

JOURNEYMAN INTERNATIONAL, INC.

DESIGN AND CONSTRUCTION PROPOSAL

BAHIR DAR PRENATAL HOSPITAL
BAHIR DAR, ETHIOPIA



Address to Grant sample

Pro
Ima

ject
age

Dear Reader,

Have you ever felt so passionate about something that you were not able to believe the opportunity when it presented itself? That is what this process and journey has been for me in working on this project.

My name is Katherine Aalund and I am a 5th year landscape architecture major at California Polytechnic State University, San Luis Obispo. I have wanted to participate in humanitarian design for a long time and have been blessed with the opportunity to work alongside an organization as incredible as Journeyman International.

As a Christian walking in my faith I believe that we are the hands and feet of our Creator and that it is our duty and prerogative to reach out and provide to those in need. I have been given the opportunity to receive a higher education and learn a specific tool, a practice. I intend to utilize this tool to further my Father's kingdom here on Earth in the hopes that more will be saved through the collaboration of work on this project.

This hospital in Bahir Dar, Ethiopia is a dream for me, and over the last two months I have thoroughly enjoyed re-searching the culture, land, traditions, and rich history of the area. As the project progresses and design commences I find myself on the edge of my seat, eagerly awaiting the next adventure.

I invite you to stay tuned to this project and design, because I hope it offers the same adventure to you as it does to me.

Sincerely,
Katherine Aalund

Dear Reader,

The book you are holding in your hands represents ten weeks of in depth research and analysis on a very special place in our world, Bahir Dar, Ethiopia. As you browse through these pages, you will realize that this is an area lacking basic access to healthcare facilities. Through careful work and planning, access to healthcare can be provided to these deserving people by the Journeyman International team. Because of this, I am proud to say that I am serving as the Architectural Designer for the Bahir Dar Hospital Project.

This project marks the first time in my career that I have been able to use the skills I have acquired in my studies in a meaningful, helpful, and relevant way. To me, the details set forth in this book are more than just numbers in spreadsheets or words in an essay. Truly, the information gathered thus far represents the thousands of lives that will eventually be saved by this project.

I am greatly honored to be a part of the Journeyman International team as I am looking forward to the next step in the process. With all of the important information collected, it is my goal to now provide my highest quality of work in the design of the hospital facilities. In the coming weeks, our team will be pooling resources, creating innovative solutions, and challenging ourselves to bring this project to life at full scale. Please check back with us as we embark on the rest of this Journey.

Much appreciated,
Tyler Thomas

**Full Bleed
w/ Sect**

ed Picture
ion title



EXECUTIVE SUMMARY



RESPONDING TO A PROBLEM



PROJECT TEAMS

- Journeyman International, Inc. 501(c)3
Daniel Weins - President
(805) 952-5469
9393 Eagle Vista Way
Atascadero, Ca 93422
- Seed of Health
- US Doctors for Africa



LOCAL CONTEXT

- This project is located within the city **Bahir Dar, Ethiopia.**
- Ethiopia is the **oldest independent** country in Africa.
- Ethiopia has 80 different ethnic groups speaking over 83 different languages.
- Located within the **Tropical Zone** between the equator and Tropic of Cancer, in the “Horn of Africa”.
- Ethiopia produces more coffee than any other African country.
- 1 US Dollar = Approximately 17 Birr (Ethiopian Currency)
- The majority of the population practices **Christianity** through the Ethiopian Orthodox Church.
- Bahir Dar is the third largest city in the country, and is home to a population of over **200,000.**
- 87% of the population lives in **rural areas.**



HEALTH STATUS & PROBLEMS

- Life expectancy: **50.8 years**
- Infant Mortality Rate (IMR): **97 per 1000 births**
- Under Five Mortality Rate: **500-700 per 1000 births**
- Burden of diseases is **350 per 1000 people**
- Many of these diseases are **preventable infectious diseases**.
- **Prevalent diseases:** acute respiratory infection, malaria, nutritional deficiencies, diarrhea, and HIV/AIDS
- The healthcare status is extremely **poor**, with only **10% of ill persons obtaining treatment**.
- Bahir Dar, has 1 referral hospital, 2 health centers, 1 clinic, and 21 privately owned health facilities, for a total of **25 existing facilities**.
- A typical person visits the hospital once every four years.
- **9.5% of the rural population** utilizes the existing health facilities.
- **14% of the urban population** utilizes the existing health facilities.
- Need for a **lower cost** treatment facility that has **higher quality service**.
- Need for an **educational facility** to help distribute information about preventable diseases.



PROJECT OVERVIEW

- This facility will sit on 1 acre of land.
- The building will be 4,000 square feet total with two stories.
- Main building material: CMU
- The occupancy for this facility will be:
- Electrical Utilities cost:
- This building will feature fire sprinklers



FINAL DESIGN

FINAL RENDERING



HOSPITAL SPECIFICS

- ____ hospital beds will be in ____ rooms.
- The hospital will have the capacity to help ____ **patients per day.**
- The project will be developed in **two phases.**
- **Phase 1:**
 - Within 4 years
 - Will offer Outpatient Medical service, HIV/AIDS Counseling and Testing, X-ray Service, Ultra-sound Examination, Mother and Children Health Care Service, and Reproductive Health & Family Planning
- **Phase 2:**
 - Within 8 years
 - Will offer Minor Operations/Surgical Service, Inpatient Treatment, Pharmaceutical Services, Ambulance Service, Psychiatric Service, and Laboratory Service.
- The **medical equipment** used will include:



SCHEDULE

SCHEDULE DIAGRAM



ENGINEERING ANALYSIS



FINANCIAL ANALYSIS

- Total Estimated Cost: \$86,000.
- Price per square foot:
- Land Procurement



PROJECT TEAMS



JOURNEYMAN INTERNATIONAL AND SEED OF HEALTH

JOURNEYMAN INTERNATIONAL

The Journeyman International vision was launched with the intent of filling the expertise void between international NGO's and the new facilities they construct. While developing a dental clinic in Belize as a senior project, a group of architecture and environmental design students from CalPoly University began recognizing to potential to fill this need with a construction focused non-profit endeavor. Since filing for incorporation in 2009, Journeyman International has designed an orphanage in Mexico, a development center in Zambia, and a dental clinic in Belize. These projects were a catalyst- we are just getting started.

JOURNEYMAN OBJECTIVES

- 1. Partner with reputable NGO's and design construct humanitarian facilities.*
- 2. Relieve the construction burden of partnered NGO's, allowing them to focus on their mission.*
- 3. Introduce economically feasible "Green" construction fundamentals in the developing world.*

JI SERVICES

In specifics, Journeyman provides the following services:

1. Feasibility study - The Journeyman team assesses if the project can be construction at the specified location, overcoming all logistical concerns and within the projected budget.
2. Costs data analysis - Journeyman team's travel to the project location to procure material, labor and equipment price data. This step is crucial for developing an accurate estimate in a developing nation.
3. Conceptual Project Estimate - Prior to any official construction documents, J.I. assesses to project details to formulate a line item projection of the project costs.
4. Research - A Journeyman team will spend hundreds of hours researching the site, region, feasibility of project goals, and cultural considerations required for project success.
5. Schematic Design - Journeyman designers will develop schematic design concepts for the owner and building officials to review.
6. Final Design - Journeyman designers will create

construction-ready plans and specifications.

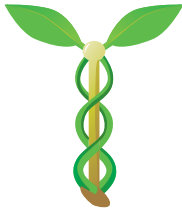
7. Construction analysis - The Journeyman project management team will develop the project schedule, budget, contracts, site logistics maps, safety plan, storm water pollution prevention plan, and evacuation plan.
8. Project Management - Journeyman will send a full time project manager to the field.
9. Grant Proposal - The Journeyman team will develop an extensive grant proposal for the project.

BUSINESS MODEL

In close partnership with several universities, the Journeyman business model relies heavily on the talent and labors of architecture, engineering, and project management students. By capitalizing on student thesis', senior projects, and accredited internships from California's best technical schools, the Journeyman business model thrives. These circumstances result in a higher quality of effort, research and passion than we find in the professional industry. All student projects are then review by licensed and professional tradesman.



THE PROCESS



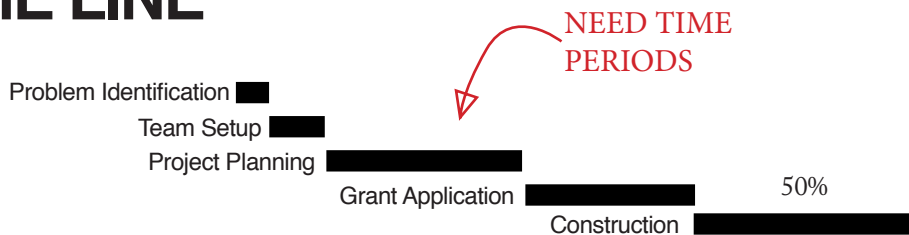
completed project diagram or symbol

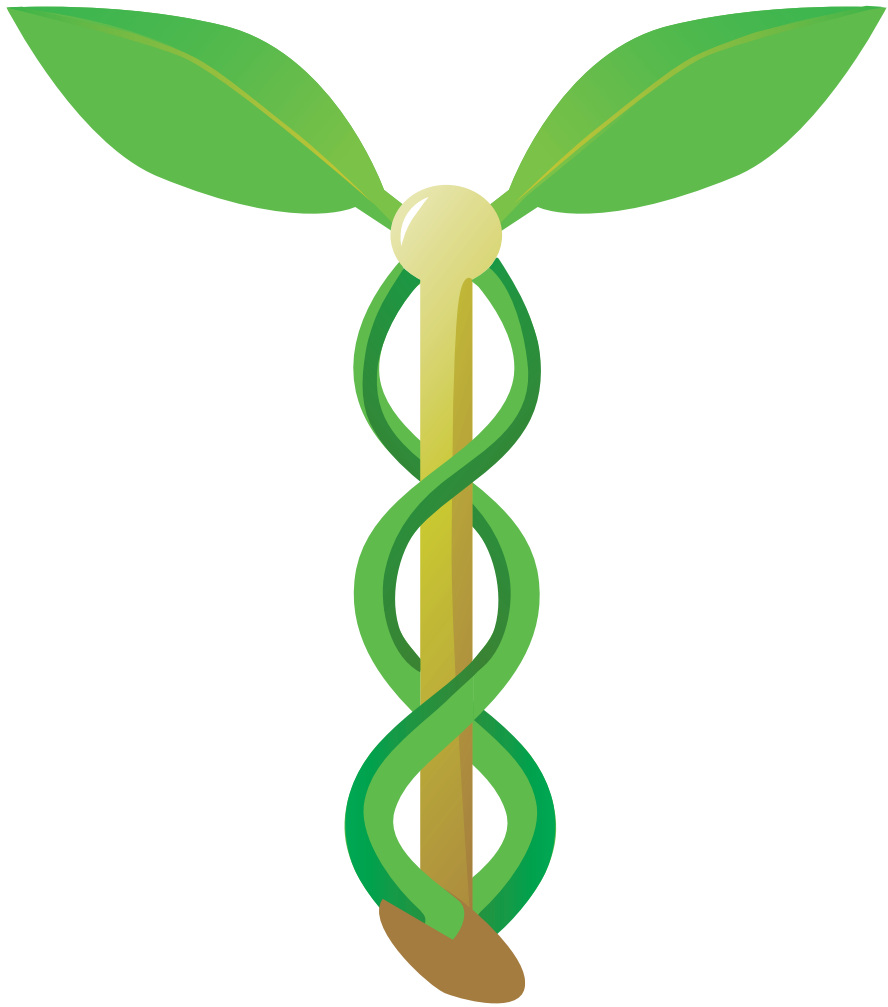
1. An NGO, like Seed of Health, defines a problem or need in a developing country. In this case: A Prenatal Healthcare Facility in Bahir Dar, Ethiopia.

