

# SES

Social Inclusion and Energy Management  
for Informal Urban Settlements

## CITY PROFILE GONDAR

Atsede D. Tegegne, Mikyas A. Negewo, Meseret K. Desta,  
Kumela G. Nedessa, Hone M. Belaye



Funded by the  
Erasmus+ Programme  
of the European Union



# CITY PROFILE

## GONDAR

Atsede D. Tegegne, Mikyas A. Negewo, Meseret K. Desta,  
Kumela G. Nedessa, Hone M. Belaye

### Funded by the Erasmus+ program of the European Union

The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

The views expressed in this work and the accuracy of its findings is matters for the author and do not necessarily represent the views of or confer liability on the Center of Urban Equity.

© University of Gondar.



This work is made available under a Creative Commons Attribution 4.0 International Licence:  
<https://creativecommons.org/licenses/by/4.0/>



## CONTENTS

<b>PART 1</b>	
<b>Introduction</b>	<b>4</b>
<b>PART 2</b>	
<b>History and Physical Environment of Gondar</b>	<b>6</b>
2.1 Historical Development	7
2.2 Physical Environment	9
<b>PART 3</b>	
<b>Economy and labor markets</b>	<b>12</b>
<b>PART 4</b>	
<b>Demographic growth and migration</b>	<b>15</b>
4.1 Population size and growth	15
4.2 Fertility and Mortality levels	15
4.3 Migration	15
4.4 Age-Sex composition	16
<b>PART 5</b>	
<b>Spatial distribution of informal settlements</b>	
<b>PART 6</b>	
<b>Future development plan</b>	<b>19</b>
6.1 An Overview of the Gondar City Plan	19
6.2 Proposed interventions	21
6.3 Structural Elements of the Land use	23
6.4 City-region, long-term boundary and development frame of Gondar city	23
6.5 Synthesis of the plan	25
References	28

---

## PART 1 INTRODUCTION

The city of Gondar is situated in North-western parts of Ethiopia, Amhara Regional State. It is at 12°3'N latitude and 37°28'E. Gondar is located at 727 km from Addis Ababa, the capital city of federal government of Ethiopia, and 120 km from Bahir Dar, the capital city of Amhara National Regional State. Gondar has a total area of 192.3 km<sup>2</sup> with undulating mountainous topography. According to the 2007 National Population and Housing Census, Gondar consists of a total of 50, 817 housing units. Gondar is the center of political and economic activities of the North Amhara region and it is main city of the North Gondar Zone. The city is classified into 12 administrative sub-cities, which have their own legislative, executive and judiciary organs.

Gondar has one of the largest urban populations in Ethiopia. According to the Central Statistics Agency (CSA) population projection (2013), the population of Gondar was estimated to be 323,875 by 2015 and to be increased to 360,600 in 2017. Since Gondar is a major destination for urban-rural migrants in North West Ethiopia, migration contributed to population growth in the city.

Gondar is a major tourist and business hub in North-West Ethiopia. Among many tourist attraction sites of Gondar, Fasiledes Castles within the city and the Semen National Park, located 120 Km to the north west of Gondar can be found. The city earns a significant amount of money from hotel and tourism. Trade is also a key economic activity in Gondar. The city's success in trade is attributable to the surrounding areas, for instance, Metema, and Humera that produce cotton and sesame. In comparison, manufacturing has not only contributed

the least to its GDP (only 7%) but also generates a little number of jobs (EMUDHC, 2015:24).

However, unlike other cities of Ethiopia, agriculture's share in Gondar's aggregate product is more visible as a considerable number of farmers live within its boundaries. This is because the city administration recently annexed some rural *Kebeles* to its structure. Thus, the inner city of Gondar is dominated by built-up areas while in peri-urban areas agriculture is the dominant occupation. Even though recent urban planning categorizes urban land use into commercial, residential, and agricultural/industrial sectors, one cannot easily find such clear demarcations on the ground. In this hastily modernizing medieval city, commercial and residential places mesh. It is usual to find a household unit divided for commercial and residential activities whereby household members share the chores in both sectors.

The city of Gondar's development and expansion followed axial pattern with a generally slow urban growth rate especially in the late 20<sup>th</sup> and the beginning of 21<sup>st</sup> centuries. Unemployment in the city remains high especially amongst the youth, including those with a university degree. An informal settlement has expanded. The number of orphan and vulnerable children is unacceptably high (SOS, 2016). As Gondar is striving to respond to its challenges, a comprehensive understanding of the historical development of the city, its current situations, and major development challenges of the city would have immense importance. The paper, thus, describes the historical, economic, and development situation of the city, to point out the pressing policy issues in the city's growth in general and social and energy inclusion issues in particular.

CITY PROFILE  
GONDAR

This report is organized into seven sections. The first one, including this part, mainly deals with the introductory part of the city. Section two describes the geo-spatial location, climate, and historical development of Gondar. Section three presents the main features of economy, and labour markets of the city. Section four describes the demographic characteristics of Gondar's population and the relevant factors that affected the size and composition of the population. This is followed by a mapping and description of the informal settlements in Gondar. The last section mainly focuses on the future development plans of the city as well as proposed interventions to respond to the development challenges of Gondar. ♦

## PART 2 HISTORY AND PHYSICAL ENVIRONMENT OF GONDAR

### 2.1 Historical Development

Gondar is one of the few urban centers that still exist as attested by the available literature on the history of urbanization in Ethiopia. Although urbanization processes took place prior to the 20<sup>th</sup> century, most of the towns vanished due to geographical, political, and economic factors availed in the country. A prolific author, Richard Pankhrust wrote about Gonder in 1990 how the city of Gondar was established. He noted that the establishment of Gondar marks as the first truly fixed capital since early medieval times and goes down in Ethiopian history. As an important turning point, Gondar rose in the late 17<sup>th</sup> century and witnessed a notable renaissance of Ethiopian civilization, which had an impact in and around the city and the lifestyles of its people.

Emperor Fasiledes established Gondar by succeeding to the throne of a country in turmoil induced by popular protests against Emperor Susneyos's acceptance of the Roman Catholic faith. Emperor Fasiledes took prompt steps and almost immediately restored Orthodox Christianity as an official State religion, and fired the Portuguese Catholic Patriarch Afonso Mendez into exile in Goa, India. He followed a closed-door policy, which isolated Ethiopia for centuries to come. According to records, Fasiledes requested the Funj king of Sinnar in the Sudan, the ruler of Mocha (Mukha) across the Red Sea in Yemen, the pasha of the Sudanese port of Suakin and the Egyptian authorities in Cairo not to allow Europeans to pass their territories towards Ethiopia. Historically, trade must have been a significant, even a key element in Gondar's success (Munro-Hay, 2002). The site lay on routes that connected the commerce of many of the lost provinces of the for-

mer empire of the Kings of Kings of Ethiopia, from *Enarya* in the south, to *Massawa* on the northern coast. Gondar looked – to its misfortune at times – westwards towards the Sudan, the kingdom of the Funj sultans centered at Sinnar, and so to the Nile trade. To the east, it traded as far as Yemen, where it linked into the international commerce directed towards Europe. Coffee from the south of Ethiopia went via Yemen to the western world.

It is worth noting that the period of Fasiledes was a shrunken empire in Ethiopia, and Gondar was reasonably accessible from all directions. In the fourth year of his reign (1635/36), king Fasiledes fixed his residence at Gondar. Gondar was seemingly central to Christian Kingdom of the time. Particularly, it was an important province of Tigray and Gojjam, although the customary camping spots of the peripatetic court and some of the royal residences had often lain considerably further south and east.

Fasiledes was seemingly a stable reign who consolidated Gondar as a royal residence and enabled his son, Yohannes I (1667-82) to build Gondar. Probably at his command, two attractive buildings, which still survive, were erected. Emperor Yohannes, like his father, preferred segregation for Muslims and Jews although they decided to dwell in separate quarters of the town. Yohannes I still spent a great deal of his time out of Gondar, employing *Yebaba*, south of Lake Tana and *Aringo*, east of the lake, as his summer capitals. *Aringo* and *Yebaba* remained in favor through several subsequent reigns.

Despite the summer campaigning and the other residences, from Yohannes' time onwards, Gondar was

the chief royal residence. Nevertheless, Gondar was preferable for the rainy season. When the weather was more clement, most kings went on long and frequent tours of inspection or conducted military campaigns and royal hunts all over the kingdom. They were often absent from the city, residing in tents or in other royal residences. However, when Iyasu I (1682-1706), the third emperor, continued the building at Gondar, it firmly established the city as the imperial city. The emperor went regularly to and from his city of Gondar, to wars, synods, and to visit the churches on islands in Lake *Tana*. There, *Shaqla Manzo* became a favourite resort with a palace, church and fortification in the Gondar style. The successive emperors in Gondar succeeded one after the other, embellishing the castles and churches, building new ones, until the compound as we see it today was completed. However, there were more buildings, some substantial, that have collapsed and fallen into ruin. Over time, at Gondar, a complex city and court life succeeded parallel to the old custom of constant campaigning from a capital of tents. Urban activity flourished as Gondar grew larger and larger. We must imagine the whole area something with activity, with innumerable tents and temporary buildings filling up the now empty courts. The silence and emptiness of the courts today offers an entirely false impression of the Gondar castles.

