and also study area had a several activities takes place such as; entrainments, fishing, washing cloths and vehicles, used as illegal slaughter and nowadays the river becomes exposed to polluting due to misusing of the area, lack of awareness, financial constraints, insufficient professional knowledge, absence of collaboration and poor public involvement and lack of planning orders are the most influential factors. Due to this the river missing its symbolic meaning of the town. Therefore, advanced development in budget allocation, capacity building, legal framework, awareness creation and stakeholder's involvement are needed to promote sustainable riverside development. Finally, this study was given recommendations, case design solution, and formulated strategies.

Keywords: Green infrastructure, Lah river, Riverside, Riverside development, Riverfront development guidelines and Waterfront planning.

CHAPTER ONE

1. INTRODUCTION

This thesis is written for a study that has been conducted in Finote Selam town, Ethiopia for the partial fulfillment of the requirements the Degree of Master's in Urban Planning and Design at Adama Science and Technology University. The study aimed at assessing the existing condition and challenges of the riverside development in the case of Lah river and providing recommendations that overcome the existing challenges. Good riverfront development contributes positively to the quality of urban life and the city economy. Despite the fact that the vital role of river and riverside receive high attention worldwide, they are still not receiving full attention in sub-Saharan Africa in general and in Finote Selam town of Ethiopia in particular, and are consequently under threat from urban development and human activates. As urban planner and a resident of Finote Selam town, the researcher was aware of several aspects of this general situation. Therefore, these things motivate the researcher to better understand the existing situation of Lah river development and suggest solutions to overcome the threats.

To this effect, this chapter deals with the background of the study, statement of the problem, objectives of the study, research questions, scope of the study, the significance of the study, limitation of the study and description of the study area.

1.1. Background of the study

Water has been a valuable natural resource from the time of the growth of early settlements up until the present day. Water bodies have an unquestionable value as an ecological, recreational and economic resource to urban areas. Good waterfront development contributes positively to the quality of urban life and the city economy (Yassin, 2011).

Since the beginning of civilization, rivers have played a major and important role in shaping and influencing the development of the nation and the culture of its people. There are two rivers in Finote Selam town namely; Lah and Arera. Lah river is a larger and wider river which passes through two kebeles namely; 02 & 03 among six kebele in town. In fact, in Finote Selam, settlements have historically sprung up along river edges, hence, many urban kebeles in Finote

Selam specially kebele 02 & 03 were established after riverside. As a consequence, some of the villages were named and formed after the rivers that ran through them (Institute, Finoteselam Structure Plan Report, 2010).

Urban waterfronts are the center points of many cities. These waterfronts began as commerce centers transportation hubs, manufacturing centers, and commercial areas. However, as transportation moved from bulk to container shipping and manufacturing moved out of cities (for various reasons), old industrial waterfronts became large swaths of unused property. Waterfront development and redevelopment has been a hot issue since the 1970s, when Baltimore, Maryland began its famous redevelopment project, converting old, underused waterfront property into economically viable space. Numerous other large- and small-scale developments have been undertaken since then, in such glamorous cities as Sydney, Australia, and London, England, and in small towns, such as Portland, Michigan, and Grand Haven, Michigan (Chen, 2015).

History of waterfront development for the first attempts of redeveloping waterfronts begun in North America during the 1960s in Baltimore and Boston, then in San Francisco. Where these projects became later models for the following revitalization projects developed in Europe and North America. In the 1970s this kind of development gradually spread to the other parts of the world (Zaherawati, 2013).

Urban riverside development in developed countries like North America and Europe are developed a larger-scale, mixed-use development, small stream and canal bankside development; historic restoration and imitation; blossoming of the people-place; world exposition development on the waterfront; integration of environmental art and lighting; the growth of festivals and other ephemeral events; and increase in regulation of waterfront site development characteristic (Perk, 2012).

There is little or no river development in developing countries, particularly in Africa. But in (Zanzibar city) Zanzibar's stone town of Tanzania, it will meet a more versatile riverside development. (Munir , 2012). Riverside development in Ethiopia is not concerned issue for long time. Recently; however, there is a paradigm shift in the riverside development concepts are exercising on the existing two longest and widest rivers from Entoto-Akaki 56 km length for

three years project. Even though in Finoteselam town they have not an idea and left Lah river high potential of town and rural neighboring.

Developed countries have resources and eagerness of the government. However, the existing challenges of the riverside development on developed countries are management & revitalization. In developing countries, riverside development and buffer zone is not (yet) successfully implemented in practice due to various reasons of which the misunderstandings relating to the important role and value of riverside development in terms of the economic, social, and environmental benefits are probably the main denominator (Chen, 2015). This is one of the research gaps that the study intends to fill.

1.2. Problem Statement

The riverside development has been different purposes in the metropolis or towns and it's a key to struggle with poverty. It has different substantial points in the city such as income growth, even it addressing food consumption, minimizing urban heat island, improving environmental quality, enhancing ecological systems, the emphasis for recreation, and minimizing pollutions in the city or town (Edward, Rodolphe, & et al., 2004).

Despite their significance, rivers are among the most vulnerable environments owing to anthropogenic influences alongside natural phenomena that can cause dramatic environmental changes in their ecosystems. Currently, the river found in Finote Selam town, which is known, as Lah is not well designed and the plan is not considering the potential of riverside, both sides of the river has used as waste site by the community, informal and authorized settlements, lack of proper delineation of the green buffer zones and loss of indigenous forest or dominated by eucalyptus trees, security of tenure problem/crimes, such as robbery, rape, and even murder occurred around the river. As a result, the site has become a physical and psychological threat to the urban community, and used as illegal slaughter and meat trash. As an effect, urban dwellers have suffered different challenges such as poor accessibility of public and semi-private space along the riverside to meet and interact with each other during pleasure, grief, and other purposes.

The formal land-use, according to the structure plan report of Finote Selam that was developed in 2010 and is currently at work, a mandatory minimum 15 meters setback, which will act as a

buffer zone, is proposed on both sides of the river- edges. In fact, on spatial/structure plan AutoCAD's file is 0.5-144 meters buffer zones. Moreover, the environment regulation No: 16/2004 clearly states that the space allocated for green areas should not in any circumstances be used for any purposes other than the intended program and should obtain legal protection (Institute, Urban Planning Standard, 2008). Within this zone, for environmental and ecological reasons, it is expected for no settlement or any other sorts of physical interventions to happen other than green developments. Any sort of physical intervention made along this ecologically sensitive part of the city is illegal. However, the reality explains otherwise, sheltering several settlements along with different informal activities within the river-edge. As a result, the rivers and the river-edges are highly pile of dirty and degraded parts of the town, as these areas become destination points for most of the garbage and sewers from households and factories.

Studies on the riverside development in Finote Selam are very limited. One study undertaken by Anagawa in (2009) focused on the analysis of the development and management of green areas in Finote Selam town. Another study conducted by Minalachew (2007) focused on investigation of open space and its management in case of on Finote Selam town. However, the two studies did not focus on the riverside as an element of green area and issues related to the development and management of riverside area has not included in the studies. Besides, the previous studies do not recommend alternative design solutions, strategies, and approaches for addressing the existing riverside problems. This has made it difficult for much attention to be focused on taking necessary actions to address the challenges and enhances sustainable urban riverside development. Hence, this study is intended to contribute to filling these gaps.

1.3. Research Objective

1.3.1. General Objective

The general objective of the research to assess the existing condition of the riverside development and suggest alternative strategic approaches and design solutions that overcome the current problem of the riverside.

1.3.2. Specific Objective

- To evaluate the implementation of a structure plan with respect to riverside development.
- To identify the existing activities along with Lah riverside.
- To promote sustainable use of riversides by recommending possible mechanisms which overcome riverside development challenges.

1.4. Research Questions

1) How the riverside development is considered during the planning and implementation of the structure plan?
2) What are the existing activities undertaken along the river?
3) What kind of strategy and design solutions are important for promoting sustainable development and management of the riverside?

1.5. Significance of the study

- To enhance social and physical as well as functional activities existing on the riverside for public and semi-private open space.
- To improve the standards of good public and semi-private open space along Lah riversides.
- The study provides scientific knowledge by filling literature gaps for developing an effective riverside development plan, implementation, and management strategy for a given town.
- It also helps as input for policymakers in formulating policies and strategies along with the issue. In addition to this, this study could be used as a base for further investigation to enrich the research findings in this area.

1.6. Scope of the study

The study is conducted in the town administration of Finote Selam, in Amhara region. The spatial scope of the research paper is confided within the Finote Selam town by focusing on the Lah river. And also, in this study area there are some tendencies towards using riversides for other illegal purposes like residential and other purposes on the expense of riversides. in other hand the spatially scope, of the research is restricted in Finote Selam town along Lah riversides. Adam

Thematically, assessment of the current condition of Lah riverside development trend of Finote Selam town in relation to goals and objectives set in the proposals in temporally, 2020. The study tries to address these problems and create awareness on the residents of different groups and for the kebele administrations towards the real values or benefits of riverside development.

1.7. Description of Study Area

Lah River is one of two rivers in the town, and the river flows from north to south direction. Lah river is the larger in terms of width, length, and its tributary rivers. The Lah river is one of the deeper and longer rivers in Finote Selam with an average depth of 2.75 meters and a length from upstream to downstream reaching 65 km. This river originating from the hill of 'Ashifa Bota'. This place is located about 13 km southwest of the Gish Abay Sekela (the source of the great Blue Nile) river (Institute, Finoteselam Structure Plan Report, 2010).

Finote Selam's structure plan provides for special functions the mainstream of the river and 0.5-144 meters buffer zones. The town has an estimated area of 1,749.65 hectares. The River flows from North to South between kebele's 02 & 03. The study area is covers 25.19 and with the Planning, the area is 53.47 hectors and its length 4.1 kilometers. Even though the researcher was taken 1.2 km from the total 4.1 km length. The development of the riverbank as a tourism area will support revitalization efforts to improve the river's original function which has been neglected. The land slope in this area, is 2-5%, 5-10% & 10-15% which is suitable for urban riverside development. The soil types are the mixed of Nitosol (very porous reddish brown to red deep color soil) and black cotton soil. Nitosol soils have sandy textures, have good permeability due to their texture and important agricultural. Black cotton soils hold much residual moisture and are important soils for agriculture especially during moisture stress this is because such soils have very low permeability and tend to hold water in the soil structures. The history of maximum flood mark was horizontally 7 meters in 1999 & 2004 years and baseflow 0.45 meters in 2005 year. (Institute, Finoteselam Structure Plan Report, 2010). And the other thing is that the Lah river has a 12.3% peak elevation and a low elevation has a 7.9% or 2.5% on average marginal river flow (Earth, 2018).

1.7.1. Geographical Location

Finote Selam is found in the North Western Ethiopia in Amhara National Regional State. It is one of the 22 city administrations in the region. Finote Selam is a town and separate woreda in western Ethiopia. Located in the West Gojjam Zone of the Amhara Region, 387 km from Addis Ababa, and 176 km from Bahir Dar. But, the air travel (bird fly), the shortest distance between Finote Selam and Addis Ababa is 246 km. Finote Selam, the "Pacific Road", the name given by Emperor Haile Selassie during the Italian attack on Ethiopia. Formerly its name was Wojet. Now Finote Selam is the capital city of West Gojjam Zone. This town has a longitude and latitude of 10°42′N 37°16′ E Coordinates: 10°42′N 37°16′ E with an elevation of 1917 meters above sea level. It is surrounded by Jabi Tehnan woreda. The 2007 census reported this town had a total population of 25,388 of whom 12,763 were males and 12,625 were females. The town has four urban and two rural (Bakel & Shembekuma) kebeles with a total area of 1,749.65 ha. The city's topography is characterized by a sloppy nature of gradient from North to South and the main road following the gradient is the watershed of the two rivers, situated east and west boarder of the city (Institute, Finoteselam Structure Plan Report, 2010).

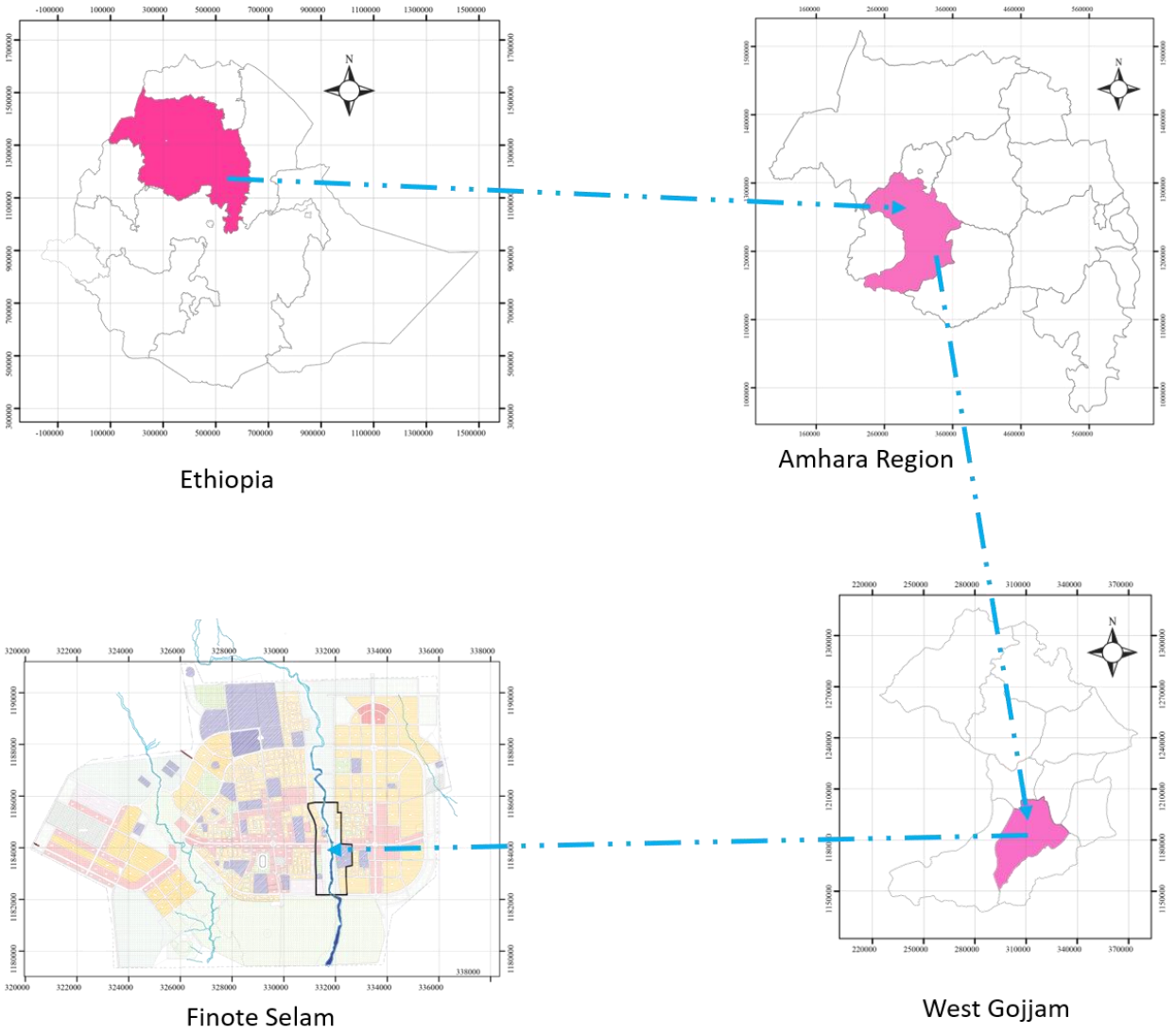

Figure 1.2. Map of the study area (Ethio-GIS data & (Institute, Finoteselam Structure Plan Report, 2010))

1.7.2. The climate condition of the study area

In Finote Selam, the wet season is comfortable and overcast and the dry season is warm and partly cloudy. Over the course of the year, the temperature typically varies from 52°F to 86°F and is rarely below 47°F or above 91°F. Based on the tourism score, the best time of year to visit Finote Selam for warm-weather activities is from mid-October to mid-March. This temperature can be higher at certain times, especially with increased cases of forest fires in the past few years. This condition requires a great addition of vegetation to provide a cooler atmosphere in the tourism area such as groundcover and wood, Such as native plants and rain trees like; Sycamore

tree, Ficus Vasta (‘Warka’), Jatropha Curcas/Physic nut or ‘Ayderkie’ and etc. (Institute, Finoteselam Structure Plan Report, 2010)

1.8. Limitations of the Study

Different problems were faced when the study was conducted. There were limitations due to the absence of well-organized data in offices inaccessibility of recent line maps. Only one available old Auto Cad Structure Plan of 2010 is used along with Google earth images of 2017, 2018 & 2019, and unwillingness to give genuine responses to the interview and questionnaires. Important officials and experts who were going to be included in the sample were not available and/or were busy and afraid of COVID 19 Virus transmission to provide important data and information.

1.9. Justification of the Research

There are two rivers in Finote Selam town namely; Lah and Arera. The reason why Lah river is selected for the study is that it is a larger and wider river which passes through two kebeles namely; 02 & 03 among six kebeles in Finote Selam.

The study location focuses on two adjacent urban kebeles that have various tourism potentials i.e. natural, cultural, and man-made attractions, namely kebele 02 and 03. The natural tourist attraction is the Lah’s river (especially Guaguat waterfall), which is one of the few locations with natural tourism potential in Finote Selam. And also, it has a higher potential for the town development while it is developed.

And also, in terms of man-made tourist attractions consist of the ‘Keste-Damena’ bridge, north-west direction of Finote Selam Hospital, the bridge located directly at the riverside. Keste-Damena bridge is the symbolic icon of the town. Cultural tourist attractions comprise local cultures such as ‘Timket’ and ‘Meskel, traditional art, and typical culture of Damot.

However, recently, in Lah riverside different crimes has taken place and it is used as waste disposal site which makes the health problems of adjacent kebeles. The river is also polluted due to the people wash their clothes and body in the river. Therefore, it needs proper development and management.

1.10. Operational definitions of the study

Riverside is the area of land by the banks of a river. They walked back along the riverside (Mark McCracken, 2005).

Waterfront development refers to any development in front of water and a water body; a river, lake, ocean, bay, creek or canal (Diyun, 2009).

Waterfront planning is an aspect of conventional land use planning with the focus on community use of surface water and uses of the land which will take most advantage of access to the water and water-frontage (Stevenson, 1973).

Green infrastructure or blue-green infrastructure is a network providing the "ingredients" for solving urban and climatic challenges by building with nature (Timur, 2013).

Greenfield land is undeveloped land in a city or rural area either used for agriculture or landscape design or left to evolve naturally. These areas of land are usually agricultural or amenity properties being considered for urban development (Timur, 2013).

Channel (Watercourse): An open conduit either naturally or artificially created which periodically or continuously contains moving water, or which forms a connecting link between two bodies of water (Immoor, 2006).

Discharge: the volume of water the flowing stream that passes a given location in the unit of time. Frequently expressed in cubic feet per second or cubic meters per second (Immoor, 2006).

Riverfront Tourism: the relations between rivers or other water sources and cities often show a complex interaction of various elements, including the development of tourism around the river Jones, 2007).

CHAPTER TWO

2. LITERATURE REVIEW

2.1. Overview of Riverside Development

Cities are incredibly complex and textured. They are shaped in many ways. Economics, politics, society, culture, and nature all play a crucial part in this process. Cities often seem disordered created by spontaneity and almost infinite variety of places, people, and practices. Whatever the forces and practices are cities are always the result of design. The design may be conscious and formal, undertaken by architects and planners. On the other hand, a city is made and remade through the daily activities of its inhabitants every day. It is the result of informal cultural, social and economic practices. Informal practices also create a new form of urbanism in cyberspace (Edward, Rodolphe, & et al., 2004).

To revitalize and develop riverside areas that are polluted and degraded needs an understanding of the historical relationship between water and adjacent land use patterns. Thus, the relationship between water and cities and how water as an element of urban morphology structures a city is discussed below using various theories. Then the discussion flows to the settlement evolution pattern of the selected site and its planning regulation towards watershed areas (Abdullahi, 2012).

2.1.1. River Front Delineation Criteria

According to Autor's (Abdullahi, 2012), there are two basic criteria for delineation of riverfront in planning. The first is that of fixing up of a certain distance from the river's edge based upon the average distance of the building edge from it. If there is any road running parallel to the river, then the river fronts the riverfront may be delineated up to the road. Here by this method delineation of river front in the site has been done. The Second criteria are to delineate the river front depending upon the river related activities. The river front boundary is fixed at the limit where the influence zone of the activity ends.

2.1.2. Why the Waterfront?

According to (Gaffen, 2004), Over recent decades, waterfront development and redevelopment have evolved with a focus on historic preservation and recreation. During this time government

and private sectors have begun to incorporate waterfront planning and design into their development projects. In particular, the patterns of development are changing by connecting land, water and air and landscape aesthetics to land development planning. The growing focus on redeveloping urban waterfronts can be attributed to several factors, that include: awareness of the natural environment and smart growth, preservation and adaptive reuse, federal assistance and tourism industry.

2.2.Key Terminology of riversides

2.2.1. Definition of Riverfront, Redevelopment and Waterfront Planning

The riverside is the area of land by the banks of a river. They walked back along the riverside. (Mark McCracken, 2005)

The riverfront area is the confluence area of water and land. It is not only the edge of land but also the edge of water, and the land should cover some areas. Waterfront is the location where water and land meet covering the range that is used in relation to water. Usually, it includes the land within 300 meters from the waterline and the area above the water at a depth of 5 meters (Diyun, 2009).

Fig 2.1. The riverfront description (Diyun, 2009)

Redevelopment can be termed as further development of an already developed area. The definition of redevelopment can be ‘the urban process of improving cleared or undeveloped land, including erection of buildings and other facilities by public or private developers (Mark McCracken, 2005).

Waterfront planning is an aspect of conventional land use planning with the focus on community use of surface water and uses of the land which will take most advantage of access to the water and water-frontage. Thus, it attempts to take into consideration both the uses of the water and the uses of the land around it (Stevenson, 1973).

2.2.2. Riverbank Zone and Riverside Development Zones

Based on Autor's (Amy, 2005) Land adjacent to the river can be defined and characterized into three zones:

The riverbank zone is the area adjacent to the river between the water's edge and the top of the bank. Where there is no bank, but rather a vertical bulkhead or other engineered vertical structure, there is no riverbank zone.

The development zone is the area adjacent to, and on the land side of, the urban greenway zone. The development zone is the area where renovation, redevelopment, or new development will occur. Such development may be commercial, residential, institutional, or any other use permitted by the zoning for the site.

The urban greenway zone is the area between the top of the bank and the development zone and should be developed with landscaping and a recreational multi-use trail. Exceptions to this principle include development or construction required by river dependent uses, incompatible industrial use, and existing buildings or structures.

2.2.3. Discharge

According to (Immoor, 2006); described the term of discharge, formula, and channel as follow:

Discharge: the volume of water in flowing stream that passes a given location in unit of time. Frequently expressed in in cubic feet per second or cubic meters per second. Calculated by the formula Q = A x V where; Q is the charge; A is the cross-sectional area of the channel and V is the average velocity of the stream.

Channel (Watercourse): An open conduit either naturally or artificially created which periodically or continuously contains moving water, or which forms a connecting link between two bodies of water.

2.2.4. Greenfield Land

Greenfield land is undeveloped land in a city or rural area either used for agriculture or landscape design or left to evolve naturally. These areas of land are usually agricultural or amenity properties being considered for urban development. Greenfield land can be unfenced open fields, urban lots or restricted closed properties. Greenfield sites offer a high degree of freedom for a developer, compared to sites with existing developments (Timur, 2013).

2.2.5. Setbacks

A setback defines the requirements for the minimum distance between new development and the river. Setbacks are required for all new development, but do not apply to existing buildings or development (Institute, Urban Planning Standard, 2008).

2.2.6. Elements Successful Waterfront Development

Regarding to (Yassin, Sandy, & et al., 2012), determined that the success of a waterfront development is only achieved once it can function on all levels and benefit all stakeholders. Therefore, in order to achieve the specific aims of a successful waterfront development, identified 10 elements recommended to be taken into consideration while planning a waterfront development.