2. The NGO connects with Journeyman International to help develop the idea at full scale.

3. JI utilizes the resources from students and young professionals to develop a fully comprehensive project solution.

TIME LINE





SEED OF HEALTH

Seed of Health is a start-up non-profit dedicated to the construction, finance, and operation of teaching hospitals in Ethiopia. The quality of medical care in Ethiopia is egregiously unacceptable. We are determined to change the situation.

Seed of Health was founded in the summer of 2011 by a coalition of UC Berkeley pre-medical students and professors. Our long term ambition is dedicated to easing the medical burdens of the underserved worldwide. As trained young professionals with an entrepreneurial mindset, we are confident that by utilizing connections within our industry, we will raise the resources needed to save countless lives.

As a catalyst to our vision of a healthier world, Seed of Health will first be developing a medical clinic in Bahir Dar, Ethiopia. The health status of this region is among the lowest in the world, with the average life expectancy being 56.2 years. The infant mortality rate is 101 deaths per 1000 live births and the under-five mortality rate is 673 deaths per 100,000 live births. However, nearly one-third of these deaths are preventable, and it is time to go to work.

SEED OF HEALTH SERVICES:

- 1. Raise financial support needed for construction and operation costs*
- 2. Furnish, staff and operate humanitarian medical facilities*

BUSINESS MODEL:

This vision is spearheaded by young professionals who volunteer their services and time. As medical professionals they are able to teach, train and practice medicine in addition to raising funds and managing the corporation. Seed of Health capitalizes on pre-med university students to acquire much of the research needed to professionally develop this facility.





LOCAL CONTEXT



A CLOSER LOOK AT THE CULTURE, RELIGIONS, POLITICS, ECONOMICS AND CLIMATE OF BAHIR DAR, ETHIOPIA

AFRICA'S OLDEST INDEPENDENT COUNTRY: ETHIOPIA

Located in the “Horn of Africa”, the country of Ethiopia is one of antiquity. The nation boasts a population of 90,873,739 people living in lands rich with cultural history.

Ethiopia's unique heritage has much to do with the fact that the nation has never been colonised, unlike many of its neighboring African countries. The integrity of the land and its people has been intact for almost 2,000 years, and over 80 different ethnic groups speaking 83 or more different languages have learned to coexist.

RELIGION

Through the centuries Ethiopia's religions have fluctuated. The majority has fluctuated between Islam, Christianity, Judaism, and Paganism. Today, the prevalent religion is Christianity as practiced through the Ethiopian Orthodox Church.

POLITICS

In 1995 the Federal Democratic Republic of Ethiopia was established. With this constitution the people were granted the rights to freedom of expression and press, the right to assemble, and the legal delineation that all citizens are created equal under the law. Ethiopia has served as a symbol of African independence and was one of the founding members of the United Nations. These advancements in political structure have indeed helped to push the country into modern development, yet many issues in terms of economics and infrastructure have stunted further growth. [MORE INFO ON POLITICAL STRUCTURE.](#)

POLITICAL STRUCTURE:

- *Life Expectancy at Birth (LEB): 50.8 years*
- *Infant Mortality Rate: 97 per 1000 live births*
- *Under Five Mortality Rate (MMR):
500–700 per 100,000 live births*
- *Premature Death from all causes:
350 per 1000 persons*

ECONOMICS

Ethiopia relies on its agricultural sector to employ 85% of its people. Agriculture commodities such as cereals, pulses(), oilseeds and most importantly, coffee produce more than half of the country's GDP. The tropical climate has proved to be highly conducive to the production of coffee beans. Ethiopia is internationally praised for providing some of the world's most delicious coffees. In fact, the country exports more coffee than any other commodity produced.

Given that the population is largely agriculturally based, it is estimated that 50 million people live in rural areas. Many of these people work as subsistence farmers, providing only what they need for their families. Others work for larger farms producing the commodities traded in the international marketplace. However, the agriculturally based lifestyle does come at a price as the Ethiopian people deal with droughts, famines, a lack of infrastructure. Not to mention very little access to healthcare facilities.

All of these issues pose major threats to future development. As a whole, the country of Ethiopia is on the brink of modernization. In some of the larger cities,

tourism flourishes. However, the historical monuments and profits from coffee exports are not enough to save a country dealing with major third world issues.

ECONOMIC STATISTICS:

- *GDP: \$94.76 Billion*
- *USA GDP: \$15.04 Trillion*
- *Main Industries: Agriculture (namely coffee, cereals, pulses, and oilseeds), Fishing*

Farmers of Ethiopia help to produce 45% of the nation's GDP.



A boy with his bicycle. Bicycling is a major source of transportation in Bahir Dar.



A young girl in a rural area of Bahir Dar. This type of stick and thatched roof structure is common on the area.





Left: A satellite image of Bahir Dar, located on the South shores of Lake Tana.

Right: A palm tree lined street in the heart of the city.



BAHIR DAR, ETHIOPIA

Bahir Dar is located at the southern tip of Lake Tana, in the northwestern Ethiopia. The city is the third largest in the country, and is also the fastest growing in the nation.

Bahir Dar grew around a Jesuit settlement in the 16th or 17th century and is now considered to be one of the leading tourist destinations in Ethiopia.

The city is known for its wide palm lined avenues and large variety of colorful flowers, as well as its distinctly tropical ambience. Bahir Dar has 7 cool months during the year where the temperatures range from 50° F to 68° Fahrenheit, and 5 warm months where the temperatures then jump to 68° F through 86° F. The best months for construction are January through May.

Considered to be one of the most well-organized and safe cities in Africa, Bahir Dar was awarded the UNESCO City for Peace Prize in 2002 for its ability to address the challenges of rapid social economic development.

Despite this honorable award, Bahir Dar is still a struggling city aspiring towards new world technology while battling old world problems.

BAHIR DAR STATISTICS:

- *Population: 199,210*
- *Rank: 3rd largest city in Ethiopia*
- *Rural Population:*
- *Urban Population:*
- *Weather: 50° F to 86° F depending on season*





In a busy marketplace, citizens sell their and trade their goods, mostly agricultural commodities.



A view of the Blue Nile Falls, a major tourist attraction of the area.

A boy paddles across Lake Tana in a reed boat. The lake serves the people as a mode of transportation to other cities located around the lake.



LAND

Bahir Dar is considered to be a part of the Ethiopian Highlands. The lands are characterized by a rugged mass of mountains constituting the largest continuous area of its altitude on the entire continent. These distinct topographic features have earned the nickname, “the roof of Africa.”

The city of Bahir Dar is situated on the south shores of Lake Tana, Ethiopia’s largest lake. With a surface area of 2,156 km², Lake Tana feeds the Blue Nile. Within the lake there are numerous islands. The beautiful Blue Nile Falls separate the lake and the Blue Nile, offering a distinct variety of fish fauna. The ecosystem of the lake is diverse with 70% endemic species and additional migratory birds who seasonally stay on the waters.

Within Bahir Dar, the people go through great efforts to reap the land as much as possible. Unfortunately, this has led to several forms of environmental degradation. Overgrazing, deforestation, high population pressure, inadequate land and water resource management practices are all issues that threaten the city’s industry. **Stats**

INDUSTRY

What success the local industry has gained has much to do with the climate and surroundings. Locally, temperate weather has helped to produce a distinctive type of flora and fauna known as Afromontane. The montane grasslands and woodlands of this area have fertile soil that is heavily populated by farming communities. True to Ethiopia in general, Bahir Dar is largely based on agricultural production because of the valuable soils and proximity to water. However, due to poor, traditional and backward agricultural performance, millions of people still face food shortages, famine, starvation and malnutrition. **stats**



Lake Tana and its many species of fish and mollusks support a large fishing industry that produces 1.5 tons of fish yearly. Fishing comes secondary only to farming, but it does allow Bahir Dar to promote trade locally and throughout the country.

Favorable weather and natural landscapes also make Bahir Dar one of Ethiopia's most visited tourist attractions. Tourism also helps to support the people, as visitors from around the world flock to the shores of Lake Tana to immerse themselves in the rich Ethiopian culture, and of course to enjoy the coffee. The two main attractions in the city are the Tis Isat Falls (also known as the Blue Nile Falls) and Lake Tana. **The Blue Nile feeds the Nile that runs through Egypt, and Lake Tana provides a source of life not just for fish and birds, but for the people of Bahir Dar as well.** The Lake's Islands become more accessible during the dry season when the water levels are lower. These islands are famous for their monasteries. The monasteries represent a large portion of the Bahir Dar history, and for many of them women **are not allowed inside.**

INFRASTRUCTURE

Bahir Dar is connected to other cities in Ethiopia via the road system that provides bus routes as well as

private car transportation. Taxis are used for getting around the immediate city, but the most common form of transportation is cycling. Located near the city is an airport that is equipped with paved runways which provides flights to the country's capital city multiple times a day.

An Ethiopian woman prepares coffee during a long traditional ceremony



An Oromo woman and her two children. The Oromo People are the most populous group in Ethiopia



Administratively, Bahir Dar is considered to be a Special Zone, located between two chartered cities (Addis Ababa and Dire Dawa). The Federal Police, the city police, and the local neighborhood militia provide safety for the city. The most common threat comes from the hustlers overcharging tourists for boat trips. On the other hand the daily and extensive weekend markets provide ample opportunity for safe and cultural exploration for tourists and natives alike.

