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# **Public Facilities Services from Planning Perspective (The case of Debre BirhanTown, ANRS, Ethiopia**

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## Acronyms/Abbreviations

AA	Addis Ababa
AMP-DB	asset management Plan of Debre Birhan Town
ANRS	Amhara National Regional State
ASDR	Age Specific Death Rate
CSA	Central Statistical Authority/Agency
DB	Debre Birhan
DBU	Debre Birhan University
EBCS	Ethiopian Building Code Standards
EEPCO	Ethiopia Electric Power Corporation
EEP	Ethiopian Electric Power
ECSU	Ethiopian Civil Service University
EIA	Environmental Impact Assessment
EMA	Ethiopian Metrological Agency
EPE	Environmental Policy of Ethiopia
GER	Gross Enrolment Ratio
GFR	General Fertility Rate
GMFR	General Marital Fertility Rate
GRR	Gross Reproductive Rate
Ha	Hectare
HH	Household
HIV	Human Immunodeficiency Virus
HU	Housing Unit
IMR	Infant Mortality Rate
Kebele	The lowest administration unit in the municipality structure
m.a.s.l	meter above sea level
MoUDC	Ministry of Urban Development and Construction
MoUDHC	Ministry of Housing, Urban Development and Construction
NGO	Non Governmental Organization
NUPI	National Urban Planning Institute
RES	Reservoir
RUPI	Regional Urban Planning Institute
RH	Relative Humidity
SP	Structure Plan
SWOT	Strength, Weakness, Opportunity and Treats
TFR	Total Fertility Rate
UN	United Nation
WHO	World Health Organization

## **Abstract**

*Like in any other developing countries, urban centers in our country are growing rapidly and residing a lot of people. Consequently, alleviation of urban problems has already become one of the prime agenda and attracts the attention of decision makers at all levels (Federal, Regional and City Governments). With such understanding scholars, practitioners, federal and regional governments are giving attention for solutions emanated from scientific research. Accordingly, this study has given a focus to undertake situational analysis on public facility provision in Debre Birhan Town in order to compile all relevant data, generate information and document them to enables city planners and engineers understand very well the context and to give required information for municipality administrators which capacitate them in their day to day activities of the town particularly to respond for infrastructure demand. In light of this all necessary data based on scientific research methodology has been gathered and analyzed with respect to the nation interest and programs; and norms and standards. The theme under this study covers, major public facilities which dominantly owned and run by the government like Education, health care, sport and recreation, youth centers and play ground; and religious institutions and cemeteries. On top of questionnaires, reviewing the compiled documents of each sector a face to face discussion with respected professionals and a focus group discussion was conducted. Finally, after identifying the related SWOT of the town recommendations have been forwarded.*



## Chapter One

### 1. Introduction

#### 1.1 Background of the Study Area

##### 1.1.1 Historical Foundation and Naming

According to previous studies, the anonymous chronicler of Emperor Zara Yaqob avowed that Debre Birhan was founded by the Emperor himself as a capital for his empire in 1454. According to the web-page (Wikipedia, free encyclopedia), Debre Birhan is home to Trinity Church. In 1452, the king saw a light for 10 days (that may have been Halley's Comet)<sup>1</sup> after he killed his son for converting to a non-Christian faith, and hence he built the church, where his son is buried nearby. In any case, it is emerged in connection with the appearance of Orthodox Church which was ordered and established by the Emperor in response to a miraculous light that was seen in the sky at the time. That is why, the emperor ordered a church to be built on the site, and later constructed an extensive palace in the nearby area for his stay which was destroyed. Zara Yaqob spent 12 of the last 14 years of his life in Debre Birhan.

Historical development of Debre Birhan was up and down in the past 5 or 6 centuries. Thus, this historical study deals its development by classifying landmark periods that have showed sounded development effect for the town.

##### 1.1.2 Prior Development Period (until mid 1930s)

One of the significant historical times was that of 1878, when Emperor Yohannes IV and Nigus Menelik of Shewa had made an agreement (which is called the Leche Agreement) to transfer the capital of Shewa from Leche to Debre Birhan. This was a turning point in the history of Debre Birhan.

According to some informants (elders and prominent persons of the church), though it was for a very short period of time Debre Birhan has showed significant development during the time of Negus Menelik as it served as his capital. However, later he changed his center from Debre Birhan to Wara Eilu that brought about the moving out of Menelik and his followers

(courtiers, palace workers, soldiers, etc) and thereby the depopulation of the center that in another instance seemed to bring about a total catastrophe decline. But, it was not happened because the town had about 2500 population by the end of 19<sup>th</sup> century and even in the succeeding years after his abandonment of Debre Birhan.

### **1.1.3 Italian Occupation Period (1936-1941)**

The other land mark historical period in the development of Debre Birhan was that of the Italian occupation period (1936-1941). Like many other urban areas of the country, due to the resistance most of the houses owned by the local *Balabats* in the town were bombarded and demolished by Italians. After their control of the town, they constructed fortifications and military camps that include Deshimo Camp (which was built beyond Beressa River and this was a camp that was built to control western and southern parts of the town together with Birinta Camp), and Kinito Camp (which was constructed opposite to Deshimo Camp to the east facing River Dalacha that intended to control both eastern and northern sides of the town. Thus, this period brought about the emergence of other *saferes* called Deshimo, Kinito, and Birinta; these emerging settlements were given safer names (in connection with Italian Camps or the People living in there); the major triumph of this period was the re-establishment of the market center which had once active during the first half of the nineteenth century which was turned out to be a major center for cattle marketing between the country side and Addis Ababa. In connection with this, in front of the market center another populated settlement area called Banda Safer was established; in front of Selassie Church another settlement area called Komando Safer was also developed in this period; and a complete urban spatial shape as the town grew in every directions with considerable size.

In general, such spatial expansion wasn't happened alone and hence its population was also increased associated with it. The estimates were that of from 3,000 (by 1937) to 4,000 (by 1938/1939) and to 4500 (by 1941).

Besides, the re-routing of the Addis Ababa-Dessie-Asmara road bisecting the town (which was begun before the arrival of Italians) is also the other factor that enhanced its development as it encouraged the appearance of trading houses and administrative offices in both sides of the road. Some other buildings were also constructed (which were used as offices, camps, hotels and private residences and commercial houses), a catholic church was also constructed, and a modern medical hospital was begun (which was finalized in 1946 after they left the town).

### 1.1.4 The Period between 1941 and 1983

As mentioned above this is the other landmark period in the history of Debre Birhan. Immediately after the evacuation of Italians its development seemed to be stagnated even though it was for a very short period of time and its estimated population remained as 4,500. But immediately after the evacuation of Italians, Debre Birhan was assigned to be the center of Teguletina Bulga Awraja (one of the awrajas of Shewa province) that had significantly accelerated the development of the town. During this period too, there was some sort of population decline but it revived immediately as soon as it has got an awraja center status. And hence, the population of the town which was estimated to be 4500 by 1941 rose to 4700 by 1948 and to 19,000 by the year 1967, and again to 21,550 by 1974. According to the 1984 Housing and Population Census its population had already reached 25,635 with an average annual growth rate of 2.5 per cent. It was during this time that the Municipality of Debre Birhan was established and (immediately, had received the lands owned by the *Baldaras* in the south and the Hudad owned by the Ministry of Agriculture), basic services were flourished, and its master plan (the 1973) was prepared.

In early 1970s Debre Birhan had obtained some about 16 notable safer which manifests its relative growth of the time. These, among others, include that of:

- Qess Amba (a place where the former kings have located their abodes and a place settled by former clergies);
- Tebasie Safer (a place that borders Beressa River and is known for its fierce cold climate);
- Arada Safer (which was the central place facing the main Addis Ababa-Dessie road);
- Ankober Safer (a place north of Arada, known as Araqie and Tella safer);
- Asmara Ber (a place on the eastern part settled by well to do people of the town);
- Islam Amba (a place opposite to Sellassie Church, surrounding the Mosque and is a place settled by Merchants); and
- Lukanda Safer (a place located opposite to the market area and around the butcher shops).

After 1974, the town was classified and administered under 8 Kebeles and 2 Kefetegnas.

### **1.1.5 The Period After 1984**

The other landmark period in the history of Debre Birhan is that of the period after 1986 as this time was signified by status change from awraja capital of Teguletina Bulga to a capital of North Shewa Administrative Region and then after it becomes capital of North Shewa Zone (of Amhara National Regional State). Thus, its administrative importance had also been changed from 1984 onwards. Concomitantly, its economic and social importance has also been growing in relation to its administrative importance since then even if its growth in the beginning was slow that actually became fast and rapid in the past three or four years (2011, 2012, 2013 and 2014). In recent past times of this period, several accomplishments have been registered in the town. To mention some, Debre Birhan University (its foundation stone was laid down on 9<sup>th</sup> May, 2005 and started in January, 2007); Private Health Collage and Hospitals (Ayu and Dr Gizaw Metasebia though one is still not Operational), Condominium (which was begun in 2006); Urban Street System Development (Cobblestones and Asphalts) beginning from 2008/9; Factories and Industries (like Aquasafe, Sabela Printing, Terra Plc, Wodera Flour); Standard Hotels (Eva Hotel, its extension started operation in 2013/14); etc are the manifestation of its rapid development. The other notable accomplishment of this period is that of the signing of bilateral decentralized Sister-City agreement between Debre Birhan and Bluemenil City of France in 2000/2001 for financial, technical and material assistant relationship.

Thus, the CSA 2007 National Hosing and Population Census revealed its population as 65,231 (of whom 31,668 Male and 33,563 Female). Currently, the town is classified under 9 *kebeles* under municipal status and a center for North Shewa Zone and Basonna Wereda.

### **1.1.6 The Municipality**

The Municipality of Debre Birhan was established in December 1941. This was a year before Decree No. 1 of 1942 (which was issued by the Imperial Ethiopian Government for the establishment of municipalities & townships). Immediately after its establishment it had served for the development of the town. The municipality had received the lands owned by the *Baldaras* in the south and the Hudad owned by the Ministry of Agriculture. Thus, it was this municipality that began to distribute lands for users and provide some urban services in the town.

### **1.1.7 Service Development**

As mentioned above, the established municipality had started the provision of urban services immediately after its establishment and a number of accomplishments. Among others, those efforts include:

- The completion of the water sewerage system which was left incomplete by the Italians;
- The Cinema Hall (which was originally built by Italians) was re-built around 1959/1960;
- From 1964 to 1974 new roads were opened and the existed were also widened; and
- The provision of land distribution for shop constructions (40 m<sup>2</sup>) in and around the market center for commercial purposes.

Other than these, a hydro-electric power was installed by the order of Ras Mesfin Seleshi (the then governor of Shewa) in 1959. One of the early established (in 1943 E.C) services was that of Debre Birhan Hospital which had a Rural Hospital status that had posed considerable development effect as it used to serve the whole population of North Shewa. Likewise, the other major stimulant of this time was that of the establishment of Debre Birhan Teacher Training Institute (which was started as a Community Training School) by the Ministry of Education in collaboration with the United States Cooperation Mission to Ethiopia that begun training by the year 1965. The other main endeavor that stimulated the growth of Debre Birhan was the set-up of a wool factory in mid 1960s in cooperation with the Belgian Government (as a share holder).

## **1.2 Physical Feature of Debre Birhan**

### **1.2.1 Location, Status, Area and Shape**

Debre Birhan is found in North Shewa Zone of ANRS. It is astronomically located in an approximate geographical coordinates between 9<sup>0</sup> 38'00''-09<sup>0</sup>41' North Latitudes and 39<sup>0</sup> 30'00''-39<sup>0</sup>32' East Longitudes. In relative terms, it is situated at about 130 kms road distance from Addis Ababa (the national capital) and at about 696 kms from Bahir Dar (the regional capital) on the main highway to Dessie and/or to Mekele. The town is bounded by weredas of North Shewa Zone of ANRS which is an indication of good potential. Currently, it is

classified with 9 *kebeles* under municipal status and wereda level and serves as a center for North Shewa Zone and Basonna *Wereda* too.

The total area of Debre Birhan under the municipal (*wereda* level) jurisdiction (including the surrounding rural areas) is estimated to be about 18,000 hectares while the existing built-up area under urban occupation is some about 2200 hectares that, in general, implies the available excessive expansion areas within its jurisdiction. The shape of the town, as identified in the existing study, is somewhat linear (elongated) following inlets and/or outlets of major roads which is identified as one of the planning issues in this SP preparation to maintain compact shape so as to optimize the required infrastructure and service expansion expenses (Da-Ya, 2014).

### **1.2.2 Climatic Condition**

With an average elevation of 2750 meter above sea level (m.a.s.l), Debre Birhan is classified under Dega agro-climatic zone. With an average maximum temperature of 20.1c° and average minimum temperature of 6.5 c°, the town has got mean annual temperature of 13.3c° (2008 to 2013 G.C). This, though may be cold for some times (October, November and December), is favorable for human settlement and to undertake any developmental activities. Debre Birhan, with mean annual rainfall of 965.25mm (2008-2013 G.C), has moderate annual rainfall amount that is sufficient to undertake any developmental activities, helpful to sufficiently recharge the ground and surface water, and made the town the most preferable area with ample water supply coverage attracting different investments where water is one of the inputs for production. Thus, this structure plan preparation should consider such favorable climate and abundant rainfall (via plot assignment). The dominant prevailing wind directions of Debre Birhan are Southeasterly and Easterly winds (that blow from southeast to southwest and from east to west). Thus, pollutant establishments (industries) that emit any smokes, dusts, sounds, and odors should be allocated against these directions in the southwest and western parts of the town in this structure plan preparation (EMA, 2014 as cited in Da-Ya, 2014).

