



Mujerave Needs Assessment

Santa María Chiquimula

Totonicapán, Guatemala

Author: Kody M. Gerkin

11/15/2015

Contents and Abbreviations

Contents and Abbreviations	2
Author's Note	3
MNA Overview	4
Description of Process.....	5
General Introduction to Guatemala, Totonicapán, and SMC	7
Statistical Overview of Guatemala/Totonicapán/Santa Maria Chiquimula	12
Personal Snapshot.....	19
Key Informant Interviews	21
Guided Community Based Assessments	23
Focus on Greenhouses	27
Non-Governmental and Non-Profit Organization Coverage	32
Conclusion	33
Addenda	35

Abbreviations

SMC – Santa Maria Chiquimula, Totonicapán (the political and geographical area wherein this needs assessment was carried out)

MNA – This document, the first Mujerave Needs Assessment

SEGEPLAN – A series of needs assessments carried out by the Secretary for Planning and Programming, Office of the President of Guatemala, for local government and non-governmental organization to use of diagnostics and project planning. These reports are used heavily herein as they constitute the most recent and most thorough collection of data on the lives and livelihoods of residents of rural areas in Guatemala

Author's Note

This first Mujerave Needs Assessment (MNA) was heavily informed by two years of on-the ground experience living and working in rural areas in the Department of Totonicapán. From the years 2006-2008 the author worked as a Peace Corps volunteer in Santa María Chiquimula on projects closely linked with the work of local and international non-governmental organizations (NGOs), as well as political leaders in the municipality and surrounding region. His primary work partners were organized women's groups in rural, marginalized areas of the municipality. Working in their homes enabled the author to develop a prolonged and first-hand perspective of their lives and lifestyles, as well their ability to mobilize vast amounts of social capital and other locally available resources in order to prioritize and improve their family's health and well-being. Upon returning to Guatemala in 2014, the author was saddened to see that, for many of his former co-workers and friends in SMC, the overall quality of life had worsened. This was in part due to a drought that had caused a near 75% crop failure in staple crops such as corn and beans. The drought was not the cause of their suffering, the drought simply pushed populations who had already living precariously close to the edge of starvation for decades that much closer. As of this writing, in November 2015, acute malnutrition has caused thirty deaths in nationwide here in Guatemala in 2015 alone.¹ Having lived and worked in one of the poorest areas of the country for over two years, the author relied heavily on his perspective gained from interacting with rural women and their lived experiences to draft this report.

Because I have been so moved in my development work and in my study of the subject, particularly in Latin America, I decided to found an NGO that works in underserved areas and works through women's groups to achieve sustainable development outcomes. Without these experiences, and the cooperation of more Guatemalan women than can be thanked in print, this MNA would not have been possible.



The author and a women's group in Aldea Xebé, Santa María Chiquimula, Totonicapán, 2008.

¹ Telesur. *30 Deaths in 2015 Highlight Chronic Malnutrition in Guatemala*. Accessed June 12th, 2015: <http://www.telesur.tv/english/news/30-Deaths-in-2015-Highlight-Chronic-Malnutrition-in-Guatemala-20150527-0060.html>

MNA Overview

This needs assessment is broken into nine sections:

- **Description of Process**
- **General Introduction to Guatemala, Totonicapán, and SMC**
- **Statistical Overview of Guatemala/Totonicapán/Santa Maria Chiquimula**
- **Personal Snapshot**
- **Key Informant Interviews**
- **Guided Community Based Assessments**
- **Focus on Greenhouses**
- **Non-Governmental and Non-Profit Organization Coverage**
- **Conclusion**

The ***Description of the Needs Assessment Methodology/Process*** details how the MNA was carried out, who was involved, and in what ways. It will inform the reader of specific steps taken to ensure representation from a broad swath of societal actors. This information would also allow other organizations or interested parties to replicate the process, ensuring a measure of reliability and objectivity.