PEOPLE

Like all of Ethiopia, the people of Bahir Dar have a deep-rooted culture. It is evident in their traditions that these people place a high importance on respecting their elders. Most Ethiopian people live simpler lives as the city is just entering a modern era. They take part in very few indulgences with the exception of the highly respected coffee ceremonies.

The coffee ceremony is an integral part of Ethiopian culture. It is said to be one of the most enjoyable experiences to take part in, and if you are invited to attend a coffee ceremony at one's house, it is a great honor.

Preparing “Bunna” (boo-na) as said by the Ethiopians, takes up to an hour and a half. It starts with a woman bringing out fresh washed beans and roasting them in a coffee roasting pan on a small open fire/coal furnace. Drinking of the coffee should be treated as a special event. Sipping slowly is important as it shows one's gratitude for the lengthy ceremony and delicious taste.

TRIBES

The three largest tribes in Ethiopia are the Amhara, the Oromo and the Tigray. The largest of these is the Oromo tribe with a population around 40 million; constituting of 32.2% of the total population of the country they are the single largest ethnic group in Ethiopia. In second place is the Amhara tribe numbering about 23 million, making up 30.1% of the country's population. In third place is the Tigray tribe who consist of 6.1% of the population of Ethiopia as a whole, and number about 5.5 million. As an interest to this project one of the other larger neighboring tribes is the Afar tribe. Their population consists of 1,276,867 people in Ethiopia (or 1.73% of the total population), of whom 108,488 are urban inhabitants.



The Oromo tribe is considered to be a Cushitic tribe. Cushitic speakers have occupied parts of northeastern and eastern Africa for as long as recorded history. Approximately 99% of the tribe lives in Ethiopia, with the remainder 1% living in the surrounding countries. A large part of their culture is gadaa: their society was traditionally arranged in accordance with gadaa, which was a social stratification method partially based on an eight-year cycle of age sets. Under gadaa, “every eight years the Oromo would hold a popular gathering called the Gumi Gayo, at which laws were established for the following eight years”. There is a democratically elected leader called the Abba Gada who is in charge of the system for the next eight-year term. The system of gadaa is no longer in wide practice but it still remains a significant part of the Oromo culture.

The Amhara tribe is a tribe that is a group of farmers that typically live in the north central highlands of Ethiopia. Approximately 90% of the tribe makes their living off of agricultural practices. They are a Semitic people whose ancestors possibly came from what is modern-day Yemen. The language that the Amhara tribe speaks is Amharic, the working language of the federal authorities of Ethiopia. Traditionally it is the

Amhara tribe that dominated the country’s political and economic life. The main religion that is practiced by the Amhara tribe is Christianity.

The Tigray tribe lives in the northern highlands of Ethiopia’s Tigray province. The Tigreans have long been subject to the Amhara tribe and their rule and language. This is because the Tigreans and the Amharans share a common ancestry from the same group of Semitic speakers. The Tigray tribe lives in the northern highlands and the predominant religion is Christianity, but there is a large percentage of Muslims as well. The coffee ceremony is something that both the Amhara and the Tigray tribe share, and the Tigray tribe as well finds its livelihood in agricultural roots and practices.

The Afar tribe is an ethnic group of people from the “Horn of Africa”: they live in similar areas to the Tigray tribe. Traditionally Afar society has been organized into separate and independent kingdoms, each governed and ruled by its own Sultan. The Afar tribe is one of the nine recognized ethnic groups in the country of Ethiopia. The Afar tribe is also part of the Cushitic branch of the Afro-Asiatic language family speaking the Afar language as their mother tongue. Traditionally the Afar



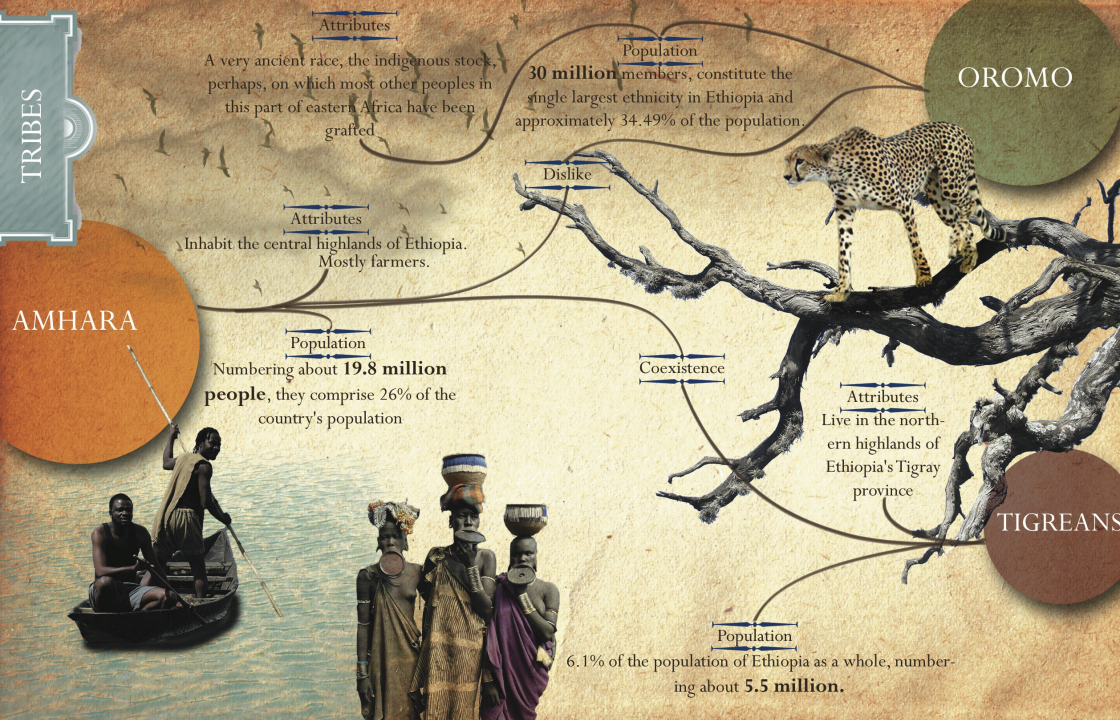
This young girl is from the Afar Tribe, one of the neighboring tribes in the Bahir Dar area.

This group of people are from the Oromo Tribe, Ethiopia's most populous group.



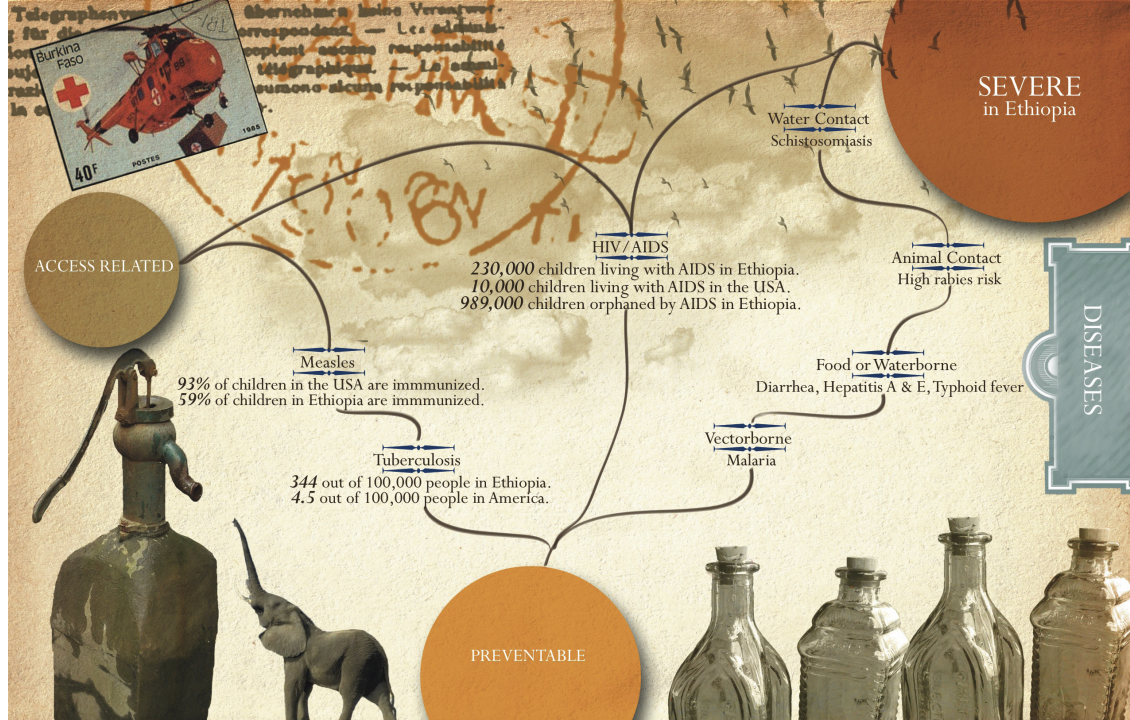
tribe is a group of nomadic herders, but they are also renowned for their martial prowess. The men of the Afar tribe carry a “jile” which is a famous curved knife and they have an extensive lit of battle songs. Additionally the Afar tribe is predominately Muslim, and they have a long history of association with Islam.





CONCEPTUAL ANALYSIS: TRIBES

This image depicts the tribes that are located in and around the city of Bahir Dar, Ethiopia. The tribes that are shown here are the three largest, and most prevalent to the design and project: the Oromo, the Amhara, and the Tigray. By viewing this map one can understand more about the individual tribes and the relationships that they have with each other. By making this abstracted site analysis we are greater able to understand the relationships between aspects of the culture that will greatly influence the design decisions that we make.



CONCEPTUAL ANALYSIS: DISEASES

Depicted here are the various diseases in the city of Bahir Dar, Ethiopia that will be addressed either directly by the proposed hospital or will be addressed indirectly by the rippling effect of increased healthcare in the region by the implementation of this hospital. The most common diseases, preventable diseases at that, are diarrhea, malaria, HIV/AIDS, nutritional deficiencies, and acute respiratory infection. This map shows the relationships between diseases, causes and preventability. These relationships will help inform design decisions in regards to the use allocation in the hospital.





This group of people are from the Oromo Tribe, Ethiopia's most populous group.