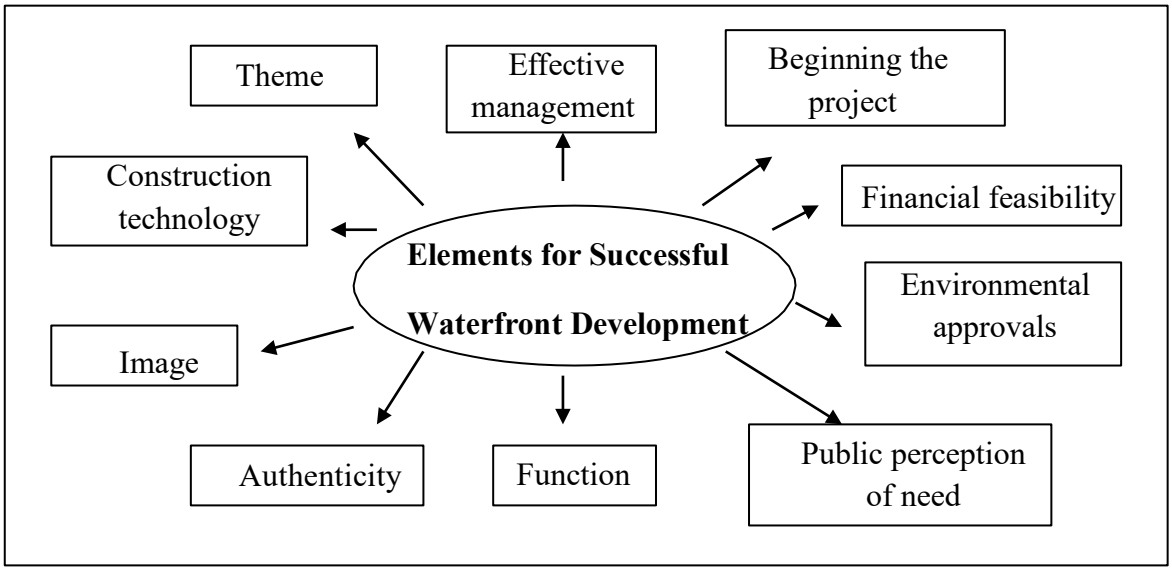

Figure 2.2: Elements for Successful Waterfront Development (Yassin, Sandy, & et al., 2012)

2.2.7. Principles for Sustainable Waterfront Development

In addition, (Yassin, Sandy, & et al., 2012) recommended several principles that must be included while developing plans for waterfront areas, as follows: -

i. Accessibility: the waterfront should not be isolated or separated from the development, so that the public can access the waterfront easily (convenient means for visitors to access the waterfront area).
ii. Integrated: integration of the history, culture and existing architecture are recommended for a new waterfront development.
iii. Sharing benefits: a balance between public benefit and developer profitability must be found. A public-private partnership is essential for realizing the inspiration of the design.
iv. Stakeholder participation: the involvement of multitudes of interested parties is compulsory: government agencies, developers, community organizations, environmental groups and the public all have a stake in the development of a waterfront property and all must be involved in the process.
v. Construction phase: breaking down a huge project into several phases and allowing all stakeholders and the general public to see this provides a vision for the future.

2.2.8. Planning Guideline on Waterfront

According to Environment Protection Authority (2010), the buffer delineation is further classified in to three zones. The first zone consists at edge of the river were the water flows. In this zone planting of shrubs and indigenous trees is necessary so as to prevent landslide as well as to protect and sustain flora and fauna of the city. The second zone is delineated for vegetations which purifies and protect underground water while small size vegetations and lawn planted at the end of the bank to allow rain water infiltration and to sieve aggregates from the water representing the third zone.

In African countries, riverside development and buffer zone is not (yet) successfully implemented in practice due to various reasons of which the misunderstandings relating to the important role and value of riverside development in terms of the economic, social, and environmental benefits are probably the main denominator. This is one of the research gaps that the study intends to fill.

2.2.8.1. The effects of water as a planning element in urban area

The balance is established between nature and social life for a sustainable development of cities. In addition, it brings existing environment in a number of features in term of aesthetic and functional (Timur, 2013).

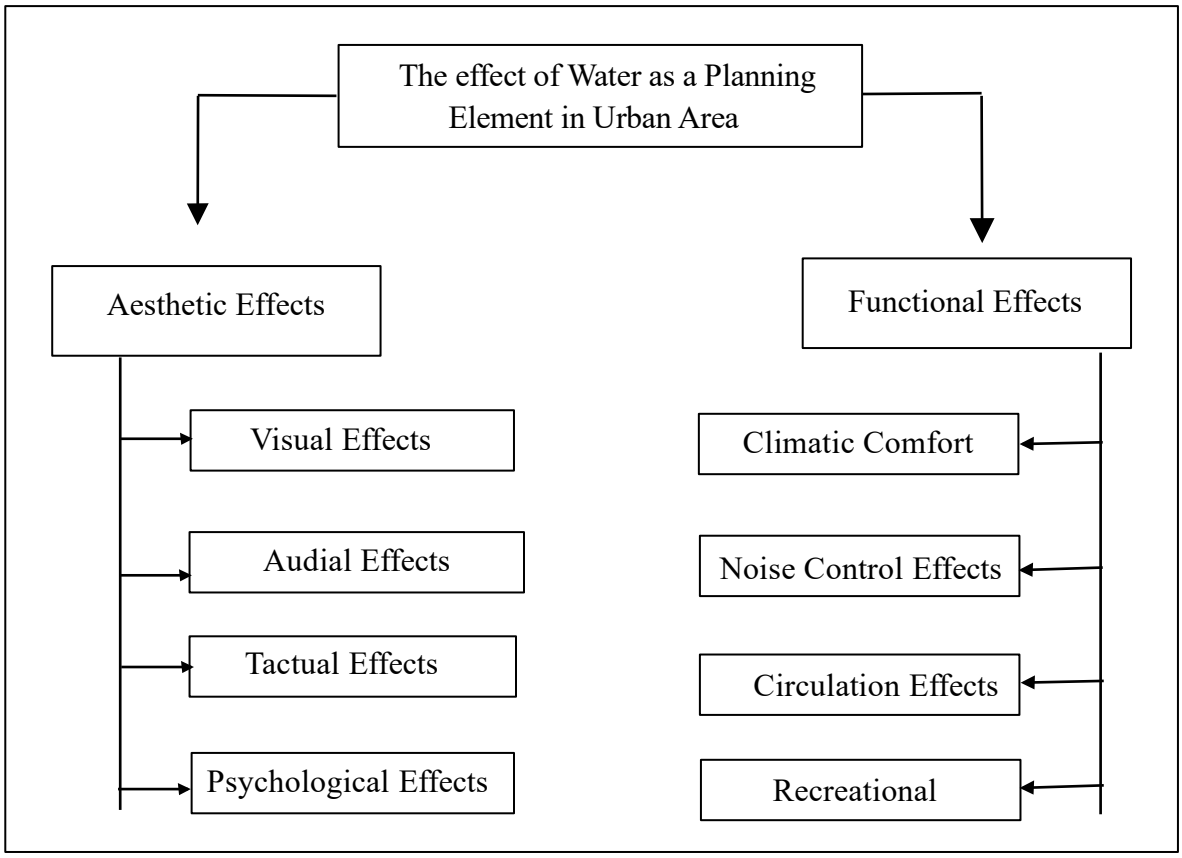

Figure 2.3 Adapted from (Timur, 2013), the effects of water as a planning element in urban area

2.2.9. Benefits of urban waterfront regeneration

Urban waterfront regeneration, which is phenomenon in global dimension, have a social, economic and environmental benefits to the community. According to Papatheochari (2011) & Jones (2007) and et.al, the most pronounced benefits urban waterfront regenerations are: to increase in real estate property values, improvement of the environmental conditions and water quality and water ecology by means of the advanced management processes, providing of opportunities for new uses and activities, social service, jobs, and it providing relationship between water and the city, to preserve historical and local heritage also re-use of historic building, attracting tourists not only at the local level, but also regional level and nationally, the finally it improves of the town's image.

2.3. Contextual Review

2.3.1. Urban Greens in Ethiopia

According to (Girma, 2019) dissertation; Urban planning proclamation No574/2008 makes urban administrations one of the institutional areas for environmental protections in Ethiopia. Urban greens include green riverside development Colluders. The urban planning strategy of Ethiopia allocates 30% of the land for roads and infrastructure, 30% for green areas and 40% for building construction. The green areas include open spaces and environmentally sensitive areas. All these are very important steps in advancing the efforts of riverside development and its management in the country.

Whereas studying the current condition of Lah rivers in Finote Selam, there are some important points worth mentioning. These include; the town nearly urban development pattern and the different urban planning practices that had been playing a fundamental role in guiding its urban development. Consequently, discussing these factors, in brief, might help to have a general insight into the provision, growth and development of riverside in Finote Selam since the establishment of the town. Since the arrival of some around the river in Finote Selam, the people used certain spaces for a different purpose. For instance, celebrating holy festivals (Epiphany) and another social purpose.

2.3.2. Finote Selam's structure Plan towards water bodies specially Lah riverside

In 1941 the Emperor together with the British soldiers crossed the Ethio-Sudanese border and spent one night in a tent at a small village called Wojjet, now Finote Selam. Before his majesty leaving to the provincial capital, Debre Markos in 1947 the Emperor gave order to shift the political center of the Awrajja Ghizat from Bure to Finote Selam. The area was covered by dense of forests. At this period settlement started /offices with grass roof or huts were built around Kidane Mihret Church/; which is now called the oldest center of the town. The first plan was introduced, in the period of Emperor Haileselasse. The plan was designed by former National Urban Planning Institute (NUPI) before a decade. Starting from 1992, on wards the development plan was not reviewed and stayed for more than 15years. Then in 2010, the structure Plan for Finote Selam was prepared for a time span of ten years. After the independence the first higher level plan ANRS Urban Planning institute adapted in 2020 for the next ten years. Most of these settlements are

residential units located in the eastern, northwestern, and southeastern peripheries of the town on lands planned and reserved for public parks, green areas, and sport fields structure plan. Unfortunately, Finote Selam never experienced complete implementation of any planning taken so far. Redevelopment of riverside area cannot be found in the first two planning although Zenebe Consult had some suggestions regarding the riverfront which was far-reaching (Institute, Finoteselam Structure Plan Report, 2010).

Major water source for the residence of the city was from the near-by streams and rivers. The proximity of settlements around streams and rivers in Finote Selam could be argued to have evolved from its original intention of using its clean water for drinking, washing and use for agricultural purposes which were plausible and user-friendly city-river interaction. If see the existing structural plan of Finote Selam, planning regulation regarding natural water bodies are categorized under green concepts of the city. The provision of the green frame within the city is intended to provide dual benefits for local communities and the environmental ecology of the city with the benefit of watershed protection mechanisms for air pollution as well as biodiversity conservation. Out of the 376.17 ha of green areas planed for the town in the Structure plan, the green buffer along the river banks are expected to cover 19.53 hectare which is 1.12% out of total area designated for green areas and 21.5% of the town's proportion (Institute, Finoteselam Structure Plan Report, 2010). Detail discussion on contextual review was in chapter four.

Figure 2.4. Partial view of the Lah riversides (Taken by Researcher google Earth, 2019)

2.4. Case Studies

The case approach has proven to be particularly fruitful in decision making and planning processes. The case study as a research strategy which can be likened to an experiment, a history, or a simulation (Dong, 2004).

To that end, researcher has chosen four distinguishing cases studies from North America, Europe, India and Africa for comparative analysis. With pictures, charts and diagrams, each case is systematically categorized, analyzed and then summarized by the findings.

2.4.1. Cumberland River Redevelopment Plan, Nashville, USA (International level)

On October 6, 2005, the Metro Nashville Parks and Recreation Department and the U.S. Army Corps of Engineers collaborated to produce a Nashville Riverfront Redevelopment Master Plan which will rely on citizen input gathered at three public meetings in December 2005 as the basis for a master plan to be created by a professional design team. The final plan will also build on principles in the Plan of Nashville that emphasize the importance of the river as an environmental, recreational and economic development asset (Farrell, 2007).

Figure 2.5. Proposed Plan of Nashville map (www.nashvilleriverfront.org/)

The study area for this section of development runs along both the east and west bank of the Cumberland River, from the Interstate 65 bridge to the north, to the Interstate 24 bridge to the South on the West Bank and Shelby Park on the East Bank. The area stretches approximately 6.5 linear miles (Farrell, 2007).

The major elements that the plan of Nashville says about the Cumberland River: The Cumberland river should be treated as an asset central to Nashville's identity an asset to be treasured and enjoyed, the riverbanks of waterways and wetlands should be protected, the river and its wildlife areas should have environmentally sensitive, balancing habitat, recreation, transportation and water supply issues, future riverfront development should incorporate amenities and public access to the river, there should be a variety and multiplicity of connections across the river, should there be strong connections between neighborhoods and the river, all green space along the river should be interconnected, new mixed-use neighborhoods should be encouraged along the river, a new park should be created along the river for northeast Nashville (Farrell, 2007).

2.4.2. South Bank of River Thames, London, UK (International level)

Historically London's development has focused on the north bank of the Thames. London has always been a north bank city with most of the tube lines, government buildings, business and shops located north of the river. The south bank, on the inside bend of the river, is the north banks alter-ego. Yet it contains the shortest means of getting from one side of the city to the other (Farrell, 2007).

The south bank was slower to develop than the north bank, alongside the City of London and Westminster, because sunlight favors the north bank and the deep channel of the Thames was alongside it. During the middle ages the south bank developed as a place of entertainment outside the formal regulation of the City of London on the north bank (Farrell, 2007).

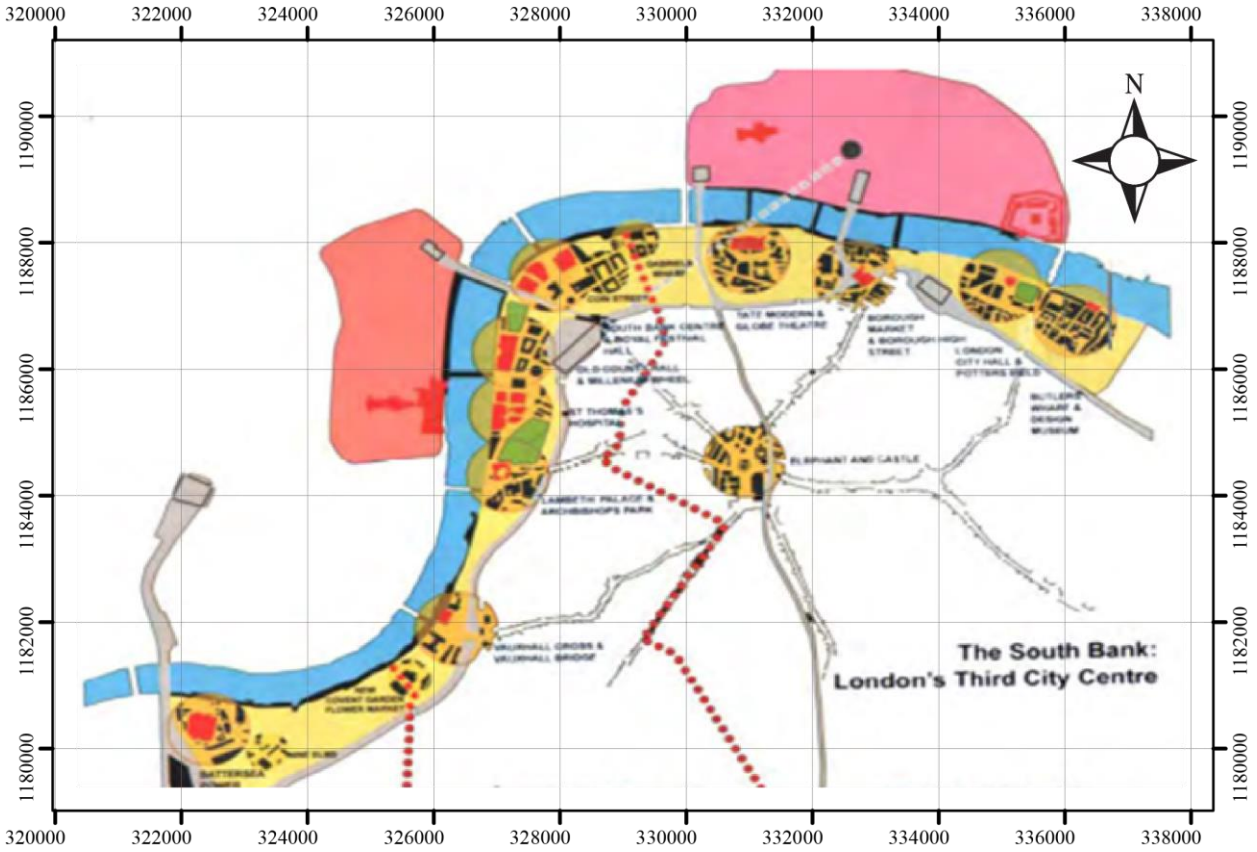

Figure 2.4. The south bank of River Thames (Farrell, 2007)

2.4.3. Sabarmati Riverfront Redevelopment, Ahmedabad, India (International level)

Ahmedabad, Commercial Capital of Gujarat State, India has unique identity recognize by River Sabarmati and Gandhi Ashram established on its western Bank. The City is spared over area of 190.84 Sq. Km and the River Sabarmati flows from north to south in the center of the city and splits the city in almost two equal parts (Farrell, 2007).

The riverfront was characterized by unimaginative and unplanned development. It's potential to provide city level social infrastructure and recreation facilities lie untapped. Except for a few months during the monsoon the river remained dry despite the building of a major barrage to retain water (Farrell, 2007).

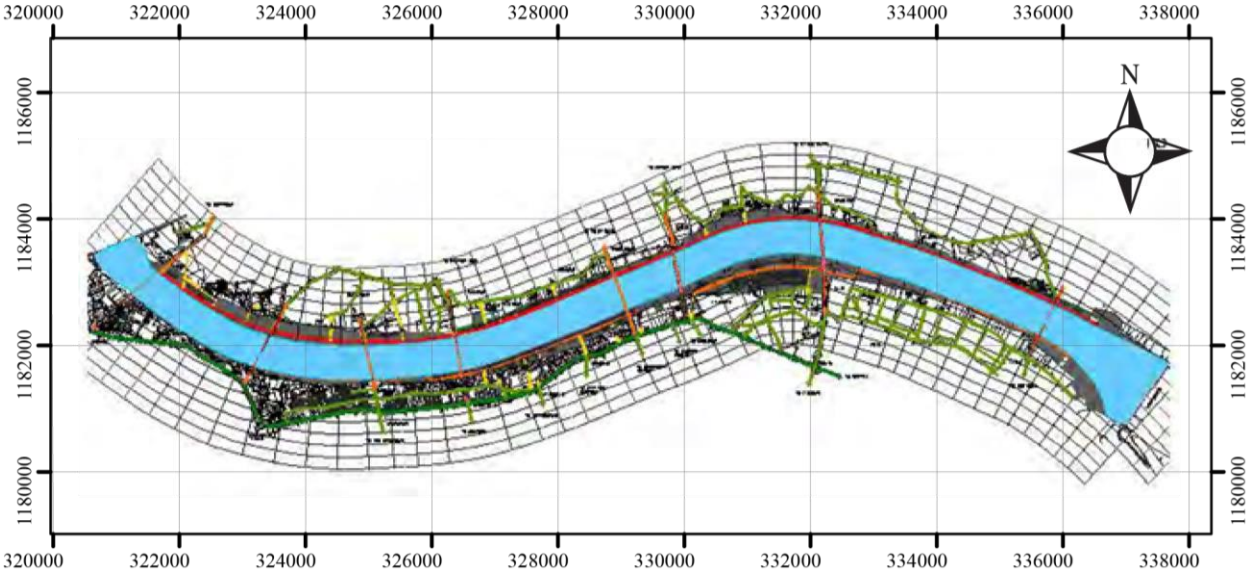

Figure 2.3. Proposed road network of Sabarmati riverfront development project (Farrell, 2007)

2.4.3.1. Objectives of the Sabarmati River Front Development Project

To beautify the large stretch of the riverfront of almost 20 kilometers by providing gardens, promenades, permanent open recreation areas, to eliminate flood hazard and to relocate the slum dwellers to proper housing and to create entertainment complexes along the river, To regulate the river water by narrowing its width and eliminate the danger of floods (Farrell, 2007).

The main considerations in allocating land uses were: existing land uses along the river; extent, location and configuration of reclaimed land available; potential for development; the structural road network and form of the city; bridges proposed in the Ahmedabad Development Plan and, the possibility of providing adequate infrastructure.

It is proposed that a total of 15.48 ha of the reclaimed land be used for relocation and rehabilitation of those people living in slums along the river who are affected by the project. The land is allocated in three pieces at separate locations. This ensures that none of the project affected persons will have to move too far from their present location.

The gap of this case study was not decided in advance how many key informant interviews should be conducted nor who exactly should be interviewed.

2.4.4. Riverside development, Addis Ababa, (National level)

The study is conducted on inner-city riverside areas mainly through on-site observation and mapping on selected case areas (Munir , 2012).

2.4.4.1. Case area selection criteria

There are seven major and medium rivers within Addis Ababa along with their 75 seasonal tributaries draining the city southwards. Out of these seven major rivers crossing the city, the first selection criteria are looking for rivers that cross the inner/main center of the city according to the city's centrality delineation used on recent government documents. Rivers located on urban areas which are subjected to the massive ongoing urban renewal/upgrading program, make up the second selection criteria (Munir , 2012).

Google earth image of 2002, 2005 and 2009 are used to analyze the general transformation of the selected area within the given years using GIS remote sensing software as a tool to analyze the transformation. The images are classified in to built-up structures, access roads, vegetations and others/open vacant lands/. According to the remote sensing analysis, it is observed that there is a clear expansion of area coverage in built-ups as well as access roads and whereas the vegetation coverage area has shown a significance reduction between the year 2002 and 2005 (Munir , 2012).

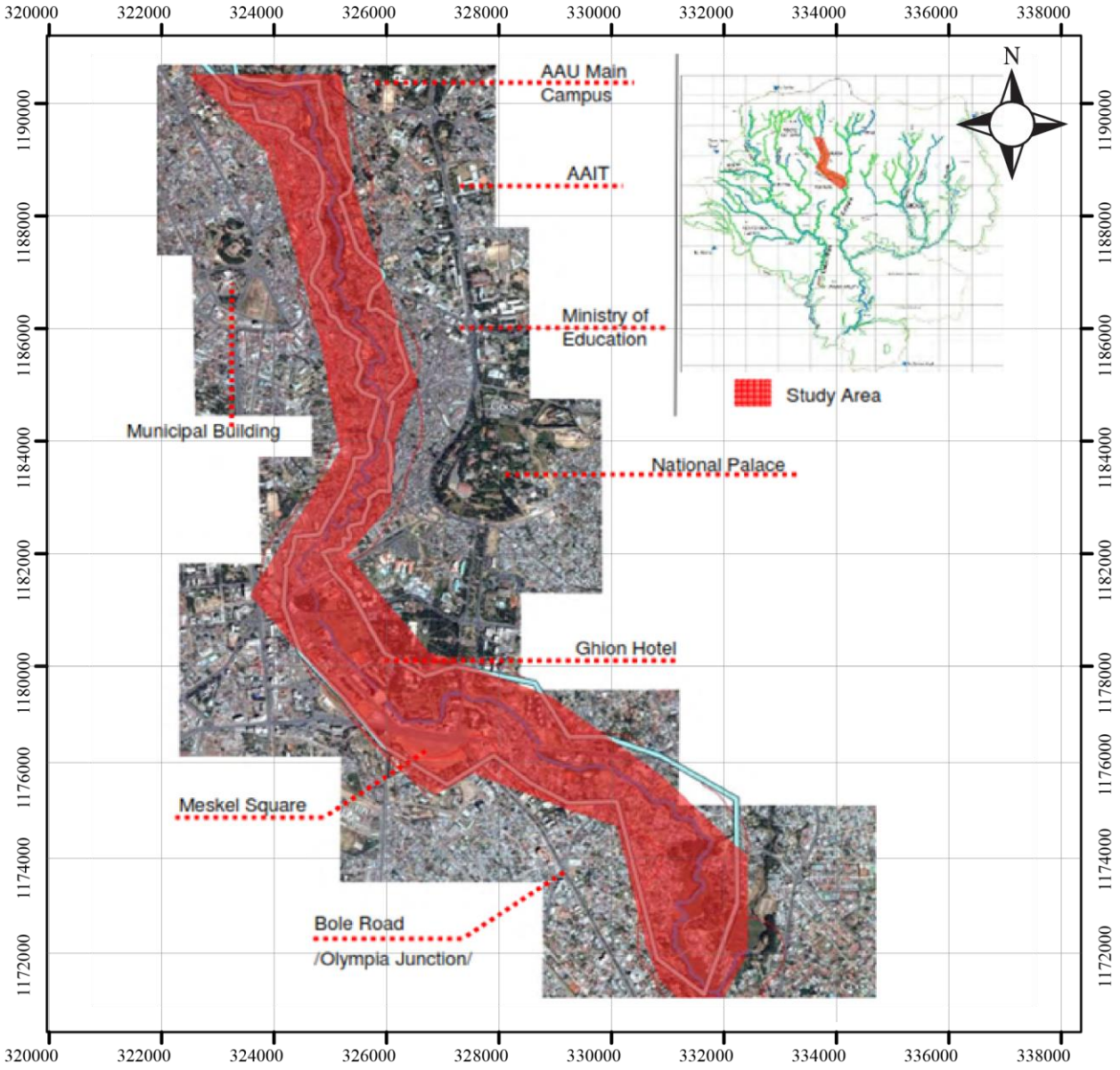

Figure 2.3. Centrality location map of selected as case study area (Munir , 2012)

In order to understand what kind of interventions are taking place in river side areas as well as the buffer-zone area. Four major zones are selected with high level of spatial transformation within this case for further study.