## **1.3 Population Characteristics and Dynamics**

### **1.3.1 Population Characteristics and Distribution**

This sub-topic deals about population characteristics, demographic and non-demographic characteristics of Debre Birhan Town, which will include that of population size, growth,

age, sex, household size, ethnic group, religion, relationship to head of the household, marital status, employment status, educational status, disability, etc based on the CSA (Censuses and Projections) and the Household Sample Survey result of 2014 GC (2006 EC) that has been conducted by the consulting firm (Da-Ya Consulting Planners and Engineers PLC) for the purpose of this structure plan preparation.

### 1.3.2 Population Size and Growth Rates

According to CSA (2013), the latest estimation of Debre Birhan’s population reached that of 83,479. Between 1984 and 1994 population size of the town grew at the average rate of 4.12% per annum, and from 1994 to 2007 its rate declined to 4.01% per annum (Table 1-1).

**Table 1. 1** Population Size, Distribution and Growth Rate for Debre Birhan

Year	Male		Female		Total	Sex Ratio	Growth Rate		
	No	%	No	%					
1984	11637	45.4	13998	54.6	25635	0.83	4.12		
1994	17918	46.3	20799	53.7	38717	0.86		4.02	
2007	31668	48.5	33563	51.5	65231	0.94			4.0
2013	40,527		42,952		83,479				

Source: CSA (1984), (1994), (2007), and (2013)

In any case, all these entailed an alarmingly population growth and increase and if such increasing of population size continuous without any doubt within a certain years. The reason behind such increment might be its high natural growth and in migration to the town since the area is becoming economically active and very much convenient for investment as compared to the area around it. Thus, such issue require due attention.

#### The Population Projection

Based on the above mentioned assumptions to the future courses of the basic growth components (fertility, mortality and migration) and specific growth contributing factors, exponential method of population projection is used by assuming the population is growing continually at a constant rate of per year taken from the trends of growth of the town.

**NB:** As per the direction from Amhara Region Urban Planning Institute (RUPI,) during the first in house discussion with different stakeholders in Debre Birhan Town, the rate of the ANRS population is considered to be 0.06 per annum and hence for Debre Birhan too this figure has been considered.

The CSA 2013 population estimation of the town is taken as a base year population for projection which is 83,479. Thus, the population of the town is expected to reach to a level of **129,618; 144,690; and 158,297** at the end of the planning period (2024) with low, medium and high variants, respectively (Table 1-2).

**Table 1. 2 Population Projections for Debre Birhan (2014-2024)**

Years	1994		2007		2013		2014		2024	
*Growth	M	F	M	F	M	F	F		M	F
Variant and Sex	17918	20799	31668	33563	40,527	42,952			78,498	83,113
Total	38717 <sup>1</sup>		65231 <sup>2</sup>		83,461 <sup>3</sup>		86,875		158,297	

**NB: \*Higher Growth Variant was taken (R=6%), and it is assumed this growth pattern will continue until the end of the planning period.**

**Data <sup>123</sup> sources (CSA; 1994, CSA; 2007 and CSA; 2013).**

Generally, as the population growth trend stated in Table 1-2, the population of Debre Birhan Town is assumed to grow by an average annual growth rates of **6.0%** under high growth variant throughout the projection period (2014-2024) due mainly to the above mentioned town specific growth favoring factors. Besides, such expected population size includes the population of the newly included five rural kebeles which are now become part of the city administration. Hence the baseline (2014 GC) population is 86,875 and the future planning period population is projected as 158,297 (2024 GC). Such high population projection results from a judgment of maximum probable birth rate (age specific), minimum probable death rates, maximum probable in-migration and minimum probable out migration. However, it is important to note, though the general population projection as a framework is made with high growth variant (6%), other projections for facilities are made with the common/universal medium growth variant (4.01%) with the aim to minimize the risk of service and facility provisions.

### 1.4 Statement of the Problem

The major constraints of the public service are the low number of facilities which are ill-equipped, mal-distributed and in a state of disrepair, an ineffective health care delivery system which is top heavy, uncoordinated, inefficient and biased towards the curative service, a shortage of human and material resources with inefficient utilization of the service resources are also noted as a prime challenge of the sector. The number and distribution of public services like education, health, recreation and cultural facilities are not up to



respective sector standard and provided on the one hand neglecting the proposals forwarded during master plan preparation on the other hand even though the change need is convincing, it is not done based on findings of in depth study and following the formal procedure that has to be considered to synchronized with the total urban system. Another problem is the contribution of private sector in number and duration in such service is not predictable. Related problem with the private sector is they want to acquire land for these service at the center of the town where they feel more safe and more profitable which can create conflict of interest on the area which is demanded by others who can use the land inefficient manner and make more productive by applying vertical development. These are among the problems has been noted and a thorough investigation needed up on them to reveal where they are, how good they are, how fairly distributed, who own and run them etc. in order to see what alternative appropriate measures are available and implementable.

### **1.3 Objective**

#### **1.3.1 General Objective**

The study focuses on the analysis of the existing situation of the public facilities and identify the major problems, potential and constraints and to suggest possible solutions which could serve as an input for comprehensive plan preparation of Debre Birhan town.

#### **1.3.2 Specific Objectives**

The study has the following specific objectives:

- To assess the existing situation of public facilities such as Education, Health, culture and recreational, youth centers and religious institutions and cemeteries in relation to availability, accessibility, location, their distribution system and existing capacities and other related variables.
- To identify planning issues that will be addressed during master/structure plan preparation of the town
- To recommend possible solutions and strategies in order to mitigate the existing problems and constraints of these infrastructures/public facilities

### **1.4 Scope of the Study**

#### **1.4.1 Spatial**

For study focuses on Debre Birhan town which has nine kebeles with a total area of 5711ha.

#### **1.4.2 Thematic**

The study focuses on the analysis of existing Public facilities/ infrastructures in relation to efficiency, accessibility, effectiveness, compatibility and other related variables.

#### **1.5 Significance of the Study**

The main concerns of the study are identifying major problems and constraints in relation with provision of urban public facilities/ infrastructures, which are fundamental the urban to function in effective, efficient, competitive and sustainable manner. This study has significance for development plan preparation of the town. On the other hand the finding of this study will enable the town administration to thoroughly understand the town existing demand and enable them to put pre condition for any further utility development program in their jurisdiction that ultimately they want achieve by their day to day activities. Moreover, it could also an important source for further research or study on the same issue.

#### **1.6 Limitation of the study**

- Lack of quantitative and qualitative data in certain institutions.
- Reluctance of some households to answer all the questions.
- The unwillingness and carelessness of a few respondents in giving reliable data during socio-economic survey.

#### **1.7 Methodology of the Study**

##### **1.7.1 Sources and Methods of Data Collection**

In this study primary and secondary data sources are employed. The primary data were collected through field survey, interviews, questionnaire, focus group discussion and physical observation. The secondary data were collected from published and unpublished documents tracts, reports of different offices, previous studies and proposals. In the process of primary data collection, it is conducted in all sectors of the service.

### **1.7.2 The Data Gathering Procedure**

To make, first, the information coherent, observation to infrastructures/ public facilities conditions is made at the places where facilities are situated. After having this information questionnaire is distributed to all concerned offices and collected with some interviews while needed. Then focus group discussion was conducted of which important information are gathered. Finally, public and expert hearing forum was organized at town level from which ample information was gathered. In parallel with interviews and questionnaire field survey was conducted by data collection members to collect the existing utilities and their level of services and locating these facilities with GPS is done.

### **1.7.3 Instrument of Data Collection**

The instruments employed for data collection were structured pre-coded and open-ended questionnaires separately. The pre-coded once are used for data collection from selected households and both open-ended and closed-ended questions were used for sector and kebele representatives and other concerned organizations. In addition, issues assessed by observation during field survey are prepared and done accordingly.

### **1.7.4 Methods of Data Analysis**

Both qualitative and quantitative methods are used for data analysis. In quantitative analysis statistical tools like ratio, percentage and average have been performed to display the pattern and nature of different characteristics. On top of this qualitative description over some aspect has been done.

Then the result of these quantitative and qualitative analysis were used for identification of constrains and potentials through SWOT interpretation. These techniques are basically suitable in identifying, prioritizing and ranking of problems, issues and intervention areas and hence facilitate and ease subsequent planning works.

## **1.8 Organization of the Paper**

This paper is prepared based on the analysis of existing situation of infrastructure/ public facilities services of Debre Birhan town. The first chapter deals with the general introduction of the study and study area. The second chapter presented review of related literatures. From third to five chapters provide data and their analysis and interpretation of the service in Debre Birhan town. The last chapter deals with the

findings, conclusions and recommendations for the problem encountered and for the potential problems.

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## Chapter two

### 2. Review Literature

#### 2.1 Conceptual Framework

##### 2.1.1 Education Service

**Education** is the process of facilitating learning, or the acquisition of knowledge, skills, values, beliefs, and habits. Educational methods include storytelling, discussion, teaching, training, and directed research. Education frequently takes place under the guidance of educators, but learners may also educate themselves.<sup>[1]</sup> Education can take place in formal or informal settings and any experience that has a formative effect on the way one thinks, feels, or acts may be considered educational. The methodology of teaching is called pedagogy.

Education is commonly divided formally into such stages as preschool or kindergarten, primary school, secondary school and then college, university, or apprenticeship( Wikipedia, the free encyclopedia).

Education is a process by which man transmit his experiences, new finding and values accumulated over the years, in his struggle for survival and development, though generation. Education enables individuals and society to make all rounded participation in the development process by acquiring knowledge, ability, skills and attitudes (Ethiopia Education and training Policy 1994: 1).

Educational infrastructure is a backbone and basis of a country's welfare and economic development, because the quality and quantity of infrastructure (All physical, human and institutional) and its distribution across a nation is heavily indicator of economic development level of a country.

##### 2.1.2 Health Service

A **health facility** is, in general, any location where healthcare is provided. Health facilities range from small clinics and doctor's offices to urgent care centers and large hospitals with elaborate emergency rooms and trauma centers. The number and quality of health facilities in a country or region is one common measure of that area's prosperity and quality of life. In many countries, health facilities are regulated to some extent by law; licensing by a

regulatory agency is often required before a facility may open for business. Health facilities may be owned and operated by for-profit businesses, non-profit organizations, governments, and in some cases by individuals, with proportions varying by country(Wikipedia).

### **2.1.3 Sport and Recreation**

A **leisure centre** in the UK, Ireland, Australia (also called aquatic centres) and Canada is a purpose built building or site, usually owned and operated by the city, borough council or municipal district council, where people go to keep fit or relax through using the facilities (Wikipedia, the free encyclopedia).

#### **Typical facilities**

Facilities may include a swimming pool (many with water slide), large sports hall, squash courts, cafeteria, licensed bar, fitness suite, aerobics studios, outdoor grass and/or artificial pitches for football (soccer), hockey etc., a solarium, sauna and/or steam room.

Leisure centres in the UK and Canada are staffed by leisure centre attendants employed by the local council. They carry out a range of tasks to help and supervise people using leisure centre facilities and act as swimming pool life guards, gym instructors and coaches offering advice, motivation and expertise to users. Many of its functions may overlap with that of a community centre.

Leisure centres are also popular in Australia, where they are mostly privately operated but Government funded. In that country they are often also called Recreation Centres, or most commonly Aquatic Centres due to the swimming facilities being the most popular facility that is available.

In some areas of the UK and Canada (such as Calgary) these services are now operated by private companies on contract to the local authority.

### **2.1.4 Cultural and Religious Facilities**

Culture is a set of attitudes, beliefs, morals, customs, values and practices, which are common to or shared by any group. The group may be defined in terms of political, geography, religious, ethnicity their lives, their behavior or reaction toward events including towards moral and economic incentives. Human behaviors are largely culturally determined.

Religion is the pattern of belief and practice through which human beings communication with or hope to gain experience of that which lies behind the world of their ordinary experience. All the religious need their own warship places. Attached to this there is demand for cemetery.

Religion manifests in a number of traditions, which for our cases, the religious in Ethiopia stem from an ancient Judaism, the Christianity and the Islam. In Christianity, for Ethiopian case, there are Orthodox Church, Catholic Church and Protestantism. The protestant has a number of classifications, often called denominations including angelical, Baptist, Lutheran and others (ALI Awduale & others, 2003).

A **cultural center** or **cultural centre** is an organization, building or complex that promotes culture and arts. Cultural centers can be neighborhood community arts organizations, private facilities, government-sponsored, or activist-run. In the Roman Catholic Church a **religious institute** is "a society in which members...pronounce public vows...and lead a life of brothers or sisters in common (Wikipedia, encyclopedia)

Religious institutions have a distinguished and special place in our history and laws, which were created to protect the practice of each person's faith.

