

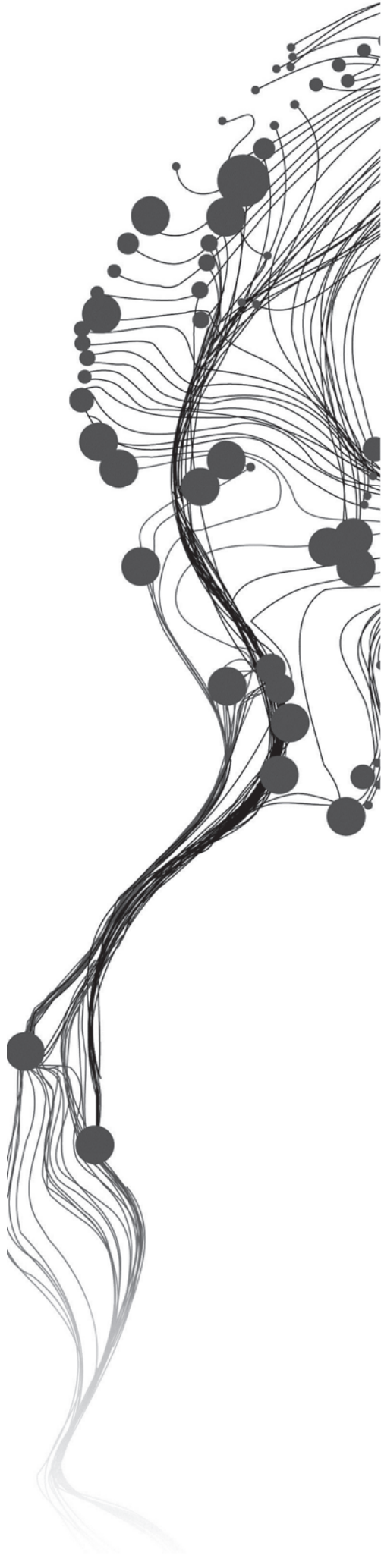
ADAPTATION AND DISSONANCE IN QUALITY OF LIFE: INDICATORS FOR URBAN PLANNING AND POLICY MAKING

MSc Thesis

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ADAPTATION AND DISSONANCE IN QUALITY OF LIFE: INDICATORS FOR URBAN PLANNING AND POLICY MAKING

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Enschede, the Netherlands, March, 2012

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ABSTRACT

Quality of life (QoL) studies are attracting urban planners and policy makers because of their usefulness for formulating and implementing public policies and strategies and for evaluating and monitoring implemented public policies and strategies. QoL can be measured using subjective, objective indicators or by combining both. QoL research which is designed to facilitate urban planning and policy making should be measured using both subjective and objective indicators. Since this help's to identify the states of QoL and reasons behind these states.

To measure QoL and identify the mains reasons of adaptation and dissonance a mixed method of data collection and analysis is applied in this study. Focused group discussion (FGD) was held at the beginning of the data collection to rank the pre-selected domains of life and identify related indicators for. Housing (housing affordability, housing over crowdedness and room for rent), access to green space (access to public park), access to public services (access to primary education facility, access to secondary education facility, access to health facility and access to public transport) and family income (adequate family income) are the first four most important domains and their intended indicators used for household survey. Then 210 family head was interviewed through household survey with closed and open ended questions. The sample households were selected randomly. After quantitative preliminary analysis two Ketenas (smallest administrative unite) that are experiencing adaptation and dissonance were selected for further qualitative data collection with walking interview. A semi-structure interview was also used to capture the knowledge of urban planners and policy makers about adaptation and dissonance and how they treat the issues in their career. Using quantitative data analysis basically descriptive analysis and spatial analysis the level of subjective and objective QoL is measure at indicator level. By combining the measured subjective and objective QoL the states of QoL are identified for each indictor. Conventional content analysis was applied to identify the reasons behind adaptation and dissonance.

In the study area the level subjective QoL is high only for the indicator access to primary education facility. Whereas for the indicators housing over crowdedness, room for rent and adequate family income level of subjective QoL is slightly high. Access to secondary education facility and access to public transport are the indicators with slightly low subjective QoL. The indicators housing affordability and access to health facility scored low level of subjective QoL in kedamay Weyane sub-city. For the indicators access to primary education facility, access to secondary education facility, access to health facility, access to public transport and housing over crowdedness the level of objective QoL is high in the study area. Whereas for the indicators housing affordability, room for rent and adequate family income the level of objective QoL is low. By combining the subjective and objective QoL the states of QoL that are *Wellbeing*, *Adaptation*, *Dissonance* or *Deprivation* are identified for each indicator. Where wellbeing and deprivation shows the match between the subjective and objective QoL; on the other hand adaptation and dissonance shows the mismatch between the subjective and objective QoL. Some of main reasons of adaptation and dissonance identified in this research are having access to basic infrastructure, housing ownership, housing affordability and quality of services and having additional means of income.

Identifying the reasons of adaptation and dissonance is important for enhancing QoL of residents of an area by formulating and implementing public policies and strategies based on citizens' perception and priorities. It is also important for monitoring and evaluating the effect of development interventions on QoL of residents.

Keywords; Quality of life, Adaptation and Dissonance, Urban planning and Policy making, walking interview

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LIST OF ABBREVIATIONS

Term	Description
HS	Household survey
IP	Individual perception
NM	Not mentioned
QoL	Quality of life
SD	Secondary data
WI	Walking interview
FGD	FGD

1. INTRODUCTION

This chapter has six sections. In the first section the background and justification of the research problem is presented. The justification on the important of the research is presented in the second section of the chapter. The research problem is presented in the third section. The main objective and sub-objective of the research is presented in section four. In the fifth section of the chapter the research questions are presented. Finally in section six the conceptual frame work of the research and its description is presented

1.1. Background and Justification of the problem

Quality of life (QoL) is a multidimensional concept and it is used in many different ways by various research communities. The concept has no universally accepted definition and as a consequence it is conceptualized in different ways across different disciplines based on the objectives to be achieved and the methodologies employed. These differences limit the possibility of having a universally accepted definition and methodological approach to assess Quality of Life against which the appropriateness of a given method can be judged. However, knowledge of existing conceptual and methodological approaches can guide the choice for one or a combination of existing methods to analyse QoL for a specific area of interest.

Given the different disciplines involved in Quality of Life studies, it is agreed that QoL relates to description and assessment of the conditions of life of people in a certain country or region. Despite many research attempts to study the elements which determine QoL, they vary on the considered domains of life. Such domains of life for instance include housing, family income, safety and access to public services. Furthermore, the scale at which the different studies conducted vary from one another; some are conducted at national level, some at regional level, but very few are conducted at a lower scale like neighbourhood or sub-city level (Tefazghi et al., 2010; Woldetinsaye, 2011).

In this study we use the definition by Foo (2000) where QoL is defined as: “individuals overall satisfaction with life”. QoL has two dimensions which are known as subjective and objective. It is often measured using either subjective or objective indicators, which are assumed to be distinct (Shin et al., 2003). Subjective indicators represent the individual’s evaluation of objective conditions of life, which are derived from surveys of resident perceptions, satisfaction or well-being with urban living. On the other hand objective indicators signify the external or tangible conditions of life that are often derived from secondary data; such as demographic and socio-economic data, crime records and reports on the existence of public services.

According to the measured subjective and objective indicators, the level of QoL has four states known as wellbeing, deprivation, adaptation or dissonance (Craglia et al., 2004; Olson and Schiber, 1992; Tesfazghi, et al., 2010). Wellbeing is when both individual’s subjective feeling and objective living conditions of life is good (Zapf, 1984) as cited in (Craglia, et al., 2004; Tesfazghi, et al., 2010). If both subjective and objective conditions are bad then there is deprivation. On the other hand when the subjective condition is good but the objective condition is bad then there is adaptation. However, if the subjective condition is bad but the objective condition is good, then there will be dissonance.

Accordingly, studies regarding inhabitants’ satisfaction of QoL have become a major input for policy makers and urban planners to identify the problem areas, causes of dissatisfaction, demographic influences and citizens’ priorities in life. Cognizant with this, QoL studies have been an interest of many researchers in the developed world (Bunge, 1975; Diener and Suh, 1997; Fahy and Cinneide, 2006; Foo, 2000; Senlier et al., 2009; Tesfazghi, et al., 2010; Woldetinsaye, 2011). Some of the QoL studies tend to evaluate the perception of QoL of individuals (Das, 2008; Foo, 2000; Senlier, et al., 2009), while others compare QoL differences among two or more cities (Senlier, et al., 2009). Very few deal on analysing the spatial variability of QoL (Tefazghi, et al., 2010; Woldetinsaye, 2011). However, most of the QoL studies have been conducted in the developed countries and very little or virtually no systematic and scientific studies have been made in developing countries, particularly in Ethiopia. In many cities of the developing

countries the key factors that affect the individuals' QoL are not yet clearly identified. As a result, documented information on QoL is scanty.

In addition most of the QoL studies are at a regional and country level (Foo, 2000; McCrea et al., 2006; Senlier, et al., 2009). But these kinds of high-scale assessments can hide enormous spatial variation in QoL that could prevail at different levels such as province, district or city centres. In such circumstance local variation are often overlooked in macro scale studies.

Consequently, QoL studies that attempt to examine variations in conditions of life at a smaller scale and that identifies further the main reasons behind the mismatch between the living condition, which people have and the satisfaction with their living condition is vital (adaptation and dissonance). Most importantly, to the best of our knowledge, there is no any research attempt made on urban QoL in the northern highlands of Ethiopia particularly in Mekelle city where the present study concerns. Consequently, understanding individuals' overall satisfaction of life and identifying the reasons behind their satisfaction and dissatisfaction based on the subjective and objective conditions of life is vital. Therefore, studies aimed at generating empirical information on conditions of life and on the reason behind adaptation and dissonance at a small scale that would ultimately assist planners and policy makers to make informed decisions are pertinent. Consequently, the proposed research aims to address this gap in knowledge.

This research aims to measure the QoL of urban residents' in Mekelle city, Northern Ethiopia at sub-city level, by considering both subjective and objective QoL. The study will pay specific attention to the main reasons behind different perceptions of individuals from the objective living condition they have particularly in the case of adaptation and dissonance. A methodological approach that involves a comprehensive analysis of QoL is employed to explore individual's priorities, cognitive reactions to her/his whole life.

1.2. Justification of the Research

The aforementioned problems are general to developing countries and findings of this research will contribute to the application of measuring urban QoL, which is one of the spearhead of ITC especially within the framework of urban governance. Measuring is also viewed by many as a basic tool to monitor and capture the effects of development interventions on the living conditions of the people. However, documented information on conditions of life is inadequate in most of the developing countries. Therefore, it is in this respect that the researcher intends to carry out a study so as to generate empirical information on the subjective and objective conditions of life. Thus, it is hoped that the research will result in better knowledge regarding conditions of urban QoL in the study area, which can assist planners and policy makers in the formulation and implementation of appropriate policies and strategies that address the enhancement of urban QoL.

While the datasets and findings of the research will be particular to the study area, the approach of measuring QoL as well as the results of this study will be largely generic and can be applied elsewhere.

1.3. Research problem

QoL studies have been viewed by many as a major input for policy makers and urban planners to identify the key factors that affect individuals' QoL. However, despite its usefulness virtually no systematic and scientific studies have been made in Mekelle city. As a result, documented information on QoL is scanty. Studies aimed at generating empirical information on urban conditions of life, which in turn address this gap in knowledge is therefore pertinent.

1.4. Research objective

The main objective of the research is to measure the QoL and identify the reasons behind adaptation and dissonance at sub city level in Mekelle city, northern Ethiopia.

1.4.1. Specific Objectives

1. To measure the subjective and objective QoL.
2. To identify the states of QoL in the sub city.
3. To identify the reasons behind the adaptation and dissonance at the smallest administrative unit, Ketena.
4. To analyse the relevance of understanding the reasons behind adaptation and dissonance for urban planning and policy making.

1.5. Research Questions

For each sub objective the following research questions are identified

Questions for sub-objective 1:

- ✓ What is the level of subjective QoL at sub city level with each indicator?
- ✓ What is the level of objective QoL at sub city level with each indicator?

Questions for sub-objective 2:

- ✓ What are the four states resulting from the combination of subjective and objective QoL in the sub-city for each indicator?
- ✓ What is the advantage of identifying the states of QoL?

Questions for sub-objective 3:

- ✓ What makes people to adapt the existing condition of their life?
- ✓ What makes people to feel dissatisfied while they have good condition of life?
- ✓ What are spatial features or patterns that (partly) explain the occurrence of 'adaptation' or 'dissonance' at the smallest administrative unit, Ketena?
- ✓ Why people have different perceptions of QoL from the objective conditions of life they have?

Questions for sub-objective 4:

- ✓ What do the policy makers and urban planners know about adaptation and dissonance?
- ✓ How do policy makers and urban planners look in to adaptation and dissonance?
- ✓ Which state (adaptation/dissonance) is more important for policy making/ urban planning?

1.6. Conceptual framework

Three techniques of measuring QoL that are applied using the two perspectives of QoL: subjective and objective perspectives (Figure 1). The three techniques are the application of subjective indicators to measure the subjective QoL, objective indicators to measure objective QoL and the combination of objective and subjective indicators to identify the states of QoL.

To measure the subjective QoL, seven domains from social, economic and physical dimensions of life were preselected to be ranked through FGD. These are family income, housing, access to public service, family life, safety, neighbourhood satisfaction and access to green space. According to the result of the FGD housing, access to green space, access to public services and family income are considered in this study. Likert scale is used for standard comparison, which is used to quantify individual's perception of life with each indicator. Open ended questions are also used to identify reasons behind adaptation and dissonance during the household survey and walking interview. The respondent's rational response is used to measure subjective QoL.

Objective QoL is measured from the perspective of social, economic and physical dimensions of life. Secondary data is used as an input to measure the tangible condition of life. Quantitative method is used for analysing the objective QoL. Then the states of QoL are identified based on the level subjective and objective QoL that is analysed from the household survey and secondary data. Quantitative method of analysis is employed for this purpose. Finally the main reasons behind adaptation and dissonance are identified based on the individual's perceptions of subjective QoL that is acquired from the household survey and walking interview.

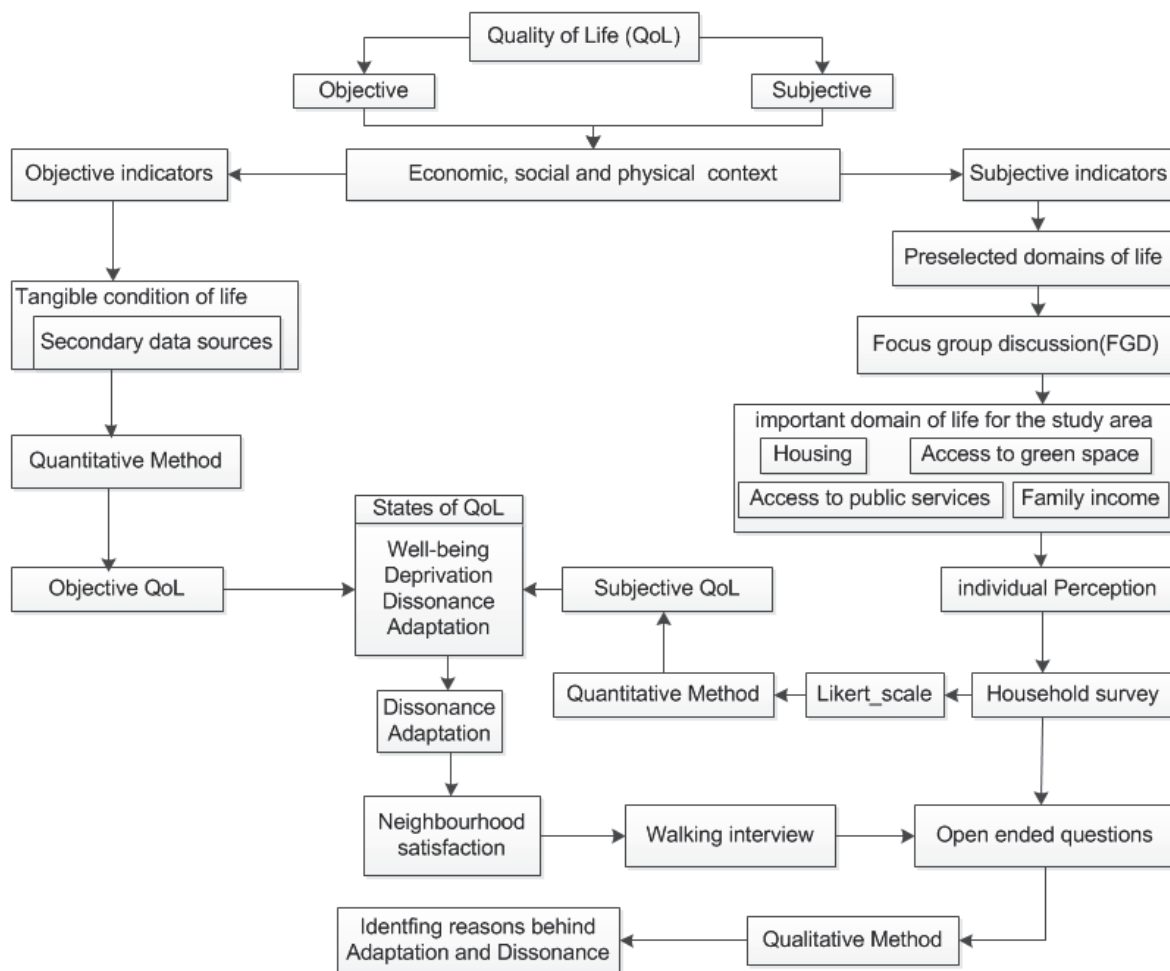


Figure 1 Conceptual framework

2. STUDY AREA DESCRIPTION, DOMAIN OF LIFE AND SCOPE OF THE STUDY

This chapter provides a short overview of the physical, demographic, and socio-economic situation of the Mekelle city in general and the study sub-city in particular. Furthermore, the sampling strategy of the research, the main domains of life that affect urban QoL considered for the purpose of this study and the scope of the research is discussed in this chapter.

2.1. Study area

Mekelle is the sixth largest city in Ethiopia and the capital of the Regional State of Tigray. Established nearly 150 years ago by Emperor Yohannes, the city is nestled in Ethiopia's temperate highlands, in the heart of a region that traces its origins back to the ancient Axum Empire that once controlled Red Sea trade (4th century BC–10th century AD). Over the past two decades, Mekelle has experienced rapid growth as the capital of the Regional State of Tigray.

Mekelle city lies in the Ethiopian highlands 780 km north of Addis Ababa. Geographically the city is located between 13023'52"N and 13027'11"N latitude and 4055'46"E and 4059'35"E longitude covering a total land area of 9815 hectare. As presented in Table 1 the city is structured into 7 sub-cities for administrative purposes. It has an autonomy to manage overall political, social and economic development of the city. The population of the city has increased from 20,000 in the early 1970s to 507,675 by 2011, of which 246,736 (48.6%) are male and 260,940 (51.4%) are female (Partners, 2011). The city has a temperate climate due to its elevation (over 2,200 meters).

Table 1 Characteristics of the sub-cities of Mekelle city

No	Sub city Name	Population (2011)	Sub-City Area(ha)	Number of Ketenas per Sub-city	Population density (pop/ha)
1	Adihaki	26093	670.2	9	38.93
2	Kedamay Weyane	46000	710.9	14	64.71
3	Ayder	32095	1305.7	7	24.58
4	Quiha	18761	1036.4	2	18.10
5	Hawelt	20693	1319	11	15.67
6	Hadinet	46508	1589.2	8	29.27
7	Semen	64044	3183.6	13	20.12

source: Mekelle municipality research paper: Transportation plan and implementation strategy of Mekelle city (Partners, 2011)

Kedamay weyane sub-city

Kedamay weyane, where the present study concerns, is one of the 7 sub-cities Mekelle covering an area of 710.9 ha. The map of the study area with its smallest administrative unit is presented in Figure 2.

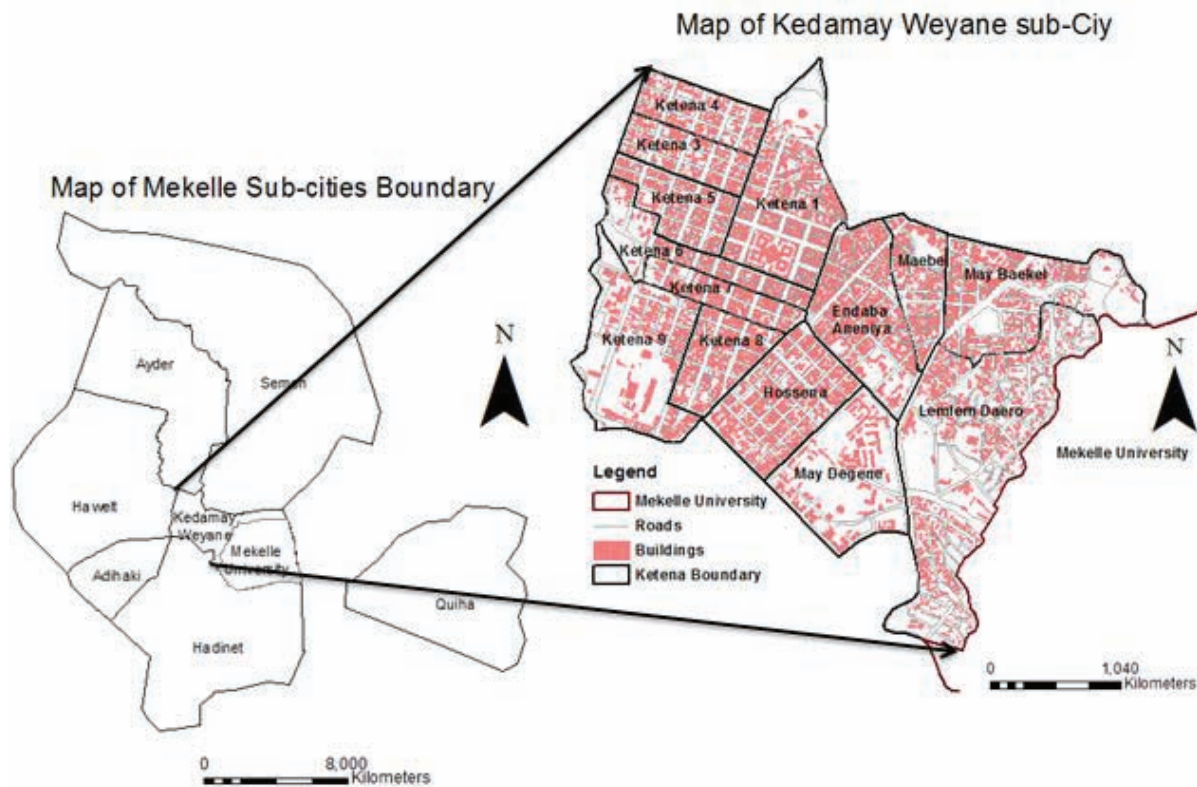


Figure 2 map of the study area

The sub-city has 14 Ketenas, which is the smallest administrative unit in Mekelle city. According to the data from the municipality of the city, the total population of Kedamay Weyane sub-city is about 46,000 (see Table 1). Average population density of the sub-city is 64.71 per hectare, which makes it the most densely populated sub-city of Mekelle. Population distribution across the 14 Ketene's and its respective area coverage is presented in Table 2.

