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Social Inclusion and Energy Managment
for Informal Urban Settlements

CASE STUDY
PERIPHERAL AND INNER-CITY INFORMAL HOUSING SITUATION IN MEKELLE

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ABSTRACT

The definition and understanding of informal settlement or informality in general is a very wide and diverse concept depending on different countries' socio-economic context. Not only from country to country but also within cities in Ethiopia the issue of informality shows different causes and situations. The case of informality in Mekelle appears in different forms, including informal planning, tenure insecurity (mainly due to the process of rapid urbanization and infrastructure development), and neighborhoods with poor or non-proper infrastructures. This specific case study tries to assess the situation of informality in Mekelle by considering two areas. The first case is the informal transformation or development of settlements at the peripheral areas of the city. These settlements are mainly characterized by their transformation from rural areas into urbanized settlements. The second case focuses on informalities in the inner city center. The main character of informality in the inner-city case is manifested by the lack of proper infrastructure provisions, poor housing conditions and unplanned organizations. The study tries to identify the situation of informality in both case areas in a comparative way to understand the informality at the city scale. ◆

Key words:
situation of informality, peripheral urban developments, inner-city urban developments

" This specific case study tries to assess the situation of informality in Mekelle by considering two areas."

CONTENTS

PART 1
CONTEXTUAL BACKGROUND
AND PROBLEM STATEMENT

1.1. Background and justification Informal Settlements

Urban development trends in the built environment usually are categorized as formal or informal developments or settlements. The provision of infrastructure as well as economic development in urban centers is also a continuum of this category. According to UN Habitat, formal urban developments are those that follow the state land administration policies and local administration planning and construction regulations, while informal urban developments do not comply with one or another requirement. With this regard, informal settlements usually bear attributes like illegal occupation of land, non-adherence to building codes and infrastructure standards or both illegality of land and non-conformity to building standards and codes (Fekade 2000)

By 2008 over 50 percent of the world population lived in urban areas and it is expected to rise to 70 percent by 2030, whereby Africa and Asia would experience the fastest urban growth and Africa's urban centers would host around 61.8 percent of the world population by that time (UN HABITAT 2008, 2009a). This rate and scale of urban population growth, accompanied by climate change and resource depletion, would require a high concern and intervention from all concerned stakeholders to avoid human and environmental calamity, particularly where 90 percent of the upcoming urban growth will be happening in developing countries (Blanco et al 2009). In line with this it is a must to note that significant number of the urban population in developing countries is dependent on the informal sector (UNHABITAT 2009). For this informal settlements are among the main indicators (Roy, 2005)

Urban growth trends in Ethiopia

Ethiopia is the second most populous country in Sub-Saharan Africa with an estimated population of about 90 million (UNDP 2015). It is one of the largest landlocked countries with a total area of 1,133,380 square kilometers. Ethiopia is one of the oldest independent nations in the world, with that it has a long history of indigenous urban settlements. However, currently the country today is one of the least urbanized nations of Africa, with not more than 17 percent of its population living in urban areas. In line with the pattern of the least urbanized countries of the world the country is recording one of the fastest rates of urban growth in the world, estimated at an average of 5.4 percent per annum, this set to triple from 15.2 million in 2012 to 42.3 million in 2013 (World Bank, 2015). Most of this growth demonstrates itself in the increase of small, mostly roadside towns or service centers whose principal role is mediation of local commerce and, more often than not, functioning as centers of public administration. The number of such settlements has been rising so fast in the recent past that the number of places recognized as 'urban' by the Central Statistical Authority was as high as 925 in 2004. Approximately two-thirds of these urban places are small towns whose populations do not exceed the 5,000 mark. Excluding the capital city, the country today has only 10 cities with population sizes over 100,000 (UN –HABITAT 2007). Ethiopia has set a vision of becoming a middle - income country by 2025. The poverty rate has already decreased from 39% in 2004/5 to 26% in 2012/13, and there has been a 53% increase in its absolute Human Development Index (HDI) since 2000 (Cities Alliance, 2015).

Mekelle city development and current status

One of the oldest towns in the northern part of Ethiopia, Mekelle as a City was founded in the 13th Century. It served as the capital of Ethiopia in the 1870s during the reign of Emperor Yohannes IV. Today the city is a vibrant hub of culture, industry and education. Historically, the city was used as a market town. Camel caravans from Afar region brought salt to trade from the volcanic lakes to the East. The area is of great historical interest, serving as the gateway to the World Heritage Sites of Axum and many rock-hewn churches in Tigray. A number of attractive landmarks feature in the city, including a civil war monument, castles, churches and the largest salt market in Ethiopia. As the capital of the Tigray region in the north of the country, Mekelle is the largest city in north Ethiopia and the second populous city in Ethiopia with an estimated population of 341,000 in 2016 (CSA, 2013). The city sits at an elevation of 2000m with relatively high temperatures and evenly distributed rainfall throughout the year. The largest ethnic group is Tigray (96%) the majority of whom are reportedly Orthodox Christians (93%) (MUHDCo, 2015b). The fact that Mekelle is located at a nearby distance from culturally important monuments and sites, benefits the city with great tourism investment potential. Next to Addis Ababa, Mekelle holds the biggest number of educational institutions, this makes the city a growing knowledge hub. This is a source of direct economic opportunity as well as capacity for the region. Mekelle is home to many higher education institutions such as Mekele University which have an estimated student number of more than 30,000 as well as 94 schools (79 for grades 1-8 and 15 for grade11-12). The city is connected though a new international airport, frequent intercity bus services and has a mostly paved road network (85%). The city has good healthcare and educational service coverage.

The population-to hospital ratio is 1:95,500 compared to the average 1:176,600 for major cities in Ethiopia. Electricity usage in the city has dramatically increased in recent years (Cities Alliance, 2015).

1.2 Research statement objectives and questions

The definition of informal settlement or informality in general is a very wide and contradicting concept depending on different countries' context. Not only from country to country but also within cities in Ethiopia the issue of informality shows different cause and scenario.

According to UNDP the definition on informality says "Informal settlements are human settlements which do not provide their inhabitants the opportunity for enjoying their *rights to an adequate standard of living".* Looking into informality in the city of Mekelle's context, it can be distinguished from different perspectives. As it is the case in different cities in Ethiopia informal settlement or illegal construction is not often tolerated by regional governments. Due to the sweeping measure taken as in the case of Gefeh Gereb in Mekelle, in which more than thousands of houses deemed illegal had been demolished, the existence of informal settlements in a bigger scale (settlements without legal documents) is rare. However, the issue of informality in Mekelle appears in different forms including, *informal planning*, *tenure insecurity* (mainly due to the process of rapid urbanization and infrastructure development), and neighborhoods with poor or inadequate infrastructures.

Major Objective

The main objective of this case study will be to study the developments and situation of informality in the context of Mekelle.

Specific objectives include
- To understand informal housing situations in the context of Mekelle as a city.
- To identify the different situations and characters of informal housing in Mekelle
- To identify and compare the situations and characters of informality from two perspectives (peripheral and inner-city).

Research questions

- What are the physical and socio-economic characters of informality in Mekelle city?
- What are the similarities and differences of informality in peri-urban areas and inner-city centers in Mekelle?
- What are the driving influences of informality in Mekelle?

from the perspectives of Housing condition, Environment, Urbanization, Socio-Economic and administrative issues.

- Different planning challenges including, infrastructure development, regularization and land policy
- Housing characteristics, conditions and typology

1.3 Scope of the study

- Neighborhoods genesis and Morphology
- Characters and situations of informal housing

1.4 Organization of the research

This case study is organized in six chapters, and each part or chapter will start with specific introductions. ◆

Table 1

Summary of Content

PART	FOCUS/SUMMARY OF CONTENT
One	This chapter is planned to introduce and highlight the research content and the way it was structured to address the research question. It gives a background on the case area, the methodological approach and scope of the case study.
Two	This chapter presents theoretical framework and appropriate literatures relevant to the case study. Theories on informal settlement and housing are discussed. Literatures relevant to informal settlement and informality in housing are summarized in the chapter.
Three	This chapter presents the methodological approach chosen to collect and organize the research data for the case study. The type of data and the means by which it was generated is discussed in this chapter
Four	In this chapter the research case study area is presented and discussed. The case study is organized in such a way that all the generated data on the field form a meaningful totality detailing whenever there is necessity. The case study is discussed in this chapter based on the primary and secondary data collected. It also shows the situations of informality in the two selected cases areas.
Five	In this chapter the collected data is analyzed and discussed to show the situation of informality from two perspectives, one in the case of informality in the inner city, the second is the case of informality at the peripheries of Mekelle.
Six	This section deals with conclusions and recommendations.

PART 2
THEORETICAL FRAMEWORK
AND LITERATURE REVIEW

2.1 Contextual framework Slums

Definitions of what exactly constitutes a slum vary considerably. There are significant differences in types of slums and their characteristics. These differences might be as pronounced within a particular city, as they are across cities and countries. In many cases reliable data simply does not exist. This makes it notoriously hard to determine the exact number of people living in urban slums. The UN estimates that 1 billion people live in urban slums – one out of every six human beings on our planet. It also estimates that by the year 2030 this number may increase to 2 billion. Alternate viewpoints suggest that these numbers are based on broad selection criteria, thereby diluting the emphasis that needs to be focused on those who are living in really critical conditions. While resolving these discrepancies is important, what remains unambiguously clear is that the living conditions in slums pose an enormous and escalating problem – a problem which threatens the health and well-being of hundreds of millions of people across the world.