The great diversity of work that religious organizations undertake touches many areas of secular law. Most law firms treat religious organizations like just another "corporate client." We do not. For nearly fifty years, we have helped a large and diverse group of faith-based organizations navigate what can be foreign, and at times hostile, secular laws in a manner consistent with the principles of their faith. In courts across the country, we represent religious institutions in a broad range of matters, from battles to protect First Amendment religious freedoms to challenging local regulations in an effort to protect the rights of faith-based groups.

Religious institutions have unique structural, ethical and moral requirements that must always come first. We ensure that they do.

### **2.1.5 Public Amenities**

Public amenities are service which in contract with citizens like post offices, city walls, fire stations, public library, slaughter house etc. it also deal about resource, conveniences, facilities or benefits continuously offered so the general public for their use or enjoyment. Public amenities are very important for the existence, and development of the cities. They enable the people to enjoy life and have the opportunity to achieve the goals they have set for themselves.

## **2.2 Practical Framework**

A right to education has been recognized by some governments, including at the global level: Article 13 of the United Nations' 1966 International Covenant on Economic, Social and Cultural Rights recognizes a universal right to education. In most regions education is compulsory up to a certain age (Wikipedia, the free encyclopedia).

### **2.2.1 Developing Countries**

The strong impact of education on factors such as fertility and health has been widely documented. Population dynamics, in turn, affect education in many ways. From 2005 to 2010, the population aged 0 to 4 decreased annually by 0.9% in Latin America and by 0.1% in East, South and West Asia, but increased by 2% in sub-Saharan Africa. Thus, while most developing regions can shift resources from expansion of primary education to quality and equity, as well as expansion of post-primary education, most African countries must deal with these challenges in a context where access to primary education still needs to be expanded because of population growth (UNESCO, 2014).

Since 1999, the number of primary school-age children out of school has decreased, from 107 million to 57 million, but two-thirds of the reduction was achieved between 1999 and 2004. There are large differences in progress between regions. In 1999, both South and West Asia and sub-Saharan Africa each had around 40 million children of primary age out of school. In South and West Asia the number fell by 28 million, while the reduction in sub-Saharan Africa was only 12 million (UNESCO, 2012c as cited in UNESCO 2014).

Despite overall improvements in getting children into school, dropout remains a serious problem. The survival rate to the last grade of primary education has hardly changed since 1999, with only around 75% of those who started primary school reaching the last grade in



2010. In sub-Saharan Africa, the proportion making it to the last grade even fell slightly, from 58% to 56% (UNESCO, 2014a).

The gross enrolment ratio in secondary education, which rose by 19% globally since 1999 to reach 71% in 2011. Despite this progress, however, it is important to recall that enrolment in secondary education was still only 31% in low income countries in 2011, while the proportion of secondary school pupils enrolled in TVET programmes has remained at 11% since 1999( UNESCO, 2014).

## **2.2.2 Education in Ethiopia**

### **2.2.1.1 Growth and Transformation Plan (2010/11-2015/16)**

#### **Objectives**

Ensure an effective and efficient education and training system that will enhance quality, efficiency and relevance, and equity and access at all levels. This will be achieved through performance capacity building, and developing and maintaining competency parameters.

#### a) Objectives of General Education

- Expand access to pre-primary education and maintain its quality and efficiency
- Expand access to quality primary education for all
- Expand quality secondary education that will serve as a basis and bridge to produce a middle and higher level workforce in line with the demand of the national economy/labour market, and intake capacity of higher education institutions
- Ensure equity in education by narrowing gender, regional and urban-rural disparities
- Expand access to functional adult literacy (FAL) to enhance the country's all round development endeavors

#### b) Objectives of Technical and Vocational Education and Training/TVET

- Expand outcome based and quality TVET equitably, both in rural and urban areas. This should be in line with the demands of the national labor market and a system that will make the institutions become centers of technology transfer will be implemented.
- Create concrete capability of micro- and small scale enterprises /MSEs through technology accumulation, building institutional capacity and transfer of technology

- Develop an integrated package that will involve all actors and stakeholders, and enhance the capacity of the industry to own and promote setting occupational standards and accreditation of competencies
- Give particular emphasis to females and the youth, and empower them to possess working skills and competencies that will ensure they are economically self sufficient.

**c) Objectives of Higher Education**

- Establish a higher education institution system which focuses on result based management, administration and performance, and that recognizes and scales up best practices
- Produce a higher level of skilled and capable human power as per the demand of the development of the country in general and the manufacturing industry in particular
- Ensure higher education enrolment that prioritizes science and technology
- Assure higher education institutions that have achieved education quality and relevance in accordance with the demands of the economy
- Enhance the competitiveness and competency of female students to promote their success and ensure gender equity

**Table 2. 1 Targets of the GTP**

Education	Base line 2009/10	Plan Target 2014/15
Gross Primary Enrollment Ratio (1 to 8) (%)	94.2	100
Primary school ratio of girls to boys	0.93:1	1:1
Primary Pupil: text book ratio	1.25:1	1:1
Primary Net enrollment ratio	87.9	97
Secondary school gross enrollment ratio	38.1	75
Government higher institution intake capacity (under graduate)	185,788	467,000
TVET intake capacity	430,562	1,127,330
Adult literacy rate (%)	36	95

### 2.2.1.2 Growth and Transformation Plan II (2015/16-2010/21)

### 2.2.2 Standards set by Ministry of Education

**Table 2. 2 School versus Catchment area**

	Level of School	Max. Distance Student to reach
1	KG	1 km
2	1-4 (first Cycle)	4km
3	5-8 (Second Cycle)	9 km
4	High School (First Cycle)(9-10)	5-10km

**Table 2. 3 School, Standard Set For Student per Grade**

No. Of School	Level Of School	Number of students, Standard
	KG	240
2	Primary school/first cycle(1-4)	720-1440
3	second cycle(5-8)	720-1440
4	High School(9-10)	480-800

**Table 2. 4 Books and classroom Standard For Each Parameters**

Grade level/Cycle	Standard Books to student ratio	Standard student to classroom ratio
1-4	1:1	1:50
5-8	1:1	1:50
9-10	1:1	1:50

**Table 2.5 Level, Requirement, and Location of Education Service**

S/N	Level of Education	Space Requirement	Catchment Area	Serviced population	Location
1	Pre-Primary level Nursery (2-3)	70-175 m <sup>2</sup>	≤ 400m	1000-2500	<ul style="list-style-type: none"> <li>▪ With in residential Area</li> <li>▪ Within KG and near working places</li> </ul>
	KG	500-3000m <sup>2</sup>	≤ 1km	1000-2500	<ul style="list-style-type: none"> <li>▪ Center of catchment area</li> <li>▪ With in residential area</li> <li>▪ 100m from dumpsters, noise pollutants, health facilities, etc</li> </ul>
2	Primary Education	1.5-2.5ha	≤ 3km	12,000-18,000(AA) 5,000-15,000	<ul style="list-style-type: none"> <li>▪ With in residential area</li> <li>▪ Along residential collector roads</li> <li>▪ 100m far from market traffic congestion, dumpsters, noise pollutants, health facilities, etc</li> <li>▪ Not or on near hazard-prone lands</li> </ul>
3	Secondary Education	3-6ha	3-5km	10,000-15,000	<ul style="list-style-type: none"> <li>▪ With in residential area</li> <li>▪ Along main collector roads</li> <li>▪ Near intersection of roads and mass transport system</li> <li>▪ Area provided with infrastructure services</li> <li>▪ Farm from dumpsters, hazarded prone lands, noise and other pollutant activities</li> </ul>
4	Post-secondary Ed. Or Specialized High School	3-6ha	3-5km	10,000-600,000	<ul style="list-style-type: none"> <li>▪ Near mass transport system (With in a walking distance from transport service)</li> <li>▪ 100m far from major traffic points</li> </ul>

### 2.2.3 Health Infrastructure and Profile in Ethiopia

The Ethiopian health care delivery system has historically been unable to respond qualitatively or quantitatively to the health needs of the people. It has been highly centralized and services are delivered in a fragmented way with a reliance on vertical programs and there is little collaboration between public and private sectors. At the centre of the problem is the backward socio-economic development resulting in one of the lowest standard of living, poor environmental conditions and low level of social services. This prevailing situation has been aggravated, in recent years, by the high population growth. The other cause of health situation in Ethiopia can also be attributed to the isolation of large segment of society from

the modern health sector. Wide spread illiteracy prevents the dissemination of information on modern health practices. A shortage of trained personnel and insufficient funding also hampers the equitable distribution of health services. Above all most sounding health institutions are concentrated in urban centers while 85% of the population is rural.

Health in Ethiopia has improved markedly in the last decade, with government leadership playing a key role in mobilizing resources and ensuring that they are used effectively. A central feature of the sector is the priority given to the Health Extension Program, which delivers cost-effective basic services that enhance equity and provide care to millions of women, men and children. Ethiopia has demonstrated that low-income countries can achieve improvements in health and access to services if policies, programmes and strategies are underpinned by ingenuity, innovativeness, political will and sustained commitment at all levels (wikipedia)

## **Health Sector Strategy**

### **Objectives**

The main objective of the health service in the future is to give a comprehensive and integrated primary health care in health institutions at the community level. The approach will be to emphasise the preventive and promotive aspects of health care without neglecting essential curative service. The focus shall be on communicative diseases, common nutritional disorders, and on environmental health and hygiene. Maternal and child care, immunisation, reproductive health, treatment and control of basic infectious diseases like upper respiratory tract infections and tuberculosis, control of epidemic diseases like malaria and the control of sexually-transmitted diseases, including AIDS, will receive special attention. Information, education and communication about health and nutrition shall be strengthened. Human and material resources will be developed, deployed and managed in line with these objectives (FDRE embassy in London, 2016).

### **Major components of the health care strategy**

1. Strengthening the preventive and promotive health service
2. Curative and rehabilitative care
3. Drugs and medical supplies
4. Health information, documentation and processing

5. Organisation and management of the health delivery system
6. Human resource development and management
7. Research and development
8. Financing the healthcare delivery system

### **Health Service Coverage and Utilization**

**Health service coverage:** The overall level of health service coverage is estimated to be approximately 45 percent. The actual coverage estimates for the individual programs are very low.

The major reasons for the poor coverage of health services in Ethiopia are the limited physical access of the population to health facilities and staff, as illustrated by the facility to population ratio. Currently, health facilities for a population of some 58 million people comprise 89 hospitals, 191 health centres, 1, 1 75 health posts and 2,515 health stations. The available health care facilities are also unevenly distributed across regions(FDRE embassy in London, 2016)..

**Health service utilisation:** Total outpatient utilisation of government health facilities in Ethiopia suggests that, on average, there are about 0.25 visits per person per year. A household survey on health care utilisation found that only 10 percent of persons reporting illness actually obtained treatment for their conditions from any health facility, government or private. Utilisation by the rural population (9.5 percent), as compared to 14 percent in urban areas, is lower than the national average. The findings further show that the three most important determinants of whether treatment is sought are:

- the cost of treatment
- the distance from, or the absence of, the health care facility
- the quality of the facility
- the educational status of the patients, or the mothers in the case of children.

#### **2.2.3.1 Growth and Transformation Plan (2010/11-2015/16)**

Not surprisingly there are major rural-urban differences: in rural areas only about a third of the population has some kind of facility within 5 km., whereas almost all of the urban population does. The proportion of population living more than 20 km. from a health facility has fallen from 20% of households in 1996 to 13% in 2000. Over half of the rural population

is now less than 10 km. from either a health post or clinic (2004); although to get to a hospital 77% of rural families still need to travel more than 20 kilometers(FDRE, 2016).

In the past years, remarkable achievements have been recorded in the expansion and construction of Health facilities, and improve the quality of health service provision. The Health Extension Program (HEP) is an innovative health service delivery program that aims at universal coverage of primary health care. The program is based on expanding physical health infrastructure and developing Health Extension Workers (HEWs) who provide basic preventive and curative health services in the rural community. Health Sector Development Program IV is designed in line with the overall directions of the government for the next five years. The most priority areas of the health sector development program will be maternal and newborn care, child health, halt and reverse the spread of major communicable disease such as HIV/AIDS, TB and Malaria.

### **Objectives**

Improve the health of the population through provision of promotive, preventive, curative and rehabilitative health services.

- **Improve Access to Health Service:** This objective includes availing of affordable health service to improve health of mothers, neonates, children, adolescent and youth, reduce the incidences and prevalence of communicable and non - communicable diseases and Improve hygiene and environmental health.
- **Improve quality of health services:** It includes provision of health services as per the standard by health facilities at all levels.