Table 2 Characteristics of the 14 Ketenas of Kedamay Weyane sub-city

No	Name of Ketena	Population (2011)	Area of the Ketena (ha)	Population density (pop/area(he))
1	Ketena 1	4997	15.72	317.88
2	Ketena 3	2730	5.26	519.01
3	Ketena 4	2363	5.85	403.93
4	Ketena 5	2769	5.49	504.37
5	Ketena 6	1979	19.74	100.25
6	Ketena 7	2274	4.33	525.17
7	Ketena 8	2023	6.36	318.08
8	Ketena 9	3117	23.03	135.35
9	May Baekel	2580	23.22	111.11
10	Lemle Daero	4139	498.13	8.31
11	May Degene	4254	17.28	246.18
12	Maebel	3555	6.21	572.46
13	Hossena	3269	11.97	273.10
14	Endaba Aneniya	5951	13.45	442.45

Source: Kedamay weyane sub-city administration 2011.

As shown in Figure 3 Kedamay Weyane sub-city has heterogeneous built environment characteristics. In some Ketenas of the sub-city there are very old and non-durable houses in a very dirty neighbourhood but in the others the houses are modern, they have also infrastructure like road and their neighbourhood is

neat. From visual interpretation of the photos; we can say there is a high difference of income level between the residents of the sub-city.



Figure 3 worst of residential houses in Ketena1 (A) and better of residential houses in Ketena Hossena (B)

2.1.1. Sampling Strategy

The data for this study are derived from a household survey conducted in Kedamay weyane sub-city, Mekelle from October 4, 2011 to October 13, 2011. The study is constitutes in one of the sub-cities in capital city of Tigray region. The study sub-city was chosen purposively according to some criteria basically due to its heterogeneity in its social characteristics such as family income, built environment and location of the sub city, which assists in exploring the variation in QOL life within the sub-city which in turn helps to identify the states of QOL. As presented in the map in Figure 4 sample households were selected randomly from each Ketena of the sub-city so as to include a systematic variation in subjective and objective conditions of life. The sample size from each Ketena was decided based on the population size of the Ketenas. Based on the digital map of building footprint of the study area acquired from Mekelle city municipality, a total of 210 households were randomly selected using random sampling of cases in SPSS. Then the selected households were exported to ArcGIS software package as dBase for visualization. Accordingly 14 maps showing the sample households of each Ketena were prepared in ArcGIS for the purpose of the survey. This method of sample selection has given every household heads in the sub-city a chance of being included in the sample. Therefore the sample selection is free from bias.

Sample Households Surveyed in Kedamay Weyane Sub-city, 2011

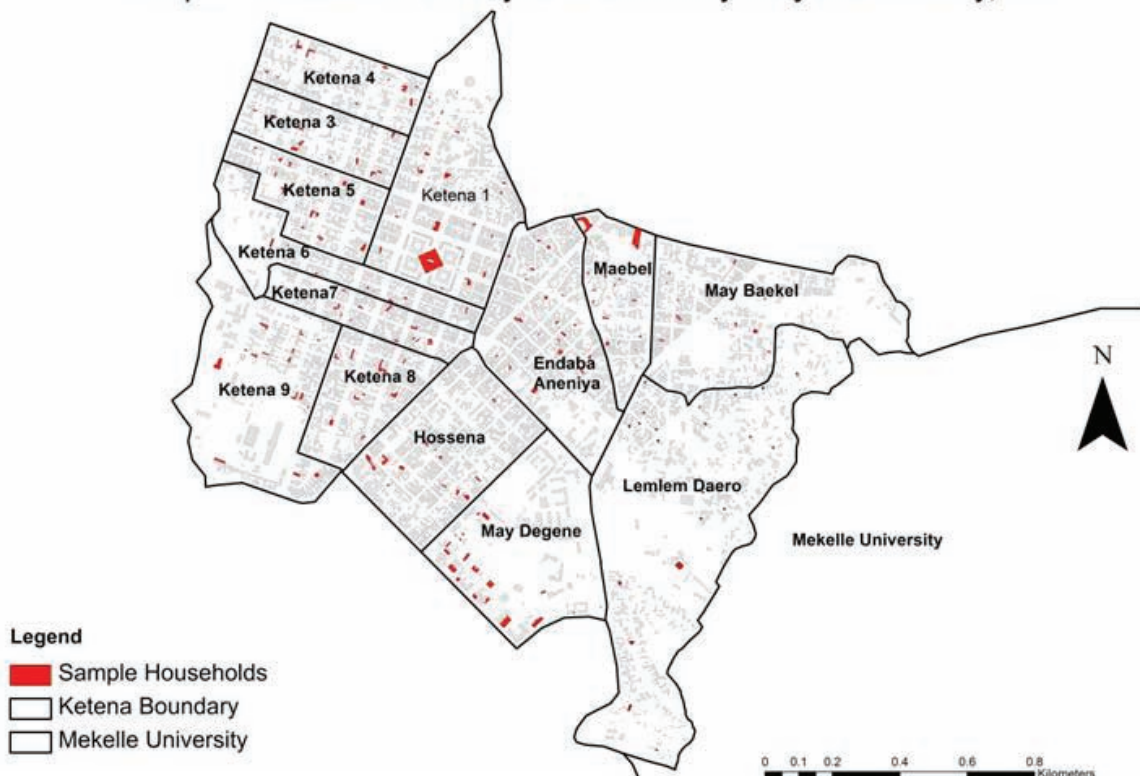


Figure 4 Sample household of the survey

2.2. Domains of life

Domains of life are important to measure how people feel about their life. Based on prior knowledge of the study area and in depth reviews of literature seven domains of life were identified during the pre-field work preparation. These are: housing, family income, family life, access to public services, neighbourhood satisfaction, safety and access to green space.

Since it is important to measure QoL based on the domains considered as important by the subjects, a FGD was held at the beginning of the field work with representative of the sub-city residents so as to rank the importance of the pre-selected domains. Accordingly housing, access to green space, access and quality of public services, family income, safety, family life and neighbourhood satisfaction domains were ranked from most to least important respectively. Hence the first four domains discussed below were considered for the household survey.

Housing is an important domain of urban QoL and affects individual's QoL in urban areas. It is difficult to meet the basic human needs without proper shelter. Housing issues have also effect on health, education, neighbourhood, economy, satisfaction of individuals with their life and community's wellbeing.

Access to green space is one of the important domains of life which can affect urban QoL. This domain can be evaluated according to its availability, accessibility and quality. Better access to green space contributes a lot to better QoL. Access to green space can affect highly social life of a society and neighbourhood satisfaction.

Access to public services which includes access to water, education, health and public transport can affect urban QoL. It is believed that the better the quality and coverage of public services the higher the QoL. Furthermore, proximity to these public services also affects individual's satisfaction with their life.

Family income is also another important domain of life that can affect QoL in urban areas. It is expected that families with higher income have better QoL.

2.3. Scope of the research

The main objective of the study is to identify the reasons behind adaptation and dissonance. These are among the states of QoL, which explain a mismatch between the objective and subjective QoL. Due emphasis is given on investigating the reasons behind adaptation and dissonance based on perceptions of resident's, policy makers and planners, which is not done in earlier researches.

Seven domains of life and their indicators are selected based on the socio-economic setting, culture and geographic location of the study area. Most of the domains are adapted from previous studies on QoL in Ethiopia (Tesfazghi, 2009; Woldetinsaye, 2011). However, through FGD the domains were ranked based on their importance for QoL in the study area's context. The study attempts to include important indicators with each domain through FGD in the context of urban QoL as the outcome of the research is expected to contribute for further planning and policy making issues in urban areas.

3. LITERATURE ON QUALITY OF LIFE

In this chapter literatures which deal on studying urban QoL are reviewed. The literature review is presented in five main sections. In the first section different QoL definitions used by different scholars are reviewed. Literatures on QoL measurements using subjective or objective indicators are reviewed in the second section. However in the third section literatures which combined subjective and objective QoL indicators for measuring urban QoL is reviewed. The empirical evidences on urban QoL studies are reviewed in the fourth section. Finally in the fifth section of the chapter literatures on states of QoL are reviewed.

3.1. Definition of Quality of life

Depending on the purpose and objective of the study different scholars define QoL differently. Accordingly there is no widely accepted definition for QoL (QoL) in literatures. For instance, Foo (2000) defined QoL as individuals overall satisfaction with the life they have. QoL is also defined in terms of what one has lost, or lacks, rather than what one has (Bowling and Windsor, 2001). Costanza et al. (2007) defined QoL as the extent to which objective human needs are fulfilled in relation to personal or group perceptions of subjective well-being. On the other hand Senlier, et al. (2009) defined QoL definition as the relation between the individual perceptions and the feelings of people, and their experiences within the space they live in. Recent definition of QoL is given by Pearl et al. (2011) whereby QoL is defined as a measure of objective and subjective features of life. Thus it can be observed from the different QoL definitions that there are key words such as satisfaction, objective facts, enjoyment, happiness and life satisfaction which are used by the different scholars (McCrea, et al., 2006; Tesfazghi, 2009).

3.2. Measuring Quality of life

QoL of life can be measured using subjective indicators, objective indicators or by combining both. This section has two sub sections. In the first sub-section literatures that applied subjective indicators to measure QoL are reviewed. Whereas in the second sub-section literatures that used objective indicators to measure QoL are reviewed.

3.2.1. Subjective Quality of life

Subjective QoL reflects the perception or satisfaction of individuals with the life they have. It is usually measured using subjective indicators. Subjective measures are intangible, incomparable, and unstable as they are based on individual's perception, satisfaction as well as well-being. QoL which is measured with subjective indicators need not be related with the objective condition of life (Santos et al., 2007). Most frequently Likert scale is employed as a main technique to measure subjective QoL. For example Das (2008) used 5 point Likert scale from very satisfied to very dissatisfied while Tesfazghi, et al. (2010) applied 6 point Likert scale ranging from completely dissatisfied to completely satisfy. But subjective QoL can also be measured in terms of individual's overall life satisfaction with regard to their life as a whole. Accordingly measuring directly individual's cognitive and emotional reactions to her/his whole life as well as to particular domains of life is crucial to understand the subjective wellbeing of individuals (Das, 2008).

A review of literature reveals that different researchers use different methods to develop subjective indicators. Some of the methods include adopting from previous QoL studies, from household survey or from expertise view (Das, 2008; Foo, 2000; Senlier, et al., 2009; Tesfazghi, et al., 2010). As these indicators

measure individual's perception, it is important to develop them with full involvement of stakeholders using participatory mapping tools such as FGD, participatory sketch mapping and image mapping. This will in turn aids in attaining indicators that can measure QoL accurately according to the geographical location. Moreover, it is important to get better understanding of different perceptions of people for the same area (Woldetinsaye, 2011).

3.2.2. Objective Quality of life

Objective QoL is one type of QoL, which represents the external or tangible condition of life (Das, 2008; Foo, 2000; Senlier, et al., 2009; Tesfazghi, et al., 2010). It is usually measured by objective indicators, which measure the tangible, comparable and stable conditions of life. Objective indicators are quantitative indicators which are used for measuring concrete aspects of life. These indicators are associated with social, economic or environmental conditions. Objective indicators can suffer by under reporting or over reporting (Das, 2008). These indicators use tangible domains to measure the objective QoL, like education, health, transport, social welfare, air pollution, water pollution, green space, waste management, family income and consumption, housing and economic dynamism (Santos, et al., 2007). They are mostly appropriate for use at neighbourhood, city, region or country level and can be derived from secondary data such as census and remotely sensed satellite imagery.

3.3. Combining subjective and Objective Quality of life indicators

Even though most literatures indicate that the relationship between objective and subjective indicators is weak (Das, 2008; McCrea, et al., 2006), there are a few who indicated a strong link (Brereton et al., 2008; Santos, et al., 2007). Linking objective knowledge with perceptions of individuals is very important for better understanding and evaluation of local conditions of QoL. This helps to get results that are close to the reality on earth. Combining objective and subjective measures of QoL may be relatively direct for some domains of life, for example individual's family income and satisfaction of individuals with their family income as both types of measures are related to the individual (McCrea, et al., 2006). Combining these two indicators therefore useful for more complete assessment of QoL and recapitulate the aspect of life that is difficult to summarize by one of them (Santos, et al., 2007). Most of the time the weak link of the indicators occur due to the fact that objective indicators are measured at aggregated level to neighbourhood and also to higher levels while subjective indicators measures QoL satisfaction and perception at individual level (McCrea, et al., 2006). Therefore appropriate tool for combining these indicators is required in order to resolve the problem and get the correct outcome.

3.4. Empirical evidence on subjective and objective Quality of life

Numerous empirical studies employ different domains or aspects to measure urban QoL. For instance satisfaction from family life, education, wealth, health was evaluated by Foo (2000) and this is more related with demographic and socio-economic character of individuals. McCrea, et al. (2006) used domains related to satisfaction from the environment such as neighbourhood satisfaction, local area satisfaction, regional satisfaction and regional QoL to evaluate satisfaction. Some of the indicators used on the literature by Das (2008) to measure individuals life satisfaction was, satisfaction from condition of housing, satisfaction from cost of living, satisfaction from condition of traffic and satisfaction from level of environmental. Similarly Tesfazghi, et al. (2010) used domains such as housing, built environment, neighbourhood safety, neighbourhood sanitation, quality of public services, access to public service, social connectedness and family income to evaluate and analyse the spatial variation of urban QoL. Pearl, et al. (2011) also used

domains such as safety at streets, recreational centre accessibility, level of education, housing quality and parking space on their QoL research.

Literatures reviewed for the proposal stage of this study is illustrated in Table 3. As presented in the table most QoL researches are for European countries and attempted to measure both subjective and objective QoL. The sample size of these studies range from 69 to 2400 and the sample size have no relation with the total population of each of the study area. Besides, most of the literatures used a Likert-scale with 5 points.

Table 3 Summary of urban QoL studies

Author	Region	Size of the study area	Total population	Sample size	Likert scale	QoL Measures
Foo (2000)	Asia	647.8	3.1 million	2200	5	Subjective QoL
Ibrahim and Chung (2003)	Asia	NM	NM	300	5	Subjective QoL
McCrea, et al. (2006)	Europe	20,000	2.35 million	1610	5	Both subjective and objective QoL
Santos, et al. (2007)	Europe	NM	NM	2400	5	Subjective QoL
Das (2008)	Asia	NM	NM	379	5	Both subjective and objective QoL
Senlier, et al. (2009)	Europe	NM	NM	300	NM	Both subjective and objective QoL
Tesfazghi, et al. (2010)	Africa	14.720	220,991	607	5	Both subjective and objective QoL
Pearl, et al. (2011)	Europe	254.5934	3,726	69	5	Both subjective and objective QoL
Woldetinsaye (2011)	Africa	NM	220,925	410	6	Both subjective and objective QoL

3.5. States of Quality of life

Combining subjective and objective QoL is important to identify the four states of QoL that are presented in Table 4. These are measured by using the subjective and objective indicators respectively. In most literatures four states of QoL are listed: well-being, deprivation, adaptation and dissonance (Craglia, et al., 2004; Olson and Schiber, 1992; Tesfazghi, et al., 2010). In the literature of Sirgy et al. (2006) used different terminologies to explain the four states of QoL. The author referred to Wellbeing, Adaptation, Deprivation and Dissonance as Real Paradise, Fool's Paradise, Real Hell and Fool's Hell respectively.

Table 4 four states of QoL

Subjective quality of life (perceived quality of life)			
Objective quality of life (tangible condition of life)	Good	Good Well-being	Bad Dissonance
	Bad	Adaptation	Deprivation

The four states of QoL identify the match and mismatch of objective and subjective QoL. The match is defined by well-being and deprivation whereas the mismatch is defined by adaptation and dissonance. Well-being is defined as the happy life people have because it shows good objective and subjective condition of life. When the objectively measured conditions of life people have is good and people also feel good or if they are satisfied with particular domains and with the overall QoL they have, these people are categorized in the well-being category (Craglia, et al., 2004; Olson and Schiber, 1992; Sirgy, et al., 2006; Tesfazghi, et al., 2010). When objective and subjective measures of QoL are bad, means the objectively measured condition of life people living in is bad and these people are feeling bad with the QoL they have or if they are dissatisfied, it is deprivation. The other state of QoL is adaptation. This is a state in which people are satisfied with the conditions of life they have though the objective conditions are unsatisfactory. In other words this means they adapt the bad objective condition of life they have and they live happily. On the other hand dissonance is a state of QoL in which the objective QoL is good but individual's perception is bad or dissatisfied with the QoL they have. Generally speaking adaptation and dissonance show the contrast between the objective and subjective QoL whereas well-being and deprivation shows similarity (Tesfazghi, et al., 2010). The objective of this study is to identify why this contrast is created or to identify the reasons behind the contrast.

4. RESEARCH METHODOLOGY

The research strategies employed in this study combine both quantitative and qualitative methods. Quantitative data on subjective and objective conditions of life and other basic information was collected from sample households using structured questionnaire. Qualitative method is used to capture data pertaining local perception and opinions on the reasons behind adaptation and dissonance using open ended questions during household survey and walking interview.

4.1. The research design

The research is designed in the way to answer the research questions and to achieve the sub objectives and main objective as it is presented in the Table 5. In general to achieve the sub-objectives there are more than one question. The required data and its sources for the research with the methods of data collection and analysis employed are also presented.

Table 5 the research design

Sub-objectives	Research question	Data requirement	Method of data collection	Method of data analysis
1	✓ What is the level of subjective QoL at sub city level with each indicator?	IP	HS	Descriptive statistics (mean Score) and GIS
	✓ What is the level of objective QoL at the sub city level with each indicator?	SD	SD	
2	✓ What are the four states resulting from the combination of subjective and objective QoL for each indicator?	IP	HS	Descriptive statistics (mean Score) and GIS
		SD	SD	
	✓ What is the advantage of identifying the states of QoL?	SD	SD	Literature review
3	✓ What makes people to adapt the existing condition of their life?	IP	WI and HS	Qualitative data analysis such as conventional content analysis
	✓ What makes people to feel unsatisfied while they have good condition of life?	IP	WI and HS	
	✓ What are spatial features or patterns that (partly) explain the occurrence of 'adaptation' or 'dissonance' at the smallest administrative unit, Ketena?	SD	SD	Spatial analysis in ArcGIS
	✓ Why people have different perceptions of QoL from the objective conditions of life they have?	Literatures	SD	Literature review
4	✓ What do the policy makers and urban planners know about adaptation and dissonance?	policy makers and planners knowledge on Adaptation and Dissonance	semi structured interview	Qualitative data analysis such as conventional content analysis
	✓ How do policy makers and urban planners look in to adaptation and dissonance?	The same as above	The same as above	
	✓ Which state (adaptation dissonance) is more important for policy making and urban planning?			The same as above

IP= Individual Perception, HS= Household Survey SD= Secondary Data, WI= Walking Interview

4.2. Data source and acquisition methods

The study is based on both primary and secondary sources of information. Primary data was collected through FGD, household survey, semi-structured interviews and walking interviews. Secondary data were collected from governmental organizations. The sources and methods used to acquire data for the research are outlined below.

4.2.1. Acquisition of Primary data

Most of the data required to answer and validate the research questions were collected from primary sources. To generate the required data from the primary sources, different methodological approaches such as FGDs, in-depth interviews, interview with government key officials and walking interview were employed. These techniques were used to collect data pertaining subjective and objective domains of life and elicit the reasons behind adaptation and dissonance. Structured questionnaire were employed for this purpose for the in-depth interviews. The questionnaire was design in a way that it covers both subjective and objective attributes of QoL, which would ultimately help to measure both subjective and objective QoL as well as to identify the states of QoL. The questionnaire was administered in Tigrigna, local language.

Training of interviewer and testing questionnaire

Three Enumerators with knowledge of local language and experience on socio-economic survey were recruited locally and trained on the basis of the content of the questionnaire in order to minimize the errors in data collection that may be introduced by the enumerator. Moreover, an effort was made to structure the questionnaire in such a way the respondents understand and answered it easily. Prior to the actual fieldwork the questionnaire was pre-tested on the contents of the questionnaire by taking a sample of 30 MSc students from ITC. The pilot survey was intended to test whether additional questions are needed, respondents understanding of the questions and check for omission of questions. After the pilot survey, the questionnaire was revised and things that were unclear were discussed. A close supervision was held during the survey to control the quality of the data.

Focus group discussion

FGD provides an appropriate area to bring together inhabitants to share their perception on the conditions of life in their city. Due attention were made to include a representative of all social classes in the FGD in the sub-city. Accordingly FGD with key informants were held in sub-city to enrich the first hand data collected through interview basically it was supposed to rank the pre-selected domains of life, housing, family income, family life, access to public services, neighbourhood satisfaction, safety and access to green space according to the importance they have in the residents' QoL and to select indicators need to be included with each domain. After in-depth discussion the participants finally ranked the domains according to the importance for their life. Accordingly housing, access to green space, access to public services, family income, safety, family life and neighbourhood satisfaction were ranked from 1st to 7th respectively. Based on the rank made by the participants the first four domains of life were used to refine the questionnaire and the remaining three domains were excluded from questionnaire.



Figure 5 Photo showing focus group discussion session, October 1, 2011

Interview

Interviews with the selected 210 sample household heads were conducted in the sub-city Kedamay Weyane based on the domains ranked by the FGD and the necessary information was obtained. It includes information on basic attributes of objective QoL such as employment status, education level, household size and housing tenure; and household's perception of satisfaction on housing, access to green space, access to public services and family income. The questionnaire was organized with Likert-scale which ranges from 1= very satisfied to 6= very dissatisfied. Likert or frequency scale is the most commonly used method of primary data collection for obtaining individual's opinion or perception on selected domains. It is also a method with a fixed choice of response format (Sirgy, et al., 2006). The data that was collected from the household survey is used to measure the QoL of the sub-city in the area.

Furthermore, semi structured interview with 4 urban planners and policy makers were held in order to get their insight on their knowledge about the main reasons behind Adaptation and Dissonance in urban QoL and how these dimensions are being treated during regional planning and policy making process. These targets were selected based on their knowledge of the study area, work experience on planning and policy making activities and on their level of influence at work. These interviews provides additional information about the important domains of life and QoL in the area from professionals point view as well as understand the awareness of the professionals with the conditions of adaptation and dissonance.

Walking interview

Walking interview, which is one of the participatory methods were also used for collecting primary data for the study. This method is important for QoL studies because it explores the relationship between people's perception and place. There is a relation between what people say and where they say it (Evans and Jones, 2011). It is useful method to capture data related to people's understanding of a particular place or the whole neighbourhood in general. This method therefore aids for understanding and identifying the reasons behind the states of QoL particularly adaptation and dissonance. This method enable the respondent's to talk as much as they want on the issue they are asked.

During walking interview the one who set the route for walking is very important. The route can be set by the researcher or the interviewee (Evans and Jones, 2011), and it depends more on the knowledge of the interviewer about the place under study and the nature of the study taking place. Since there is a particular

place as a target and the interviewer has detail knowledge about the place, the route was set by the interviewer for this study.

After the household survey preliminary analysis was done to identify the Ketenas with adaptation and dissonance. This was a very important to continue the primary data collection with walking interview. 30 sub-set samples, 15 from each case (adaptation and dissonance), were selected for the walking interview. These sub set sample was selected based on pre-defined criteria such as ability to walk, having a good knowledge of research and the neighbourhood, and interest to be interviewed again after the household survey. Accordingly walking interview with open ended question was used in order to understand the main reasons behind adaptation and dissonance in QoL. There were no pre-formulated questions for this method. At the beginning of the interview the respondents were asked about what they feel about their neighbourhood in general and based on their responses they were asked other questions which can help to understand what bring adaptation and dissonance in the study area.