The Gaps of the case study; it focusses only riversides resident/settlements rather than existing activities, pervious plan proposal, and its implementation.

2.4.5. The case study findings

The above four case studies that are discussed in the previous segments have unique qualities in

terms of redevelopment process. Each of them helped to understand the different aspects of redevelopments of riverfronts that are needed to be looked at. A comparative analysis of the case studies is given in Table 4.1

Table: 4.1. Comparative analysis of the above case studies by researcher literature survey

Name of Project	Sabarmati, India	South bank, River Thames, London, UK	Cumberland, River Nashville, USA	Entoto-Kebena-River, Addis Ababa
Planning Process	Long and steady	Fragmented and phase wise	Fast and rapid	Long and
Study before Planning	Done by Govt.	Done both Govt. and private initiative	Done by Govt.	Private proposal & recently by Govt Program
Govt. initiative in planning	Present	Present	Present through Army	Present
Public participation	No	In planning level	Extensive participation	No
Land acquisition	A major portion is acquired	Available through Govt.	Available through Govt.	Available through Govt.
Finance	Through Government	Through Government	Through Government	Recently by Govt budget
Implementation	Under construction	Complete	First phase complete	Under construction

2.5. Summary and gaps of the literature

The literature review and discussion in this chapter address the current knowledge and status of studies on definition, issues, trends and principles of riverside/waterfront development. But, some of the studies have some limitations which can be summarized as follows;

Generally, the above-reviewed literature has its perspective and methodologies to investigate the accessibility of urban environments. Dominantly they have focused on the built environment and human behaviors (land uses, block length, scale, softness, visual complexity, perceptions, connectivity, distance, amenities, and safety) as a major factor for the accessibility of riverfront development. But this literature has gaps in including topography, climatic condition, and temperature of the study areas that have to be in the account to analysis how the accessibility of an urban environment specially riverfront development. During the implementation most of the researcher used European standards without consideration of local context these exposed to poor feasibility or they used as only for educational purpose without giving any alternative design solutions, the researcher are special focus on wide lakes, Ocean, beaches, or wide river is not emphasize small and medium rivers of towns/cities. Finally, the studies/projects are basically focus flood defense and related phenomena do not motivation on the multidisciplinary advantage of river edges. After stopping the floods, they have forgotten how to sustainability.

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1.Research Design

To accomplish the research objective of the study both primary and secondary data were used. Regarding to primary data interview, site survey, structured questioners were used for analysis purpose. Review of existing literature, journals & articles in riverside development were conducted as a secondary data. In addition, information was gathered from Finote Selam town concerned sectorial offices through open-ended questioner. By using formula developed by Cochran (1997), 359 representative population was determined for the study and the questioners was distributed through systematic random sampling method.

3.2.Types of Data/Data Sources

To achieve the purpose of this research, data have been collected from both primary and secondary sources. As far as secondary data are concerned books, journal articles, official documents, and governmental reports were used as a source. To this end reviewing relevant literature was made to overview other countries' experiences about the importance of RS and primary data were collected through questionnaires and interviews administered to the relevant respondents and official experts.

3.3.Sampling Techniques

From those individuals who reside in kebele two and three, and who have been the experience of living in selected kebeles and also well-informed about study area. Lah's river passthrough kebele's 02 & 03 from administration boundary so, the researcher was employed 3 data collectors for taking an interviewer from the two selected kebeles by using purposively.

Both probability and non-probability sampling techniques were used. In this study probability sampling, especially systematic random sampling was used to select households, to be included in the sample, living in the around riverside of the town. The samples were selected from the municipal document lists in which all the target population is listed in alphabetical or in some other order. To select residential units from the target population using systematic random sampling

techniques, the sample size was decided based on the total population of the target group. Therefore, to determine the sample interval, the formula total population divided by the sample size = the N^{th} unit

(P/n= N^{th} unit) was used.

Then every N^{th} housing unit i.e. (5,575/344 = 16^{th}) was selected from the municipal document list. In this study, a non-probability sampling technique was used to get the required data/information about the issues that the researcher has. On the other hand, purposive sampling was used for the research to make the data more viable and reliable for the research. This purposive sampling technique was going to be used deliberately because the researcher considered a good means of getting information that make the information more relevant and reliable for the research.

3.3.1. Target Population

The target population of the study was all the residents found at the adjacent of Lah river in Finote Selam (selected kebele dwellers), management and technical heads of the municipality and kebele officials and experts as their relevance to the study in providing appropriate information.

3.3.2. Sample Size

From the total 6 urban kebeles in the town potentially and practically major influenced sites (kebeles) were selected purposively first and then from two kebeles respondents were selected using systematic random sampling. The reason for the researcher chose Kebele 02 and Kebele 03 out of six kebeles in Finote Selam is because the two kebeles are adjacent to Lah River. In the other hand, Lah river passthrough kebele 02 & 03 therefore, these two kebeles are either directly or indirectly benefiting or hurting from Lah River better than the other remaining four kebeles.

Accordingly, 2 kebeles (kebele 02 and 03) were selected for this study, and from the total 5,575 households of the selected kebeles, those who were found at the Lah riverside; 3,703 households from kebele 01 and 1,872 households from kebele 03 were identified from the municipality document list.

In order to determine the desired sampling size, a standard statistical approach equation was used (Cochran, 1997). The reason chose this formula was most recent research related to riverside used Cochran.

Therefore, $n = Z^2 pq/d^2$----------Eq.1

Where, n = desired sampling size when population greater than 10,000

Z = the standard number variable at a required level of confidence (standard normal deviation)

P=the proportion of in the target population estimated to have characteristics being measured.

q = 1-p

d = the level of statistical significance test (0.05)

Since the estimated population is less than +10,000 the following formula was applied

fn =(n/1+(n/N)) ----------Eq.2

Where fn = desired sampling size when the population is less than 10,000

n = desired sampling size when the population is granter than 10,000

N= the estimated population size

According to the formula, $f_n = (n/1+(n/N))$; $f_n = \underline{Z^2pq/d^2}$

$n = \underline{(1.96)^2(0.5)\ (0.5)}$; n = 384; i.e., $f_n = \underline{\quad 384 \quad}$

$(0.05)^2$ 1+(384/5,575)

The sample size was, therefore; = 359

The total sample size was 359 households from the riverside urban area residents and 25 staff members are from below listed office.

Accordingly, out of 5,575 households, 359 sample informants were selected for household surveys. A proportional to size allocation method was employed to obtain a representative sample size for each kebele from selected. In proportional to size sampling, subjects are selected in proportion to their occurrence in the population (Girma, 2019). This means that the sample per kebele was determined by the percentage contribution of households by each kebele to the total number of households (5575) in the two kebeles.

Table 3.1. The Sample size is taken kebeles

Name of Towns	Selected kebeles	No_ of Households	Sample size used
Finote Selam	Kebele 02	3,703	238
	Kebele 03	1,872	121
Total		5,575	359

Municipal's data adapted by the researcher

Therefore, the sample size from each kebele was taken proportionally 238 sample households from kebele 02 and 120 sample households from 03 kebele. To make the data more viable and reliable purposively important governmental organizations and staff members were included in the sample; six kebele officials and experts two professionals from six kebele (a total of 12), 5 municipal officials and experts, 5 West Gojjam Zone Water Irrigation Energy Development Office, and 3 Jabi Tehnan Woreda Environmental Protection and Land Administration Office staff and experts (i.e.25 staff members were included in the sample).

The sample households were selected using, systematic random sampling method. Accordingly, households from each kebeles were selected systematically by using a table of 16th interval numbers from the registered list of households in each of the kebeles. For the implementation of systematic interval selection, a number was assigned to each household head name on the list, and then the households were selected from the registered sampling frame using interval numbers. After the necessary sample unit n were drawn, one mature member of members from the household (age,>18) was invited to respond to the questions.

3.4.Data Collection Methods

Collecting relevant data for analyzing the current practice of riverside development in Finote Selam needs for applying different methodologies. Various scholars who conduct successful researches on related issues claim that, the best way of obtaining a data on how urban riversides operate or used is by making site visits to the areas and observe what really is going on there. Other techniques like interviews and questioners were also used in order to measure people's perception of these spaces.

3.4.1. Observation Techniques

3.4.1.1. Behavioral Mapping

The behavioral mapping that would be used for this research focuses on studying people's activities along Lah river for a certain amount of time and mapping the physical setting of these spaces. This technique was performed at the different hours of the day and at night times of weekends and also in ceremonial days. Using this technique, people's activities on the selected case areas were studied by documenting both stationary activities such as washing, sitting, talking, reading… and activities in motion like walking, playing etc. Mapping of the physical settings include mapping trees, footpaths, Waterfall and any other important feature in the study areas.

3.4.1.2. Trace Measures

By observing and recording the traces left when people use this riverside, this technique helps to gather information about what kinds of activities are taken place in the selected areas. This part mainly involves tracing left over physical evidences like smear of dirt and different natural features of riversides.

3.4.2. Interviews and Questioners

Under these techniques help to measure the attitudes, perceptions and motivation of people about the selected study areas. The type of questions that would be asked in this part generally two categories: the first, use - (who uses the spaces, how often, when they tend to use them and how) and second was the attitudes, opinions, and problems regarding the Lah riverside. The interviews conducted in this research were of two types: interviews with local residents and interviews with government officials and some experts.

In order to make a closer investigation and to get reliable data and information related to urban riverside development, both primary and secondary data were used in the study. The researcher is used both open-ended and close-ended questionnaires. The close-end questionnaires have been collected from purposively selected 2 adjacent kebeles (i.e. kebele 02 & 03) household's respondent and open-end questionnaires have been collected from purposively selected experts from six kebeles, municipality, West Gojjam zone water Irrigation Energy Development office, and Jabi Tehnan Woreda Environmental Protection and Land Administration office. To this finish, three data collectors (i.e. 2 persons is for kebele 02 and 1 person is for kebele 03) were used to administer the survey questions. A total of 359 questionnaires were prepared and finally engaged in conducting this survey. They were all administered in the study area; however, only 331

questionnaires representing 92.2 % of the total number were returned valid for analysis. Based on this literature 331 (92.2) % response rate is within the acceptable range for further analysis. The answers to the survey were numerically coded and inputted into SPSS (Version 16.0). The specific analytical methods that were then employed will be described in the analysis chapter.

3.5.Methods of Data Analysis

Raw data collected through questionnaires, interviews, observations were as carefully tallied, tabulated, and organized. Both quantitative and qualitative approaches of data analysis were used. The qualitative method was used to describe the findings qualitatively while the quantitative data were analyzed by using the Ms. Excel 2016 and SPSS software package. Tables, charts, graphs, percentages, ratios, figures, and photos were used to interpret and summarize the findings where necessary.

3.6.Ethical Consideration

The following ethical guidelines were out into place for the study period. The dignity and wellbeing of the respondents was protected at all times, the research data remained confidential throughout the study and the researcher obtained participants permission to participate in the study voluntarily and finally, the research study is independent and impartial.

CHAPTER FOUR

4. RESULTS & DISCUSSION

This section presents results derived from the investigative analysis and the statistical analysis. In the qualitative result based on response rate and recommendation for best practice for Lah riversides development.

4.1. Background of Respondents

4.1.1. Age of the respondents

Under this subtitle the researcher briefly discussed on the age of the respondents from purposively selected living kebeles household. As it is clearly presented in the below figure 4.1, and chart shows the result of survey undertaken is analysis and summarized in to three main categories of age group, which were given specific year of each respondent during data collection period. Accordingly, the respondents aged from 18-36 years are 90.8% (326 persons), followed by age 37-55 is 7.3% (26 persons) a, and 55 year and above aged respondents are fortunately which is 1.9% (7 persons). Therefore, the majority of the respondents (90.8%) are lie in between 18-36-year-old. This indicates the majority of the respondent is in most active age level and thus can understand and familiar enough to the issues under study. So, they need a leisure time recreation site. i.e. Lah riverside is public open space, while it developed.

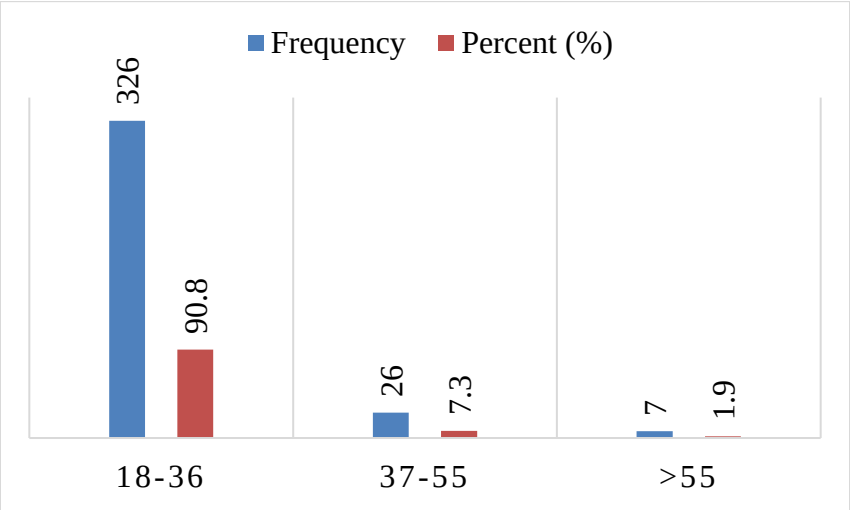

Figure 4.1. Age of the respondents (Field Survey, 2020)

4.1.2. Sex composition of the respondents

Regarding sex composition of the respondents, unexpected trend reflected from the female respondents. They were not willing to respond while requested. This is by reflecting their low or/and absence of detail knowhow regarding riverside development, plan preparation and implementation activities of the town they are living in. As a result of this the majority of the respondents 298 persons which accounts 83% are males and only 17% (61persons) are females.

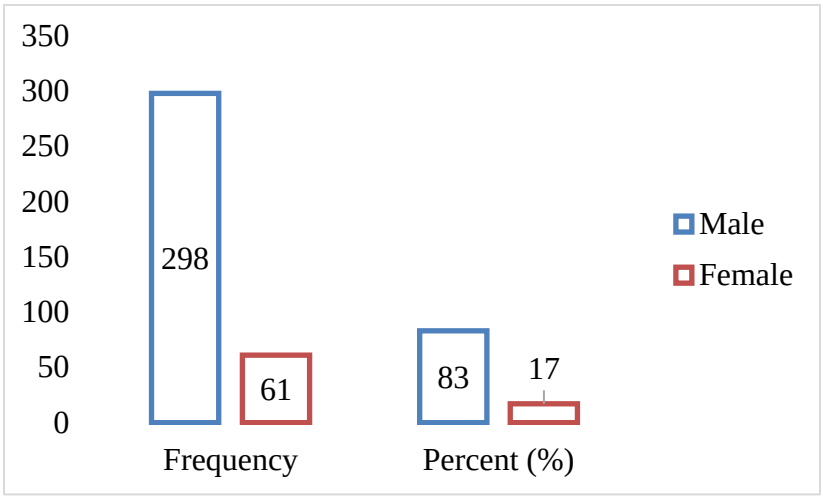

Figure 4.2. Sex composition of the respondents (Field Survey, 2020)

4.1.3. Marital status the respondents

The below table 4.1, survey result shows that from the respondents' marital status is identified that 44.3% of them have been get married and living together with their families, 53.2% of them have never been married and only 2.5% has been divorced. Among all respondents captured in the survey possibly no one found under the rest categories of marital status like widowed and others.

Table 4.1. The marital status the respondents (Field Survey, 2020)

No	Marital Status	Frequency	Percent (%)
1	Single	191	53.2
2	Married	159	44.3
3	Divorced	9	2.5
Total		359	100.0

4.1.4. Family size the respondents

Regarding the family size of the respondents it is identified that 61% of them have 1-2 family size (i.e. a single and recently married), 105 of respondents have 3-5 family size and remains have 5-7 and 8-10 7% and 2.85 family size respectively.

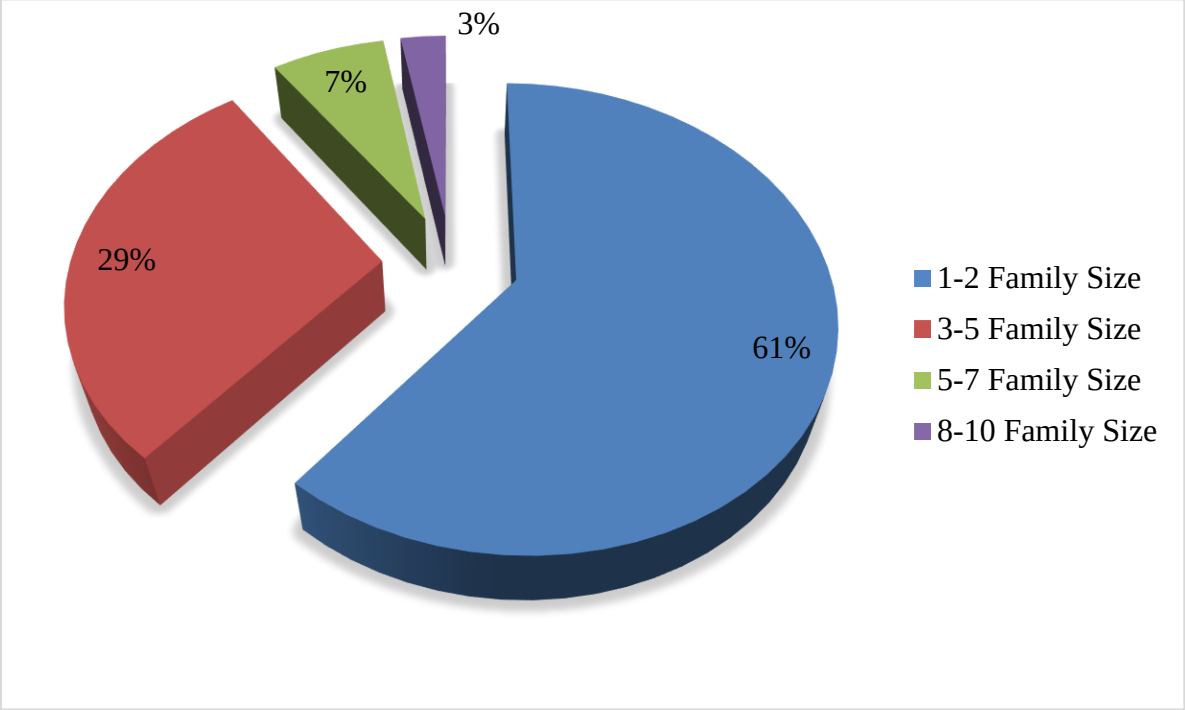

Figure 4.3. The family size the respondents (Field Survey, 2020)

4.1.5. Education level and professional background of the respondents

Regarding to the educational status of the respondent, the researcher used an effort as much as possible to ask the literate people as the issue under study is technical. This is performed by classifying the respondent's educational status/level into five sub category (No formal education, primary level, secondary level, tertiary college and finally degree and above).

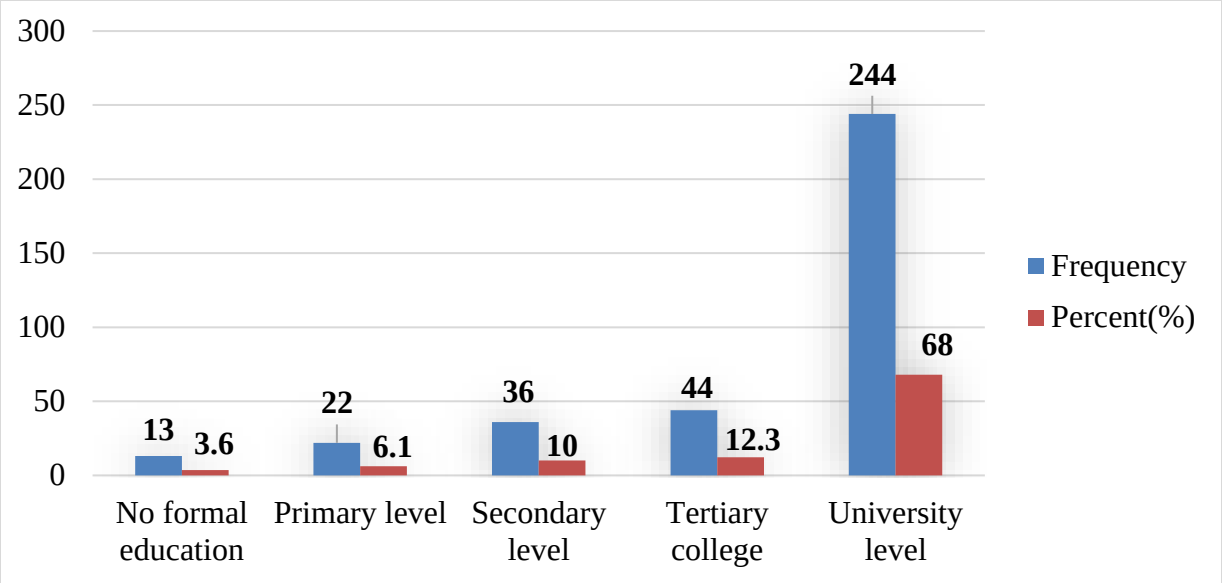

Figure 4.4. The education status of the respondents (Field Survey, 2020)

As one can clearly understood from this above figure 4.4, it is possible to conclude that the effort predeveloped riverside to attain and capture literate residents in the process of survey is succeeded. Accordingly, only 3.6% of the respondents are found in the category of no formal education, 6.1 % are primary level, 10% are secondary level, 12.3% are diploma holders and finally, 68% of the respondents are attained their first degree and above. This also implying possibly the entire respondents can deliver, argue, suggest and comment on study subject matter and whatever issues of their home or/and working town Finote Selam.

4.1.6. Occupation of the respondents

Likewise, the others similar demographic situations presented below the respondents' occupational status is also assessed in much generalized way by categorizing into ten broad divisions and the survey result is presented below in the figure 4.5. as follows. The majority of the respondents 178 persons (49.7%) was government official (civil Servant) for instance: engineers, military or police, bank officer, 25.2% of respondents are working private, 15 persons or 4.2% respondents are working NGOs, 10.6% are students, and the remaining 10.3 % of the respondents are unemployed. According to the 10.3% (37 persons) respondents they have no permanent job and participating here and there in every temporary or daily activities as soon as provided for their existence, thus taken as unemployed. Respondents found in this category are like carpenters, masons, brokers, etc. Finally, only 25.2 percent of the respondents became employee of private firm and are the list.

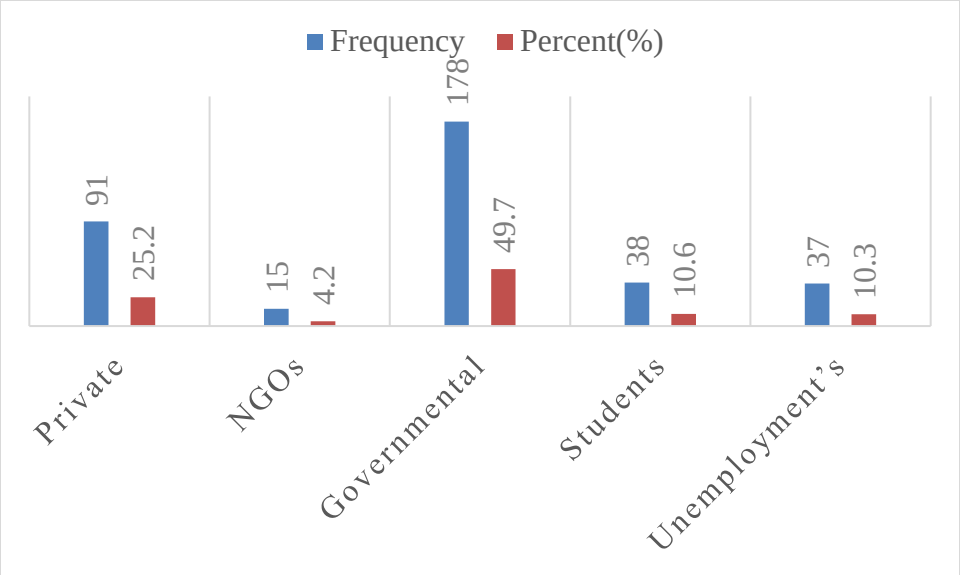

Figure 4.5. The occupation of the respondents (Field Survey, 2020)

4.1.7. Living experience in adjacent kebeles to the study area

The majority of the respondents (32.31%) are described as they have been living in the Finote Selam town for more than 20 years. Moreover, as a few respondents among these expressed it is their born place/town though is not presented in the analysis graph for the sake of simplicity. Following this 22.56% also lived for long period of time 5-10 years old, and only 14.48% of them are lived for 0-5 years. To implies the above figure 4.6, was respondents have permanently lived in study are for a long period of time.