Emperor Bakaffa's chronicler refers to Gondar as the city of peace. A stable throne in a more-or-less permanent capital encouraged the development of activities of peace. There was a flowering of arts, literature, trade, and industry. Gondarine artists, encouraged by the patronage of emperors and empresses, particularly Mentewab, produced splendid manuscripts on parchment with fine illustrations. The Ethiopian Jews, *Bete-Israel* or *Felasha*, who lived near Gondar in their own quarters called *Felasha-Bet*, became involved in many of the city's local industries such as pottery, blacksmithing, thatch- and cane-work and building. Tradetoo,

flourished and, Gondar became an important market for agricultural products from its surrounding area, as well as a long-range luxury market and caravan center for goods passing to and from Adwa and *Massawa* and the Sudan, or to the south to *Enarya*, *Kaffa* or *Janjira*. There were bi-weekly markets in the city.

The socioeconomic, cultural, and political decline of the monarchy and Gondar begins with the death of Emperor Bakaffa and coronation of his son, Iyasu II, who also died soon afterwards ushering in a period of gradual deterioration. The two minors – Iyasu II and Iyoas – conducted a few major campaigns beyond the requirements of general maintenance of order and disciplining of regions that fail to offer tribute. During Iyoas and his successors, a great king-making *Ras* (approximately equivalent to Duke) usually dragged the emperor with him on his campaigns. From a royal residence for the reigns, Gondar rose to the status of capital city for emperors, only to become, in the end, their prison. The control of the emperors grew feebler. The great feudatories, *Ras* or *Dejazmach*, who ruled the important provinces, waxed ever stronger and brighter.

The nobles in the early Gondar period were, as in the past, almost entirely subordinate to the Emperor whose great power arose from his absolute control over his subjects' wealth. Every feudatory under his command was, therefore, obliged to serve him in time of war at his own expenses and to furnish him with soldiers in proportion to the estate he gives. In the fullness of time, however, the decline of monarchy follows the rise of Gondar. This enabled the nobles in the second half of the 18<sup>th</sup> century to seize most of the power hitherto wielded by the sovereign.

In the second half of the 18<sup>th</sup> century, the internal situation in Ethiopia reached a pitch of disorder designated as *Zemene Mesafint*, the 'Era of Princes'. During which several provincial chiefs became virtually independent and established dynasties of

their own. Nominally, however, emperors continued to reign with considerable ceremonial deference although they were little more than puppets in their power over the chiefs. Some of the newly independent chieftains, however, were reluctant to humble themselves in the traditional manner for the emperors' nominal overload. Emperors came and went in fast succession. To make the contrast clear, there were 26 reigns of 19 emperors during the 86 years *Zemene Mesafint* after Iyoas' death in 1769. In the 86 years before 1769, there were 8 reigns of 8 emperors, while there were, 7 reigns of 7 emperors plus the interim of the Italian occupation (1936-1941) during the 86 years after 1851. This period was a time of disunity, civil war, and in some ways cultural regression.

The great feudal lords who soon divided the decaying empire into private fiefs still needed, or at least still employed, the old theory of the Solomonic principal to support their pretensions. They accordingly made use of the ready supply of captive imperial puppets exiled at the *Amba* or steep-sided mountain of *Wahni* northeast of Gondar. There, theoretically, all make children of kings of the 'Solomonoid' family where they interned so as not to offer any threat to the throne. The imperial idea remained valid, celebrated by the records with an increasing sense of unreality. That is why the chronicler Alaqa Gebru wrote of TekleGiyorgis, a puppet emperor who ascended to the throne five separate times between 1799 and 1800 at the behest of the 'Princes.' Indeed, history remembers TekleGiyorgis as the last emperor who was occasionally able to take action on his own initiative even though he was nicknamed *fetsame mengist*, 'End of the Government,' or perhaps rather 'End of the Monarchy.'

Things remained the same until 1864 when Tewodros came to power. Tewodros was not from the old Solomonic line – although he fashioned a pedigree to conform to the requirement – nor did he have any desire to retain the capital at Gondar. He rather chose *Debèrè Tabor* and *Meqèdela*. His

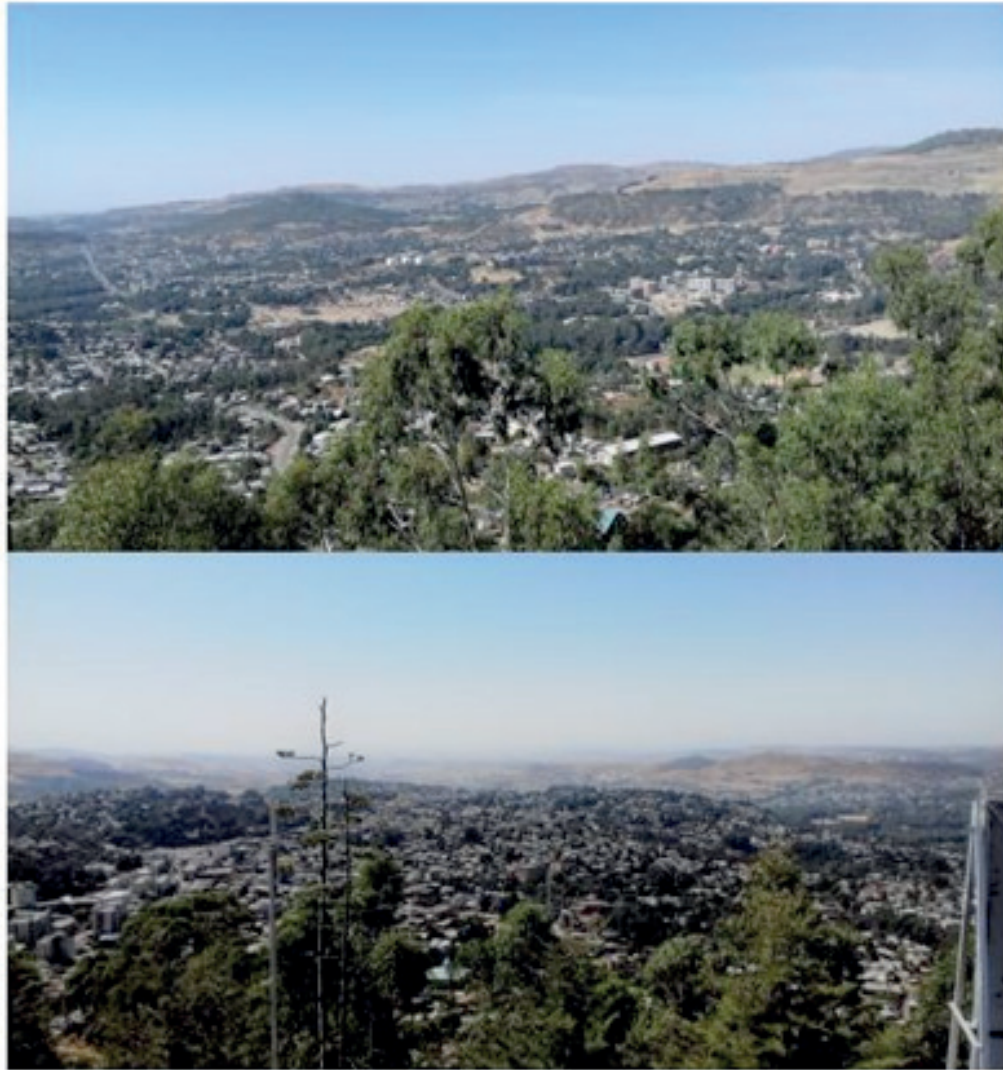
successive use of these two capitals – and his armed attacks on the city of Gondar on two separate occasions (1864 and 1866) – finally sealed the fate of the old city, which, unable to survive the collapse of centralized imperial power, had been declining for a little over a century. He had a protracted relationship with the clergy in particular when he planned to the resources at the disposal of the church. Following Tewodros' defeat at the hands of British forces, the Mahadists of Sudan ravaged, burned and looted what remained of Gondar and Azezo in 1888. Gondar, which fortified its status as an empire-wide capital, thereby lost most of what was left of its old political, commercial and religious importance. The city was eventually abandoned by many of its clergy as well as the traders and craftsmen.

The Italians, who occupied Gondar on 1 April 1936, restored much of the imperial city, and installed their offices in the remaining The Fasil Castle is currently under restoration; steel girders support the castles of Bakaffa and Mentewab. With the recognition of the Fasil Gibbi as one of the wonders of the world by the UNESCO, the Organization is the main sponsor of these projects.