The ***Introduction/Statistical Overview*** sections describes the municipality of Santa Maria Chiquimula (hereafter referred to as SMC), the department of Totonicapán, and Guatemala, contributing to the reader's ability to understand Guatemala's basic human development, how it compares with communities in the United States, and how SMC compares to other communities in Guatemala.

The ***Personal Snapshot*** provides further context for the overall Needs Assessment. By giving the reader the story of one inhabitant of SMC, they may better relate to the statistics and information presented in other sections of the report.

Key Informant Interviews were conducted with the leaders of two of SMC's non-profit organizations. These organizations have a demonstrated history of completing projects in the area and working with international non-governmental organizations to successfully achieve their goals. A third interview was carried out with an employee at the Health Clinic in SMC.

Two ***Guided Community Based Assessments*** were carried out, and they are detailed in the section of the same name. These two meetings were composed entirely of members from SMC and facilitated by the author. The facilitation methods used to guide these meetings are further explained in this section as well.

A ***Focus on Greenhouses*** was included after the author heard repeatedly from community members about the benefits of greenhouses.

A brief ***Non-Governmental and Non-Profit Organization Coverage*** section details why Totonicapán was chosen as the geographical focus of this non-governmental organization, and furthermore why Racana, SMC, was chosen as the site of pilot projects.

The ***Conclusion*** provides specific development project proposals (with rough budgets when available) that could be developed by Mugerave in order to address the needs elucidated by this report.

Description of Process

With significant input from international development consultants and professionals², the following strategies were used to acquire the information needed for this report:

- Gathering Secondary Data from diverse sources (United States Department of State and Center for Disease Control, Guatemalan Ministry of Health and Secretary of Planning and Programming, etc.)
- Gathering primary data through Key Informant Interviews with community members and the directors of local non-governmental organizations
- Gathering primary data through Guided Community Based Assessments with both the Board of Directors of an SMC-based non-governmental organization (NGO) and with the leadership of several local NGOs, female representatives of both organizations (all leaders in this organizations are men), and four members of Mujerave's Guatemalan Board of Directors, all women.

Authors note: In 2014 when the founder and president of Mujerave and author of this MNA returned to Guatemala, he was motivated to return to his former Peace Corps site and to pursue sustainable development as a vocation. The projects that he envisioned carrying out in no way met the needs of the community as he observed them. That is to say conditions had changed dramatically in SMC. This report reflects an entirely different reality than that which our author had expected to find. However, this served only to deepen the author's faith in the notion that communities know their needs best. Though the belief is not shared by all development professionals, community members themselves are often best-positioned to know how to use resources both local and foreign to understand and meet their needs. Oftentimes international development organizations will arrive with pre-conceived notions about how best to improve the conditions among local populations who are struggling to meet their basic needs. Many donor-generated dollars are wasted in projects that suit the needs of the organizations carrying out the projects, not the communities served. It is therefore the goal of Mujerave to avoid this cliché development pratfall: telling a community what it needs to do to improve and how. Rather, as an organization, we seek to listen, and respond to needs as expressed by the constituents we serve—rural, underserved women and their families. This MNA was drafted with that ethos.

Strategies employed in the Guided Community Based Assessments and Key Informant Interviews were employed for the purposes of root-cause analysis. Root-cause analysis is used to identify deeper, more meaningful dilemmas that run-of-the-mill development projects may not address. For example, local populations may inform an international NGO that their community's school is without toilets. The international NGO may choose to build flush toilets and a septic tank to meet the school's needs. However, the community may never have had toilets in part because there is not water in the community during the dry season. Now the community has toilets that they cannot use for 6 months out of the year. Had the organization done root-cause analysis prior to implementing their project, they may have decided to implement a different type of project.

To complete the root cause analysis and gather the primary data used to draft the MNA, the author utilized the "five whys" approach. This approach, developed and refined by the Toyota Motor Corporation, involves forcing respondents to repeatedly answer a simple question; why? To illustrate the usefulness of this method, let us examine it in the context of an everyday situation.