Depending on their particular circumstances, the lives of slum dwellers may be threatened by floods, landslides, diseases, exposure to toxic industrial waste, and indoor air-pollution. The lack of access to roads, footpaths, street lighting, drainage, electricity, garbage collection, and socio- economic assistance – also contributes significantly to the vulnerability of slum dwellers. Women and children are especially affected by poor sanitation, indoor air pollution and by the burden of excessive time spent on collecting water and fuel. The list of challenges faced by slum dwellers is long, and many of these disadvantages reinforce each other in a vicious cycle.

In many cases the residents of slums may have insecure or unclear tenure of land. The land they live on might be government owned, privately owned or held under informal tenure. These issues of informality and instability further complicate their living situation. Insecurity of tenure is one of the most common features of urban poverty, underlying the formation and existence of slums. There is a need to deal with this as a matter of priority and as a central condition for the improvement of the lives of slum dwellers.

Generally, the communities that live under these conditions are made up of very low-income households who have migrated to urban centers in search of a better future. They usually settle in these communities to be close to work opportunities, which in many cases tend to be exploitative and informal… sometimes criminal. In many African countries, however, the lack of serviced land for housing has led to such extreme distortions in land and housing markets that lower-middle and middle-income households also have no choice but to live in slums. (World Bank 2006). Slums are usually characterized by having highly congested urban areas; by sub-standard housing that includes unsafe buildings, poor sanitary provisions, poverty and social disorganization (World Bank, 2002).

According to UN Habitat (2002) a slum dweller is one who lacks one of the following
- Adequate water
- Adequate sanitation
- Sufficient living space
- Secured tenure
- Durable housing (quality of structures & environment – hazards)

Physical and social characters of slums Inner city slums

The physical and social features of slums vary according to the age of the settlement and its location in a city. Central city slums are characterized for their high density with older structures and longer term residents, many being renters. Pocket and linear slums exist throughout cities, often built illegally on public infrastructure, and may require removal and resettlement. Their residents are often extremely poor, and often rely on hawking and begging.

Peri-urban slums

Peri-urban settlements are often the most recent, lower in density, growing rapidly, and located on larger land parcels. They are settled predominantly by immigrants, grouped according to regional or religious affiliation, who find employment in the newer suburban commercial and industrial areas. Many residents are squatters in self-built structures, though some may pay land rent to private landlords.

Squatters

According to World Bank (2002) squatters settle on land, especially public or unoccupied land, without right or legal title. Squatters include those who settled on public land under regulation by the government, in order to get legal title to it

Squatting

Squatting is the act of squat (setting on a piece of land without permission) or the act of occupying a given piece of public land in order to acquire title to it.

Squatter settlement

The definition of squatter settlement varies according to different countries and cities context. However; a common character is that they are areas where people build home in violation of formal rules about property rights, zoning types and quality of construction (Epstein; 1972, William; 1985). The main defining characteristic of squatter settlements is the illegality of tenure. The squatter occupies land that is legally owned by another (government or private land) without his consent. The other feature is that the existence of this settlements is not formally approved by appropriate local authority and organization. Squatter settlements invade on existing land regulation and building standards (Seymour; 1976, William; 1985). Generally, squatter settlement refers to and is characterized by the illegality of the land ownership and other infrastructure provision. In Ethiopian context, squatter settlements are known as "Chereka Bet". The term Chereka bet in its Literal Translation means " house of the moon" implying the illegal construction of houses overnight using moon light, so that to avoid control by the legal
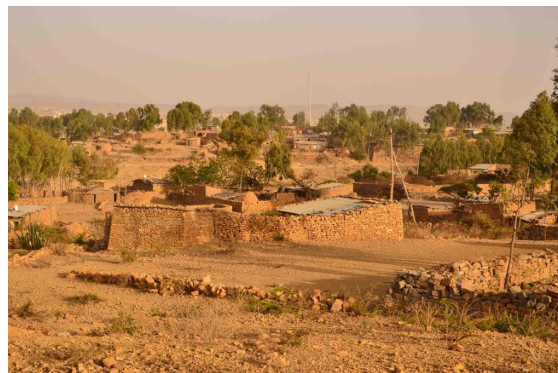
Figure 1

Example of inner city slum

Figure 2

Peri–urban Slum example

authorities, they are usually built on land occupied or used without the consent of the local city council and without having any construction permit. These settlements are usually inhabited by the urban poor and most of the time they are cut off from proper infrastructure provision. However when their size expands they used to get infrastructure provisions, mainly water and electricity provision. The provision of water and electricity in turn makes the settlements to be recognized as formal settlements but without formal tenure. Once these settlements are provided with such infrastructures they are susceptible for speculation in price of land.

Informal settlements

Defining the terms "informal settlement" and "informality" is opens a broad debate because of the different contexts in different countries. According to a report from UN Habitat informal settlements constitute 43 percent of the developing countries population, while in more developed countries they constitute only 6 percent. Hence informality and informal settlement is a serious concern to look at in developing countries.

Rather than defining, characterization is a better approach to understand informal settlements. According to *UN - HABITAT* Informal settlements are characterized by
- Inhabitants who have *no security of tenure* vis-à-vis *the land or dwellings they inhabit*, with modalities ranging from squatting to informal rental housing,
- The neighborhoods which usually *lack, or are cut off from, basic services and city infrastructure* and
- When the **housing situation may not comply with current planning and building regulations**, and is often situated in geographically and environmentally hazardous areas.

Another characteristic of informal settlements is that they are usually residential areas of the urban poor more often in the cities of the developing world. They are mainly found on public, private or customary land accessed by invasion or developed against planning, building and ownership regulations (Abbott, 2001). These settlements lack basic social services and infrastructure facilities. Baken (1991) classifies Informal Settlements as those settlements
- Which occur due to (un) authorized invasion and development of public and private land,
- Which are developed through subdivisions that are not registered officially or subdivisions that do not conform to planning regulations,
- Which are within areas covered by customary tenure which have been made part of the city through cities' expansion,
- Which are built without permits from the local authorities according to the specific local building regulations.

2.2 Threats for Informal Housing

Most cities with informal settlements usually face many problems related with high unemployment, urban poverty, social challenges and conflicts. Most of the time, residents of informal settlements are poor and disadvantaged, hence they face many challenges including lack of access to adequate infrastructure, clean water, power supply, public transportation and proper sanitation. These areas are mostly unhealthy and environmentally hazardous, because of unplanned garbage and sewer discharge systems and suitable for spreading diseases and epidemics. Because of the lack of proper tenure security, in most of the cases, these housing areas are always under threat of being evicted and demolished. In most cases these settlements are located in environmentally hazardous area, they are usually susceptible for flood, landslides, earthquakes and others.

2.3 Responses to slums and informal settlements

As a summary from different countries governments experiences the responses to slums and informal settlements can be categorized onto four, which are forced evictions, clearance and relocation, clearance and on-site redevelopment, upgrading in place. (World Bank Group 2006)

Forced eviction
Slum clearance through violent forced evictions and large scale slum demolition, without the offering of any alternative or choice to the populations displaced, has been a widespread practice. Slum dwellers who have struggled to survive in the most difficult of circumstances, suddenly find the culmination of their efforts and the physical manifestation of their will to survive, destroyed in the most brutal way. Besides having to deal with a devastating blow to their economic and social assets, slum demolition is an extremely powerful psychological blow to their spirit. The 'Center on Housing Rights and Evictions' estimates that every year 5 million people suffer this cruel fate.

One example could be around 2005, in what was called 'Operation Murambatsvina,' the Zimbabwean government destroyed homes, businesses and street vending sites in cities across the country. The official UN fact-finding mission reports that about 700,000 people have lost either their homes or their livelihoods, or both. About 2.4 million people have been affected to varying degrees. Due to the demolitions, serious HIV patients have been left without healthcare, students without education, and they were displaced without food, water, sanitation or shelter. Women and children suffer the most from such evictions.

Clearance and relocation
This involves the removal of slum residents from the central city to resettlement sites that are usually miles outside urban areas. Once the slum dwellers have been cleared out, the land they lived on is slated for redevelopment to high value uses. The problem with this approach is that the dispossessed residents usually cannot find work near the resettlement site and eventually return to the city as squatters. In some cases residents have been dispossessed of their homes only to find that the promised resettlement sites simply do not exist. In many cases forced evictions are disguised as clearance and relocation schemes.

On–site redevelopment
A third approach used by policymakers has been clearance and on-site redevelopment. This involves temporarily moving the slum residents, then clearing the land, and finally building new housing for them on the same site.

Building multistory housing is sometimes justified when commercial uses on the same site can subsidize the costs of residential space. For instance, families could live above the businesses they operate on the ground floor. In some cases, however, multistory housing is not practical, because the commercial uses cannot support the level of subsidies needed to build and maintain the new housing.

Upgrading in place
A fourth policy approach toward slums, which is usually preferred by communities, is upgrading in place. This consists of improving the existing infrastructure and facilities up to a satisfactory standard, and often addressing issues of tenure. An important advantage of upgrading is that it minimizes the disturbance to the social and economic life of the community. It is the approach that most strongly guarantees that the intended beneficiaries remain the actual beneficiaries of what could be very costly interventions.