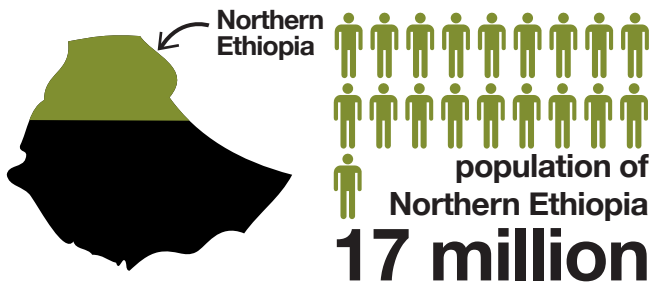
EDUCATION

Education throughout the city and the country as a whole is at a very low standard. Although there are educational establishments, the quality of teaching and learning is poor. Many children complete only primary school where they are in classes with as many 65 peers with only one teacher. Supplies are limited as well and in general Ethiopians are at a major disadvantage in the educational realm. According to the CIA World Factbook only 42.7% of the population (ages 15 and over) can read and write.

This lack of education reflects in many other areas like the dismal healthcare sector, poor infrastructure, and low quality of living.

ETHIOPIA

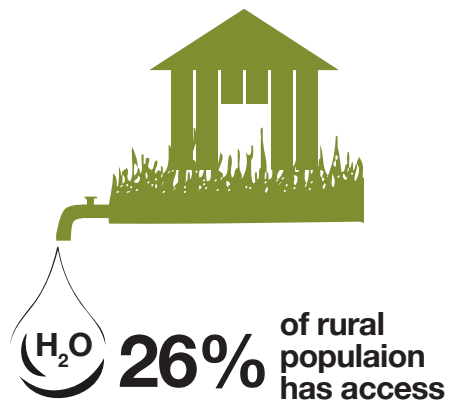
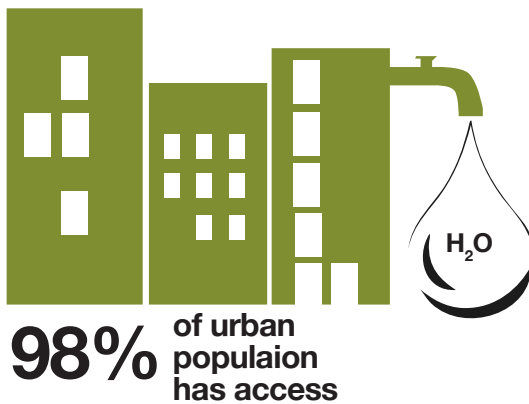
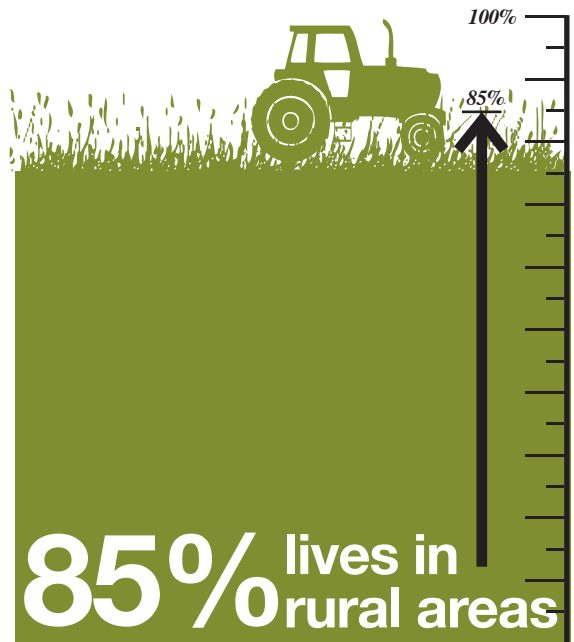
NEED TO KNOW FACTS



27,000
annual tourist visits



42.7%
of the population can read and write



45%

of the GDP comes from agriculture, mostly from coffee exports



Ethiopia has a democratic government....



A healthcare provider in one of the few healthcare facilities. These facilities struggle to provide service to the people of Bahir Dar, as well as those who travel from far distances seeking services.

HEALTH STATUS AND PROBLEMS



AN EXAMINATION OF THE DISEASES, ILLNESSES AND PROBLEMS AFFECTING THE ETHIOPIAN PEOPLE

A COUNTRY IN NEED

When compared to other regions in the country, the health status of Bahir Dar is extremely poor. These health problems are largely attributed to potentially preventable infectious diseases and nutritional deficiencies in addition to a high rate of population growth of 3.194% annually. Wide spread poverty among the vast majority of the population, low educational levels (especially among women), inadequate access to clean water and sanitation facilities, and poor access to health services have also contributed to the burden of ill health.

CURRENT PROBLEMS

The health status of the region is among the lowest in the world. Life expectancy at birth (LEB) is estimated at 50.8 years, the infant mortality rate 97 per 1000 live births, while the under five mortality rate (MMR) is estimated at 500-700 per 100,000 live births.

The total burden of diseases, as measured by premature death from all causes, is approximately 350 per 1000 persons. Pre-natal and maternal medical conditions such as acute respiratory infection, malaria, nutritional deficiencies, diarrhea and HIV/AIDS are the prevalent diseases in the region. Diseases that affect children

under the age of 5 years (acute respiratory infection, nutritional deficiencies and measles) account for one-third of MMR deaths. When prenatal and maternal conditions are added, the health problems of mothers and children combined account for about 50% of all deaths. Although largely preventable, childhood and maternal illnesses as well as communicable diseases are the major causes of deaths in the region.

HEALTH STATISTICS:

- *Life Expectancy at Birth (LEB): 50.8 years*
- *Infant Mortality Rate: 97 per 1000 live births*
- *Under Five Mortality Rate (MMR): 500-700 per 100,000 live births*
- *Premature Death from all causes: 350 per 1000 persons*

PREVALENT DISEASES

- *Acute respiratory infection*
- *Malaria*
- *Nutritional deficiencies*
- *Diarrhea*
- *HIV/AIDS*

Sanitary drinking water is hard to come by for many. Unsanitary drinking water is one of the leading causes of disease.



HISTORICAL INEFFICIENCY

The Ethiopian government considers healthcare to be a top priority and is committed to improving the healthcare status by utilizing all accessible internal and external resources.

Historically, the existing healthcare system has been unable to respond to the health needs of the people (both quantitatively and qualitatively). It was highly centralized; its services were delivered in a fragmented way with reliance on vertical programs; and there was little collaboration between the public and private sectors. Consequently, the Ethiopian Transitional and Federal Government initiated political, economic and social changes resulting in the formulation of the 1993 Health Policy and Strategy: The federal government and the regional authorities currently seek to reorganize health services into more cost effective economic development efforts for the country.

In 1977 free medical care for the needy was introduced, however in 1993 only 55% of the population had access to health care services. During the 1970s and the 1980s Ethiopia was stricken with wars, drought, political turmoil and population explosions that left their lasting mark on the healthcare system.

In 2000 24% of the population had access to safe drinking water and only 15% had adequate sanitation, and a year prior the public health care expenditures were estimated at 4.4% of the GDP. In 2001 the number of people living with HIV/AIDS was estimated at 2.1 million, and the number of people who died from HIV/AIDS totaled 160,000.

A LACK OF FACILITIES

Bahir Dar is a thriving city, with rapidly expanding social and economic activities. In many cases the demand for social services (such as health services, schooling, etc) surpasses the region's capacity to render the service. At present there is one referral hospital, two health centers and one clinic that are administered by the Regional Health Bureau. In addition there are some 21 privately owned primary health facilities.

Despite the presence of these facilities the health service coverage of the zone is still very low; it is roughly estimated at about 10% (computed by taking the physical norms by level of health service delivery). These facilities are also shared by people from adjoining zones, further



widening the gap between the demand for health services and the existing supply of health facilities, creating a serious negative impact on the quality of the health services.

MOTHERS AND CHILDREN

Maternal care in Ethiopia is considered to be on the forefront of importance by many in the medical profession. In 2012 the maternal mortality rate per 100,000 births was 470, compared with 589.7 in 2008 and 967.7 in 1990. Children under 5-mortality rate per 1,000 births are 470, and the lifetime risk of death for pregnant women is 1 in 40.

Additionally Ethiopia is one of several African countries in which female mutilation is performed. Approximately 90% of all women in Ethiopia undergo this ritual and there is no specific law that prohibits it. In 1994 there were an estimated 23.9 million women who had had this procedure.

One of the issues that this project will address is maternal health in the region of Bahir Dar. Worldwide over 500,000 women and girls die of complications related to pregnancy and childbirth each year. Over 99% of those

deaths occur in developing countries such as Ethiopia. In this country alone around 25,000 women and girls die each year to pregnancy related complications. However that number pales in comparison to the 500,000 women and girls who will suffer from disabilities caused by complications during pregnancy and childbirth each year.

These complications are experienced during pregnancy or delivery itself, but can also occur up to 42 days after delivery. Some of the causes include hemorrhage or bleeding, infection, unsafe abortion, hypertensive disorders and obstructed labor. Conditions such as malaria, diabetes, anemia and sexually transmitted infections greatly increase a woman's risk for complications during pregnancy and childbirth and are therefore indirect causes of maternal mortality and morbidity. Since most of these complications occur during childbirth and the postpartum period some of the steps to address these issues are emergency obstetric care, skilled birth attendants, postpartum care, and transportation to medical facilities if complications arise.

Mothers and their children are some of the main sufferers of disease and illness.





A mother and her child receive treatment at an HIV/AIDS treatment center. Only about 10% of ill persons end up obtaining treatment from the strained healthcare facilities.





Women and their children wait in line at the highly impacted healthcare facilities. Many of these women and children will not receive treatment for the medical issues they are dealing with.

FORCED TO IMPROVISE

The health service coverage of Bahir Dar is estimated at about 41%. The main reason for the poor health coverage in the region is the population's limited physical access to health facilities and healthcare professionals. This limited access combined with a lack of funds for modern services has pushed many Ethiopian people to traditional Ethiopian medicine. Unfortunately, this medicine is often times the work of less reliable traditional healers that use home-based therapies.

According to the CIA World Fact Book, 38.7% of the population lives below the poverty line. Many of these people do not have enough money to provide proper food, let alone healthcare. Thus, the allure of the traditional healers has gained widespread popularity. Although these healers provide ineffective treatment, they are much cheaper and accessible than modern medicine facilities. Some of the most common health problems that would be easily treatable with modern medicine go mistreated by the home healers. Traditional healers extract healing ingredients from wild plants, animals and rare minerals. These methods are no match for the life threatening conditions like HIV/AIDS, malaria, and acute respiratory infection.

ILL AND UNINFORMED

A lack of education also works against the Ethiopian people who are trying to gain healthcare. In some parts of the country it is common belief that there are two main causes of disease; God's will or unclean drinking water and unsanitary food. Although these may very well may be valid causes of the existing health problems, other causes go largely unaccounted for. Many people are unaware that the diseases they suffer from are communicable. The prevalent diseases are mostly preventable. However, a lack of awareness allows the diseases to spread.

