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Social Inclusion and Energy Management
for Informal Urban Settlements

CASE STUDY

QUALITY OF LIFE IN INFORMAL URBAN SETTLEMENT IN ETHIOPIA: THE CASE OF THREE SUB-CITIES IN GONDAR CITY

Mikyasa Abera Negewo



Funded by the
Erasmus+ Programme
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ABSTRACT

Ethiopian cities experience voluminous and incessant influx of new residents for reasons emanating mainly from real or perceived rural-urban differentials in life chances and/or quality of life. This immigration, coupled with natural population increase, create challenges for urban areas to meet residents' need for basic infrastructure, services and decent living. Inadequate housing stock and urban land management system have forced many to resort to informality, making squatter and slum settlements prominent features of the current Ethiopian urban socioeconomic and political landscapes. It is against this backdrop that this study tried to assess existing conditions of informal settlements and their inhabitants to identify mechanisms of promoting sustainable and inclusive urban development in the city of Gondar. To this end,

the study drew on widely employed indicators of QoL to gather the subjective perception of residents of three sub-cities of Gondar city – Lideta, Samuna-ber and Weleqa. Using mixed methods approach (survey, key informant interview, desk-review and observation), pertinent data were gathered from residents, relevant officers, and experts. The study documents significantly differ between informal and formal settlements on major indicators of quality of life – including economic wellbeing, physical and social infrastructure, and safety and security, among others. It also underlines the fact that any plan for urban upgrading and/or expansion must take into account objective realities as well as subjective valuations that are important to the sustainability and inclusiveness of the city of Gondar. ♦

Keywords:

quality of life, indicators, participatory research, inclusive city, Gondar

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PART 1 INTRODUCTION

Currently, more than half of the world's population live in urban areas and this figure is projected to increase to 64% and 86% in developing and developed countries, respectively, by 2050 (UNDESA 2018). Twenty-first century cities are also growing to become complex and dynamic systems – concentrating people, opportunities as well as threats and challenges. The experiences of the western urbanization show cities are engines of economic development and have increasingly assumed dominant position in information and global connections. The more cities develop, the more nations prosper (Mpofu 2013).

Cities have always been focal points for economic growth, cultural vitality, technological innovation and employment generation. They also host important sociocultural institutions as museums, galleries, film industries, theatres, fashion houses, etc. Conversely, rapid urbanization occurring in countries with low per capita income such as Africa has increasingly become a threat to the vitality of urban centers (Cohen 2004). Africa is rapidly urbanizing at the world's highest rate of 4% per annum (UN-Habitat, 2004); and, the rate of urbanization in Ethiopia is even higher with 4.63%, with 20.8% of its current population residing in urban centers (CIA 2019).

Though economic development is strongly associated with western urbanization, this has not been the reality in third-world countries. Several authors (e.g. Munro 1974; Mountjoy 1976; Fox 2012) argued that urbanization in Asia, Africa and Latin America are caused by adverse rural conditions (that make emigration as a common response) and polarized urban development. In Africa specifically, urbanization

“appears to become partially decoupled from economic development” (Cohen 2004:27). Hence, despite its incredible advancements in western civilization, the history of urbanization in most developing countries is full of challenges. In most cases, urbanization is rapid and has outstripped cities' capacities to manage the process and provide adequate services for residents (Chen 2006; Engida 2013).

One undesirable outcome of this scenario is the explosion of informal settlements i.e. slums and squatter settlements (Shortt and Daniel 2013). With most of the world's urbanization taking place in developing countries, the pressure on their urban infrastructure, services and institutions will only be growing. Since western urbanization was associated with industrialization, affluence and strong urban institutions, developed countries were better in coping with the challenges of urbanization and/or reduce its bad outcomes. Conversely, urbanization in the developing world is mainly caused and associated with high natural population increase and massive rural-urban migration – rather than industrialization (Brunn and Williams, 1983). Their limited resources and weak institutions make governments ineffective to manage emerging urban challenges. Consequently, the real number of slum residents have been on the rise and by 2018 it reached 1.4billion (UNDESA 2018), jumping from 863millions in 2012 (UNHabitat 2013).

Most of their urban centers expand horizontally as many, due to shortage in housing stock in inner cities, moves into unplanned settlements on the fringes and at the expense of agricultural lands, vegetation covers and areas of natural beauty (Mnwuyelet

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2005). This process usually leads to problems of squatter settlement, poor land-use, waste disposal management, pollution, housing, urban decay, social disintegration and antisocial activities that put peoples' wellbeing and security at risk. Without adequate inner-city upgrading initiatives, slums absorb more and more urbanites. To put this in context, in 2018, one-in-four people lived in informal settlements; by 2030, one-in-three people will face similar fate (UNDESA 2018).

This horizontal expansion of urban centers has been described as organic and indispensable urban reality and some authors (e.g. Kombe 2005) claim urban planners and policy makers in Africa have little choice but to embrace it and make urban land management systems pro-poor, decentralized and responsive. With the awareness on Ethiopia's rapid urbanization and preponderance of informal settlements in the urban landscape, this study assesses how the process affects the quality of life of informal settlers to draw empirical conclusions and make feasible policy recommendations. ♦

PART 2

THE CONCEPT OF QUALITY OF LIFE IN URBAN STUDIES

The concept of quality of life (QoL) – with linkages to concepts of sustainability and livability of cities and the rapidity of urbanization – has recently become more popular in urban studies. Growing out of the concern with standard of living, it later expanded and embraced the natural, sociocultural and economic spheres of cities and their residents. QoL studies inform urban planning and management strategies, policy evaluation, monitoring the effects of policies on the ground, etc. (Seik 2001). Data on QoL are indispensable to anyone interested in the wellbeing and welfare of urbanites as well as those responsible for the management and planning of inclusive and sustainable urban development. They also provide pertinent and timely information to planners and stakeholders about the interests and needs of diverse socioeconomic groups and their perception and satisfaction with urban infrastructure, institutions and services.

The concept of ‘quality of life’ was first used by Pigou in 1920 while discussing economic wellbeing in largely economics terminology (Pigou 1920). But the social indicators or QoL movement is said to have begun with President Hoover’s Committee on Social Trends which issues its report ‘Recent Social Trends in the US’ in 1933. Though similar study reports were published in subsequent years, research on QoL “did not gain intellectual stature until the 1960s” (Sirgy et al 2006:364). However, the 1970s represent the heyday of research and publications on QoL (Sirgy et al 2006). The term QoL has also effectively replaced its older referents in ‘general welfare’ or ‘social wellbeing’ (Liu 1976). Since then, research on QoL has progressed with refinements on its methods, indicators, components and statistical techniques.

Liu (1976: 12) defined QoL as “the output of a certain production function of two different but often interdependent input categories – physical inputs which are objectively measurable and transferrable, and the psychological inputs which are subjectively, ordinally differentiable but usually not interpersonally comparable.” Though illusive and variously defined, the concept of QoL has attracted the contributions of many researchers. Though it is used to broadly refer to the wellbeing of people and their environment – and the connections and dissociations therein – its applications vary as per the disciplinary orientation and focus of its proponents. Sociologists (McKain 1939; Cottam and Mangus 1942; Ferriss 2004), economists (Ordway 1953; Osborn 1954), geographers (Weber and Hirsch 1992; Lo and Faber 1997), among others, attempted to examine QoL from their disciplinary point of views and added to the conceptual rubric that complicated its standard operationalization. In other words, studies on QoL are interdisciplinary by their nature. They lay at the juncture where social science and urban studies meet.

The concept of QoL has multiple dimensions with objective indicators and subjective measures; the former dominating the contributions of economists and geographers (Liu 1976; Boyer and Savageau 1981) and the later underlying the works of social psychologists (Van Kamp et al, 2003). Some (e.g. Wish 1986; Landis and Sawicki 1988; Dissart and Deller 2000) question the validity of objective indicators to measure QoL; but in planning literature, the difficulty in measuring subjective QoL (Liu 1976; Lee 2008) or using the results in policy formulation (Myers 1988) initiated profound elucidations of objective indicators (and led to the neglect of sub-

jective dimensions) of QoL. Their persuasions influenced several researchers (e.g. Foo 2000; Das 2008) to study QoL employing objective indicators that prioritize reliable and comparable data across cities, neighborhoods and communities. They work with a set of criteria and indicators to assess and identify changes – mostly stated in quantitative terms – in such domains as the physical, social and economic. For them, subjectivists may be able to understand the perception and appreciation of people about the world around them, but they run the risk of crippling relativism that comes with the difficulty of identifying a universally agreed set of subjective indicators or indicators that apply to a larger group (Rishan, Martinez and Verplanke 2014).

Conversely, critics of objectivists claim that the supposedly objective indicators of QoL do not necessarily reflect how local residents define and value QoL. Nor do they adequately capture variations between neighborhoods within a city (Marans 2003). Besides, people's subjective valuation of the urban space, infrastructure and services could vary along their socioeconomic, cultural and demographic attributes. Hence, it bears significantly on QoL assessment and scores – and, this works best when participatory research methods actively involve relevant stakeholders in the process of identifying and designing contextually-relevant subjective indicators of QoL. In other words, studies on QoL should aim at measuring objective QoL and peoples' perception or subjective valuation of these objective conditions.