2.4 Changing Government Policies towards Informal Housing

Almost all developing countries are not able to deliver adequate housing through the formal housing development. The problems for this shortage could rise from personal to institutional level. A lack of individual affordability is not the universally valid constraint for informal settlements, what is common is the institutional unwillingness to accept informal sector employment as consistent collateral for access to the institutionally provided housing. There are many official formalities for implementing informal sector housing. But now it is apparent that provisions of an official housing program for the informal sector workers are desirable and supportable (Sastrosasmita & Amin 1990).

• Upgrading of informal housing:
The upgrading of existing informal settlements has become an increasingly important element in the provision of housing in developing countries. Slum upgrading is generally less expensive and more cost effective than any other scheme for housing development. It is also affordable to the lowest-income groups. On the other hand it is less disruptive to households than the demolition and relocation approach (Johnson 1987). According to Choguill (2007), a number of advantages of informal housing upgrading can be identified. First, it preserves existing economic systems and opportunities for the urban poor. Second, it maintains the community structure and the safeguards that already exist in the community group. In this way, the urban poor do not lose their jobs.

• Rehabilitation:
Though there are many policies and regulations in developing countries to rehabilitate disadvantaged people before eviction or demolition, it is not often - practiced. Implementation of rehabilitation program takes more time because of multi-sectorial involvement. In absence of proper planning of housing standards, job provision and social interactions, this type of schemes often fails. Choguill (2007) has shown that standards are necessary in solving low-income housing problem. They are required to ensure good health concerned with water, sanitation and drainage and reduce danger of fire.

• Demolition/eviction:
Eviction is the usual consequence of the widespread tenure insecurity in informal settlements. This is carried out, in most cases, in inner city areas where land is in high demand and precious. Arson attacks are also common, where fire is intentionally set to informal housing settlements to discourage consolidation as an alternative form of eviction (Ahmed 2007). Evictions can suddenly stop the services of service providers that's why such organizations keep their interventions limited in scope. ◆

PART 3
RESEARCH METHOD

3.1 Method

Various incompatible interests of an urban setting involve different actors with different capacity to influence end results. To investigate and understand the situation of informality one has to examine the issue from different perspectives and address all the actors who will be involved in the sector. This approach necessitates an interactive data collection method with different actors to get their perspective with the issues of the research question. Hence, the data collection in this study mainly focusses on understanding informal housing in the context of Mekelle specifically.

3.1.1 Choice of method

Basically, in any research the choice of method is dependent upon the way the data is assumed to be generated and analyzed to reach at findings. According to Montello and Sutton (2006) the two major data collection types, Qualitative and Quantitative data are defined as follows;

Qualitative methods:
broad term referring to scientific methods that incorporate some combination of collecting non numerical data such as verbal or pictorial records, collecting data using relatively unstructured and open ended approaches and formats, and analyzing data with non-numerical and non-statistical approaches.

Quantitative methods:
broad term referring to scientific methods that incorporate some combination of collecting numerical data such as metric-level measurements, collecting data using relatively structured and closed-ended approaches and formats, and analyzing data with numerical and statistical approach.

The main data to be used for this case study will be a qualitative one even though quantitative data could also be generated for the selected sample sizes in the specific selected case areas. This case study research is based on two case areas. Informal housing and informal settlement is a case which had never been studied in Mekelle. Focusing on the understanding of the general situation based on qualitative research approach will be an opening for further research which could be done in detail with quantitative data support.

3.1.2 Source of data and collection method

The general structure of the data generation mechanism for this case study is designed and implemented based on a parallel investigation focusing on the central actors in relation to the focus of the research topic, which are residents of Mekelle in the inner-city and the peri-urban areas. Generally, the data generation mechanism was focused in these areas through interview and direct observation. During this period, other important areas beyond the case study district have been included in the data generation process to put the research in a wider context.

The data collection mainly focused on two actors considering informal housing situation in Mekelle, the first one is government offices (including the city administration and local sub-city administrations), and the second one are residents of the selected site.

Table 2

Type of data collected from different sources/ with different methods

TYPE OF DATA COLLECTED	DOCUMENTS	MAPS	INTERVIEW	DIRECT OBSERVATION	PHOTOGRAPHY
GOVERNMENT OFFICES:					
Mekelle City administration	X	X	X	X	
Semien Sub City office	X	X	X	X	
Hawelti Sub City office	X	X	X	X	
Residents on Endameskel site			X	X	X
Residents on Serawat site			X	X	X

Existing Data

Collecting existing data is mainly employed to provide essential background data in quick and cost effective manner (Samset, 2003). The data collected comprised publications of planning projects, academic literatures, maps, documentation of public meetings and discussions and other relevant secondary data. These data were collected almost in all localities of the stakeholders (the main sources were Mekelle city administration, sub city offices, and researches at Mekelle University and other institutes); hence the collection task was coupled with other activities, like interviews, all along the process.

Direct Observation

Direct observation was helpful in orienting the researcher in the real environment of the case study area. Especially in a situation where up to date base maps didn't exist, frequent visits were mandatory to understand the locality and create a mental map of the case areas. Before selecting the final two sites similar sites in the city have been visited. During this period informal discussions have been conducted with random residents in the different sites to gain a general information on the different sites. All along the interview periods, direct observation had sup-

plemented a great deal from what could possibly be learned from further interviews. Interview subjects usually talk about things that they think of worthy. In this case inquiries from direct observation were constructive.

Key – informant interviews

This part of data generation started as an entry point of the study areas, both the inner-city and peri-urban case areas. Samset (2003) explains the comparative advantage of the tool as an 'inexpensive quick and efficient means of gaining deeper insights into concrete questions and issues.' (Samset, 2003) At Endameskel site, an older resident who lived in the site for more than 70 years was very useful as key informant to understand the historic background of the site and Mekelle in general.

In-depth Interview

Interviews were conducted based on semi-structured approaches which allow a flexible dialogue while keeping the conversation relevant to the issues. Residents of the case study area and other stakeholders were included as primary subjects of this process.

I. Interview with the residents of the Study areas

The residents of the study areas were diverse in two ways

- Residents from the Inner-city area: most of them are old residents on the site.
- Residents from the peri-urban area: most of them are former farmers living in their site.

Table 3

Interview overview

INTERVIEW AREA	Inner-city Endameskel Site	Per-urban Serawat Site
NUMBER OF INTERVIEWEES	4	4
DISCUSSION QUESTIONS	• What are the main challenges they face living in their respective site? • How is their involvement in the development and planning process of their neighborhood with their respective sub city officials? • What are their expectations from the sub city or city administration in the development process of their neighborhood? • Hierarchically, what kind of infrastructure or facilities they prefer to have?	

II. Interview with city and sub-city officials

In this part, interviews were mainly focusing on officials from the city administration and respective sub-city administrations. There were also questions raised for respective professionals from the sub-city administrations.

INTERVIEW QUESTIONS
How is informality identified or defined in their sub-city?
Are there identified informal settlements in their sub-city?
What kind of informality is identified in their respective sub cities?
What measure are being taken whenever they identify informal constructions or settlements?
What are the main reasons for the emergence of informality in their respective sub-cities?

3.1.3 Sample houses survey

To show the situation of informality more in detail based on selected indicators with quantitative data, selected houses were surveyed by preparing questionnaires. From each case site 25 households are selected and surveyed. The sample size was chosen after making initial map survey and personal observations on the sites. The questionnaire developed contains the following categories.

- Socio – economic data
- Housing condition
- Transportation and infrastructure
- Environment and Waste management system
- Ownership and tenure

PART 4
RESEARCH AND CASES STUDY AREAS

4.1 Informal housing situation in Mekelle

In most cases in Ethiopia, the occurrence of illegal settlements is taken as an indicator of failures in the performance of the formal sector by city administrations or responsible bodies, Mekelle is not different from this case. According to different references, although the level of informal or illegal settlements in Mekelle is relatively better compared to other similar cities in Ethiopia, occurrences of the inevitable phenomenon of informal settlement has been observed, mostly along the periphery.

In 2011, 1338 housing units, deemed illegal by the regional government, had been demolished at Gefeh Gereb. Furthermore, in 2013, 1820 informal builders or settlers who purchase land through different informal mechanisms were legalized. Adding to that, the 2014 city administration report showed 827 units were recorded illegal, most of them demolished and the report has also pointed out that there is a severe occurrence of illegal settlement at the city periphery (Mekelle city structure plan review report 2014). After the issue of Gefeh Gereb, what the city is doing, with regard to informal or illegal constructions or settlements, is a strong control and demolishing when found. Even though the city administration is putting strong administrative controls of illegal or informal settlements in these outskirt areas, encroachment is still going on at a small scale.

Physical conditions of informal settlements in Mekelle Land issues

In any big Ethiopian cities including Mekelle, The major formal land delivery system for residential housing and investment is through the lease system. According to Ethiopian law, land is a public property and an individual can enjoy only the use right of land under his/her possession. Thus, the way to legally get a plot of land for housing development and investment purpose is reliant on the effectiveness of the lease policy. The lease proclamation No 272/2002, which is the current active law regarding land provision, includes provisions on how an individual can acquire a piece of land. Under these proclamation, land can be acquired through an auction system, negotiation, lottery system and the award system. The price of lease in Mekelle as in other Ethiopian cities increased very high during the last ten years, which makes it difficult for low income groups to acquire land in the city.

Currently, the city of Mekelle is expanding very fast with rapid population growth as well as big migration from rural areas and other smaller nearby towns. This transformation is also bringing a high demand of land for residential and other functions. Due to this influx the city is expanding to the neighboring rural towns and includes them to become part of the city administration.