For the purpose of walking interview basic instruments such as GPS, digital camera and voice recorder were employed. The GPS was used to record the track of the interview, the camera was important to have photos of places mention as reason of satisfaction or dissatisfaction during the walking and talking activity and the voice recorder was used to record the responses of the interviewee. Before the walking interview started, the time of the camera was set in the same time with the GPS. This is important to geo-code the photos with the tracks from the GPS.

The starting point of the interview is the house of the residents and a selected target place was the end point of the interview. The end point was selected purposively to examine how the respondents react with it. For those who are adapting the bad condition of life and feel satisfaction with it the target end point was a bad place but for those who are feeling dissatisfaction with good condition of life the target end point was good place.

4.2.2. Acquisition of Secondary Data

Secondary data was collected to analyse the objective QoL in Kedamay Weyane sub-city. Data on population, employment rate, crime data, and digital maps of building, land use, administration boundary, contour map, distribution of services including education and health and other relevant data necessary for answering the research questions and to achieve the research objectives were collected. The secondary sources of information included government official statistical abstracts and researches undertaken in the area. To acquire the necessary secondary information for the study a visit was made to Mekelle City municipality, Urban Planning Institution, office of the sub-city administration, police stations at the sub-city, Mekelle university GIS department, Central Statistics agency of Ethiopia Mekelle branch, Bureau of education and Bureau of Finance and Economic Development. Moreover, different research papers and web pages were also important to accomplish the research.

In Table 6 the data collected during the field work is presented. In addition to the data collected the sources of the data as well as format of the data collected is presented in the table.

Table 6 Secondary data collected

<i>SN</i>	<i>Data Type</i>	<i>source</i>	<i>Format</i>	<i>Remark</i>
1	Population data 2011	Kedamay Weyane sub-city	Word	It was gathered by the administration of the sub-city, at Ketena level
2	Population data 2007	Central statistical agency Ethiopia, Mekelle branch	PDF	At sub-city level
3	Crime data	Kedamay Weyane police station	Excel	At sub-city level
4	Employment rate	Bureau of Finance and Economic Development	PDF	
5	Literacy rate	Mekelle university GIS department	PDF	
6	Literatures	Mekelle university GIS department	PDF	Studies on health and education
7	Digital maps of roads, land use, built up, utility, distribution of public services including education and cadastre and others	Mekelle municipality and urban planning institution	GIS	

4.3. Data preparation

The collected data was entered immediately after field survey and this was done simultaneously with the field survey during the period. Data was checked for its consistency and entered in SPSS data sheet for statistical analysis and GIS for spatial analysis. Besides, the secondary data collected from different sources was in a hard copy and PDF format and these were converted to appropriate data format for analysis.

4.4. Methods of Data Analysis

Analysis of data provides sense for the data collected during the field work. The research strategies employed in this study combine both qualitative and quantitative methods. The advantage of simultaneously employing qualitative and quantitative methods in the study of urban QoL is getting increasing recognition among researchers. This is because it enables to benefit from the insights that the two methods provided when used in combination. In summary the methodological framework employed for the data analysis is outlined in Figure 6.

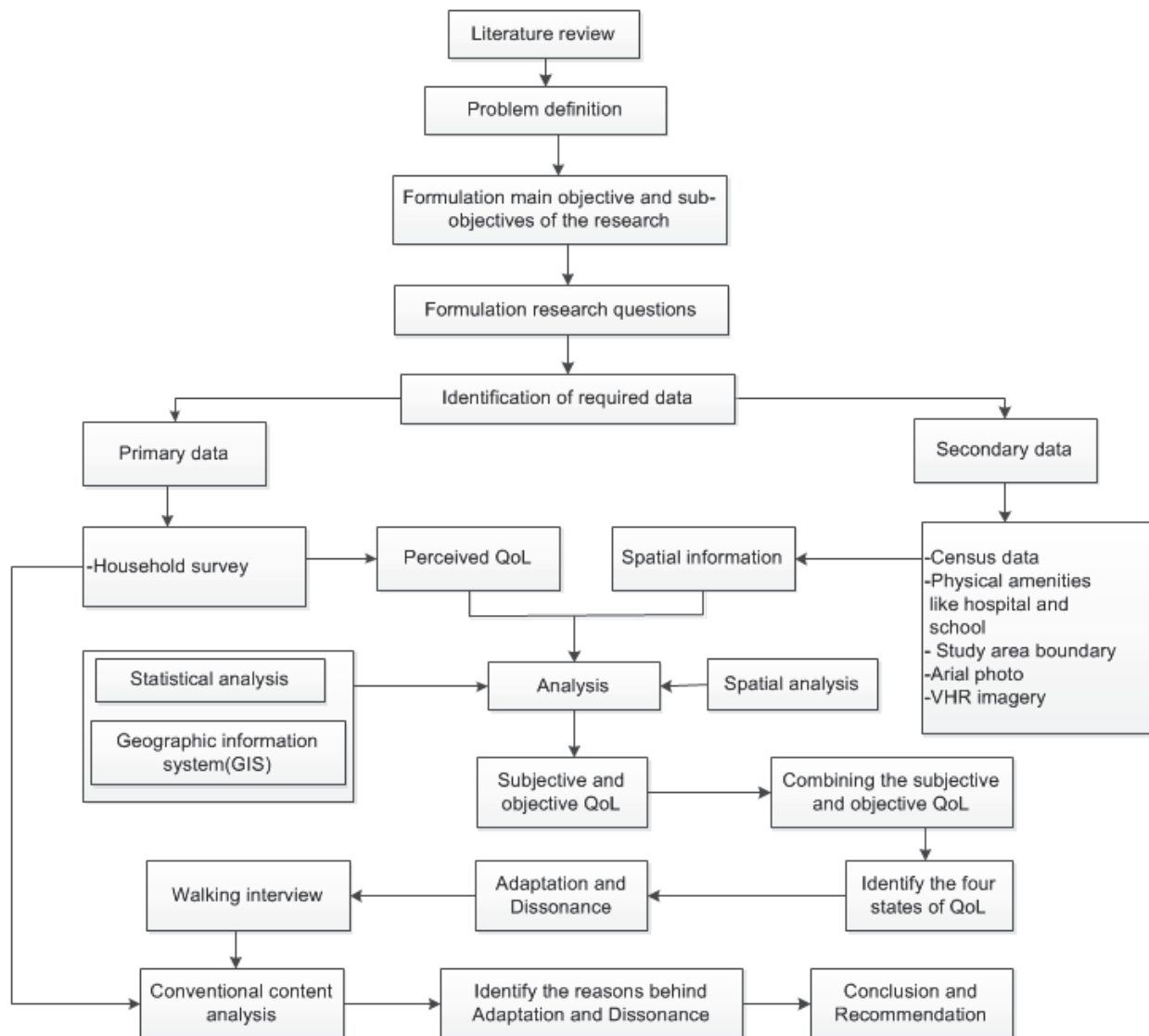


Figure 6 Research design and methodology

4.4.1. Analyzing subjective quality of life

Subjective QoL at indicator level and individuals satisfaction with each indicator was measured using descriptive statistics. Likert-scale method which ranges from 1 very satisfied to 6 very dissatisfied was employed to measure the responses of the sample respondents.

Descriptive statistics is applied to measure the Subjective QoL and respondent's satisfaction with the indicators at a sub-city level. Mean score is computed for each indicator in the domains and this was used to measure the subjective QoL for each Ketena.

4.4.2. Analyzing objective quality of life

Both descriptive and spatial statistics was employed to measure the level of objective QoL in the study area. Eight basic indicators (for operational definition of the indicators see annex 1) that represent individual and household characteristics and spatial indicators were included to quantify objective QoL. The included individual characteristics are employment status; education level and household tenure. The individual characteristics indicators such as employment status, education level and household tenure were categorical and these indicators were transformed to a score of 0-1 according to their contribution to QoL. Accordingly the indicator with high contribution to QoL was assigned a lower score. For example, for the indicator employment a household who is employed, government or self-employee takes a score of 0 and 1 otherwise. Family income is transformed into natural logarithm. No transformation was done for household size and number of room's as they are continuous variables.

Table 7 Transformed score of indicators

Individual characteristics at Kedamay weyane sub-City

Figure 7 Research design and methodology

Sex	Male	59.7	125
	Female	40.3	85
Age	<31	2.4	5
	31-40	19.9	42
	41-50	34.1	72
	51-60	31.8	67
	>60	11.8	25
Education level	Illiterate	33.3	70
	Primary school	31.0	65
	Secondary school	19.0	40
	Vocational school	9.0	19
	University degree	7.6	16
Employment status	Employed	68.6	144
	Unemployed	31.3	66

Furthermore housing over crowdedness, which measures the objective QoL on housing, was determined by dividing rooms per household by household size. Household size refers to number of all family members living in the household. The standard of crowdedness adapted to categorise the value is UK standard that is presented in Table 8.

Table 8 UK standard for categorizing housing over crowdedness

<i>Indicator</i>	<i>Number of rooms</i>	<i>Number of people</i>
Overcrowding	1	2
	2	3
	3	5
	4	7.5
	>= 5	2 for each room

To measure distance from household's home to school and health facility Geographic information system (GIS) is applied and these are included in the analysis as proximity indicators. Centroid block maps are used to identify the nearest distance to the facility. During the data preparation equal value was assigned for both government and private facility.

Population density is determined by dividing total population of each Ketena by its total area. The number of total population for the year 2011 was acquired from the city municipality. Similarly built-up density was determined by dividing total built-up area by total surface area of each Ketena.

4.4.3. Combining between subjective and objective QoL

To identify the states of QoL in the study area, it is important to combine the level of the subjective and objective QoL. A 2 X 2 matrix was developed to combine the subjective and objective QoL and to identify the states of QoL resulting from this combination. The technique for developing the matrix is adapted from (Zapf, 1984) as cited in (Craglia, et al., 2004). The matrix which is presented in Table 9 is prepared based on the good and bad subjective and objective QoL. For the subjective QoL; a Ketena with mean score of less and equal to the mean score of the sub-city for an indicator is considered as Ketena has good subjective QoL with that indicator. On the other hand a Ketena with mean score greater than the mean score of the sub-city for the indicator is considered as the Ketena has bad subjective QoL with the indicator. This category is based on the Likert-scale applied in the study. For the objective QoL; Ketenas that are within the applied standards and thresholds for each indicator are considered as they have good objective QoL; if not Ketenas have bad objective QoL. The identified states show the match and mismatch between the subjective and objective QoL measured. Accordingly, when both subjective and objective QoL is good it is Well Being; when both are bad we call it Deprivation; if the subjective QoL is good and the objective QoL is bad it is Adaptation and when the subjective QoL bad but the objective QoL is good it is Dissonance.

Table 9 matrix for identifying the states of QoL

		<i>Subjective QoL</i>	
		GOOD (\leq SCMS)	BAD ($>$ SCMS)
<i>Objective QoL</i>	\leq Th, GOOD	Wellbeing	Dissonance
	$>$ Th, BAD	Adaptation	Deprivation

Th = Threshold, SCMS = Sub-City Mean Score

4.4.4. Reasons behind Adaptation and Dissonance

A qualitative data analysis method called content analysis is applied for this study to identify the reason behind adaptation and dissonance based on the compiled opinions gathered from the individual respondents, planners and policy makers on their knowledge of adaptation and dissonance. Hsieh and E.Shannon (2005) summarized three approaches for content analysis based on ways of developing initial codes. These are conventional, directed and summative content analysis and for the purpose of this study conventional content analysis is used. Conventional content analysis approach better fits to our study as its categories are derived from the data during data analysis by fully understanding the general text or response of the individuals (Hsieh and E.Shannon, 2005).

The five important steps applied to analyse the qualitative data are presented in Figure 8. The first step is to define the unit of analysis. For this study the unit of analysis is phrase. In the second step, by going through the data cancelling identical statements is done, in order to reduce the volume of the data. Developing system of categories is done in the third step of the analysis. For this study the developed system categories are adaptation and dissonance. In the fourth step data is assigned to categories, which is called coding. The aim of the coding is to have a structure in the data. Codes can be developed based on data, literature or by integration of both approaches. For this study the codes are developed based on the data. Within this type of coding system there are several techniques of developing codes: line by line technique of coding which is categorized under the grounded theory is applied. Finally the system of categories is revised based on the data. Then it is presented in a narrative way with the help of photos

General steps of qualitative content analysis

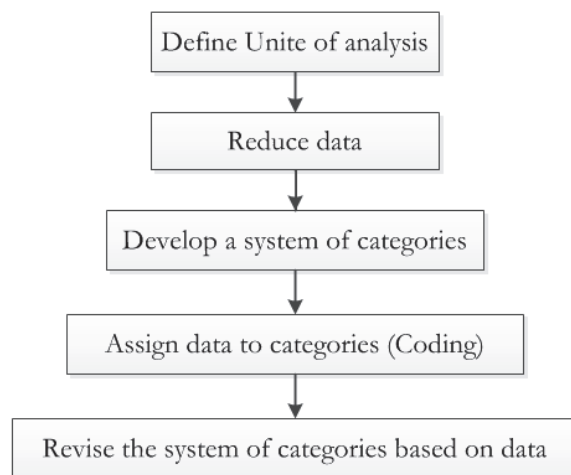


Figure 8 steps of qualitative analysis

5. RESULTS

The findings of the study are presented in this chapter in six main sections. In the first section the result of the analysis on the household and individual characteristics of the respondents of the research is presented. In the second section of the chapter the result of the FGD is presented. In the third section the measured subjective and objective QoL is presented. The combined effect of the measured subjective and objective QoL at indicator level is presented in the fourth section of the chapter. The analysis on the reasons behind adaptation and dissonance is presented in the fifth section for each indicator. Finally the analysis on the knowledge of policy makers and urban planners on adaptation and dissonance and how they treat this issue is presented in section six of the chapter.

5.1. Household characteristics in Kedamay weyane sub-city

During the household survey questions about both individual and household characteristics were included in the questionnaire. The sample size of the study is 210, which is distributed to the fourteen Ketenas of the sub-city according to their population size. Individual's response on their subjective QoL is measured with a Likert-scale which has a range of 6. The representation is 1 = 'very satisfied', 2 = 'satisfied', 3 = 'slightly satisfied', 4 = 'slightly dissatisfied', 5 = 'dissatisfied', 6 = 'very dissatisfied'. This range is the same to all the indicators included in the study. These representations were translated to the local language Tigrigna. In addition the objective indicators included in the questionnaire have both individual and household characteristics of the respondents.

The household characteristics of the study area are separated as individual and household characteristics. The individual characteristics are those related with the head of the family which is the target respondent of the survey. Individual characteristics included in the questionnaire are employment status, education level, age and sex. Whereas the household characteristics included are household size, family income, household tenure and number of rooms.

In Table 10 the percentage of the individual characteristics of the respondents of this survey is presented. The majority of the households (59.7%) are male headed in the study area. Besides, the age of the respondents of this research ranges from 27 to 80. However the majority of the respondents are in the age range of 41-50 which is 34.1% of the total respondents. The age which is presented here is the age of the family head. For the indicator illiteracy 66.7% of the respondents are literate while 33.3% are illiterate. 31.0% of these literate respondents are attended primary education whereas 19.0% have completed secondary education however only 16.6% have college diploma and above. A majority of the respondents (68.6%) are employed. These represent both government and self-employees.

Table 10 individual characteristics

<i>Individual characteristics at Kedamay weyane sub-City</i>			
indicator	Classification	Percentage (%)	Quantity
Sex	Male	59.7	125
	Female	40.3	85
Age	<31	2.4	5
	31-40	19.9	42
	41-50	34.1	72
	51-60	31.8	67
	>60	11.8	25
	Education level	Illiterate	33.3
	Primary school	31.0	65
	Secondary school	19.0	40
	Vocational school	9.0	19
	University degree	7.6	16
Employment status	Employed	68.6	144
	Unemployed	31.3	66

As presented in Table 11 large number of the respondents in the sub city has household size of 5 – 6 (50.5%). Most of the respondents (56.2%) have a monthly family income between 1000 – 2500 Birr which is 58 – 145 US Dollars per month. A large percentage of respondents which is 62.4 of the respondents in the sub-city have rooms 1 – 2.

Table 11 Household characteristics

<i>household characteristics at Kedamay weyane sub-City</i>			
indicator	Classification	Percentage (%)	Quantity
Household Size	1 - 2	7.6	16
	3 - 4	38.6	81
	5 - 6	50.5	106
	> 6	3.3	7
Family income Per Month	< 1000 Birr	7.1	15
	1000 - 2500 Birr	56.2	118
	2500 - 4000 Birr	32.9	69
	> 4000 Birr	3.8	8
Number of rooms	1 - 2	62.4	131
	3 - 4	35.2	74
	5 - 6	2.4	5

5.2. Focus group discussion

During the FGD the pre-selected domains of life from related literatures was ranked according to their importance for QoL of the residents of the sub-city. The domains presented for the FGD to be ranked are housing, family income, access to green space, access to public services, safety, and family life and neighbourhood satisfaction. The domains are ranked base on their importance for QoL of the respondents.

The rank of each domain resulted from the FGD are presented in Table 12. Housing was ranked as the most important domain of life whereas neighbourhood satisfaction was the least important domain.

Table 12 rank of domains by the FGD

<i>No</i>	<i>Name of domain</i>	<i>Rank</i>
1	Housing	1 st
2	Access to green space	2 nd
3	Access to public services	3 rd
4	Family income	4 th
5	safety,	5 th
6	family life	6 th
7	neighbourhood satisfaction	7 th

The list of domains which are presented in Table 13 are the domains which are used for further primary data collection in the study area. These domains are the first four most important domains for the QoL of the residents of the study area. In addition to the rank domains; related indicator to each domain were also provided from the FGD.

Table 13 Selected domain and their indicators

<i>No</i>	<i>Name of domain</i>	<i>included Indicators</i>
1	Housing	Housing affordability Housing over crowdedness Room for rent
2	Access to green space	Access to public parks
3	Access to public services	Access to primary education facility Access to secondary education facility Access to health facility Access to public transport
4	Family income	Adequate family income

Even though during the FGD the domain access to green space was ranked as second most important domain of life; it is excluded from the analysis because all the respondents explained that they are 'Very dissatisfied with the domain. In addition it is also inaccessible by all the residents of the study area since public green space is unavailable in the city.

5.3. Measuring subjective QoL at sub-city level per indicator

The level of subjective QoL is measured for each indicator that included in the study. The score of satisfaction with each indicator is measured as percentage of responses that is collected during the household survey to the question how satisfied they are with each indicator. A Likert-scale with 6-points range is applied to evaluate individual's satisfaction with each indicator. The findings of the research on the measured the level subjective QoL for each indicator are presented below under its domain.

5.3.1. Housing

Housing is one of the most important domains of life for measuring urban QoL from the perspective of subjective and objective conditions of life. The indicators that can be included in the housing domain can differ between QoL studies. Some of the reasons for these are social structure, culture and socio-economic status of the area under study. In this study, the indicators incorporated with housing domain are housing affordability, housing over crowdedness and room for rent. These indicators are identified during FGD. These indicators are used to measure the level of subjective and objective QoL of the residents of the study area.

In Table 14 percentage of satisfied respondents, the mean score and standard deviation of each indicator of housing domain at sub-city level is presented. From the indicators included in housing domain; most respondents are dissatisfied with housing affordability; in which 63% of the total respondents are dissatisfied with the indicator. This level of satisfaction has a means score of 4.6 according to the Likert-scale applied in the study. Most of the respondents of the research (44.3%) are slightly satisfied with the indicator housing over crowdedness. When this level of satisfaction is presented on range of the Likert-scale used in this study, it has a score of 3.2. Majority of the respondents (42.4%) of the study explain as they are slightly satisfied with indicator room for rent. Based on the Likert-scale applied; this level of satisfaction represents a mean score of 3.3.

Table 14 Percentage of satisfied respondents with each indicator of housing domain

<i>% of respondents satisfied with each indicator of housing domain at sub-city level</i>						
Level of satisfaction	Affordable Housing		Housing over crowdedness		Room for rent	
	%	Quantity	%	Quantity	%	Quantity
Very satisfied	0.0	0	0.0	0	0.0	0
Satisfied	1.0	2	17.6	37	19.5	41
Slightly Satisfied	25.7	15	44.3	93	42.4	89
Slightly dissatisfied	18.0	54	11.4	24	11.4	24
Dissatisfied	63.0	132	26.7	56	26.7	56
Very dissatisfied	3.3	7	0.0	0	0.0	0
Mean (6 point Likert scale)	(4.6) Dissatisfied		(3.2) Slightly Satisfied		(3.3) Slightly Satisfied	
Standard deviation	0.39		0.54		0.53	

1=Very Satisfied and 6=Very Dissatisfied

5.3.2. Access to public services

According to the result of the FGD one of the domains of life included in this study is access to public services. Within this domain; indicators of service and infrastructure including access to education, health, public transport, piped water, electricity and improved sanitary can be incorporated. However in this study only indicators access to primary education facility, secondary education facility, health facility and public transport are considered since during the FGD more attention was paid to these indicators to be included with the domain access to public services. Access to education facility is analysed separately for primary and secondary education for both subjective and objective QoL.

The percentage of satisfied respondents, mean score and standard deviation for each indicator of the domain at sub-city level is presented in Table 15. 80% of the respondents of the research in the sub-city are satisfied with the access they have to primary education facility. The level of satisfaction of the indicator has a mean score of 2.2 according to the Likert-scale applied. Most of the respondents of the research (50%) are slightly satisfied or have a mean score of 2.6 with the indicator access to secondary education facility. Unlike the other indicators of access to public services for the indicator access to health facility majority of the respondents are fall in two Levels of satisfaction with almost equal percentages. 37% of the respondents of the research are slightly dissatisfied whereas 36% are dissatisfied with indicator access to health facility with mean score of 4.0. For the indicator access to public transport 60% of the respondents are slightly satisfied with a mean score of 3.0.

Table 15 Percentage of satisfied respondents with each indicator of the domain access to public services

% of respondents satisfied with each indicator of the domain access to public services at sub-city level								
Level of satisfaction	Access to education facility				Access to health facility		Access to public transport	
	Primary		Secondary					
	%	Quantity	%	Quantity	%	Quantity	%	Quantity
Very satisfied	0.0	0	0.0	0	0.0	0	0.0	0
Satisfied	80.0	168	48.0	101	11.0	23	5.2	11
Slightly Satisfied	18.0	38	50.0	105	16.0	34	60.0	126
Slightly dissatisfied	1.0	2	1.0	2	37.0	77	8.6	18
Dissatisfied	1.0	2	1.0	2	36.0	76	24.3	51
Very dissatisfied	0.0	1	0.0	0	0.0	0	0.0	0
Mean (6 point Likert scale)	(2.2) Satisfied		(2.6) Slightly satisfied		(4.0) Slightly dissatisfied		(3.0) Slightly satisfied	
Standard deviation	0.49		0.56		0.96		1.4	

1 = Very Satisfied and 6 = Very Dissatisfied

5.3.3. Family income

One of the domains of life included in this study to measure the residents QoL of the study area is family income. This income is meant to be the income of the household earned by all members of the household with age of 15 and above. In the study; according to the result of the FGD only one indicator that is adequate family income is used to measure income related QoL.