Problem statement – diminishing quality of topsoil has caused decreased agricultural yields in a local area.

1. Why is the quality of the topsoil decreasing?

Loss of trees and forested areas is contributing to high volumes of soil erosion during the rainy season.

² Special thanks to Andrew J Gall and Lynn Roberts.

2. Why are we seeing a loss in forested areas?

People are cutting down a lot of trees.

3. Why are people cutting down so many trees?

Timber sales is one of the few viable means of earning a living in the area.

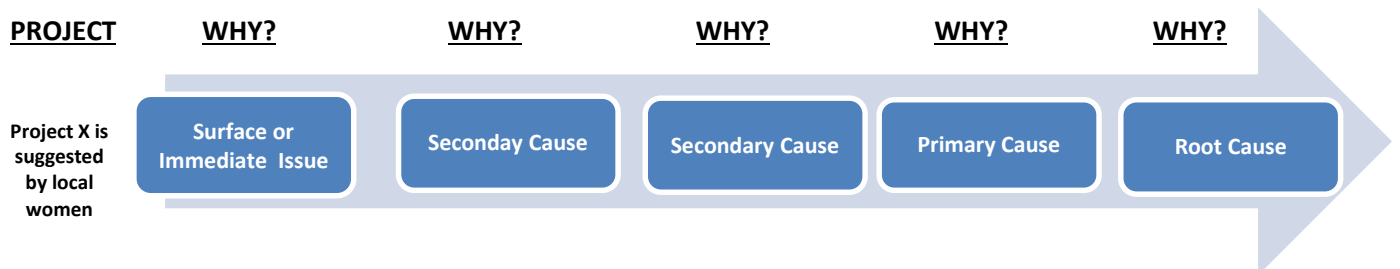
Root cause = Lack of economic opportunity

If one had stopped here at this step, and simply begun a campaign against deforestation to stop people from cutting down trees (without creating alternative income streams) then the problem would have likely persisted. By focusing instead on creating other income streams, a project may address a root cause – lack of economic opportunities. A program focused on creating meaningful economic opportunities would be more likely to result in reduced deforestation and ensure the retention of high quality topsoil and higher agricultural yields.³

Within sustainable development, projects that are designed to address root causes, particularly those with an emphasis on supporting individuals through a focus on human capital outcomes, often have a greater likelihood of producing positive change in rural, marginalized areas of the developing world.⁴

Later in this report, readers will see Mujerave's use of this technique displayed as in the sample below.

Later in this report, readers will see Mujerave's use of this technique displayed as in the sample below.



³ Adapted from API. *Five Whys Tool for Root Cause Analysis*. Accessed Jun 20th, 2015.

<https://www.cms.gov/medicare/provider-enrollment-and-certification/qapi/downloads/fivewhys.pdf>

⁴ Lutz, Wolfgang. *Sola schola et sanitate: human capital as the root cause and priority for international development?* The Royal Society Philosophical Transactions B. 21 September 2009. Accessed Jun 12th, 2015:

<http://rstb.royalsocietypublishing.org/content/364/1532/3031.short>

General Introduction to Guatemala, Totonicapán, and SMC

Guatemala at a Glance

Guatemala Population: 14,647,083

Totonicapán Population: 427,780

SMC Population: 46,003⁵

Currency: Quetzal, Quetzales (Roughly 7.6 USD at time of writing)

Languages: Spanish and 23 indigenous languages officially recognized including K'iche', which is the dominant language in Totonicapán and Santa María Chiquimula

Major urban areas - population:

Guatemala City (capital) 2.847 million (largest city in Central America)

Major infectious diseases: Food or waterborne diseases: bacterial diarrhea, hepatitis A, and typhoid fever

Vector borne diseases: dengue fever and malaria in tropical areas⁶



Flag of Guatemala



Coat of Arms

Guatemalan Geography

Guatemala is located in northern Central America, and shares its longest border with Mexico. It also shares borders with Belize, El Salvador, and Honduras. It has coastal areas on both the Pacific and Atlantic oceans, albeit a much lengthier coast on the Pacific Ocean. Overall, the landmass of Guatemala is roughly equivalent to that of the United States 32nd largest state, Pennsylvania.