Table 3

Migration rate of Ethiopian cities CSA 2008 Housing condition

S.N	Urban Centre	2007			Growth Rate 1994 – 2007
		Population	Migrants	% Migrant	
1	Addis Ababa	2,738,248	1,303,406	47.6	2.1
2	Adama	220,212	130,366	59.2	4.2
3	Adigrat	57.588	30,925	53.7	3.3
4	Adwa	40,500	19,035	47.0	3.9
5	Axum	44,647	20,047	44.9	3.8
6	Arba Minch	74,879	45,002	60.1	4.8
7	Asossa	24,214	16,490	**68.1**	5.6
8	Bahir Dar	155,428	86,418	55.6	3.7
9	Bishoftu	99,928	49,165	49.2	2.4
10	Debre Markos	62,497	32,873	52.6	1.8
11	Dessie	151,174	70173	48.3	3.4
12	Dilla	59,150	27,564	46.6	4.3
13	Dire Dawa	232,854	68,925	29.6	2.3
14	Gambela	39,022	22,945	58.8	**5.8**
15	Gondar	207,044	86,544	41.8	4.7
16	Harar	99,368	43,026	43.3	2.0
17	Hawassa	69,995	41,997	**60.0**	**6.1**
18	Hosanna	157,139	110,783	**70.5**	**6.3**
19	Jigjiga	125,876	32,098	25.5	**6.1**
20	Jimma	120,960	61,085	50.5	2.4
21	Kombolcha	58,667	27,456	46.8	3.0
22	Mekelle	215,914	113,139	52.4	6.2
23	Nekemte	75,219	40,393	53.7	3.6
24	Semera	2,625	1,880	**71.6**	**12.1**
25	Shashamane	100,454	52,839	52.6	5.1
26	Shire Endaselassie	47,284	25,344	53.6	4.8
27	Wollaita Sodo	76,050	43,653	57.4	5.7
	Total	**5,325,857**	**2591402**	**48.7**	**2.6**

The Tigray vernacular architecture, including houses built in Mekelle, is well known for the use of stone as a main construction material. It is the most readily available material especially in the rural as well as city periphery areas. Informal settlements in Mekelle are relatively well constructed compared to the *chika* houses (Mud and straw houses) in Addis Ababa. This is due to the abundant availability of stone as a construction material. However some of the houses are poorly constructed which makes them need regular maintenance.

Figure 3

Typical Mekelle Hidmo house type

Figure 4

Typical Mekelle Hidmo house type

General infrastructures

As in other cities, informal settlements in Mekelle are also characterized by not having proper infrastructures; mostly the roads are unpaved and irregular, some of the houses do not have access to adequate water and electrical supply. Lack of proper sanitation is also an issue.

Tenure

As mentioned before, settling or making a house on illegally claimed land is not tolerated by the government in Mekelle, because of that it's very hard to find houses without the right to own one. However as defined before, informal settlement is not only about having no tenure, the issue of unsecured tenure is also another character of informal settlements. The insecurity in tenure in Mekelle could be traced from different reasons including, the fast expansion of infrastructure provisions, mainly road, the development of land use for old settlements, the inclusion of farm lands into the city administration, the development of new industrial parks and other.

Figure 5

Poorly paved access road

4.2 Mekelle urbanization background

4.2.1 Historical Background of Mekelle

Mekelle is the capital city of Tigray, which is one of the nine states in Ethiopia. Tigray region is mainly know for hosting the oldest civilization in Africa which is called Aksumite civilization. The Aksumite civilization was one of the world's four powerful civilizations (Roman, Persian, and Chinese) around 5th B.C. to 4th A.D. The main wealth of the Aksumite civilization was dependent on trade. The city of Aksum which is a UNESCO registered world heritage city, holds some ancient monuments.

The highlands of Tigray is not known only for the Aksumite civilization. The region also is home to hundreds of medieval rock hewn churches and built up churches. The most famous ancient churches include the Debre Damo Church, the rock hewn churches in the mountains of Gheralta area and central Tigray.

Looking at the long history of Ethiopia, Meklle is a relatively young city, which dates back from the 14th century. According to oral stories, the city was founded around the 14th century during the reign of emperor Dawit. At that time, Mekelle was a relatively small village occupied by farmers. It is believed that during emperor Dawit's time the true cross of Jesus Christ, passed through Mekelle and it stayed there for a brief moment before it made its further journey south. In line with that people started to settle at the foot of the *Endayesus* and *C'homa* Mountains. This place is called Endameskel today.

The city of Mekelle basically shows three phases of development: the first one is called the earliest stage which includes the old villages' development and the imperial town development, the second phase is the intervention by the Italians during the brief occupation period, the third phase is the modern time planning and development.

Figure 6

View of Enda Yesus Mountain and Gonay Daero, Sketch "Muculla in Abyssinia" by Henry Salt, 1809 (Adopted from Rumiokazaki)

4.2.2 Early Stage of Urban Formation of Mekelle

The earliest urban pattern of Mekelle is basically developed out of old rural town development, which was mainly following on settlements at foothills of mountains of Endayesus and C'homa. These settlements were characterized for having organic patterns and village like developments. These early stage settlements show the development of the city as an agriculture dependent town. During these early times Mekelle was believed to have many streams and rivers. Most of them are none existent today with the developments of roads and other constructions in the city.

Nine Villages

This is the time when the city evolved along traditionally known nine villages. These villages basically appeared along river sides and mountain areas. Academically, these nine villages are first mentioned on the book by Tadese Sequar. These nine villages are known as *Enda meskel, Gonay Daero, May Degene, May Liham, C'homa, Enda Gabir, Enda Anania, Ada Gafaf, and May Gafaf.* Today they are still known by their original names, the only difficulty is that through the development of the city, the boundaries for these villages are not known clearly at present. These villages display the oldest traditional Hidmo houses (Traditional Tigray houses) in Mekelle. While C'homa, Enda Meskel, Gonay Daero, May Degene and May Liham are located in mountainous area, Ada Gafaf, Enda Anania, May Gafaf, and Enda Gabir are situated in a relatively plain part of Mekelle.
(Adopted from Rumiokazaki)

Figure 7

Aerial Picture of Mekelle around 1960s (Adopted from Ruiokazaki)

• **Enda Meskel**

Enda Meskel is said to be the oldest villages in Mekelle. Meskel means cross, the name is attached with a legendary story that the messengers sent from King Dawit went to Egypt in 1382-91 and arrived with the true cross of Jesus Christ at this village. The messengers are thought to have stayed in this village for 40 days. Actually, the area called Enda Meskel covers a much wider site from the upper part of the south bank of May Liham River. The opposite side of the river is the village of May Liham, neighboring Medhane Alem Church. There are remains of Hidmos, more than 100 years old. According to oral information there must have been 30-50 *Hidmos*. In ancient times, Mikael Church was said to have stood there, but after the construction of Medhane Alem and Mariam Churches by Yonannes IV it disappeared.

- **Gonay Daero**

The naming of this village, which means "large fallen trees" fits this place as it was surrounded with trees when a British traveler painted the village. The size of the village seems to have been of 30-50 Hidmos.

The present area with this name expands much wider than the old village: from the old bus terminal up to Ghiorghis Church, including the area behind the old stadium. This village is located alongside the path, which goes to/from Enda Yesus.

- **May Degene**

The name of May Degene originated from May Degene River. Although the present area with this name expands from the lower point at the stadium to the upper point of Ghiorghis Church and the spring, the old village must have been around the spring. It is on the terrace formed on the ridge.

- **C'homa**

The old village Chomea used to be also at the middle of the hillside slope, but the increase of population made this area with the same name much wider than the original one. The actual site covers Hill Top Hotel and the headwaters of Gerebe Bubu River. The site is a terrace with a great view across the plain. Historically, Emperor Yohannes IV had stayed here in a tent before the palace was completed.

- **May Liham**

The name of May Liham is derived for the nearby May Liham river. The present area called with this name covers a much wider area from Medhane Alem Church down to the old Mekelle Hospital and Gerebe Bubu River. The old village is thought to have occupied the upper part of this area, neighboring to Medhane Alem Church. The original inhabitants in this village were thought to be farmers.

- **Enda Gabir**

Enda Gabir is one of the oldest villages in Mekelle. The presence of one of the oldest churches in Mekelle, made residents settle around it. The actual area with this name stretches from this church to the place where the two rivers, May Liham and Gereb Bubu, meet. Old *Hidmos* remain still close to the church. The delta formed by two rivers and this village conveys a special value both for topographic and land management reasons.

- **Enda Anania**

The actual area of Enda Anania is around the east part of the current Hawzen Square. What makes this village different from other villages is that it is now completely integrated to high-density inner city, but still with keeping its historical flavor. It's being located closer to May Liham River and the presence of a spring must have been one of the decisive factors for its location. It is said that priests from Kata, a place 17km away from Mekelle, used to make ceremonies in this village.

- **Ada Gafaf**

Ada Gafaf is the present area around the south west of Mariam Church. The remains of old H*idmos* still bears evidences for how the housing typologies looked in the old times. Even if the old houses still exist in this area, the modern rectangular planning pattern totally transformed the old organic settlement pattern.