The percentage of satisfied respondents, mean score and standard deviation of the indicator at sub-city level is presented in Table 16. The percentage of satisfied respondents for this indicator is dispersed to almost all ranges of the Likert-scale applied. But as presented in the table most of the respondents (48.6%) explain as they are slightly satisfied with adequacy of their family income with a mean score of 2.8.

Table 16 Percentage of satisfied respondents with the indicator adequate family income

<i>% of respondents satisfied with the indicator adequate family income at sub-city level</i>		
Level of satisfaction	Adequate family income	
	%	Quantity
Very satisfied	1.4	3
Satisfied	24.3	51
Slightly Satisfied	48.6	102
Slightly dissatisfied	19.0	40
Dissatisfied	6.7	14
Very dissatisfied	0.0	0
Mean (6 point Likert scale)	2.8 (Slightly satisfied)	
Standard deviation	0.98	

1=Very Satisfied and 6=Very Dissatisfied

5.4. Measuring subjective QoL at sub-city level per domain

The percentage of satisfied respondents, mean score and standard deviation analysed for the sub-city per domain is presented in Table 17. Majority of the respondents (52.9%) are slightly dissatisfied with the domain housing. The level of dissatisfaction of the respondents has a mean score of 3.6 according to the Likert-scale applied in the study. However for the majority of the respondents (72.9%) the level of satisfaction with the domain access to public services is slightly satisfied. This level of satisfaction has a mean score of 3.0 in the Likert-scale used in this study. 48.6% of the total respondents of the research are slightly satisfied with the domain family income. In the liker-scale applied in this study to measure the subjective QoL this level of satisfaction has a mean score of 2.8.

Table 17 Percentage of satisfied residents with each domain

% of respondents satisfied with each domain at sub-city level						
Level of satisfaction	Housing		Access to public services		Family income	
	%	Quantity	%	Quantity	%	Quantity
Very satisfied	0.0	0	0.0	0	1.4	3
Satisfied	6.2	13	14.8	31	24.3	51
Slightly Satisfied	18.1	38	72.9	153	48.6	102
Slightly dissatisfied	52.9	111	12.4	26	19.0	40
Dissatisfied	22.9	48	0.0	0	6.7	14
Very dissatisfied	0.0	0	0.0	0	0.0	0
Mean (6 point Likert scale)	(3.6) Slightly dissatisfied		(3.0) Slightly satisfied		2.8 (Slightly satisfied)	
Standard deviation	0.91		0.52		0.98	

1=Very Satisfied and 6=Very Dissatisfied

5.5. Measuring Objective Quality of Life at sub-city level per indicator

The level of objective QoL for the residents of the study area is measured using eight indicators that are housing affordability, housing over crowdedness, room for rent, access to primary education facility, access to secondary education facility, access to health facility, access to public transport and adequate family income. The indicators are categorized under three domains that are housing, access to public services and family Income. Each indicator is analysed based on standards and thresholds (see appendix 1).

5.5.1. Housing

In Table 18 the percentage of level of each indicator as well as the mean score and standard deviation of each indicator is presented. Majority of the residents of the sub-city (51.0%) are living in unaffordable housing. However majority of the residents of the research that are 68.6% of the total residents are living in sufficient living space. Majority of the residents of the sub-city (60.5%) do not have extra room for rent.

Table 18 Percentages of level objective QoL for each indicator of housing

% of level each indicator of housing at sub-city level					
Indicator	level	%	Quantity	Mean (6 point Likert scale)	Standard deviation
Housing Affordability	Affordable	49.0	103	1.5	0.35
	Unaffordable	51.0	107		
Housing crowded ness	Not crowded	68.6	144	1.69	0.47
	Crowded	31.4	66		
Room for rent	Available	39.5	127	0.40	0.49
	Not available	60.5	83		

5.5.2. Access Public services

In Table 19 the percentage residents with access, means score and standard deviation for each indicator of the domain access to public services is presented. According to the result of the analysis 95.2% residents of the sub-city have an access to primary education facility within 1 km distance. Unlike the other indicators of the domain access to public services all the residents of the sub-city (100%) have access to secondary education facility and public transport. This indicates all the residents of the sub-city are living within 2 km distance from the nearest secondary education facility and within 500m distance from the nearest mini-bus station. Majority of the residents of the sub-city (69.3%) have an access to health facility. The residents who have access to health facility are living within 40 minutes travel time from the nearest health facility.

Table 19 percentage of residents with access to public services

% of households with access to each indicator of public services at sub-city level					
Indicator	Accessibility	%	Quantity	Mean (6 point Likert scale)	Standard deviation
Access to primary education facility	Have access	95.2	6495	0.95	0.21
	Have no access	4.8	327		
Access to secondary education facility	Have access	100	6822	1.00	0.00
	Have no access	0	0		
Access to health facility	Have access	69.3	4725	0.67	0.46
	Have no access	30.7	2097		
Access to public transport	Have access	100	6822	1.00	0.00
	Have no access	0	0		

5.5.3. Family income

The percentage household with adequate family income as well as mean score and standard deviation of the indicator adequate family income is presented Table 20. The percentage is calculated based on the income poverty line of the Ethiopia. According to this income poverty line; families with and below family income of 2508 birr Ethiopian currency (146 US dollars) are considered as they have inadequate family income (BoFED, 2011). Based on this threshold majority of the residents of the sub-city that are 62.9% are living with adequate family income.

Table 20 Percentages of households with adequate family income

% households with adequate family income					
Indicator	level	Percentage (%)	Quantity	Mean (Likert)	Standard deviation
Adequate family income	adequate	62.9	78	0.37	0.48
	Inadequate	37.1	132		

5.6. States of Quality of Life

This section provides the states of QoL identified for each indicator considered in the study from the measured subjective and objective QoL of the indicators. The mean score of the subjective QoL and the threshold score of the objective QoL of each indicator is combined in terms of the level of subjective and objective of QoL to identify the states. From this combination, the states of QoL are identified which represents the match and mismatch between the measured subjective and objective QoL in the sub-city.

5.6.1. Housing

The states which are identified from the measured subjective and objective QoL for each indicator of housing domain are presented below per indicator.

Housing affordability

As shown in the map in Figure 9 four states of QoL are identified for the indicator housing affordability. The identified states are Wellbeing, Adaptation, dissonance and deprivation. From the identified states wellbeing and deprivation shows the match between the subjective and objective QoL of the indicator housing affordability. However adaptation and dissonance explain the contrast between the subjective and objective QoL of the residents with the indicator. The Ketenas in wellbeing with the indicator are Ketena 6, 8, 9 and May Baekel. Residents of these Ketenas have good subjective and objective QoL with the indicator. However Ketena 4, 5, Endaba Aneniya and Maebel are living in deprivation with the indicator housing affordability. In these Ketenas both the subjective and objective QoL is bad with indicator. The objective condition of housing affordability is bad but the subjective condition is good in Ketena 7, May Degene and Lemlem Daero of the sub-city. The residents of these Ketenas are experiencing adaptation. Residents of three Ketenas in the sub-city that are Ketena 1, 3 and Hoskena are experiencing dissonance. Dissonance is a state of QoL that represents the bad perception of residents of their QoL while they have good objective QoL.

States of Quality of Life of The Indicator Housing Affordability in Kedamay Weyane Sub-city, Mekelle, Ethiopia, 2011

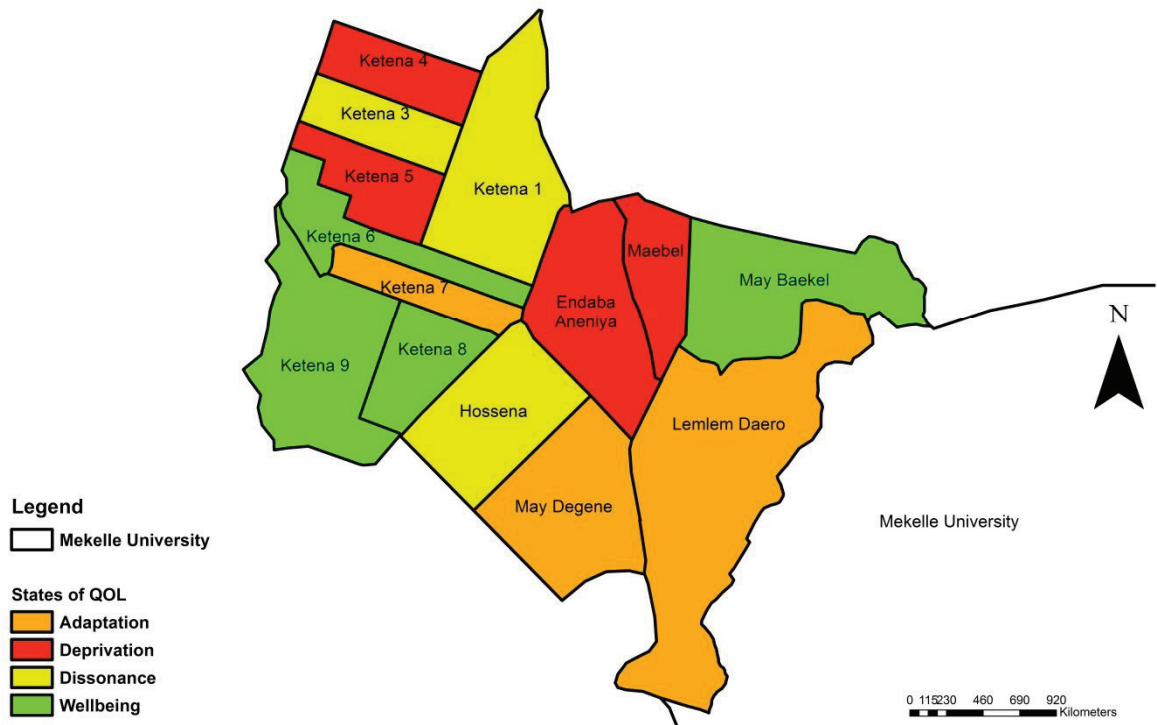


Figure 9 map of the four states of QoL for the indicator housing affordability

Housing over crowdedness

The map in Figure 10 shows the states of QoL that are identified depending on the good or bad subjective and objective QoL in Kedamay Weyane sub-city for the indicator housing over crowdedness. Residents of Ketena 5, 9, Hossena, May Degene and May Baekel in the sub-city are in wellbeing with the indicator. In these Ketenas both the subjective and objective QoL is good with the indicator. From fourteen Ketenas of the sub-city residents of three Ketenas that are Ketena 4, 6 and 7 are experiencing deprivation with the indicator housing over crowdedness. These residents have bad subjective and objective QoL with the indicator. Adaptation is being experienced in Ketena 1, 3, 8, Endaba Aneniya and Lemlem Daero with the indicator. The residents have good subjective QoL but bad objective QoL with the indicator. Maebel is the only Ketena which is experiencing dissonance with the indicator housing over crowdedness in the study area. In the Ketena subjective QoL is bad however objective QoL is good with the indicator.

States of Quality of Life of The Indicator Housing Over Crowdedness in Kedamay Weyane Sub-city, Mekelle, Ethiopia, 2011

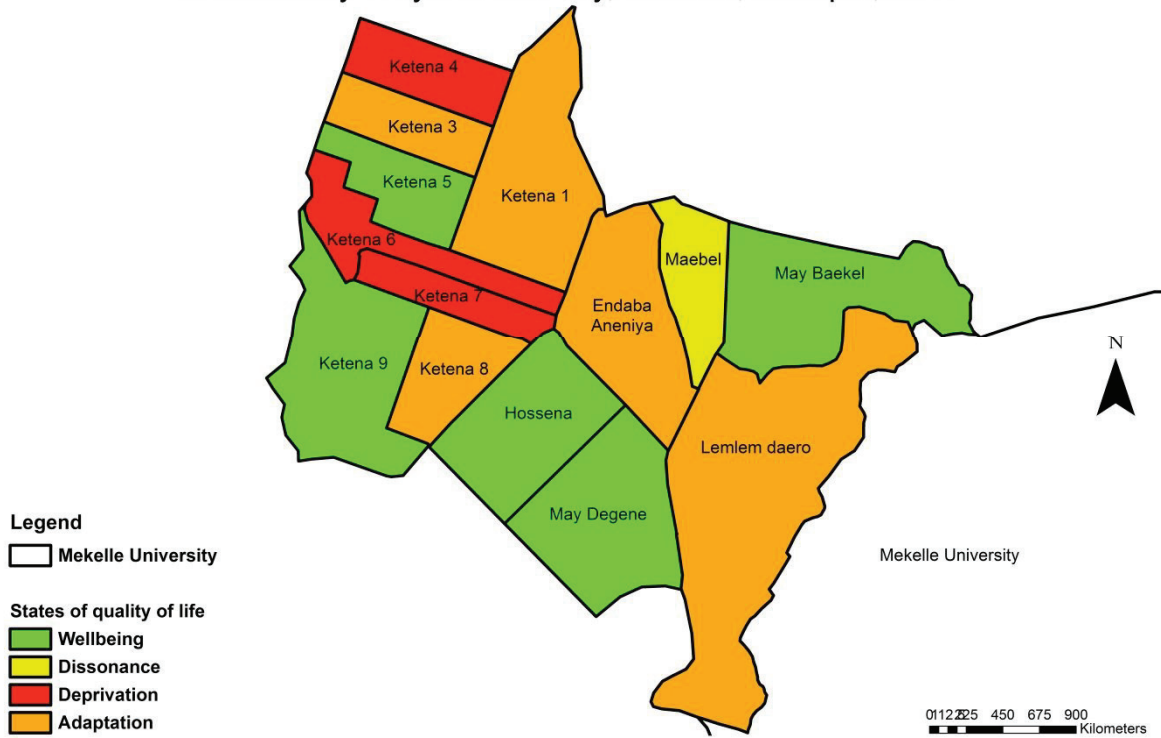


Figure 10 map of the four states of QoL for the indicator Housing over crowdedness

Room for rent

The states of QoL that are identified for the indicator room for rent is presented in Figure 11. Wellbeing, Adaptation and Deprivation are the states that are identified from the measured subjective and objective QoL for the indicator in the sub-city. Residents of Ketena 5, 8 and 9 are in wellbeing with this indicator. For these residents the subjective and objective QoL is good with the indicator. Deprivation is being experienced by residents of Ketena 4, 6, 7 and Maebel in the sub-city with this indicator. Both subjective and objective QoL is bad for these residents with the indicator room for rent. Ketenas 1, 3, Endaba Aneniya, Hossena, May Degene, May Baekel and Lemlem Daero are Ketenas in the sub-city that are experiencing adaptation with the indicator. In these Ketenas the subjective QoL is good whereas the objective QoL is bad with the indicator room for rent.

States of Quality of Life of The Indicator Room For Rent in Kedamay weyane Sub-city, Mekelle, Ethiopia, 2011

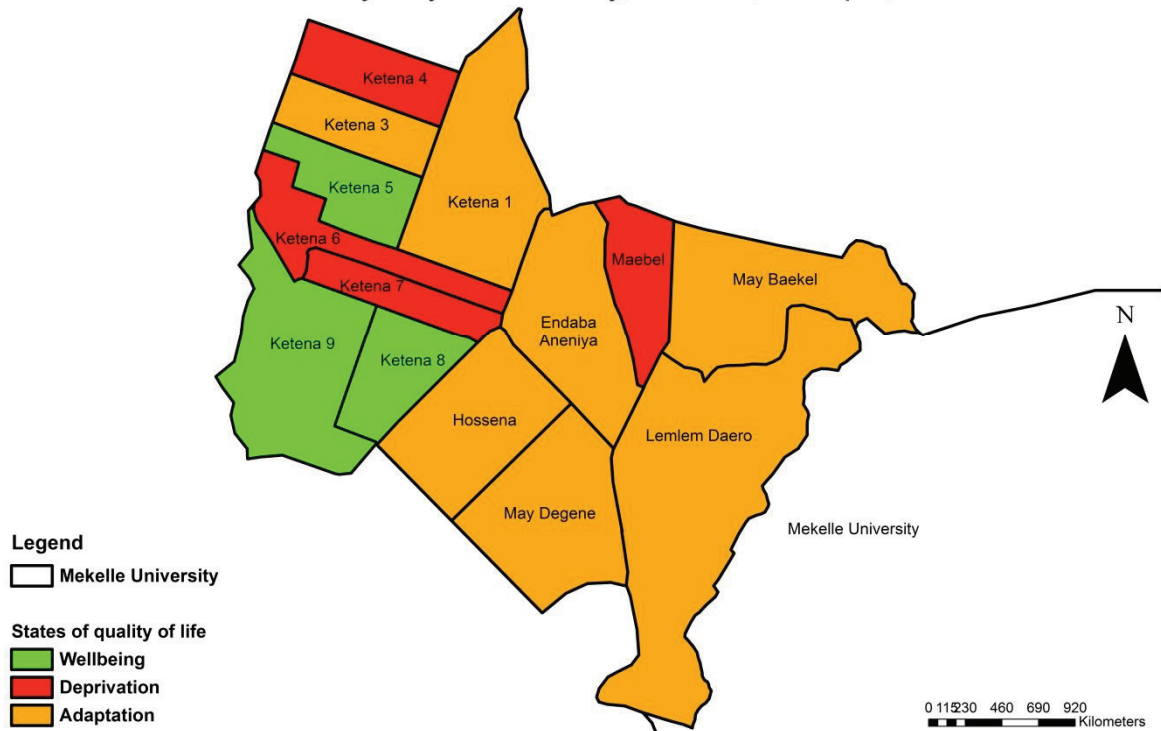


Figure 11 map of the four states of QoL for the indicator room for rent

5.6.2. Access to public services

The states of QoL for each indicator of the domain access to public services are identified from the distribution of QoL in Kedamay weyane sub-city depending whether the subjective QoL is good or bad as well as the objective QoL is good or bad for each indicator.

Access Primary Education facility

As shown in the map in Figure 12 the states of QoL that are identified for the indicator access to primary education facility are Wellbeing, Deprivation and Dissonance. Ketenas 3, 8, 9, Hossena, Maebel and Lemlem Daero are the Ketenas in the sub-city that are in wellbeing with the indicator. In these Ketenas both subjective and objective QoL is good for the indicator. Only two Ketenas of the sub-city that are Ketena 1 and 4 are in deprivation with the indicator. The residents of these Ketenas have bad subjective and objective QoL with the indicator. In the sub-city Ketena 5, 6, 7, May Degene, Endaba Aneniya and May Baekel are experiencing dissonance with the indicator. For the residents of these Ketenas subjective QoL is bad but the objective QoL is good for the indicator access to primary education facility.

States of Quality of Life of The Indicator Access to Primary Education Facility in KedamayWeyane Sub-city, Mekelle Ethiopia, 2011

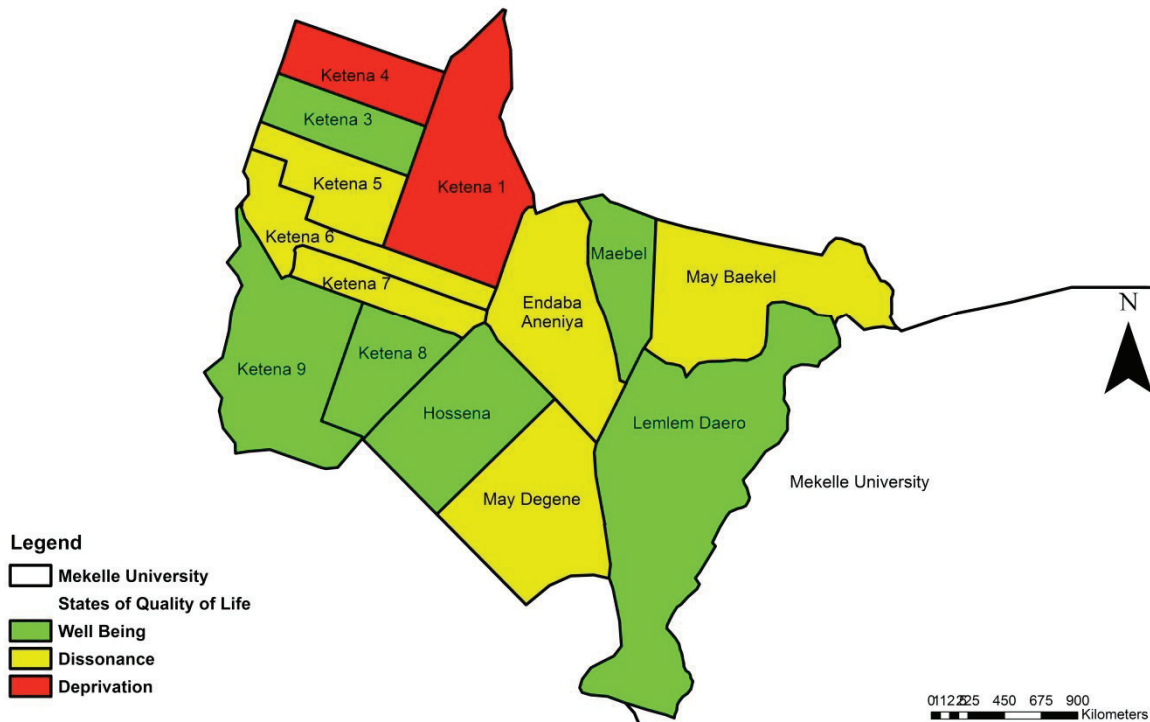


Figure 12 map of the states of QoL for the indicator access to primary education facility

Access to secondary education facility

The states of QoL that are identified for the indicator access to secondary school are only wellbeing and dissonance. In Figure 13 the identified states for the indicator are presented. Residents of Ketena 1, 8, Hossena, Endaba Aneniya and Lemlem Daero are in wellbeing with the indicator access to secondary education facility. The subjective and objective QoL is good with the indicator in the Ketenas. In the sub-city Ketena 3, 4, 5, 6, 7, 9, May Degene, Maebel and May Baekel are experiencing dissonance. In these Ketenas the subjective QoL is bad but the objective QoL is good with the indicator.