Guatemala's Position on the World Map

Source: <http://www.emapsworld.com/images/guatemala-location-map.gif>



Guatemala's Regional Position and Major Cities

Source: http://www.forcedmigration.org/maps/guatemala.gif/image_preview

⁵ Secretary for Planning and Programming, Office of the President of Guatemala. Santa María Chiquimula, Municipal Development Plan, 2011-2021. P. 19 Henceforth SEGEPLAN, SMC.

⁶ CIA World Factbook. Guatemala. Central Intelligence Agency. Accessed: June 12, 2015:

<https://www.cia.gov/library/publications/the-world-factbook/geos/gt.html> (Source for Languages through Major Infectious Diseases Data)

Guatemalan History

Prior to European colonization, Guatemala was home to diverse groups of indigenous people collectively known as the Maya. Some of the most magnificent Maya ruins can be found in Guatemala today, including Tikal, in Guatemala's northernmost Department of Peten.



Tikal's Great Plaza

Source: http://www.airpano.ru/files/tikal_02_big.jpg

Mysteriously, Tikal and other major Maya urban centers collapsed prior to the arrival of the Europeans. However, the Maya empire was a very complex one, noted for its social, cultural, and scientific advancements:

The Mayan ruins of Tikal are hidden deep in the rainforests of Guatemala. From the air only a handful of temples and palaces peek through the canopy. The stone carvings are weather-beaten. Huge plazas are covered in moss and giant reservoirs are engulfed by jungle. The only inhabitants are wild animals and birds.

But 1,200 years ago, Tikal was one of the major cities of the vast and magnificent Maya civilization that stretched across much of what is now southern Mexico, Belize and Guatemala. Tikal was home to perhaps 100,000 people. Thatched farmsteads and fields would have stretched as far as the eye could see.

The Maya thrived for nearly 2,000 years. Without the use of the cartwheel or metal tools, they built massive stone structures. They were accomplished scientists. They tracked a solar year of 365 days and one of the few surviving ancient Maya books contains tables of eclipses. From observatories, like the one at Chichen Itza, they tracked the progress of the war star, Venus.

They developed their own mathematics, using a base number of 20, and had a concept of zero. They also had their own system of writing. Their civilization was so stable and established, they even had a word for a 400-year time period.⁷

⁷ Cecil, Jessica. British Broadcasting System. *The Fall of the Mayan Civilisation*. Accessed June 12, 2015: http://www.bbc.co.uk/history/ancient/cultures/maya_01.shtml

As with many indigenous cultures in the Americas, the arrival of Europeans wrought death and destruction. Pitting ethnic groups within the Maya against one another, the Spanish sought to replace the Maya culture with their own. Gaining independence from Spain in 1821 did little to change the colonial power structure.

In modern times, Guatemala has suffered from a rotation of coups and corrupt leaders. Though the indigenous population accounts for nearly half of the current population, descendants of the Spanish remain to this day the political, economic, and social power brokers in Guatemalan society, controlling the finest agricultural land and major industries. In 2015 thousands of protestors took to the streets in Guatemala's major cities to protest corruption at the highest levels of the government. As of this writing, both Guatemala's Vice-President and President have been ousted from office and are in jail awaiting trial on corruption charges. The stripping of the President's immunity by the congress and his arrest were monumental shifts in Guatemala's historical oppression and rule by military and elite corporate forces. It remains to be seen if lasting reform will signal a truly new era in Guatemala's political and economic structures.⁸



Aerial view of a protest in Guatemala City against a corruption case involving high-level officials, April 25, 2015.