**Figure 1**

Current partial images of Gondar city



## 2.2 Physical Environment

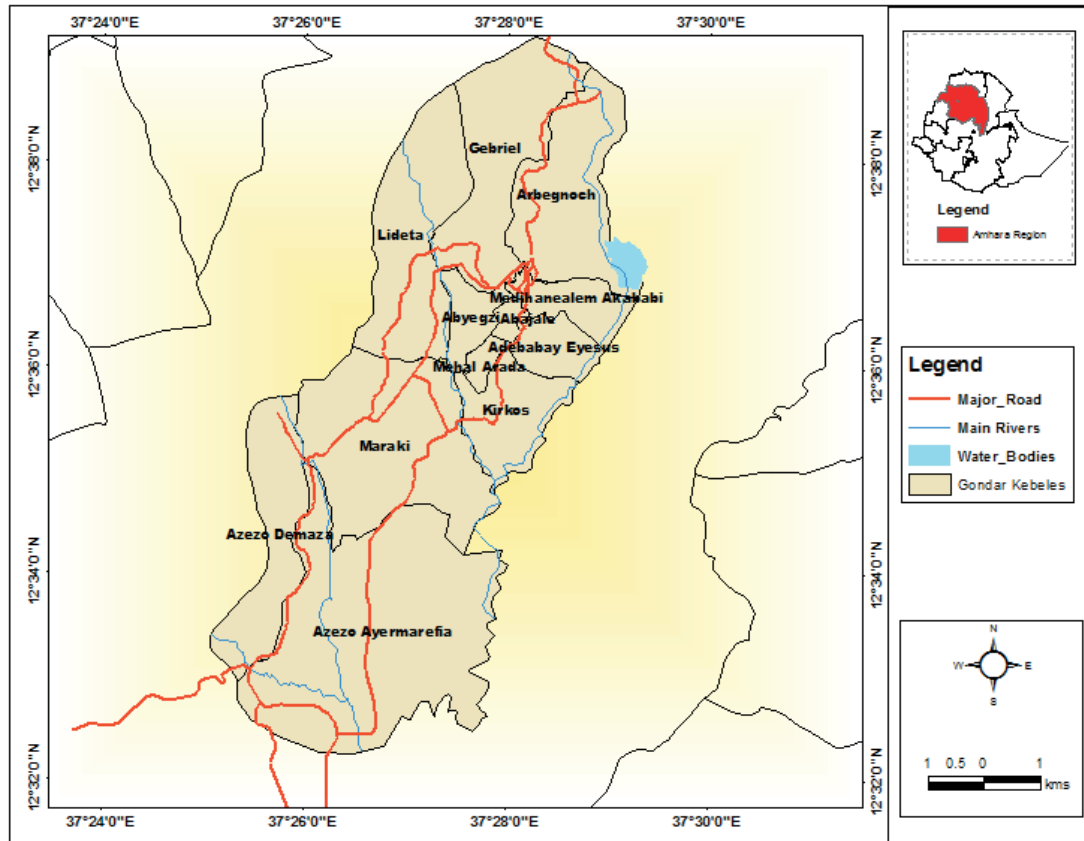
### 2.2.1 Location of Gondar

The current city of Gondar geographically, is situated in Northwestern highlands of Ethiopia, Amhara Regional State at about 12°3' N latitude and 37°28' E. It is located at a distance of 727 km. from Addis Ababa, which is the capital of Ethiopia, and 120 km from Bahir Dar, main town of Amhara National Regional State. The main road from Addis

Ababa (from the south) via Bahir Dar continues to Gondar northwards to Adwa and Aksum, and westwards to Metema and Sudan. In the northwest direction, Semien National Park, a world heritage site registered by UNESCO is situated at about 120km. Gondar has a total area of 192.3 km<sup>2</sup> with undulating mountainous topography.

**Figure 2**

Geographical location of Gondar city



Gondar city is situated in the foothills of the Semen (or Northern) mountain chains at an average elevation of 2200 meter above sea level surrounded by a crown of 3,000-meter high mountains in three sides. To the south, the landscape opens to a valley and distant views of Lake Tana, source of the Blue Nile.

### 2.2.2 Climate

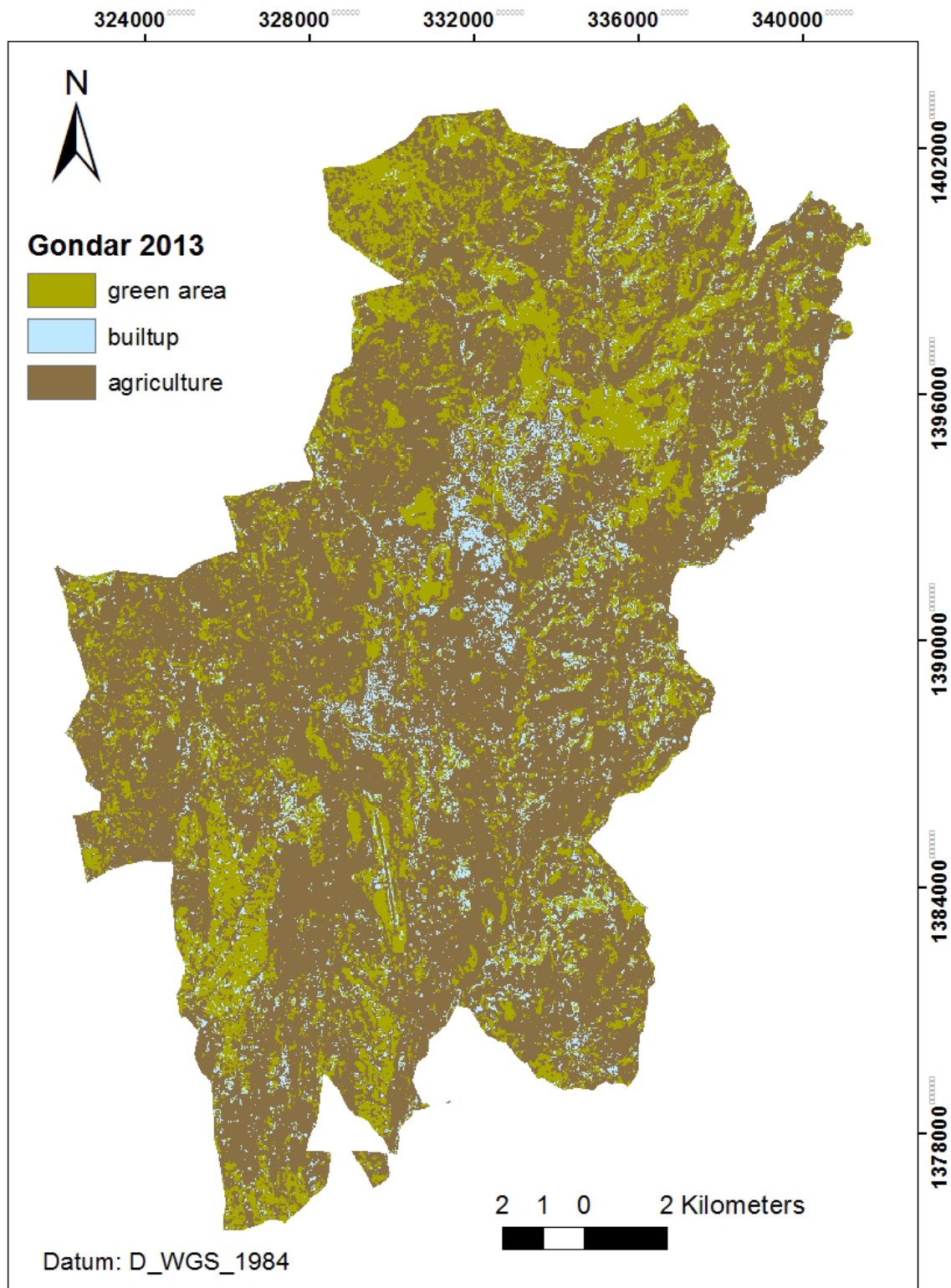
Rainfall of Gondar city is erratic and characterized by fluctuations. Under normal condition, it deviates from mean value. The mean annual rainfall in Gondar city has been 1025mm in the past 26 years. However, there were great variations in between years. For example, the annual rainfall between 1980-1992 was 977.3mm while it was 1073.6mm between 1993-2005. The highest rainfall record of

the past 26 years was in 1980 with 1312.7mm value while the lowest rainfall value was observed in 1992 and accounted for 719.9mm

### 2.2.3 Land use types of Gondar

Gondar can be characterized by three major land use types namely agriculture, built up and green areas with paved, asphalted and all weather roads. Error! Reference source not found. below indicates that the inner city of Gondar is dominated by built up areas while in periurban areas, agriculture is dominant. Green areas are gradually diminishing while other land use types are expanding (Kassie et al, 2016). In the figure, the land use types include the peri-urban (rural kebeles) which are recently included in City administration. ♦

**Figure 3**  
Main land use types of Gondar and its surrounding



## PART 3 ECONOMY AND LABOUR MARKETS

During the Gondarine period (1636-1866), the peasantry constituted by far the largest and economically the most important section of the population. Peasant life over the centuries probably changed only slowly, but the development of Gondar in the 17<sup>th</sup> century resulted in the commercialization of agriculture in the neighbouring areas. James Bruce described *Wagera*, to the north-east of the city, as the ‘granary’ of Gondar while the district of *Chagassa* was ‘rich and well cultivated’ for it depended on the city, ‘the mart of its produce.’ The *Agaws* traveled hundreds of miles from south of Lake Tana. They sometimes arrived in the city with cattle, honey, butter, wheat, hides, wax and other commodities. There was even some production of grapes for the city, notably in the border regions of *Drida* and *Karutta*. Notwithstanding some commercialization in the Gondar area, there is no evidence of any significant change in farming techniques during this period, certainly nothing comparable to the *Agricultural Revolution* of the then Europe. Consequently, production and productivity were low.