### **Major Targets**

- Decrease maternal mortality ratio from 590 per 100,000 live births to 267/100,000
- Decrease under five mortality from 101 to 67 per 1000 live births
- Increase family planning service (CPR) from 32% to 65%
- Increase Penta 3 immunization coverage from 82% to 90%.
- Reduce incidence of HIV in adults from 0.28% to 0.042% and maintain the incidence at
- 2.4%
- Reduce Prevalence of malaria to below 0.7%
- Increase TB Case Detection Rate from 34% to 75%

**Table 2. 6 Health sector target**

Health	Base line 2009/10	Plan Target 2014/15
Primary Health Services Coverage (%)	89(2008/09)	100.0
Under Five Mortality Rate (per 1000)	101	67
Maternal mortality rate (per 100,000)	590	267
Contraceptive Prevalence Rate (CPR) (%)	55	80
Proportion of Births Attended by Skilled Health Personnel (%)	25	60
DPT 3 vaccination coverage (%)	81.9	90
Percentage of Households in Malaria Prone Areas with ITNs(%)	100	100

### 2.2.3.3 Standards of Service

**Table 2. 7 Level of Services, Requirements and Locations of Health Facilities**

	Level of Health Service	Space Requirements	Catchment Area(Radius)	Served Population	Location
1	Health post	0.11ha	<1km	5,000-7,000	<ul style="list-style-type: none"> <li>▪ Center of catchment area</li> <li>▪ With in Residential area</li> <li>▪ Near intersection of residential roads</li> <li>▪ Far from noisy activities</li> </ul>
2	Health Center	0.45-0.6ha	Woreda or <2km	25,000	<ul style="list-style-type: none"> <li>▪ With in the serviced area</li> <li>▪ Accessible along collector roads</li> <li>▪ Far from dumpsters, noisy activities</li> </ul>
3	District Hospital	1-1.5ha	Woreda Boundary including rural areas	250,000	<ul style="list-style-type: none"> <li>▪ Within catchment area</li> <li>▪ Within walking distance from mass transport system</li> <li>▪ Along collector roads</li> </ul>
4	Regional Hospital	2ha	Regional level	1,000,000	<ul style="list-style-type: none"> <li>▪ Within catchment area</li> </ul>
5	<i>Special/Referral Hospital</i>	<i>Variables</i>	<i>National</i>	<i>National</i>	<ul style="list-style-type: none"> <li>▪ Within walking distance from mass transport system</li> </ul>



					▪ Along collector roads
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## Chapter Three

### 3. Education Services in Debre Birhan

As education is the process of teaching and learning specific skill, schools of different levels should be developed according to the guidelines, regulations, norms and standards recommended. It Promotes or facilitates the realization of self potential and talent of an individual. Thus, in relation with social, cultural and economic development, education has been seen as basic human rights which should be accessible for all citizens. In Deber Birhan town there are different formal educations programs that include pre-primary, primary, secondary education tertiary or higher education program run in the town.

#### 3.1 Educational Facilities in Deber Birhan Town

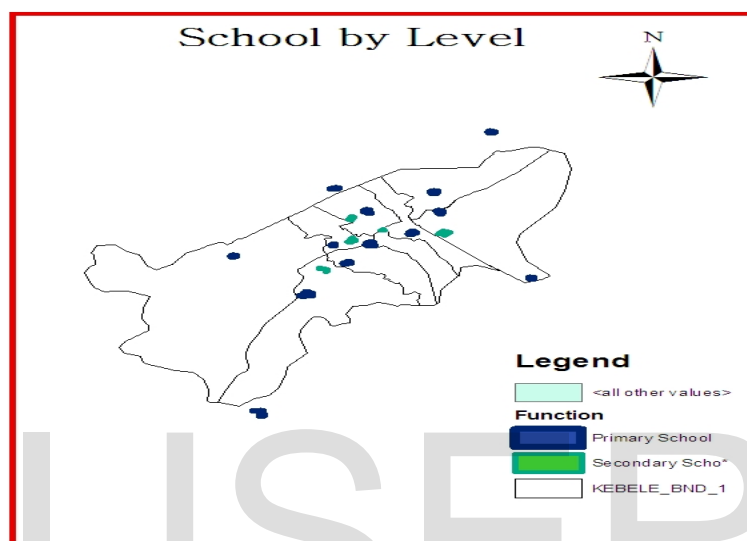
In Debre Birhan, there are several educational services at various levels, which are serving populations in and around the town. In the municipal boundary there are three KGs, one KG-5, six KG-8, three primary (1-4), three (1-6), five (1-8), two high schools, one preparatory school, five TVETs of which two are Public (Poly & TTI), and one university (Table 3-1). Figure 3-1 shows spatial distribution of schools in the town.

**Table 3. 1 School Types, Ownership and Catchment in Debre Birhan Town (2014)**

SN	School Levels	Ownership			Catchment Area	Catchment Standards	Gap between Standard & Existing
		Public	Private	Others			
1	Kg	-	3	2	<1km	0.2-1km	Acceptable
2	Kg – 5	-	1	-	<1km	1.0-5.0km	Acceptable
3	Kg-8	-	6	-	<2km	1-5km	Acceptable
4	Primary (1-4)	3	-	-	<1km	0.5-1.5km	Acceptable
5	Primary (1-6)	3	-	-	<2km	5km	Acceptable
6	Primary (1-8)	5	-	-	<2km	1-5km	Acceptable
7	Secondary (9-10)	4	0	-	>10 km	5-10km	Not acceptable
8	Preparatory	1			>10 km	5-10km	Not acceptable
9	TVET (Poly & TTI)	2	3	-	-	-	-
10	University	1		-	-	-	-

**Source: Debre Birhan Educational Office (2014)**

Kindergartens are evenly distributed in the town except some parts and hence only few children's cross the main road. Some of students enrolled in Preparatory and high school (government) are coming out of catchment area this requires attention of service providers in the town and in the area where they are coming.



*Figure 3. 1 Spatial Distribution of Schools*

### **3.2 School Coverage**

The educational facilities that are found in Debre Birhan town serve for the surrounding rural kebeles and urban residents. The technical and vocational training college serves the ANRS. On the other hand, Debre Birhan University obtain students from different regions of the country and the high School (9-10) and preparatory (9-12) serves for the junior schools found in the town and for some rural dwellers students who passed grade 8 examinations.

### **3.3 School Facilities in the Compound**

The educational facilities such as sport field, water supply, electricity, library, laboratory, lounge for both staff members and students and other facilities are necessary to facilitate the

learning and teaching processes and improvement of education both in quality and quantity.

In this regard, almost all schools are well furnished, no serious problems have noticed.

**Table 3. 2 Existing Facilities in some Schools**

SN	School Name	Level	Electricity	Water Supply	Toilet			Lounge	Library	Playing Facility	Work Shop
					Boy	Girl	Both				
1	Abune Gorigorios	Kg-8	✓	✓	✓	✓		✓	✓		
2	Adventist P. School	Kg-5	✓	✓	✓	✓		✓	✓		
3	Andinet P School	1-8	✓	✓	✓	✓		✓	✓		
4	Atakilt P School	1-4	✓	✓	✓	✓		✓	✓		
5	AtseZerayacob School	1-8	✓	✓	✓	✓		✓	✓		
6	Basso p School	1-8	✓	✓	✓	✓		✓	✓		
7	Basso S School	9-10	✓	✓	✓	✓		✓	✓		
8	Biruhesfa P School	1-8	✓	✓	✓	✓		✓	✓		
9	Cherkos	1-4	-	-	✓	✓		-	-		
10	Cholie P School	1-6	-	✓	✓	✓		-	✓		
11	D/Eba 2 <sup>nd</sup> ry school	9-10	✓	✓	✓	✓		✓	✓		
12	Debre Birhan Sec School	9-10	✓	✓	✓	✓	✓	✓	✓		
13	Genet P School	1-6	✓	✓	✓	✓		-	✓		
14	H/Mamo Preparatory	11-12	✓	✓	✓	✓	✓	✓	✓	✓	
15	Melkta Acadamy	Kg-8	✓	✓	✓	✓		✓	✓		
16	Merit P School	Kg-8	✓	✓	✓	✓		✓	✓		
17	Millennium Se. School	9-10	✓	✓	✓	✓	✓	✓	✓		
18	Model No_2 School	1-6	✓	✓	✓	✓		✓	-		
19	New Life P. School	Kg-8	✓	✓	✓	✓		✓	✓		
20	Providence P. School	Kg-8	✓	✓	✓	✓		✓	✓		
21	Selamchora P School	1-4	✓	✓	✓	✓		-	✓		
22	Soresa P School	Kg-8	✓	✓	✓	✓		✓	✓		
23	Tebase(Medhanialem) P School	1-8	✓	✓	✓	✓		✓	✓		

**Source: Debrebirhan Education Office and Field Survey, 2014**

Most of the schools have basic facilities such as; electricity, water supply, toilet, lounge, library and playing facilities. Few of the schools lack some facilities which are important to take consideration and equipped them. All of the schools have separate toilet for boys and girls which is appreciable (Table 3-2).

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**Table 3. 3 Schools Physical Condition, Compatibility, Accessibility and Area against Standard**

SN	School Name	Physical Condition	Compatibility	Accessibility	Area (Ha)	Standard (Ha)	Difference	Remark
1	Abuna Gorigoris	Fair	Compatibility	Accessible	0.98	1.5 - 2.5	-	Private
2	Adventist	Good	Incompatible	Accessible	0.72	1.5 - 2.5	-	Private
3	Andinet Primary School	Good	Compatibility	Accessible	1.15	1.5 - 2.5	-	Gov't
4	Atakilt Primary School	Good	Compatibility	Inaccessible	4.18	1.5 - 2.5	-	Gov't
5	AtseZeryakob Primary School	Good	Incompatibility	Accessible	4.9	1.5 - 2.5	+	Gov't
6	Baso Primary School	Good	Incompatibility	Accessible	2.49	1.5 - 2.5	✓	Gov't
7	Baso Secondary School	Good	Incompatibility	Accessible	5.15	2.5 - 6	✓	Gov't
8	Birutesfa Primary School	Good	Compatibility	Accessible	7.22	1.5 - 2.5	+	Private
9	Cherkos Primery	Poor	Incompatible	Accessible	1.16	1.5 - 2.5	-	Gov't
10	Chole Primary School	Poor	Compatibility	Inaccessible	0.44	1.5 - 2.5	-	Private
11	D/Eba 2 <sup>nd</sup> ry school	V. Good	compatible	Accessible	3.71	2.5 - 6	✓	Gov't
12	Debrebirhan Poly Technique	Very Good	Compatible	Accessible	4.94	2.5 - 6	✓	Gov't
13	Genet Primary school	Good	Compatibility	Accessible	4.25	1.5 - 2.5	+	Gov't
14	H/Mamo Preparatory	Good	Compatibility	Accessible	3.65	2.5 - 6	✓	Gov't
15	Melkte Acadamy primary School	Good	Compatibility	Accessible	3.66	1.5 - 2.5	+	Private
16	Merit KG-Primery	Good	Compatibility	Accessible	0.50	1.5 - 2.5	-	Private
17	Millinium High School	Good	Compatible	Accessible	2.194	2.5- 6	✓	Gov't

18	Model No-2 School	Poor	Incompatibility	Accessible	0.46	1.5 - 2.5	-	Gov't
19	New Life	Good	Incompatibility	Accessible	0.41	1.5 - 2.5	-	Private
20	Providence primary School	Good	Compatibility	Accessible	2.63	1.5 - 2.5	+	Private
21	Selam Chora Primary School	Good	Compatibility	Accessible	2.53	1.5 - 2.5	✓	Gov't
22	Soresa Primary School	Good	Compatibility	Accessible	0.77	1.5 - 2.5	-	Private
23	TebaseMedhanialem Primary School	Good	Incompatibility	Accessible	6.67	1.5 - 2.5	+	Gov't

*Source: Field Assessment, 2014*

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From the above table (Table 3-3) one can conclude that many of the schools do have good physical conditions, which is most welcome. However, the compatibility of some schools with other establishments is not good, for example schools with garage, church, hotel and the like. Such incompatibility problems need to be addressed in the land use planning.

In general, the distribution of schools with regard to the primary schools (1-8), high school (9-10) and preparatory across the town is not even. Thus, such distribution problem needs to be addressed in order to have better equal as well as even distribution and thereby to serve the population.

With regard to the area they occupied only 6 out of 23 schools or 26.1% are within the range. The other 6 are holding extra among them 3 are private. Therefore, when the municipality gives a land for investors should respect the standards and norms of the sector and need to encourage the present occupants to use the land to level of standard or upgrade the service to the secondary level. Even the government schools, who have occupied extra land, need to build more rooms in the compound and increase their intake to the maximum range of student to school ratio.

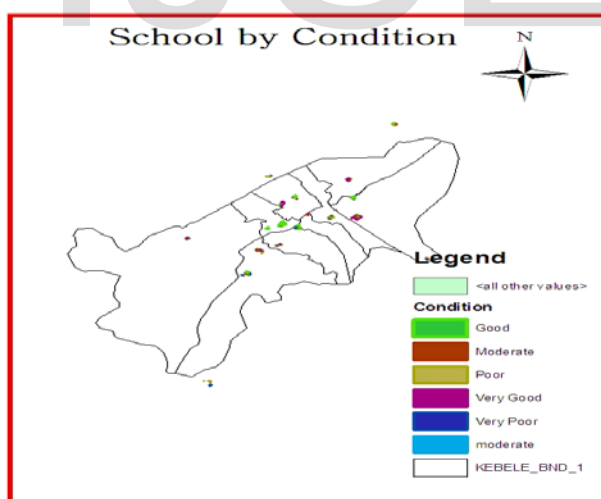


Figure 3. 2 Schools by Conditions



### 3.4 Number of Enrolled Students

#### 3.4.1 Number of Standard against Standard

Table 3-4 depicts total number of students and the comparison against the standard. Accordingly, it is identified that the number of students enrolled in KGs, Primary Schools and Millennium High School are less in number from the school standard set by the Ministry of Education except Biruhtesfa, Basso and Andinet Primary Schools. On the other hand, in the H/Mamo Preparatory and Debre Birhan High School accepted students are more than the standard set by Ministry of Education. This implies that the town needs additional High Schools (three) and one Preparatory School to fulfill and met the standard.