Modern medicine is very much an intangible resource for these people. In fact, only 14% of the urban population utilizes healthcare facilities compared to only 9% of the rural population who utilize healthcare facilities. A lack of access, low levels of education, and the high price of healthcare keep these people from the help they need.

HEALTH STATUS AND PROBLEMS

NEED TO KNOW FACTS



50.8 years
life expectancy at birth



under five mortality rate:

**500-700/
100,000**
live births



infant mortality rate:

97/1000
live births



R.I.P.

350/1000
premature deaths from
all causes



10%
of ill persons
receive treatment

25 existing facilities in Bahir Dar



1 referral
hospital

+



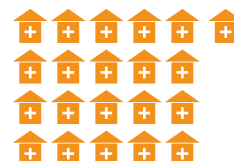
2 health
centers

+



1 health
clinic

+



21 privately
owned facilities

are struggling to serve over **200,000** people

prevalent diseases:



nutritional
deficiencies



malaria



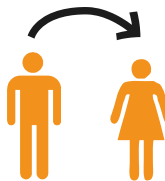
HIV/AIDS

890,000 adults
92,000 children
suffer



acute
respiratory
infection

causes:



interpersonal
transmission



unsafe
water



lack of
education



lack of
sanitation
facilities



An Ethiopian woman being treated in a local hospital for Obstetric Fistula, a preventable condition that occurs amongst young women who give birth.

DEMAND ASSESSMENT



AN OVERVIEW OF THE NEED AND POTENTIAL FOR SOLUTIONS IN BAHIR DAR, ETHIOPIA

OBJECTIVE

This project seeks to build and finance a teaching hospital in the impoverished and underserved city of Bahir Dar. The main objectives are to increase the availability of medical and healthcare services and to establish technical schools to train healthcare providers in the communities.

DEMAND

As previously outlined, there are only 4 government run health facilities (one referral hospital, two health centers and one clinic) and 21 privately owned primary health care facilities to serve over 200,000 people. To make the health service coverage even worse, the one referral hospital has a very large coverage zone that is not even limited to Bahir Dar as thousands of people from neighboring cities and rural areas travel to Bahir Dar seeking medical attention.

According to the Ethiopian Review, a local news source, 80% people are suffering from preventable diseases, such as malnutrition, in this region. Of those who are able to make it to a health clinic, only 10% of them actually receive treatment for their problem. The number of sick people is continuously growing as access to the proper care and education is very limited.

EXISTING FACILITIES:

- 21 Privately owned primary health care facilities
- 1 Government Run Health Facility
- 1 Referral Hospital
- 2 Health Centers
- 1 Clinic

TOTAL FACILITY CAPACITY:

- *University of Bahir Dar: 300-400 patients/day*



CURRENT EFFORTS AND GOALS

The Ethiopian Transitional and Federal Government initiated political, economic and social changes resulting in the formulation of the 1993 Health Policy and Strategy: The federal government and the regional authorities currently seek to reorganize health services into more cost effective economic development efforts for the country.

As indicated in this health policy document, the Ethiopian government considers health care to be a top priority and is committed to the attainment of these goals utilizing all accessible internal and external resources.

GOVERNMENT PLAN OF ACTION:

- Reducing the **infant mortality rate (IMR)** from 97 to 63 per 1000
- Reducing the **under-five child mortality rate (CMR)** from 167 to 63 per 1000
- Reducing the **maternal mortality rate (MMR)** from 775 to 380 per 100,000
- Improving access to **health services (AHS)** from 51% to 74%
- Increasing **child immunization (CI)** from 60% to 9

Cognizant to this vision, government health policy highly encourages the participation of the private sector and NGO's in the provision of health care.

UTILIZATION OF EXISTING FACILITIES

The total outpatient utilization of public health facilities in the country suggests that on average there are about 0.25 visits per person per year. A Policy and Human Resources Development Project (PHRD) study reveals that only 10% of ill persons obtained treatment for their condition from any health facility (private or government).

Only 9.5% of the rural population utilizes health facilities as opposed to 14% of the urban population. According to the PHRD study the three most important factors pertaining to seeking treatment are:

- The cost of the treatment
- The availability (distance) and quality of service
- The parent's level of education

The health service coverage of the Bahir Dar Special Zone is estimated at about 41%. The main reason for the poor health coverage in the region is the population's limited physical access to health facilities and health care professionals.

EFFECTS OF A NEW FACILITY

The implementation of a new hospital in this area will contribute to making these figures a reality. The Health Center is envisaged to serve the inhabitants of Bahir Dar and the surrounding rural and urban Keble's. During the first three years of its operation, the Health Center is expected to provide service for 40-100 persons every day and from the fourth year onwards the service capacity will increase to 100-250 persons a day.

In order to meet the investment objectives above Seed of Health has planned to equip the nascent health center with standard up-to-date medical equipment and facilities. Medical staff to provide quality service will be recruited and placed. The major services of the Health Center are outlined in a two phase plan.

PHASE 1 WITHIN FOUR YEARS:

- *Outpatient Medical Service*
- *HIV/AIDS Counseling & Testing*
- *X-ray Service*
- *Ultra-Sound Examination*
- *Mothers & Children Health Care Service*
 - *Immunization*
 - *Prenatal & Postnatal Service*
 - *Delivery*
- *Reproductive Health & Family Planning*

PHASE 2 WITHIN EIGHT YEARS:

- *Minor Operation/Surgical Service*
- *Inpatient Treatment*
- *Pharmaceutical Services*
- *Ambulance Service (for Emergency)*
- *Psychiatric Service*
- *Laboratory Service*

INITIAL PROJECTED PATIENTS AND RELATED SERVICES:

- *HIV/AIDS: 2~10 people per day*
- *Pregnant Women and New Mothers: 15~40 people per day*
- *Acute Preventable Illnesses and In-Need-of-Pharmaceutical Services (common cold, flu, etc): 10~30 people per day*
- *Minor Injuries: 6~10 people per day*
- *Immunizations: 7~10 people per day*





A doctor helps a woman and her child during a hospital check-up.

DEMAND ASSESSMENT

NEED TO KNOW FACTS



Proximity to other Facilities

*This 2.5 mile by 1.75 mile portion of Bahir Dar is located approximately 3 miles from the heart of the city

nearest facility:
Abay Health Center
approx: 1.28 miles from site

projected patients phase 1:

**HIV/
AIDS:**



up to **10**
patients/
day

**Pregnant &
new mothers:**



up to **40**
patients/
day

**Acute
preventable
illnesses:**



up to **30**
patients/
day

**Minor
injuries:**



up to **40**
patients/
day

Immunizations:



up to **40**
patients/
day



rural:
9.5% utilize
health facilities



urban:
14% utilize
health facilities



average:
1 visit for every
4 years/person



A satellite image of the 11th Kebele of Bahir Dar. Lake Tana is located just two miles east of the site, highlighted in yellow
Right: A palm tree lined street in the heart of the city

LOCATION & SITE ANALYSIS



EXAMINING THE PROPOSED PLOT OF LAND AND SURROUNDING AREAS

SITE

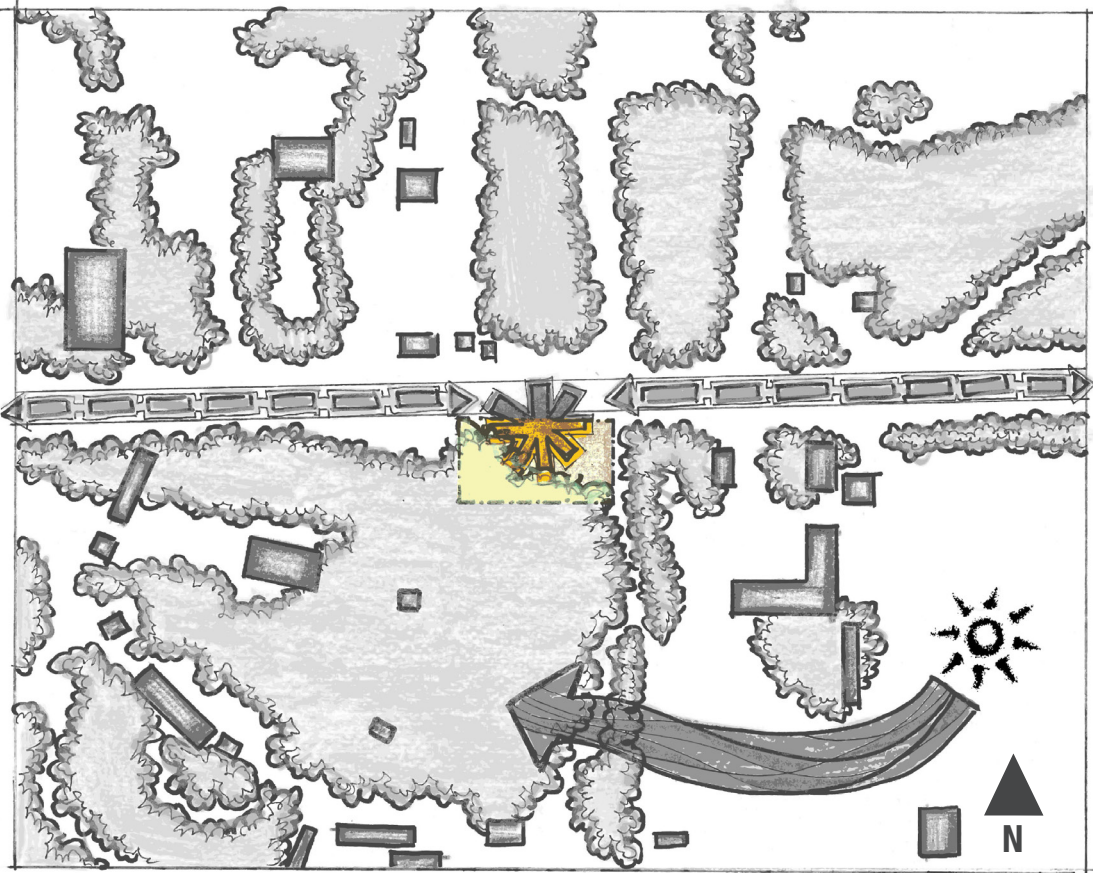
The parcel of land that has been donated to this project is located in the 11th kebele of Bahir Dar. Kebeles are neighborhoods, and the 11th kebele is located to the east of Lake Tana, across the Blue Nile.

The road Highway 3 runs through the city of Bahir Dar in a west-east pattern and forms the northern boundary of the site. The dimensions of the site are approximately 45 m by 60 m, which results in 131 ft by 213 ft. The parcel of land is 27,903 sq feet, and roughly one third of that is unobstructed of existing trees and vegetation and consists primarily of transitional type between alkaline and tholeiite basalt soil.