On the other hand, of the five major life domains – employment, family life, personal health, social relationships and residential environment (Yang 2008) – considered in assessing QoL, only residential environment fall within planners' direct sphere of

influence. It is against this backdrop that this study adopts an approach where residents refine objective indicators and identify their own contextual indicators of QoL through a participatory research design that includes community workshop. It argues that 'quality' is essentially evaluative and subjective (Lee 2008), and residents are the best judge of its character. Besides, the prioritization of residents' perspectives on QoL is best suited to achieve the study's ultimate purpose i.e. inform participatory and inclusive urban planning and development. In fact, such a study promises to produce valuable feedback and information when tackling community-based issues through bottom-up approach (Elsa, Martine & Verplanke 2010:74).

This study also aims to fill the existing knowledge gap on QoL in the city of Gondar. There are studies that focus on and measure dimensions of QoL in urban settings – including informal settlements – from a broadly objectivist stand. To date, however, no study used a participatory research design to define and refine the list of objective indicators with inputs from residents and undertake a study to comparatively assess QoL in different settlement patterns. ♦

PART 3

METHODS AND DESIGN

A. Study site: The city of Gondar

Gondar, founded by Emperor Fasiledes in 1636, is a medieval city of Ethiopia. It is located 730 kms north-west of Addis Ababa, the capital city of Ethiopia. With 358,000 residents, Gondar is the fourth populous city in Ethiopia – next to Addis Ababa (4.6million), Dire Dawa (1.3million) and Mekelle (480,217). The city is administratively organized into 12 sub-cities. It is a major tourist destination and lies at the heart of Ethio-Sudan cross-border international trade. Courtesy of recent expansion, the city's administrative jurisdiction covers agricultural lands – with residents whose mainstay is agriculture. For those living across the rugged terrain of the city, trade, commerce, civil service and tourism are the main sources of livelihood.

Recently, Gondar has been expanding rapidly beyond existing urban development plans and strategy. This scenario has brought multifarious challenges – infrastructural, environmental, socioeconomic, etc. – to its administrators and residents. Besides, from center-to-periphery, there is no clear demarcation of land-use for commercial, agricultural/industrial, residential, and green-space. Hence, it is usual to find residences in areas with profound commercial activities and vice-versa, and, its development, rather sprawl, is axial with built up areas constructed along main or a few subsidiary roads.

Ranking the sub-cities of Gondar by population density would give us the following list (in descending order): Abajalé, Mehal Arada, AbiyEgzi, Medhanialem, Adebabay Eyesus, Kirkos, Azezo Dimaza, Lideta, Arbegnoch, Gabriel and Azezo AyerMarefiya (CSA 2016). There are also emerging

informal settlements with substantial number of residents at Genfo-Quch and Weleqa that are not included in the above list of sub-cities.

B. Study design and methods

Quality of life (QoL) is a multidimensional concept, comprising objective and subjective, or environmental and psychological, dimensions. Although there is no one universally agreed definition, theory or method of QoL, literature review reveal that the core components of QoL are health status, personal and social wellbeing, satisfaction with life and environment i.e. housing, schools, health services, safety and security, road and transport. Thus, this study used several methods – document review, community workshop, survey, KII and – to assess residents' assessments and priorities on indicators of QoL across residential spaces in the city.

Though this study drew on theoretical insights of Greene and Caracelli (1997), Creswell, Plano, Gutmann, and Hanson (2003) and Mertens (2003), it did not subscribe to any prescriptions so that it retains the pragmatism of mixed method approach – in design, data collection, data analysis and interpretation. Broadly speaking, though, it adopted a pragmatic-realistic perspective to collect process- and variable-oriented data that unravel regularities and mechanisms (Maxwell, 2008). As such, it employed a sequential exploratory strategy that commenced with document review and community workshop. The workshop represented the initial phase of data collection and tool refinement; but instead of delaying data integration till the final phase of the study, workshop results were analyzed and used in designing survey questionnaire.

The study design was cross-sectional where data were collected from residents of selected sub-cities of Gondar through workshop, survey and KII. The study's nature and timeframe did not allow for a longitudinal study that would have generated data to assess change over time in key indicators of QoL.

Community mapping workshop (CMW). Tom Lavers (2007) warns against confusing peoples' priority of goals with academics' theories of need;¹ and, this study heeded to his credible remark and refrained from imposing universalistic categories of needs. Hence, it began with reviewing the literature and conducting community mapping workshop (CMW) with city population i.e. residents, community representatives, experts (planners, architects, etc.) and administrators to identify the important goals of life (from an extended list of 23, that allows workshop participants to refine as needed) for residents of formal and informal settlements and rank or prioritize them i.e. weighting.

Survey. Based on the results of the CMW (discussed in the results section), the study identified and targeted households located in three sub-cities of Gondar: 2 predominantly informal i.e. slum (Lideta) and squatter (Weleqa) and 1 predominantly formal (Samuna-ber) settlements. Samuna-ber was included in the study as control settlement for discussion on indicators of QoL. From each sub-city, 35 households were randomly selected for the exploratory survey.

A standard questionnaire, with a consent form, was designed to gather data on: socio-demographics (age, sex, schooling and employment status); health status (self-assessed general health); life satisfaction; personal QoL; and, satisfaction with environmental QoL. Widely validated items from the Medical Outcomes Study were modified and used to measure **health status** by asking respondents to rate their health as very good/good, fair or poor. Five items were used to measure **life satisfaction**: overall life satisfaction, household satisfaction, satisfaction with performance of daily living activities, satisfaction with

capacity for work and satisfaction with self. Responses were measured as 0 (dissatisfied), 1 (undecided) and 2 (satisfied), and compared across residential areas. Respondents were asked to rate their personal QoL as 0 (poor), 1 (undecided) and 2 (satisfied). Widely validated and 11 itemed **environmental QoL** scale of UNESCO (1976) was used to measure satisfaction with the quality of housing, schools, police, safety and security, roads, transport, health services, environmental services (street cleaning, street lighting), employment opportunity and recreational facilities (libraries, peers, playgrounds and sport-grounds). Respondents were asked to rate their satisfaction for each item as 0 (dissatisfied), 1 (undecided) and 2 (satisfied), and averaged for an overall environmental QoL score.

A 3-score scale system – satisfied, undecided, dissatisfied – was used throughout the study instead of the 5-score scale system to reduce respondents' inconvenience to appreciate the subtle differences between 'very satisfied' and 'satisfied,' on the one hand, and 'very dissatisfied' and 'dissatisfied,' on the other, and opt for either 'satisfied' or 'dissatisfied' as a genuine reflection of their responses to items on the questionnaire. While abridging specificities in both ends, nonetheless, it simplified the questionnaire for the respondents and enumerators. Accordingly, 'very satisfied' and 'satisfied' were merged as positive responses in 'satisfied' and 'very dissatisfied' and 'dissatisfied' were merged as negative responses in 'dissatisfied.' The neutral/undecided option was retained as it is in the original scales.

On a methodological note, though items on the questionnaire were largely drawn from standard tools, their design and refinement benefited significantly from the CMW. During the workshop, facilitated by researchers, participants discussed, identified and ranked indicators/components of QoL. Drawing on a long list of indicators of QoL and/or goals of life, their inputs helped the refinement and contextualization of the survey instrument and how the research could be organized and conducted to produce valid outputs.

1 He was discussing the works of Doyal and Gough (1991) in their 'Theory of Human Need' based on two localities in Ethiopia i.e. North Shewa (Amhara) and Arsi (Oromia)

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Key informant interview. 6 key informant interviews (KIIs) were conducted with experts in urban planning and housing, greening and beautification, road construction, units of the city of Gondar administration.

Presentation and analysis. Tables, quotations and narrations were used to present the findings of the study from primary and secondary data sources. Data were analyzed using frequency distributions, measures of central tendencies, chi-square tests of association and ANOVA to assess variations among residents' socioeconomic, demographic and QoL indicators in the three sub-cities of Gondar. Relevant procedures were used to test the statistical significance of associations or differences on key variable in and among the three sub-cities. ♦

PART 4

RESULTS AND DISCUSSION

The results and discussion in this section are based on data collected from randomly selected residents of three sub-cities of Gondar i.e. Lideta, Samuna-ber and Weleqa. But the procedure did not strictly follow the requirements of probability sampling to make the findings representative of the population in the three sub-cities. Hence, caution was taken in making and/or reading the findings and conclusions for recommendations and policy implications. Regardless, as an exploratory study, it produced interesting insights into how residents' socioeconomic, demographic, etc. attributes interacted with their personal valuation on QoL indicators.

This section starts with summary description on the procedure and results of CMW conducted with the city's stakeholders. Such an approach to organize this section emphasizes the methodological relevance of CMW to ground the research outcomes on community realities.