The peasantry kept facing numerous problems. Many farmers had to contribute half their produce to landlords who in return furnished them with seed. Bruce observed that it was ‘a very indulgent master’ who did not take ‘another quarter’ for the risk he had run and the quantity retained by the peasants was ‘not more than sufficient to afford sustenance for his wretched family.’ The peasants suffered furthermore from ‘the greatest’ of all plagues i.e. ‘bad government’ which, according to Bruce, speedily destroyed all the harvest reaped from favorable climate and soil.

The peasantry in the second half of the 18<sup>th</sup> century suffered frequently from the ravages of civil war. Bruce describes many a scene of devastation. Bruce reported of approaching the Blue Nile in 1770 and observing the whole country was forsaken, the houses uninhabited, the grass trodden down and the fields without cattle. Everything that had life and strength fled before that terrible leader, and his no less terrible army; a profound silence was in the fields around us.’ In proceeding a little farther, he found ‘the houses all reduced to ruins, and smoking like to many kilns. Even the grasses, or wild oats, which grew very high, burnt in long plots of a hundred acres altogether; everything bore the marks that Ras Mikael was gone before, whilst not a living creature appeared in those extensive, fruitful, and once well-inhabited plains. An awful silence reigned everywhere around.’

According to Pankhrust, such scenes were common. Gondar emerged as a major commercial center. It was the site \ where a wide, spacious market flourished near the principal Palace where all the merchants met and everyone had their ‘proper place.’ This fair lasted from morning to night and dealt in all sorts of commodities. Muslims largely dominated the trade in the city as in many earlier commercial settlements. The sizable Muslim population lived on one side of the settlement. The principle of urban segregation – for Muslims and Falashas – received official sanction during the reign of Emperor Yohannes I in 1668. Besides Muslim traders and agents, a number of Armenian and other foreign Christians served in a similar capacity. Subsequently, Gondar hosted many commercial centers: *Addis Alem*, *Tanguri*, *Enfraz*, etc.

Trade dominates economic activities in the city of Gondar today, while its recent expansions to the peripheries integrated populations mainly focused on agricultural activities. The surrounding areas such as *Metema* and *Humera*, produce cotton and sesame, creating employment for thousands of inhabitants and generating foreign currency through market oriented cash-crop production. Consequently, the average annual as well as per capita investments were relatively higher in Gondar than it was for Bahir Dar, Dilla and Jimma which are located in resources rich regions with some commercial agriculture. In addition, Gondar had higher average capital per project (as well as employee) comparable to rates in Kombolcha, Bishoftu, Bahir Dar and Axum (EMUDHC, 2015:44).

As it is the case with other urban centers, the rise and decline of Gondar had probably as much to do with its capacity to produce goods and services that were in demand outside its boundaries as it had to do with the effects of wars and environmental disasters. It is those functions that meet the needs of the external market that enable urban centers to earn their incomes and, in so doing, help them grow. Depending on the nature of their principal functions, urban centers may play important roles as agents of social, cultural, economic and political change. No systematic identification of the economic base of urban centers, however, preceded the development of cities in Ethiopia. Similarly, Gondar suffered the consequence when they cease to be government's seat, and many economic classes such as blacksmith and artisans – left the city soon after the change of the Empire's capital.

Gondar's development and expansion followed axial pattern with a generally slow urban growth rate especially in the late 20<sup>th</sup> and 21<sup>st</sup> centuries. Gondar is one of the three metropolitan cities in Amhara National Regional State with a direct link to Bahir Dar-the region's capital. Even if the recent urban planning categorizes urban land use into commer-

cial, residential and agricultural/industrial sectors, one cannot easily find such clear demarcations on the ground. In this hastily modernizing medieval city, commercial and residential places mesh; it is usual to find a household unit divided for commercial and residential activities whereby household members share the chores in both sectors.

Most of Gondar's economic activities relate to trade and commerce while, as the capital of the North Gondar Zone, public administration is also one of its core activities. The government is the main employer of the city's mainly young population while many generate income in the informal sector. Enterprises engaged in trade accounted for 54% while service-providers accounted for 27% of the total enterprises in the city (Ethiopian Ministry of Urban Development and Housing Construction (EMUDHC), 2015:39).

As a tourist destination with historical, natural, and cultural heritages Gondar's service sector expanded enormously with several hotels, resorts, travel agencies, etc. established recently. They have also created employment opportunities especially for in Tourism, Marketing Management and other graduates in hospitality fields.-In fact, community and personal services sector is one of the important categories that contribute immensely to the city's aggregate product at similar level as Hawassa, Mekelle, Bahir Dar, Adama, Jimma, Dessie and Dire Dawa with an average rate of 14% (EMUDHC, 2015:23).

Manufacturing constitutes only 7% of Gondar's GDP at the level similar as Adama, Mekelle, Bishoftu, Bahir Dar, Dire Dawa and Hawassa (EMUDHC, 2015:24). Unlike other cities of Ethiopia, the share of agriculture in Gondar's aggregate product is more visible with its expanded administrative structure that includes a considerable number of farmers within its boundaries. Urban agriculture provides employment and livelihoods to communities that also supply a variety of food products to the urban market.

The economic landscape of Gondar has not expanded sufficiently to meet the growing demand for jobs creating surplus labor market. Unemployment in the city remains high especially amongst the youth, including those with a university degree. In the fringes of the city (e.g. Azezo), it is usual to observe a pool of labourers waiting daily construction work for meager rates. Many of these youth migrate from surrounding areas seeking better opportunities as land – the most valuable resource in rural Ethiopia – becomes scarce and its productivity declines to support the increasing population. Some live in shanty houses for daily rents with poor sanitation, services and lighting around the fringes of the city. The Government of Ethiopia's recent pronouncements recognize the role of cities as engines of national economic development on account of their service for industrial development and rural-urban linkages. A modified version of UN-Habitat methodology estimates the contributions of Ethiopian cities around 40% of the national GDP.

Informal sector employment is still dominant reflecting serious shortcomings of the labour market to provide formal employment. Micro and Small Enterprises (MSEs) has significantly reduced unemployment rate with significant impact on poverty alleviation. Yet the 17.4% rate of unemployment in 2014 is still high and is more severe among the youth (22.8%) and females (24.1%) while graduate unemployment is an emerging issue that needs immediate attention. The market for the products and services of MSEs was mainly dependent on government projects such as condominium, cobblestone roads and university buildings construction. However, the transition of MSEs to medium and large enterprises has been very low. Cities should place the MSE development strategy within the wider context of Local Economic Development (LED) strategy, as this is expected to offer better chance for the sustained growth and transition of MSEs by fostering their forward and backward linkages with medium and large enterprises operating in economic sectors

linked to local resource endowments and/or their comparative advantages.

City administrations should ensure that the land, infrastructure and finance related needs of existing and potential businesses are catered for. This would require developing industrial zones based on an assessment of their comparative advantage as well as adopting planning approaches that go beyond the case-by-case planning of individual cities. Cities should be adequately empowered to operate as important units of economic decision making and supported to develop their own city development strategies (CDS). ♦

## PART 4 DEMOGRAPHIC GROWTH AND MIGRATION

### 4.1 Population size and growth

Despite Ethiopia's long history in human settlement, there haven't been precise estimates of the national total population before the 20<sup>th</sup> century (Hailemariam, 1990). Yet, the results of national censuses provide evidence of steady population growth in Gondar city over the past years. The population size grew from 112,249 (54 % female) to 207,044 with an annual average growth rate of 4.7% between the intercensal periods of 1994 to 2007. While according to the CSA population projection, the population of Gondar was estimated to increase to 323,875 by 2015 and 360,600 in 2017 (CSA, 2013).

### 4.2 Fertility and Mortality levels

High fertility level is the main demographic feature in Ethiopia. However, according to the national demographic and health surveys conducted between 2000 and 2011, total fertility rate has sharply declined to 5.4 children per woman in 2005 from 5.9 in 2000 and slowly reduced further to 4.8 in 2011. The rural-urban gap in fertility transition accounts for nearly 3 children (2.6 vs 5.5) (CSA, 2001, 2006a, 2012). Like other urban centers of the country, fertility level declined in Gondar. According to the 1994 census result, the TFR for Gondar city were 2.3 children per woman.