States of Quality of Life of The Indicator Access to Secondary Education Facility in Kedamay Weyane Sub-city, Mekelle, Ethiopia, 2011

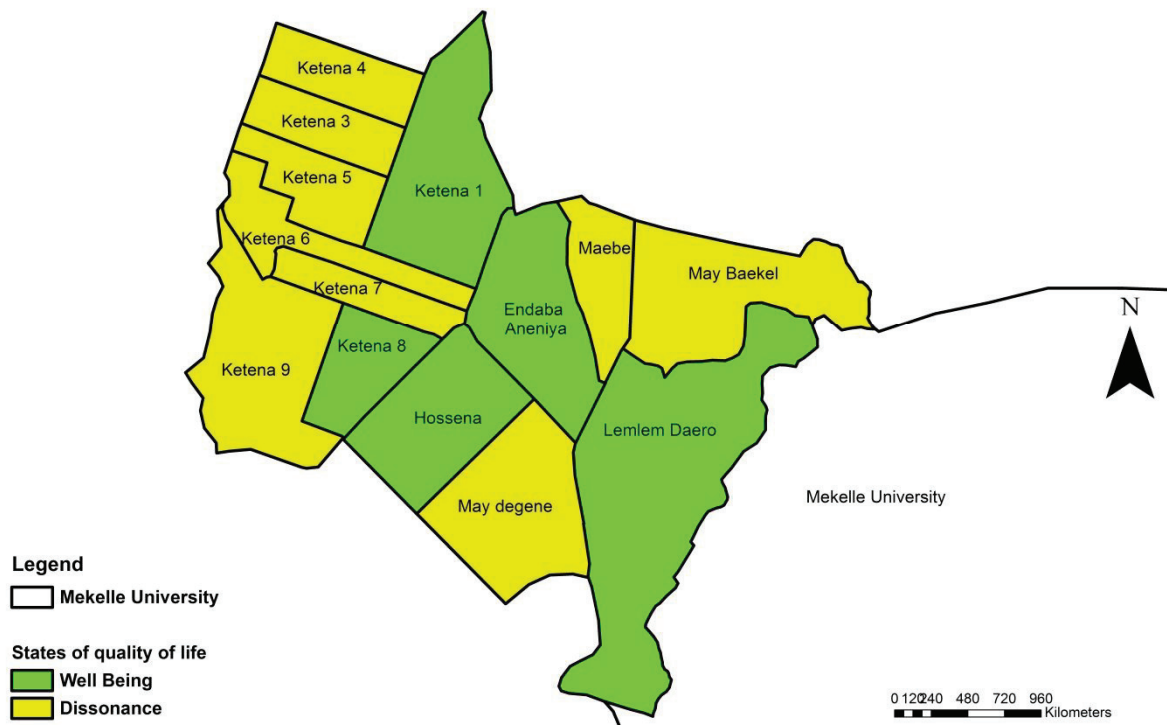


Figure 13 map of the states of QoL for the indicator access to secondary education facility

Access to health facility

The map in Figure 13

Figure 14 the states of QoL identified for the indicator access to health facility and the available governmental and private health facilities within the sub-city and nearby the sub-cities are presented. From the states of QoL wellbeing is existed in Ketena 8, Hossena, Endaba Aneniya, May Degene and Maebe. As presented in the map the residents of these Ketenas have access to both private and government health facilities. For the Ketenas in wellbeing both subjective and objective QoL is good with the indicator. On the other hand residents of Ketena 1, 3, 4, and 5 are living in deprivation in which both subjective and objective QoL is bad for the residents these Ketenas with the indicator. In the sub-city adaptation is being experienced by the residents of Ketena May Baekel and Lemlem Daero with the indicator access to health

facility. Subjective QoL is good however the objective QoL is bad for the indicator in the Ketenas in adaptation. Residents of Ketena 6, 7 and 9 in the sub-city are experiencing dissonance with the indicator. These residents have bad subjective QoL but good objective QoL with the indicator.

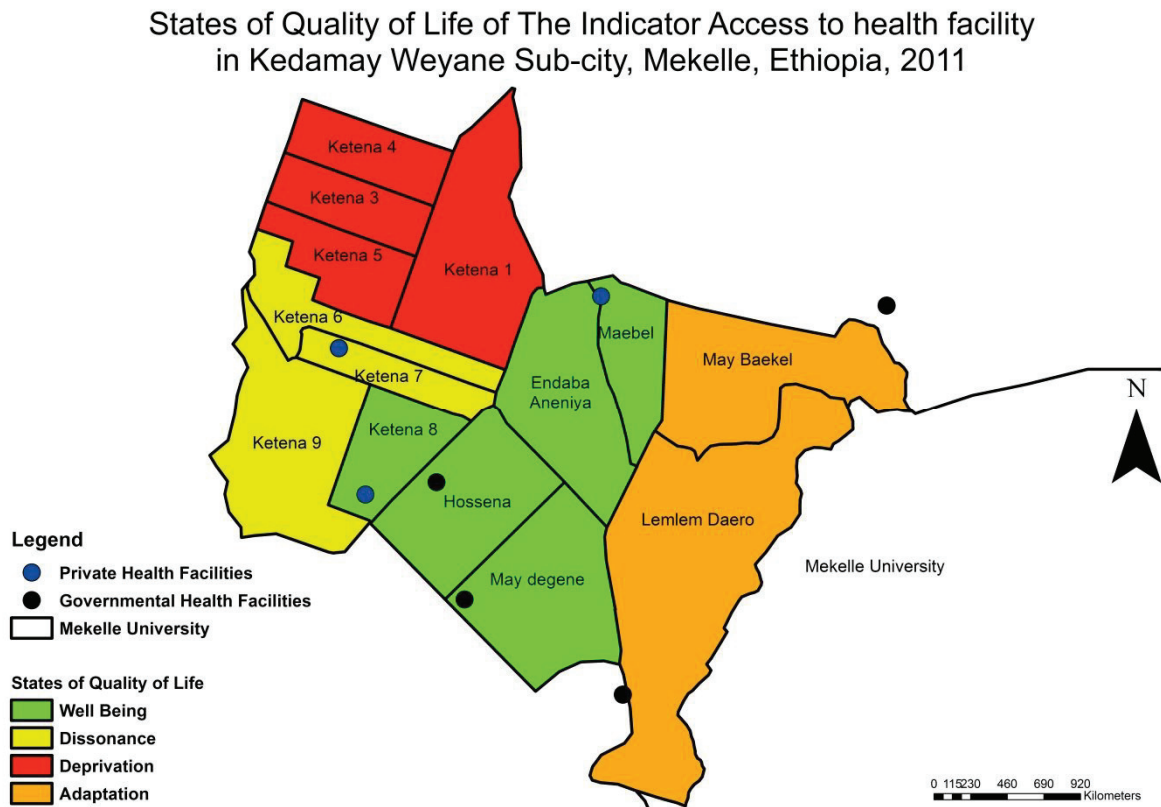


Figure 14 map of the states of QoL for the indicator access to health facility

Access to public transport

Similar with the indicator access to secondary education facility only two states that are wellbeing and dissonance are identified for the indicator access to public transport. As shown in the map in Figure 15 majority of the Ketenas in the sub-city are in wellbeing. Ketena 1, 3, 4, 5, 6, 7, 8, Hossena and Endaba Aneniya are in wellbeing with the indicator access to public transport. In these Ketenas both subjective and objective QoL is good with the indicator. The Ketenas of the sub-city that are experiencing dissonance with the indicator are Ketena 9, May Degene, May Baekel, Maebel and Lemlem Daero. The residents of these Ketenas have bad subjective QoL but good objective QoL with the indicator.

States of Quality of The Indicator Access to Public Transport in Kedamay Weyane Sub-city, Mekelle, Ethiopia, 2011

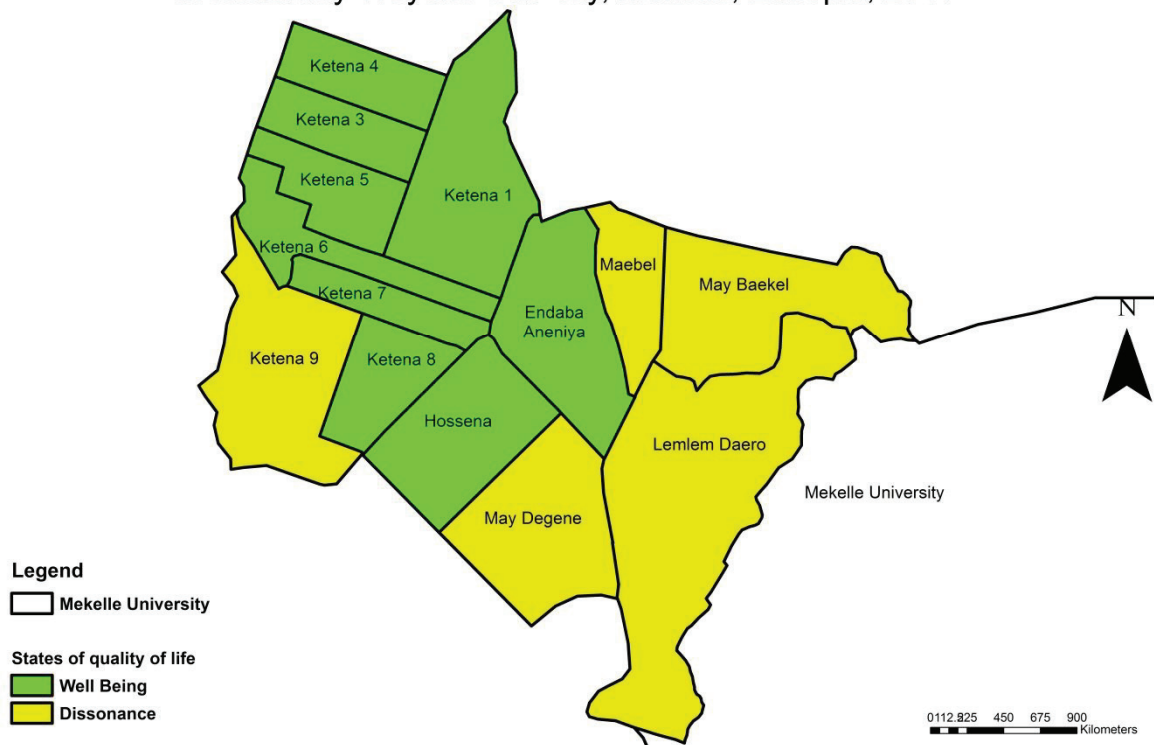


Figure 15 map of the states of QoL for the indicator access to public transport

5.6.3. Family income

From the measured subjective and objective QoL for the indicator adequate family income which is the only indicator used to measure family income related QoL in this study the states of QoL are identified.

Adequate Family income

In Figure 16 the identified states of QoL for the indicator adequate family income is presented. The states are identified based on the good or bad subjective QoL and objective QoL measured for the indicator. These states are Wellbeing, Deprivation, Adaptation and Dissonance. The Ketenas of the sub-city that are in wellbeing with this indicator are Ketena 1, 3, 5, 8 and 9. In these Ketenas the subjective and objective QoL of the residents is good with the indicator. Residents of Ketena 4, Endaba Aneniya and Maebel are experiencing deprivation with the indicator adequate family income. The Ketenas that are in deprivation have bad subjective and objective QoL with the indicator. Only residents of two Ketenas of the sub-city are experiencing adaptation since they have good subjective QoL however their objective QoL is bad. These Ketenas are Hossena and Lemlem Daero. The Ketenas that are in dissonance with the indicator are Ketena 6, 7, May Degene and May Baekel. For these Ketenas the subjective QoL is bad but the objective QoL is good.

states of Quality of Life of The Indicator Adequate Family Income in
Kedamay Weyane Sub-city, Mekelle, Ethiopia, 2011

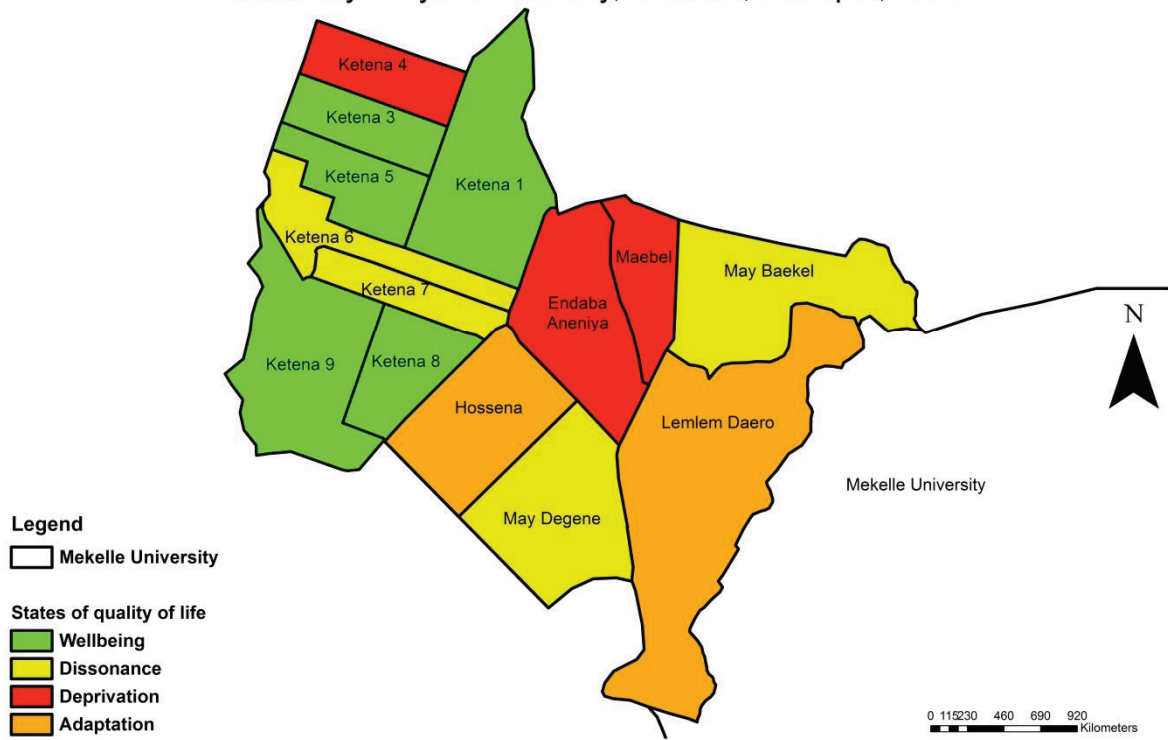


Figure 16 map of the four states of QoL for the indicator adequate family income

5.7. Reasons Behind adaptation and dissonance

This section provides the finding of the research from qualitative analysis on identifying the main reasons behind adaptation and dissonance separately for each case (adaptation and dissonance) per indicator. The reasons are presented in a narrative way with support of photos.

5.7.1. Housing

In this research different reasons of adaptation and dissonance related to each indicator of housing are identified. The main reasons for each case are presented below as explained by the respondents.

Reasons of adaptation for housing affordability

In the sub-city Ketenas which are adapting housing unaffordability are Ketena 7, May Degene, and Lemlem Daero.



K7R1: even though the house rent is very expensive I am satisfied because the house has all basic infrastructures, in addition it is very clean, and it has playground for my children within the house and also I do not have additional cost of transport since it is located at the centre of the city. (K7R1; K7=Ketena 7, and R1= Respondent 1)

Figure 17 Support photo for explaining adaptation of housing affordability



KMDR2: I am very satisfied that the house rent is expensive in this Ketena.

Interviewer: can you explain why you are satisfied?

KMDR2: I have three rooms for rent which faces to the road (See Figure 18) since house rent is expensive in this Ketena especially if it faces to the road; I get enough money for my family. Because of this I do not need to go to work. For this reason I am satisfied. (KMDR2; KM=Ketena May Degene, and R2= Respondent 2)

Figure 18 support photo for explaining adaptation of housing affordability

KLDR3: I am satisfied because the house has sufficient living space and it is located at the centre of the city. Every member of the household has his/her own bed room. The kitchen and store is also enough for my family. Because we have a large family size and we want to rent a house in the centre of the city it have been difficult for us to get such house even to pay more than what we are paying now. (KLDR3; KLD=Ketena Lemlem Daero, and R3= Respondent 3)

KMDR4: usually I do not even feel as the house is expensive. I only feel it when people talk about it. This is because I really like the social life I have here, the people are very helpful. They are always by my side in good and bad situation and I do not think I need more than this in life. (KMDR4; KMD=Ketena May Degene, and R4= Respondent 4)

The main reasons of adaptation related to housing unaffordability identified in this research are having access to basic infrastructure, having playground within a house, housing condition, physical location of the house, sufficient living space, housing ownership (using the house as a means of income by renting rooms) and social connectedness.

Reasons of dissonance for housing affordability

The main reasons of dissonance explained by the residents of Ketena 1, 3 and Hossena that are Ketenas experiencing dissonance with the indicator housing affordability in the sub-city are presented below.



K3R1: I am not satisfied with the house which a rented from the housing agency. This is because the houses are constructed without considering the living style and culture of the society. I think how much you spend for housing is not the only issue of satisfaction but does it fulfil the needs of the occupants must be considered. (K3R1; k3= Ketena 3 and R1= Respondent 1)

Figure 19 support photo for explaining dissonance of housing affordability



KHR2: my house is in a good condition and it has electricity, piped water, toilet and backyard. But since the house rent is lower in this Ketena I am not satisfied. Because the amount of money I am getting from house rent is much smaller than in other Ketenas with the same type of houses in the sub-city. (KHR1; KH=Ketena Hossena and R2= Respondent 2)

Figure 20 support photo for explaining dissonance of housing affordability



Figure 21 support photo for explaining dissonance of housing affordability

K1R3: One of the rooms of the house where I live in, is mini bar and restaurant. I am not satisfied because of security problems and disturbance created related to the bar especially in the evenings. (K1R3; K1=Ketena 1, and R3= Respondent 3)

The main reasons of dissonance for housing affordability identified in the sub-city are agency houses do not much the living style of the residents, getting less money from rent than expected, having no access to basic infrastructure and mixing of residential and commercial houses.

Reasons of adaptation for housing over crowdedness

Ketena 1, 3, 8, Endaba Aneniya and Lemlem Daero are the Ketenas that are experiencing adaptation with the indicator housing over crowdedness in sub-city.



Figure 22 support photo for explaining adaptation of Housing over crowdedness

K1R1: Although my family size is big and the house is small as well as it is bad condition, however I am satisfied with the house and its size. Because I cannot pay more than what I am paying now for housing if I do so my children will starve. For us it is not about comfort; the issue for my family is about having a shelter with less rent no matter its crowdedness and condition. (K1R1; k1=Ketena 1 and R1= Respondent 1)

K3R2: The house has one room and we are using it for business and for residential purposes. I am satisfied with the house since getting a house with the amount of rent I am paying now is very difficult in this Ketena due to its location. (K3R2; k3=Ketena 3 and R2= Respondent 2)

KLDR3: I am satisfied with the house not because it is big but because it is mine. I do not worry every month to pay rent and my children do not suffer because of house owners rules and other inconveniences created by the owners. (KLDR3; KLD=Ketena Lemlem Daero and R3= Respondent 3)

The main reasons of adaptation with the indicator housing over crowdedness identified in the sub-city are being unable to pay rent for houses with sufficient living space, difficultness of finding a house with fair rent in the sub-city and ownership of housing related with not paying rent every month and freedom of children.

Reasons of dissonance for Housing over crowdedness

Only Ketena Maebel is in dissonance with the indicator housing over crowdedness in the sub-city.

KMR1: Initially the house was enough for our family but when I became old and stop working since there is no other choice for getting money we over crowded our family living space in order to get some extra rooms for rent. (KMR1; KM=Ketena Maebel and R1= Respondent 1)

KMR2: The house is affordable, sufficient and it is in a good condition but we are dissatisfied because of some unofficial rude rules of the house owners forced us to respect. And I always wish to have my own house regardless of its location and condition. (KMR2; KM=Ketena Maebel and R2= Respondent 2)

KMR3: Comparing our family size with the rooms we have it seems adequate but it is not because whenever we have guests the house becomes crowded. For this reason we are dissatisfied with the living space we have. (KMR3; KM=Ketena Maebel and R3= Respondent 3)

The main reasons of dissatisfaction mention by the respondents of the research related to the indicator housing over crowdedness are using the rooms as a means of income, no place for visitors and rules set by the house owners.

Reasons of adaptation for room for rent

Residents of Ketena 1, 3, Endaba Aneniya, Hossena, May Degene, May Baekel and Lemlem Daero are experiencing adaptation with the indicator room for rent.



KEAR1: We are satisfied because of the income we are getting from house rent and it is the only income of our family. Since in the Ketena house rent is very expensive, especially if it is faced to the main road; it is adequate for the family even though renting a house is over crowding our family. What I mean is initially we did not have extra rooms for rent but we overcrowded the family to get rooms for rent. (KEAR1; KEA=Ketena Endaba Aneniya and R1= Respondent 1)

Figure 23 support photo for explaining adaptation of number of rooms

KLDR2: We don't have extra rooms for rent but we are satisfied because we don't have problems related to tenants. As I usually heard from relatives and neighbours most of the tenants are irresponsible and they create problems related to use of water, toilet and electricity. So I am satisfied that we do not have such problems related with having room for rent. (KLDR2; KLD=Ketena Lemlem Daero and R2= Respondent 2)

The main reasons of satisfaction with indicator rooms for rent identified in this study are getting money and no interaction with tenants.

Since no respondents of the research are found with good objective QoL but bad subjective QoL for the indicator room for rent. No reasons of dissonance are identified for the indicator.

5.7.2. Access to public services

From the analysis on identifying the states of QoL for each indicator of the domain access to public services except for the indicator access to health facility no Ketenas are identified being experiencing adaptation (see section 5.7.2.) in this study. Since the interest of the research is identifying the reasons behind the states of QoL which shows mismatch between the subjective and objective QoL of the residents; only reasons of dissonance are identified for all indicators of the domain except for the indicator access to health facility. The main reasons of dissonance for each indicator are presented below however the main reasons of adaption and dissonance are presented for the indicator access to health facility.

Reasons of dissonance for access to primary education facility

Ketena 5, 6, 7, Endaba Aneniya, May Baekel and May Degene are the Ketenas which are experiencing dissonance with the indicator access to primary education facility in the study area.

KMBR1: I have two children who go to primary school. I am sending them to private school in another sub-city. I pay tuition fees; there is also additional cost of transport that I have to pay every month. This is because the government primary school in sub-city that we have access to is not giving good service. The government school have no teaching aid materials, toilet, the class rooms are in bad condition and they are crowded as well as the teachers lack capacity and ethics. (KMBR1; KMB=Ketena May Baekel and R1= Respondent 1)

KEAR2: The school available here is private and the tuition fee is very expensive, the uniform and the school meal is also expensive. Totally it is becoming beyond my capacity. Even though we have access to primary education facility I am not satisfied because the money I am spending for one child is a lot. (KEAR2; KEA=Ketena Endaba Aneniya and R2= Respondent 2)

KMDR3: The school is located at a side of high way. I feel as it is not an appropriate place for school especially for primary one. I am always worried about my children's safety. I never feel relief until I see them back to the house. I am always scared because I feel that my children exposed to traffic accident. (KMDR3; KMD=Ketena May Degene and R3= Respondent 3)

The main reasons of dissonance for this indicator are low quality of the government school available, unaffordability of private schools, safety problem related to physical location, the teachers are inexperienced and unavailability of teaching aid materials.

Reasons of dissonance for access to secondary education facility

Ketena 3, 4, 5, 6, 7, 9, Maebel, May Degene and May Baekel are the ketenes that are experiencing dissonance with the indicator access to secondary education facility in the sub-city.

K4R1: Everything is good in the school that we have access to but I am dissatisfied because it is very expensive. The other issue that makes me dissatisfied is since most of the students in the school are from rich family and majority of them are teenagers there is high competition in dressing and school meals. This is affecting the education of the students I can see the influence in my children (K4R1; K4=Ketena 4 and R1= Respondent 1)



KMR2: In the school that we have access to, there is shortage of well experienced teachers. This condition is affecting the result of the students in the national exam. In addition the teachers are irresponsible and unethical; they do not care about their students' future. For me the school is almost like empty box which produces nothing. Generally speaking I am not satisfied with the access we have to secondary school. (KMR2; KM=Ketena Maebel and R2= Respondent 2)

Figure 24 support photo for explaining dissonance with access to primary school



KMDR3: Actually I cannot say there is a secondary school in this sub-city because even though physically it exists but it does not have teaching aid materials, the books which are available in the library are for the old curriculum; we are forced to buy books in the new curriculum for our children. (KMDR3; KMD: Ketena May Degene and R3= Respondent 3)

Figure 25 support photo for explaining dissonance with access to Secondary school

The main reasons of dissonance with the indicator access to secondary education facility identified in the research are lack of experienced teachers, poor students controlling mechanism of the school, unavailability of important materials like books and laboratory chemicals and unaffordability of the private secondary schools. Generally speaking according to the responses given by the residents the government schools are not supported with books and other materials that can help the new curriculum.