- **May Gafaf**

The name of May Gafaf originates in the presence of May Gafaf River nearby. The present area with this name expands beyond this river in the south of the market area. It is said to have been among the oldest settlements in Mekelle and the area used to have a small forest. What should be noted is the fact that later at the beginning of the twentieth century the southern hill of this area was chosen as the site for a monumental castle. The priority of this area came from its topographic value. Through time the shape of the old settlements disappeared and it has been replaced by the grid system that Italians had planned.

Urban Planning trends under Emperor Yohannes IV

Emperor Yohannes IV, who imitated its current form, shaped the history of modern Mekelle. With the construction of his palace in Mekelle, the city became a very important trade and political center of Ethiopia during the end of the 19th century.

Five towns were chosen as candidates for the construction of his new palace: Adowa, Aksum, Tembien, Quiha and Mekelle. Although Yohannes had originated from Tembien, the people of Tembien did not allow him to construct his palace, later he decide to construct his Palace in Mekelle for many reasons. Many rivers were found in Mekelle, the place was favorable for agriculture, there was abundant forest for access to wood as energy source and construction material, and above all the people of Mekelle were welcoming him. The construction of the palace started in 1864 and ended in 1876. An Italian architect called Giacomo Naretti[1] was in charge of the construction.

Figure 8

People gathering in front of the old palace (Picture adopted from Ethiopia photographed by Richard Pankhurst)

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[1] Giacomo Naretti (1831-1899) was an Italian architect, who migrated to Egypt during the period of construction of the Suez Canal, then to Ethiopia as a carpenter, together with other engineers. He became an official architect at the court of Yohannes IV. He constructed the Palace of Mekelle, and Kidane Meheret Church of Mekelle and Enda Selassie Church of Adowa. He died in Asmara. His diary with 742 pages was an excellent document on the reign of Yohannes IV.

The site for the palace seems to have been carefully chosen as it stands on a swelled land neighboring May Liham River. The site was the focal point of all nine villages, which stretched out both on the low land and on the slope of the mountains. The officials of Yohannes were given lands around this palace. With the construction of the palace and the assigning of land for the high officials around the palace, residents start to settle in a big scale around the palace. There was also a big open market in front of the palace, which currently is used as a carnival site for the celebration of Epiphany. The other very important settlement during his time was around the churches of Medhanealem and Enda Mariam.

Character of a "Palace City"
After the construction of the palace, Mekelle took the title of a capital city of Ethiopia. During this time the city was divided into two quarters, the North-West and South. During this time, a couple of the old villages, mainly Ada Gafaf and Enda Anania, were engulfed with the new settlement. Looking at the housing typologies and the main housing types specially, the high officials' houses were typical Mekelle Hidmo houses while the normal residents were living in round Tukul houses.

With the emergence of Mekelle as a capital city, the population size started to grow abruptly mainly due to migration of citizens from different parts of the country. The city was characterized with the palace in the center and surrounding high officials' quarters. Village people were integrated, then, as those who make provisions to the palace and high officials. The zoning system was based on hierarchy starting with the Emperor (Palace), next the houses of high officials (residential quarter), layman (settlement) and clergy (church). The area around Medhanealem church was used as an administrative place while the high officials were under the control of the court. Another important settlement was the establishment of a Muslim community toward the west which leads the city to be a strong economical and trading center both locally and internationally.

After the death of Emperor Yohannes his brother Dejazmach Abraha started building another palace one kilometer south of the old palace, today called Abraha castle. The reason for his construction of a new palace was a conflict with Emperor Yohannes's family members. The construction of this new castle also creates another settlement pattern for Mekelle stretching the city further to the south.

4.2.3 Urban Transformation in the Modern Period

Italian Occupation and Implementation of New City Planning
During the brief occupation of Ethiopia by Italians 1935-1942, the Italians tried to prepare master plans for most of Ethiopian main cities, including Gondar, Addis Ababa, DireDawa, Mekelle, Jima and others. The plan prepared by the Italians colonialists for Mekelle was based on a strict grid plan technique. The basic idea was to add a new town adjacent to the old one. In Mekelle, new land in the south was chosen to set up this new town. Modern in city planning, which was then emerging in Europe, was fully implemented: land use, clear division of land by grid system, wide streets and so on.

According to the new plan, residential quarters were placed in the east together with several administrative facilities in the eastern extremity while the market and commercial sector occupied a comparatively wide area in the west. The connection with the old town was done through two main streets, one from the Market to the Square in front of the Palace, another from the administrative area to the center. Besides this new town, the Italian plan introduced the alignment of compounds and streets in the old town, that is, on a parcel facing a street, buildings must be built along the boundary to the street. This regulation was completely different from before. The old town should be rearranged with such buildings bordering streets. With the new plan the notion of streets became clearer, replacing of spontaneous alleys and paths.

Just like any colonial city planning, the new plan for Mekelle was also based on segregation of the locals from the Italians. Through this process, while the Italians were taking the new planned quarter the natives stayed in the old quarter.

Development in Post-war Period

After the Italians left, the city kept expanding based on the existing plans. The only main change was that segregation stopped. Once the Italians left, the Ethiopians overtook the Italian quarter and most buildings were owned by merchants. The grid plan continued in the southern direction but the growth was very slow. The city also started its own municipality in 1941. Once the Municipality was formed new developments started to happen including the construction of schools, health facilities and public housing.

After the colonial time the most important plan developed for the city was the one prepared by the Italian architect Arturo Mezidimi[2]. During the 1960's he was the most active architect in Ethiopia and a very close person to Emperor Haile Selassie. During his stay he worked on the preparation of master plans for around 40 medium sized towns including Mekelle. He also designed famous architectural pieces mainly in Addis Ababa and Asmara including the African Union hall. Though his plan was not very clear and was not applied completely, some features still show the previous Italians planning trend such as the zoning and land use. According to his plan, the emphasis was on the development of residential quarters in the northern part of Mariam church and the proposal of administrative center focusing on the construction of the city hall as a central figure.

Contemporary planning

After the reign of Emperor Haile Selassie stopped in 1974, the military took over and the whole land policy of the country changed. During the military time, all land was nationalized and no one was allowed to own an extra house. Every extra house and land was nationalized and transferred to the ones who do not have a house. All extra houses taken by the government and transferred to the public are called *Kebelle*[3] houses. Public housing model including Kebelle housing and rental housing by Rental Housing Administration[4] was a new housing provision system by the socialist military government. During the 1980s, the city was at a standstill development, due to continuous war between the socialist government and the Tigrayan People Resistant Movement. After the liberation of Tigray from the central government the city start to make redevelopment. One of the changes after liberation was the return of Kebelle houses to the original owners or their families. Hence unlike any other cities in Ethiopia, the existence of Kebelle houses in Mekelle is almost none.

During the early 1990s, with the formation of National Urban Planning Institute (NUPI) started preparation of plans for the different cities in Ethiopia including Mekelle. Actually NUPI was formed at the end of the fall of the socialist government.

In 1991, NUPI prepared an action plan for the city. In the new action plan, the city was proposed to expand to the outskirts further south and west. Mekelle was then divided into 20 *kebelles*. Exterior *kebelles* had much larger surface than the inner ones. This means that the outer ones were much less inhabited. For extension of the urbanized area, the municipality employed an axial system, once conceived by the colonial government. Instead of implementing facility planning, this plan shows less active intervention by way of designating the restraints. The outline of this action plan is as follows: (Rumiokazaki, 209)

2 Arturo Mezzedimi, who originates from Tuscany, Italy, moved to Eritrea during the war time, then studied at the Ecole des Beaux-Arts in Paris and also in Lausanne. In 1959, he was called by Emperor Haile Selassie for the design of Africa Hall, and the headquarter of the United Nations Economic Commission for Africa. Appointed professor at Asmara University, he continued works in Ethiopia, such as the City Hall of Addis Ababa, the Sport Centre of Asmara and so on. He was the architect of the Bus Terminal, the Central Square in front of the Palace and several hotels in Mekelle. After the fall of the Emperor, he moved to Djibouti.

3 Kebelle is an administrative unit, which is equivalent of "neighborhood", created in 1975. Even after the endn of the military government, this autonomous system was inherited for local governance. Kebelle runs public housing, forest management and other economic activities to guarantee income.

4 Rental Housing Administration (Rha) was established in 1975, focusing on the provision of houses with the rent of more than 100 birr per month.

- The basic idea was the continuation of the grid pattern of the Italian master plan beyond the boundary of colonial city. Topographic considerations played an important role. The delta around Ada Gabir old village was a kind of a pivot for the expansion toward the north. Two major sectors are to be recognized: one along May Liham River with the continuation of the Italian grid from Mariam Church, another beyond Ada Gabir to form a rectangular strip.

- The idea of a strong main axis was apparent. An axis extended from Abraha Castle in the south to the northern extreme far beyond Mariam Church. Neighboring to Mariam Church, a new administrative zone was reserved as previously shown in the proposal by a Swedish team.

- To the south, concentric lines were more preferred to the straight ones, probably due to the topographic conditions. Slopes were reserved for forests although during wartime, a large number of trees were cut as fuel.

- Residential land occupied 53% of the municipal surface in order to receive the future growth of the population. Residential zones were allocated within the standardized block, following the size of the Italian grid. A certain number of public service zones were allocated, but without considering the content. (Adopted from Rumiokazaki)

- Reserves for nature and agriculture were especially considered. The northern part of the city was mentioned to be adequate for agriculture. The southern part was rather sterile and topographically steep so that it preserved a large surface for nature. Such natural reserves, despite their deserted appearance, could serve as future buffer zones among urbanized districts.