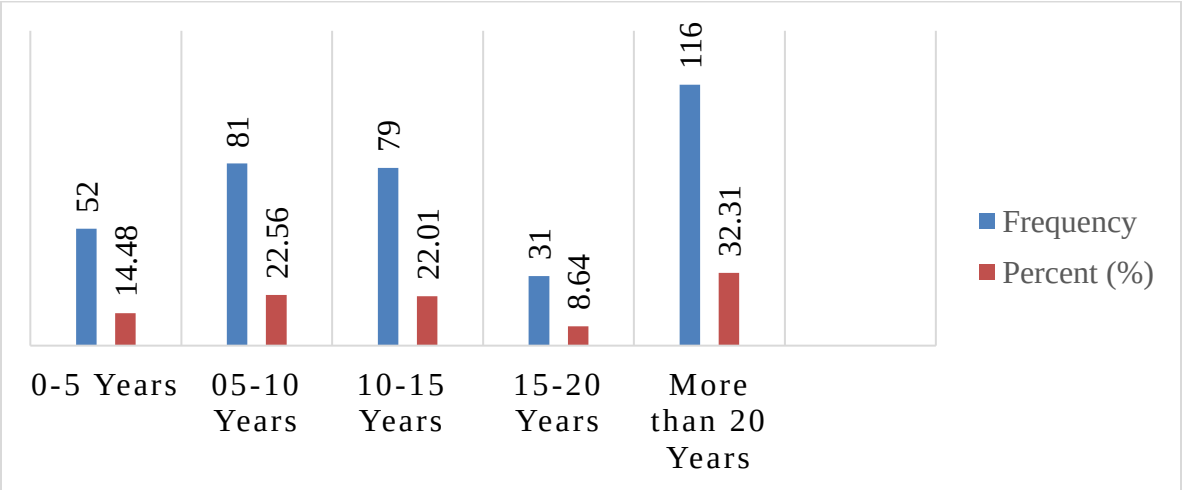

Figure 4.6. The respondents living years (Field Survey, 2020)

4.1.8. The respondents' source of domestic water

In Finote Selam town there is a problem of source of domestic water. The below figure 4.7, indicates 36 respondents (10%) are used a water pump for a source of domestic water, 1.95% respondents are used a village springs, 64.1% of respondents are used interior tap water (one tap), 22% of respondents are used Interior water supply system (multiple taps) and the remains 1.9% of respondents are used a Lah river for drinking, bath and washing clothes.

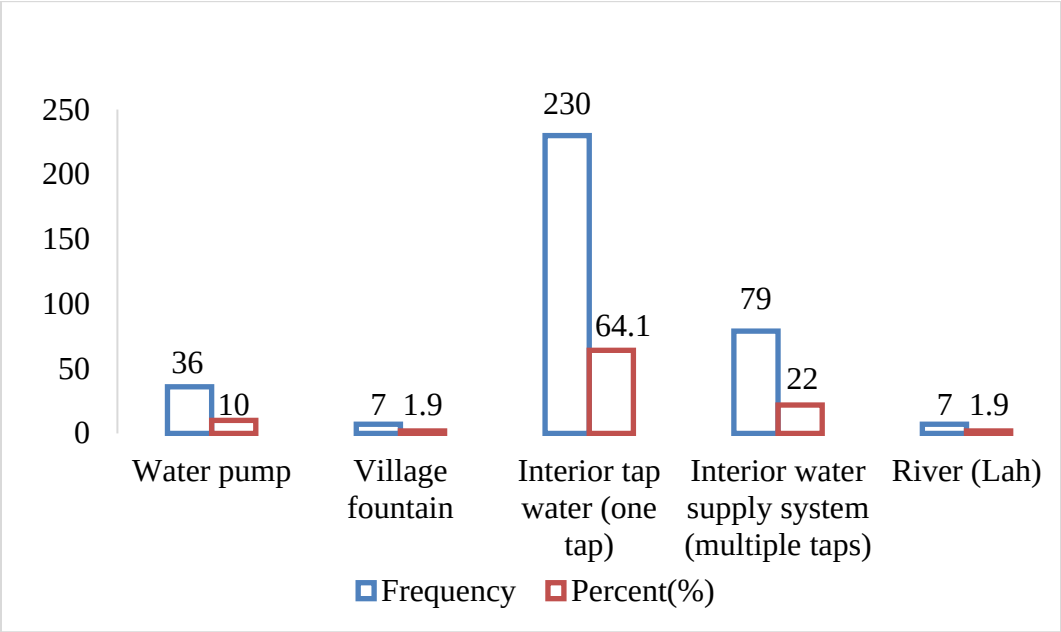

Figure 4.7. The respondent's source of domestic water (Field Survey, 2020)

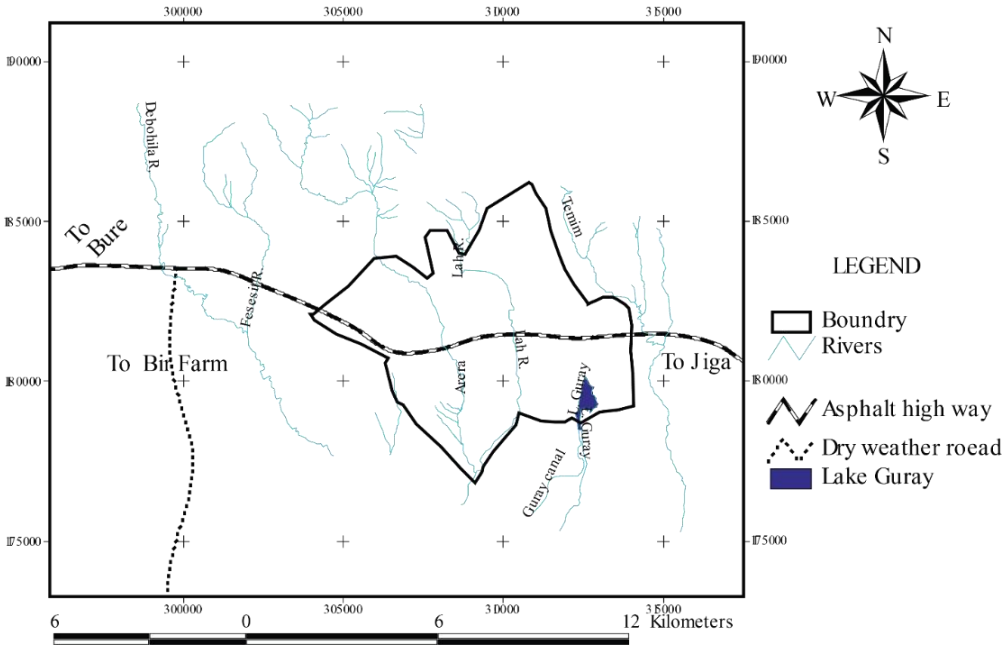

Figure 4.8. River drainage map of Finote Selam and the surrounding areas

Generally, above figure 4.8. illustrated, river Lah and river Arera are the most important sources of water for consumption, sanitation purpose and horticulture activity to the Finote Selam town and surrounding rural areas.

4.1.9. Problems of water supply in selected kebeles

The above figure 4.10 and below table 4.2 are basically displayed the problems of existing source of domestic water and river drainage systems. The below table indicates 348 respondents (96.9%) said that there are problems of water supply for a source of domestic water and 11 of respondents are not suffered by water problem. If Lah river will a well-treated, it may a one means of domestic water supply for dwellers.

Table 4.2. Problems with water supply for respondents (Field Survey, 2020)

	Responds answer	Frequency	Percent (%)
	Yes	348	96.9
	No	11	3.1
	Total	359	100.0

4.1.10. Type of wastewater system of the respondents

The above table 4.2 and below figure 4.9 are basically displayed the problems of existing source of domestic water and river drainage systems & it's detail evidence on selected study area.

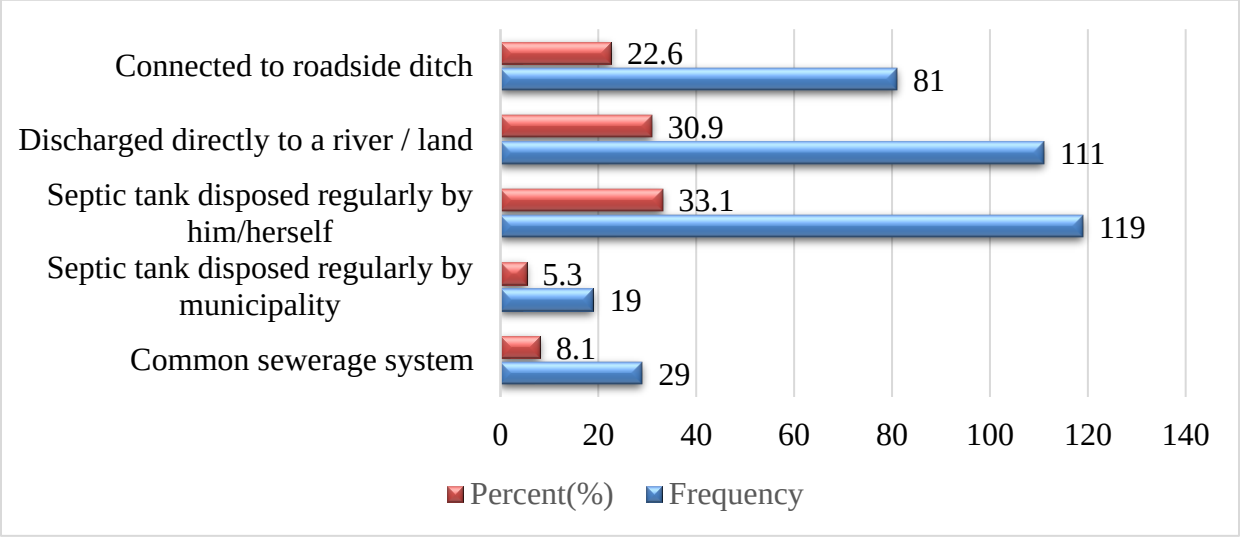

Figure 4.9. Type of wastewater system of the respondents (Field Survey, 2020)

The above figure 4.9., shows 8.1% of respondents used wastewater system on a common sewerage system, 5.3% of respondents are used septic tank disposed regularly by municipality, 33.1% of respondents are used septic tank disposed regularly by him/herself made in front of house entrance and edge of fence, 30.9% respondents are used discharged directly to a Lah river/ gorge/land, and the rests 22.6% of respondents are used directly connected to roadside ditch. Especially 53.5% of the respondents are used discharged directly to a river/land and connected to roadside ditch are directly and indirectly faced on Lah river. Finally, Lah river have been polluted. This consequence directly a negative influence on aquatic animals.

4.2.The existing activities along Lah riversides

The study has observed different activities taking place on study area. Even though, most of these activities are directly connected and contributing positively to the inhabitants' livelihood, some of the activities are destructive in ecological point of view and one means of river polluting. Some of the destructive programs practiced along riverside areas are: illegal slaughter service, solid and liquid waste disposals from households, waste output from car washing service, and etc.

Figure 4.10. Current condition of Lah riversides (Fieldwork, 2020)

Figure 4.10 (A) Using an illegal slaughter service, (B) solid waste disposals and also it was observed Lah riverside, there is no provision of any public rest rooms. As a result, some parts of the were used as an open-air urinal and some of the edge of the river is common to see pile of faeces (used as open toilets), and (C) is used to for waste output from Bajaj/car washing service for a long a period of time. This in turn affected the image of the Lah river.

The information obtained from the respondent reveled that different activities has taken place in the riverside of Lah river. Based on figure below 4.11, 18.4% of respondents (66 persons) are coming to the river for doing a physical exercise(sports), 28.4% of respondents (102 persons) are washing cloth & swimming, 20.6% of respondents (74 persons) are entertaining, 5.8% of respondents (21 persons) are catch the fish (fishing) , 16.4% of respondents (59 persons) are coming reading various type books, 6.7% of respondents (24 persons) are come to Lah riversides for used as a local slaughter and the rest comes 3.1% of respondents (11 persons) comes for multi-purposes. Generally, respondents have a mixed opinion about the nature of Lah river public activities. The major activities from asked & observed along the river are physical exercise/sport, and annually takes place some religious festivals, clothes washing and others are occurred. In terms of social interactions are mentioned the earlier discussion, Lah RS is one of the rarely confluence places for different age groups are sitting along RS for different purposes.

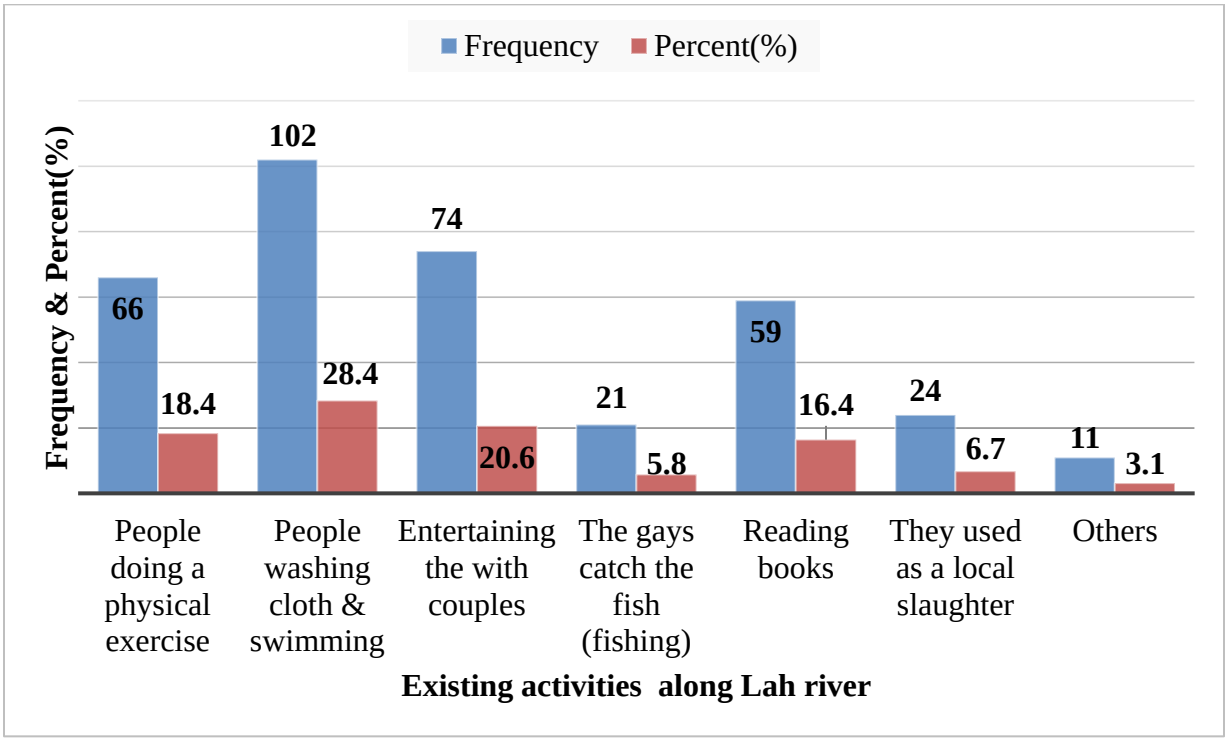

Figure 4.20. The respondent's activities along Lah RS (Field Survey, 2020)

Figure 4.12. The existing activities along Lah river (Fieldwork, 2020)

The above typical figure 4.12, “A’’ shows the boys are catch the fish (fishing), “B” is the students reading exercise book and hand books and “C” shows that the ladies are washing the cloths. The researcher has been observed different activities along Lah river such as; farmers arable land and irrigation on edge of river, removing solid and liquid wastes (place for pile of dry and liquid waste), reading some books, local slaughter site, fishing , appointing for young couples, washing clothes, motors or motorize and swimming, physical exercise morning and afternoon, illegal activities like; gambling, robbing, rape, and even murder, urban agriculture like; animal husbandry, nursery and flowers, some vegetables and fruits. Based on the above figure, there is high intention of social relaxation/interaction and weak habit of reading book on riverside for the reason of uncomfortable. This implies Lah riversides needs some improvement. In other hand, from observations made during this study it was found out that in this river the kind of activities taken place were more of utilitarian behavior rather than relaxation or recreation.

Figure 4.13. Existing features along Lah river (Fieldwork, 2020)

The above typical figure 4.13, (A) is point out the nursery and flowers planted by small scale enterprises and (B) display's "Guaguat" waterfall from Lah river.

Figure 4.14. Existing natural & manmade features along Lah river (Fieldwork, 2020)

The above typical figure 4.14. (A) is point out the old "Keste Damena" bridge and several oldest native trees. This implies Keste demean bridge needs renovate and the oldest native also would be replaced anther native trees.

4.2.1. Time it takes to reach Lah riversides

The figure below 4.15, defined 224 respondents (62.4%) are reached up to 20 minutes, 101 respondents 28.1% are reached 21-40 minutes and the remains 41-60 minutes was 9.5% of respondents far from Lah river to entertain or other purpose/activities. So, 62.4% of respondents are near to access Lah riverside for different purposes. This implies that Lah riversides wants a sustainable solution from faced problems.

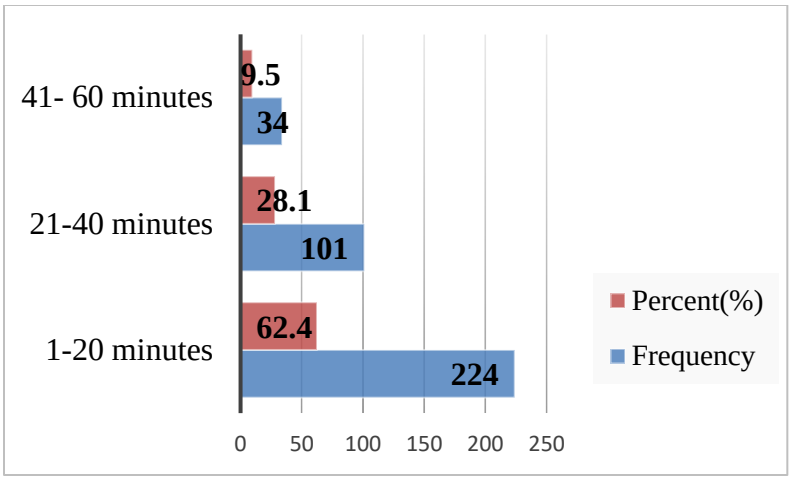

Figure 4. 15. The respondent's time it takes to reach Lah riversides (Field Survey, 2020)

4.2.2. The frequency to visit Lah river

The figure below 4.16, shows 29 respondents are visit/for action takes place/ 8.08% in everyday, the weekly visitors are 164 respondents (45.68%), monthly 74 respondents (20.61%), others are annually and sometimes are 50.01% & 20.61% respectively. At the weekend and end of months 66.29% of respondents has been visited for different purpose at 238 frequency. To improve the frequency of visiting Lah riverside is the researcher gives a better emphasis.

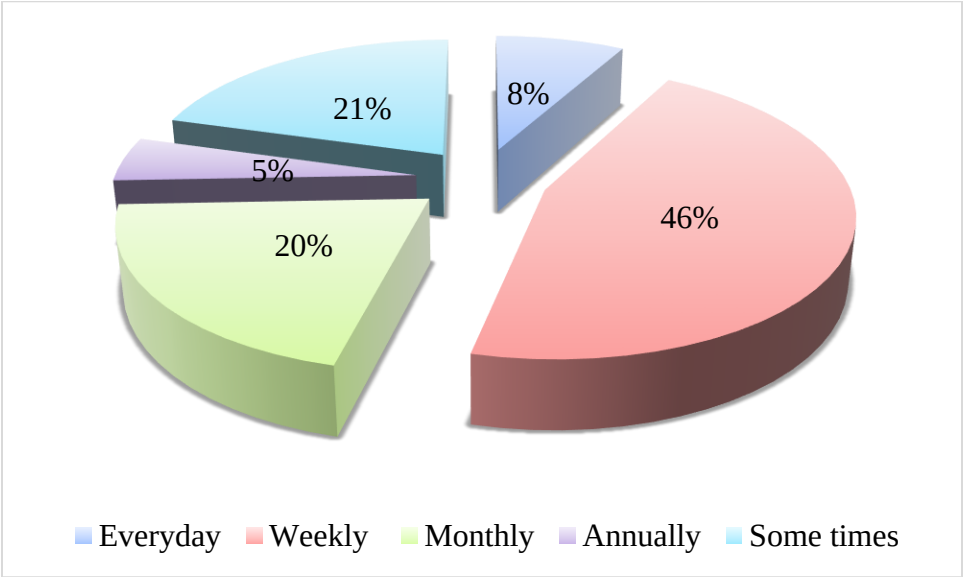

Figure 4.16. The frequency to visit Lah river (Field Survey, 2020)

4.2.3. The Comparison of Rainy Vs Dry Season for Visit Lah RS

Similarly, observations in this study area discovered that in the sunny season due to the presence of some trees, the microclimate within this riverside is relatively much better than its surrounding area. As a consequence, during the harsh afternoon the people were seen using the shades of the trees along riversides. Even in the rainy seasons also unless the rain is very strong, people used to use these trees as shelters. In this regard observations in Lah RS indicated that most of the trees were forgotten and not maintained well for a long period of time. As a result, some of these trees were dead, while many others were failed to grow to their full sizes. Consequently, in this RS the sense of order, continuity and indication of the relative importance of the accent is missed.

The below figure 4.17, shows 27.02% of respondents the seldom/not sure reputation of visit/coming along Lah's river from May to September, 12.53% respondents are visiting sometimes, 40.39% respondents are visiting often, and 20.06% respondents are visiting always along Lah riversides in summer season for different purposes. Lah riverside is not well-designed site but the respondents are visit summer season without no infrastructures (lack of RS facilities). This implication is the riverside development were needed.

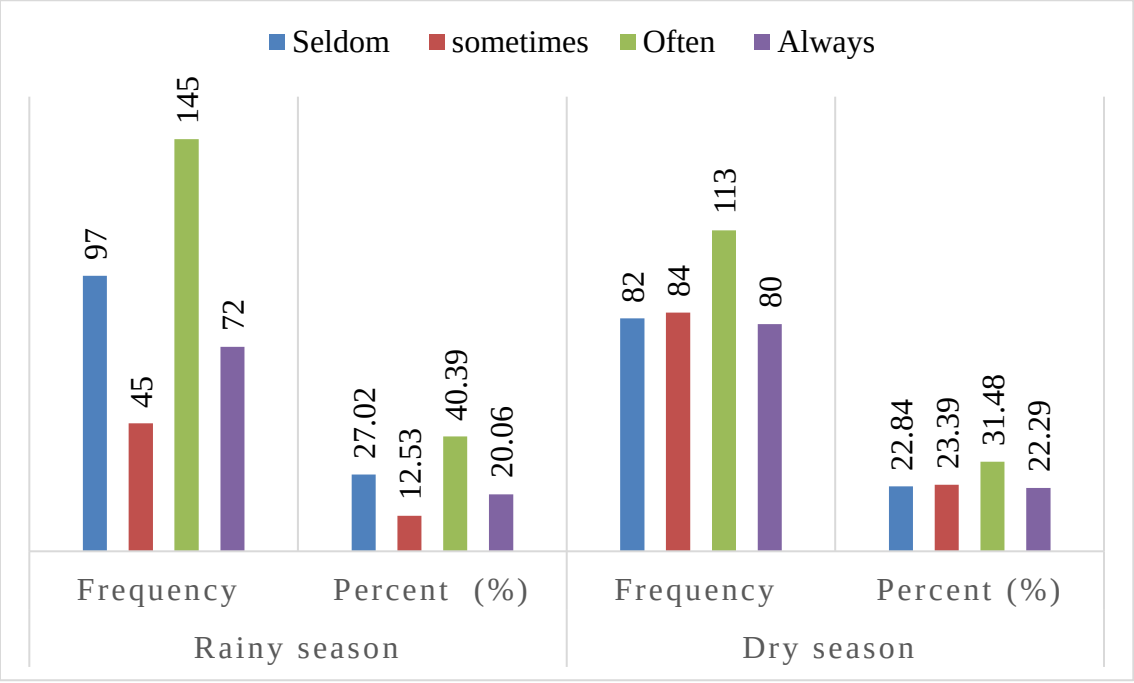

Figure 4.17. The Comparison of winter Vs summer season for visit Lah RS (Field Survey, 2020)

Although in winter season, presented 22.84% of respondents the seldom/not sure reputation of visit/coming along Lah's river from September to May, 23.39% respondents are visiting sometimes, 31.48% respondents are visiting often, and 22.29% respondents are visiting always along Lah riversides in winter season for different purposes. Lah riverside is not well-designed site but the respondents are visit winter season without no infrastructures (lack of riverside facilities). The comparison of summer and winter season, in terms of frequency & percentage, winter season is more reputed than summer season by different reasons. In Finote Selam town there is a high humidity, this humidity to enforce searching cool temperature.