Reasons of adaptation for access to health facility

Ketenas that are experiencing adaptation with the indicator access to health facility are May Baekel and Lemlem Daero. The main reasons of adaptation are presented below.

KMBR1: The health facility we have access to is governmental which is located in the neighbouring sub-city. We are satisfied with the health service we get from the hospital not because it is near for us but because but it is affordable. (KMBR3; KMB: Ketena May Baekel and R1= Respondent 1)



KLMR2: When I need health service for myself or my family members I usually prefer go to Ayder referral hospital (which is the biggest hospital and medical research centre in the city, see Figure 26) because it is neat and has good medicine supply. Above all it has well experienced doctors and other medical staff. I am satisfied with service I get from the hospital no matter how far it is from my place. (KLMR2; KLM: Ketena Lemlem Daero and R2= Respondent 2)

Figure 26 support photo for explaining adaptation with access to health facility

The main reasons of adaptation with access to health facility identified in this study are affordability, physical condition of health facility, availability of medicine and experiencing doctors as well as other medical staff members.

Reasons of dissonance for access to health facility

Ketena 6, 7 and 9 are the Ketenas which are experiencing dissonance with the indicator access to health facility in the sub-city.

K6R1: We are forced to pay a lot of money in private hospitals and clinics because the government hospital that we have to in neighbouring sub-city is not serving well. They don't have medicine, there is lack of experienced doctors and most of the staff members lack professional ethics on take caring of patients. (K6R1; K6: Ketena 6 and R1= Respondent 1)

K7R2: In this Ketena there are hospitals and clinics which are all private. They are neat, have good medicines and experienced doctors but the payment is very expensive which is unaffordable for us. If we go once we spend more than half of our monthly family income. (K7R2; K7: Ketena 7 and R2= Respondent 2)

K9R3: Sometimes I wonder why people are calling the government hospitals as hospital. If there is no medicine, and doctors what is the advantage of having a building with the name hospital? And without these all how we can call them hospitals and clinics? I think what makes a building hospital is not the name but the service it is giving or it supposed to give. (K9R3; K9: Ketena 9 and R3= Respondent 3)

The main reasons of dissonance identified for the indicator access to health facility in the study area are lack of experienced doctors, lack of medicine, unethical take caring of patients by almost all medical staff members', unaffordability of private health facility and inadequacy of services.

Reasons of dissonance for access to public transport

Ketena 9, Maebel, May Degene, May Baekel and Lemlem Daero are the Ketenas which are experiencing dissonance with the indicator access to public services. The main reasons of dissonance identified in this study are presented below.

KLDR1: If we do not go to the main station usually getting a seat is difficult. Even if we get a seat they mostly forced us to share it with someone while it is one person's seat. In addition if we want to get services out of the main station we do not have any idea on what time the mini bus can come. I am totally dissatisfied with the service I am getting from the public transport. We talk several times with government agents but they have not solved the problem yet. (KLDR1; KLD: Ketena Lemlem Daero and R1= Respondent 1)

KMDR2: In most case there is no difference between long and short distances in payment. Even though there is a tariff for each stop; the service providers do not follow it. We usually pay equal amount money regardless of the distance we have travelled. The government controlling system is poor in this issue. (KMDR2; KMD: Ketena May Degene and R2= Respondent 2)

KMR3: The mini bus drivers and their assistance do not respect their customers. Especially if you refused to share a seat with someone they treat you so badly. (KMR3; KM: Ketena Maebel and R3= Respondent 3)

The main reasons of dissonance with the indicator access to public transport are unavailability of seats, no regular schedule available, unfair payment for the service and bad behaviour of service providers.

5.7.3. Family income

The main reasons of adaptation and dissonance identified for the indicator adequate family income are presented below for each state.

Reasons of adaptation for adequate family income

The Ketenas which are in adaptation with inadequate family income are Hossena and Lemlem Daero.

KHR1: My family size is small, I have only one child and our family income is adequate for us. I am satisfied because comparing my income with the time I spend at work; it is a lot of money. I am happy that I have spare time which I use it for taking care of my child and to participate in social activities (KHR1; KH: Ketena Hossena and R1= Respondent 1)

KLDR2: The family income is inadequate but regardless of the amount of money I am earned; I am satisfied that I have permanent job. (KLDR2; KLD: Ketena Lemlem Daero and R2= Respondent 2)

KHR3: The main source of our family income is house rent. As you can see I am old and I cannot go to work. I am satisfied at least we have an income. Without the income from the rent think how could be our life since there is no subsidy for people like me in the country. Actually I know also how to make the small money adequate by managing. (KHR3; KH: Ketena Hossena and R3= Respondent 3)

The main reasons for adapting inadequate family income identified in this research for the study area are time spend at work, having a permanent job and having an income from other source like house rent, aid from children who are not members of the household and reach relatives.

Reasons of dissonance for adequate family income

Ketenas that are experiencing dissonance with the indicator adequate family income are Ketena 6, 7, May Degene and May Baekel.

K6R1: The time I spend at work is too much. It is true the income I am getting every month is adequate for my family but I am always exhausted after work, I am not able to take care of my children and it is impossible for me to participate in social gathering. Because of these reasons I am dissatisfied. (K6R1; K6: Ketena 6 and R1= Respondent 1)

K7R2: Comparing with others our family's income is not small but since we have a large family size it is not adequate. I am totally dissatisfied because I am forced to go to work in my free time since I have to fill the gap. (K7R2; K7: Ketena 7 and R2= Respondent 2)

KMBR3: I am self-employ; the job I have now is unacceptable but I am doing this because I do not have any other choices. Even though the money is enough for my family but I am totally dissatisfied. I am feeling shame and I know my children are also feeling shame because of my job. (KMBR3; KMB: Ketena May Baekel and R3= Respondent 3)

The main reasons of dissonance explained by the respondents of the research with indicator adequate family income are spending much more time in work, having large family size and having unacceptable job.

5.7.4. Spatial features that explain the occurrence of 'adaptation' or 'dissonance'

As the findings of the study indicate the existence of dissonance is more explained by spatial features than adaptation in this study area. In the sub-city the features that explain the occurrence of dissonance are health facility, education facility and public transport facility. Besides, this indicates dissonance with indicators of public services is more explained by spatial features than indicators of housing and family income. According to the measured objective condition of living in this study most of residents of the sub-city have an access to these spatial features. However according to the measured subjective condition of living; the resident's perception is bad. As explained by most of the respondents (see section 5.7.2.) the existence of dissonance related to the spatial features is more related to unaffordability, unacceptability and inadequacy of the services than unavailability and inaccessibility of the services. For instance residents of Ketena 6, 7 and 9 (Figure 14) are in dissonance with the indicator access to health facility not because of inaccessibility but affordability. Majority of the residents of these Ketenas have middle and low level of family income but they have access to private health facility which is unaffordable for them. For this reason they are dissatisfied.

5.8. Relevance of understanding the reasons behind adaptation and dissonance for urban planning and policy making

The planners and policy makers interviewed in the study work for the same organization with different mandate. The mandate of the planners is to follow up the implementation of development interventions and master plan of the city. However policy makers mandate is formulating public policies and strategies as well as designing development interventions.

UPI1: I know that adaptation and dissonance exist in the sub-city but to my knowledge they never been considered in urban planning and policy making activities. This is because mostly the mandate of planners in the city is to follow up the implementation of development interventions and master plan. (UPI1; UP: Urban Planner and I1= Interviewee 1)

UPI2: We know that adaptation and dissonance are being experienced by the residents from the feedback and complains they give us every time. Even though we know they can be very helpful however we never considered them in policy making, urban planning and also in designing development intervention for two reasons. The first reason is that, it is rare that we participate in public policy formulation and designing intervention since mostly this is done by nonprofessional Politian's. The second reason is even if we participate there is no chance to consider the citizens' needs and priorities because points that we have to consider are given to us from the political leaders. (UPI2; UP: Urban Planner and I2= Interviewee 2)

PMI3: I know nothing about these issues. This is my first time to hear about them. Usually what we do in public policy formulation and designing interventions is, we take the federal government manifesto of urban development and QoL enhancement of the citizen as a base. (PMI3; PM: Policy Maker and I3= Interviewee 3)

5.8.1. Policy makers/ urban planners knowledge about adaptation and dissonance

The result of the qualitative analysis on the knowledge of policy makers and urban planners about adaptation and dissonance shows that the planners have better knowledge on the states of QoL than the policy makers. The planners know what adaptation and dissonance means and also they know the existence of adaptation and dissonance in the sub-city. But the policy makers do not know even what these terminologies are referring to let alone their existence and how they can exist. The planners have explained as dissonance is more existed than adaptation in the study area from their point of view. The reasons of dissonance explained by the planners from expert point of view are more expectations of the residents than the government is supplying now. These include better quality and quantity of roads, health facilities, education facilities and recreation facilities. In addition issues related to need of 100% coverage of piped water, electricity and solid waste collection are reasons of dissatisfaction. There are also reasons identified by the planners' related to housing including interest of the citizens of getting land for housing construction for free and need of low cost housing constructed by the government.

5.8.2. How do policy makers and urban planner look in to adaptation and dissonance

According to the result of the analysis; for different reasons adaption and dissonance have not being considered in urban planning and policy making activities in the study area. Due to lack of knowledge and awareness of the issue of adaptation and dissonance policy makers never considered them in formulation and implementation public policies and strategies and also in designing interventions. However, even though the urban planners know about adaptation and dissonance and they are aware of the existence of

adaptation and dissonance in the sub-city; they never considered them in their career for two reasons. The first reason is because mostly the mandate of the urban planner is to follow up the implementation of interventions and master plan rather than participating in new planning activities, formulation of public policy and strategies and designing interventions. The second reason is even if the planners get the chance to participate in formulation of public policy and strategies and designing intervention they are not able to incorporate the citizens' needs and priorities due to political influence.

5.8.3. Which state (adaptation/dissonance) is more important for policy making/ urban planning

As explained by both urban planners and policy makers dissonance is more important for urban planning and policy making since the main objective of planner and policy makers is to enhance the QoL of citizens with better satisfaction with the life they have. They also explain understanding the reasons of dissonance could help more for formulation and implementation of sound public policies and strategies for enhancing the QoL of the citizens based on their priorities. In addition, it could also help for designing development interventions that can assure better QoL.

5.9. Summary of main reason of adaptation and dissonance

Different reasons that make residents of the sub-city to have different perceptions from the existing living condition they have are identified for each indicator used in this research.

5.9.1. Housing

The main reasons that make residents of Kedamay Weyane sub-city to have different perception from the existing living condition they have related to housing are presented in Table 21. The reasons are identified for each indicator of housing.

Table 21 main reasons of adaptation and dissonance for each indicator of housing domain

<i>Main reasons of adaptation and dissonance identified for each indicator of the housing domain in kedamay Weyane sub-city</i>			
Domain Name	Indicator Name	Reasons of Adaptation	Reasons of dissonance
Housing	Housing affordability	<ul style="list-style-type: none"> • Having access to basic infrastructure • Having playground within a house • Housing ownership • Housing condition • Sufficient living space • Physical location of a house • Social connectedness 	<ul style="list-style-type: none"> • Having no access to basic infrastructure • Living style • Getting less money from rent • Mixing of residential and commercial houses
	Housing over crowdedness	<ul style="list-style-type: none"> • Unable to pay rent for houses with sufficient living space • Difficultness of finding a house with fair rent in the sub-city • Ownership of housing related with not paying rent every month and freedom of children. 	<ul style="list-style-type: none"> • Using the rooms as a means of income • No place for visitors • Rules set by the house owners
	Rooms for rent	<ul style="list-style-type: none"> • Getting money • No interaction with tenants 	No reasons Identified

5.9.2. Access to public services

In Table 22 the main reasons of adaptation and dissonance identified in this study for each indicator of the domain access to public services are presented. These identified reasons make the residents of the sub-city to have different perception from the existing living condition they have.

Table 22 main reasons of adaptation and dissonance for each indicator of the domain access to public services

<i>Main reasons of adaptation and dissonance identified for each indicator of the domain access to public services in Kedamay Weyane sub-city</i>			
Domain Name	Indicator Name	Reasons of Adaptation	Reasons of dissonance
Access to public services	Access to primary education facility	No reasons Identified	<ul style="list-style-type: none"> • Low quality of the government school available • Unaffordability of private primary schools • Safety problem related to physical location of schools • The teachers are inexperienced • Unavailability of teaching aid materials.
	Access to secondary education facility	No reasons Identified	<ul style="list-style-type: none"> • Lack of experienced teachers • Poor students controlling mechanism of the school • unavailability important materials like books, laboratory chemicals • Unaffordability of private secondary school
	Access to health facility	<ul style="list-style-type: none"> • affordability of the service • Physical condition of health facility • Availability of medicine • Availability experiencing doctors and other medical staff 	<ul style="list-style-type: none"> • Lack of experienced doctors • Lack of medicine • Unethical take caring of patient • unaffordability and inadequacy of private health facilities
	Access to public transport	No reasons Identified	<ul style="list-style-type: none"> • Seats are not available • No schedule and standard station • Unfair payment • Bad behaviour of service providers

5.9.3. Family income

In Table 23 below the main reasons of adaptation and dissonance for the indicator adequate family income is presented. These are the main reasons which make the residents of the sub-city to have different perceptions of their family income adequacy from the objective condition of their family income adequacy.

Table 23 main reasons of adaptation and dissonance for the indicator adequate family income

<i>Main reasons of adaptation and dissonance identified for the indicator adequate family income</i>			
Domain Name	Indicator Name	Reasons of Adaptation	Reasons of dissonance
Family income	Adequate family income	<ul style="list-style-type: none"> • Spending little time at work • Having a permanent job • Having an income from other source like house rent (this reason is for old people, sick and for people with low educational background) 	<ul style="list-style-type: none"> • Spending much more time at work • Having large family size • Having unacceptable jobs by the society

6. DISCUSSION

This chapter provides the discussion of the findings of the research in four main sections. The first section discusses the measured subjective and objective QoL, the identified states of QoL for each indicator and the advantage of identifying the states of QoL. The main reasons of adaptation and dissonance for each indicator are discussed in the second section. In the third section of the chapter why people have different perceptions from the existing condition of life they have is discussed. Relevance of understanding the reasons behind adaptation and dissonance for urban planning and policy making is discussed in the fourth section.

6.1. Subjective QoL, Objective QoL and States of QoL for each indicator

According to the objectives to be achieved and research questions need to be answered QoL is measured using subjective and objective indicators in this study. From this measured QoL the states of QoL are identified. The results of the measured subjective and objective QoL as well as identified states of QoL in the study area are discussed in three sub-sections. Each indicator is discussed under its domain. In addition the advantages of identifying the states of QoL is discussed in this section

6.1.1. Housing

The level of subjective QoL, objective QoL and the states of QoL for each indicator of housing domain is discussed in this sub section. The layout of the discussion is; first it discusses on the measured level of subjective QoL then on the measured level of objective QoL and finally it discusses on the identified states of QoL for each indicator of housing.

Level of subjective QoL at sub city level for each indicator of housing

Except for the indicator housing affordability the level of the subjective QoL is similar for the indicators of housing domain (Table 14). Unlike the other indicators of housing majority of the respondents of the research are dissatisfied with the indicator housing affordability. The reason of dissatisfaction could be unaffordability of housing in the area due to its location, being very important and active business area even though this cannot generalize to all Ketenas in the sub-city. The residents of the sub-city are slightly satisfied with the indicators housing over crowdedness and room for rent. Although the two indicators have the same level of satisfaction in the study area however the percentage of respondents is higher for the indicator housing over crowdedness. The reason for this could be because most of the residents in the sub-city do not extra rooms for rent. However the level of overall satisfaction of the respondents with the domain housing is slightly dissatisfied (Table 17).

The difference in the level of measured subjective QoL per indicator and per domain indicates that measuring subjective QoL at domain level hides important information. In addition, measuring subjective QoL at domain level gives different image of subjective QoL from the existing condition. In order to get detail information on individuals' perception and priorities in life and to identify an indicator which causes satisfaction or dissatisfaction measuring subjective QoL at indicator level is helpful. In addition, to understand why people are satisfied or dissatisfied with their life for the purpose of planning further development interventions measuring subjective QoL per indicator is vital.

Despite the other indicators of housing level of satisfaction of the residents is lower with the indicator housing affordability. This finding of the research is an indication for urban planner and policy makers how serious problem is housing unaffordability in the study area. Besides this is also an alarm as they need to pay attention on providing affordable housing to the residents of the sub-city based on income level.

Level of objective QoL at sub city level for each indicator of housing

According to the result of the analysis on measuring the level of objective QoL for each indicator of housing; except for the indicator housing over crowdedness the level of objective QoL is similar for the indicators of housing (Table 18). The level of objective QoL is low for the indicators housing affordability and room for rent in the study area. This indicates majority of the residents of the sub-city are living in unaffordable housing because they are spending more than 30% of their family income for housing, besides majority of the residents of the sub-city do not have extra rooms for rent. Although the level of objective QoL is the same for the two indicators however the percentage of residents with low objective QoL is higher for the indicator room for rent. Based on the UK standard of living space (see Table 8) applied in this study to analyse the level of objective QoL related to the indicator housing over crowdedness majority of the residents have high objective QoL with the indicator. This indicates less than three members of these households are sharing the same bed room. This indicator is dependent on household size and number of rooms occupied by that household.

States of QoL for each indicator of housing

Despite the other indicators of housing equal number of Ketenas; four in each case are in wellbeing and deprivation and also equal number of Ketenas; three in each case are in adaptation and dissonance for the indicator housing affordability (Figure 9). The findings of the research clearly show that residents of four Ketena are living in wellbeing with the indicator. In these Ketenas both the subjective and objective QoL is good with the indicator. In the Ketenas the residents are spending less than 30% of their family income for housing and their perception of housing affordability is good. On the other hand residents of four Ketenas of the sub-city are experiencing deprivation with the indicator housing. In this case both the subjective and objective QoL is bad with the indicator. These residents are spending more than 30% of their family income for housing consequently their perception of housing affordability is bad. From the fourteen Ketenas of the sub-city residents of three Ketenas are living in adaptation with the indicator housing affordability. In this condition the subjective QoL is good whereas the objective QoL is bad. Even though these residents are living in unaffordable housing however their perception is good. These residents are spending more than 30% their family income for housing but they are satisfied. The objective QoL is good for the indicator housing affordability in three Ketenas of the sub-city however the subjective QoL is bad in these Ketenas. Consequently the residents of the Ketenas are living in dissonance with the indicator. These residents are spending less than 30% of their family income for housing but their perception is bad. Compare with the other indicators of housing domain more Ketenas are in dissonance with this indicator.

Unlike the other indicators of housing; the indicator housing over crowdedness has equal numbers of Ketenas five in each case in wellbeing and adaptation in the sub-city (Figure 9). For the residents who are living in wellbeing both the subjective and objective QoL is good. This indicates that less than three members of a household are sharing the same bed room and their perception of the living space they have is good. For the residents who are experiencing adaptation; the subjective QoL is good but the objective QoL is bad. In these households three and more members of the family are sharing the same bed room

however their perception with the overcrowded living situation is good. Residents of three Ketenas in the sub-city are living in deprivation with the indicator. The subjective and objective QoL with the indicator is bad in these Ketenas. For these residents three and more members of their household are sharing the same bed room and these residents perceive the overcrowded living condition badly. But only residents of one Ketena are living in dissonance. For the residents of this Ketena the subjective QoL is bad but the objective QoL is good. In this case less than three members of the households are sharing the same bed room but the residents' perception is bad. Irrespective the other indicators of housing; more Ketenas are in wellbeing with the indicator housing over crowdedness.

Despite the other indicators of housing only three states that are adaptation, wellbeing and deprivation are identified for the indicator room for rent. Residents of seven Ketenas of the sub-city are experiencing adaptation with the indicator. Comparing with the other indicators of housing more residents of the sub-city are in adaptation with the indicator room for rent. In these Ketenas the subjective QoL is good but the objective QoL bad. The residents of the Ketenas have no extra room for rent but their perception of the indicator is good. However residents of three Ketenas in the sub-city are living in wellbeing with the indicator room for rent. In this condition both the subjective and objective QoL of the residents is good with the indicator. These residents have an extra room for rent without overcrowding their families' living space and their perception of the indicator is good. In the sub-city residents of four Ketenas are living in deprivation with the indicator. In these Ketenas both the subjective and objective QoL with the indicator room for rent is bad. These residents do not have extra rooms for rent and their perception of the indicator is bad. Despite the other indicators of housing no dissonance existed for this indicator since no respondents found with good objective QoL but bad subjective QoL for the indicator in the sub-city.

6.1.2. Access to public services

In this sub-section the result of the analysis on measuring the level of subjective and objective QoL and identifying the states of QoL for each indicator of the domain access to public services is discussed.

Level of subjective QoL at sub city level for each indicator of access to public services

The level of the subjective QoL for the indicators of the domain access to public services range from satisfied to slightly dissatisfied based on the liker-scale applied in the study (Table 15). Despite the other indicators of access to public services; majority respondents of the study are satisfied with indicator access to primary education. The reason for this could be the increasing number of primary schools with better quality in the past few years. Even though the number of secondary schools is also increasing and the physical accessibility is high in the sub-city however the residents are slightly satisfied. This could be related to the number of students who are failing in the national exam every year. The residents of the sub-city are slightly dissatisfied with the access they have to health facility. Unlike the other indicators of the domain this indicator has lowest level of satisfaction. The level of satisfaction with the indicator indicates the poor situation of health service in Mekelle city. Alike to the indicator access to secondary education facility; the residents are slightly satisfied with the indicator access to public transport. Even though the two indicators have the same level of satisfaction however the percentage is higher for the indicator access to public transport. The overall satisfaction level of the residents of the sub-city with the domain access to public services is slightly satisfied.

Similar to the domain housing; for this domain also there is a difference between the levels of subjective QoL measured per indicator and per domain. While the respondents are slightly satisfied with only two indicators however the overall satisfaction measured at domain level indicates as the respondents are slightly satisfied with all the indicators of the domain. Measuring subjective QoL per indicator helps to explore which indicator is a reason for satisfaction or dissatisfaction for the residents. A QoL study which is aimed to be an input for urban planning and policy making have to be measure per indicator since it gives the most detail information of the residents' opinions and priorities. Besides it can also show direction for further designing and implementing of development interventions. As well as it can guide the formal activity of urban planning and policy making for enhancing the QoL of urban residents.

Level of objective QoL at sub city level for each indicator of access to public services

To measure the level of objective QoL of each indicator related to access to public services in this study standard thresholds are used. For all the indicators included in the study the level of objective QoL is measured based on proximity each resident has to the public services included.