- Historical aspects were not taken into account. There was no prescription for the conservation of historical monuments and their protected areas. Even Yohannes Palace and Abraha Castle, which deserved national monuments, were categorized only as administrative and commercial facilities. The old city, which was divided into several kebelles, was nothing but slum-like inner city with low sanitary conditions. Landscape was not at all considered, either.

Current administration of Mekelle

Currently, Mekelle is divided into seven administrative sub-cities. Namely the seven sub-cities are Semien, Hadnet, Quiha, Kedamy Weyane, Hawelt, Adihaqi, and Ayder.

Figure 9

New administration zones in Mekelle

1. Ayder
2. Semien
3. Adihaqi
4. Kedamay Weyane
5. Quiha
6. Hawolti
7. Hadnet
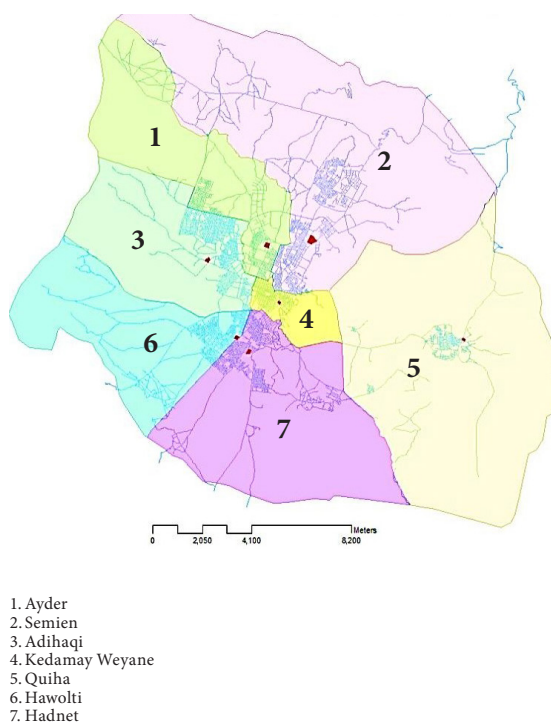
4.3 Site selection

As discussed earlier, the case of informality in a bigger scale is very rare in Mekelle, however before selecting the specific case sites for this study, the researcher tried to see the general situation at a city level. As the title of this case study points out, the research is to see the case of informal housing situations in the inner city and peripheries of the city. Before reaching to select the specific two sites representing the two types of settlements, a rough investigation was made to select appropriate sites first by looking through maps, second by looking at literatures about the old city of Mekelle so that to understand the inner city development, the third way was to go to selected sites in person and take personal investigations. The comparison for select-ing the sites was based on different criteria.

Criteria to select the site from inner-city
- The historic background of the site, whether it is an old settlement or new development
- The development process on the site, if new development is affecting the site or not
- The accessibility for infrastructure: especially whether the site is accessible for transport or not.
- The existence of old houses and long term residents
- The concentration of poor housing conditions Criteria to select from Peripheral site
- The settlement pattern: whether the site is planned or not
- The livelihood on the site
- The condition of the houses
- The accessibility for infrastructure: especially whether the site is accessible for transport or not.
- Connection with the city center.

Through this process, the following sites were inves-tigated and compared with each other for selection. Sites identified and compared from the inner city include May Liham, Gonay Daero, Kebelle 14, and Enda Selasie. Sites identified and compared from the peripheries include Serawat, Aynalem, Feleg Daero, and Gefeh Gereb.

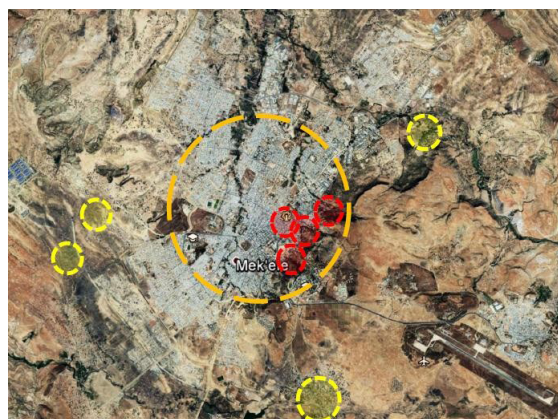**Figure 10**

Map showing visited sites for selection of case

Figure 11

Kebelle 14 site

4.4 May Liham site

May Liham is one of the earliest settlement in Mekelle. It is located at the foothill of C'homa Mountain. The site has two landmark churches, Kidane Mehret and Medhanealem churches. These two churches were founded as monasteries for female and male respectively. Still now, these churches attract many parish students from different parts of the region. Some of the students live around the churches. According to oral tradition, there were two families who lived in the site in the old times, the families of Shikur and Maeza. Most of the residents in this site were descendants of these families. Still now some residents are from these family lines. During the imperial time, most land in this site was transferred from families to families as inheritance. During the socialist government time, most of the land and extra houses were nationalized and became the property of the government. After liberation, some of the land was transferred back to the original owners. The site is located in a steep part of Mekelle leading to the mountain of C'homa, which makes it difficult for the provision of infrastructure for long time. It is one of the oldest but least developed parts of the city with regards to the provision of road and transport. The only proper road passing through the site was constructed only some 6 years ago. The road is actually not provided primarily the residents on the site, rather serves to pass to the top of C'homa Mountain. The mountain top is used as a carnival site during the commemoration of the founding of the True Cross, which is being celebrated by Ethiopian Orthodox church every September 27/28. In 2017, a large steel cross was mounted on the top of the mountain. Through the provision of the road many houses were affected as parts of their house or fences were demolished.

Figure 12

Medhanealem Church

Figure 13

Shelter for the parish students

Figure 14

The 56 meter long cross on top of the C'homa Mountain

Figure 15

New road passing through May Liham site to the top of C'homa Mountain

The settlers in this site used to be either farmers or church servants during the old times. Currently most of the residents' livelihood is dependent on different sectors including, trade, and service, renting houses, government or private company employees and many more. The site was used as residential settlement during the old times because the plains were used for farming activities; furthermore, the existence of the churches nearby made people settle around the church.

4.4.1 Selected households interviewed and studied in detail

The survey area for this case study covers an estimated 1.5 Hectare. The selected site shows the old organic pattern and most of the houses do not get direct access from road. At the site, 25 houses were surveyed with questionnaire and four house owners were interviewed in detail. The people interviewed in this site are very open and cooperative compared to the one we approached in the peripheral site.

Figure 16

Map of May Liham site

Selected houses for the interview

House no. 001

- Age of the house owner: 78 years
- Age of the house: more than 70 years
- Number of family members: 4
- Compound size: approximately 700m²

The owner is one of the oldest settlers in the site. His family were descendants of the original residents. The Hidmo house is more than 70 years old, it is one of the earliest houses showing the original style of the construction in old Mekelle. It has been refurbished several times but currently it is in poor condition. The old house is being rented mostly in the dry season of the year. Because of its poor roof condition, the house is closed and not in use in the rainy season. The house does not have proper kitchen, proper toilet, and waste management. Due to the construction of the new road a large portion of land was cut off from the site. Since there was no house on the land and the old house was far from the fence, the compensation, which the owner received was for the fence only. According to the city administration, compensation could be given only for any construction on the site rather than the land because land is the property of the government according to the constitution.

From the interview with the owner a lot information is extracted considering the story of the whole neighborhood. According to the interviewee, the old residents in the site were mainly farmers and church servants, including parish students and priests. Most of the old houses owners still live in the site and they are priests in the nearby churches of Medhanealem and Kidane Mehret. Most of the people living there got their land either through inheritance or they bought land from the original owners.

Figure 18

Owner of house 001

Figure 17

Location map of house 001

The major complaints from residents in the site include the following:

- Poor provision of water mainly due to the steep topography
- The lack of public transportation which makes the residents to walk for long distance to get to the city center, especially to access health facilities, schools and market places.
- Apart from the main road which was introduced to get to C'homa Mountain, the other roads leading to the houses are not accessible by vehicles which is a challenge mainly for access of emergency issues like for the access of ambulances or fire fighter cars.

- The lack of proper drainage management: there is a risk of flood at times.
- Most of the residents lived in the area starting from the imperial time, hence they passed through three government systems. Through all these, land policy was different due to which the owners had many disputes with the city administration when it came to transferring their land for their family members, when they wanted to sell their land: disputes because of low compensation and many more.
- Lack of proper sanitary management, solid waste and liquid waste management.

Figure 19

The old Hidmo house in poor condition

Figure 20

Shelter for the parish students

House no. 002

- Age of the owner of the house: 75
- Age of the house: more than 70 years
- Number of family members: one
- Compound size: more than 1000 m^2

According to the interviewed lady in this house, this property is in dispute among family members because of unresolved conflict over inheritance. Almost all the members who claim that they have a stake in this house live somewhere else some of them in Mekelle, others in Addis Ababa, others abroad in US. In the compound there are two houses: one is the old Hidmo house, the other one is a small one room temporary house. The Hidmo house used to have four rooms but since it is in very deteriorated condition, the old lady is using only two of the rooms. She lived in the Hidmo when there is no rain because the roof is in very poor condition. The small one-room detached house is used for the rainy season. The owner is a widowed old lady, her husband was a priest who was serving in one of the churches nearby, and he passed away some 10 years ago. Since her husband died, she lived by her own. Life for her is very difficult because of her old age and she has no permanent income. She gets some help from her relatives occasionally; otherwise, it is her neighbors who support her with food and drink. Her main spending is for food and water, and electricity bill. She stays in her house almost all day because of her old age and deteriorating health issue.