### 4.3 Migration

There is much uncertainty regarding data on migration in Ethiopia even at national level (de

Brauw et al., 2014). There are several reasons why information on migration in Ethiopia is relatively scarce and uncertain. Lack of effective registration systems and limitation to very few specific questions focusing on birth place or place of previous residence in national censuses and surveys are among the reasons (see for example CSA, 1995, 1999, 2010; 2006b). Such available sources provide information on inward migration as a proportion of the overall population in a destination. Accordingly, rural to urban migration is the most dominant type of internal migration in Ethiopia (26.7%) next to rural to rural migration (46.9%) (CSA, 2011).

Rural to urban migration significantly contributes to the process of urbanization in Ethiopia due to rural push factors such as lack of cultivable rural land or pulled by better social services in the urban destinations (Hailemariam and Adugna, 2011). On the other hand, due to the perceptions on potential negative impacts of rural-urban migration in the urban destinations, such as increasing unemployment, pressure on social services, squatter settlements in and around the city<sup>1</sup> (UN-HABITAT, 2010).

Over recent years, inward migration to Gondar has become ceaseless. According to the 1994 census report, of the total migrants in Amhara region (1,483,029), the share of migrants in Gondar city was about 2.7 percent (CSA, 1995). More than 50 percent of these migrants were from rural origin. More than 91% of migrants had stayed a year or more in the city. Moreover, the 2007 census result revealed that out of the total migrants to Amhara region, about 3.7% resided in Gondar city. 54.5% of these were female migrants and about 88% had stayed in Gondar for a year or more.

---

<sup>1</sup> In fact, amongst the 27 Ethiopian urban centers covered in a study, Gondar had one of the highest poverty gaps between rural and urban areas at 6.9% in favor of urban areas, which is only second to Dire Dawa (MUDHC, 2015:134).

Most in-migrants to Gondar city lack marketable skills to get a job in the public or service sectors or lack the necessary initial capital to start their own business; and, they are the ones who most likely become informal traders or daily laborers. They may also become victims of prostitution, abuse, criminalization, etc. A study by Kaleamlak (2013) stated that 33.3% of slum residents of Gondar were daily labourers while beggars, weavers and the unemployed accounted for 13.4%, 3.3% and 50% respectively with 66.7% of them earning a meagre 300ETB (approximately 12USD) or less per month.

#### **4.4 Age- Sex composition**

Besides the total population size, the age-sex composition of a population is the cumulative result of trends in fertility, mortality, and migration. Information on age-sex composition is essential for the analysis of many other types of demographic data. The age structure of the population in a city displays the dependency ratio which is the ratio of the dependent populations (children under age 15 and older people, at 65 and above) to the working age population (ages 15 to 64). Trends in total dependency of Gondar vary in intercensal periods showing decline from 74.1% to 56.6% between 1994 and 2007, which is conditional on the change in child dependency and fertility transition. The working age group population (age 15 to 64) showed 7% increase (57% to 64%) for the city during the period 1994-2007. A very young age structure of the population aged below 15 years in the city indicating demands for huge investment on education and health. Relative to the total population of Gondar, the share of the population in this young age group slightly declined from about 39% to 33% between the year 1994 to 2007. This reflects decline in fertility level of the city. Furthermore, the sheer number of the urban population who are in the early ages mean that the number of new urban residents will rise due to natural population growth. ♦



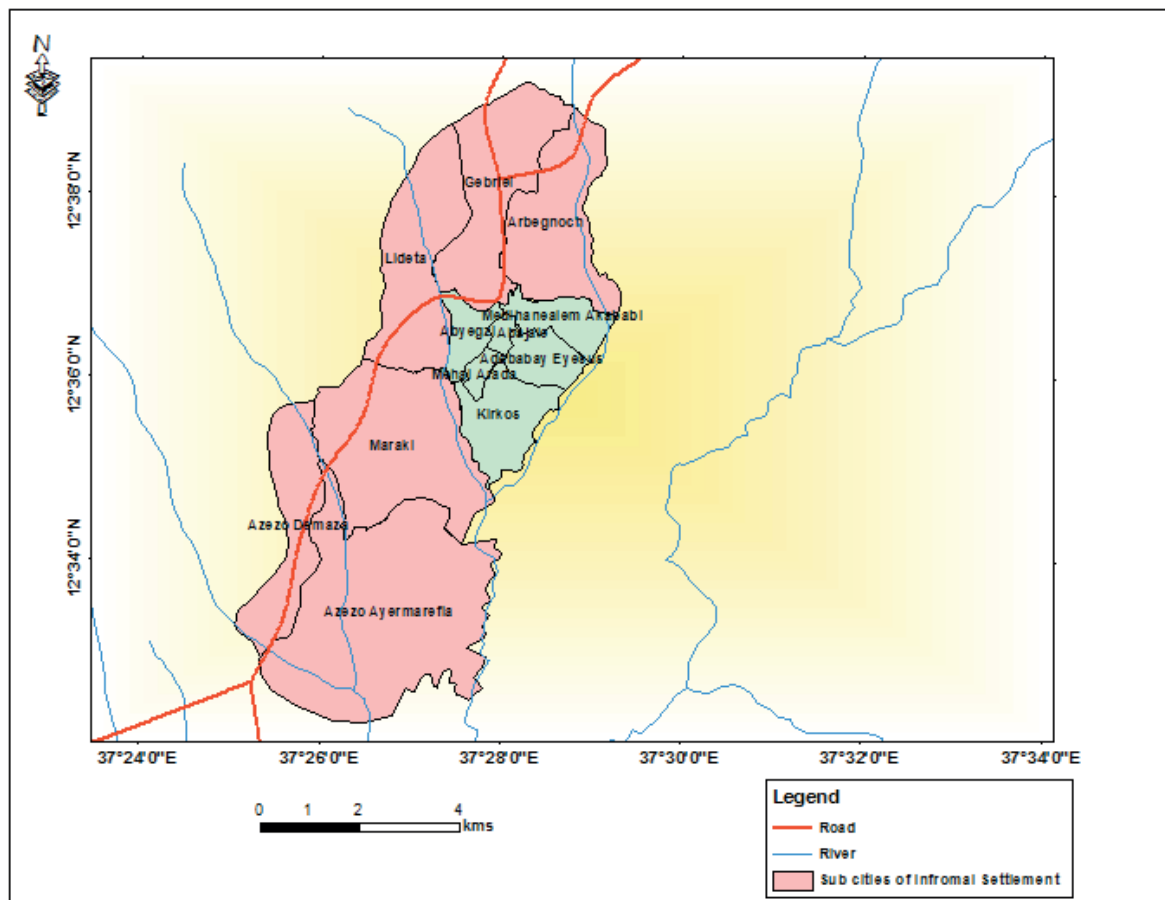
## PART 5 SPATIAL DISTRIBUTION OF INFORMAL SETTLEMENTS

As the city's population grows at alarming rate and access to urban land through formal channels becomes complicated, the number of informal settlers is proportionally increasing (Beyene & Dessie, 2014; Gebeyehu, 2016). The city municipality identified six major informal settlement sub-cities as indicated in figure 4. In terms

of area coverage, these sub-cities occupied the largest proportion of about 747 informal settlers. As it was observed, most of the informal settlers are located in urban fringes where infrastructure is not well developed. This will leave the settlers disadvantaged among urban settlers (Beyene & Dessie, 2014; Gebeyehu, 2016).

**Figure 4**

Spatial distribution of major informal settlement areas



CITY PROFILE  
GONDAR

Only 16.7% of the slum dwellers had electricity at home, while the remaining 53.3% and 6.7% use, respectively, petrol lamp or candle and none of them using electricity as a source of energy for cooking and heating. The use of biomass or firewood or charcoal increases the exposure of children for acute respiratory infections. Gondar is the second next to Jimma in the percentage of houses without electricity (20.2%) (EMUDHC, 2015:67). ♦

## PART 6 FUTURE DEVELOPMENT PLAN

### 6.1 An Overview of the Gondar City Plan

Gondar city has a 10 year future development plan (2015-2025) that aims at bringing about efficient and effective urban development and transformation, satellite towns, hinterland through integrated and balanced development. According to Gondar City Administration (2015), the plan set five major intervention strategies:

- Change: re/usage, re/vitalization, renewal, healing and mending of the existing settlements
- New: expansion, inclusion, integration, linking of new and rural developments and satellite towns and the city region:
- Urban region interface planning:  
Self realization: new spirit and new re/thinking:
- Good Governance and urban management and institutional capacity building

The plan proposes three phases of development comprising controlled revitalization, Urban renewal and densification, urban upgrading and densification and Green frame improvement. New development and densification are the two consecutive phases.

The strategies have been summarized hereunder into seven thematic areas.