4.2.4. The Preferred time to visit Lah river during winter vs summer season

The fig below 4.18, shows the preferred time to visit Lah river during summer season (from May to September) & winter season (from September to May) by different factors for several activities.

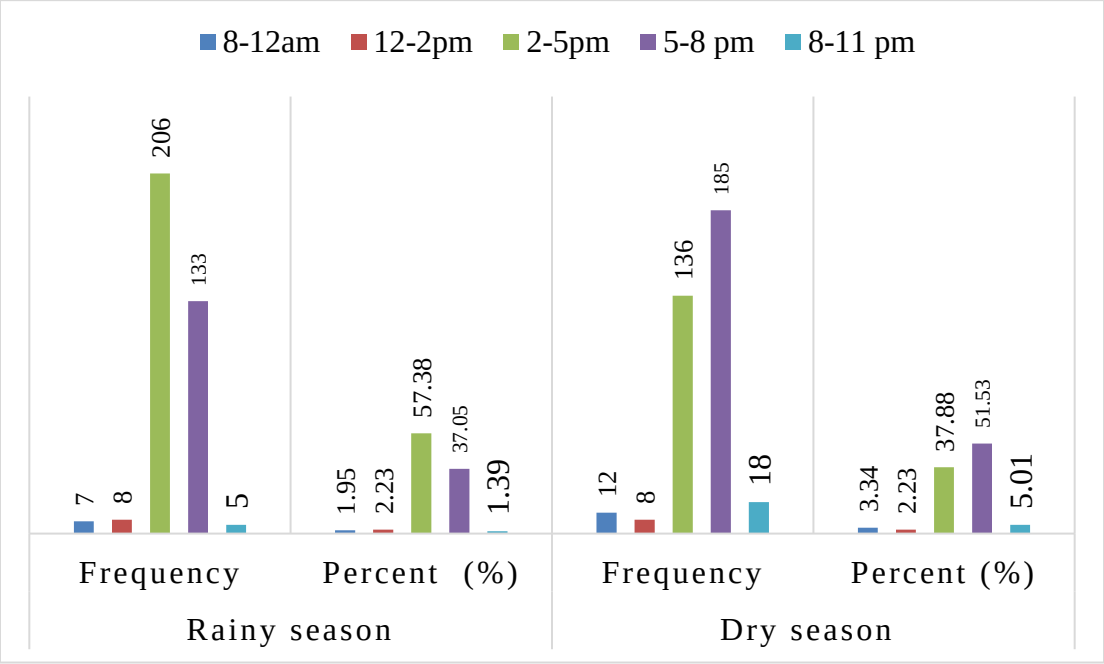

Figure 4.18. Preferred time to visit Lah RS during rainy vs dray season (Field Survey, 2020)

The above figure 4.25, displays 1.95% of respondents are visited/spent his/her time morning 8-12 am, 2.23% of respondents are 12-2 pm, 57.38% of respondents are visited/spent his/her time 12-2 pm (afternoon), 37.05% of respondents are 5-8 pm, and 1.1% of respondents are 8-11 pm. Generally, from 94.4% of respondents (afternoon 2-5pm and 5-8 pm) have a preferable time to

visiting Lah riversides during summer season. To summarize table 4.24, more than half of respondent (57.4%) preferred time to visit these places was after 2-5 p.m. in the in-summer season.

According to survey data (figure 4.25), expressed 4.2% of respondents are visited/spent his/her time morning 8-12 am, 41.5% of respondents are 12-2 pm, 50.14% of respondents are visited/spent his/her time 12-2 pm (afternoon), and the remains 3.9% of respondents are 8-11 pm. Generally, from 91.6% of respondents (afternoon; 2-5pm and 5-8 pm) have a preferable time to visiting Lah riversides during winter season. Finote Selam annual average rain fall was 200-600 and average humidity was 93% (Institute, Finoteselam Structure Plan Report, 2010).

4.2.5. Times spent for recreation around Lah riverside

The above figure 4.19, indicates 27.6% of respondents are spent 30 minutes for recreation purposes around Lah RS, 51.3% of respondents are spent 1-2 hours, 14.8% of respondents are spent 2-3 hours, 4.2% of respondents are spent and the remanence 1.9% of respondents are spent above 6 hours. More than half (51.3%) of respondents and other group of respondent implies spent his/her time for different purposes along Lah river. If there better recreational center they will spend a long time.

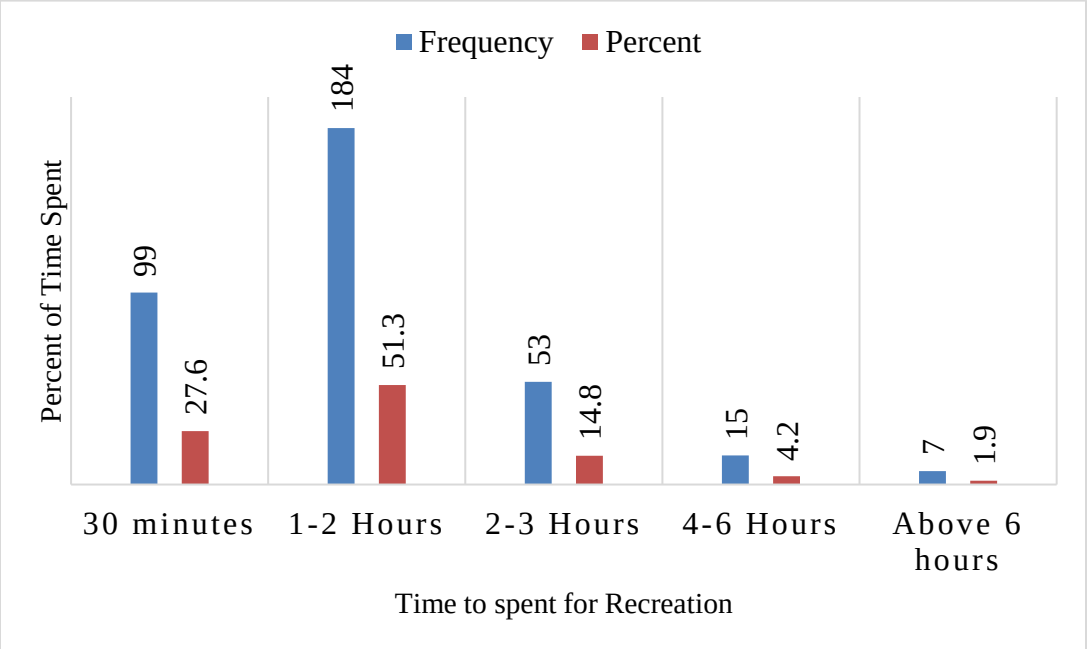

Figure 4.19. Times spent for recreation around Lah RS (Field Survey, 2020)

4.2.6. The reason discomfort for recreation to respondents/visitors

The figure 4.20, below shows that 88.6% of respondents (318 persons) are discomforted for recreation for visitors because the side of river is a pile of dry and liquid waste, 3.3% of respondents (12 persons) stated that since different crimes such as robbery, rape, and even murder has taken place around the river it is not comfortable place for recreational purposes, 1.7% of respondents (6 persons) are not comfort for recreation to visitors because the side of river is has become a physical and psychological threat/fear to the urban community, 6.1% of respondents (22 persons) are not comfort for recreation to visitors because the side of river is used as illegal slaughter and meat trash, 0.3% of respondents (1 persons) are not comfort for recreation to visitors because the side of river is his/her different internal & external reasons. In total, the major problems faced by the informants as well as the civic authorities was the dumping of solid waste along the riverside. Out of the total samples surveyed 88.6% were of this opinion. The above listed facts are suggesting to the study area need an improvement.

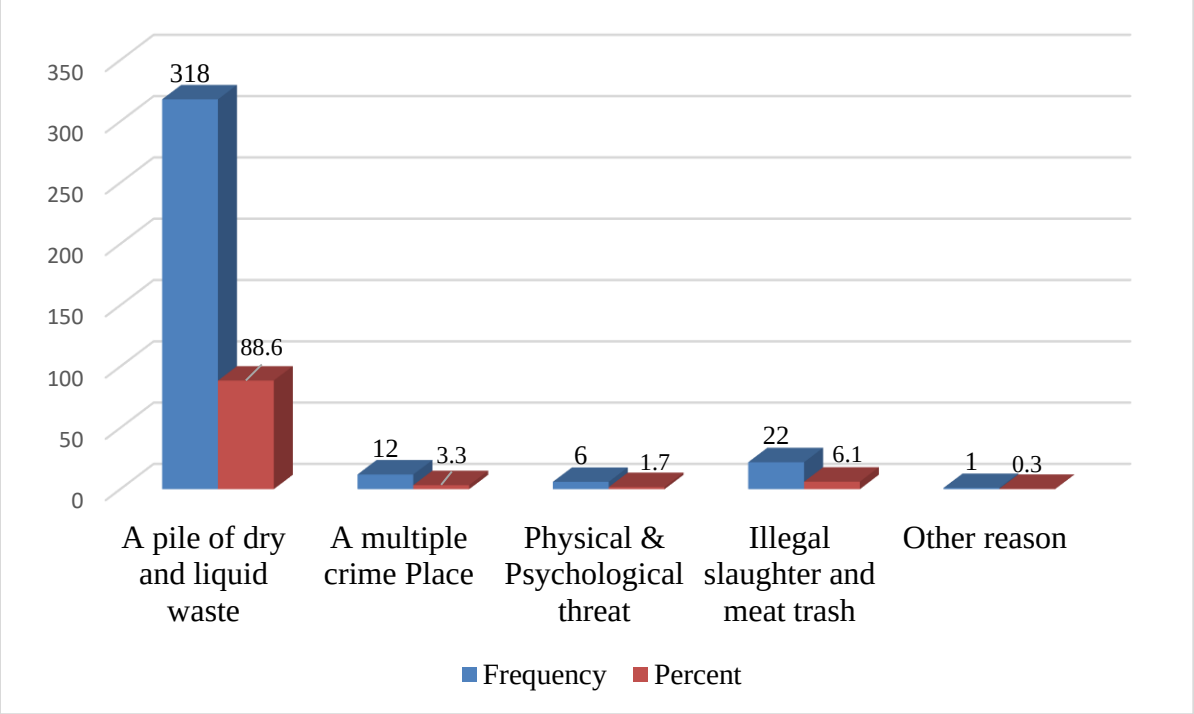

Figure 4.20. The reason discomfort for recreation to visitors (Field Survey, 2020)

4.2.7. Public spaces and semipublic open spaces in study area

According to (Anagaw, 2009) research's findings in Finoteselam town was insufficient of public open space and greenery in all case the town. However, there are some public open space is administered by kebeles & city government in case area such as; Guaguat Waterfall & surrounding forest, Meles park, Gomata forest, and Shembekuma riverside forest. Though, these small public park and forests are located along the river-edge, the side which is not fenced with solid blind wall hindering river visibility.

4.2.7.1. River edge topography

The topography of the Finote Selam is not sloppy in nature, but some elevational difference along Lah river which increases runoff into the Lah's river. To reduce the effect of the runoff and contribute to environmental protection, many individuals had an interest in developing their own private green areas along the banks of the Lah river. But, even if their proposal was for environmental protection and management, practically they planted eucalyptus trees for marketing.

Lah river-edge topography can be characterized into three types- steeply sloped on both sides, and; gradually sloped on both sides and a combination of steeply sloped and gradually sloped on either side's "A'', "B" & "respectively.

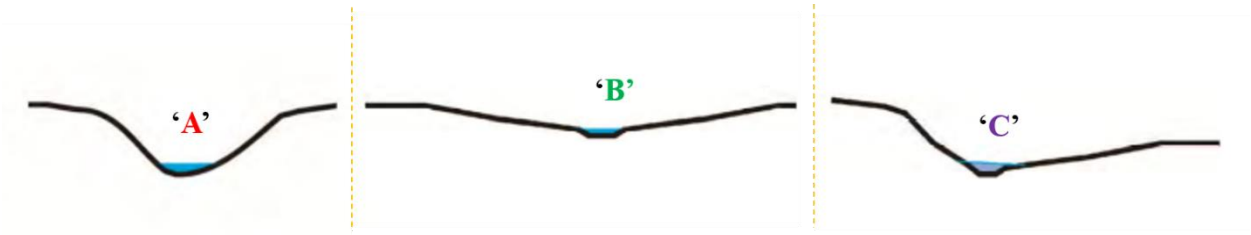

Figure 4.21. Illustration the topographic feature of the river (drawn by the researcher)

The river-edge topography of the case area "A" (around Guaguat Waterfall and Keste Damena bridge) is characterized as steeply sloped on both sides and has a flood plain character on the opposite side where most of the agriculture practice is taking place. In contrary to case area "B", on the rest case areas, both sides of the river-edges are characterized by steeply sloped topography. "C" Gradual sloped topography promotes direct use of the river while the highly/steeply/ sloped topography of the river- edge discourages the usability of the river water and as a result, highly sloped river-edges receive direct drainage and house-hold sewages. The topographic feature of the

river-edges is also an important parameter playing a crucial role in determining the type of activity taking place within the setting. Lah river has a 12.3% peak elevation and a low elevation has 7.9% or 2.5% on average marginal river flow (Earth, 2018).

Figure 4.22. The sectional elevation of Lah river margin (Earth, 2018)

4.2.7.2. Slope analysis study area

Finote Selam town is almost flat land; although it is slopped down slightly from North to South; and gentle slope to the river Lah cross in the Eastern part of the town. Hence, the topographic terrain /slope/ of the study area is analyzed in table 4.3 below:

Table 4.3. The slope description of study area

No_	Slope Classes	Area (Ha.)	Percentage (%)
1	2-5%	18.94	35.42
2	5-10%	19.89	37.19
3	10-15%	14.64	27.39
	Total	53.47	100

Table 4.3, shows the slope classification of the study area with respect to color; hence the 2-5%/ orange/, 5-10% /deep orange/, 10-15%/. And shows how terrain is higher at upper streams in sides and decreases /goes down/ at the lower streams. Majority of the area is suitable for the development of services and infrastructures (Institute, Finoteselam Structure Plan Report, 2010).

4.2.7.3. Positive and negative impacts due to the physical change of the riverside

In the creation of physical change of riverside areas, positive and negative impacts were observed. The following summarized brief points are mentioned in the scope of the findings of the study.

Positive aspects of the transformation are observed in this study as most of the change are: provide access to working space to household members in order to support their livelihood, accommodate social services and facilities i.e. annually the site used as Epiphany celebration festival.

Negative impacts of the change: some of the major negative impacts of the change are: illegal construction for settlement and other purposes along river, in terms of health problems; in the site is a pile of dry and liquid waste conditions, improper suffocation might highly contribute to health problem. Some low-income dwellers sustain their livelihood through animal husbandry. So, this phenomenon will also put the dwellers at risk of health problems associated with animal diseases. And also, in terms of environmental degradation; lack of sanitation and direct connection of sewers and toilets to storm water drainage pipes and rivers will result in environmental degradation of the riverside area.

4.3. Attitude of the local community toward Lah riverside development

During the survey, an effort to identify those essential users' needs from Lah RS as a public & semi-private space, people were asked about: their ideas or opinions regarding the current physical condition of the riversides; and also, their wishes regarding the future development of this study area.

4.3.1. Willingness to support for Lah riverside development

The field survey result (figure below 4.24) shows that, 9.8% of respondents the summation of (strongly disagree & disagree) of not supported Lah riverside development neither idea nor financial, 9.2% of respondents(neutral) are dormant for time being to support or not, and 81% of respondents volunteer groups (agree & strongly agree) are volunteer to supported for development along Lah riversides development require more resources (human and capital). So, they are interested to give their incentives as much as possible. On the other hand, about 81% were sure whether the number of riverside development projects will be increased in the future. The

interviewees who indicated sure responses thought that riverside development require more resources (human and capital) and that they also have the potential for costs to outweigh benefits.

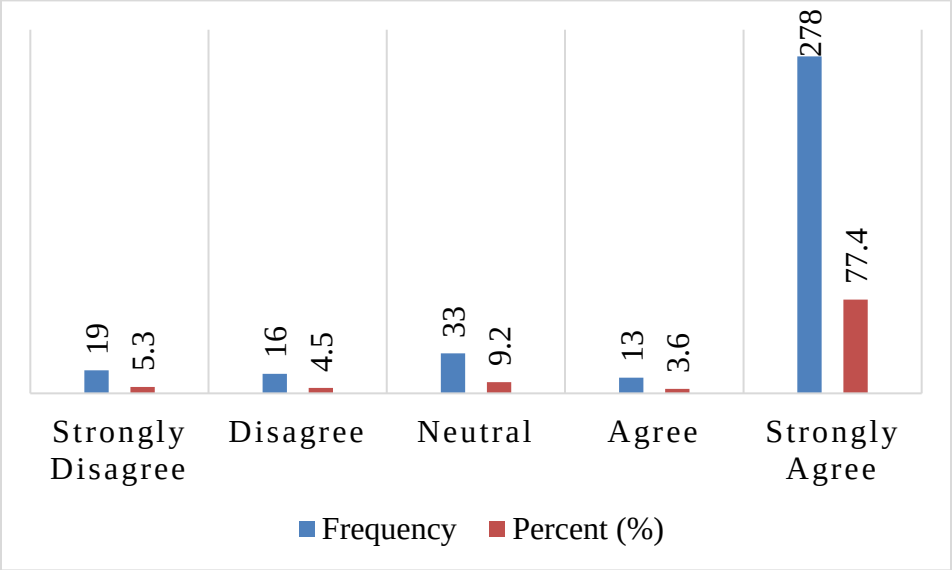

Figure 4.24. The respondent's willingness to support for Lah RSD (Field Survey, 2020)

4.3.2. The believe of the respondents Lah riverside as branded for town

According to information obtained from respondents are interested in giving the town a special brand along the Lah river. The below figure 4.25, expressed 8.4% of the respondents of strongly disagree & disagree respond that Lah riverside will not been as a branding icon of the town, 4.5% of respondents are said neutral for Lah as branding and 87.2 % of respondents (313/359 person's) the massive of agree & strongly agree are said Lah as a think as brand branding icon for Finote Selam. This data shows that the people of Finoteselam are interested in giving the town a special brand along the Lah river.

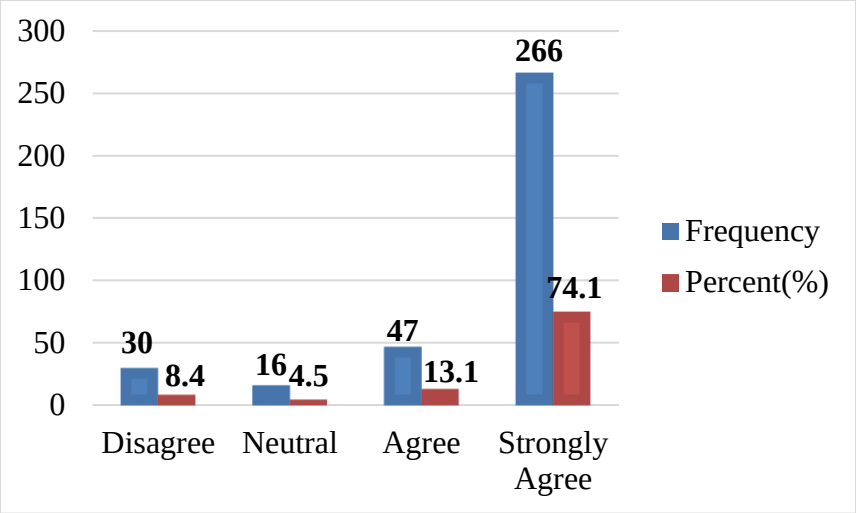

Figure 4.25. The believe of the respondents Lah riverside as branded (Field Survey, 2020)

4.3.3. The believe of the respondents Lah river as a nightlife attraction

Under this subtitle discussed the respondents of selected kebeles believe to recreational center and other activities takes place for 24 hours. Evening events in this area are important factors for the vitality of town's during night times. To create a safer environment during evening hours, lighting needs to be incorporated in the design of urban riverside development. There has to be also sufficient lighting for the perception of safety in the different parts of the proposed site. Lighting can also be used to highlight landscape features and promote pedestrian's movement during evening hours.

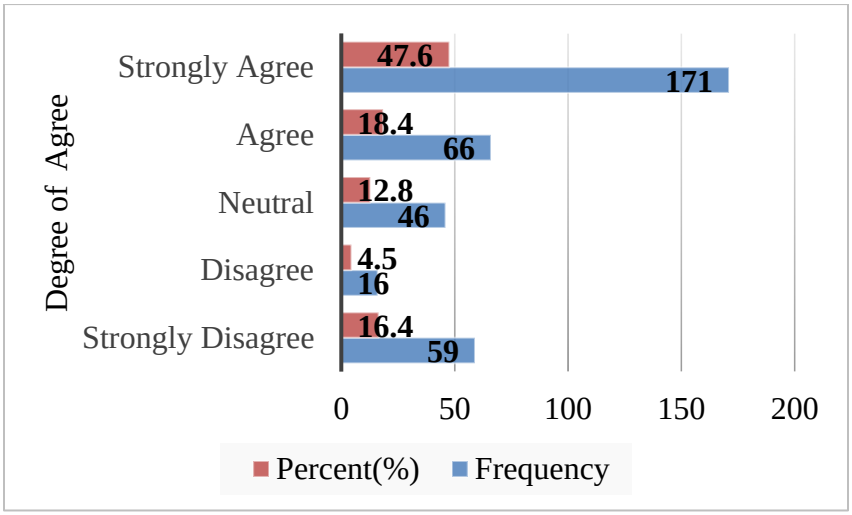

Figure 4.26. The respondents believe, Lah river as a nightlife attraction (Field Survey, 2020)

The above figure 4.26, shows 20.9% of respondents are a hard to disagreed group, 12.8% of respondents are neutral, and 66% of respond believed that Lah riverside used 24 hours active rather than day times. as a branding icon of the town, 4.5% of respondents are said neutral for Lah as branding and 87.2 % of respondents (313/359 person's) the massive of agree & strongly agree are said Lah as a think as brand. Despite this fact; observations at Lah river revealed that there was not any kind of lighting provision in this area. As a result, during evening hours the Place is completely dark and deserted.

4.3.4. The interest of respondents to see a commercial development on the RS

The survey result shows (figure below 4.27), that from the respondents are interest of respondents to see a commercial development along Lah riverside additional central business district of the town. The below figure 4.15, shows 18.1% of respondents are massive disagreed groups, 12.3% of respondents are not concerned issue (they are neutral), and 69.7% of respondents are (250/359 person's) the massive of agreed groups are said Lah riverside become commercial activity colluders as much as possible for the future rather than multi-nucleon recreational centers.

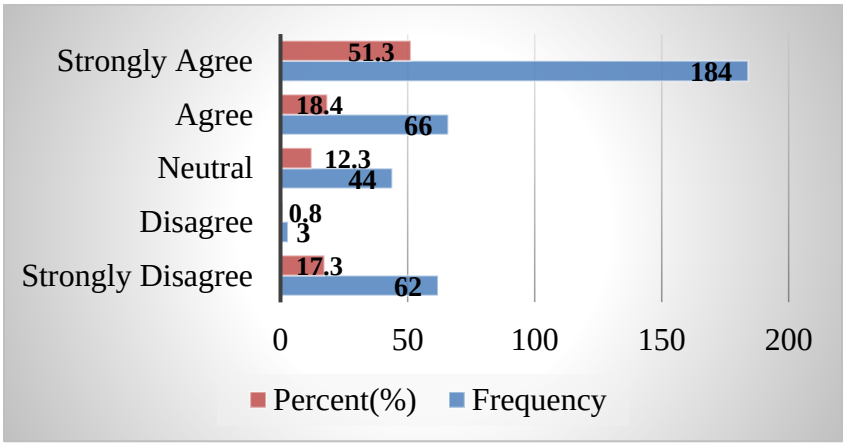

Figure 4. 27. Interest of the to see Lah RS as commercial center (Field Survey, 2020)

4.3.5. The respondents to affect their privacy when increased use of RS facilities

The comfort level of public open space is crucial for their use. It is important point regarding comfort, mainly related with safety and security in study area. The comforts along Lah riverside it may be needs environmental comfort; physical comfort and; social and psychological comfort. So,

this discussion deals about the respondents' that affect their privacy when increased use of RS facilities.