Figure 21
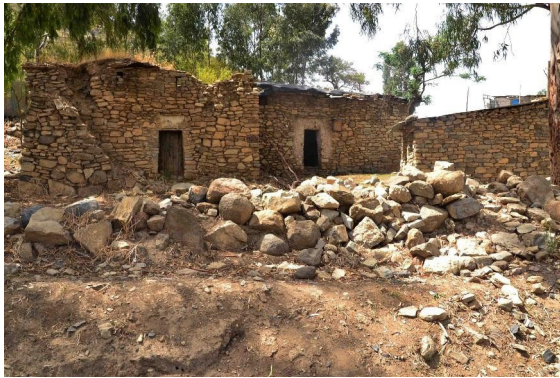
Location map of house 002

Figure 22

Owner of house 002

The compound is poorly kept, there is no proper toilet and kitchen provided. The fence is poorly constructed with stone and wood. Since the property is on the main roadside, a large portion of the property was taken during the new road construction.

The house is constructed with stone but without proper bonding. The floor is earthen, the ceiling in the old Hidmo house is made from wood which is used to support the roof.

Figure 23

The poor housing condition of the old Hidmo building

Figure 24

Images showing the internal space condition

House no. 003

Figure 25

Map of House no. 003

- Age of the owner of the house: 60
- Age of the main house: more than 70 years
- Number of family members living in the house: three
- One rental house with two family members
- Compound size: approximately 300m²

This property is another old property in May Liham site. The ownership of the property is under dispute between two sisters. One of the sisters lives in the property with her three children while the other one is living in Addis Ababa. The old house is a two story Hidmo house. The lower floor is owned by the sister who lives in the site while the upper story is owned by the other one who is living in Addis Ababa. Through time the old house is deteriorating and the family members living in the lower floor want to maintain it; however, the sister, who owns the upper storey refuses to maintain the building. The families living in the lower floor suffer a lot from this dispute because the housing condition are getting worse while the court decision in this case is not resolved yet. Due to this frustration, one of the sons of the families in the lower

floor comitted suicide in inside the building. With that sad story the whole family got depressed and abandoned the old building and built a temporary house next to the old one. Currently, they are living in a house which is transformed from a cattle stable. The property is located at the main side of the new road to C'homa Mountain.

This house, just like most of the houses around, is without standard toilet and kitchen space. The main house is an old Hidmo type with a corrugated iron roof but it is closed currently and no one is living in it. The new temporary buildings built on the site are built without building permit. This is another issue which raised dispute between the owners and the local administration. Because of this lack of building permit the side buildings are made of temporary materials.

Figure 26

Image of house number 003

Figure 27

Poor condition of kitchen space

Figure 28

The temporary house attached to the main house

Figure 29

Figure 28: The cattle stable and rented house next to it

House no. 004

- Age of the owner of the house: 65
- Age of the main house: more than 75 years
- Number of family members living in the house: three
- Compound size: not defined

Before this house was separated with the introduction of a road in the middle of the property it was a big property being shared by brothers and sisters of one family. The new road passes through the original property and it dissects the family into tow compounds, each in one side of the road. The one on the upper land belongs to the elder sister while the other one on lower part belongs to her younger brother's family. Each of them live with their respective families. During the period of the communist government, this property was regarded as an "extra" house and taken from the owners.

The old Hidmo house which still remains in the site is a circular type, unlike the other Hidmos around the site. Since this Hidmo is in a very poor condition, it is abandoned and the families live in new buildings constructed next to it. The house is without fence, hence it is difficult to locate the boundary of the property. At the front, the boundary is the road while from the back it is mixed with the open field behind.

Figure 30

Image of house number 004

4.4.2 Discussions with Semien sub city administration

May Liham is found under the Semien sub city administration. Semien sub city contains most of the old neighborhoods and the northern part of Mekelle. For this case study, the contacted person from the sub city administration is working as a land management officer in the sub city. The questions raised and the answers were as follows:

Q. Is there any identified informal settlement in your sub city?

A. There are not many identified or recognized informal settlements in the sub city but there are some cases happening in smaller scaled in a scattered way. Mainly this happens in the mountain areas and river sides, as well as at the peripheries of the sub city, mainly around Feleg Daero area.

Q. What type of informality is observed generally?

A. Generally the kind of informality observed in the case of Semien sub city is the illegal construction along river fronts and forest or mountain areas. There is also the case of construction without building permits.

Q. What is considered as informal construction in your sub city?

A. According to Semien sub city what is considered as informal construction includes:

- any construction contradicting the Land use Development Plan (LDP)
- any construction without a building permit
- extension of houses and property lines without the permit of the sub city administration
- any construction which is different from the one in the permitted design

Q. What measures do you take when informal constructions are found?

A. There is a command post or regulatory body formed in the sub city which will control the case of illegal construction and settlement. The assigned body will make frequent checks in the administrative boundary of the sub city and take any measures against illegal and informal constructions. Most of the time, the decision will be first to request owners to make corrections if the informality happens in a legally owned property. If the informality or illegality happens without any legal right to own the land, the decision will be to demolish the construction.

Q. What kind of plans do you use to control informal settlements?

A. For every neighborhoods in the sub city, LDPs are prepared. According to this plan, there are always controls on illegal constructions. The other control system is checking by professionals through random visits on the sites; however, the problem with this is that there is a critical shortage of staff, and it is very open for abuse.

4.5 Serawat site

Serawat is one of the agricultural sites found at the periphery of Mekelle in the Hawelti sub city administration. Some 10 years ago it was exclusively agricultural land, however through the process of merging peripheral agricultural lands it became part of the city administration and it was proposed as expansion area for the city administration. Most of the residents on the site are still mainly farmers.

Currently the new industrial park for Mekelle is located behind this site, the new road passing to the industrial park makes the houses in the site change land use. Under the new structural plan, it is reserved for mixed development, hence agricultural activities are transforming into mixed activities including service, small scale commerce and subletting of houses. Since the site is far from the city center and rents are very cheap, it is prefered by low income workers for renting. These rental houses are built by the original owners in the site and those who had bought land there.

The site is one of the places in Mekelle where there is a critical shortage of water. Almost all houses are not provided with water. The main water supply is through communal tap water within a certain distance from the group of houses; however these communal taps are not functional and residents are forced to travel some 3 to 4 kilometers to fetch water at least once in a day. There is a truck delivering water for the residents once every week but it is not enough. That is why they are forced to travel to fetch water.

Serawat, just like any other peripheral lands was affected by many informal settlements. Previously, there used to be several squatter settlers in the site but most of them are now legalized and under the proper land management system. The city administration developed a LDP some five years ago but since it is not implemented, it creates a gap for the emergence of informality through different ways.

Figure 31

Residents fetching water from distance place

The slow implementation of the LDP becomes a frustration for residents. Because of the delay, they couldn't make use of their land according to the plan, every year they are uncertain what to do with their farm land because, unless the LDP is implemented, they couldn't transfer their land or get any compensation. Some of the informalities observed in the site include:

- Illegal construction on farm lands
- Illegal transfer/sell of farm land from residents to others.
- Informal planning due to the lack of provision of proper roads inside the neighborhood
- There is no proper access and waste management system, almost all houses are without toilet.
- No provision of water line for each houses.

With the introduction of the new industrial park further behind the site, the place is expected to be one of the most populated and developed areas because the industrial park will hire more than 20,000 laborers in its first operation phase in the year 2019. One of the challenges the industrial park will bring to the city, will be the lack of accommodation for the workers because most of the workers are expected to come from outside of Mekelle. Hence, residents of villages around the park including Serawat and Gefeh Gereb could benefit from constructing rental houses in their property. The change of LDP is also a factor to transform the livelihood of the people from farm dependent to service dependent.

Figure 32

Map of Serawat site

Figure 33

Well constructed fence

4.5.1 Selected households interviewed and studied in detail in Serawat

The survey area for this case study covers an estimated two Hectares. This site is relatively less dense compared to the inner-city site because most of the land is still being used for agricultural activity. The houses are organized organically following their farm land. Most of the houses do not get direct access from roads. In this site, 25 house were surveyed with questionnaire and four house owners were interviewed in detail.

Selected houses for Interview

House 01
- Age of the owner of the house: 60
- Age of the main house: more than 30 years
- Number of family members living in the house: five
- Compound size: approximately 600m^2

This house is one of the oldest houses in the site. The owners are dependent on cattle raising and farming. Their farm land is a little far from their house. The house they are living in is a three room house. There is a kitchen but no toilet facility. The fence is a well constructed stone fence.

House 02
- Age of the owner of the house: 45
- Age of the main house: around 10 years
- Number of family members living in the house: three
- Compound size: approximately 200m^2

This house is relatively near to the main road. The residents living in the house are renters. The income generation for the residents is small scale commerce by selling bread, Enjera and local drinks. The property is without toilet, proper kitchen and water access. The household head choses to rent the house due to its cheap rent price, she pays 500 birr for the whole compound. The house is a two room house with an approximate size of 25m^2. According to the interviewee, the owner acquired the land through inheritance from his parents. Traditionally, when children get old enough to marry, they have the right to get a portion of farm land from their family's property. That is how the owner got his land.