4.1 Community Mapping Workshop (CMW):

The procedure and results

The CMW involved participants from diverse communities, urban planners, experts, architects, and faculty and students at UoG, among others. During the workshop, after preliminary discussion and debriefing on the purpose of the study and workshop, participants were clustered into two groups: Group A – urban planners, experts and architects and UoG faculty; Group B – community representatives and city residents. Firstly, both groups were asked to:

1. rank the sub-cities of the city of Gondar in terms of their informality and/or livability; and,
2. prioritize the indicators of QoL for residents of the city of Gondar;

Group A ranked the various sub-cities of the city of Gondar – from better- to worse-off in terms of livability – as follows: Samuna-ber, UoG, Chewa-sefer, AutoParco, Piazza, Beleko, Lideta, Hospital, Kebele 18, Addis Alem, Azezo and Weleqa. Group B ranked the various sub-cities of the city of Gondar – from better- to worse-off in terms of their livability – as follows: Piazza, Arada, Hospital, Belajig, Fikirbekuraz, Lideta, Azezo, Addis Alem and Weleqa. Test of Spearman Rank Correlation between the two group's rankings of sub-cities' livability was found to be very strong at 0.88. In other words, both groups ranked the informality and/or livability of the sub-cities roughly similarly.

During the workshop, participants were allowed to define sub-city geographic/administrative boundaries loosely and enjoy a degree of freedom to map informality in the city based on their personal and community experiences. The downside of this procedure was some, but consistent, level of irregularity in the sectors identified and characterized as formal and informal. For instance, while Group A identified 12 sub-cities of the city, Group B identified only 9. A pragmatic approach was used to identify overlaps between the two lists.

Starting with Group A's elaborate list of sub-cities (12), the sub-cities were categorized into three clusters of four sub-cities each. The rationale and advantage in this procedure lie in its reduction of the margin of error in sampling by clustering sub-cities into broadly similar categories. Alternatively put, the procedure reduced making the error of picking sub-cities with more or less similar profile – as per the workshop participants' views – as the study

population, which is a probability if three sub-cities were randomly picked directly from a pool of all sub-cities. Accordingly, one sub-city was randomly selected from each of the three clusters with four sub-cities each.

When randomly picking sub-cities from each of the three clusters based on Group A's list, there were corresponding sub-cities in Group B's list – with the single exception of those in the second cluster in Group A's list, which had a corresponding sector only at the top of the list of sub-cities in Group B. Otherwise, the close approximation of rankings allowed the use of either, but preferably the more elaborate one i.e. Group A in identifying sub-cities for a comparative study of QoL between different sub-cities of the city.

Accordingly, and with the primary aim of comparison, three sub-cities were randomly selected to represent three settlement patterns: formal, slum and squatter. To do so, the procedure considered the approximate rankings of sub-cities by workshop participants into predominantly formal, predominantly slum or predominantly squatter. Accordingly, Lideta (slum), Weleqa (informal) and Samuna-ber (formal) were selected for the study.

Secondly, CMW involved ranking of important priorities of life goals and indicators of QoL. Accordingly, Group A and Group B were offered a list of 23 priorities of goals in urban living – including health, water, food, housing, electricity, education, environment, etc. Group A and Group B ranked food and health as the first priority of goals, respectively, while water (for group A) and neighborhood livability (for Group B) were second priority goals. But, since test on Spearman Rank Correlation did not produce strong reliability/reliability between the rankings of Group A and Group B (0.33), we opted to include all priorities of goals and frame as items or indicators of QoL.

4.2 Socioeconomic and demographic profile of respondents

This study is exploratory in purpose, and with that aim in mind, it collected data from 45 respondents in each sub-city (total, n=135). The average age of the respondents was 42.3years (s=14.53). 53.3% of them were female (F=4.64; $\alpha=.02$); and, compared at sub-city level, significantly fewer females were living at Weleqa (40%) than at Lideta (51%) and at Samuna-ber (69%). The correspondence between sex and sub-city could be related to the rather precarious settlement and tenure structure at Weleqa (F=7.68; $\alpha=.022$). Culturally, males than females are encouraged to engage in labor migration and/or adventurous/speculative occupancy prevalent in locations like Weleqa. Males are cultural bearers of the responsibility to ensure their families' sustainable livelihood or search for new sources when families' livelihood structure strains or inadequate to meet needs.

90% of the respondents were born in the city of Gondar, and 98% of them were born and raised in different parts of ANRS, where Gondar is located, with the origin of the remaining 2% being in Tigray National Regional State. The number of years in residence in the sub-city – starting from first occupancy to the survey period – varied significantly among sub-cities, with Lideta, Weleqa and Samuna-ber hosting residents with older (15yrs), new (6yrs) and newer (5yrs), respectively, occupancy (F=8.98; $\alpha=.001$). Here we also observe correspondence between when the three sub-cities were established and the reported years of residency. In the city's modern history, Lideta is one of the oldest settlements.

Table 3.1

Respondents' demographics and socioeconomic status by sub-city

		N (%)	AGE	MEAN YEAR SINCE ARRIVAL (N)	MEAN MONTHLY INCOME IN ETB (N)	FAMILY SIZE	PERCENT FEMALE (N)
Sub-city	Lideta	45 (33)	46.6	15 (10)	3429 (45)	4.7 (44)	51 (23)
	Samuna-ber	45 (33)	42.6	5 (10)	4307 (45)	3.6 (44)	69 (31)
	Weleqa	45 (33)	37.2	6 (23)	5499 (45)	4.2 (37)	40 (18)
	Total	135 (100)	42.3	8 (51)	4412 (135)	4.2 (125)	53 (72)

Figures in cells represent the number of observation (and percentiles within sub-cities), Source: Survey 2019

On the other hand, families at Lideta (4.7) were significantly bigger in size ($F=3.62$; $\alpha=.03$) than those at Weleqa (4.2) and Samuna-ber (3.6). This result aligns with what was found in cross-cultural literature for bigger families among low socioeconomic status. In this case, Lideta hosts larger families with less earnings and educational attainment as compared to those in other settlements. On the other hand, we also need to take into account the precarious nature of squatting and its insecurities that discourage many from having large families. The general opinion is that when families acquire decent housing – through ownership or rent from, mostly, public-providers, they are more likely to increase their fertility and, hence, size, probably courtesy of the sense of stability and security it creates.

Married couples make up the large portion of the study population, accounting for 68% (Lideta), 76% (Samuna-ber) and 53% (Weleqa) of the respondents. But we have to be cautious not to read too much into this result since marriage and cohabitation, on the one hand, and divorce and separation, on the other hand, are difficult to distinguish in most non-western societies (Dodoo, 2007), including the study area. However, there are two notable results in Table 3.2 as they apply to residents in informal settlements: firstly, comparatively higher numbers of singles (33%) and divorcees (11%) lived at Weleqa, while more widows/widowers (16%) resided at Lideta ($\chi^2=22.81$ $\alpha=.02$) at the time of the study. The literature has been undecided on this aspect of residents'

profile (e.g. Royo and Velazco 2005; Velibeyoglu 2014; Simiyu, Cairncross and Swilling 2019).

Economic affluence – as measured by gross monthly earning – significantly varies ($F=3.89$; $\alpha=.03$) between households in the three sub-cities (median=4412ETB);² and, those at Weleqa earn the highest (5499ETB) followed by households at Samuna-ber (4307) and Lideta (3429). This contradicts the findings in much of the literature where squatters are mostly characterized as low-income migrants or slum residents who move to fringes forced by inner-city regeneration projects and/or inability to afford decent housing in parts of the city with better infrastructure, services and land/house value. Key informants and city planning experts had also underlined their claim that a sizable portion of current squatters are speculators who, while owning houses in other parts of the city, aim to benefit from return on their small/minor investments on the land acquired through cheap and/or illegal mechanisms.

² This finding, however, should not be taken literally but in the context of figures for sub-cities, which has to be used for comparative purpose only. Otherwise, it would make residents of the three sub-cities belong to one of the better to do households of the nation.

Table 3.2

Respondents' current marital and employment status by sub-city

		SUB-CITY			
		LIDETA	SAMUNA-BER	WELEQA	TOTAL
Current marital status	Never married	3 (7)	5 (11)	15 (33)	23 (17)
	Married	30 (68)	34 (76)	24 (53)	88 (66)
	Divorced	2 (5)	1 (2)	5 (11)	8 (6)
	Separated	1 (2)	1 (2)	0 (0)	2 (2)
	Widowed	7 (16)	3 (7)	1 (0)	11 (8)
	Divorced and remarried	1 (2)	1 (2)	0 (0)	2 (1)
	Total	44 (100)	45 (100)	45 (100)	134 (100)
Employment status	Unemployed	5 (11)	7 (16)	12 (27)	24 (18)
	Full-time, government employee	7 (16)	20 (44)	17 (38)	44 (33)
	Part-time, government employee	2 (4)	0 (0)	0 (0)	2 (2)
	Full-time, private employee	2 (5)	3 (7)	2 (4)	7 (5)
	Part-time, private employee	6 (14)	2 (4)	0 (0)	8 (6)
	Self-employed	22 (50)	13 (29)	14 (31)	49 (37)
	Total	44 (100)	45 (100)	45 (100)	134 (100)

Figures in cells represent the number of observation (and percentiles) within sub-city. Source: Survey 2019

In terms of employment, and at city level, self-employment and full-time government jobs absorb the majority of respondents. But at sub-city level, there was statistically significant difference among respondents in the three sub-cities ($\chi^2=23.96$; $\alpha=.01$). The majority of Lideta residents were self-employed (50%) or full-time government employees (16%), while those at Samuna-ber and Weleqa were mainly government employees (44% and 38%, respectively) or self-employed (29% and 31%, respectively). Unemployment is highest at Weleqa (27%) and lowest at Lideta (11%), with Samuna-ber averaging around 16%. Generally speaking, average unemployment rate for the three sub-cities was lower than the national average; but, Weleqa still hosted higher number of the unemployed; half (50%) of the unemployed lived in the various quarters of the sub-city. This finding corresponds with the finding at KwaZulu Natal State, South Africa (Wilkins and Hofmeyer 1994) or Mathare, Kenya (Muiyu 2014) and Kisumu, Kenya (Simiyu, Cairncross and

Swilling 2019) where informal settlements reportedly had high proportion of people without jobs, or heavily engaged in casual jobs or concentrated in informal sector.