*Regional, national, and international setting; Hinterland, rural economy, Urban-Rural and urban-urban Linkage; Sustaining history and tourism development; Population, household development, addressing social problems and services; Urban economy, urban finance and urban management; and Physical, geological and environmental problems*

**Reserving land:** In all themes, this strategy is stated with the aim of facilitating urban, hinterland, regional, and national economic development through establishing and promoting urban region system. It recommends reserving lands for service provision facilities (transport), educational and health services calculated for backlog and future demands in urban and rural areas of the hinterland; public urban spaces; service rendering businesses; home for the elderly, orphanage, rehabilitation centers, correctional institutions, alternative education, training and awareness centers; private investment and MSEs, retail trade in city centers hierarchically; for wholesale trade, manufacturing, hotels and restaurants; for facilities for export and import of goods to the Sudan and also Djibouti; for collection and distribution centers, storages, depots, markets, stock markets, public and freight transport terminals, routes, parking, loading and unloading, hotels, motels, and expansion of social and municipal services.

**Establishing and strengthening rural-urban and urban-urban development linkages:** This strategy focuses more on hinterlands to strengthen urban centers in the hinterland and creating a strong urban system and linkage for experience sharing, resource exchange and technical supports. Literature recommends directing physical and financial resources toward urban industrialization, in part to harness the agglomeration effects brought about by concentrating economic activity in specific geographic locations. Others argue that agriculture has strong growth linkages, both within rural areas and national economies and thus investing in agriculture generates large economy and wide multiplier effects. While urban and rural development are not

necessarily mutually exclusive, a scarcity of public resources and the need to meet both short and long-term development objectives implies that trade-offs between rural and urban investments are expected (Dorosh & Thurlow, 2014). However, such trade-off options are not clearly indicated in the plan.

***Materializing sustainable tourism industry and heritage management:*** This includes protecting, planning and revitalizing the surrounding areas of heritage sites from population pressure/density and interference of human and animal activities by delineating buffer zones (breathing spaces). It also includes undertaking periodical professional restoration works. Thus, the assumption is integrating the growth of the city with protection of heritage and cultural sites and restricting the building heights not to exceed the height of the castles as well as the Italian central command buildings. Tourism is a leverage point for Gondar as the level of diversification of the rural and urban economy. The existence of linkages between agriculture and other sectors like tourism and the variety of types of enterprise, including formal and informal households, MSEs (by size and by linkages) determine the productive structure of an economy (Proctor, 2014).

***Improving capacity for Revenue Collection and sustainable business growth:*** One of the acute problems that Ethiopian cities face is inability to collect revenue in full and on time (Ayenew, 1999). Recognizing this fact, improving collection of regional, city administration, *Woreda* and municipal revenues to have an efficient and well managed urban finance is clearly necessary. In the same vein, building the capacity to compete, providing loan, and promoting sustainable business growth and improving saving rate for start-up businesses for the socially disadvantaged are mentioned in the plan.

***Improving quality of human capital:*** Improving performance and awareness creation activities on social problems; Providing organized support for people

facing social problems and establishing follow-up and monitoring mechanisms; Strengthening efforts for reducing and addressing high prevalence of social problems and improve budget allocations are indicated in the plan. Albino, Berardi, & Dangelico (2015) argue that smarter cities start from the human capital side, rather than relying entirely on technology. Human capital, creativity, and cooperation among relevant stakeholders therefore helps to solve problems associated with urban agglomerations.

***Establishing system of data management:*** Emplace improved data management on social problems and vulnerable groups;

***Strengthening employment generation schemes:*** to increase employment opportunities in urban agriculture in urban sub-cities, rural *Kebeles* and satellite towns within the green frame and MSEs.

***Improving the Systems of Service Delivery:*** Municipal bureaucracies are criticized as being cumbersome, not service-oriented, corrupt and unable to cope with the increasing challenges of modern urban government resulting poor service delivery (Ayenew, 1999; GTZ-German Technical Cooperation, 2010; Lund, 2014). Thus, the plan puts recruiting of more and qualified staff as a requirement for city service and city administration, delivering services and building modern office facilities for the city administration.

***Appropriately Regulated Land Use System:*** This includes defining proper quarry sites, abattoir, industries, and waste collection and disposal sites. Strict regulation in accordance with existing regional and urban regulation and follow-up of rehabilitation are also important. Besides following appropriate integrated road network, transport and land use proposals within the town and green frame principle; preserving land and maintain scenic areas, strengthening and enhancing the natural setup of the city and promote rich green frame in un-buildable areas, including river banks, low-slope

areas, hills and mountains are outlined. Establishing gravity fed system for sewage and a treatment by lagoon and reserve 3.12ha land for north eastern part and another site in the south with 2ha; and provide communal VIP latrines are proposed in the long-term water supply study of the city.

## 6.2 Proposed interventions

Five interventions are proposed:

**Controlled revitalization:** this intervention works for the heritage sites with defined area for building height. The same areas are proposed to be re/developed through controlled revitalization.

**Urban renewal and densification:** These are the high density and investment potential corridors of the city.

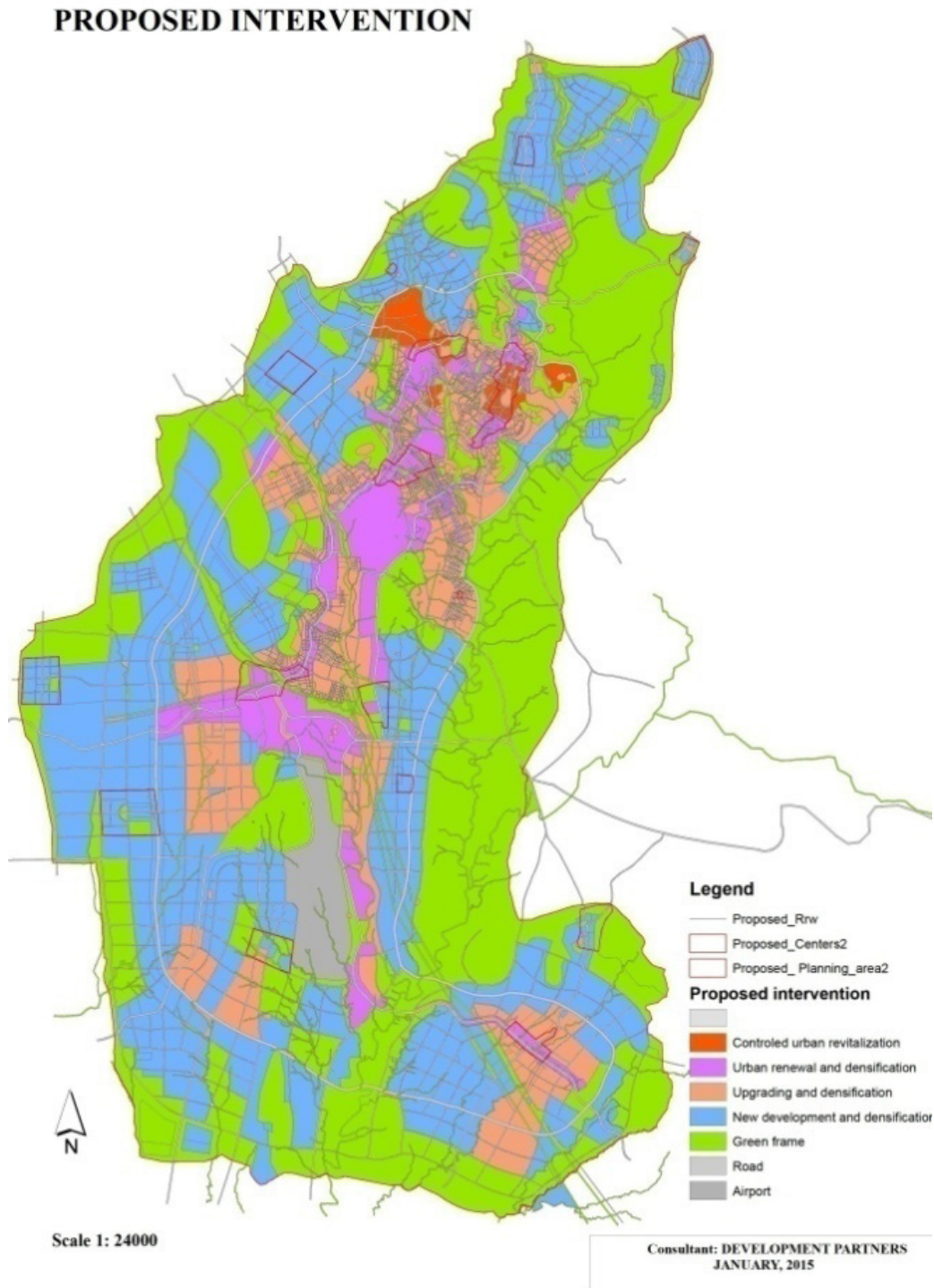
**Urban upgrading and densification:** upgrading and densification is anticipated for the immediate surroundings of the urban renewal and densification areas and the settlements in older parts of the city.

**New development and densification:** This applies for the periphery and expansion areas with ongoing development projects that have the possibility of densification or vacant areas for expansion. As to accommodate existing farmers and rural houses in these areas, adjusting the road network and providing required land uses in defined centers is set as strategy.