The sun pattern moves from east to west across the site, with more direct sunlight on the southern angle of the site vs the north because of the sites location above the equator.

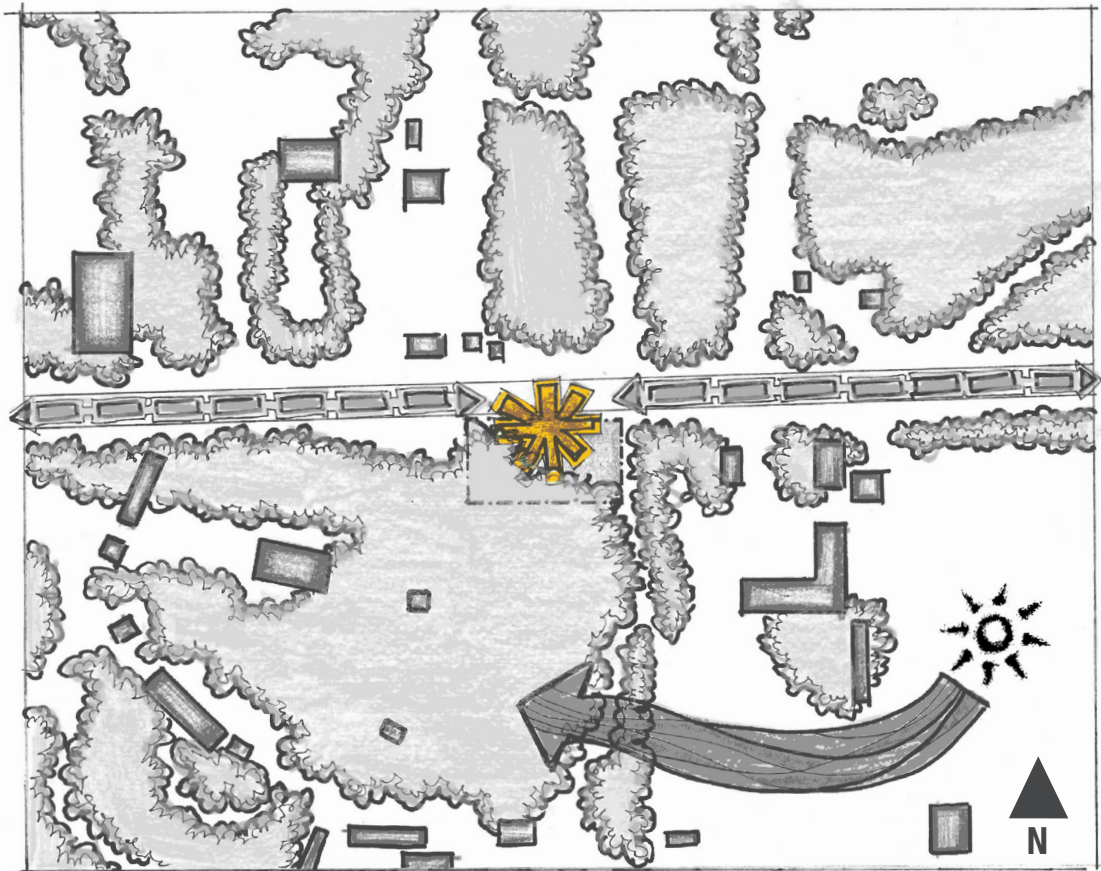
Currently there are no existing built structures on the site, and one of the existing land uses to the west of the parcel is a mosque.

The distance from the site to the center of the city is approximately 6.1 km and takes roughly 6 minutes to travel by car.



OUR SITE

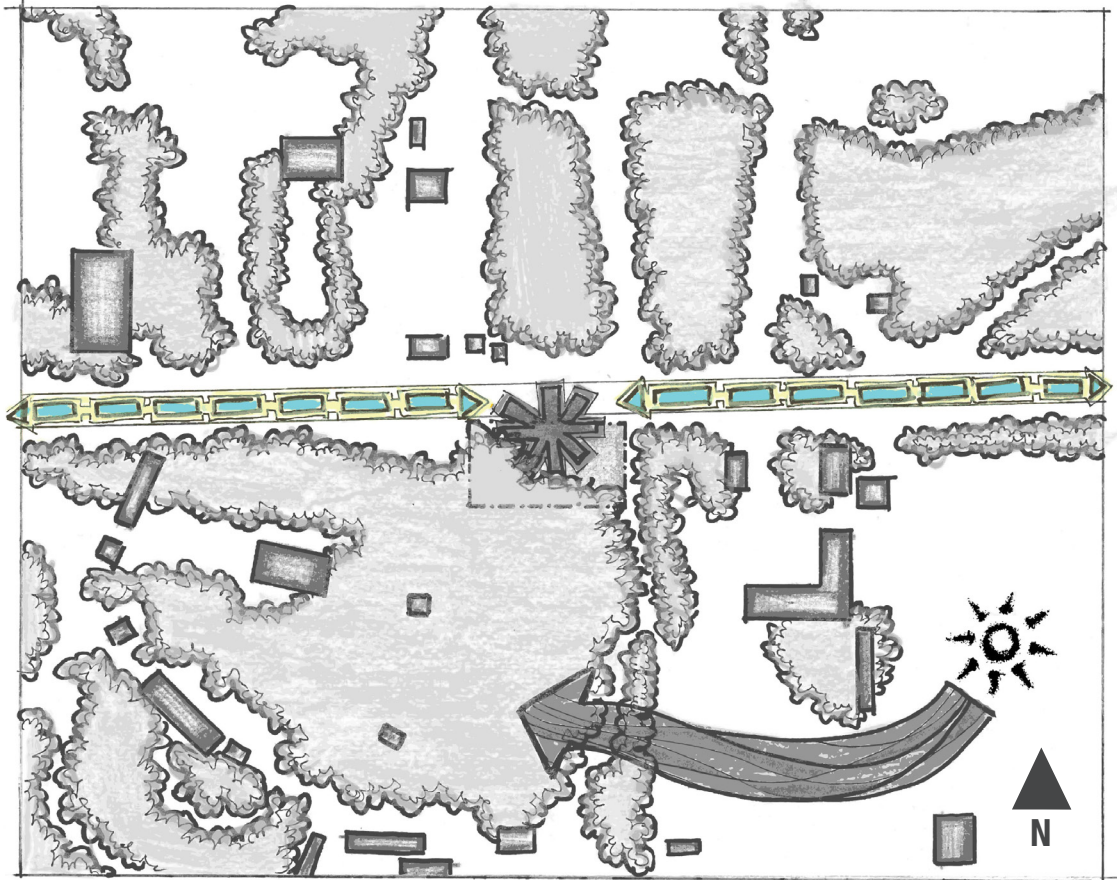
The parcel of land donated to Seed of Health for this project is located in the 11th kebele, or neighborhood of the city of Bahir Dar, Ethiopia. This parcel is located across the Blue Nile River, to the east of the heart of the city. It measures 40 m by 65 m, and is approximated to have a 5% slope. The road Highway 3 forms the northern border of the site, with existing land uses surrounding the remaining three sides.



ACCESS

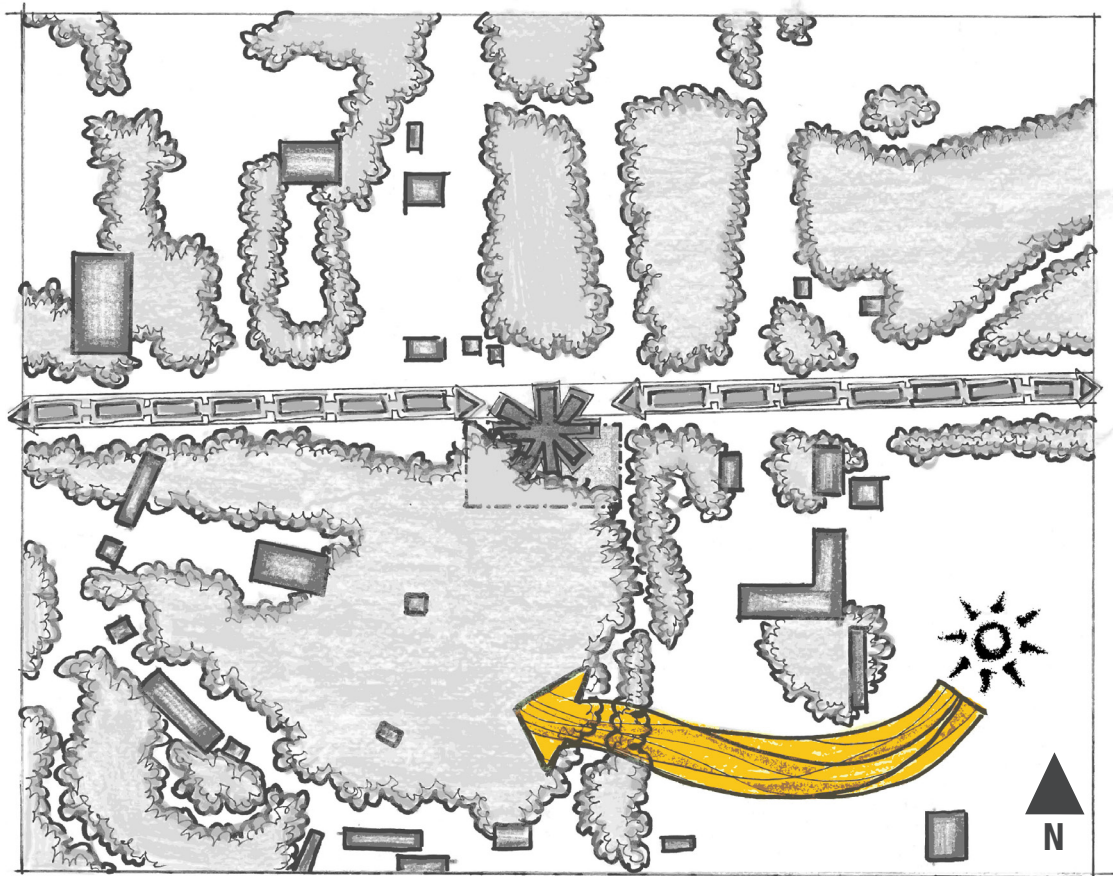
Access to the parcel of land is illustrated here with the asterisk, with access being primarily from the highway running to the north of the site. Vegetation and neighboring land uses surrounds the remaining three sides of the site, providing no vehicular access. However it is possible to have pedestrian and wildlife access on the remaining three sides.