On the other hand, ILO report on Latin America and the Caribbean indicates half of the employed people work in informal jobs (ILO 2011). Informal employment comes with low earnings, lack of social protection and inferior working conditions for workers. But we have well educated and uneducated people engaged in informal sector. Why we have educated people in informal sector could be down to the fact that informal employment “embraces a variety of heterogenous activities such as self-employed entrepreneurs, salaried workers of large and small firms and unpaid domestic workers” as well as daily laborers (Herrera-Idárraga, López-Bazo and Motellon, 2013:4). However, the tendency among most educated people is to move away from informal employment towards the formal sector.

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Table 3.3

Respondents' educational attainment (or years of schooling) by sub-city

EDUCATIONAL ATTAINMENT	APP. YEARS OF SCHOOLING (BENNETT 2011)	SUB-CITY		
		LIDETA	SAMUNA-BER	WELEQA
Illiterate	0 years	7 (16)	6 (13)	0 (0)
Read and write only	0.5 years	4 (9)	10 (22)	8 (19)
Primary. Grades 1-4	2.5 years	3 (9)	1 (2)	2 (5)
Primary. Grades 5-8	6.5 years	6 (14)	2 (4)	1 (2)
Secondary. Grades 9-10	9.5 years	15 (34)	8 (18)	14 (33)
Preparatory. Grades 11-12	11.5 years	3 (7)	3 (7)	5 (12)
Certificate and Diploma	13.5 years	0 (0)	2 (4)	3 (7)
BA/BSc. First degree	16 years	5 (11)	11 (24)	7 (17)
MA/MSc/LLM. Second degree	18 years	1 (2)	2 (4)	2 (5)
	Average years (Sub-city)	7 (44)	8 (43)	9 (39)

Figures in cells represent number of observation (and percentiles) within sub-city. Source: Survey 2019

Data on educational attainment were collected in terms of the 'highest grade completed' with response categories that include 'illiterate,' 'read and write only,' 'Grade 1-4,' etc. During data organization, categorical data were transformed into numerical years of schooling using Bennett's (2011) formula of approximation whereby years of schooling were averaged to find a single-score to represent respondents' educational attainment. About 3/4th of the respondents completed grade 12 at most;

and, the remaining 17%, 4% and 4% earned their first-degree, second-degree and TVET-certificate credentials, respectively. But Chi-square test of association between educational level and sub-cities were statistically weak ($\chi^2=23.36$; $\alpha=.10$). With a combined average of 8years, residents at Weleqa, Samuna-ber and Lideta, respectively, had 9, 8 and 7years of schooling ($F=.87$; $\alpha=.42$), which imply educational attainment was not significantly related to settlement patterns in the city of Gondar.

Table 3.4*Respondents' educational attainment by sex and sub-city*

EDUCATIONAL ATTAINMENT, BY CATEGORY	SUB-CITY			
	LIDETA	SAMUNA-BER	WELEQA	TOTAL
Illiterate	7 (100)	6 (100)	0 (0)	13 (100)
Read and write only	4 (100)	10 (199)	8 (100)	22 (100)
Primary. Grades 1-4	3 (100)	1 (100)	2 (100)	6 (100)
Primary. Grades 5-8	6 (100)	2 (100)	1 (100)	9 (100)
Secondary. Grades 9-10	15 (100)	8 (100)	14 (100)	37 (100)
Preparatory. Grades 11-12	3 (100)	3 (100)	5 (100)	11 (100)
BA/BSc. First degree	5 (100)	11 (100)	7 (100)	23 (100)
MA/MSc/LLM. Second degree	1 (100)	2 (100)	2 (100)	5 (100)
TVET. Certificate	0 (0)	2 (100)	3 (100)	5 (100)
Total	44 (100)	45 (100)	42 (100)	131 (100)

Figures in cells represent the number of observation (and percentiles) within sub-city. Source: Survey 2019

4.3 Quality of life in formal and informal settlements

As a multidimensional concept, QoL is measured in terms of indicators that touch upon the physical, sociocultural, economic and other relevant aspects of environmental and personal living. The survey, accordingly, developed scaled questionnaire items on these indicators, and residents of three sub-cities were requested to rate their level of (dis)satisfaction on each item as 'satisfied,' 'undecided/indifferent' or 'dissatisfied', and these levels of (dis)satisfaction were scored as 2, 1 and 0, respectively. As per the operational definition of informal settlement we provided in the methods section, Lideta and Weleqa fall under 'informal' and Samuna-ber under 'formal' settlement patterns.

Sub-cities and their physical infrastructure

To record residents' assessments on neighborhood's physical infrastructure, 5 items were used. With the single exception of *traffic on the main road connecting the neighborhood to inner city* ($F=1.78$; $\alpha=.172$), the three sub-cities brought significantly different satisfaction to their residents. Specifically, Weleqa was better in terms of main roads connecting the settlement to the inner city ($F=4.73$; $\alpha=.010$). This response refers to the asphalt road that crosses the settlement to connect the Gondar (Zonal capital) with smaller

administrative centers. The road was in a very good condition, and superior to the main roads connecting Lideta and Samuna-ber to the inner city, which is relatively old and frequently under maintenance.

On the other hand, Samuna-ber was superior both in terms of the availability ($F=6.03$; $\alpha=.003$) and quality ($F=5.77$; $\alpha=.004$) of in-roads, walkways, etc. interconnecting its various quarters. In fact, there is huge public investment in constructing cobblestone in-roads that interconnect the various sectors of sub-cities of Gondar. City administrations identified cobblestone paving as one of the initiatives to reduce urban unemployment. Being labor intensive, it creates substantial jobs for hundreds of thousands in quarrying, chiseling, transporting and paving. On the flipside, it has also increased interconnections within sub-cities. Both Samuna-ber and Lideta benefited significantly from this initiative in improving their physical infrastructure. Conversely, Weleqa, a squatter settlement, has been an outsider to such infrastructural development initiatives that include cobblestone paving. This partly explains why 73% and 34% of Samuna-ber and Lideta respondents, respectively, run, walk or cycle in and around their neighborhood, compared to just 16% Weleqa respondents ($\chi^2=32.35$; $\alpha=.001$).

Table 3.5

Respondents' assessment on physical infrastructure by sub-city

VARIABLES: PHYSICAL INFRASTRUCTURE	SUB-CITY			TOTAL
HOW SATISFIED ARE YOU WITH THE NEIGHBORHOOD?	LIDETA	SAMUNA-BER	WELEQA	
Roads connecting to inner city**	1.39 (44)	1.22 (45)	1.69 (45)	1.43 (134)
Traffic on the main road connecting to inner city	0.82 (44)	0.73 (45)	0.51 (45)	0.69 (134)
Availability of interconnecting roads**	0.59 (44)	1.13 (45)	0.93 (45)	0.89 (134)
Quality of interconnecting roads**	0.75 (44)	1.31 (45)	1.00 (45)	1.02 (134)
Run, walk or cycle around the neighborhood****	15 (34)	33 (73)	7 (16)	55 (41)

Figures in cells represent mean or number of observation (and percentiles) within sub-city. (Source: Survey, 2018)
****sig @.0001; ***sig @.001; **sig @.01; *sig @.05

These results correspond to the findings of Richards, O'Leary and Mutsonziwa (2007) in South Africa and Moses (2013) and Onyango (2018) in Kenya where informal settlement residents' demand for infrastructural development was high and satisfaction with amenities was depressed. On the other hand, cities have to be cautious in responding to these demands. As lessons from Dar es Salaam (Tanzania) show, unilaterally upgrading road network in informal settlements without protecting its organic interlinkages with other parts of the city could promote congestion, destruction of livelihoods and social capital, etc. rather than improve transport/connections within and without (Mchome 2017).

Sub-cities and their social infrastructure

When collecting information on social infrastructure, we included items (14) that touch up public transportation, telecommunication, school, hospital, electricity and potable water. With regard to public transportation, and compared to those at Lideta and Weleqa, Samuna-ber residents reported to have better access to public transportation i.e. availability ($F=12.03$; $\alpha=.000$), which they deemed were sufficient ($F=12.73$; $\alpha=.000$), comfortable ($F=10.76$; $\alpha=.000$) and safe ($F=4.00$; $\alpha=.021$). Field observation and interview with authorities ascertained that the city routes with public transportation were Arada-Piazza-College-Samuna.ber-Azezo and Arada-Piazza-Hospital-Lideta-Samuna.ber-Azezo.