According to the measured level of objective QoL at sub-city level for each resident of the sub-city; we can understand that majority of the residents of the sub-city have an access to primary education facility. This result of the analysis can be interpreted as majority of the residents are living within or less than 1 km distance from the nearest primary school. Since having an access to education facility considered as it has positive effect on individuals QoL, these residents are considered as they have good QoL. Residents of an urban area within 1 km distance from primary school are considered as they have good access to primary education (Green and Argu, 2011). All the residents of the study area have an access to secondary education facility. This finding of the research indicates that all the residents of the sub-city are living within or less than 2 km distance from the nearest secondary schools. The increasing number of secondary schools in the city in the past few years is considered as they increases the physical accessibility of secondary schools in the study area. even though majority of the residents of the sub-city have access to health facility comparing with the other indicators of public services the percentage of the residents with access to health facility is low. Almost half of the residents have access to health facility whereas for the other indicators of public services the accessibility is almost 100%. This can be interpreted as, almost half of the residents of Kedamay Weyene sub-city reaches a health facility within or less than 40 minutes walking time. The accessibility to health facility needs an improvement in the study area. Improvement in access to health facility is considered to improve the QoL of the residents (Shrestha, 2010). Similar with the indicator access to secondary education facility all the residents of the sub-city have access to public transport. The result of the analysis clearly show that there is full coverage of public transport in the sub-city. All the residents of the sub-city are living within 500 m distance from the nearest mini-bus station. Unlike the indicators of housing level of objective QoL for all indicators of access to public services is high.

Except for the indicator access to health facility the finding of the research indicate that government authorities and NGO's who deals with the provision of public services have to work on the other aspects accessibility of public services since proximity is not an issue for the residents of the sub-city.

States of QoL for each indicator of access to public services

Despite the other indicators of the domain access to public services; equal numbers of Ketenas are in wellbeing and dissonance with the indicator access to primary education facility (see Section 5.6.2.). Six

Ketenas of the sub-city are in wellbeing with the indicator since the subjective and objective QoL is good with the indicator in these Ketenas. This can be interpreted as these residents are living within or less than 1 km distance from the nearest primary school and their perception of the access they have to primary school is good. Another six Ketenas are living in dissonance with the indicator access to primary education facility. The residents have good objective QoL since they are living within 1 km distance from the nearest primary school however the subjective QoL of the residents is bad which means the residents perceive the access they have to primary school badly. Only residents of two Ketenas of the sub-city are living in deprivation with the indicator access to primary education facility. For these residents both subjective and objective QoL is bad with the indicator. This can be interpreted as the distance from the house of these residents to the nearest primary school is more than 1 km and the residents' perception of the access they have to primary school is bad. In this case the issue could be availability and proximity.

The research findings show that only two states of QoL that are wellbeing and dissonance exist for the indicator access to secondary education facility in the study area (Figure 11). This is because all the residents of the study area have an access to secondary within 2 km distance however there are respondents who are not satisfied with the access they have. From the two states of QoL dissonance is more exist in the study area because majority of the respondents have bad subjective QoL with the indicator. In addition compare with the other indicators of the domain access to public services more Ketenas are experiencing dissonance with this indicator. From the fourteen Ketenas of the sub-city nine are in dissonance with this indicator. For the residents of these Ketenas the objective QoL is good means they are living within 2 km distance from the nearest secondary school however the subjective QoL is bad means the residents' perception with the access they have to secondary school is bad. Proximity may not be accessibility for these residents. Five Ketenas of the sub-city are living in wellbeing with the indicator access to secondary education facility. Both subjective and objective QoL is good with the indicator in these Ketenas. The residents are living within 2 km distance from home to the nearest secondary school and their perception of the indicator is good.

Despite the other indicators of the domain; four states of QoL that are wellbeing, adaptation, dissonance and deprivation are identified for the indicator access to health facility Figure 13. Majority of the Ketenas (five Ketenas) of the sub-city are living in wellbeing with the indicator. In these Ketenas the subjective and objective QoL is good with the indicator. These residents have an access to health facility within 40 minutes walking time from their house and their perception of the access they have to the nearest health facility is good. On the other hand residents of four Ketenas of the study area are living in deprivation with the indicator access to health facility. Both subjective and objective QoL related to this indicator is bad for these residents of the sub-city. The residents are walking for more than 40 minutes to get a health service and their perception of the access they have to health facility is bad. Residents of three Ketenas of the sub-city are experiencing dissonance with this indicator. For these residents the subjective QoL is bad whereas the objective QoL is good. The residents of these Ketenas reach to the nearest health facility within or less than 40 minutes of waking time but their perception with the access they have is bad. Despite the other indicators of the domain; two Ketenas that are experiencing adaptation are identified for this indicator in the sub-city. In these Ketenas the subjective QoL is good; the perception of the residents is good however the objective QoL is bad means the residents are walking for more than 40 minutes to get a health service.

From visual interpretation of the map shown in Figure 13 the states of QoL for the indicator access to health facility are spatially clustered in the sub-city. The spatial cluster is more related to availability, proximity, affordability and level family income. Availability and proximity are spatial reason of the clustering whereas affordability and level of family income are non-spatial reasons of the clustering. In the spatially clustered Ketenas with wellbeing health facility is affordable for the residents since it is provided by government and the residents are satisfied because of affordability and proximity of the services. On the other hand for the spatially cluster of Ketenas with deprivation the reason is unavailability of services. However in the spatially clustered Ketenas that are experiencing dissonance most of the households have middle level of family income and they have access to private health facilities which are expensive. Since the health services available are unaffordable for them the residents are dissatisfied. For the cluster of Ketenas which are living in adaption; the residents of these Ketenas are satisfied with the access they have to health facility not because of proximity of the service but because of its affordability.

Similar with the indicator access to secondary education facility only two states of QoL are identified for the indicator access to public transport that are wellbeing and dissonance (Figure 15). In the sub-city objectively all the residents have access to public transport but subjectively there are dissatisfied residents. Despite the other indicators of the domain access to public services; majority of the Ketena (nine Ketenas) are in wellbeing with the indicator in the sub-city are. This could be because of the location of the sub-city. Since the sub-city is located at the centre of the city there is high coverage of the public transport. For these residents the subjective and objective QoL is good with the indicator. The residents are living within 500 m distance to the nearest mini-bus station and the perception of the residents with the access they have to public transport is good. Residents of five Ketenas of the sub-city are experiencing dissonance with the indicator access to public transport. The residents have bad subjective QoL however their objective QoL is good. These residents are living within 500 m distance from the nearest mini-bus station but their perception of the access they have is bad.

6.1.3. Family income

The level of measured subjective and objective QoL and the states of QoL identified for the indicator adequate family income is discussed in this sub-section.

Level of subjective QoL at sub city level for the indicator adequate family income

The residents of the study area have slightly satisfied level of subjective QoL with the indicator adequate family income (Table 16). Despite the other domains used in this study to measure QoL; the level of subjective QoL is the same at indicator and domain level for the domain family income. This is because only one indicator is used to measure family income related QoL.

Level of objective QoL at sub city level for the indicator adequate family income

The objective QoL with the indicator adequate family income is analysed according to the official family income poverty line of Ethiopia that is 2508 birr per month which is equivalent to 146 US dollars (BoFED, 2011). Based on this threshold majority of the residents of the sub-city have adequate family income (Table 20). The level of objective QoL related to this indicator is high for most of the residents of the sub-city. This can be interpreted as majority of the residents of the sub-city have a family income more than 2508 birr per month or 146 US dollars.

States of QoL for the indicator adequate family income

Most of the residents of the Ketenas in the sub-city are living in wellbeing with the indicator adequate family income (See Section 5.6.3.). Residents of five Ketenas of the sub-city are in wellbeing since they have good subjective and objective QoL with the indicator. These residents are living above the income poverty line or their family income is greater than 2508 birr or 146 US dollars per month and they are satisfied with the adequacy of their family income. Whereas residents of three Ketenas of the study area are living in deprivation with the indicator since both the subjective and objective QoL is bad for these residents with the indicator adequate family income. In these Ketenas the family income of the residents is less than 2508 birr or 146 US dollars per month and the residents' perception of the inadequacy of their family income is bad. Residents of two other Ketenas of the sub-city are experiencing adaptation with the indicator adequate family income. In these Ketenas the subjective QoL is good; where the residents' perception is good with the adequacy of their family income however the objective QoL is bad; this means the residents' family income is less than 2508 birr or 146 US dollars per month. From the fourteen Ketenas of the sub-city residents of the four Ketenas are experiencing dissonance since the subjective QoL is bad but the objective QoL is good with the indicator. The family income for these residents is greater than 2508 birr or 146 US dollars per month however their satisfaction with the adequacy of their family income is bad.

6.1.4. Advantage of identifying the states of QoL

Identifying the states of QoL is important to find out where the match and mismatch between the subjective and objective QoL is occurred. Besides, identifying the states of QoL gives information on the residents' priority in life and satisfaction or perception of their existing living condition. This could assist urban planners and policy makers for designing and implementing development projects and interventions to upgrade the living status of residents of an area. It also highlights where, when and at what level to do development interventions. It is important to have clear information on which specific intervention is effective for a particular area (Field and Kremer, 2006). Identifying the states of QoL could also help for formulating and implementing public policies and strategies based on the citizens interests and priorities for life.

Identifying the states of QoL is also important to evaluate the effect of implemented interventions on the living condition of residents. Since interventions can have positive or negative effect on life of citizens; it is important to evaluate their impact in life of the residents. The identified impacts can be used for further development interventions by taking lessons from the previous one.

Identifying the states is also important the further study in QoL; particularly finding out the reasons that makes individuals to have different perceptions from the existing living condition they have. Since understanding these reasons of the mismatch can help urban planners and policy makers in their daily career and for designing and implementing development programs based on the priorities and perceptions of residents.

6.2. Reasons behind the adaptation and dissonance

The main reasons of adaptation and dissonance identified for each indicator used in the study are discussed in this section. These are the states of QoL which shows mismatch between the subjective and objective QoL of the residents. Identifying the reasons of satisfaction and dissatisfaction in life can provide valuable information for urban planning and policy making by identifying problematic areas and to rectify policies and strategies towards these areas for enhancing QoL citizens (Ibrahim and Chung, 2003).

6.2.1. Reasons for adapting bad living condition

The main reasons of adaptation identified for housing unaffordability in this study are having access to basic infrastructure, sufficient living space, housing ownership, having playground within a house, housing condition and social connectedness. Findings of the research clearly indicate that having access to basic infrastructure including piped water, improved sanitary and electricity is one of the main reasons of adaptation for unaffordable housing in the study area although less attention was paid to these basic infrastructure in the FGD. Some respondents of the research are satisfied with their house not because it is affordable but because it has basic infrastructure specially piped water and improved sanitary. These respondents set availability basic infrastructure as criteria for spending any amount of money for housing. In the study area some residents are satisfied with unaffordable housing because they have playground within their house for their children. Since public green space is unavailable in the sub-city; as explained in the FGD children used to play in the highways which is unsafe and causing many traffic accidents on children. For this reason, most of the respondents who have children and have playground in their house found satisfied even though housing is unaffordable for them. Some other residents of the sub-city are adapting unaffordable housing because they have sufficient living space. These residents have large family size and they are willing to spend any amount of money for sufficient living space. Besides some residents are adapting unaffordable housing in the sub-city because they owned a house. The reason of satisfaction for these residents is using a house as a means of income by renting. Since house rent is expensive in the area; regardless of the condition of the house they have, these residents are getting more money from house rent. Social connectedness is also one reason of adaptation for housing unaffordability identified in this study. Some residents of the sub-city are satisfied with unaffordable housing because they are strongly connected to their neighbours and neighbourhood. Mostly these residents do not even feel the unaffordability of housing. There are also respondents who are satisfied with their unaffordable housing because the house they have is in a good condition.

The finding of the study indicate that some residents of the sub-city are satisfied with the indicator housing crowdedness not because they have sufficient living space but because of having low family income, location the house (related to income generating), social connectedness and housing ownership. Some residents of the sub-city are experiencing adaptation with the overcrowded living condition they have because their family income is low and cannot afford a house with sufficient living space. These residents are satisfied since they have a house that they can afford regardless of its sufficiency. Because of the location of the sub-city and being most important place for economic activities in Mekelle city; getting a house is very difficult. Some residents are satisfied that they get a house even if they are living in overcrowded situation. These residents do not want to move to other places with sufficient living space since their neighbourhood is a means of income for their family. Social connectedness is also another reason for adapting overcrowded living condition in the study area. There are respondents who live in the sub-city for long time and have strong connection with their neighbours and neighbourhood. These

respondents are satisfied with the overcrowded living situation they are experiencing. These residents prefer to live in overcrowded situation rather than leaving their neighbourhood. Housing ownership is also one reason of adaptation for the indicator housing over crowdedness in the study area. The residents are satisfied for two main reasons. The first one is; since they are living in their houses they believe they have full freedom in life. The second reason of satisfaction is getting money from rent. These residents initially had sufficient living space but they overcrowded their family's living space to get extra rooms for rent. These residents are satisfied no matter how crowded their family life is because the money from rent increases their family income and enable them to fulfil the needs of the household members.

Irrespective the other reasons of adaptation identified for the indicators housing affordability and housing over crowdedness in the study; housing ownership and social connectedness are the reasons that are identified for both indicators.

Findings of the research clearly show that two opposite reasons are influencing some residents of the sub-city to experience adaptation with the indicator room for rent. These reasons are having and not having extra rooms for rent. The first reason is related to getting additional source of income. This reason explains the situation that respondents are satisfied with the extra rooms they have for rent since house rent is expensive in the sub-city due to its location. However these residents overcrowded their family living space to get extra rooms for rent since initially these residents did not have an extra room for rent but they squeeze their living space in order to get extra rooms. The second reason of resident's satisfaction with this indicator is having no extra room for rent. These respondents are satisfied that they do not have extra rooms for rent because they fear of the possible problems that can be created by interacting with tenants. It is not always true to feel dissatisfied because people do not have extra room for rent and if they are not getting additional income from the rent.

Except for the indicator access to health facility reasons of adaptation related to the indicators of the domain access to public services are not discussed in this section since there are no respondents of the research who are adapting these indicators.

Regardless of the poor physical accessibility of health facilities in their area, some respondents of the research are found satisfied with the access they have to health facility. The reason of satisfaction of these respondents is not proximity but affordability, physical condition of the health care facility, availability of medicine and experienced doctors as well as other medical staff members are their reasons. Some residents of the sub-city are satisfied with the access they have to health facility not because it is physically accessible for them but because it is affordable. Majority of these respondents have access to governmental health facility. Besides these residents are low income families and cannot afford the private health service even if they can be able to access it. As identified in this study even if people have a physical access to health facility if it does not give good service means if doctors, other medical staff members and medicine is unavailable and if the physical condition of the health facility is poor they cannot be satisfied. They can be even willing to travel more distance to get better service. Some residents of the sub-city are satisfied not because of the proximity of the health facility they have access to but it is because experienced doctors and other medical staff members and also medicine is available in the health facility they have access to. In addition they are also satisfied because the health facility is in a good physical condition.

Some people even though they have inadequate family income they can be satisfied with their family income for some other reasons. Residents of the sub-city are satisfied with their inadequate family income because of having permanent job, time spend at work and getting money without going to work. People feel secure and also satisfied even though their family income is inadequate because they have a permanent job. In most cases in Ethiopia if a person have a permanent job which is usually in government offices there is no fear of losing her/his job whether the person is productive or not. In most cases they have life time guarantee of having this family income. For this reason; some respondents of the research are satisfied even though their family income is inadequate. Others are satisfied with their inadequate family income by comparing with the time they spend at work. Having much more spare time is very important for taking care of children, managing a house and social life activates. Mostly these satisfied respondents are women since they have responsibilities of taking care of children, managing a house and participate in social activities according to the life style of the society. Having no job but getting an income from other sources is also one reason of satisfaction with inadequate family income. These respondents are categorised in to two. The first one is an old and sick people who stopped working due to age and sickness. These respondents are living with the support they get from their children which are not members of the household any more or from rich relatives. These respondents are satisfied with their inadequate family income by imagining how can be their life without this support. The second one is a young people who inherit a house with rooms for rent from died family. Even though the money they are getting from the house rent is inadequate for their family they are satisfied because they do not want to work.

Adaptation and walking interview

With the help of walking interview which is mostly deal on investigating the relation between people and place (Evans and Jones, 2011) the reasons of adaptation and dissonance related to neighbourhood satisfaction are identified in this study. Applying walking interview was very helpful for the study because the respondents were able to point out some spatial futures as their reasons of satisfaction and dissatisfaction. The method is applied in Ketena 1 for identifying the reasons of adaption.

Reasons of adaptation which are related to spatial features of neighbourhood identified with walking interview in this study are having no other choices, location of neighbourhood, availability of affordable recreational areas and social connectedness. The reason having no other choice is related to housing characteristics of the neighbourhood and the level of family income of the residents. Since most of the houses in the neighbourhood are in poor condition; house rent is cheap in the area. Majority of the families who are living in this neighbourhood; their target is getting a house with cheap rent that they can afford since they have low family income. These residents are satisfied that they have affordable house regardless of its condition, living space and whether it has basic infrastructure or not. The other spatial reason of adaptation identified in this study is location of neighbourhood. Some residents of the sub-city are satisfied with their neighbourhood because it is located at the centre of the city therefore they do not have additional cost of transport to different places including work, market, school and health facility. The other reason of satisfaction of the residents with their neighbourhood is availability of affordable recreational areas including cafés, pool house and smell bars. These spatial futures create a high bond between the neighbourhood and some of its residents specially the residents with low family income. Despite the other reasons of adaptation identified in the research social connectedness is identified in both household survey and walking interview. Living their whole life in one neighbourhood also make people to adapt their neighbourhood and feel satisfied with it. Some of the residents feel as everyone in the neighbourhood is by their side whenever they face problems. For this reason they are satisfied.

Combining walking interview and household survey with open ended questions have an advantage of identifying both spatial and non-spatial reasons of adaptation. Through the household survey reasons of adaptation related to housing and family income were identified. For the domain access to public services non-spatial reasons are identified with household survey whereas the spatial reasons are identified with walking interview in this study. By applying walking interview spatial reasons of adaptation related to neighbourhood are also identified including availability of affordable recreational areas and location of the neighbourhood.

6.2.2. Reasons of dissonance with good condition of life

In this research different reasons of dissonance for each indicator considered in the study are identified through household survey and walking interview with open ended questions.

The main reasons of dissonance for the indicator housing affordability identified in research are having no access to basic infrastructure, getting less money from house rent and living style. Some residents of the sub-city feel dissatisfaction because of these reasons although housing is affordable for them. Even though less attention was given to basic infrastructure including piped water, improved sanitary, electricity and telephone line during the FGD but for majority of the respondents in dissonance with housing affordability, the reason of their dissatisfaction is having no access to basic infrastructure specially piped water and improved sanitary. For these residents even though housing is affordable they have additional spending for buying piped water and for medical services. Due to the unavailability of piped water and poor sanitary especially children get sick every time and they need to see a doctor at least once a month. This is directly affecting the family income since these residents are spending more money for medical services and buying water. The situation also affects the time they have to spend at work since they have to take care of the sick children. In addition this situation is affecting the education of the children since they cannot attend classes while they are sick. Residents of the sub-city who have extra rooms for rent are also dissatisfied because housing is cheap in their Ketenas. These residents believe that they have a good quality rooms but the money they are getting from rent is small. Comparing the house rent level in their Ketenas with level of house rent in other Ketenas they are dissatisfied because it is cheaper in the Ketena where they live. Some residents of the sub-city are also feeling dissatisfaction with their house not because housing is unaffordable but because it does not match with their living style. These dissatisfied respondents with the affordable housing in the study area are those who are living in agency houses. Since the agency houses do not have garden which is very important in the culture of the society majority of the residents are dissatisfied with the house they have.

With the indicator housing over crowdedness some residents are dissatisfied because they overcrowded their living space for getting extra rooms for rent. These residents had sufficient living space but to get money from rent they overcrowded their family living space since they do not have any other means of income. These residents cannot go to work due to age, low education status and sickness. Some other residents of the sub-city are feeling dissatisfaction with the indicator not because they are overcrowded, have poor housing condition or not having access to basic infrastructure but their dissatisfaction comes from unofficial rules of the house owners. Some of these rules are not to use water more than 25 liters per day, not to on the light after midnight, not to have many guests: this is related to the use of toilet by the guests and not to use playground which is within the house. Having many visitors every time and having no extra rooms for visitors is also one reason of dissatisfaction with this indicator in the sub-city. This reason is more related to the culture and social connectedness of the residents. For these respondents the

living space is sufficient for their family member but because of many visitors living space is overcrowded in the households.

Since no respondents of the research are experiencing dissonance with the indicator room for rent, no reasons of dissatisfaction are discussed for the indicator in this section.

As the research findings clearly show; most of the reasons of dissonance identified for the government and private primary education facilities in the study area are different. The respondents explain more reasons of dissonance with government schools than with private schools. This indicates dissonance is more existed with the respondents who have access to government primary schools than the residents who have access to private primary schools. Even though majority of the residents have access to government primary schools however most of them are dissatisfied. The main reasons of their dissatisfaction are low quality of the government schools, unavailability of experienced teachers and location of the school. Compare to the private primary schools in the sub-city the governmental primary schools have low quality. The low quality of the schools can be explained by unavailability of teaching aid materials like books, overcrowded class rooms and insufficient playground. Because of the low salary scale in the ministry of education of the country most of the experienced teachers do not want to teach in government schools. In addition the increasing number of the private schools with better salary and other benefits is also one reason of the unavailability of experienced teachers in governmental primary schools since they are attracting the experienced teachers. This indicates the increasing number of private schools in the city is affecting the governmental schools in losing the skilled man power. Some respondents of the study are also dissatisfied with the governmental primary school due to unsafe location. There are schools which are located at the side of highway. Residents of the sub-city who send their children to these schools are dissatisfied because the students are exposed to traffic accidents. Even though the private primary schools have necessary teaching aid materials and the physical condition of the school is also good but the residents of the sub-city who send their children to these schools are dissatisfied because of unaffordability of the schools and dressing and school meal competition between the students. The competition of dressing is high especially in female students. This completion is affecting the education of the students since they concentrate more on what to dress rather than how to be successful in their studies. Despite the other reasons identified for private and governments primary schools; school location is a reason of dissatisfaction for both. The residents are dissatisfied because the children are exposed to traffic accident due to the location of the schools.

The findings of the research show that although all the residents of the sub-city have access to secondary education facility, majority of them are dissatisfied with secondary school they have access to (Figure 13). In most cases the reasons of dissonance related with the indicators access to primary and secondary education facilities are similar. The main reasons of dissonance with the indicator access to secondary education facility are lack of experienced teachers, poor controlling mechanism of students, and lack of teaching aid materials and expensiveness of private schools. Some residents of the sub-city are dissatisfied with the access they have to secondary schools because of lack of experienced teachers. Since secondary school is the place where students take national exam; lack of experienced teachers could affect the result of the students. The residents that are dissatisfied with the indicator because of unavailability of experienced teachers blame the school for the failure of the students in the national exams. Although the physical accessibility of secondary schools is good in the sub-city some residents are in dissonance because of lack of teaching aid materials. The schools have laboratory and library rooms but they do not have books, chemicals and other important materials. People cannot be satisfied because they have empty rooms of laboratory and library. Poor students controlling mechanism of the schools is also one reason of

dissatisfaction for some residents of Kedamay weyane sub-city since it affects the future of the students. These reasons are mostly related with the governmental secondary schools in the sub-city. Some residents who have access to private schools are in dissonance because of unaffordability of the schools. High spending for education can affect the family life especially for households with more children and middle level family income. The other reason of dissatisfaction related to private secondary school is competition of dressing and school meal between the students. Families who send their children to private schools are mostly forced to buy expensive cloth and to prepare different school meals than the family meal. Since most of the children who go to private schools are from rich family there is also class difference between the students.