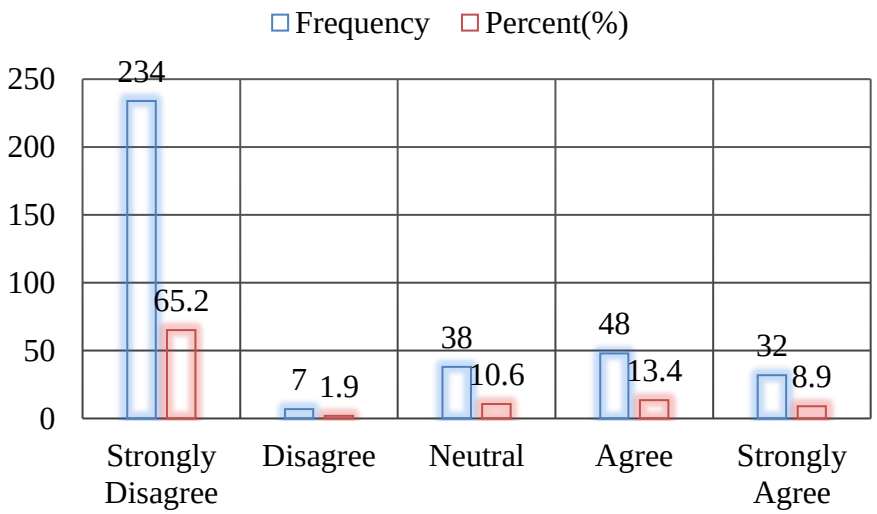

Figure 4.28. Affect their privacy when increased use of RS facilities (Field Survey, 2020)

The above figure 4.28, shows 67.1% of respondents are massive disagreed groups for increased use of RS facilities (like; setting chair, walkways/paths, stair etc.…) is not affected their privacy, 10.6% of respondents are not concerned issue (they are neutral), and 22.3% of respondents are the massive of agreed groups are said the increased use of riverside facilities are affected their privacy. This implies above 50% of the respondents (67.1%) are not affect their privacy when increased use of RS facilities. In another hand the increased RS facilities are not touch their comfort and safety of the respondents. The interviews made with users regarding safety and security revealed that in this area is there was a petty crime like robbing, robbery, rape, and even murder that is why mentioned under subtitle of problem statement.

4.3.6. Lah RS promotes modern culture: arts, music, festivals

The below figure 4.29, shows 7.3% of respondents the massive disagreed groups they not promote modern culture: arts, music, festivals, 10.6% of respondents are not concerned issue (they are neutral), and 90.8% of respondents are the massive of agreed groups are promotes modern culture: arts, music, festivals. The agreed groups (326 respondents) implies along Lah riverside development have been promotes modern culture: arts, music and different types of festival celebration. This emphasis the town eco-tourism trends. And also, the above graph 4.27, shows in

terms of environmentally friendly 98.1% of respondents are agree (Yes) to well-developed riverside is environmentally friendly and 1.9% of respondents are respond not agree or reject well-developed RS is environmentally friendly. According to 352/359 of respondent's RS development on Lah is necessary issue.

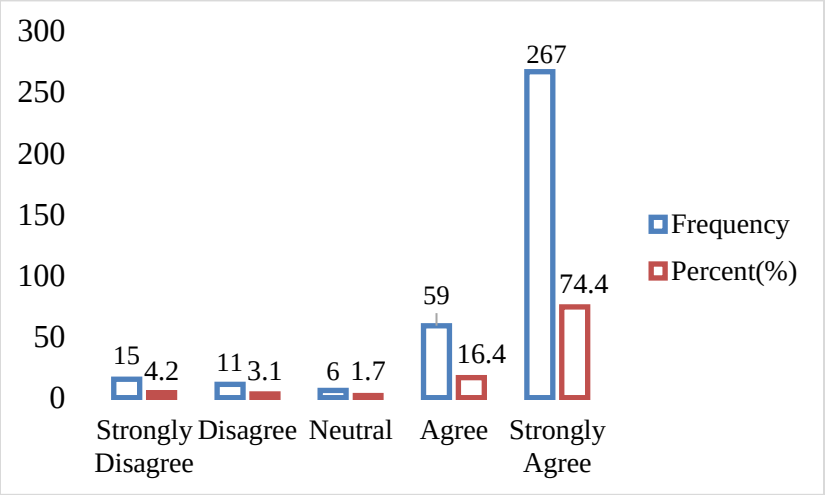

Figure 4. 29. Lah RS promotes modern culture: arts, music, festivals (Field Survey, 2020)

4.3.7. Futures of the respondents along Lah riversides

The below figure 4.30, shows the respondents futures/wish to see Lah riversides will be the center of recreation, commercial district, tourism attraction, social services, zone of urban agricultures, walkable distance for pedestrian, and other related activities hubs.

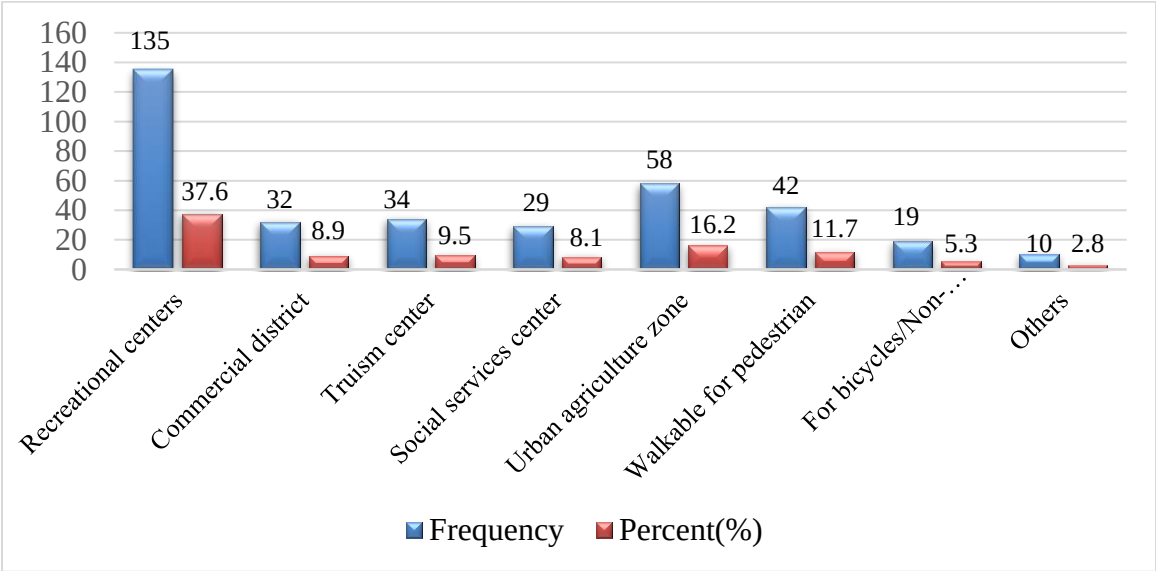

Figure 4. 30. Futures of the respondents along Lah riversides (Field Survey, 2020)

According to the survey data, for futures of the respondents on study area is that nearly a third (37.6%) of the respondents are now motivated to undertake riverside development is recreational centers for futures, 8.9% of respondents (32 persons) were wish commercial district, 9.5% of respondents (34 persons) were wish truism centers for town, 8.1% of respondents (29 persons) were wish social services center like; celebration of different festivals, arts, meeting, 16.2% of respondents (58 persons) were wish urban agriculture zone like a horticulture, gardens and parks vegetables,11.7% of respondents (42 persons) were wish walkable for pedestrian, 5.3% of respondents (19 persons) were the riverside development should include provision for sufficient public facilities and amenities such as pedestrian paths, toilets, landscaping and recreation areas, and rest 2.8% of respondents (10 persons) were wish different purpose.

The overall finding, from the above (i.e., figure's 4.24 up to 4.30) indicates that the study area needs alternative design solution so as to crate sustainable environment for the society. On the other hand, the researcher's try to answer the third study objective.

4.4. Evaluate the planning and implementation of a structural plan with respect to riverside development

Evaluation of the structural plan of the towns has revealed that a variety of urban open spaces & environment categories were proposed for the towns including, parks and gardens, sports fields, playgrounds, and green along river and buffer. However, most emphases were given to playgrounds and as the evaluation indicates, the proposed components are varying in shape and size according to standards. Based on the assessment of the structural plans, the total areas allocated for the open spaces & environment components such as parks, sports fields, and playgrounds were 615.57 ha in Finote Selam's towns.

4.4.1. Proposed land use for the structure plan of Finote Selam town

According to SP of Finote Selam, the major proposed land uses consists of 7-elements: housing, center, business and administration /CBA/, services, manufacturing and storage, transportation and road network, environment and open spaces, and special functions.

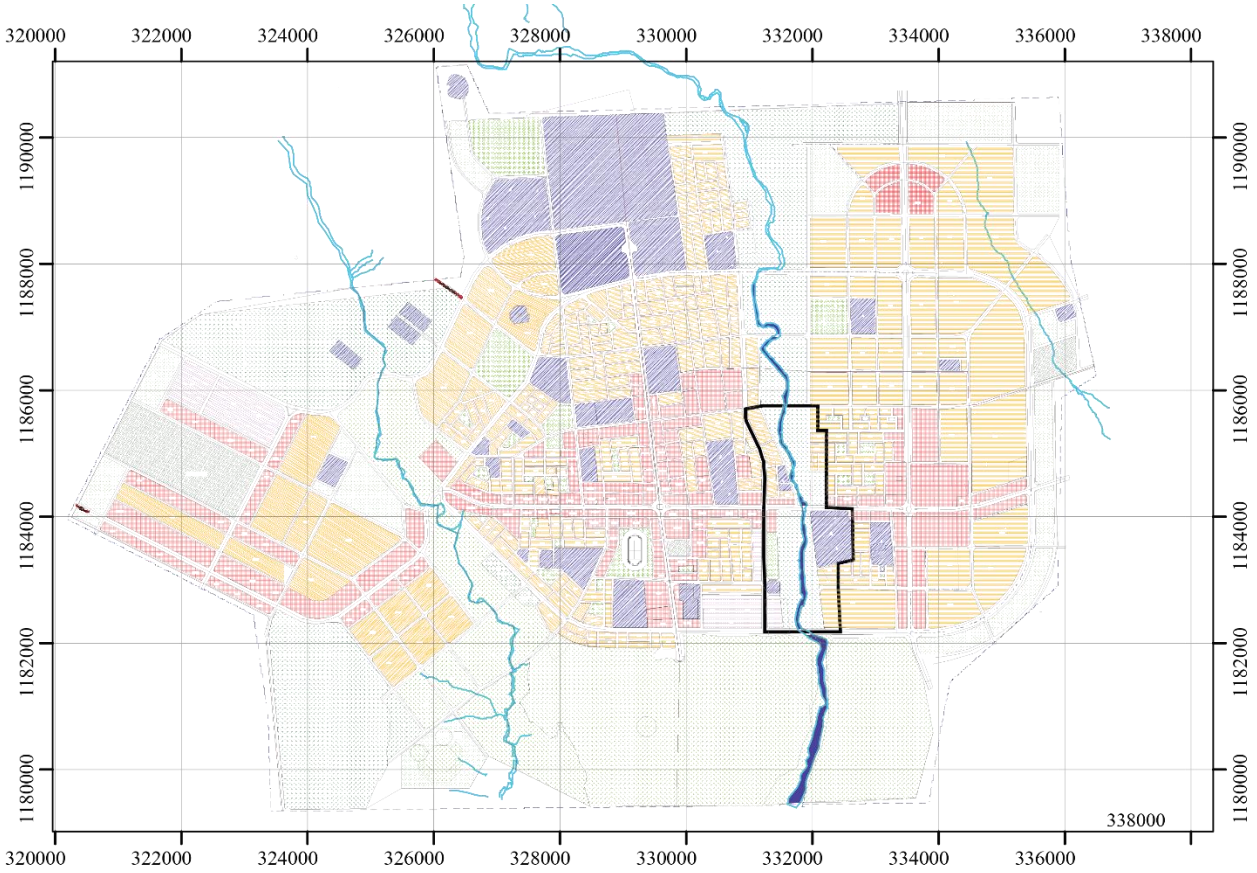

Figure 4.31. The proposed Land Use Plan (Institute, Finoteselam Structure Plan Report, 2010)

Table 4.4. The description of proposed land use of Finoteselam Town

No.	Proposed Land Use	Area (In Ha.)	Percentage (%)
1	Housing	570.52	32.61
2	Center, Business & Administration	148.77	8.50
3	Services	128.37	7.34
4	Manufacturing & Storage	24.15	1.38
5	Open Spaces & Environment	376.17	21.50
6	Transport & Road Network	404.55	23.12
7	Special Function	97.12	5.55
	TOTAL	1749.65	100.00

Source: (Institute, Finoteselam Structure Plan Report, 2010)

From above figure 3.31 & table 4.4, shows the structure plan, lion-share of land was assigned for residential and road network purpose and a very small proportion was allocated for other land uses such as industrial activities, commercial, open spaces, services, and administration. It also doesn't seem to be less when we see a direct 21.50% share of the green and open space category. But the following table 4.8, detail lists are demo. According to (Institute, Finoteselam Structure Plan Report, 2010) the following listed are under the provision of open spaces and environmental sensitive areas:

Table 4.5. The detail contents under open spaces and environmental

Land Use Category	Contents of Land Use Category		Land Use Category	Contents of Land Use Category
Open Spaces & Environment	1. Open spaces • Play lot, • playground and • sport field,		Open Spaces & Environment	4. Environmental • Forest (manmade & natural) • Buffer zones, • Nursery sites • Environmentally sensitive (Marshes, lakes, rivers, ground water potential areas)
	2. Formal greens • Green areas, • parks, botanical garden, • zoo, lake and riverside • resort centers, etc.			5. Urban Agriculture • Animal husbandry • Breeding and fattening, • Dairy products • Poultry, • Apiculture, fishery, etc. • Horticulture • Vegetables and fruits • Flower cutting • Crops or grazing
	3. Sport centers • Gymnasium, club, circus, ground tennis, etc. • Stadium • Golf centers, horse-riding fields, athletics centers, etc.			

Source: The researcher adapted from (Institute, Urban Planning Manual, 2011)

The categories listed above would be clear evidence of how much less they would have done if they were developed or implemented by the Local Development Plan (LDP) & Neighborhood Development Plan (NDP). Therefore, the proposed land use for recreation and Open Space is low when compared to the Ethiopian urban planning standards (i.e. 30% for open space & greenery, 40% for built up and 30% for road & transportation).

Table 4.6 The river buffer green infrastructure design standards (Urban Planning standard, 2016)

No	Function	Range of buffer width in (m)	Minimum buffer width in(M)
1	Stream stabilization	10-52m	15m
2	Water quality protection	45-30m	30m
3	Flood attenuation	20-150m	150m
4	Riparian wildlife habitat	30-48m	90m
5	Water fisher's protection	>30m	45m

According to, river & river buffer green infrastructure design standards implementation, Manual No,17/2016" says; natural riparian (riverside trees,) buffers have been lost in many places over the years. River buffers provide enormous buffers for the society, wildlife, water quality and the environmental among others.

4.4.2. Structural planning provision along Lah river

During plan preparation, the professionals or the plan makers should have clear and precise know-how and understanding about the people's culture and settlement pattern of the people who are living in the town for which the plan is prepared. Their failures to visit the sites to be planned have resulted in the preparations of plans in which certain areas have been prepared for green areas on the plan but in actual fact are already built-up areas. Structure plan classification is planned to be as comprehensive and inclusive as possible: - It allows the presence of parks, gardens, green corridors, playgrounds, sports fields, and derelict or vacant land that is vegetated. The SP used in this study has taken into account only the components indicated on the structural plan of the towns and identified from the field survey. The structural plans of the towns have put the farmlands as urban agriculture and it did not include in the urban riverside development. However, many authors agree on the urban forest, public green spaces, gardens, playing grounds, right-of-way along streams and roads, community gardens, urban wetlands, and constructed features such as

green roofs, green walls, permeable vegetated surfaces, green swales and rain gardens as the main components that constitute urban open spaces. River Lah is the most important source of water for consumption, sanitation purpose, and horticulture activity to the Finote Selam town and surrounding rural areas. One major and one medium river within the town of Finote Selam along with their some seasonal tributaries drain the town; the major one (Lah river) is north-southwards originating from the hill of "Ashifa Bota". This place is located about 13 km southwest of Gish Abay (the source of the great Blue Nile) river. But this river receive sewages and wastes from the residential areas located along the course of the river as well as from small scale industries which are located along the river banks (Institute, Finoteselam Structure Plan Report, 2010).

The major problems/ gaps on the 2010 Structure Plan provision along Lah riverside are: -

Buffer zone: - the structure plan of the town that was developed in 2010 and is currently at work has put a particular setback of a minimum of 0.5 meters and maximum 144 meters buffer zone in both sides of the river course for areas located in the inner town and developed areas of the town. But standard for rivers at least 15m minimum and 300 m maximum buffer zone needed. So, the SP was violated planning standard (code: S44 & RE).

Availability of lengthy, wider block formations which decrease accessibility, coarse-graded mobility, and which make tiredness, boring permeability 200-395 meters length and 76-230 meters width. The Land use provide a single-block near to Lah, this determined use decreases the flexibility and increases the bureaucratic process from municipality- zonal-bureau. And also, some of the block do not have a land use code and this create implementation problems, and increases bureaucratic process. The normal standards for block width 50-60 m and 80-120 m length. Even though the SP is not given priority for length of the block to riversides and block width 230 m i.e. violate block depth (code: between CO11 & S44, R11). The short side block implies directly give advantage for minority dwellers.

Compatibility matrix for use zoning: land use incompatibility in between urban agriculture (for instance; animal husbandry, vegetable, etc.…), industrial zone, services, and residence, manufacturing & storage is not compatibility along riverside. For instance; the plan provides for slaughter house & manufacturing was 30-50 m distance from Lah river (code: S60 & M). This cause a long-term effect health hazard on the users of these urban agricultural products.

2010 Year proposed urban open spaces & environment components on the SP

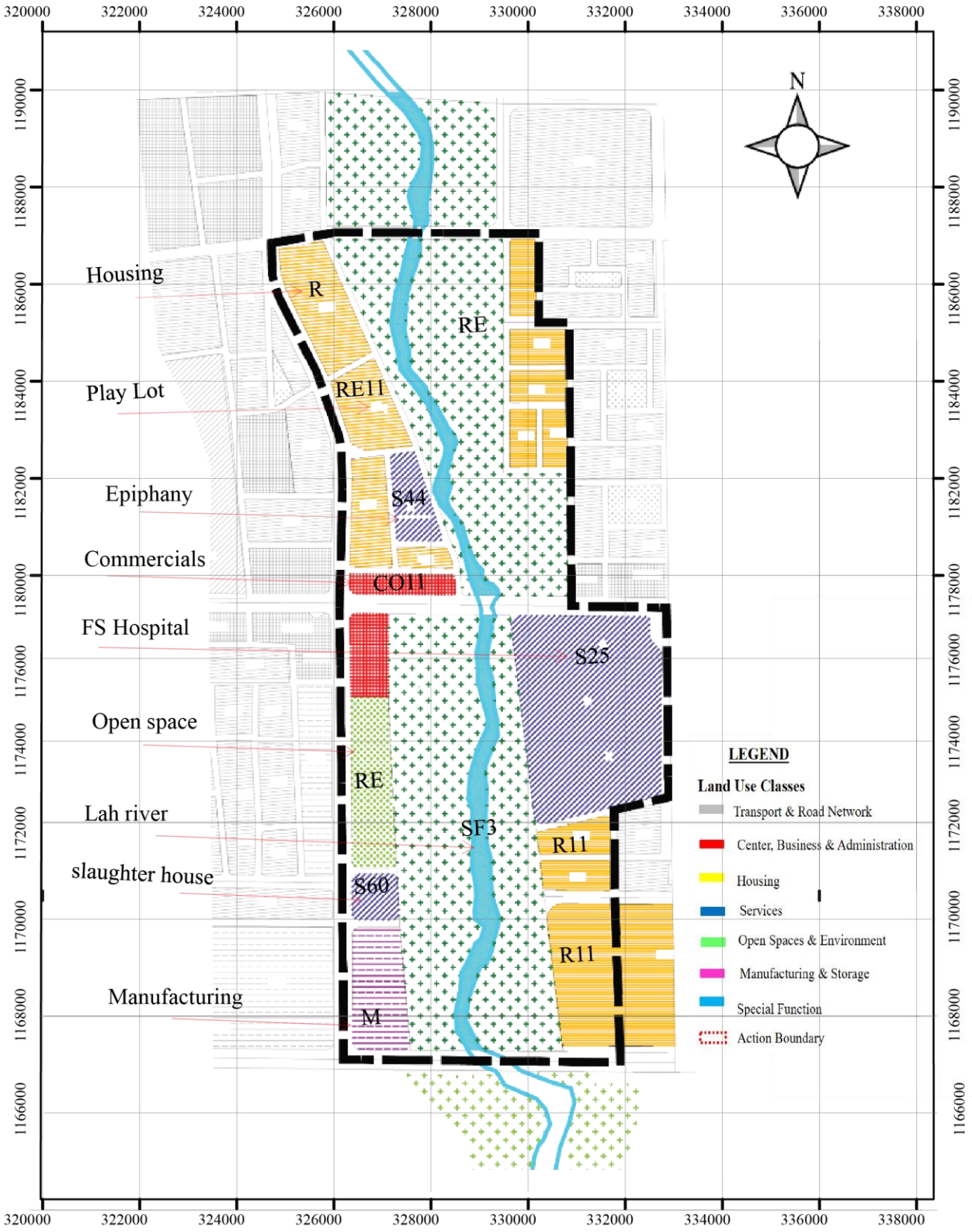

Fig 4.32. Open Spaces & Environment on SP (Institute, Finoteselam Structure Plan Report, 2010)

Land use hierarchy and collector street spacing: SP delivers from northern part of river 562 m collector street spacing and also southern part of river provides 675 m spacing. Other things are some turning off streets are going to buffer zone without cul-de-sac (code: between S60, M, RE, R11 and different streets are existed).

A lot of land use violations / for instance, in front of Lah river and it implemented administrative purpose, open space to slaughter house, open space to residential etc.…/ and a lot of land use zonal change held for a number of times. Road network system of the town especially along river was poorly ordered / hierarchical/. Lack of alternative road adjacent to the river. The road may be used as boundary of buffers zone.

4.4.3. The respondents participate in Finote Selam on SP preparation

The below table 4.10, shows 16.4% of respondents (59 persons) are participate in Finote Selam previous plan preparation and 83.3% of respondents (299 persons) are not participate in Finote Selam previous plan preparation.

Table 4.7. The respondents participate in Finote Selam 2010 SP preparation

Respondents' Participation	Frequency	Percent (%)
Yes	59	16.4
No	299	83.3
Total	359	100.0

Source: Field Survey, 2020

This sample survey data indicates less community participation during plan preparation or weak participatory plan. For next time such kind of project or riverside development will be take a participatory for the societies. Feedback from the survey on Lah riverside development, the societies' and concerned stakeholders participation should be ensured from the very early stage to the final stage of a structure plan preparation and riverside development like this by involving the local community in every phase of planning decision about the appropriate development type to after development management and maintenance. This would prevent irregularity, controversy, and tendency of avoiding responsibility on the part of resident users.

4.4.4. The factors influencing the site transforming to other purpose

The following are main driving factors in accommodating physical change:

1) Availability of vacant land: availability of open and vacant land mainly inside the compounds of both government owned structures and privately owned structures which have bigger plot coverage. So, this vacant land provokes illegal settlement/purposes and land fencing for private owners.

Figure 4.33. The farmers used as arable land to the edges of river (Fieldwork, 2020)

2) Absence of legal controlling body: new constructions of structures along the buffer zone area are been built owing to absence of controlling and regulatory body.
3) Accessibility and proximity: the proximity of the land to main access points is influencing the magnitude of change as well as the purpose of the transformation.
4) Topography: the appearance different topography along Lah river edge.
5) High housing demand: the housing demand is seen both as social livelihood and economic livelihood.
6) Absence of ownership claim of the buffer zone area: even though the Finoteselam clean & beautification office are assigned to protect the buffer zone area, the office has been highly challenged by the existence of illegal settlements. At this particular study, claim of ownership of the area is only made on legal papers while the practical case shows otherwise. For instance; figure 4.34 (A) was constructed St. Lideta church & figure 4. 34 (B) was built a manufacture & storage of oil factory.

Figure 4.34. Illegal construction on buffer zone for various purposes (Fieldwork, 2020)

4.4.5. The comparison of 2010 SP proposal and existing land use

The below figure 4.35 (A) indicates the proposed along river developments and river buffer in the structural plan of 2010. The figure displays that, river buffer around the residential areas were clearly planned on plan. At the same time, river buffers were proposed to restrict urban development to 15-120 meters distance from the river. However, currently all the proposed river buffers were converted to residential use, urban agriculture like; (horticulture, poultry, animal husbandry), social services (slaughter house, St. Lideta church), manufacturing and storage and other land use classes are constructed in Figure 6.35 (B). Based on the data survey and field observation from 2010 to 2020 year, more than 7.5 ha (38.4%) are changed/violate the plan from 19.53 ha of proposed for buffer zones, the changed land use is residential, services, urban agricultures and manufacturing uses. And according to in-depth interviews of household around Lah river and experts from different sectoral offices, the SP is violating/changing by different factors. It implies there is structural Plan violation regarding to buffer zone especially along Lah riverside.