CIRCULATION

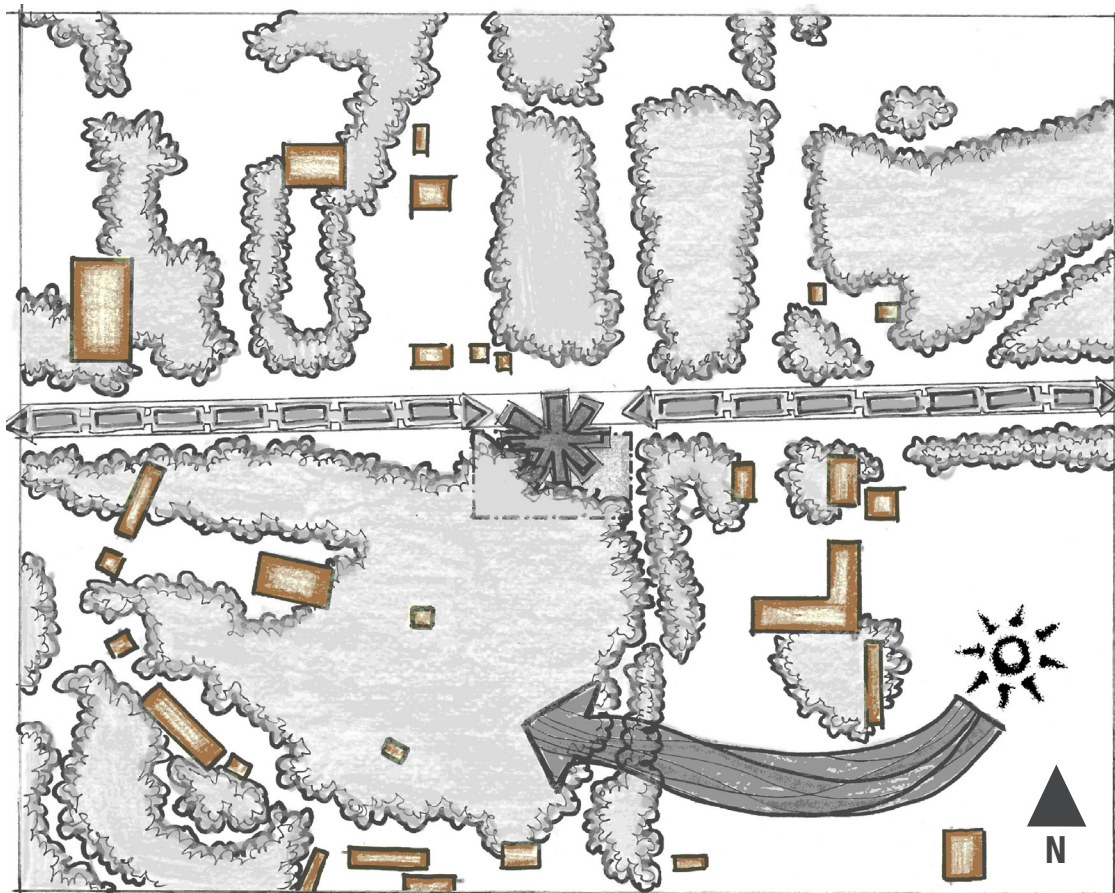
The primary form of transportation in Bahir Dar is bicycle, with the second most common being the three-wheeled rickshaw known as a bajajs. Out here on the outskirts of the city the most common form of transportation is by car or bicycle. The Highway 3 that runs to the north of the site in an East/West fashion supports two-way traffic and carries commuters to the heart of the city or away into the countryside. The road is one of the only ones in the area around our site and is heavily used.



SUN PATTERN

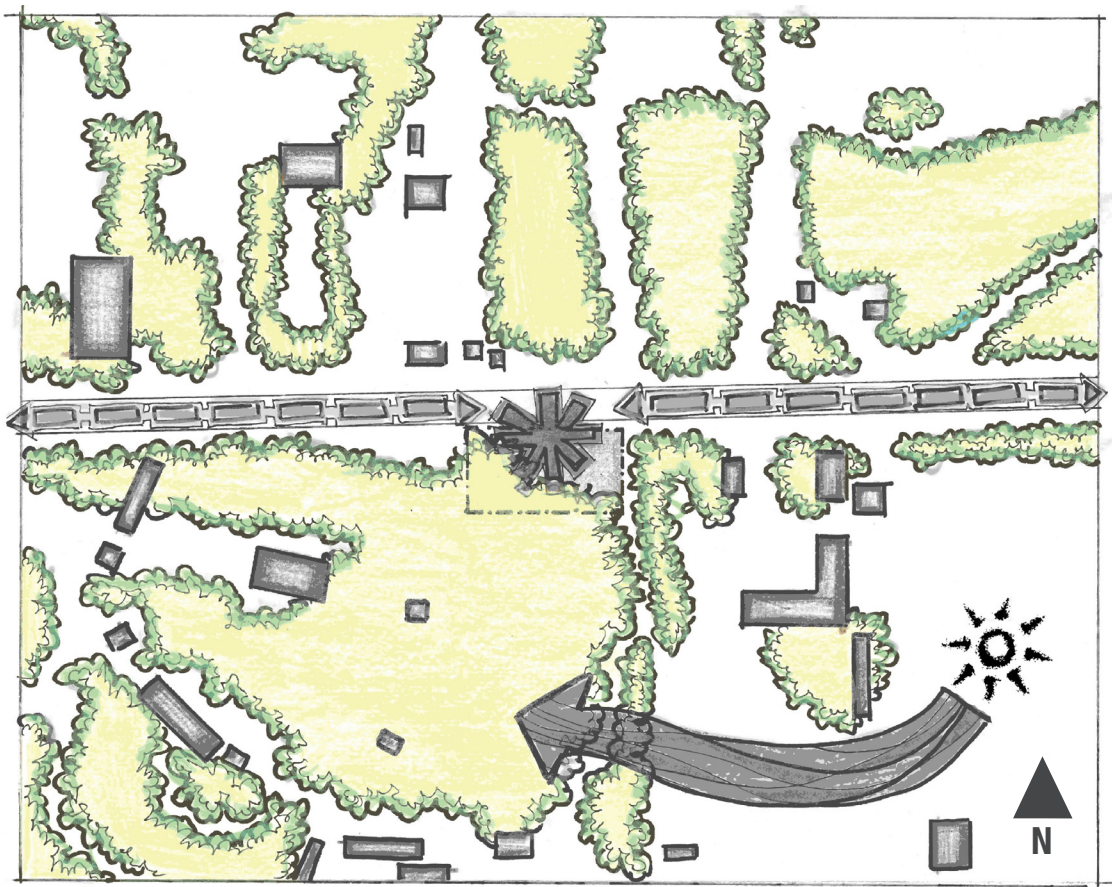
The sun follows the pattern of westward movement across the site. Because Ethiopia is in the Northern Hemisphere the sun angles are relatively similar to the ones that are found in North America, comparatively. Southern sunlight is direct and intense, while northern sunlight is indirect and softer. The analysis being that windows should be greater on the northern side of the building and open southern facades should be shaded or screened.





EXISTING SURROUNDING STRUCTURES & LAND USES

In this image the surrounding structures and buildings are indicated, although no specific land use information is conclusive. It can be deduced that a majority of the surrounding parcels of land are residential or agricultural in use. However it is known that one of the larger surrounding buildings is a mosque.



VEGETATION

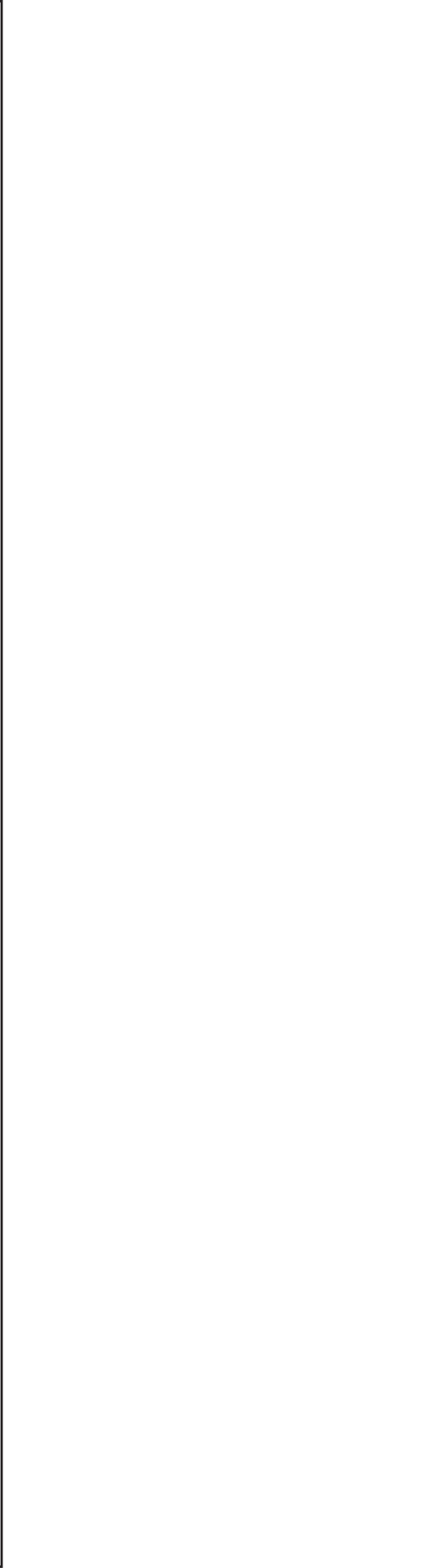
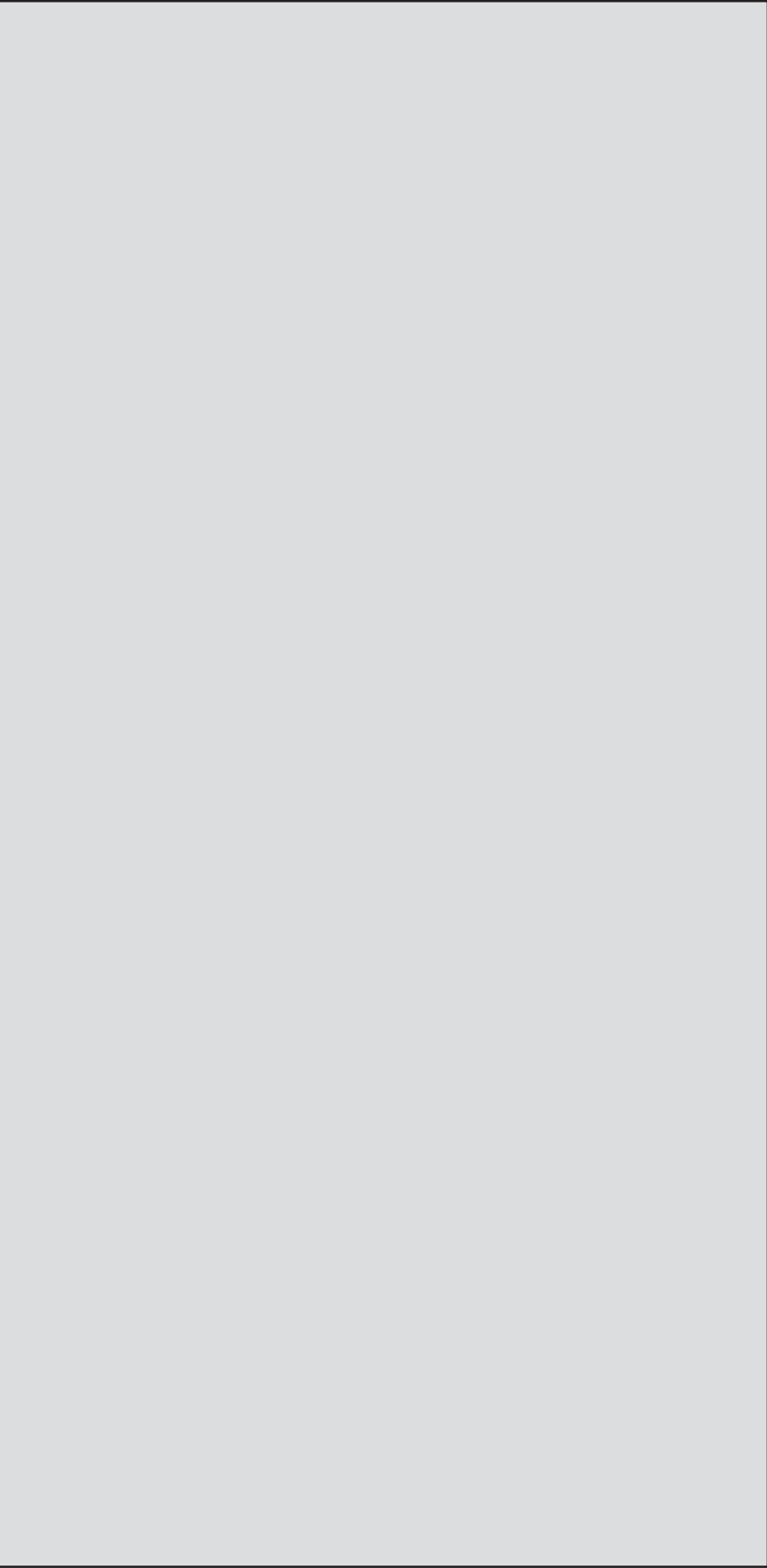
This image depicts the surface of the land occupied by vegetation. Bahir Dar is situated in what is known as the Ethiopian Highlands. The Ethiopian Highlands share a similar flora and fauna of other mountainous regions of Africa; this distinctive flora and fauna is known as Afromontane but from the time of the last Ice Age has been populated with some Eurasian flora. Specifically this portion of Bahir Dar falls into the region known as the Ethiopian Montane Grasslands and Woodlands.