As identified in this study physical accessibility to health facility alone cannot make people satisfy. The reasons that cause dissatisfaction for the residents of the sub-city even though they have physical accessibility are lack of medicine and experienced doctors and also other medical staff members for the residents who have access to governmental health facility whereas unaffordability and inadequacy of medical services are reasons of dissatisfaction for residents who have access to private health facility. Proximity do not mean accessibility if the health facility does not also have enough skilled man power, medicine and other important materials like chemicals for laboratory test. In the private health facility the condition is different. People are dissatisfied because of unaffordability and inadequacy of the service. The number of beds available in the private health facilities are inadequate comparing to the number of patients they give service every day. In addition they have limited resource of modern machineries for surgery and other services.

Having an access to bus station does not mean getting a service of public transport. People cannot be satisfied because only they have access to bus station since having access to bus station does not mean getting service on time, with reasonable tariff, with comfortable seat and respect from service providers. In the study area some of the respondents are dissatisfied with the access they have to public transport for the above listed reasons even if they have physical accessibility to mini-bus stations. To use the public transport in the sub-city people have to wait more than 30 minutes. This is because there is no regular schedule that the users have to follow. Due to poor controlling system of the government the service providers do not use the proposed tariff. For this reason the service users pay the same price for short and long distances. For some of the respondents who are dissatisfied with the access they have to public transport unavailability of seats and the bad treatment of customers by the service providers are the main reasons of their dissatisfaction.

In the study area some residents are in dissonance with the indicator adequate family income because of spending too much time at work, having large family size and improper job. There some residents of the sub-city who are dissatisfied because of spending much time at work. These residents are dissatisfied since spending much time influences their family life and social life. This reason is more a reason of dissatisfaction for women respondents of the research. Because of large family size with diverse need of members of a household some respondents are dissatisfied with their family income since it cannot cover all the expenses of each member of the family even though it is adequate according to the threshold applied. Having improper job like prostitution is also a reason of dissatisfaction for some residents of the sub-city. These dissatisfied respondents of the research; even though they are getting adequate family income but they are dissatisfied since they face problem like social exclusion because of their job.

Dissonance and walking interview

Applying walking interview in this study was very helpful to identify reasons of dissatisfaction related to neighbourhood. These reasons of dissonance are related to spatial futures of the neighbourhood. The walking interview was applied in Ketena Endaba Aneniya in the sub-city. The reasons identified are increasing number of bars, no access to public green space and no access to government primary schools in the neighbourhood. Some respondents are dissatisfied with their neighbourhood because residential houses are changing to business mostly to bars. Due to increasing number of bars in the neighbourhood there is a safety problem which makes the respondents to be dissatisfied with their neighbourhood. The other reason of dissatisfaction related to neighbourhood identified is not having access to public green space. Even though there is small Private Park in the Ketena which is not even known by the government as park; the residents are dissatisfied due to the unaffordability of the private park. The other reason of dissatisfaction is related absence of government primary school. The residents have access to private schools but they are dissatisfied due to its unaffordability.

6.3. Why perceptions of QoL differ from the objective conditions of life

People's perceptions of their living condition vary for different reasons. For people who are satisfied with bad condition of living they have; the reasons are having no other choices, believing what they have is what they deserve in life and not aware of their bad living condition. On the other hand for those who are dissatisfied with good condition of living the reasons are mismatch on how they want to live and how they are living currently as well as what they expect from government sectors and what they are getting.

In most cases residents of the sub-city who owned a house have good perceptions of QoL related to housing even though the objective condition of housing is bad. However for some residents the only reason of satisfaction is the ownership. In most cases these people do not consider the condition of the house, the living space and the access they have to basic infrastructure including piped water, improved sanitation and electricity. For this reason, comparing with the other domains of life considered in this study; majority of the residents are in adaptation with the indicators of the domain housing. Some residents of the sub-city are dissatisfied with the indicators of housing even if the objective condition of life related to housing is good. The reasons of their dissatisfaction are not building future asset, rules set by house owners, instability and being influenced by the increment of rent every time.

In some cases peoples' perception of their QoL is bad even though objectively they have good QoL. In the study area, despite the other domains of life used to measure the residents QoL; majority of the respondents' perception is bad with the QoL they have related to the indicators of public services. The main reasons of their dissatisfaction are unaffordability, unacceptability and inadequacy of the services. Even though most of the time QoL related to public services is measured using the indicators accessibility and availability of services but majority of residents are dissatisfied because of reasons beyond accessibility and availability. This indicates as proximity and availability alone cannot bring satisfaction to service users. On the other hand very few residents of the sub-city have good perception of public services particularly with the indicator access to health facility regardless physical accessibility of the service. The reasons of satisfaction for these residents are affordability, acceptability and adequacy of the services they have access to even if it is not within the acceptable walking time. In reality people are willing to travel more distance to get affordable and quality services(Amer, 2007).

6.4. Relevance of understanding the reasons behind adaptation and dissonance for urban planning and policy making

One of the main goals and concerns of urban policy makers and planner is to enhance QoL of residents of urban areas. However, QoL is not have been addressed by planners and policy makers because of the ambiguity of the concept, its blatant political use and due to the methodological complexity of scientific research on the topic (Myers, 2007).

However having documented information on urban QoL alone cannot be useful for urban planning and policy making. It is also relevant to identify the area of satisfaction and dissatisfaction as well as understand the reasons of satisfaction and dissatisfaction. The higher objective of policy makers and urban planners should be to integrate citizen perceptions and priorities into the policy making and planning process (Myers, 2007). This will be helpful for formulating and implementing public policies and strategies with high capability of solving problems and enhancing QoL of the citizens.

6.4.1. Housing

The research findings related to housing clearly indicates that in formulating public policies and strategies related to urban housing planners and policy makers have to work more in providing affordable housing for all, improve access to basic infrastructure, increase housing ownership and provide houses in the place of residence of the citizens.

Increasing provision of affordable housing for all

As identified in this study most of the residents of the sub-city are living in unaffordable housing. Besides majority of these residents are dissatisfied. Formulating and implementing public policies and strategies which facilitate and increase affordable housing provision for all income groups based on their family size can enhance the QoL of the residents' of the sub-city.

Improve the citizens' access to basic infrastructure including piped water, improved sanitation electricity and telephone line

As explained by most of the respondents; one of the main reasons of adaptation and dissonance related to housing in the study area is having or not having access to basic infrastructure. Improving the access of the residents to the basic infrastructure can enhance their QoL. Therefore policy makers and urban planners need to pay attention on formulating and implementing public policies and strategies as well as designing development interventions that can improve the access of the residents to the basic infrastructure.

Increasing opportunities for housing ownership

Housing ownership is one of the main reasons of adaptation and dissonance related to housing identified in this research. Public policies and strategies which increase the residents' opportunity for owning a house can enhance the QoL of the inhabitants.

Adjust standards for construction materials

As one of the findings of research clearly indicates; housing durability is one reasons of adaptation for housing especially unaffordable housing. Adjusting standard on construction materials and formulating

policies and strategies which enables to control construction projects based on liability to the adjusted standards is important. Since this can enhance the QoL of the residents.

Developing zoning system of land uses

Majority of the residents who are dissatisfied with housing; the mix of land uses is one of their main reason of dissatisfaction. The place of residence of these residents is in the same area with bars and other business activities. This mix in land uses is creating problems to the residents related to safety. Therefore formulating and implementing policies and strategies that appreciate the system of developing zoning of land uses can solve the problems and enhance the QoL of the residents.

Improve opportunities for the citizens for owning a house in the neighbourhood they are living in

Since social connectedness is high in the sub-city and it is also one main reason of adaptation related with housing and neighbourhood. Housing provision policies and strategies which consider social connectedness and increase the opportunity of the residents owning a house in their neighbourhood can enhance the QoL of the residents of the sub-city.

6.4.2. Access to public services

As the research findings related to public services obviously show policies and strategies related to public services provision should not only consider physical accessibility rather they should also considered the following issues for the study area.

Improving the accessibility of public services in availability, accessibility, affordability, acceptability and adequacy

Majority of the residents of the sub-city are dissatisfied with the access they to public services mostly not because of availability and proximity but because of unaffordability, unacceptability and inadequacy of the services. Policies and strategies which incorporate all aspects of accessibility of public services can improve the QoL of the citizens.

Planning for incentive to attract experienced professionals including teachers and doctors

Since one of the main reasons of dissatisfaction for the majority of the residents with the access they have to public services is lack of experienced professionals; formulating and implementing policies and strategies which attract professionals by giving incentive is important since the availability of the professionals can help the public services to perform better. Consequently this can enhance the QoL of the residents.

Increase the availability of materials including medicine, medical instruments, chemicals for laboratory use in health cares and schools and reference books for students and teachers

The residents of the sub-city are dissatisfied with the access they have to public services specially education and health facility because of the unavailability of important materials like medicine, books and chemicals. Formulating and implementing policies and strategies and designing interventions that improve the availability of these materials can improve the QoL of the residents.

Improve the capacity of professionals by providing trainings

As identified in this research one of the main reasons of dissonance with public services is lack of experienced professionals. At the absence of experienced professional; formulating policies and strategies that allows improving the capacity of the available professionals through training and refresher courses can solve the problem and can help public services to perform better. Solving the problems of the public services related to lack of experienced professionals can play a major role in enhancing the QoL of the residents.

Improving the comfort of service users

Most of the respondents in the sub-city are dissatisfied with the public services they have access to especially with public transport because of unavailability of seat. Formulating and implementing public policies and strategies that improves the comfort of the residents related to public services can enhance their QoL.

6.4.3. Family income

In formulating and implementing public policies and strategies and designing development interventions for enhancing the QoL of the study area considering the issue below related to family income can help for better performance of the policies and strategies.

Providing subsidies for low income families

To improve the QoL of the residents of the sub-city formulating policies and strategies that can initiate provision of subsidies for low income families related to housing, education and health is important since these low income families are living in overcrowded and non-durable house and they have also access to low quality of schools and the health care facilities because of the low family income they have.

7. CONCLUSION AND RECOMMENDATION

This research has been necessitated to explore the main reasons of adaptation and dissonance that are states of QoL which are identified from the measured subjective and objective QoL at sub-city level. The identified reasons are considered to be supportive for formulating and implementing public policies and strategies. The aim of this chapter is to summarize the study and to point out concerns for further study.

7.1. Conclusion

In this section of the chapter the study is summarized based on the sub-objectives formulated to achieve the main objective of the research.

7.1.1. To measure the subjective and objective QoL

The level of subjective and objective QoL for the indicator housing affordability is low in the sub-city. However the level of the subjective and objective QoL for the indicator housing over crowdedness is slightly high and high respectively. For the indicator room for rent the level of subjective QoL is slightly high whereas the level of objective QoL is low. These findings of the research indicate that policy makers and urban planners of the study area need to pay attention on providing affordable housing to all income to enhance housing related QoL. In addition the government's and other international organization's development interventions towards housing should concentrate on providing houses based on family income level of the residents.

The level of subjective and objective QoL for the indicator access to primary education facility is high. For the indicators access to secondary education facility and access to public transport the level of the subjective QoL is slightly low whereas the level of objective QoL is high. However for the indicator access to health facility the level of subjective QoL is low but the level of objective QoL is high. For majority of the residents of the study area the issue of proximity is not a problem with the indicators of the domain access to public services. To improve the QoL of the residents of the sub-city; government authorities and NGO's which deals with provision of public services need to pay attention on issues of affordability, acceptability and adequacy in addition to availability and accessibility for all indicators of access to public services except for the indicator access to primary education facility which has high subjective and objective QoL in the study area. These findings of the research gives an information and guides urban planner and policy makers that proximity is not the only issue of access to public services.

The level of subjective QoL for the indicator adequate family income slightly high but the level of the objective QoL is high. The QoL of the residents related with is an indicator is good.

7.1.2. To identify the states of QoL in the sub city

Even though for most of the indicators used in this study the four states of QoL that are wellbeing, adaptation, dissonance and deprivation are identified there are some indicators which have three and less states. The number of states of QoL that can be identified in a study depends on the level of the subjective and objective QoL measured in that study. In Kedamay Weyane sub-city for indicators housing affordability, housing over crowdedness, access to health facility and adequate family income four states of QoL are identified since for these indicators have good and bad subjective QoL and good and bad

objective QoL. However the indicator room for rent has three states that are adaptation, wellbeing and deprivation in this study. For this indicator dissonance is not existed since no respondents found with bad subjective QoL while they have rooms for rent. For the indicator access to primary education facility also three states of QoL are identified that are wellbeing, dissonance and deprivation. Adaptation is not identified for this indicator since no respondents found with good subjective but bad objective QoL. Whereas for the indicators access to secondary education facility and access to public transport only two states of QoL that are wellbeing and dissonance are identified. This is because the objective QoL is good for all residents of the sub-city; however there are residents with bad subjective QoL with the indicators. From this we can conclude that number of states that can be identified in QoL studies is dependent on the level of subjective and objective QoL measured for the area under study.

7.1.3. To identify the reasons behind the adaptation and dissonance

Finding of the study clearly shows that most of the reasons of adaptation and dissonance identified in this study are similar. For the case of adaption the identified reasons are cause of satisfaction but for the case of dissonance the reasons are cause of dissatisfaction. For example the reason having access to basic infrastructure is a reason of satisfaction for those who are living in unaffordable housing in the sub-city. However having no access to basic infrastructure is reason of dissatisfaction for those who are living in affordable housing. Another example is having permanent job; some respondents of the research are satisfied because they have a permanent job even though they have inadequate family income, on the other hand there are also respondents which are dissatisfied because they have temporary job although their family income is adequate.

From these findings it can be conclude that public policies and strategies formulated and implemented based on the reasons identified for adaptation and dissonance can enhance the QoL of citizens with better satisfaction.

7.1.4. To analyse the relevance of understanding the reasons behind adaptation and dissonance for urban planning and policy making

Having documented information on measured urban QoL alone cannot be useful for urban planning and policy making. It is also vital to identify the reasons behind adaptation and dissonance in order to formulate and implement sound public policies and strategies based on the citizens' needs and priorities. Understanding the reasons behind adaptation and dissonance is also important for policy makers and planner to formulate effective and responsive policies and interventions to the existing situations in the area under study. It is also vital for urban planners to act towards the problem and solving them through planning projects.

In this research reasons that can give insight for the planners and policy makers for enhancing QoL of the residents with better satisfaction level are identified. For the housing related issues planners and policy makers have to work more on housing provision that considers family income level and family size of the residents. Different considerations must be taken for formulating and implementing public policies related to access to public services including affordability, adequacy, acceptability and quality in addition to availability and proximity. To enhance the QoL of the residents related to their family income policy makers have to work on creating secure job opportunities by formulating effective policies.

7.2. Recommendation

- A study that aims to identify the reasons of states of QoL has to measure QoL at indicator.
- For the indicators of the domains of life access to public services studies has to look issue of affordability, acceptability, adequacy in addition to availability and proximity
- It is also my recommendation to apply participatory approach for identifying the reasons behind adaptation and dissonance in further research. This can help to identify reasons that the entire residents have in common.

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APPENDIX

1. Operational definitions of indicators

Housing affordability

Definition: percentage of family income spent on housing by a household.

Government (2011) calculates housing affordability as the percentage of the housing spending from the total family income for each household. In this case family income is “The combined gross income of all the members of a household who are 15 years old and older”. Households who spend more than 30% of their total family income for housing are living in unaffordable housing.

Interpretation: When a household is spending more than 30% of their family income for housing; means there is a need of low cost housing development which can be distributed based on the level of family income.

Data Source: household Survey October 2011, Mekelle Ethiopia

Housing Over crowdedness

Definition: percentage of households with three or more persons sharing the same bed room.

Based on the indicators guideline of (UN., 2004); a household is considered as overcrowded if More than three persons are sharing the same room. in the other hand according to (Wilson, 2011) UK standard of Housing over crowdedness three or more members of a household have to share the same room in order to considered it as overcrowded. Bed room is the target room in this indicator. The UK standard is applied in this study

Interpretation: This is related to a household size and number of rooms occupied by that household. When the numbers of bed rooms are less for the household size; it indicates that there is a serious need of housing.

Data Source: population census 2007 and Household survey October 2011, Mekelle Ethiopia

Room for rent

Definition: percentage of households with extra room for rent.

A household is said to be have extra room for rent; it should have one or more extra rooms for rent without overcrowding the living space for their family members

Interpretation: When a household has extra room for rent; it is considered as their family income is higher than those who do not have extra room for rent.

Data Source: Household survey October 2011, Mekelle Ethiopia

Access to primary education facility

Definition: percentage of households within maximum distance of 1 km from primary school.

Green and Argu (2011) Calculate accessibility of primary schools by households based on the threshold 1 km. all residents within this threshold are said to be have an access to primary education facility. Walking is a means of transport for this threshold.

Interpretation: This means it is must to have a primary school with a diameter of 2 km between the two schools to call the residents have an access to primary school.

Data Source: Mekelle municipality: location of primary schools

Access to secondary education facility

Definition: percentage of households within maximum distance 2 km from secondary school.

Facts (2010) Calculate accessibility of secondary schools by households based on the threshold 2 km. every resident within this threshold is called have an access to secondary school. Walking is considered as a means of transport on applying this threshold.

Interpretation: to say there is an access to secondary school; secondary school must be physically existed within 2 km distance between each other.

Data Source: Mekelle municipality: location of secondary schools

Access to health facility

Definition: percentage of households within maximum of 40 minutes walking time from health facility.

(Amer, 2007) calculate accessibility health facility by each household based on the threshold 40 minutes waking time. Every household is called have an access to health facility if and only if lives with travel time 40 minutes from home to health facility by walking.

Interpretation: when a household is within 40 minutes walking time is considered as a having access to a health facility. Data Source: Mekelle municipality: location of health facility

Access to public transport

Definition: percentage of households within maximum distance of 500 m from mini bus stops.

Valérie Guihaire a (2008) calculate accessibility by public transport using threshold 400-500 m. Residents within distance of 400-500 m from bus station are considered as they have access to public transport. For this study the maximum distance which is 500 m is applied. Walking is considered as a means of transportation to reach the stations.

Interpretation: when the residents are traveling more than 500 m to reach the nearest mini bus station. There is a need of constructing additional new station.

Data Source: Mekelle municipality: location of mini bus stops and road network

Adequate family income

Definition: percentage of households with adequate family income

BoFED (2011) According to Ethiopia poverty analysis; an income poverty line is 2508 birr (the country currency) or 146 US dollars. Any household with less and equal amount of monthly income is with the income poverty line is said to be have no adequate family income or they are considered as poor.

Interpretation: when household are living with less and equal income of the income poverty line clearly it is important they need support from government and other organization.

Data Source: Mekelle business and economics bureau and household survey October 2011

2. Questionnaire for household survey

Section I: General information of the respondent's

Sub-city Name _kedamay weyane

Kebele name_____

Name of interviewer_____

Block Number _____

House Number _____

Code_____

Head of family	<i>Responses</i>				
	Male			Female	
Age					
Employment status	Employed			Unemployed	
Educational level	Not educated	primary education	secondary education	Vocational	University degree and above
Household Size					
Household tenure	Privately owned	Rent from private	Rent from housing agency	Others	
Number of rooms	One	Two	Three	Four	Other _____
Number of rooms for rent	no rooms	One	Two	Three	Other _____
Available health facilities	Government health facility		Private health facility		
Available education facilities	Government		Public	Private	No school
Family income per month (Birr)	<1000 B	1000-2500	2500-4000	4000-6000	>6000

Section II: assessment of perceived attributes of domains of life (Likert-scale) with open ended questions

<i>Assessment of Attributes</i>	<i>Level of Assessment</i>					
	1	2	3	4	5	6
1. Housing						
How satisfied are with your house?	Very satisfied	Satisfied	Slightly Satisfied	Slightly dissatisfied	Dissatisfied	Very dissatisfied
What is the reason your of satisfied/ dissatisfied?						
How do you evaluate Housing affordability in your Ketena?	Very affordable	affordable	Slightly affordable	Slightly unaffordable	unaffordable	Very unaffordable
What is the reason your of satisfied/ dissatisfied?						
How do you evaluate the sufficiency of living space for your family?	Very sufficient	Sufficient	Slightly sufficient	Slightly insufficient	Insufficient	Very Insufficient
What is the reason your of satisfied/ dissatisfied?						
How satisfied are you that you have rooms for rent?	Very satisfied	Satisfied	Slightly Satisfied	Slightly dissatisfied	Dissatisfied	Very dissatisfied
What is the reason your of satisfied/ dissatisfied?						
How do you define the condition of your house?	Very good	Good	Slightly good	Slightly Dilapidated	Dilapidated	Very dilapidated
What is the reason your of satisfied/ dissatisfied?						
2. Access to green space						
How do you evaluate the availability of green area in your neighbourhood?	Very available	Available	Slightly available	Slightly unavailable	Unavailable	Very unavailable
How do you evaluate the accessibility of the green area?	Very accessible	Accessible	Slightly accessible	Slightly inaccessible	Inaccessible	Very inaccessible
How satisfied are you with the access you have to the green area?	Very satisfied	Satisfied	Slightly satisfied	Slightly dissatisfied	Dissatisfied	Very dissatisfied
How satisfied are you with the access you have to the green area?						

3. Access to of public service	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
how do you assess the availability of improved water in your area (particularly individual tap water)	Very Satisfied	Satisfied	Slightly Satisfied	Slightly dissatisfied	Dissatisfied	very dissatisfied
How do you evaluate the Solid waste collection system in your area	Very Satisfied	Satisfied	Slightly Satisfied	Slightly dissatisfied	Dissatisfied	very dissatisfied
How do you evaluate the distance to primary schools	Very near	Near	Slightly near	Slightly far	Far	Very far
How satisfied are you with the access you have to primary education facility	Very Satisfied	Satisfied	Slightly Satisfied	Slightly dissatisfied	Dissatisfied	very dissatisfied
Can you explain why you are satisfied/ dissatisfied with the access you have to primary school?						
How do you evaluate the distance to secondary schools	Very Near	Near	Slightly Near	Slightly far	Far	Very far
How satisfied are you with the access you have to secondary education facility?	Very Satisfied	Satisfied	Slightly Satisfied	Slightly dissatisfied	Dissatisfied	very dissatisfied
What is the reason of satisfaction/ dissatisfaction with the access you have to secondary school?						
How do you evaluate the distance to health facilities?	Very Near	Near	Slightly near	Slightly far	Far	Very far
How satisfied are you with the access you have to health facility?	Very Satisfied	Satisfied	Slightly Satisfied	Slightly dissatisfied	Dissatisfied	very dissatisfied
What is the reason of your satisfaction/ dissatisfaction with the access you have to health facility?						
How do you evaluate the accessibility of your living area by public	Very accessible	Accessible	Slightly accessible	Slightly inaccessible	Inaccessible	Very inaccessible
How satisfied are you with the access you have to public transport?	Very Satisfied	Satisfied	Slightly Satisfied	Slightly dissatisfied	Dissatisfied	Very Unsatisfactory
What is the reason of your satisfaction/ dissatisfaction with the access you have to public transport?						

4. Family income	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
How adequate is your income for your family	Very adequate	Adequate	Slightly adequate	Slightly Inadequate	Inadequate	Extremely inadequate
How satisfied are you adequacy of your family income?	Very satisfied	Satisfied	Slightly Satisfied	Slightly dissatisfied	Dissatisfied	Very dissatisfied
Can you explain why you are satisfied/ dissatisfied?						