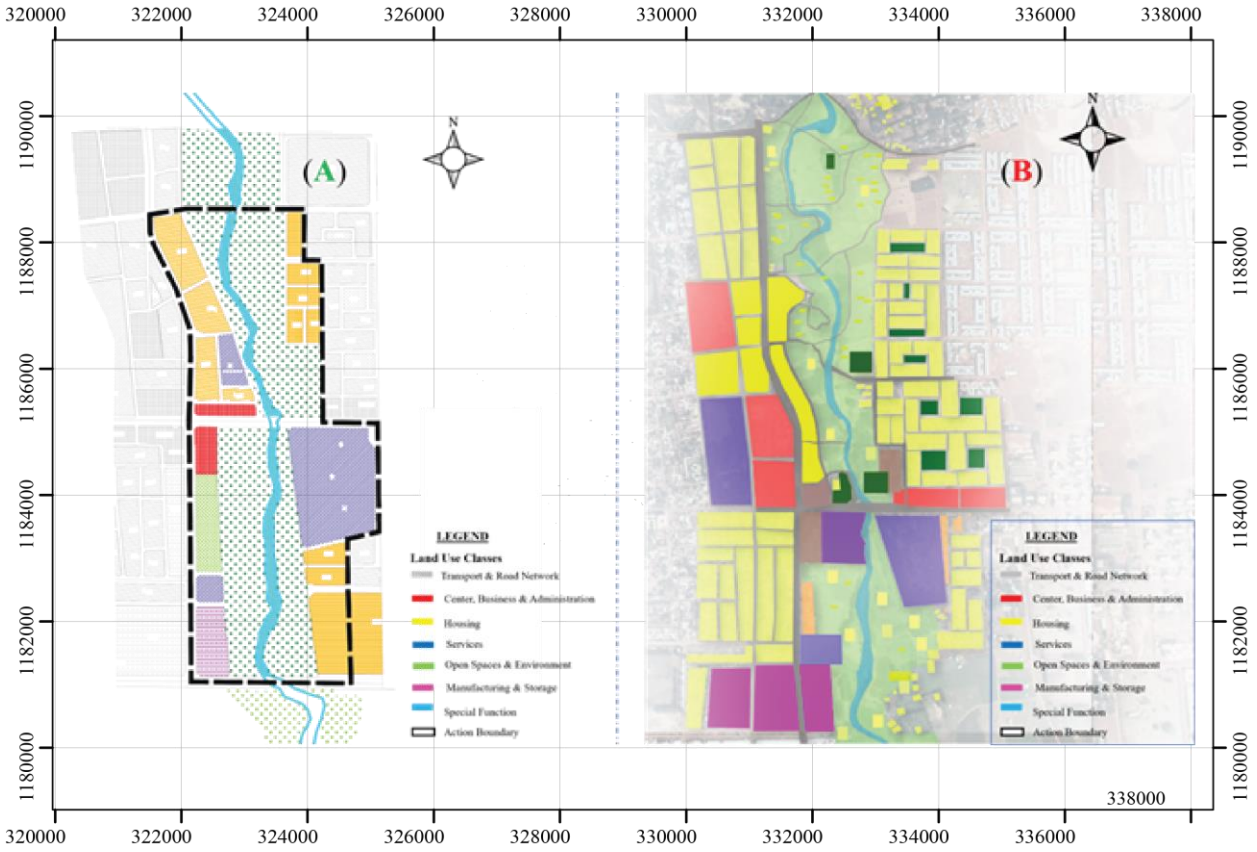

Figure 4.35. (A) SP of the town along Lah river and (B) Existing land use condition of Lah

To generalize the above discussions, the absence of plan monitoring, evaluation and updating system was a challenge to poor implementation of SP specifically along Lah river. Accordioning to Author's (Girma, 2019), the study revealed that no monitoring and evaluation of the structural plan of the towns had taken place through its entire history by any responsible body, local, regional or federal. For instance, one of the key informants said: "…manuals to undertake a comprehensive monitoring and evaluation on the implementation of principles, proposals, norms and standards of the structural plan were prepared both at the federal and regional levels. However, they are never implemented and thus lack of regular monitoring and evaluation of the implementation of the structural plan by the concerned body has been facilitating the violation of the land use plan and creating rooms to use the land proposed for green infrastructure components for other purposes."

CHAPTER FIVE

5. CONCLUSION AND RECOMMENDATION

5.1.Conclusion

From observations, analysis & discussion made at Lah riverside during the sequence of this study, it has been possible to draw a number of conclusions that could implicate; how Lah riverside in Finote Selam in general and this river in particular is operating. These include:

According to the study regarding to evaluation of structure plan along Lah river shown that, there is poor implementation of SP and during plan preparation of SP was not prepared based on the existing situational analysis, due to this difficult to implement and also, the people's of town are used the study area without consideration of the SP provision.

Concerning to existing activities along Lah riversides are indicated that, the area was used to the people for different purposes such as; washing cloths & their vehicles, for entertainments, fishing, reading, and illegal slaughter area but nowadays the study area takes place higher crimes, bad simile, and dirty the intimacy of the communities towards the river was decreased and also river is being polluting, this implies the river missing it's symbolic meaning of the town.

5.2.Recommendation

Based on the analysis data, the following recommendations for Lah RSD in Finote Selam have been provided below. The recommendations are mainly in three aspects: planning and implementation (administration); tourism development; and social equity.

5.2.1. Recommendation (for Planning and implementation/administration of SP plan)

Every riverside development should have land use regulations and urban design guidelines approved by the municipal or higher levels of governments before starting and also, plan a mixed land use pattern for ensuring economic vitality and high levels of human use. The municipality should develop one model riverside development site in the town and celebrate different ceremonies to increase the people's awareness about the benefits of riverside development. Again, the administration should implement the rules and regulations of riverside development to keep the site clean and should develop by-laws with the participation of the whole population.

And again, in woreda level, it should be more emphasized on implement sustainable development in riverside works to protect the environment and reduce causes of pollution as well as develop riverside as a part of the town. Either structure plan or RSD should be made, the participation of the communities and developers in the earliest stage up to end.

Finally, the researcher has been recommended for Lah RSD process would be include 3 stages: Firstly, provide plan to relocate existed people or activities that are already on the riverside area. Secondly, solve all the issues and problems that may affect the development of the riverside such as pollution, access and so on. Thirdly, plan and develop towards achieve the objectives/vision of the research.

5.2.2. Recommendations (Proposing case Design)

5.2.2.1. Preliminary Planning/Development Concept

The researcher was adopted Author's (Dell, 2014), the riverside development concepts for universal level competitive aims are follows:

i. The bank will be developed with a sense of belonging of Finote Selam people;
ii. River-side drive will be a pleasant experience to all visitors which will be connected to town road network for different activities;
iii. Basic concept of beautification is to bring the river back to the front of the town's landscape;
iv. There will be something for each age group and community;
v. Ample car parking facilities;
vi. Water based recreational facilities will be developed in the case design.

5.2.2.2. Riverside concept development at local/contextual level:

Researcher key word is "negotiation", in order to achieve researcher's thesis objectives, a researcher take as negotiator between society, landscape with building, land with its feature. This is coming from site analysis. Generally, in proposed site there is three major conflicts.

i. Because of the absence of any recreational center in the town as the case study indicated, youth group and town dwellers using this area which is naturally existed. And also, by the absence of public library, students used as reading purpose. So, between those party there is conflict because the student want silence. other party want to relax themselves freely.

Therefore, researcher can negotiate those party by designing public, semi-private recreational space, public library and other related centers.

ii. The edges of Lah river was covered by the native tree as the site analysis indicated. But now a day those native trees lost and replaced by the exotic plant called Eucalyptus. This tree can grow its root up to 60 meters to the ground. This can take more water and kill other plant species and the site become a drought or degraded. So, in order to negotiate the sit with plant species, the communities/stakeholders should be cut the exotic plant and replaced by native/indigenous types of species. This is suitable for the climate and the landscape.

iii. As a planner, researcher have to consider the urban forms and land values. That is why researcher going to do iconic forms on proposed site. The site contains steep-slope, flat, and some them are cliff (i.e. it needs some Engineering works). Therefore, in order to fit the building with the natural landscape or intruder not to disserve natural landscape use the split flooring method.

Concept Development in Graphical Form

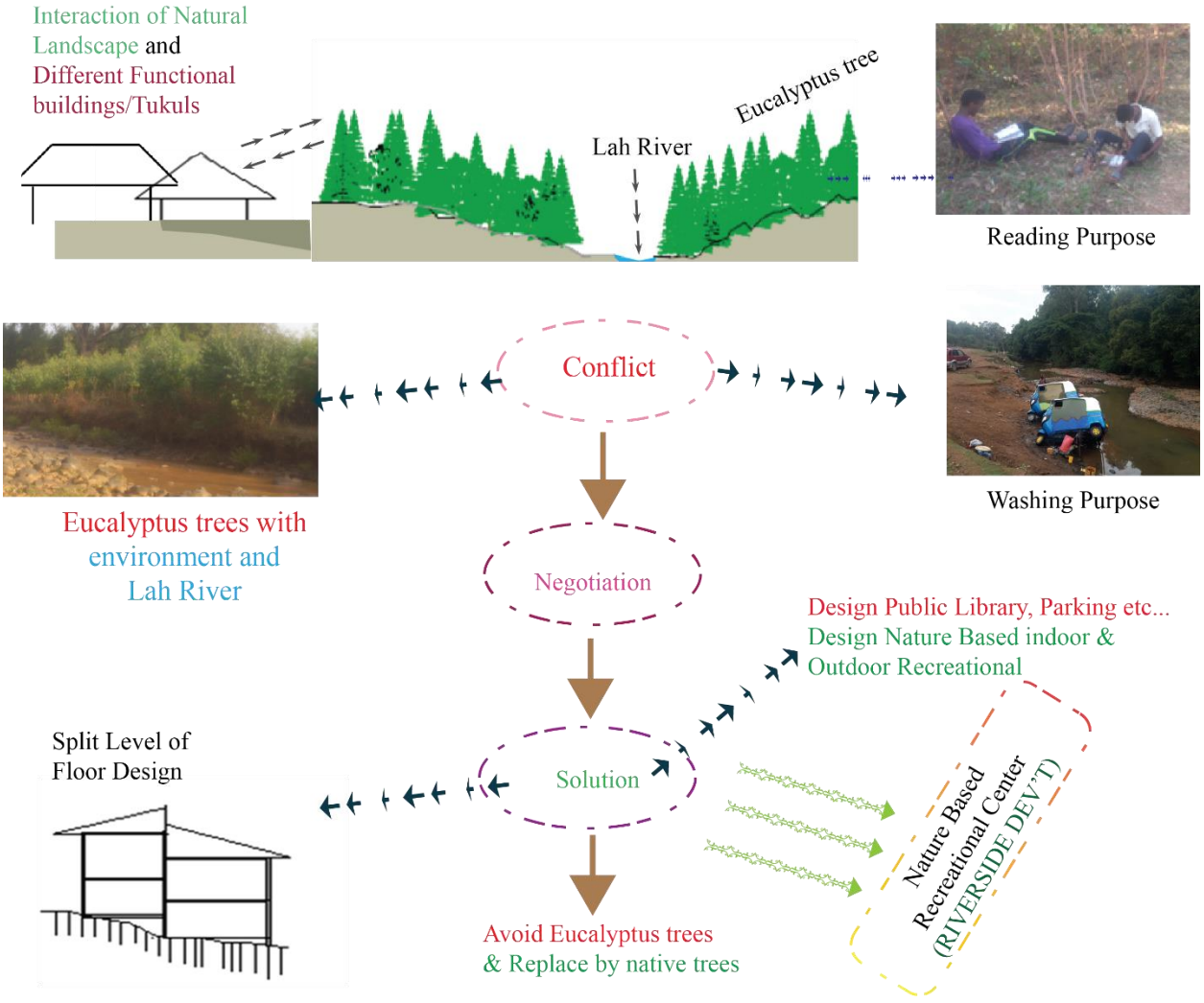

Figure 4.36. Illustrative concept plan developed by researcher, 2020

In general speaking, the above figure 4.36. mentioned three negotiation techniques help to solve the absence of leisure time recreational areas and the degraded edges of Lah river was going to give solutions based on the nature of Finote Selam town.

5.2.2.2.1. Site Demarcation/Delineation

Site Demarcation/Delineation: it is the first step of identifying boundary limit of action site. The River flows from South to North between kebele 02 & 03. The action area is covers 25.19 and with the Planning, area is 53.6 hectors and its length 4.1 kilometers. Even though the researcher

was taken 1.2 km from the total of 4.1 km length. The blue color shows the river margins, selected bleary red color are indicates its action site, and the remain bleary red color is Planning area.

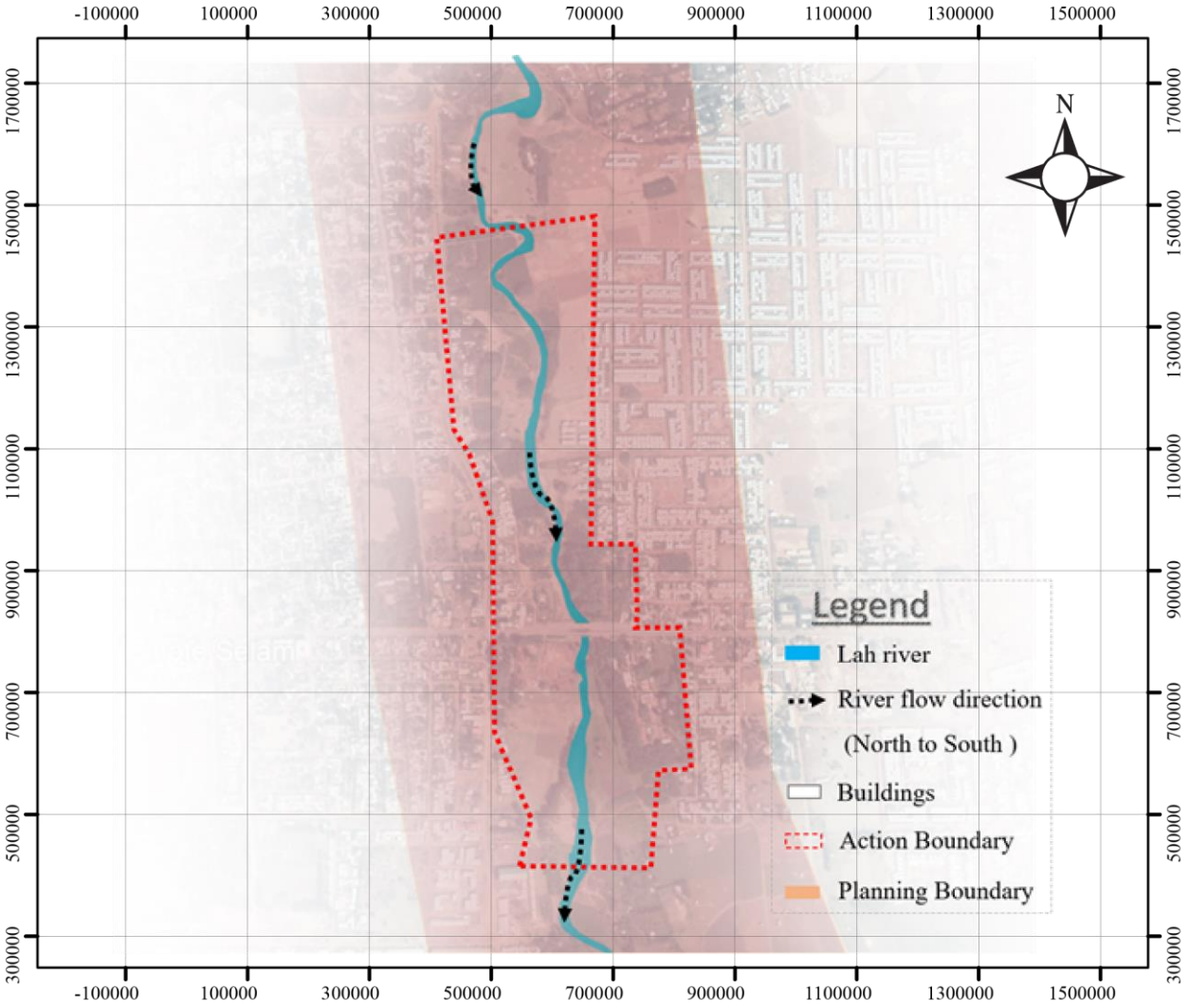

Figure 4.37. Demarcation of action site by researcher, 2020

5.2.2.2.2. Site Integration/ Linkage diagram

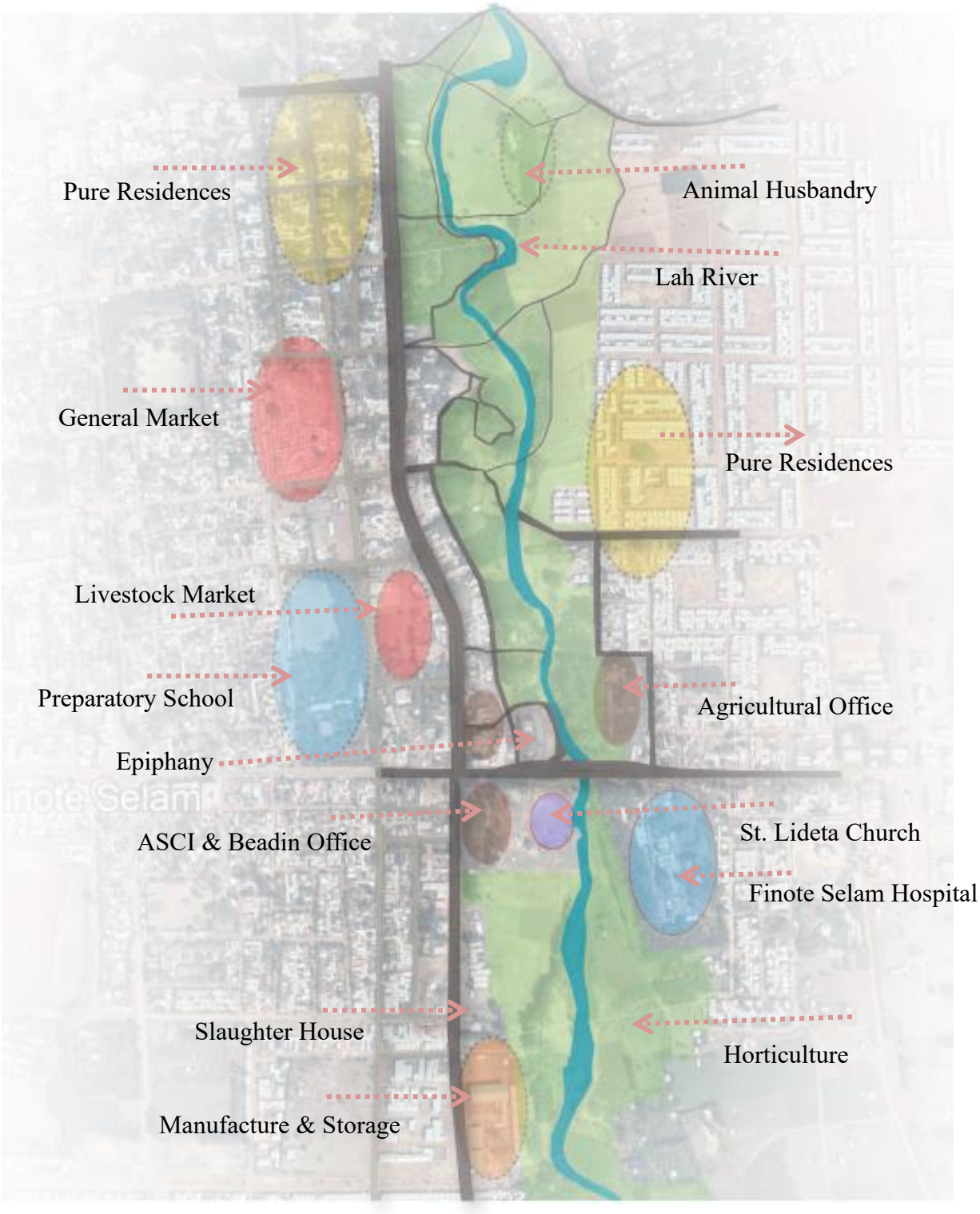

Figure 4.38. Linkage diagram by researcher, 2020

5.2.2.2.3. Site Transforming/Renovating phase I – Phase II

In this phase first identifying the potential of riverside, it means which part of footpaths/main roads have a potential to connect to social institutions, houses, market places, administrative zones, waterfalls, different landforms, buffer zones (either native trees or not). Identifying in where areas are organic or planned pattern, even identifying width of paths and roads.

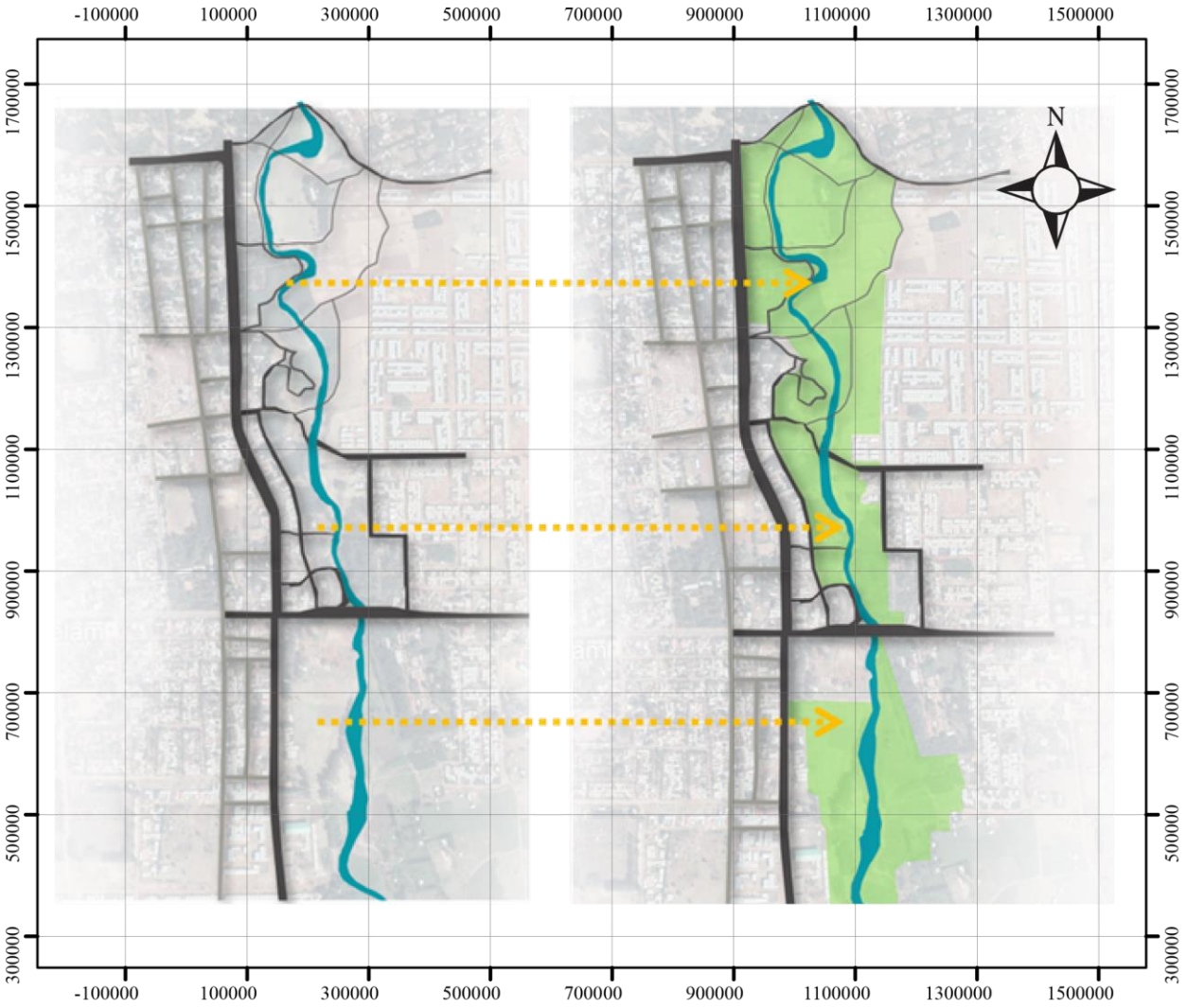

Figure 4.49. Phase I to Phase II By researcher, 2020

5.2.2.2.4. Site transforming/renovating phase II – Phase III

In this section of study (Phase II-III) identifying the preserved area of riverside, this means which part of site is protective buffer zones without intervein by any mean of activities. Other thing in this part distinguish the preserved buildings and fences for instance: Finote Selam's hospital, St.

Lideta church, place of Epiphany, different residential neighborhoods, agricultural office and nursery (docking station), gorge, gully, stream line, marshy land, animal husbandry and horticulture, and mountain green frames along Lah riversides. And also, the researcher gives a relocation some existing activities and buildings. For example; Slaughter house, manufacture and storage, animal husbandries, poultries, WOBANS (Finote Selam prevention of malaria and related epidemic diseases) adjacent to Lah river edges.