Additionally, from 1960-1996 Guatemala was embroiled in a brutal thirty-six year civil war that included a genocide campaign against the country's indigenous population and left over 200,000 dead and an estimated 1.5 million displaced. The civil war formally ended in 1996 with the signing of the Peace Accords. While these Peace Accords called for sweeping reforms and the explicit recognition of the rights of Guatemala's indigenous people, many of the reforms and promises imbedded in the Accords have never been fully implemented.

Totonicapán Geography

Totonicapán is one of Guatemala's smallest departments at roughly 410 square miles, and is located in Guatemala's mountainous Western Highlands region. The capital city of the Department of Totonicapán is a city by the same name that sits at an elevation of 8,185 feet above sea level and rests approximately 110 miles from Guatemala City via the Inter-American Highway. Characterized by rolling mountains with ramifications of the *Sierra Madre* or "Mother Range" pushing through the Department, there also exist several inactive volcanoes and attendant geothermal activity. The Department of Totonicapán is home to

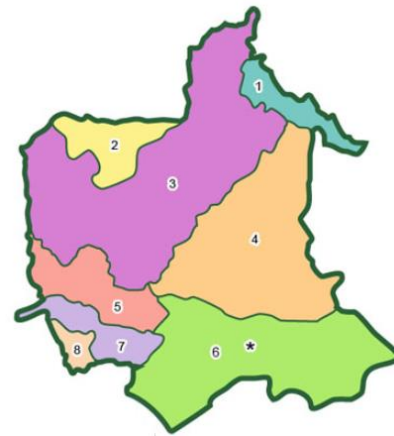
⁸ Link, Jacob. *Fed Up in Guatemala*. Harvard Political Review. October, 2015. Accessed October 18th, 2015: <http://harvardpolitics.com/world/fed-guatemala/>

some of Guatemala's best preserved oak, pine, fir, and cypress forests, many of which are community controlled through semi-formal indigenous coalitions.



Tonicapán's location within Guatemala

Source: http://commons.wikimedia.org/wiki/File:Tonicapán_in_Guatemala.svg



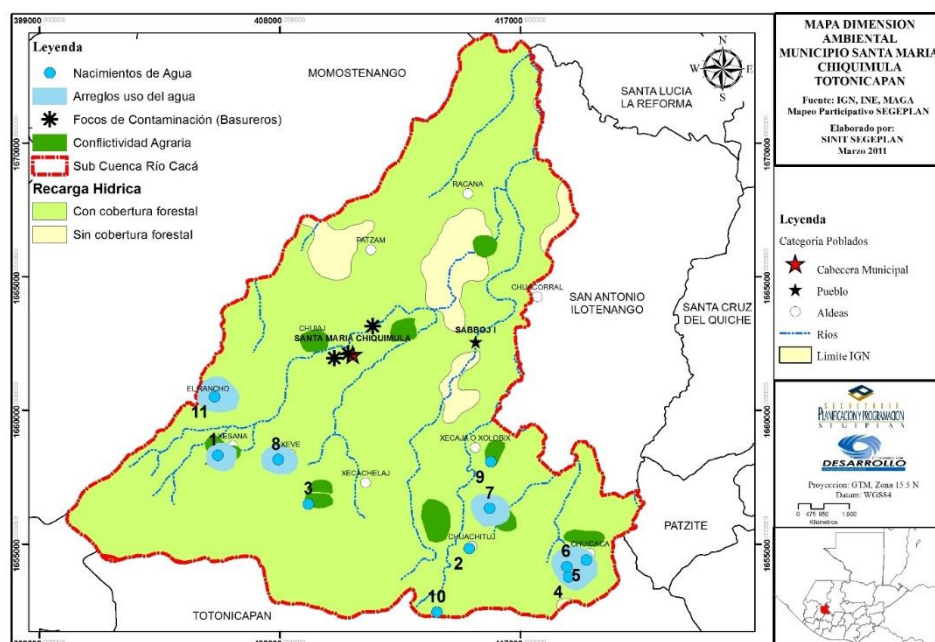
1. Santa Lucía La Reforma
2. San Bartolo
3. Momostenango
4. Santa María Chiquimula
5. San Francisco El Alto
6. Tonicapán
7. San Cristóbal Tonicapán
8. San Andrés Xecul