This simple fact puts Samuna-ber on the route of both city-bus lines i.e. city-buses pass through Samuna-ber more often than Lideta or Weleqa. Further exploration of the issue brought to light a possible misclassification by respondents who put vehicles that provide public transportation i.e. minivan, Bajaj (tuk-tuk), bus, etc. under 'public transportation' and responded to the questionnaire accordingly. Hence, public transportation includes city-buses as well as all vehicles that provide car-pooling services for residents. After considering this issue, the findings on public transportation at Gondar – that informal settlements fare worse than formal settlements on public transportation – corresponded with the findings of similar studies on the continent (e.g. Onyango, 2018; Teffo, Earl and Zuidgeest 2019).

Table 3.6

Respondents' assessment on social infrastructure by sub-city

VARIABLES: SOCIAL INFRASTRUCTURE	SUB-CITY			TOTAL
HOW SATISFIED ARE YOU WITH THE NEIGHBORHOOD'S	LIDETA	SAMUNA-BER	WELEQA	
Availability of public transportation****	1.02 (44)	1.09 (45)	0.36 (44)	0.83 (133)
Sufficiency of public transportation****	1.11 (44)	1.33 (44)	0.51 (45)	0.97 (133)
Comfort of public transportation****	0.94 (44)	1.20 (45)	0.47 (45)	0.87 (134)
Safety of public transportation*	1.07 (44)	1.11 (44)	0.69 (45)	0.95 (133)
Telecommunications services****	0.18 (44)	0.98 (45)	0.44 (45)	0.54 (134)
Primary school access and facilities****	0.23 (44)	1.20 (45)	0.22 (45)	0.55 (134)
Secondary school access and facilities****	0.50 (44)	0.73 (45)	0.13 (45)	0.46 (134)
Preparatory school access and facilities*	0.50 (44)	0.77 (44)	0.38 (45)	0.55 (133)
Distance from home to the nearest hospital****	0.18 (44)	1.07 (45)	0.42 (45)	0.56 (134)
Availability of sufficient hospital beds****	0.45 (44)	1.23 (44)	0.84 (45)	0.84 (133)
Professionalism of hospital staff****	0.32 (44)	1.07 (44)	0.78 (45)	0.72 (133)
Quality of hospital services and delivery****	0.30 (44)	1.14 (44)	0.91 (45)	0.78 (133)
Sufficient and uninterrupted power supply****	1.14 (44)	1.62 (45)	1.62 (45)	1.46 (134)
Access to potable-water****	0.50 (44)	1.38 (45)	1.16 (45)	1.01 (134)

Figures in cells represent mean (and number of observations) within sub-city.
****sig @.0001; ***sig @.001; **sig @.01; *sig @.05 (Source: Survey, 2018)

As per residents' assessment, access to telecommunication facilities and services – landline, cellular, etc. ($F=14.43$; $\alpha=.000$) and good-standard primary ($F=36.73$; $\alpha=.000$), secondary ($F=11.00$; $\alpha=.000$) and preparatory ($F=4.11$; $\alpha=.019$) schools were all better at Samuna-ber. Furthermore, residents' satisfaction with the nearness to hospitals ($F=19.65$; $\alpha=.000$) with sufficient number of beds ($F=14.59$; $\alpha=.000$) and qualified professionals ($F=15.70$; $\alpha=.000$) who deliver health services with care and diligence ($F=17.50$; $\alpha=.000$) were also superior at Samuna-ber. Samuna-ber residents also viewed their sub-city to have significantly better access to potable-water ($F=14.16$; $\alpha=.000$) as compared to both Lideta and Weleqa. Surprisingly enough, though, Weleqa – a squatter settlement – was at par with Samuna-ber when we consider residents' subjective valuation of sufficient and uninterrupted power supply ($F=8.41$; $\alpha=.000$).

In fact, this taps into the structural challenge of informal settlements whereby authorities pro-

vided water- and electric-supply lines to squatting households without duly processing their tenure on the land. Many squatters took this as symbolic of city's legalization of their holdings (why would a city provide water and electricity if the land and house are illegal?!) and invest significantly only to enter into confrontations with the city when it later on tries to regulate what it sees as encroachments. Moreover, the city-wide chronic shortage as well as repeated/unplanned power cuts could have made Samuna-ber and Lideta residents more dissatisfied about the situation than Weleqa residents who, unsurprisingly, are grateful to even have access to these facilities/services. Weleqa residents could also access electricity informally through illegal extensions from neighbors, which are not unique to informal residents in the rest of the continent (Butera et al 2016).

With regard to schools and hospitals, the disparity observed between informal and formal settlements

in the city of Gondar were also documented in studies that investigated the situation in cities across the world and the African continent. For instance, while Spaul and Taylor (2015) show low functional literacy among primary students in informal settlements of 10 Sub-Saharan African countries; and, Ngware (2013) identified serious institutional and personnel limitations in schools to provide quality education to youth in urban informal settlement in Kenya. Similar reports (e.g. Adams, Islam and Ahmed 2015; Corburn and Sverdlik 2019) also documented how poor health facilities of urban informal settlements affect their residents' health and wellbeing.

Sub-cities and their sociocultural and political landscape

Table 3.7 presents contrasting readings about residents' appreciation of sociocultural activities in their neighborhoods. Eleven items were used to tap into residents' sociocultural community engagements, sense of community identify and belongingness, and participation in politics.

With regard to recreation and leisure, the availability ($F=1.381$; $\alpha=.255$) and family-friendliness ($F=2.92$; $\alpha=.057$) of public recreational facilities did not significantly vary among sub-cities; but Weleqa residents reported comparatively superior quality public recreational facilities ($F=6.06$; $\alpha=.003$). As an aspect of recreational facilities, on the other hand, there was no statistically significant difference ($F=.23$; $\alpha=.797$) in terms of the availability of sport facilities, however, among the three sub-cities. Here we cannot overstate the relevance of recreational and leisure activities in one's wellbeing, and the lack of differentiation among subcities reveal the general dissatisfaction among residents on public recreational and leisure facilities in the city of Gondar.

Sense of community identity and belongingness is mainly a manifestation of communal engagements and institutional structures that foster and strengthen these values. As such, Samuna-ber resi-

dents reported high sense of community ownership and/or belongingness ($F=11.66$; $\alpha=.000$) than those at Lideta and Weleqa. Accordingly, the former knew most of their neighbors well ($F=12.20$; $\alpha=.000$) and engage in communal sociocultural activities better ($F=4.43$; $\alpha=.014$) thereby increasingly identifying with fellow neighbors and community. This, however, is less likely to be due to factors such as physical proximity as, for instance, residents at Lideta felt they lived in dense neighborhood ($F=6.61$; $\alpha=.002$), while those at Samuna-ber were appreciative of their neighborhood's relative spaciousness. In fact, as Simmel (1971) argues, social geometry i.e. density seems to play a significant role. Social geometry implies that while moderate density promotes interdependence and healthy communications, very high or very low density promotes resentment or disconnection among individuals. In most slums, the inadequate space between houses (in fact, in our field observation, we noted several households, especially at Lideta sub-city, constructed sharing a wall) makes confrontation and encroachments among neighbors an everyday occurrence, which could lead to resentment as well as flight away from the neighborhood for those who can instead of promoting sense of community belongingness and identification.

Table 3.7

Respondents' assessment on sociocultural landscape by sub-city

VARIABLES: SOCIOCULTURAL DIMENSIONS	SUB-CITY			TOTAL
HOW SATISFIED ARE YOU WITH THE NEIGHBORHOOD'S	LIDETA	SAMUNA-BER	WELEQA	
Accessibility of recreational facilities	1.23 (44)	1.33 (45)	1.51 (45)	1.36 (134)
Quality of recreational facilities**	1.00 (44)	1.20 (44)	1.58 (45)	1.26 (133)
Family-friendly recreational facilities*	1.17 (42)	1.20 (45)	1.52 (44)	1.30 (131)
Availability of sport facilities	1.45 (44)	1.42 (45)	1.52 (44)	1.47 (133)
Spaciousness of settlement i.e. crowdedness**	0.18 (44)	0.69 (45)	0.53 (45)	0.47 (134)
Acquaintanceship with neighbors****	0.48 (44)	0.73 (45)	0.22 (45)	0.48 (134)
Ease of making new acquaintances	0.39 (44)	0.56 (45)	0.53 (45)	0.59 (134)
Sense of ownership or belongingness****	0.42 (43)	0.70 (44)	0.18 (45)	0.43 (132)
Community social and cultural activities*	0.02 (44)	0.25 (44)	0.20 (45)	0.16 (133)
Ever been a registered voter	27 (61)	28 (62)	31 (71)	86 (65)
Ever run for a public office	2 (5)	3 (7)	1 (2)	6 (5)

Figures in cells represent mean or number of observation (and percentiles) within sub-city
 ****sig @.0001; ***sig @.001; **sig @.01; *sig @.05 (Source: Survey, 2018)

On a related note, there was no statistically significant difference between the sub-cities in terms of the ease with which residents make new acquaintances ($F=8.808$; $\alpha=.448$), which, broadly speaking, implies limited geographic mobility among sub-cities.