**Table 3. 4 Total Number of Students**

SN	School Name	Grade Level	Number of Students in 2014		
			M	F	T
1	AbuneGorgorios	Kg-7	151	139	290
2	Addis ketema	1-4	107	137	244
3	Adventist	Kg-5	90	93	183
4	Andinet	1-8	593	721	1314
5	Atakilt	1-8	89	71	160
6	AtseZreyakob	1-8	482	649	1131
7	Baso Primery	1-8	369	542	911
8	Baso Secondary	9-10			
9	Birutesfa	1-8	646	940	1586
10	Chole	1-6	125	111	236
11	Debre Eba	9-10	352	444	796
12	Debrebirhan High School	9-10	1140	1340	2480
13	Genet Primery	1-6	213	182	395
14	H/Mamo Preparatory	11-12	768	746	1514
15	MelkteAcadamy	Kg-8	97	96	193
16	Merit	Kg-7	77	88	165
17	Millinium High School	9-10	96	109	205
18	Model No-2	1-6	169	259	428
19	New Life	Kg-7	140	138	278
20	Providence	Kg-8	309	362	671
21	SelamChora	1-4	28	45	73
22	Soresa	Kg-8	447	537	984
23	Tebase	1-8	538	604	1142
	<b>Total</b>				<b>18181</b>

*Source: Debre Birhan Administration Educational Office, 2014*

According to ANRS, Education Bureau standard, most of the schools have enrolled very small students, they are underutilized. According to this standard, schools from grade 1- 4, 1- 8 and secondary education expected to hold up to a maximum of 1500, 2000 and 3000 students respectively. Even though, this document does not say about the minimum thresholds others document fixes the minimum. For instance, the Ministry of Education standard has put the minimum and maximum (1000-2000 students for one primary full cycle and 1500-3000 students for a secondary school) which is almost similar with the maximum of the regional standard. On the other hand, the new Structural Plan Manual (2012) recommends one school need to be provided to 720-1440, and 480 - 800 for Primary (1-8) and Secondary (9-10 or 11-12) respectively.

For this particular case, since the number of primary schools are many and the private sectors and NGOs engagement is significant the average of the MOE standard (1000-2000) 1500 students for projection is suggested. For secondary school, even though the discrepancy between the Structural Plan Manual and the ANRS standard is too big in order to respect the regional standard and to narrow the differences and becoming safe in terms of land reservation it makes sound taking the average of the MOE for the projection which is 2250 students per school.

### 3.4.2 Gross Enrollment Trend

The educational facilities that are found in Debre Birhan serve both the residents of the town and the surrounding hinterland. Table 3-5 shows five year education enrollment.

**Table 3. 5 Gross Enrollment Trends and Projection**

GC	Years						
	2008	2009	2010	2011	2012	2013/14	2024
<b>Grade Levels</b>	<b>School Age Population</b>						
kg			1474	1485	1434	1413	2,575
1-4	5740	5785	6779	6934	7281	6785	12,363
5-8	5757	5889	6009	6087	5918	5270	9,603
9-10	3082	3235	2878	2535	2942	3481	6,343
11-12	1633	1652	1745	1777	1717	1514	2,759
<b>Total</b>	<b>16233</b>	<b>16561</b>	<b>17411</b>	<b>18818</b>	<b>19,292</b>	<b>18,463</b>	<b>33,643</b>

**Source: Debre Birhan Town Education Office (2014)**

The gross school enrolment in different levels shows increasing trends though there have been some sort of fluctuation towards decreasing. The number of students in first cycle (1-4), second cycle (5-8), and preparatory are increasing from year to year while the numbers are decreasing in the secondary school (9-10) especially in the years 2011 and 2014. This may happened due to relatively higher repetition and dropout rate. Therefore, there should be an intervention to be taken by the concerned government body to minimize drop out and repetition rate.

### 3.5 Teacher to Student and Student to Section Ratio

To deliver efficient, effective, quality and sustainable education for students, it is crucial to have well educated, qualified and sufficient number of teachers. In addition to this, the number of students per section should be within the determined standard for good teaching-learning process

**Table 3. 6 Teacher to Student and Student to Section Ratios**

SN	School Level	Standard adopted	Teacher to Pupil ratio	Standard Teacher to Pupil ratio	Student to Section ratio	Student to book ratio
1	1-4	TTI	1:29	1:35	1:38	1:1
2	5-8	Diploma	1:29	1:35	1:38	1:1
3	9-10	Degree and above	1:30	1:40	1:52	1:1
4	11-12		1:54		1:54	1:1

**Source: Debre Birhan Administration Educational Office, 2014**

Student/Pupil to Teacher Ratio is one of the indicators and such figures in the first cycle (1-4), the second cycle (5-8) and the secondary School (9-10) are below the standard set by MoE (which is 50 students per teacher) that indicates good deal of teaching-learning quality and efficiency. The ratio for the preparatory is above the standard (that is 1:54) which needs some adjustment and additional teacher. The same is true in the case of student to section ratio too in which the situation is good for the first cycle (1-4), the second cycle (5-8) and the secondary School (9-10) where the results are below the standard set by MoE (which is 50 students per section) while it is above the standard for the preparatory school where one section forced to accommodate 54 students requiring additional sections. A lower the ratio in comparison with the standard means under utilization of resources whereas a large ratio

implies overcrowding of students in section that can affect the teaching learning process and thereby the quality as well as efficiency of education.

To sum it up (considering School Age Population and the Standard) as mentioned above the followings are recommended:

- The available primary first cycle schools (1-4) are eighteen (both Private and Government) in the town while the required number in the projected growth boundary is only eight which shows the presence of extra ten schools indicating under-utilization of resources. Thus, simply in order to meet the catchment requirement for the planning period one additional first cycle school for the expansion area (sub-Center) is recommended.
- The same is true in the case of primary second cycle (5-8), in which there are sixteen while the required number are only six which shows the presence of ten schools indicating under-utilization of resources. Thus, simply in order to meet the catchment requirement for the planning period in the expansion area (sub center) one additional second cycle primary school (5-8) is recommended.
- There are now four secondary schools (9-10) which are enough but simply in order to meet the catchment requirement for the planning period in the expansion area and taking in to account this service demand in peri urban areas one additional secondary school is proposed.
- There is one preparatory schools (11-12) in the town and the projected number is also one (2,759/3000) and hence one additional preparatory school is recommended in the sub-centers located to Addis Ababa outlet taking into consideration the future town growth orientation. The same is also suggested for TVET, and one is recommended to in the subcenter towards Ankober road.

## **Chapter Four**

### **4. Health Service**

#### **4.1 Introduction**

Like other infrastructures, health service deals with the question of availability, provision, distribution, accessibility and meeting standards. High-quality health services are a priority issue for citizens and rights to health care a recognized issue.

The Ethiopian health care delivery system has historically been unable to respond qualitatively or quantitatively to the health needs of the people. It has been highly centralized and services are delivered in a fragmented way with a reliance on vertical programs and there is little collaboration between public and private sectors. At the centre of the problem is the backward socio-economic development resulting in one of the lowest standard of living, poor environmental conditions and low level of social services. This prevailing situation has been aggravated, in recent years, by the high population growth. The other cause of health situation in Ethiopia can also be attributed to the isolation of large segment of society from the modern health sector. Wide spread illiteracy prevents the dissemination of information on modern health practices. A shortage of trained personnel and insufficient funding also hampers the equitable distribution of health services. Above all most sounding health institutions are concentrated in urban centers while 85% of the population is rural.

The major constraints of the health service are the low number of health care facilities which are ill- equipped, mal-distributed and in a state of disrepair, an ineffective health care delivery system which is top heavy, uncoordinated, inefficient and biased towards the curative service, a very centralized and undemocratic health care delivery system and management, an acute shortage of human and material resources with inefficient utilization of the available and the almost nonexistent involvement and participation of the private sector and the beneficiary communities.

#### **4.2 Existing Health Care Facilities**

Table 4-1 presents the available health institutions, ownership, location, compatibility and so on that helps to assess health service situation of the project town.

Thus, Debre Birhan Referral Hospital by now is serving about 1.2 million populations of the town and the adjacent rural kebeles. Though the hospital is assumed to serve 1.2 million populations, there are other health institutions (like Ayu Hospital, Health Centers, Health Posts and Clinics) which together stand to serve these population. Besides, as Addis Ababa is with near proximity people also get such service from Addis Ababa too. And there is also another private hospital which is still under construction named as Dr.Gizaw Desta Metasebia Hospital, which augments access to quality health facility for the town.

**Table 4. 1 Existing Health Facilities Compared with the Standard**

SN	Type of Service	Year of Establishment	Ownership	No	Population Served	Standard Population	Gap	Location (Keble)	Area9Ha)	Compatibility
1	Referral Hospital	1950s	Government	1	1.2million	250,000	-	03		Incompatible
2	Health Center	.	Government	1	50,221	25,000	1	07	0.6715	Compatible
3	Health Center	1993/4	Government	1	50,221	25,000 each		03	0.6209	compatible
4	Health Center		Government	1	50,221	25,000 each		09	0.6650	compatible
5	Health post	-	Government	14	100,443	5000 for each	0	-		Incompatible
6	Clinic	-	Private	16	-	-	-	06, 09, 02, 03, 08		Incompatible
			Government	2	-	-	-	04, 05		-
			NGO	1	-	-	-	-		-
			<b>Total</b>	<b>19</b>	-	-	-	-		-
5	Pharmacy	-	Private	11	-	-	-	06,03,04,02		-
			Government	-	-	-	-	-		-
			NGO	1	-	-	-	01		-
			<b>Total</b>	<b>12</b>	-	-	-	-		-

**Source: Debre Birhan Health Office, (2014)**

Table 4-2 depicts health professionals of the referral hospital and as shown in it there are a total of 195 health professionals with different area of specialization but the number of professionals are still below the standard set by World Health Organization (WHO). Thus, it needs due attention from all the concerned bodies. With regard to the area occupied specially the health centers occupied almost 0.6Ha which is in the standard.

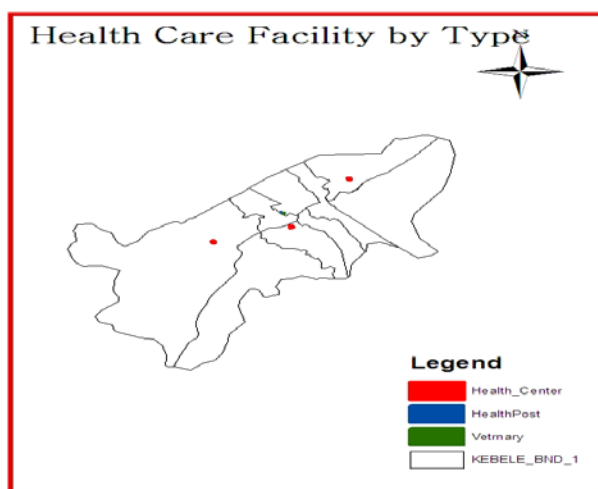


Figure 4. 1 Health care Facility by Type

Table 4. 2 Existing Health Professionals in Debre Birhan Referral Hospital

SN	Professionals	Existing Ng	WHO Standard	Gap
1	SP	6	10	-4
2	MD	29	*	
3	JUN/MD	2	*	
4	H0	6	*	
5	BSC/N	28	32	-4
6	BSC/LAB	6	12	-6
7	BSC/PHAR	11	10	+1
8	BSC/MW	5	11	-6
9	BSC/DEN	-	6	-6
10	BSC/OPHTA	1	4	-3
11	BSC/C/SURGEON	1	12	-11
12	BSC/SANITARY	1	2	-1
13	PHISIO THERAPHY	1	12	-11
14	DEN/DIP	1	6	-5
15	MW/DIP	12	*	
16	C/N/DIP	90	130	-40
17	LAB/DIP	11	22	-11
18	PH/D	12	*	
19	XRAY/D	2	*	
20	ANIS/DIP	6	*	
21	XRAY/DIP	9	*	

22	OPH/N	-	4	-2
23	EDUCATION	1	3	-2
24	SANIT/DIP	1	*	
25	LAISEN/N	3	*	
26	LAB/AID	3	*	
<b>TOTAL PROFESSIONALS</b>		<b>197</b>		

Source: Debre Birhan Referral Hospital (2014)

As the information obtained from the health office, there are three health centers, which are located in kebele 03 and 07. Their plot area is 6209-6715m<sup>2</sup> (0.6 ha) each which is almost equal to the standards. These health centers serve nine kebeles in the town and five adjacent rural kebeles. According to the population projection, the population of the town will be some 158,297 in the year 2024 (at the end of the planning period). For which additional three health centers will be required (1 to meet the existing population demand and 2 for the future planning period). In addition, there are other seventeen medium clinics.