**Green frame:** These green frames surrounding the towns, within the towns and the city and the green ribbons are projected to be afforested, landscaped and used for farming activities.

**Figure 5**

Spatial distribution of major informal settlement areas



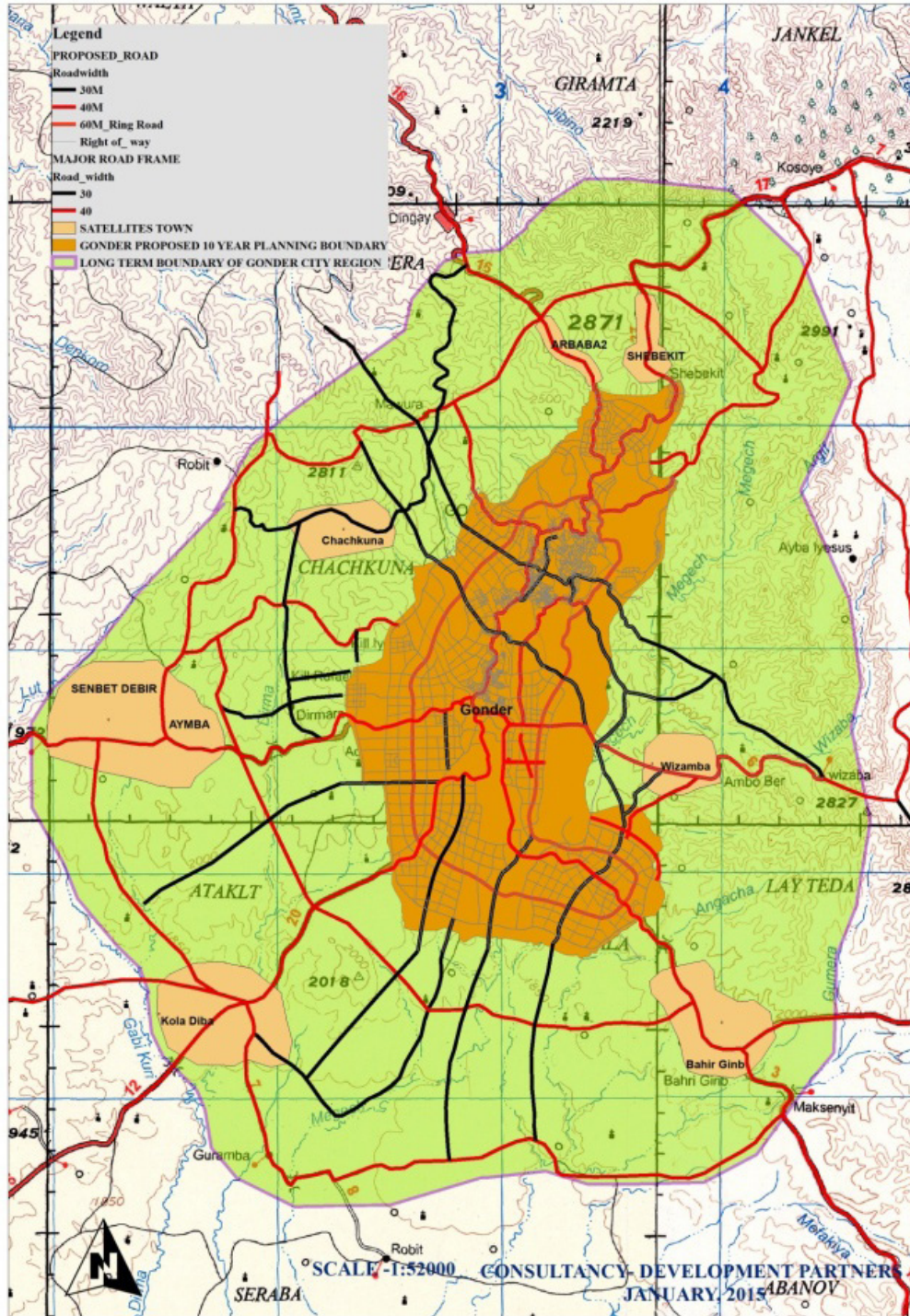
### 6.3 Structural Elements of the Land use

Decentralized development organized in hierarchies of centers is adapted as the main structuring approach of creating towns within town by using green frame in the plan. Therefore, four levels of centers are delineated: 1) Main city center 2) Sub-centers, 3) Tertiary centers and 4) Rural kebele development centers (nuclei for future tertiary city centers). All these centers have six different and basic public interest land uses: (i) commerce (ii) administration (iii) services (iv) MSEs, small scale storages and production centers (v) recreation and (vi) transport with proportional areas in accordance with hierarchy and size of population.

### 6.4 City-region, long-term boundary and development frame of Gondar city

The plan proposes th that Gondar city should follow sustainable city-region development frame witha polycentric system keeping one coherent regional unit, a clear contrast between built-up and green areas, and flexible and dynamic management. As there are towns within the city due to topography, creating towns within towns to develop as city region with seven satellite towns will be effective. These twons are: *Shembekit, Arbaba, Chachkuna, Aymba-Senbet Debir, Kola Diba, Bahir Ginb, Wiz-amba* (refer o the map). The total area of the city is calculated to be 129,000ha including green and road frame. As shown in the road proposals, the right-off way of these roads will be reserved by opening access roads and the satellite towns will expand in collaboration with Gondar city allowing the green frame to be protected as farming and supply area for both urban and rural population.

Figure 6  
 Proposed Boundary and Development frame





## 6.5 Synthesis of the plan

In this section we review the plan based on format, relevance, feasibility, adequacy of approach, and public participation.

### 6.5.1 Format of the ten year plan for Gondar city

The development of the city plan has to follow scientific methods whereby results are presented by clear documents and maps. Accordingly, the Gondar city plan document starts with summary of existing situation analyses of eight thematic issue reports and maps. That are:

- a) Regional, National, and International Setting;
- b) Hinterland, History and Tourism,
- c) Population, Household Survey,
- d) Social Problems and Social Services,
- e) Urban Economy, Urban Finance and Urban Management;
- f) Physical, Geological and Environmental Characteristics of Gondar,
- g) Land use, Housing, Land Development and Urban Growth,
- h) Road Network, Transport and Utilities. It then presents and describes the assumptions, principles, alternative and preferred concepts, intervention strategies, and proposals of the new plan.

### 6.5.2 Public participation

Results were presented to and debated among officials and experts of the city administration, stakeholders and the community in consecutive forums. First, the situation analyses reports and maps were reviewed by the Urban Planning Institute, Gondar City Administration and Sector offices, City Service office, sub-cities and University of Gondar. The outputs were presented to stakeholders on November 4, 2014 in Gondar. Written comments were given by the Institute, sub-cities, city service office, and the administration. Extensive comments were also given by participants of the stakeholder meeting: the Institute, city administration sector offices, Zone

and *Woreda* administrations, rural *Kebeles*, the community. Inputs from these forums were incorporated. The final outputs were checked by the city administration and approved for implementation. Actual participation of local people in preparation and approval process of urban development plans is tricky as it demands assessing in depth how effective are the actions in getting people to participate in the preparation and approval process of plans (Drakakis-Smith, 2000).

Such participatory approaches essentially developed out of research techniques. However, the consultation process is restricted to key figures in the community with corresponding limitation in beneficiaries dominated in most cases by functional participation with citizens being used simply as cheap labor to cut the cost to the state. Thus, the approaches range from mere lip-service to situations where the participants initiate actions themselves. In theory, the author argues the approaches can increase the flow of information for planners and enable residents to prioritize their needs and to identify development goals, and the local resources to assist in their achievement. According to Mohammed, et al (2016), If communities are not allowed to participate in the formulation and implementation of policies, that will at the end determine their (unpleasant) future. The case of Gondar is no exception.

### 6.5.3 Adequacy of approach

By adequacy, we mean flexible employment of various approaches in different stages (objectives, data collection, analysis, discussion). Our synthesis indicates that the plan adopted a hybrid approach by inter-conceptual crossovers of four concepts namely: historical continuity, grandness and greatness, a town within a town within green frame, connectivity and linkage, and green ribboned development. It recognizes differences between the concepts although it works with dynamic interplay rather than overarching synthesis. the approach seems fruitful for multi-dimensional phenomena of city planning.

The plan of the city shows the accommodation and interpretation of transcending proposals of the national, regional, hinterland urban physical, socioeconomic, road, utilities and infrastructure. In preparation of proposals for the seven thematic issues of the plan, the national, regional, hinterland urban physical, socioeconomic, road, utilities and infrastructure, new theories of urban planning and development were reported applied though not specifically mentioned. The plan also claims adopting new approaches that bring about sustainable development in the built-up city, rural *kebeles* and satellite towns, hinterland and region though again not specifically elaborated. Based on the findings of the situation analysis, the Zonal urban system is characterized by weak urban hierarchy with non-uniform distribution of population. Thus, the plan positions its main approach of regional development strategy as urban region system. It proposes upgrading some of the present small urban centers in to intermediate level and the development of other small urban and rural centers within defined urban region system and sub-systems for balanced and equitable development.