Regarding political participation, neither tests on 'ever been a registered voter' ($\chi^2=.97$; $\alpha=.62$) nor 'ever run for public office' ($\chi^2=1.11$; $\alpha=.57$) at various levels of government produced statistically significant results when compared across sub-cities. Nonetheless, political participation as a registered voter was 65% (Lideta, 61%; Samuna-ber, 62%; Weleqa, 71%), while 5% run for public office (Lideta, 5%; Samuna-ber, 7%; Weleqa, 2%). Regardless of the frequency and regularity of voting behavior, the results show most people considered politics to be a relevant aspect of their lives and try to be involved in the process at least by casting their votes to those whom they think will favor their interests. Those at Weleqa were more active than those at Lideta or Samuna-ber partly due to their structural situation that could change with change in government and administration.

Sub-cities and their environment and energy use

Questionnaire items on indicators of environment/ climate and energy management (9) produced starkly varied responses from residents of the three sub-cities, and a few were statistically significantly when compared across sub-cities. Accordingly, in terms of residents' satisfaction with their neighborhood's built-up area, design, etc. ($F=8.36$; $\alpha=.000$) and availability of alternative sources of energy ($F=5.63$; $\alpha=.001$), Weleqa was significantly better-off than those at Lideta or Samuna-ber. It is, nonetheless, interesting how Weleqa – a squatter settlement – could fare better than, for instance, Samuna-ber, on the count of its improved built-up area with appropriate and socially conscious designs. Key informant interviewees from the city administration connected squatters' responses with city's persistent claim that such settlements are nuisance to an integrated, safe and inclusive city plan. They added that by saying their neighborhood's built-up area and designs meet the required standard and housing construction regulations, squatters are staking a claim for legal incorporation into city's fold.

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Compared to Lideta and Weleqa residents, Samuna-ber residents reported better satisfaction with the natural illumination of residential premises/house (F=4.16; $\alpha=.018$) as well as quality of air (F=4.84; $\alpha=.009$) and sound (F=9.11; $\alpha=.000$). The significantly low air and sound quality at Lideta and Weleqa could be associated with residents’ main economic activities. As peri-urban or rural residents administratively under the city, Weleqa residents are engaged in various agricultural and forestry activities – such as coal production, land clearing using fire, etc., which cause air pollution. The predominantly low-income households at Lideta engage in informal economy (e.g. brewing local alcohol using wood, charcoal, etc.) as a source of livelihood, which could contribute to air and sound pollutions. Households that brew local alcohol also sell their produces from their households with the potential of drunken disturbance and noisy entertainment – music – that could contribute to sound pollution in the area. Nonetheless, it is important that

though Samuna-ber is more formal than both Weleqa and Lideta, it hosts households that brew and sell local alcoholic drinks from their own residential places.

Regarding residents’ satisfaction with their settlements’ physical environment/climate (F=2.03; $\alpha=.136$) as well as management of liquid-waste (F=.48; $\alpha=.622$) or solid-waste (F=.70; $\alpha=.498$), this study found no statistically significant difference between the sub-cities. This lack of variation between the sub-cities could partly be related to (a) no significant difference in waste (both liquid and solid) management system between Samuna-ber and Lideta; (b) non-existent waste management system at Weleqa; (c) generally high-density settlements in all three sub-cities; or, (d) fewer impactful differences among sub-cities in their topographical profiles. The literature, conversely, found significant solid- and liquid-waste management problems in informal than formal settlements (e.g. Simiyu, Cairncross and Swilling 2019).

Table 3.8

Respondents’ assessment on environment/climate and energy by sub-city

VARIABLES: ENVIRONMENT, CLIMATE AND ENERGY HOW SATISFIED ARE YOU WITH THE NEIGHBORHOOD’S	SUB-CITY			TOTAL
	LIDETA	SAMUNA-BER	WELEQA	
Built-up area, design, etc.****	0.47 (43)	0.33 (45)	0.87 (45)	0.56 (133)
Physical environment and climate	0.30 (44)	0.51 (45)	0.56 (45)	0.46 (134)
Liquid-waste management	0.70 (44)	0.87 (45)	0.84 (45)	0.81 (134)
Solid-waste management	0.53 (43)	0.55 (44)	0.38 (45)	0.48 (132)
Air-quality – pollution**	0.07 (44)	0.42 (45)	0.31 (45)	0.27 (134)
Noise-level – pollution****	0.00 (44)	0.51 (43)	0.22 (45)	0.24 (132)
Natural illumination of residential premise/house*	0.05 (44)	0.36 (45)	0.25 (44)	0.22 (133)
Availability of alternative sources of energy**	0.73 (44)	1.16 (44)	1.27 (45)	1.05 (133)

Figures in cells represent mean (and number of observations) within sub-city.
****sig @.0001; ***sig @.001; **sig @.01; *sig @.05; (Source: Survey, 2018)

An aspect of the natural environment that impacts quality of life is the availability of a variety of alternative energy sources for household use i.e. cooking, cleaning, lighting, etc. Of the list of alternative sources of energy provided in the questionnaire (with an option to provide unique responses), at

least one respondent identified solar, electricity, biomass and coal/wood/dung as their frequently used source of energy for household utility. Of these four, three energy sources (solar, electricity and coal/wood/dung) were used significantly differently in the three sub-cities. Specifically, solar was used as

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one of the sources of energy by half of Lideta, while it was not popular at Samuna-ber (26%) or Weleqa (16%), and this difference is statistically significant ($\chi^2=17.85$; $\alpha=.001$). 93%, 80% and 68%, of respondents at Samuna-ber, Lideta and Weleqa, respectively, used electricity as a source of energy ($\chi^2=9.02$; $\alpha=.01$). Wood/dung/charcoal as a source of energy were used by 93%, 84% and 67% of respondents at Lideta, Weleqa and Samuna-ber, respectively ($\chi^2=10.74$; $\alpha=.01$). Conversely, only one at Samuna-ber claimed to use biomass as source of energy and the statistical difference was not significant ($\chi^2=1.99$; $\alpha=.369$). None of the residents in the three sub-cities ever utilized wind or thermal as source of energy.

Overall, the significant reliance of city residents (city=81%; Lideta=93%; Samuna-ber=68%; Weleqa=84%) on wood/cow-dung/charcoal as the source of energy could be a source of various health risks – mainly those related to respiratory system; and, residents most affected were those in informal settlements of Lideta and Weleqa. Studies documented limited access to infrastructure and services including electricity in informal urban settlements (e.g. Zulu 2012). The use of wood/dung/charcoal has been the main correlating factors in poor health outcomes among slum and squatter settlements in various developing countries (see Penrose et al 2010).

Table 3.9

Respondents' on sources of energy by sub-city

SOURCE OF ENERGY: BY TYPE (COUNTING POSITIVE RESPONSES)		SUB-CITY			TOTAL
		LIDETA	SAMUNA-BER	WELEQA	
Solar****	Yes	22 (50)	7 (26)	7 (16)	36 (30)
Wind	Yes	0 (0)	0 (0)	0 (0)	0 (0)
Underground/thermal	Yes	0 (0)	0 (0)	0 (0)	0 (0)
Electricity*	Yes	30 (68)	36 (80)	42 (93)	108 (81)
Biomass	Yes	0 (0)	1 (2)	0 (0)	1 (1)
Wood/dung/charcoal***	Yes	41 (93)	30 (68)	38 (84)	109 (81)
MOST WIDELY/ FREQUENTLY USED SOURCE OF ENERGY (COUNTING POSITIVE RESPONSES)	Solar	1 (2)	0 (0)	0 (0)	1 (1)
	Biomass	0 (0)	1 (2)	0 (0)	1 (2)
	Electricity	13 (30)	31 (70)	26 (58)	70 (53)
	Coal, wood, dung	30 (68)	13 (30)	19 (42)	62 (47)
	Total	44 (100)	45 (100)	45 (100)	134 (100)

Figures in cells represent the number of observation (and percentiles) within sub-city.
****sig @.0001; ***sig @.001; **sig @.01; *sig @.05; (Source: Survey, 2018)

As Table 3.9 presents the most frequently exploited source of energy for household utility, and respondents identified four of the possible five alternative sources of energy i.e. solar, biomass, electricity and wood/dung/charcoal. Electricity is the most regularly used source of energy in two of the three sub-cities i.e. (Samuna-ber (70%) and Weleqa (58%)) of the three

sub-cities. In these sub-cities, residents met their remaining energy needs with wood/dung/charcoal (Samuna-ber, 30%; Weleqa, 42%). At Lideta, on the other hand, wood/dung/charcoal (68%) is the most regularly used source of energy for household utility, while electricity and solar, respectively, accounted for 30% and 2% of energy use ($\chi^2=16.69$; $\alpha=.01$).