Figure 34

The house without fence

Figure 35

Roadside conditions

The major problem they face is lack of water and proper toilet. The housing condition is in very poor condition because it is mainly temporary building with stone and mud. Since the house is a near to the main road being constructed which will pass to the industrial park, there is a difficulty of access and too much dust is a problem to keep the house clean. In the rainy seasons, the roads leading to the house is too muddy and gets difficult to access. During nighttime, since the whole neighborhood is not provided with street light, they do not feel safe getting home at night.

House 03

- Age of the owner of the house: 42
- Age of the main house around: 15 years
- Number of family members living in the house: five
- Compound size: approximately 500m^2

This household head is female and she lives with her husband and three kids. She received the house as an inheritance from her family when she got married. Her husband is a farmer and she is a housewife. She also works in the farm other than working at home. For her family, one major problem she mentioned

during the interview is, since informal selling is going on due to lack of LDP implementation, her farm land is being used as an informal access road. The land is becoming less fertile through time and they are forced to change their livelihood by providing rental houses. They get 600 birr per month by renting two room houses. Apart from renting house, the husband works temporarily in construction works in the city.

When it comes to infrastructure and other service provisions for them, the most important thing they expect from the city administration is the provision of water. Because they travel a long distance to get water it is a burden for the house wife and the kids as it's their duty to collect water and it has an effect on their studies.

The next most important thing they wish resolved is the provision of properly paved roads. The fact that the roads are dry weathered and improperly paved makes the neighborhood very dusty, with the absence of the provision of water it is difficult to keep their house clean and they fear it will have an impact on their health as well.

4.5.2 Discussions with the sub city administration

Serawat is found under Hawelti sub city administration. For this case study the contacted person from the sub city administration is working as a land management officer in the sub city. The questions raised and the answers are as follows:

Q. Is there any identified informal settlement in your sub city?

A. There are some houses which are informal but not in a big scale. Previously, in Gefeh Gereb there was a big scale of informal (Illegal) settlement. But through the decision of the city administration, houses owned by illegal settlers were demolished. Currently, there are also a few informal houses, but since it is not in a big scale it is not considered as problem for the time being, decision will be taken to these few houses when the LDP is going to be implemented.

Q. What type of informality is observed generally?

A. The main type of informality observed in the sub city includes construction of houses on farm lands, farmers selling part of their farm land without the proper legal procedure. The informality identified is the construction of houses without getting proper building permit from the sub-city. Expansion of property lines beyond their original land - this case actually appears because the residents are changing their livelihood, they start constructing rental houses in their compound by including a certain part of their farm land with their living compound. Generally the type of informality in their sub city are:

- Formal housing but without legal tender
- Informal construction
- Construction without building permit
- Illegal settlers or squatters
- Concurring Green and buffer areas
- Any construction that occurred after the demarcation by the LDP

Q. What is considered as informal construction in your sub city?

A. Considering construction it can be categorized in residential, commercial and other constructions. When it comes specifically to residential construction, the first thing to be considered is when the construction is done without a building permit. The other criteria to be considered as informal is when the owner did his house against the permitted building including addition of rooms or floors other than the one in the permitted design.

Q. What measures do you take when informal constructions are found?

A. Previously regularization have been applied with some informal settlements. The decision is made by preparing LDP and legalizing the informal settlers according to the LDP. However, currently, the decisions being taken by the city administration is to demolish any illegal construction or settlement.

Q. What kind of plans do you use to control informal settlements?

A. First LDPs are prepared for the whole sub-city neighborhoods. however; most of the LDPS for the peripheral lands are not implemented yet. Because of the lack of implementation of the LDP informal and illegal settlement is a serious issue happening at the peripheries of the sub city, as the periphery of the sub city is mostly used for farming. In the part of the sub city, which is near to the city center, the problem is not that big because the land use is strictly implemented. ◆

PART 5
DATA ANALYSIS

5.1 Data analysis method

This case study is trying to show the situation of informal housing condition in Mekelle by looking at case sites from the peripheries and inner city of Mekelle. Hence, the Data collected is analyzed in a comparative method based on selected parameters to the situation of informality in the two cases. The analysis approach is basically built upon the research questions and case study structure followed. In the first part, the development of the situation of informality in both case areas has been analyzed focusing on the residents involved in the interview and the personal observation of the researcher.

5.2 Informal housing situations in the inner city and peripheries of Mekelle

Situation of informality in May Liham representing the inner city case

Looking at the research questions and specific objectives of the case study, the following general points are analyzed.

The physical and socio-economic characters indicating informality

Looking at the social composition of the site, since the neighborhood is one of the oldest settlements in Mekelle, most of the house owners lived there for a long time, hence they have a detailed know how on what's going on in the place. As discussed in some of the interviews, since most of the houses in the site are transferred through inheritance, there is a long process of dispute among family members, which leads to the stagnant development on the housing condition that are found in this site.

When we see the economic background, most residents are owners of property and mostly they make their earning through renting houses. Because the site is inaccessible for public transport, residents do not benefit from commercial or other income generating investments, which leaves most residents living in the site with very low income.

The site is located at a hill slope which is very difficult for the provision of infrastructure including water, road and proper drainage. It is one of the least developed neighborhoods in the city regardless of the fact that is one of the oldest settlements. Most of the houses are without having proper toilets and kitchen, which makes the place poorly sanitized.

The housing condition on this site is relatively very poor compared to other houses in the city center or new development zones. The reason for the deteriorating condition of the houses include the age of the houses, lack of maintenance (mainly due to financial constraints). The construction material for some of the houses is mud and wood which makes the houses requiring frequent maintenance.

5.2.2 Situation of informality in Serawat representing the peripheral case

Looking at the research questions and specific objectives of the case study the following general points are analyzed.

The physical and socio-economic characters indicating informality

The social composition of the Serawat site is mainly characterized by showing mixture of groups. Some are owners of the property while others are renters.

Most of the residents are still dependent on farming both through crop cultivation and animal husbandry. Since this site is a place where relatively informal settlement is taking place at a big scale compared to the inner city center, some houses are without residents. Land owner only build constructions to safeguard their ownership because unless there is a building in the site they can't sell or transfer the property to another person.

Economically the original residents are still mainly dependent on agriculture; however, the people who moved to the area by renting make their income through small scale commercial activities - mainly by selling local bread and drinks or other items.

Since the site is previously recognized as under rural administration, the provision of water lines was almost none. The whole neighborhood is without water connection. Even some formal residents are not provided with water and road by the city administration. The main reasons for the lack of provision of water is the low density of residents relative to the inner city which gives it low priority.

The other critical shortage on the site is the provision of proper road and drainage system. The major reason for this is the change of land use from agricultural land to a mixed development. The LDP designates it as a mixed residential zone, however, since it is not implemented residents are still running their farms. The access roads to the site are roughly paved roads. Apart from the main road passing to the industrial park, there is no proper road system connecting the neighborhood.

The housing condition in Serawat shows a different status. The old residents' houses are very well constructed some with traditional Hidmo type, others with modern simple linear types. There are some simple houses constructed taking a small part of farm land but mostly these houses are either rented or vacant. This type of houses is constructed on farm lands mainly for marking the property. Unless there is a building on the site,

the land cannot be legalized officially because according to the government policy, land is the property of the state. It is the house which is can be legalized by the city administration as property of the owner. Hence, people do these temporary building to mark they own the land so that they can sell it or transfer it. This kind of construction can be done also done by brokers or speculators. The house constructed in these way are considered as informal or illegal. That's why almost all of them are not provided with electricity, as an example.

5.3 Informality indicators in the studied case areas
Based on the interview with the residents and sub city officials as well as personal observation on the site the following indicators are identified as informality indicators on both sites.

Table 4
Comparison May Liham vs. Serawat
Informality indicators

MAY LIHAM/INNER CITY	SERAWAT /PERIPHERAL
Site location in a steep land	The site was used as agricultural land hence there is incompatibility with the LDP and the users need
Because of steep terrain water provision is difficult	Because of low density and lag in LDP implementation, the site is completely without water provision
Housing conditions are relatively poor especially the old houses	Most houses' condition is poor due to the uncertainty the residents face whether they will be legalized or not
Completely inaccessible for public transport	Accessible by public transport from the city center but basic services are still far from the site.
Most old houses have legal issues among family members and with the sub city as well which leads to the poor development or properties	Many illegal constructions and informal settlers are buying land from farmers and making smaller room houses trying to negotiate with the city administration.
The lack of proper road leading to houses	The lack of proper road and drainage facility makes the site difficult to access especially during rainy seasons
The lack of proper road leading to houses	The lack of properly paved roads making the houses to be infected by dust and dirt.
Substandard toilets	Almost no toilets

5.4 Conclusion

As stated in the first chapter and in the literature review, defining informality is very difficult unless we see it contextually. Informality in Mekelle is a case to be studied more in detail, this is a beginning to see from what perspective we can approach the issue. According to this study, informality in Mekelle's context can be traced from two dimensions: one in the inner city and old neighborhoods, the second at the peripheries because Mekelle is one of the emerging cities expanding very rapidly.

Generally speaking, the reason for informality could arise and be studied from different perspectives depending on the different background of the cities. Mekelle as an emerging city is facing fast growth, with this fast growth the city is expanding further towards the rural towns around the city. These rural towns sometimes known as expansion areas are facing a big scale of informal settlements unlike the inner-city developments. The informality noticed in the inner - city developments is more related with substandard housing conditions and poor infra-structures, while the peripheral developments are more susceptible from land price speculation and illegal constructions. ◆

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