There are fourteen health posts located in all urban and rural kebeles under the administration of the municipality. The plot area of five rural kebele health posts is 18 by 28 =504m<sup>2</sup> each. But, the remaining 9 health posts are co-existed in each kebele administration office without their own standard office. From planning point of views, these require their own plots.

There are also eight drug vendor and pharmacy (one is owned by NGOs and the remaining seven are private owned).

**Table 4. 3 Level of Services, Spaces and Locations of Health Facilities**

Type of the Facility	Plot area (ha)	Standard Space Requirement	Gap	Catchment's area (radius)	Standard Catchment's Area (radius)	Location
Health Post		0.11ha			<1km	Size for such services should be adjoining a kebele center and have easy access to transport
Health Center	0.6ha each	0.45-0.6 ha	0	4.989km	Woreda (<2 km)	With in the residential area and accessible along collector roads No dumpsters, noisy activities
District Hospital		2ha			Woreda level	Within the catchment area, within walking distance from mass transport system, and along collector roads.
Regional Hospital		1_1.5ha			Regional	Site should be near to and within



					level	walking distance of secondary centres and mass transport services
Special/Referral Hospital		*			National level	Should be at a distance of 200 m from market areas, noisy industries and other premises including garages.

Source: Field Survey (2014)

Figure 4-2 shows spatial distribution of health institutions in Debre Birhan. Accordingly, the referral hospital is located in the central part of the town and hence it is located in a good site though it has some sort of incompatibility with other uses like the bus station. This problem needs to be solved in the land use proposal.

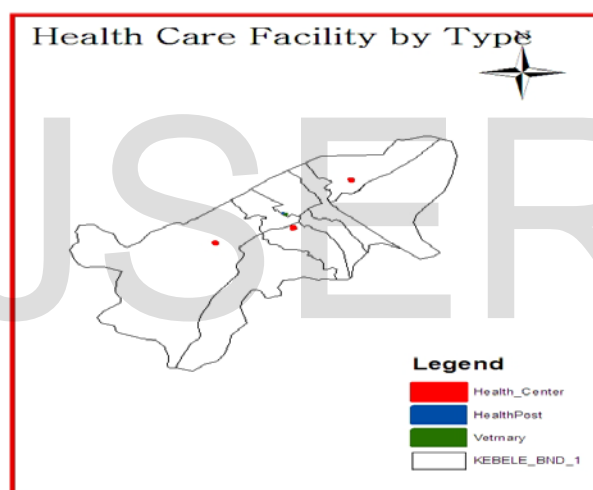


Figure 4. 2 Spatial Distribution Map of Health Institutions

### 4.3 Types of Health Services and Major Disease

Debre Birhan referral hospital and the two health centers are performing different health services. As per the information obtained from the Health Office (2014), the major services provided by health centers include:

- Outpatient;
- Mother and Child Health Care (MCH);

- Family Planning;
- Antenatal and Postnatal services;
- TB screening and treatment;
- Volunteer Counseling and Blood Test (VCT);
- Antiretroviral Therapy (ART);
- Laboratory services;
- Mother support group and etc.

In addition they provide preventive services like health education, Expanded Immunization Program (EIP), as well as major and minor operations.

**Table 4. 4 Leading Diseases of Morbidity**

S N	Disease	Unit (Patients in 2011)	%	Unit (Patients in 2014)
1	Acute upper respiratory infection	2337	20.3%	5571
2	Typhoid fever	1078	9.3%	3465
3	Deaharia	-----	---	2516
4	Pneumonia	848	7.3%	2264
5	AFI (Acute Feverile Illness)	618	8.5%	2173
6	UTI (Urinary Tract Infection)	983	7.3%	2132
7	Helminthiasis			1964
8	Eye Diseases			1632
9	5km infection			1520
10	Deaharia non Bloody	516		1447

**Source: Debre Birhan Town Health Office (2014)**

Table 4-4 shows the first ten morbidity leading diseases in the town. The first is being acute upper respiratory infection, which is increasing at alarming rate. Such kind of increments has been also noticed well in typhoid fever and pneumonia. This needs due attention from the city administration and work closely with the health care institutions through arranging health education and other preventive mechanisms.

#### **4.4 Origin of the Patients**

The referral hospital is intends to provide health services for the whole population of Debre Birhan Town, North Shewa Zone and even other neighboring zones. From the interview made with the hospital’s administration, the origin of patients is more from rural areas. As it has been explained by the head of the health office, the causes of illness is directly related with environment, water and food quality.

#### 4.5 Health Professionals in Private and NGOs Health Institution

Private and NGO health services are significantly supporting the health sector in the town directly or indirectly. As shown, somewhere earlier in the previous table (11-25), there are different health institutions under the ownership of private and non-governmental organizations. To highlight this, there is one hospital, seventeen clinics and 12 pharmacies which provide health services for the town as well as the hinterland. Table 4-5 indicates the health professionals working in these institutions.

**Table 4. 5 Professionals in Private and NGOs**

SN	Health Professionals	Place of Work		Total
		Private	NGOs	
1	Nurses	10	3	13
2	Laboratory technician	4	1	5
3	Health assistance	2	–	2
4	Pharmacy technician	8	–	8
5	Doctor	4	–	4
6	Health officers	–	1	1
Total		28	5	33

**Source: Debre Birhan Town Health Office (2014)**

The total number of health professionals working under those institution is 33 (28 are working in private health institutions while 5 are working in NGOs health institutions).

As to conclusion, there is a need more four health centers to meet the existing two deficit and the two future demand and plots for those health posts operating under kebele offices. On top of this, some institutions have shortage of professional that must be addressed to use the existing facility to the desired level and to respond the customers demand (like the Referral Hospital).

## Chapter Five

### 5. Other Services

#### 5.1 Religion Facilities

It is the most common way in which social relation is strengthened by religious diversifications. In Debre Birhan Town, like any other urban areas in the country, there have been different kinds of religions such as Orthodox, Protestant, Catholic, Muslim, Advents (Seven days) and others. In dealing with religious facilities, review population in those religions is necessary. For which, Table 5-1 depicts distribution of population proportion and worship places belong to them by religion groups based on the data obtained from the sample survey (2014). This is due to the fact that distribution of religious facilities (like worship places, cemeteries, etc) should be in line with population. Orthodox is the most dominant religion that accounts 93.6 % from the total population while all others account the rest proportion.

**Table 5. 1 Population Proportion and Worship Places by Religions Groups**

SN	Religions	Population (2014)		No of worship centers	Area/Ha
		Number	Percentage (%)		
1	Orthodox	10214	93.6%	13	80.5
2	Protestant	318	2.9%	7	2.1
3	Catholic	22	0.2%	2	3.5
4	Muslim	357	3.3%	2	0.5
5	Others	0. 2	001%		
	Total	10913	100.0%	24	86.6

**Source: Socioeconomic Sample Survey (2014)**

Worship places are the most significance area for a society in order to worship and undertake other religious related social activities. The land demand for worship places is increasing from time to time in Ethiopia and Debre Birhan as well. Worship centers are mushrooming in quiet residential neighborhoods even mixed within a residential compound causing disturbances. In addition unnecessarily vast land is occupied by some worship centers, although there are some others that do not have sufficient space for worship. In some cases these problems could cause conflicts among different religious followers. Considering this

conflict of interests the Amhara National Regional State enacted a regulation no 15/2006 which enables urban local governments or municipalities to respond in fair manner for all religious type request. Some of the important elements of the regulation include:

1. Population Size: A minimum number of applicant religious institute whose age greater than 18 years old need to be 600 followers for those who has already a land for similar service and demanding more land and 150 followers for new applicants;
2. Distance: 2000km is the minimum distance between two similar religious services;
3. Clearance: clearance from other types of religious service is 1000 meter and the minimum distance from health or education facility is 200 meter;
4. Area: the plot size excluding worship place need to be from 2000- 3000m<sup>2</sup> of this 40% need to be used for buildings; etc.

With regard to land demand for worship, the Muslim and Protestant community is applying to the municipality to get additional land somewhere else. Looking at the existing additional worship place demand and their number growing in the future, one site at the back of the University compound is proposed for Mosque, this proposal also considers the number of the University Muslim community for this facility. Other two sites (one in kebele 07 and the other in Kebele 09) are proposed upon request of the protestant religion followers. All sites are selected and proposed based on the criteria set by ANRS Regulation No 15/2006.

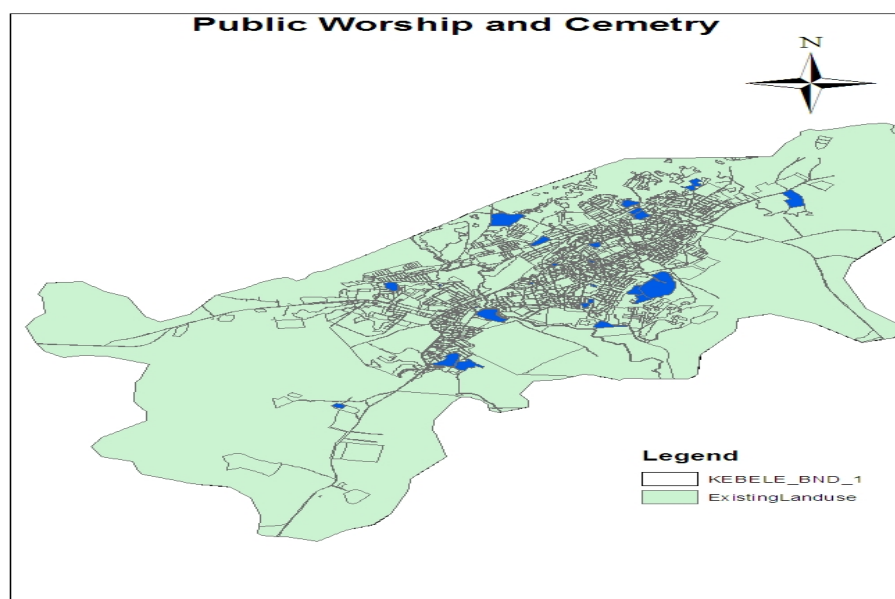


Figure 5. 1 *Distribution of Worship Places*

## 5.2 Cemetery

In Debre Birhan, the two religions have their own cemeteries that are the Orthodox which own 13 cemeteries and the Muslims which own 1 cemetery. While all other religions have only one common cemetery place and due to which followers of these religions have encountered problems that include long distance movement to buried their family and the cemetery is found near residential area and even it is crossed by newly constructed road. With these justifications, they are frequently requesting the municipality to get additional places for this purpose. In consultation with the municipality and keeping in mind the ANRS regulation no 15/2006 EC a municipal cemetery is recommended which can be regulated by the municipality and shall be used by the whole by putting boundary mark to differentiate the encroachment of the one over the other religion followers and to avoid potential conflicts.

**Table 5. 2 Cemeteries, Location and Size in the Town**

SN	Religions	Number	Followers (HH)	Area/m2	Location
1	Orthodox	13	10214 (93.6%)	803,000	In Kebele 3,4,5,6,7,8,9
2	Protestant, Catholics and Adventist	1	342 (3.1%)	30,944	In kebele 06
3	Muslim	1	357 (3.3%)	32,139	Kebele 03 (Asanis Mariam)
<b>Total</b>		<b>15</b>		<b>866,083</b>	

**Source: Religion Institutions and Sample Survey, (2014)**

The existing cemeteries are situated not in based on the norms and standards of planning and regional government respective regulation which are causing nuisance and creates inconvenience for those who are residing around. In addition to that, most of them occupy large area of land as shown in the table above. Those mentioned below must take in to consideration where and when feasible

- Always refer ANRS Regulation No 15/2006 to address the land demand for cemetery,
- The standard cemetery area can be set up on the basis of reserving an area of 2.88m<sup>2</sup> for one person,

- Recycling cemeteries should be done on existing cemeteries. With the presence of relatives the skull of a morgue should be collected and put in a proper place after seven years of the funeral date. Therefore the area could be used for new funeral service,
- Multi story burial system which is being exercised in some cemeteries in the town must be encouraged.

On the other hand to check the adequacy of the existing space against the number of population and growth rate, it was computed and the result is shown in the table below (Table 5-3).