Sub-cities and their economy and housing stock

As with the rest of the indicators on quality of life, Table 3.10 depicts the general dissatisfaction of residents with their economic wellbeing and/or housing stock (12 items). But, as depicted in the table, there were variations between the sub-cities. Contrary to the findings of study on informal settlement (e.g. Richards, O'Leary and Mutsonziwa 2007) residents of Weleqa expressed significantly better satisfaction on items that tap on economic wellbeing and housing stock: better earning capacity ($F=3.12$; $\alpha=.047$); better opportunity to change occupations/jobs ($F=8.90$; $\alpha=.000$); better security and prospect of promotion in current job ($F=11.47$; $\alpha=.000$); better size/space of rooms ($F=13.63$; $\alpha=.000$) and residential holding ($F=11.64$; $\alpha=.000$); greater number of rooms in residential house ($F=9.68$; $\alpha=.000$); and, location of residential house ($F=3.71$; $\alpha=.027$). On the other hand, Samuna-ber residents were significantly and better satisfied with the ease to acquire/retain jobs ($F=9.92$; $\alpha=.000$). They also believed that they had favorable housing market – for rent ($F=18.38$; $\alpha=.000$) or purchase ($F=7.73$; $\alpha=.001$). With regard to their personal assessment on with the suitability of location of their houses, they reported significantly better satisfaction than those at Lideta – and at par with those at Weleqa ($F=3.71$; $\alpha=.027$). Conversely, residents at Lideta sub-city reported negative assessment of their economic conditions on the items included in the survey questionnaire.

A good indicator of one's economic wellbeing is his/her housing tenure status. Nonetheless, as the city administration repeatedly claims, continuous, unregulated and illegal land acquisition threaten the livability as well as the aesthetics of the city. Constructions in informal settlements fell outside existing construction and building laws since their application presumed and amounted to legality of ownership. With the city's inability to come up with adequate plan to meet the need for decent public housing or allocate land for those with the need and means to build on their own, many resorted to ille-

gal channels to acquire land from farmers in large numbers. And many without this option continued to spend their hard-earned income on rent to only occupy uninhabitable accommodations. There were also residents that 'invade' what is commonly called 'unoccupied lands' and squat.

As in many cases over the years, city's response came a little too late with successive changes in leadership at national, regional and city levels making it untimely and ineffective. This limbo allowed the squatters to grow in number and adopt militancy to any initiative of the city except, of course, legalization. The city administration was forced to legalize squatters at Genfo-quch. In a scenario where the city is partly legalizing some and partly working out a plan to deal with the resulting urban sprawl in an integrated manner, it would be difficult to find respondents who willingly will report houses as illegally constructed or inhabited.

If our data on house tenure were to produce statistically significant results, we would have been cautioned in interpreting their implications. For tenure has strong political import, people do not openly and willfully admit their illegal occupancy. The Chi-square test of association has, however, produced insignificant outputs ($\chi^2=14.48$; $\alpha=.15$). Accordingly, the majority of residents at Samuna-ber (60%), Weleqa (52%) and Lideta (43%) reported that they privately owned legally registered houses. 16%, 18% and 16% of respondents from Lideta, Samuna-ber and Weleqa, respectively, claimed that they resided in family-owned (and legally registered) houses. None of the respondents at Weleqa, Lideta and Samuna-ber reported that their houses were unregistered – either privately or family-owned – at the time of the study.

Table 3.10

Respondents' assessment on economy and housing stock by sub-city

VARIABLES: ECONOMY AND HOUSING	SUB-CITY			TOTAL
HOW SATISFIED ARE YOU WITH	LIDETA	SAMUNA-BER	WELEQA	
Earning capacity*	0.48 (44)	0.44 (45)	0.80 (44)	0.57 (133)
Sufficiency of income to provide for family	0.66 (44)	0.62 (45)	0.86 (43)	0.71 (132)
Ease to acquire/retain jobs****	0.50 (44)	1.14 (44)	1.11 (44)	0.92 (132)
Opportunities to change occupations/jobs****	0.48 (44)	0.86 (44)	1.14 (43)	0.82 (131)
Security and prospects of promotion in current job****	0.25 (44)	0.89 (45)	0.91 (44)	0.68 (133)
Housing market – rent value****	0.57 (44)	1.22 (45)	0.49 (45)	0.76 (134)
Housing market – buying value***	0.89 (44)	1.36 (42)	0.91 (45)	1.05 (131)
Size/space of rooms****	0.21 (45)	0.16 (45)	0.82 (45)	0.40 (132)
Number of rooms****	0.26 (39)	0.27 (41)	0.84 (44)	0.47 (124)
Size/space of residential holding****	0.02 (44)	0.47 (45)	0.67 (43)	0.39 (132)
Location of residential house*	0.16 (43)	0.50 (42)	0.50 (44)	0.39 (129)
Quality of house construction materials	0.49 (43)	0.60 (45)	0.33 (43)	0.47 (131)
Shopping or market place with choices of goods	0.84 (43)	0.98 (41)	1.02 (44)	0.95 (128)

Figures in cells represent mean (and number of observations) within sub-city.
****sig @.0001; ***sig @.001; **sig @.01; *sig @.05; Source: Survey, 2018

As can be read from Table 3.10, residents at Weleqa were better satisfied with the size of their holdings compared to those at Lideta or Samuna-ber ($F=11.64$; $\alpha=.000$). Table 3.11 also depicts an expected and significant statistical difference in the square meters of the house ($F=5.24$; $\alpha=.01$) with those at Weleqa (112) reporting larger holdings than those at Samuna-ber (92) and Lideta (67). There is a very weak statistical association between number of rooms and sub-cities ($F=2.44$; $\alpha=.09$). Nonetheless, houses at Lideta had fewer number of rooms (2.2) compared to those

at Weleqa (2.8) and Samuna-ber (3.0). Average monthly house-rent at Samuna-ber (867ETB; 20% of income) was higher than at Lideta (411ETB, 12% of income) and Weleqa (365ETB, 7% of income); and, this difference was statistically significant ($F=7.88$; $\alpha=.01$). As Table 3.12 shows, monthly expenditure for rent correlated significantly and positively with household income ($F=.38$; $\alpha=.05$); but household income correlated with family size ($r=.250$; $\alpha=.01$) and number of rooms in the house ($r=.29$; $\alpha=.01$), not with residential holding and house space.

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Table 3.11

Respondents' assessment on housing and rent by sub-city

SUB-CITY	HOLDINGS, SIZE AND RENT		
	RESIDENTIAL HOUSE IN SQUARE METERS	RESIDENTIAL HOUSE'S NUMBER OF ROOMS	AVERAGE MONTHLY RENT, IF HOUSE IS RENTED
Lideta	67.4 (45)	2.2 (39)	410.5 (11)
Samuna-Ber	92.2 (45)	3.0 (41)	866.7 (6)
Weleqa	112.0 (45)	2.8 (32)	365.3 (10)
Total	90.6 (135)	2.6 (112)	495.1 (27)

Figures in cells represent averages (and number of observations) within sub-city.
***sig @.0001; **sig @.001; *sig @.01; *sig @.05; (Source: Survey, 2018)

It is worth noting an anomaly here. Residents at Lideta were the least satisfied with the number of rooms in their houses despite the fact that there was no statistically significant difference in the number of rooms by sub-city ($F=2.44$; $\alpha=.092$). The survey and field observation indicated that higher family size ($F=3.62$; $\alpha=.03$), sense of relative deprivation (or, higher expectation) among Lideta residents could

partly explain why they were significantly dissatisfied by the number of rooms they inhabit in ($F=9.68$; $\alpha=.000$). Nevertheless, we need to be cautious here too, for there was a statistically significant correlation between family size and number of rooms ($r=.198$; $\alpha=.041$) – as shown in Table 3.12. It should have rather indicated that residents at Lideta had significantly greater number of rooms – which was not the case.

Table 3.12

Correlations between respondents' housing, family size and income

PEARSON'S R	LIDETA	SAMUNA-BER	WELEQA	ALL
r12	0.249*** (39)	0.135 (41)	0.450** (27)	0.198** (107)
r13	0.360** (44)	-0.001 (44)	0.413** (37)	0.250*** (125)
r14	0.093*** (44)	0.382** (44)	-0.051 (37)	0.052 (125)
r23	0.151 (39)	0.268 (41)	0.343** (32)	0.287*** (112)
r24	0.211 (39)	0.430*** (41)	0.442** (32)	0.360*** (112)
r34	-0.212 (45)	0.177 (45)	-0.046 (45)	0.020 (135)

x1. Family size
x3. Household income

x2. Satisfaction with number of rooms
x4. Satisfaction with house spaciousness

Figures in cells represent value for r – correlation – (and number of observations).
***sig at .001, **sig at *01; **sig at .05; *sig at .1; (Source: Survey, 2018)

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On the other hand, residents’ level of satisfaction on the sufficiency of income to provide for family (F=1.66; α=.194), quality of house construction materials (F=1.81; α=.167) or the availability of shopping or market places with varied choice of goods and services (F=1.81; α=.169) did not differ significantly among the sub-cities, though all residents’ reports were below average at aggregate level. Put alternatively, across the sub-cities, the majority (Lideta, 84%; Samuna-ber, 63%; Weleqa, 83%) reported to have shopping/market facilities but with limited choices ($\chi^2=11.31$; α=.02). But relatively fewer respondents from Weleqa (9%), Samuna-ber (20%) and Lideta (16%) reported the availability of shopping facilities with full range of choices of goods and services. None at Lideta, but a few at Samuna-ber (17%) and Weleqa (9%), claimed that their neighborhood did not have any shopping/market facilities.