#### 6.5.4 Relevance of the plan

Three issues are discussed in this section. First. We assessed whether the plan fully recognizes the problems, requirements, sources, and opportunities based on the municipality's capacities. the second assessment is is of reliable data use in preparing the plan. Lastly and most importantly, capability to coordinate between the plan and related plans in different levels of spatial planning. The plan indicates social problems in the city and the support provided reporting to be minimal, disorganized and not responding to the real problem of the destitute.

The plan envisions Gondar becoming one city that regions together with Bahir Dar consisting of Gondar city i.e. the ten sub-cities, rural *Kebeles*, and satellite towns and Bahir Dar and its satellite towns as well as urban centers in the middle . This assumes taking

advantage of internal and external drivers to bring about transformation. The major drive is the strategic location of Gondar in terms of the existing and upcoming transport and energy projects such as the two Trans-African highway routes which connect almost all African Countries and pass through Gondar. The other driver is the Tana Catchment Development Corridor, one of the six and the most important corridors which consists of Gondar and Bahir Dar as centers. The third opportunity is the increasing status of sesame as one of Ethiopia's most important export products. Last but not least, Gondar is one of the largest secondary cities; largest commercial center, a major tourist destination , and a strong North West urban agglomeration and service center in Ethiopia. The plan also discusses issues of inclusion and informal settlements. It states that problems of informal settlements will be addressed by demolishing and allocating replacement land for the residents in the formally developed areas. Similarly, the provision of residence for the poor through community participation are proposed to be strengthened The replacements will be located at convenient sites with whereby the re-settlers can integrate with middle and high income groups. Evidence shows that (Nayak, 2013), the main cause of slum expansion in Gondar are rural-urban migration.

In summary, the plan attempts to prioritize opportunities based on analysis of the rural economy, agro-ecology, potential for agriculture, population dynamics, and economic base in relation to available social services. Accordingly, the major development opportunities of the city are varying climatic condition, surplus production; high demand of the urban and rural population for basic services and goods which mean market opportunities for Gondar city; road and transport; rivers; tourist and heritage sites and Diaspora.

#### 6.5.5 Feasibility of the plan

Considering four important variables is vital in assessing feasibility of a plan. These are compati-

bility of laws to adapt development plans to social requirements; coordination in administrative system and municipalities for approval and implementation of urban development plans; appropriate financial resources to secure capital or funding for implementation of plans and executive power and obligatory aspect of plans.

Considerable land use and land cover change around Gondar city is documented. The impact exerted on agricultural land that is driven by the intensified land use transformation due to urban land use encroachment that demands integrated holistic planning is also discussed (Belay, 2014).

In line with the Growth and Transformation Plan (GTP) (2015/16-2019/20) that acknowledges some of the challenges and limitations identified in the urban sector which call for further attentions in plan period namely poor project management (planning, implementation, follow up and contract management, monitoring and evaluation), capacity limitation, lack of integration and finance, technology gap, shortage of power supply and service, rent seeking practice, and lack of good governance (MoFED, 2016), the Gondar city plan would be ambitious. Although the GTP claims that measures helped to decrease the rent-seeking and bad governance practices in urban land administrations urban land administration remains vulnerable to rent-seeking and malpractices owing to various limitations during implementation of the cadastre system. In particular as the population of urban areas has been continually increasing, the demand for socio-economic services and employment opportunities has risen and demanded responsive strategies are needed to address implementation challenges. ♦

## REFERENCES

- Albino, V., Berardi, U., & Dangelico, R. M.** (2015). *Smart Citie: Definitions, Dimensions, Performance, and Initiatives. Ournal of Urban Technology*, 22(1), 3–21.
- Ayew, M.** (1999). *The City of Addis Ababa: Policy Options for the Governance and Management of a City with Multiple Identity* (No. 2) (p. 34). Addis Ababa.
- Belay, E.** (2014). *Impact of Urban Expansion on the Agricultural Land Use a Remote Sensing and GIS Approach: A Case of Gondar City, Ethiopia.* International Journal of Innovative Research and Development, 3(6), 129–133.
- Beyene, G. A., & Dessie, Y. A.** (2014). *Assessment of informal settlement and associated factors as a public health issue in Bahir Dar city, North West Ethiopia; a community based case control study.* Science Journal of Public Health, 2(4), 323–329.
- Central Statistical Agency (CSA)** (1995). The 1994 national population and housing census of Ethiopia. Result for Amhara region, Volume I, part III Stastical report on Migration, Fertility and Mortality. Office of Population and Housing Census Commission, Addis Ababa, Ethiopia.
- \_\_\_\_\_ (1999). Statistical Report on the 1999 National Labour Force Survey, Statistical Bulletin 225. Addis Ababa, Ethiopia.
- \_\_\_\_\_ (2013). Population Projection of Ethiopia for All Regions at Wereda Level from 2014 – 2017.
- \_\_\_\_\_ (2011). The 2007 national population and housing census of Ethiopia. Analytical report on population dynamics. Office of Population and Housing Census Commission, Addis Ababa, Ethiopia.
- Central Statistical Agency (CSA) Ethiopia and ORC Macro** (2001). *Ethiopia Demographic and Health Survey (EDHS) 2000.* Addis Ababa, Ethiopia and Calverton, Maryland, USA: Central Statistical Agency and ORC Macro.
- \_\_\_\_\_ (2006a). *Ethiopia Demographic and Health Survey (EDHS) 2005.* Addis Ababa, Ethiopia and Calverton, Maryland, USA: Central Statistical Agency and ORC Macro.
- \_\_\_\_\_ (2012). *Ethiopia Demographic and Health Survey (EDHS) 2011,* Addis Ababa and Calverton Maryland, USA.
- Central Statistical Agency (CSA) (2006b). *Report on the 2005 National Labour Force Survey (NLFS).* Addis Ababa: The Federal Democratic Republic of Ethiopia (Statistical Bulletin 365).
- Dorosh, P., & Thurlow, J.** (2014). Can Cities or Towns Drive African Development? Economywide Analysis for Ethiopia and Uganda. *World Development*, 63, 113–123.
- Drakakis-Smith, D.** (2000). *Third World Cities* (2nd ed., p. 205). Routledge.
- Gebeyehu, K. F.** (2016). Causes, Consequences And Policy Implications Of Squatter Settlement In Gondar Town In The Case Of Kebele 18. *Innovare Journal Of Social Sciences*, 4(2), 2–5.
- Gondar City Administration.** (2015). *Structural plan of Gondar* (p. 146). Gondar.
- GTZ-German Technical Cooperation** (2010). *GTZ-Urban Governance and Decentralization Programme Baseline Survey 2010* (p. 139). Addis Ababa.
- Hailemariam, A.** (1990). *Population Dynamics in Ethiopia.* Addis Ababa, DTRC.
- Hailemariam A. & Aduugna A.** (2011). *Migration and Urbanization in Ethiopia: Addressing the Spatial Imbalance.* In: Teller C, Hailemariam A (ed.) *The Demographic Transition and Development in Africa; the Unique Case of Ethiopia.* Springer, New York, pp 145-166.
- Kassie, M.D., Miret, A. and GebreAnanya, G.** (2016). *Green areas: Spatial and temporal changes in metropolitan cities of Amhara region.* Unpublished manuscript.
- Lund, R.** (2014). Urban Services and Governance: The Case of Solid Waste Management in Addis Ababa, Ethiopia. *Norsk Geografisk Tidsskrift - Norwegian Journal of Geography*, 68(3), 195–196.
- Mekuriaw Alemayehu, Kassahun Alemu, Hardeep R. Sharma, Zemicheal Gizaw and Abera Shibru.** 2014. *Household Fuel Use and Acute Respiratory Infections in Children Under Five Years of Age in Gondar City of Ethiopia* **Journal of Environment and Earth Science.** 4(7): 77-85.
- MOFED.** (2016). Growth and transformation plan II.
- Mohammed, S. J., Yehualashet, Y. W., & Dejenie, M. F.** (2016). *The Socioeconomic Impact of Urban Redevelopment in Gondar City.* *Innovare Journal of Social Sciences*, 4(2).
- Nayak, B.** (2013). *The Plight of Slum Dwellers at Gondar City in Ethiopia.* **International Journal of Management and Social Sciences Research (IJMSSR)**, 2(10), 56–63.

CITY PROFILE  
GONDAR

**Nayak**, Bimal Kanta. 2013. *The Plight of Slum Dwellers at Gondär City in Ethiopia* International Journal of Management and Social Sciences Research. 2(10): 56-63.

**Proctor**, F. J. (2014). *Rural economic diversification in sub-Saharan Africa* (pp. 1-24). London. Retrieved from <http://pubs.iied.org/14632IIED>

**Tilaki**, M. J. M., & Marzbali, M. H. (2014). *Developing a criteria framework for evaluation of the urban development plans in Iran: Bridging the gap between knowledge and action*. Journal of Urban and Environmental Engineering (JUEE), 8(2), 232-241.