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**Table 5. 3 Cemeteries Space Requirement**

Religions	Population in %	2009 up to 2014						2019 upto 2024						2014 up to 2024		Remark
		2014		2019		2014-2019		2019		2024		2019-2024		Death per 10 years	Space required in m <sup>2</sup>	
		population (total pop.=99151)	Death rate=1.11 %	Population	Death	Death per 5 years	Space required in m <sup>2</sup>	population	Death	Population	Death	Death per 5 years	Space required in m <sup>2</sup>			
Orthodox	(93.6%)	92,805	1030	133,840	1486	6290	18,115	133,840	1486	180,665	2005	8727	25135	15,017	43,250	Area occupied=188621m <sup>2</sup> 43250/188621=22.9%
Protestant + Catholic	(3.1%)	3074	34	4150	46	200	576	4150	46	5602	62	270	778	470	1354	Area occupied=
Muslim	3.3%	3272	36	4417	49	213	613	4417	49	5962	66	288	830	501	1443	Area occupied=
Total															46,047	
Municipal (10%)															4,604	4604/2.88=1600 inh.
G. Total															50,651	
Total	100%	90230	1949	117608	2541	11226	32330.9	117608	2541	153294	3612	38535	44301.6	13904	40043.52	

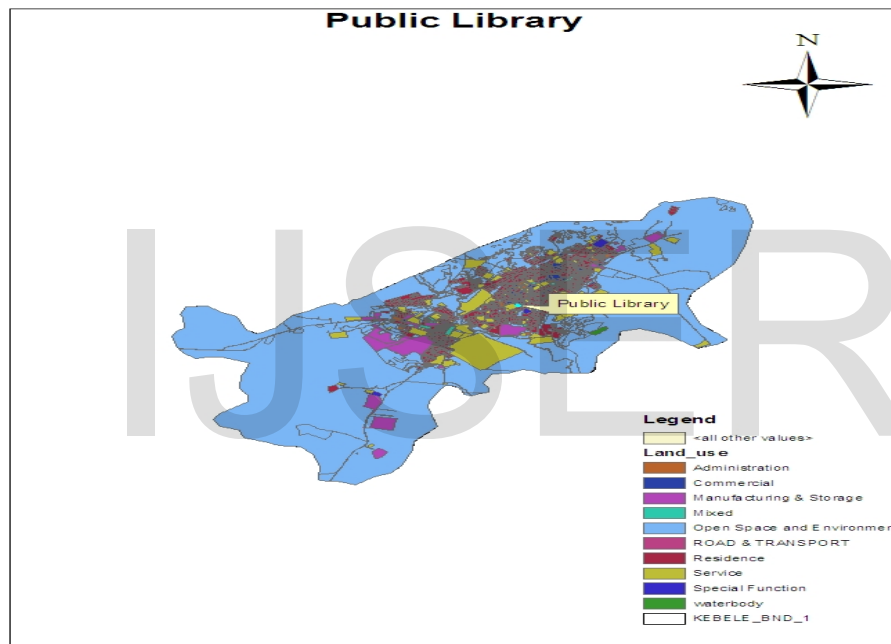
**Notes:**

- Maximum population in five years time is taken for safety purpose
- Contingency of 10% is considered for fences, waiting rooms, etc
- Death rate =11.1/1000 inhabitant
- 2.88 m<sup>2</sup> space for a person is considered
- Contingency 10% of the total area required for 2014-2024= 44047.9m<sup>2</sup>



### 5.3 Public Library

There are two public libraries in the town. One of these is, well furnished with internet connection, located in kebele 06 open to the public and also it serves the university students. The second one is situated in kebele 04 delivering service for KGs and primary students who lived in the nearby areas. In terms of numbers, these are not sufficient enough and with respect to quality and organization they need improvement. Other than these, their spatial distribution is still pothole (Figure 5- 2). Thus, additional public libraries are required and hence are proposed.



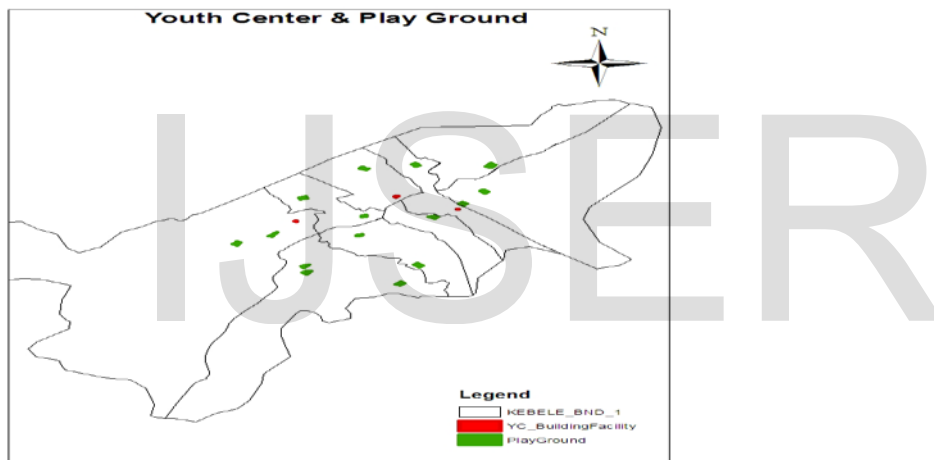
*Figure 5. 2 Distribution Map of Public Facilities*

### 5.4 Sport, Recreation Facilities and Youth Center

There are four sport and related fields and facilities in the town. Even though their number is not adequate, they are well distributed. The sport fields are found in kebele 04, 05 and 07. The stadium is at kebele 01. Only three play grounds/fields are available in the town. In the out

going master plan more number was proposed but changed in to other uses. According to the standard and demand of the dwellers more fields needs to be reserved. The MoUDHC standards recommend the play field area to be per Kebele, (Sport and recreational facilities Football field) for children to be -  $65^{+7.6} \times 100^{+12} - 8064 \text{ m}^2$ . The new stadium is not yet constructed to the level it requires and it is not yet on function.

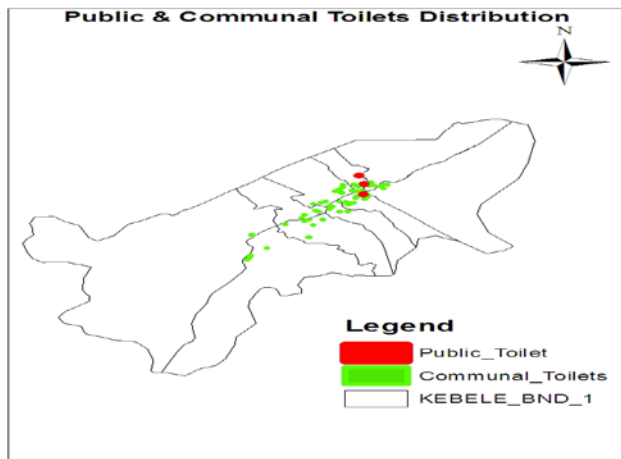
With regard to youth centers, at present there are four youth centers partly in operation and two of them still are under construction. They are built keeping the standard and well distributed and positioned in Kebeles 02, 04, 06 and 07, even though still there is more demand. The MoUDHC standards recommends that the Children and youth centre area to be:  $12,000 \text{ m}^2$ . There is also agreement with the municipality this service to be provided as much as possible per kebele.



*Figure 5. 3 Youth Center and Play Ground*

## 5.5 Public Toilets

There are three public toilets in the town which are located in and around the market center of the town in kebele 02 which is the market place, which is highly appreciable. Figure 11- 9 shows the distribution of these public toilets. These are found in one area while other large parts are devoid of such facilities as plainly revealed in the map.



*Figure 5. 4 Distribution of Public Toilets*

According to the information obtained from the municipality, there are other Fifty Seven communal toilets. In general, the numbers, quality and capacity of all the public and communal toilets are below the demand as per the populations. Besides, their distribution is also uneven. Thus, the municipality has to construct more public and communal toilets exploring where there is high and urgent demand in the short term and they can be proposed and implemented through LDP where applicable in this planning period.

## **5.6 Abattoir**

Debre Birhan has one standardized abattoir in southeast part of the town (See Figure 5-5). The level of the abattoir according to the federal manual is falls under Medium abattoir Satellite (50-75 cattle /day and 100-200 shoat/day). However, considering the future high population growth rate and economic development, this study recommended the abattoir capacity to be upgraded to at least to the next higher rank called Higher Abattoir with the capacity of the number 75-100 cattle /day and 250-300 shoat/day with the plot size of 2-2.5Ha considering Maximum Site Occupancy Ratio (SOR in %) of 50.



*Figure 5. 5 Abattoir*

When it was constructed twenty Eights before it was at the periphery, now this locality becoming place of residence and other services. Its location is not acceptable as it is found near to residential areas and the flour factory that is one of the reasons to have incompatible land use with the adjacent activities. And hence, it creates serious environmental air pollution and makes the neighborhood disgusting odor which has the negative health effect over dwellers around them. The waste management system is not up to the desired standard level. Besides, it is found far from the cattle market. Thus, it is recommended to be relocated and a new site has been proposed considering all the necessary criteria.

## **5.7 Market Facilities**

Debre Birhan has got one open (general) market, one cattle market, two gulits, one shaded and store house. The market service is open and semi-covered market, shops, mini supermarkets selling commodities and food items and giving services with a structure of G+0-G+3 of semi-covered and open markets. The market attendees come from all directions. In the north they come from Zanjira, Eblete, Yohanness and Chale areas. In the south they come as far as from Feji and Chacha. They also come from Atakilt, Debele, Berale, Wusha-Wusha, Guango and Tenkole in the east; and Angolela, Genet, and Mendida in the west.

### **5.7.1 General and Gult Markets**

Debre Birhan has got one open market in kebele 02 with an area of 4.2 hectare that makes it Level Three market as per the standard (which is between 1.2 and 6 ha). The major weekly market day is that of Saturdays while Wednesdays and Fridays are also the minor market days.

The open market has problems that need to be considered by the municipality that include: The place is being earth pressed and becomes muddy during rainy season seriously affecting the marketing, mobility and exchange; It has no proper shedding; and it has no differentiated/separated staying place for the market attendees and animals.

To this end, it is possible to maintain the existing open market during the planning period with few adjustments that could solve the above problems. Paving the market with concrete or coble stone would help to minimize and/or avoid the mud problem that was hindering smooth mobility and exchange among market attendees. Moreover, provision of shed and sufficient public toilets should be fulfilled. Delineating the market area will also help to avoid encroachments by illegal land uses. It is also advisable to separate staying places for the attendees and pack animals.

Other than this general market area, there are two gult market areas which are found in Kebele 04 and 09. The one which is found in kebele 04 has an area of 9356 m<sup>2</sup> while the second which is found in Kebele 09 has an area of 36813m<sup>2</sup>. In addition, there is also one warehouse in Kebele 09 and one shaded market place near to the general market. In this regard, there is critical shortage of warehouses. Following this observation and the future town structure two tertiary level markets in two proposed sub-centers need to be provided in order to serve the whole community with fair manner with desired level of facilities and above all for the Enhancement of economic activity.

### **5.7.2 Cattle Market**

The cattle market of the town, which is legendarily told to be established in 1447 E.C, is located between kebele 02 and 08. The location of the cattle market is ideal from the point of view of accessibility and from the flow direction of livestock. This is due to the fact that most of the cattle come from Menz, Ankober and Debre Sina areas. It is also located at few distances from the open market that made it feasible for past times. However, the market has got several problems that favor its relocation, which include: It encounters severe shortage of space where high overcrowding and congestions especially at the shoat waiting area are the usual problems;

There is no any free and appropriate area/space for expansion on the immediate outside areas; The place where it is found is not paved and/or leveled and hence is found seriously degraded and burrowed by cattle hooves and created mud on the other edge affecting mobility; There is no drainage system in the market that would have helped smooth discharge of flooding and animal urine; Although there is a public toilet with some distance from the cattle market, It is not properly and sanity manner being used and hence common to see open defecation beyond the market fence; and The market has no related facilities such as animal watering and feeding through, water service, mobility access, etc.

This service is also situated just along the Sub Arterial Road which is expected to connect a good proportion of various localities in the town. In light of this, the structure plan of the town has proposed a new cattle market area with short distance west of the existing cattle market area. The municipality should therefore, provide/supply the new market with all the necessary market facilities and services that the existing was deprived of.

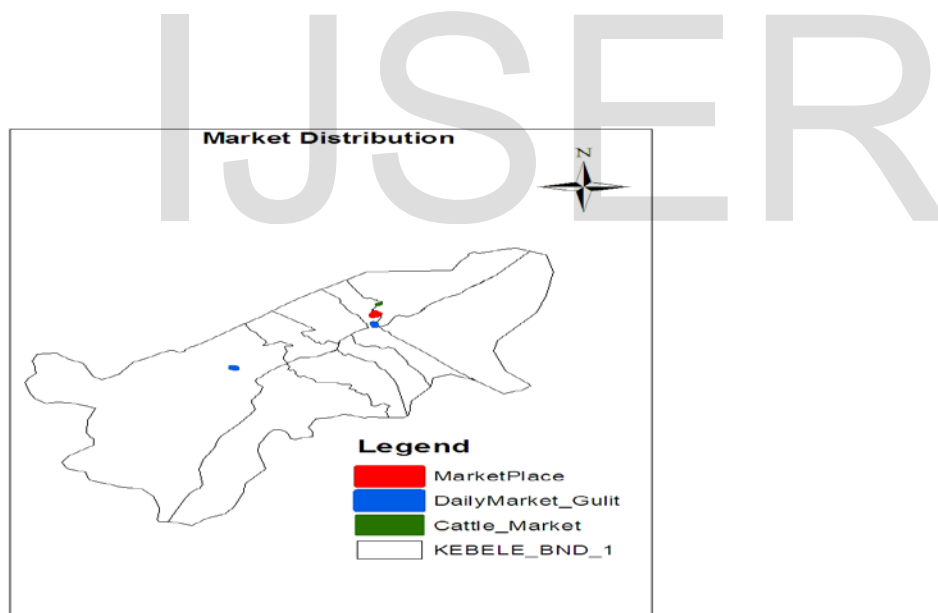


Figure 5. 6 Market Locations

## Chapter Six

### 6. Major Findings, Conclusions and Recommendations

#### 6.1 Findings

- The presence of location incompatibility of services;
- Uneven and unfair distribution of social infrastructure services;
- Inadequate physical infrastructure;
- Absence of adequate public meeting hall and recreational facilities;
- Absence of open spaces and greeneries; and
- Inadequate data organization system and lack of structural integration.