Markets are generally universal features of social life. It is even unlikely to not have shopping/market facilities in the city of Gondar – historically represented as the Camelot of Africa and evolved as one of the major trading centers in Ethiopia. Our field observation revealed that reports by few residents at Samuna-ber and Weleqa that claim their neighborhoods did not have market/shopping facilities

could be the result of difference in defining what constitutes shopping/market facilities. The available shopping facilities were either inaccessible, modern (where goods and services that most low-income households do not utilize or cannot afford area available) or small kiosks (mostly attached to residential houses without specialty in selling goods and services). Conventionally, Ethiopian households buy their supplies in large open markets which were rare in both locations.

Sub-cities and their safety and security

Safety and security are intertwined indicators of QoL. As depicted in Table 3.13, Samuna-ber respondents were the most satisfied regarding the safety and security of their neighborhood. Specifically, they reported that their neighborhood had emergency services – for fire, flooding, etc. (F=15.12; α=.000), adequate police presence and surveillance (F=6.69; α=.002), timely and responsive police and emergency services (F=8.59; α=.000), and the cumulative effect of these positive attributes manifested in the residents’ sense of security/safety to walk around the neighborhood at night (F=4.87; α=.009). Even if it was not statistically significant, they also reported better sense of safe interactions among residents in the neighborhood (F=1.46; α=.237).

Table 3.13

Respondents’ assessment on safety and security by sub-city

VARIABLES: SAFETY AND SECURITY	SUB-CITY			TOTAL
HOW SATISFIED ARE YOU WITH THE NEIGHBORHOOD'S	LIDETA	SAMUNA-BER	WELEQA	
Emergency services – fire, security, flood, etc. ****	0.35 (43)	1.13 (45)	0.53 (45)	0.68 (133)
Availability of police service and protection***	0.36 (44)	0.84 (45)	0.40 (45)	0.54 (134)
Timely response of police and emergency services****	0.45 (44)	1.04 (45)	0.53 (45)	0.68 (134)
Sense of security/safety to walk at night**	0.91 (44)	1.40 (45)	1.02 (45)	1.11 (134)
Sense of safe human interactions	0.25 (44)	0.45 (44)	0.29 (45)	0.33 (133)

Figures in cells represent mean (and number of observations) within sub-city.
****sig @.0001; ***sig @.001; **sig @.01; *sig @.05; Source: Survey, 2018

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Sub-cities and residents’ general health status

Self-reported assessment of residents’ general health (F=4.81; α=.010) as well as their current health status compared to a year earlier (F=7.92; α=.001) generated better results at Samuna-ber than at Lideta or Weleqa. But residents of Weleqa reported that their health status improved after they moved and settled in the neighborhood (F=5.82; α=.005). This is not surprising since the neighborhood is formed recently. Residents’ overall satisfaction on all indi-

cators of health wellbeing, however, though with no significant difference between the neighborhoods (F=1.74; α=.180), was discouragingly low. A further indicator of residents’ contentment was manifested in overwhelming reports that they would prefer to stay where they were at. 77%, 72% and 68% of residents at Lideta, Samuna-ber and Weleqa, respectively, responded saying ‘NO’ to a survey item that inquires them whether they wanted to change their residence (χ²=.92; α=.63).

Table 3.14

Respondents assessment on their general health and living conditions

VARIABLES: GENERAL AND HEALTH	SUB-CITY			
HOW SATISFIED ARE YOU WITH YOUR	LIDETA	SAMUNA-BER	WELEQA	TOTAL
General health status**	0.09 (44)	0.40 (45)	0.16 (45)	0.22 (134)
Current health status vis-à-vis a year earlier***	0.39 (44)	0.87 (45)	0.59 (41)	0.62 (130)
Current health, if recently moved**	0.35 (17)	0.42 (33)	1.00 (20)	0.57 (70)
General life/living conditions	0.43 (44)	0.60 (45)	0.73 (44)	0.59 (133)

Figures in cells represent means (and number of observations) within sub-city.
***sig @.0001; **sig @.001; *sig @.01; *sig @.05; Source: Survey, 2018

At the end of the questionnaire, respondents were provided with list of factors that may impact quality of life (compiled and revised based on literature review and CMW). The list included: Environment and climate, health, safety and security, education, liberty, social life, family life, job and wealth – with a final option for respondents to include factors that they think may impact their quality of life. Respondents were asked to rank the factors in terms of their importance and finally identify the single-most important factor. Based on the survey, the following results were generated.

Except for environment/climate, there was no significant difference among respondents on the factors identified through stakeholder workshop and literature review (and included in the survey questionnaire) and their impact on quality of life. They uniformly acknowledged the factors as having

bearings on quality of life (χ²=6.14; α=.05). On the other hand, study respondents (98% at Lideta, and 71% at both Samuna-ber and Weleqa) ranked health as the single-most important factor in their QoL (see the lower half of Table 3.15). But still, there was more diversity among respondents at Samuna-ber and Weleqa than those at Lideta in identifying the most important factor. At Samuna-ber, while safety/security was the most important factor for 9% of respondents, ‘education’ and ‘environment’ were proposed each by 7% of the respondents as the most important factor. Liberty, work and family-life were also identified as single most factors in quality of life, albeit by 2% of the respondents. At Weleqa, family-life and environment were identified by 10% and 7% of the respondents, respectively. Safety/security (4%), social-life (4%), liberty (2) and work (2) were also included in the list of factors by respondents (χ²=24.61; α=.04). ♦

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Table 3.15

Respondents' on factors that impact quality of life

FACTORS THAT IMPACT QUALITY OF LIFE (COUNTING POSITIVE RESPONSES)	SUB-CITY			TOTAL
	LIDETA	SAMUNA-BER	WELEQA	
Environment and climate	44 (100)	45 (100)	44 (98)	134 (100)
Health	44 (100)	45 (100)	45 (100)	134 (100)
Safety/security	44 (100)	45 (100)	45 (100)	134 (100)
Education	44 (100)	45 (100)	45 (100)	134 (100)
Freedom/liberty	44 (100)	45 (100)	45 (100)	134 (100)
Social life	44 (100)	45 (100)	45 (100)	134 (100)
Job/employment	44 (100)	45 (100)	45 (100)	134 (100)
Family life	44 (100)	44 (98)	45 (100)	134 (100)
Wealth	43 (98)	44 (98)	45 (100)	134 (100)
Total	44 (100)	45 (100)	45 (100)	134 (100)
MOST IMPORTANT FACTOR IN QOL				
Environment and climate	1 (2)	3 (7)	3 (7)	7 (5)
Health	43 (98)	32 (71)	32 (71)	107 (80)
Safety and security	0 (0)	4 (9)	2 (4)	6 (5)
Education	0 (0)	1 (2)	0 (0)	3 (2)
Liberty	0 (0)	1 (2)	1 (2)	2 (2)
Family, social life	0 (0)	1 (2)	6 (13)	7 (5)
Job and possessions	0 (0)	1 (2)	1 (2)	2 (2)
Total	44 (100)	45 (100)	45 (100)	134 (100)
*Figures in cells represent the number of observation (and percentiles within sub-city). (Source: Survey 2018)				

PART 5

CONCLUSIONS AND IMPLICATIONS

This study was conducted in the city of Gondar covering three sub-cities – Lideta, Samuna-ber and Weleqa. Based on data collected through survey, key informant interview, workshop and document review, it assessed the different dimensions of QoL in informal settlements and estimated how residents fare with those in Samuna-ber. The study found informal settlements – Lideta (slum) and Weleqa (squatter settlement) – were not deprived economically or culturally capitals, while those in formal settlement – Samuna-ber – had better social capital i.e. interconnections and sense of belongingness to the community. However, in various indicators of personal and environmental QoL, residents in informal settlements were found to be deprived and this has significant impact on their personal assessment of their neighborhood’s livability.

Both in terms of access to quality physical and social infrastructure and services, residents’ level of satisfaction in Samuna-ber was found to be significantly higher compared to both Lideta and Weleqa (informal settlement). Either the remoteness (in the case of Weleqa) or crowdedness (in the case of Lideta) might be accounted for such a difference. Nonetheless, regardless of their deprivation, we did

not find any significant difference between formal and informal settlements in terms of their wishes to change their residence, which shows their attachment to their residence. This has significant implication for any urban upgrading or development plans by private or public agencies. There has to be, thus, a sustained and inclusive dialogue with residents to ensure their concerns and wishes are heard and represented in any development ventures. This is because any single-handed venture, regardless of its noble and superior planning, is most likely to face open resistance, or overt social apathy at best.

To create such a platform, the city administration can use its existing structure as well as include private actors for ventures investment. There are several real state companies, private developers, etc. that could fill the gap in public finance and technical capacities. Specifically, since large families with strained livelihood structure live at Lideta, urban upgrading should consider enabling access to loans or credits with no or less and longer-term payback clause. These loans or credits could be injected into the residents’ small-scale businesses as the majority of the residents were self-employed; this will also serve as enabler for urban upgrading. ♦

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