The Ethiopian montane grasslands and woodlands is the largest of the highland ecoregions, occupying the area between 1800 and 3000 meters elevations. The natural vegetation is closed-canopy forest in moister areas, and grassland, bushland, and thicket in drier areas. The hillsides have good fertile soil and are heavily populated, largely by farming communities so most of the region has been converted to agriculture with a few areas of natural vegetation remaining. Remaining woodland in the drier areas contains much endemic flora and primarily consists of:

- Podocarpus conifers
- Juniperus procera
- Hagenia abyssinica

- Schefflera heterophylla
- Lobelia gibberroa
- Syzigium guineense
- Juniperus procera
- Olea africana





CASE STUDY



A BRIEF REVIEW OF AN EXISTING FACILITY IN ADDIS ABABA, ETHIOPIA

INTRODUCTION

The following case study has been gathered from the United States Agency of International Development- USAID Department. This department has been responsible for the implementation of a new program called Breedlove. Breedlove aims to help Ethiopian women who are living with HIV, through a variety of resources at the Gandhi Hospital in Addis Adaba, Ethiopia. Journeyman International has selected to use this case study as it examines the infrastructure, successes, and challenges of this facility. Through comparison and analysis, Journeyman International has gathered important information which can be applied to our project.

THE BREEDLOVE PROJECT

Food Secure and *HIV-Positive* in Ethiopia began in 2006 as a supplementary feeding intervention supported by a small, one-year grant to PCI from the U.S. Agency for International Development's (USAID) International Food Relief Partnership (IFRP). The women and hospital staff call the project "Breedlove," in reference to the lentil and potato blended soups (manufactured by Breedlove Foods Inc.) that are distributed to project participants. The grant has been re-awarded annually

since 2006: IFRP provides the food and a cash budget to support administrative costs for distributing the soup, but very little for complementary programming.

Working closely with hospital staff, PCI designed the project to complement the PMTCT, ART, nutrition assessment, education, and counseling services that women and children living with HIV receive during hospital and health facility visits. As the project gathered momentum, PCI deliberately linked the soup distributions to its coffee ceremony and agriculture activities to ensure that nutrition supplementation does not stand alone. Thus, this linkage intentionally integrates HIV programming (ART and PMTCT) with FNS programming in a manner that addresses both short-term and long-term needs of these households.

More specifically, the project is comprised of three components: 1) distribution of highly nutritious foods to address short-term nutritional needs; 2) holding coffee ceremony discussions to provide emotional support and education around HIV and FNS; and 3) promoting urban agriculture, including vegetable gardening and poultry raising, to address longer-term nutritional needs. The project's overall aim is to reduce vulnerability

to malnutrition and food insecurity among households affected by HIV.

Activities target two groups in Addis Ababa: 1) pregnant or lactating women living with HIV who are heads of households and attending a PMTCT program in one of the 16 participating health facilities in Addis; and 2) parents and/or caregivers of children who are living with HIV, under the age of 12, and attending a pediatric ART program in one of the five participating hospitals in Addis.

WHAT WORKED WELL:

FOOD AS AN ENTRY POINT FOR INTEGRATED PROGRAMMING

Linking monthly health care visits to food distribution is an effective strategy for ensuring optimal uptake and retention of HIV and FNS services (i.e., ART, PMTCT, nutrition assessment and counseling, coffee ceremonies, and urban agriculture). A strong referral network between each of the activities described above, along with intentional discussions about the benefits of

each of these services during food distributions, is key to ensuring that they are tangibly integrated, and not just connected on paper.

WOMEN SPEAKING TO WOMEN

When the health staff and PCI team speak at coffee ceremonies, the women listen. But when one of the women participants stands up and tells her story, they really listen. They are engaged and extremely supportive of one another. They often comment on how much they learn from each other's experiences; they remember the stories and the messages that are integrated within them. For this reason, the facilitators frequently invite and encourage the participants to stand and share their experiences on given topics. Some participants have even become PCI peer educators.

CAREFUL TIMING

PCI learned through trial and error that the timing of ceremonies is critical. Given the frequency of holidays and social events in this culture, and the two- to three-hour duration of a typical ceremony, the date and time need to be carefully selected for optimal turnout.

SKILLED FACILITATION

Facilitation also needs to be effective to guarantee attendance. When certain members dominate the session, other participants are discouraged and may not return. A strong facilitator is therefore crucial to managing the discussion and ensuring that it remains fruitful, inclusive, and relevant to participants' lives.

REACHING FAMILIES AND NEIGHBORS

The coffee ceremony is an effective means of reaching the participants' families and neighbors. Participants often share with their family what happens in the coffee ceremony, so the entire family can benefit. Because of the links to the urban agriculture activities, family members often get involved in gardening and poultry production. Some participants have noted that their neighbors will sometimes inquire once they see their success with gardens

and chickens. They then use the opportunity to share their new knowledge about nutrition and dietary diversity, sometimes even



CHALLENGES:

WIDESPREAD POVERTY

Women participating in the coffee ceremonies said that while they now understand the need for nutritional diversity, they often cannot afford the variety of foods recommended. Vegetables, fruits, milk, and other suggested foods are more expensive than the ingredients for injera (the traditional grain-based bread), so they frequently default to foods they know and can afford. This demonstrates that while behavior change can result from acquiring new knowledge, the change must also be economically accessible.

LONG DISTANCES

For many clients, traveling to one of the five central hospitals to receive treatment can be inordinately time-consuming and expensive. Hospitals are currently trying to refer them to health centers that are closer to home, but because they fear stigma and discrimination, beneficiaries often prefer to travel long distances so that they will not see neighbors and friends. Participants often cite travel costs as a reason for missing appointments.

LACK OF SUPPORT FOR MONITORING AND EVALUATION (M&E)

The limited budget attached to the soup distribution makes it difficult to establish a comprehensive M&E system. A quarterly review meeting takes place, and informal interviews with beneficiaries are held sporadically by M&E staff from other PCI programs (who are “borrowed” by the Breedlove project). Unfortunately, formal monitoring against indicators for the objectives of each project component is not done in a systemic or comprehensive manner. In particular, the project does not review the attendance records of women receiving PMTCT or children’s adherence to ART, and so cannot empirically assess whether these adherence objectives have been met. Instead, there is heavy reliance on anecdotal evidence. The project recognizes the need to improve its M&E system and is working to do so.

OVERBURDENED HEALTH CARE STAFF

Distributing the Breedlove soup became an additional task for already stretched health workers at the distribution sites. The scarcity of qualified health professionals is a systemic problem throughout the country. Those

handling the Breedlove commodity complain of being overworked and underpaid. The implications are insufficient communication about the commodity and the intention that it be consumed only by the targeted recipient (the pregnant/lactating mother or child living with HIV). Similarly, the urban agriculture program is not as thoroughly promoted during distributions as it could be.

STIGMA AND DISCRIMINATION

Stigma and discrimination remain significant problems in Ethiopia. In fact, many women who were photographed for this case study did not want their identities known for fear of discrimination within their communities. Stigma affects various aspects of the Breedlove project: women do not want PCI staff visiting them in their homes (to provide technical support or monitoring, for example) for fear that neighbors will suspect their status. Many women intentionally attend health clinics that are far from their homes where they will not see neighbors or be visited by health staff. Stigma exists not only at the societal level, but also within households. Women in coffee ceremonies frequently note that they do not tell their husbands that they are bringing the children for treatment or that they are attending coffee ceremonies

at the hospital. Many say that their husbands left them once they discovered their HIV status.