**Table 6. 1 SWOT**

<b>Strength</b>	<b>Weakness</b>
<ul style="list-style-type: none"> <li>▪ Suitable climatic condition and its interesting landscape both for habitation and to undertake any developmental activities;</li> <li>▪ Better social interactions and relations as well as community participations;</li> <li>▪ Commitment of the city administration to plan and develop the town accordingly;</li> <li>▪ The willingness of the community to participate in developmental activities;</li> <li>▪ The availability of different religious institutions and facilities for the society;</li> <li>▪ The participation of religious institutions in developmental activities such as provision of educational service on primary school and good trend in preserving forest;</li> <li>▪ Availability of many pre-primary and private schools;</li> <li>▪ There are adequate teachers in the first and second cycle primary Governmental schools with appropriate qualifications;</li> <li>▪ Availability of private and public higher</li> </ul>	<ul style="list-style-type: none"> <li>▪ Inefficiency, incompatibility, poor building conditions and bad smell of the existing slaughter house;</li> <li>▪ Shortage of some professionals and location incompatibility of education institutions;</li> <li>▪ Absence of fire brigade service at all in the town;</li> <li>▪ Inadequate post collection boxes;</li> <li>▪ Shortage of number of public library (which are only two);</li> <li>▪ Improper holding of religious institutions (some have not enough cemeteries like protestant church);</li> <li>▪ Uneven spatial distribution of service delivering institutions and majority of the services are concentrated around some specific areas i.e. along the main road;</li> <li>▪ Absence of swimming areas and pools;</li> </ul>

<p>institutions such as university, colleges, health district hospital, and private health institutions;</p> <ul style="list-style-type: none"> <li>▪ The presence of stadium which has a potential to provide sport and public meeting function;</li> <li>▪ Availability of excess expansion land resource for industrial and any public Facility developmental endeavors;</li> <li>▪ Establishment of community policing across each kebeles and their commitments;</li> </ul>	<ul style="list-style-type: none"> <li>▪ Problem of organization and management of data in each institutions and even in each sectors;</li> <li>▪ Un-equivalent proposition of the existing police force with the existing number of population;</li> <li>▪ Less community base training to increase the public awareness and self protection methods;</li> <li>▪</li> </ul>
<p><b>Opportunity</b></p>	<p><b>Threat</b></p>
<ul style="list-style-type: none"> <li>▪ Current general national and regional governments focus on urban development and support for development of the town;</li> <li>▪ The presence of supporting government policy and strategy for urban development;</li> <li>▪ The presence of Government (Debre Birhan University, College, and Referral Hospital ) and Private (Health College and Hospitals) owned institutions;</li> <li>▪ Peace and political stability in the country as well as over all in Debre Birhan;</li> <li>▪ Potential expansion areas;</li> <li>▪ The government policy towards involvement of the private sector on health provides a significant role on wellbeing and health of the society;</li> <li>▪ Good road connectivity with towns in the influence area;</li> <li>▪ The growing acceptance of NGOs, charity and donor organizations by the Federal, Regional, local and Municipal Governments and the community at large;</li> <li>▪ The government policy that encourages local NGOs to actually participate in the implementation of projects for the needy while it encourages international NGOs to be donors;</li> <li>▪ The secured twinning sister-ship relation with the France City;</li> </ul>	<ul style="list-style-type: none"> <li>▪ Rapid price escalation of construction material;</li> <li>▪ Prevalence of disease like acute upper respiratory infection and other communicable diseases (HIV/AIDS);</li> <li>▪ The presence of the prevalence of HIV/ADIS;</li> <li>▪ Wide spread of drug houses, pubs and night clubs both at the central as well as around university and other educational institutions would affect the moral dignity of the students in general and the surrounding community.</li> </ul>



- |  |  |
|--|--|
| <ul style="list-style-type: none"><li>▪ The ongoing local and municipal reform and decentralization programs in the country that would definitely empower local communities to have role in their own affairs.</li></ul> |  |
|--|--|

## 6.2 Conclusions

Indisputably economic development and social welfare require passable infrastructure provision based on proper planning. Thus, for the town under consideration all physical and social infrastructures are analyzed to be used as an input for structure plan preparation. Generally infrastructure plays a critical role in promoting economic growth through enhancing productivity, reducing poverty, linking people and organizations' improving competitiveness, and contributes for environmental sustainability. While it is so, the fact in Debre Birhan showed enormous problems concerning compatibility, accessibility, availability, sufficiency and effectiveness of physical and social infrastructures.

## 6.3 Recommendations

Thus, the following major points are recommended, in order to alleviate those problems and shortcomings.

- Realizing proper resource utilization in the primary schools notwithstanding the future required in the expansion areas, establishing the required secondary and preparatory schools;
- In addition to filling the health professionals gap, a total of four (two for the existing and for the future) additional health centers need to be realized;
- The problem of health posts (which have not independent place) should be considered in any possible way;
- Effecting proper cemetery spaces for those religious institutions which have distribution problems in terms of access;
- Provision of evenly dispersed and sufficient play grounds/sport fields as well as youth centers in all kebeles;

- Improving the condition of the general market and provision of sufficient warehouses should be provided for each production center to accommodate the produced goods;
- From public amenity perspective provisions of fire brigade service are mandatory in the town, so it should be provided by the municipality;
- Provision of additional public libraries based on the planning standards;
- Provision of additional public and communal toilets where appropriate; and

## 6.4 Issues Seeking Planning Solutions

### 1. Education

- The available primary first cycle schools (1-4) are eighteen (both Private and Government) in the town while the required number in the projected growth boundary is only 8 which shows the presence of extra ten schools indicating under-utilization of resources. Thus, simply in order to meet the catchment requirement for the planning period one additional first cycle school for the expansion area is recommended.
- The same is true in the case of primary second cycle (5-8), in which there are sixteen while the required number are only six which shows the presence of ten schools indicating under-utilization of resources. Thus, simply in order to meet the catchment requirement for the planning period in the expansion area one additional second cycle primary school (5-8) is recommended.
- There are now four secondary schools (9-10) which are enough but simply in order to meet the catchment requirement for the planning period in the expansion area and taking in to account the this service demand in peri urban areas one additional secondary school is proposed.
- There is one preparatory schools (11-12) in the town and the projected number is also one (2,759/3000) and hence one additional preparatory school is recommended in the sub-centers located to Addis Ababa outlet taking into consideration the future town growth orientation. The same is also suggested for TVET, and one is recommended to in the subcenter towards Ankober road.

- The numbers are decreasing in the secondary school (9-10) especially in the years 2011 and 2014. This may have happened due to relatively higher repetition and dropout rate. Therefore, there should be an intervention to be taken by the concerned government body to minimize drop out and repetition rate.

## **2. Health**

As the information obtained from the health office, there are three health centers, which are located in kebele 03 and 07. Their plot area is 6209-6715m<sup>2</sup> (0.6 ha) each which is almost equal to the standards. These health centers serve nine kebeles in the town and five adjacent rural kebeles. According to the population projection, the population of the town will be some 158,297 in the year 2024 (at the end of the planning period). For which additional three health centers will be required (1 to meet the existing population demand and 2 for the future planning period). In addition, there are other seventeen medium clinics.

## **3. Youth Center and Play field**

There are only three play ground in the town which is much less than the town demand. The MoUDHC standards recommend that the Kebele level Sport and recreational facilities, (Football field for children) - to be  $65^{+7.6} \times 100^{+12} - 8064 \text{ m}^2$

With regard to youth centers, at present there are four youth centers partly in operation and two of them still are under construction. They are built keeping the standard and well distributed and positioned in Kebeles 02, 04, 06 and 07, even though still there is more demand. The MoUDHC standards recommends that the Children and youth centre area to be: 12000m<sup>2</sup>. There is also agreement with the municipality this service to be provided as much as possible per kebele.

## **4. Worship**

Worship places are the most significance area for a society in order to worship and undertake other religious related social activities. The land demand for worship places is increasing from time to time in Ethiopia and Debre Birhan as well. Worship centers are mushrooming in quiet residential neighborhoods even mixed within a residential compound causing disturbances. In addition unnecessarily vast land is occupied by some worship centers, although there are some others that do not have sufficient space for worship. In some cases these problems could cause conflicts among different religious followers. Considering this conflict of interests the Amhara

National Regional State enacted a regulation no 15/2006 which enables urban local governments or municipalities to respond in fair manner for all religious type request. Some of the important elements of the regulation include:

- Population Size: A minimum number of applicant religious institute whose age greater than 18 years old need to be 600 followers for those who has already a land for similar service and demanding more land and 150 followers for new applicants;
- Distance: 2000m is the minimum distance between two similar religious services;
- Clearance: clearance from other types of religious service is 1000 meter and the minimum distance from health or education facility is 200 meter;
- Area: the plot size excluding worship place need to be from 2000- 3000m<sup>2</sup> of this 40% need to be used for buildings; etc.

With regard to land demand for worship, the Muslim and Protestant community is applying to the municipality to get additional land somewhere else. Looking at the existing demand and their number growing in the future, one site at the back of the University compound is proposed for Mosque, this proposal also considers the number of the University Muslim community for this facility. Other two sites (one in kebele 07 and the other in Kebele 09) are proposed to address the demand of the protestant religion followers.

## **5. Cemetery**

Christianity and Muslim followers are frequently requesting the municipality to get additional places for this purpose. In consultation with the municipality and keeping in mind the ANRS regulation no 15/2006 EC a municipal cemetery is recommended which can be regulated by the municipality and shall be used by the whole by putting boundary mark to differentiate the encroachment of the one over the other religion followers and to avoid potential conflicts.

## **6. Market**

- Debre Birhan has got one open market in kebele 02 with an area of 4.2 hectare that makes it Level Three or Secondary market as per the standard. This open market has problems that need to be considered by the municipality that include: The place is being earth cover and becomes muddy during rainy season seriously affecting the marketing, mobility and exchange; It has no proper shedding; and it has no differentiated/separated staying place for

the market attendees and animals. Paving the market with concrete or cobble stone would help to minimize and/or avoid the mud problem that was hindering smooth mobility and exchange among market attendees. Moreover, provision of shed and sufficient public toilets should be fulfilled. Delineating the market area will also help to avoid encroachments by illegal land uses.

- Following the existing service observation and the future town structure two tertiary level markets in two proposed sub-centers need to be provided in order to serve the whole community with fair manner with desired level of facilities.

## **7. Cattle Market**

- This service need to be provided in the area qualify of the following:
  - In the peripheries of towns
  - In area where road reach to enable transport the cattle
  - Near but not adjacent to the slaughter house
  - Following the flow directions of cattle, equines, shouts, etc.
- On contrary, this service is also situated just along the Sub Arterial Road which is expected to connect a good proportion of various localities in the town. In light of this, the structure plan of the town has proposed a new cattle market area with short distance west of the existing cattle market area. The municipality should also therefore, provide the new market with all the necessary market facilities and services that the existing was deprived of.

## **8. Abattoir**

The slaughter house is almost 28 years old and its capacity is not also adequate, the waste management system is not up to the desired standard level as well. It is found near to residential areas and the flour factory that are also the reasons for this service relocation proposal. As a result, it creates serious environmental air pollution and makes the neighborhood disgusting odor which has the negative health effect over dwellers around them. Besides that, it is found far from the cattle market. It is, therefore, recommended to be relocated to the area where close to the new proposed cattle market.

## Reference

- Da-Ya, (2016) *Asset Management Plan of Debre Birhan Town*, AA
- **Da-Ya, 2015, *Debre Birhan Structure Plan*, AA**
- Embassy of The Federal Democratic Republic of Ethiopia in London, 2016, *Health Sector Strategy*, UK
- FDRE (2005) *Full PASDEP Document*, AA
- FDRE (2010) *Full GTP I Document*, AA
- FDRE (2015) *Full GTP II Document*, AA
- Lewis Roca Rothgerber Christie LLP.,2016, *Religious Institutions*,  
[www.lrrc.com/religious-institutions](http://www.lrrc.com/religious-institutions)
- **Tsegaye Kassa, 2003, Ethiopia: A Country Education Profile (Fact Sheet),  
[www.bibl.u-szeged.hu/oseas\\_adsec/ethiopia\\_ed\\_profile.rtf](http://www.bibl.u-szeged.hu/oseas_adsec/ethiopia_ed_profile.rtf)**
- UNESCO/UIS. 2014. Progress in getting all children to school stalls but some countries show the way forward. Paris/Montreal, UNESCO/UIS. (Policy Paper 14, Fact Sheet 28.)