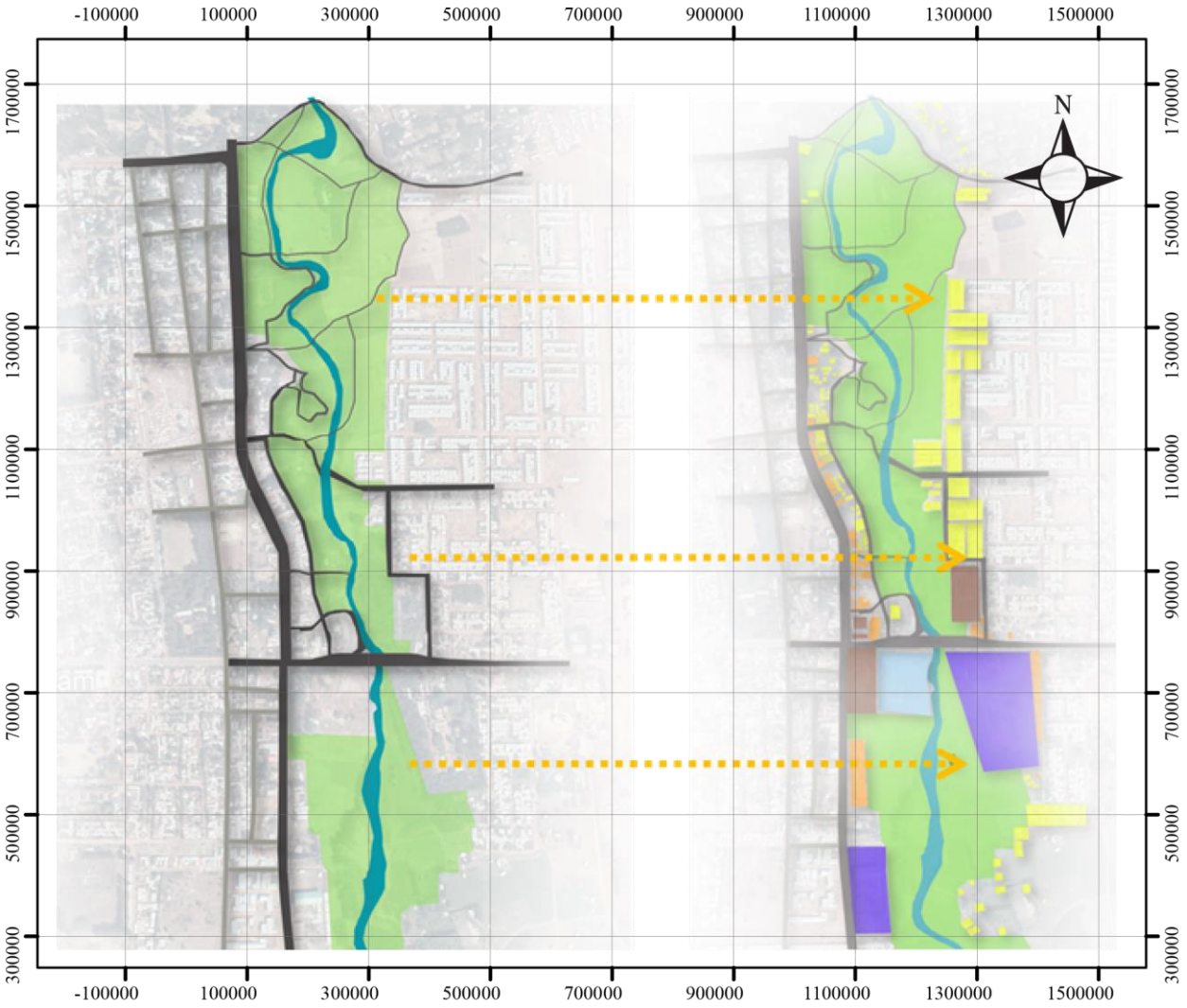

Figure 4.50. Phase II to phase III by researcher, 2020

5.2.2.2.5. Overall proposed riverside development plan

Create destinations for social and cultural activities, give an opportunity for passive recreational activities, create a place for visitors, for events, improve links, access and permeability to the

riverside from the town and other adjacent places and also encourage the people to move around Lah riversides.

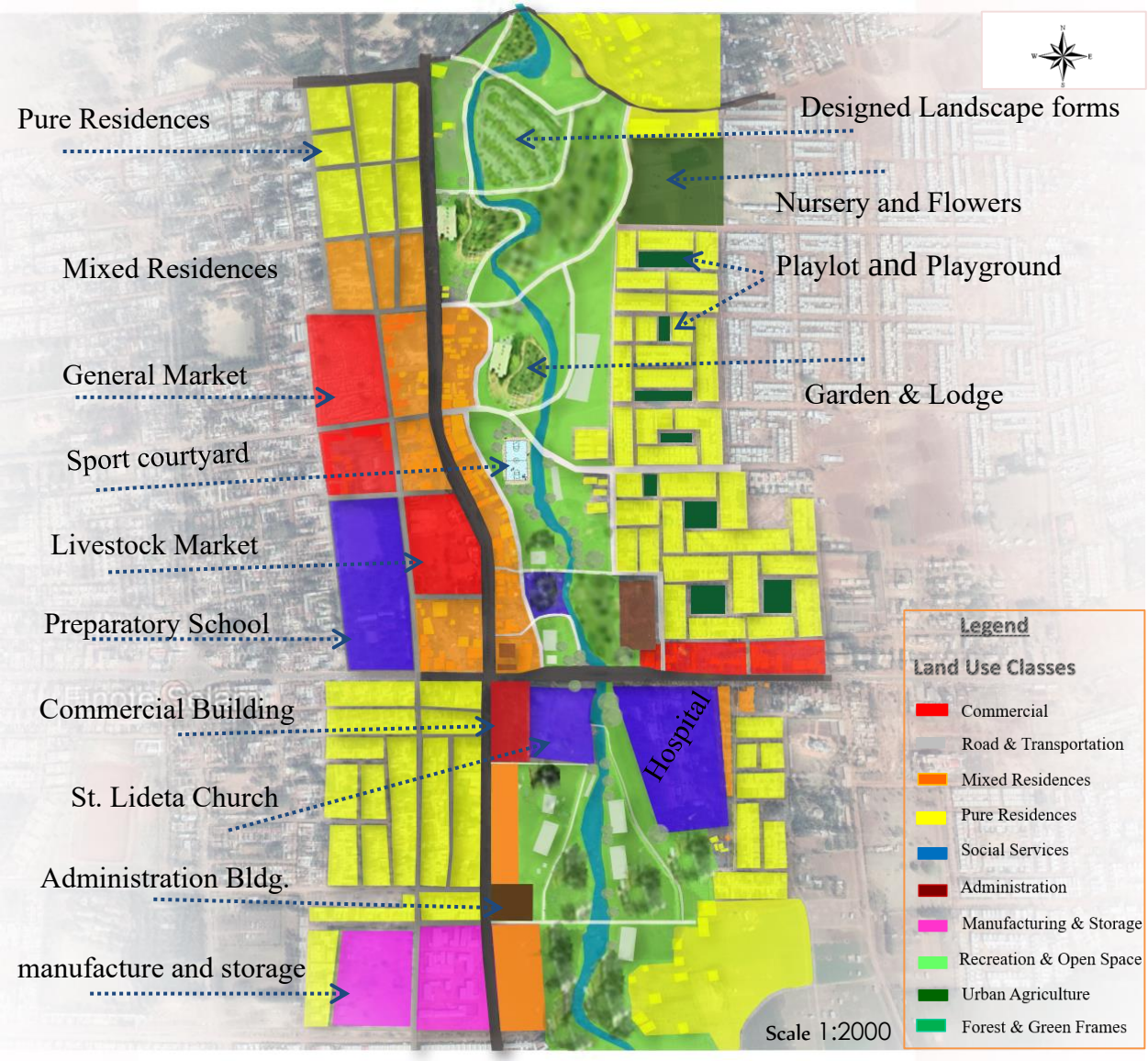

Figure 4.51. Proposed riverside development plan by resercher , 2020

Therefore, the research gives proposed riverside development Finoteselam; this design solution including the following Provision:- Garden, parks & Lodge, natural and humanmade landscape forms, Sport courtyard, nursery and flowers parks, setting chairs, stairs organic footpaths and Pedestrian walkway, green belt along river sides, Parking for cars, swimming pool, library, bridge, fountains, public and private toilets, and others different facilities along Lah river.

5.2.2.2.6. Design proposal along Lah riversides (typically illustrated site)

To revive the river to the town dwellers and ensure a sustainable development of the area, Lah river side development proposal focuses on the following issues:

- Landscape development:

A green belt is proposed along the left and right bank of Lah in compliance with the linear water Ways around Finoteselam town. Available open spaces in and around the area are to be integrated with the riverside open areas. The development is considered which will act as reserved land use to protect the first layer of landscape and to support the recreational facilities.

Figure 4. 52. Proposed landscape development designed by researcher, 2020

Figure 4. 52 (A & B) point out the proposal of man-made land forms and well-designed landscape features along river sides. This emphasis the tourist stays long and also, they would be better frequency to visit this action site.

- Recreational and Commercial facilities:

Researcher proposes to create recreational areas like, parks, walkways, trail system, ground common, parking zone etc. In addition to this, a continuous walk way and plantation development for proposed.

Figure 4.53. Proposed different recreational space designed by researcher, 2020

Figure 4.53 (A) point out the proposes different view spot setting with proper providing shade trees, (B) represents the visitors and the recreational place administrator car parking provision with esthetical visual fountains and trees. In the Lah riverside development study researcher provide parking facilities in the road side. Parking is the act of stopping and leaving it unoccupied. Parking on one or both sides of a road is often permitted, though sometimes with restrictions. Motors vehicles are not allowed in the footpath regions. If anyone wants to go with motor vehicles then he/she must park it in the parking lot. (C) shows different land form with comfortable chairs, and (D) is a place of high view pots (picnic spot) from youth center buildings to swimming pool, Sport courtyard, and remaining natural and man features. This can be a turned into an attractive place if any picnic spot is available in this side.

- Add new, renovation and adaptive reuse of historic 'Keste Demena's bridge

In order to safeguard the successful use of the recreational facilities of the Finote Selam, researcher proposes the iconic recreational centers to be earmarked, renovated with adaptive reuse. Although these should have been already done before placing it in researcher. Think over to preserve the iconic heritage bridge with sustainable use manner.

Figure 4.54. Proposed Swimming pool and Bridge Designed by Researcher, 2020

Figure 4.54 (A) point out the Swimming Pool of the site for the swimming and related purposes. Such kind of pool/pond can be used for community used. There is no sufficient facility for recreation activities in this area. For better mental and health improvement of the local people it is mandatory to provide land for different types of recreation activities like parks, playground, green and sports complex.

Figure 4.54 (B) illustrate the proposed additional alternative bridge, the first reason is the old iconic 'Keste Damena' bridge was finished the use of time span and second intention is there is only one functional bridge i.e. high traffic congestion to enter and pass way from the town even structure plan of Finoteselam puts a bridge on plan. But they are not implemented/constructed by different root case. So, the researcher has been proposed another esthetical beautiful alternative bridge and also the old bridge should be renovating for visiting passing way for only pedestrian because 'Keste Damena' bridge is iconic symbol of west Gojam specially Finoteselam town.

- River Network/road along Lah River:

A large number of economic activities will take place along the Lah river. It provides a wide pedestrian footpath along the river side so that people can walk easily and they can sit and gossip freely with the other people. In order to provide protection to the riverbank and to enhance traffic circulation in the both side of river. Pedestrian walkway starts from right side of general market to Guaguat water fall. This walk way should be used for pedestrian purposes. No vehicles are allowed in this walkway. The wide of the pedestrian would be 15-30 meters. various types of landscaping and monument should be in side of this walkway. The walkway should not be straight. It should be curved so that it removes monotones view.

Figure 4.55. Proposed pedestrian walkway along Lah designed by researcher, 2020

5.3. Strategies

The proposals and recommendations for Lah riverside development are provided in three parts. The first part consists of land use proposals over the vacant lands which were identified along the river. The second part consists of recommendations and development control guidelines for existing development along the river and the third part consists of rectification strategies.

5.3.1. Researcher's strategies according to Lah riversides

According to the riverside development plan of researcher, riverside would be guided through the following strategies:

1) Overcome the fence of Lah green colluders, to ensure a good connection between livable neighborhoods and the riverside, through extend the streets and a little bit commercial activity along Lah riversides.
2) Create a network of pedestrian linkage in form of pedestrian overhead bridges to link the whole district of town with the riversides area and to have good connections with more accessible for pedestrians
3) Low-rise standing building development with two/three story or not more than 12 meters height, to ensure that certain landmarks of the town will not visually be affected by the new development of riverside, and to provide visual corridors linked to the town center

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Appendices

Appendix I Survey questionnaire for sampled households

Adama Science and Technology University

School of Civil Engineering and Architecture

Department of Urban Planning and Design

Questionnaire for the local community

Questioner ID_____

Dear Sir or Madam:

This questioner is prepared to collect data on the, **Riverside Development: the case of Lah river in Finoteselam town, Ethiopia**. The aim of the questionnaire is collected information on local residents' perception on Finoteselam's around Lah riversides. All participation is voluntary and anonymous. It will take you 5-7 minutes to finish the following questions. I would like to promise you that the whole information given by the respondent is used for academic purpose only. Hence, considering the purpose of the questioner respondents are kindly requested to cooperate with the researcher in giving the necessary information. I would like to thanks you for your cooperation.

Instruction

Please put (X) on the box for the answers you choose or fill your answer on space provided.

N.B. In this questioner focus on riverside development specially along Lah riverside your intension, feeling, willingness, and future on Lah river. This referees to, sport courtyards, parks, green along river, walkways, and related concepts.

Part I Close-ended survey questionnaire for sampled Households

1) Name (Optional)_____
2) Age: a) Below 18 b) 18-36 c) 37-55 d) 0ver 55
3) Sex: a) Male b) Female
4) Age of the house hold_____ Family size_____ Average Monthly Income_____
5) Marital Status: a) Single b) Married c) Divorced d) Separated e) Others Specify
6) Educational Status: a) No formal education b) Primary level c) Secondary level, d) Tertiary college f) University level
7) Your occupation is:
   a) Government official b) Teacher or engineer c) Manual laborer
   d) Farmer e) Military or police f) Student
   g) Unemployment h) Other (Please specify) _____
8) How long have you been living in Finoteselam?
   a) 0-5 years b) 5 to ten years c) 10-15 years d) 15 to 20 years f) more than 20 years
9) From where kebeles you came? a) Kebele 01 b) Kebele 02 c) Kebele 03
   d) Kebele 04 e) Kebele 05 f) Others cities/towns
10) How long do you take (minutes) to reach your destination to Lah river? a) (1-20 minutes) b) (21-40 minutes) c) (41-60) minutes d) (others) _____
11) When you come Lah river a) Everyday b) Weakly c) Monthly d) Annually
   f) If there _____
12) I am visiting Lah river today PRIMARILY for/because: VFR [ ]
   Heritage/Historical interests [ ] Arts / Culture [ ] Nightlife [ ] Retail/Services [ ]
   Social / reflection / relaxation [ ]
13) What is the domestic water source in your house? a) Water pump b) Well water c) Village fountain d) Water tank e) Interior tap water (one tap) f) Interior water supply system (multiple taps) g) river h) Other (Please Specify) _____
14) Do you have any problems with water supply? a) Yes b) No (Go to next Q.13)
15) What type of wastewater system do you have in your house?
   a) Common sewerage system b) Septic tank disposed regularly by municipality

c) Septic tank disposed regularly by him/herself d) Discharged directly to a river / land

e) Other (please specify) _____

16) From May to September, what is the frequency for you to visit the riversides

A. Seldom B. One-time C. Two times D. Three times

E. Four times F. Five times G. Six times H. Every day I. Not sure

17) From September to May, what is the frequency for you to visit the riversides

A. Seldom B. One-time C. Two times D. Three times

E. Four times F. Five times G. Six times H. Every day I. Not sure

18) From May to September, in a typical week, how many hours do you spend on the riverside: _____ Hours.

19) From September to May, in a typical week, how many hours do you spend on the riverside: _____ Hours.

20) Typically, when will you go to the riversides, from May to September?

A. Before 8 o'clock B. 8-12am C. 12-2pm D. 2-5pm

E. 5-8 pm F. 8-11 pm G. After 11 pm

21) Typically, when will you go to the riversides, from September to May?

A. Before 8 o'clock B. 8-12am C. 12-2pm D. 2-5pm

E. 5-8 pm F. 8-11 pm G. After 11 pm

22) Would you be concerned about the number of tourists coming into your local area?

☐ Yes ☐ No

23) Would you participate Finoteselam plan preparation?

a) Yes b) No

14) When you came to Lah river, what you see?

a) People doing a physical exercise
b) People washing cloth & swimming
c) Entertaining the with couples
d) The gays catch the fish (fishing)
e) Reading books
f) They used as a local slaughter
g) Others

15) What you want Lah riverside for future?

a) Recreational centers
b) Commercial district
c) Truism center
d) Social services center
e) Urban agriculture zone
f) Walkable for pedestrian

g) For bicycles

16) Lah riverside is comfortable for visiting/recreation?

a) Yes b) No

17) If ‘‘No’’ the above Q4. What is reason to it’s not comforts for recreation?

a) It is a pile of dry and liquid waste

b) The place frequently cases of multiple crimes, such as robbery, rape, and even murder

c) The site has become a physical and psychological threat to the urban community

d) The site used as illegal slaughter and meat trash

Instruction II On A Scale Of 1 – 5, 1 Being Totally Disagree And 5 Being Totally Agree,

(i.e. 1 = 0% disagree, 2 = 25% agree, 3 =50 agree, 4 = 75% agree, and 5 = 100 agree)

24) would you support to increase the use of the river for leisure purposes?

1 2 3 4 5

25) Do you believe Lah should be better branded as a riverside town?

1 2 3 4 5

26) Do you believe Lah river as a nightlife attraction?

1 2 3 4 5

27) Would you like to see a commercial development on the riverside?

1 2 3 4 5

28) Would you affect your privacy when increased use of riverside facilities?

1 2 3 4 5

29) Would you believe touch your comfort and safety to increased riverside facilities?

1 2 3 4 5

30) Is it Lah riverside promotes modern culture: arts, music, festivals?

1 2 3 4 5

Part II Open ended Questionnaire for sample Households

31) Why you preferred Lah riverside rather than neighborhood reaction center?
32) Please state what kind of attraction you would like to see in the place of Lah river?
33) Please state your reason for choosing this attraction?
34) Would you be concerned about the number of tourists coming into your local area?
35) Do you think whether the riversides can be the representative of city image of Finoteselam?
36) How do the tourists appraise the riversides in Finoteselam?
37) Are you aware of any riverside development services?
38) What are the root causes of problems along the river?

Part-III. Questions to Government officials: (Municipality)

1) Do you think whether the development of riverside is kind of waste of land resource and money, considering the conflict between increasing population and lack of accommodation?
2) How do you think about the influence of the development of riverside on the land use pattern surround the side of Lah, what kind of influence do the riverside have on the land value?
3) How did the riverside influence the urban development of Finoteselam in your mind?
4) The development of riverside will inevitably lead to the relocation of residents, how did the government resettle those residents, and how do the residents think about the relocation, do you think it is necessary to relocate a local community to give the way to the development of a riverside?
5) As far as you know, how do the local residents in Finoteselam think of the riversides, what kind of role does riverside play in their daily life?
6) Do you think the riversides in Finoteselam were fully utilized?
7) How do you think about the so-called riverside culture in Finoteselam?
8) How much budget is allocated for the last 5 years for riverside development and management? Below table

Table 8.1 years budget is allocated s for riverside development and management

Year	Capital		Recurrent		Remark
	Planed	Actual	Planned	Actual	
2006					
2007					
2008					
2009					
2010					
2011					
2012					
Total					

Part-IV. In terms of Environmental Management (for Government officials)

1) how the riverside is planned in the structural plan and what was considered during the planning?
2) how the structure plan was implemented on the ground especially along Lah river?
3) What are the feedbacks of structure plan provision of open space & greenery especially about buffer zone?
4) Do you inform and train your staff about riverside?

   ☐ Yes ☐ No
5) Do you think professionals' in your institution are adequately qualified to integrate riverside planning principles?
6) Do you think there is community participation in planning and development of riverside?
7) What are the factors that delay the development of riversides especially along Lah river?
8) What are the main gaps and limitations of current green space (riverside) planning practices?

Appendix -II Field observation and checklist

1. The absolute location of action site
2. Altitudinal location of site
   2.1. Lowest point …….
   2.2. Highest point …….
3. Existing natural features
   3.1. Gorge, mountains, valleys and the like
4. Geology
   4.1. Seismic area
   4.2. Flood prone area
   4.3. Soil types
5. Riverside
   5.1. Status of riverside
   5.2. Services they are giving
   5.3. How much land it covers?
   5.4. Comparison with other surrounding parts of Finoteselam
6. Challenges and opportunities
   6.1. Types of challenges and opportunities
   6.2. Extent of challenges and opportunities
7. Design solutions
   a) Planned design solutions which are not applied yet
   b) Experiences from different projects done for similar thematic issue in different parts of the world.

Table 8.2 Field observation and checklist

No_	**State of the along with riverside areas**	**Response**		**Date of observation**	**Remark**
		Yes	**No**		
1	Derelict sit				

2	Fenced and planned with trees				
3	Well-developed and serviced				
4	Developed and managed by private				
5	Developed and managed by the public				
6	Developed and managed by the public municipality				
7	Changed to other purposes				
8	Used for dump site for solid waste				
9	Used for grazing				
10	Used for crop production				
11	Others				

Appendix -III Schematic Development Program and Design solution

Schematic Development Program for Youth center along Lah riverside

Table 8.3. Program Development for Youth center along Lah riverside

Specific Area For The Allocated Functions		**Area(M^2)**
Lobby And Reception Area		50
Administration Block:	A) Directorate Office	45
	B) Vise Directorate Office	45
	C) Small Conference Room For The Use Of Office Staff Meetin	80
	D) Secratery Office	12
Total		182
Café And Restourant	A) Kitchen And Preparation	5O
	B) Dining Area	200
	C) Toilet (Gents $ Laddies)	12
	D) Store	35
	E) Managerial Office & Secretary	32

Staff Lounge And Coffee Area		300
Total (Lounge & Restourant)		**671**
Library With Modern Amenities	1. Directorate Office	45
	2. Vice Directorate	45
	3. Secretary	12
	4. Reading Space	620
	5. E-Library	250
	6. Office	30
	7. Periodical	42
	8. Catalog	85
	9. Attendant Desk	15
	10. Coordinator	18
	11. Free Wi-Fi Area	250
	12. Binding & Copying	42
	13. Meeting Hall	120
	14. Janitor	6
	15. Store	35
Total		**1645**
Cinema Hall		350
Gymnassium	⌖ Health &Wellness	35
	⌖ Sport Program	55
	⌖ Staff	60
	⌖ Manager Office	25
	⌖ Fitness Center Directorate Office	25
	⌖ Rest Room	35
	⌖ Changing Room	24
	⌖ Fitness Lecture	50
	⌖ Operation	24

	⌖ Closet		20
	⌖ Bath with Toilet		65
	⌖ Changing Room		70
Total			**468**
Classroom	A) Training Rooms		70
	B) Art and Sculpture Studio		90
	C) Music and Dance Learning Rooms		90
	D) Homework/Computer Room		48
	E) Technology Lab		50
Total			**360**
Sport Field	Badminton	13*6	78
	Basket Ball	13*28	364
	Foot Ball	40*20	800
	Ground Tense	2.8*1.5	4.2
	Valley Ball	18*9	342
	Swimming Pool	25*20	500
	General Store		30
	Hand Ball	44*20	880
	Gymnastic	52*27	1404
Total			**5014**
Photo Studio	Machine Area		5
	Waiting Area		5
	Changing Area		3
	Studio		15
Total			**30**
Health Center	Art Room 2		18
	VCT Room		15
	Blood Bank		32

	Laboratory	30
	Pharmacy	32
	Record Room	16
	Nurse Station	16
	Nurse Staff	15
	Emergency Room	15
	Doctor Office	15
	Toilet Room	12
Total		**369**
Sauna Bath	Sauna Area	28
	Resting Area	24
	Men Changing Room	7
	Women Changing Room	7
	Men Bath Room	8
	Women Bath Room	8
Total		**82**
Women Beauty Salon		41
Ds Tv Room		90
Total		**211**
Indoor Game	Play Station	40
	Tennis Table Area	54
	Pool Game Area	68
	Greenbul Game Area	25
Total		**187**
Open Public Space and Plaza		**300**

Source: The program adapted by Researcher, 2020