The Municipalities of Tonicapán

Source: http://www.deguate.com/artman/publish/geo_deptos/Datos_de_Tonicapán_387.shtml#.VXNPsbIFBib

SMC Geography

SMC is one of eight municipalities in Tonicapán, with its municipal center at 6988 feet above sea level and approximately 19 miles via unpaved road or 22 miles by a paved road from the capital of the Department, Tonicapán. There is only one paved roadway in the municipality, which connects SMC to San Francisco el Alto, and then on to the nearest large, urban area of Quetzaltenango, Guatemala, which is approximately 26 miles away. (**Note:** Due to the mountainous terrain and congestion at an important transportation crossroad along the route it can take one and half to two hours to reach Quetzaltenango from SMC.) The urban area of SMC comprises approximately two square miles.



Map of Santa María Chiquimula

Source: http://www.segeplan.gob.gt/2.0/index.php?option=com_k2&view=itemlist&task=category&id=345:santa-maria-chiquimula&Itemid=333&opc=2

The municipality of SMC is divided into *aldeas* (villages), many of those *aldeas* are sub-divided into *barrios* (neighborhoods), and those *barrios* are sometimes further sub-divided into a grouping of homes on a hillside where a single extended family resides.

Totonicapán/SMC History

According to SEGEPLAN, the area now known as Totonicapán was inhabited by Maya people prior to the arrival of the Spanish in the 16th century. The area was populated by Maya who migrated to Totonicapán after abandoning another nearby settlement for various reasons, and it is still referred to locally by its indigenous K'iche' name, Chimeq'enja', or "place of hot water". Totonicapán was formally incorporated into Guatemala as a department in 1848. Totonicapán takes its name from indigenous words *Tononilco* or *Atotonilco*, which roughly translate to "the place of the thermal waters".⁹ To this day the department is home to several thermal baths still used for washing and bathing by local, indigenous populations.

The community of SMC is a pre-Colombian village, whose existence is mentioned in the Popul Vuh, a sacred Mayan text, indicating that it has been a continually inhabited Maya village for a minimum of 500 years.



Typical Adobe Homes in Santa Maria Chiquimula, Totonicapán, Guatemala

Source: https://ssl.panoramio.com/photo_explorer#view=photo&position=247&with_photo_id=74600378&order=date_desc&user=379260

⁹ Many communities have two names, an indigenous name and a name given by the Spanish colonial administrations

Statistical Overview of Guatemala/Totonicapán/Santa Maria Chiquimula

Guatemala Comparisons – Social and Economic Indicators

Statistics comparing aspects of Guatemalan society to other nations can be found in the graph below.

World Rank (1= Highest GDP/Capita)	GDP/Capita Source: International Monetary Fund ¹⁰	World Rank (1= Lowest Corruption)	Corruption Perception Source: Transparency International ¹¹	World Rank (1=Least Equal)	Economic Inequality Source: United Nations ¹²	World Rank (1=Most Happy)	Happiness Index Source: The Happiness Index ¹³
108	El Salvador	115	Côte d'Ivoire	14	Brazil	8	Nicaragua
109	Kosovo	115	Dominican Republic	15	Lesotho	9	Venezuela
110	Guatemala	115	Guatemala	16	Guatemala	10	Guatemala
112	Guyana	119	Mali	17	Panama	11	Bangladesh
113	Georgia	119	Belarus	18	Swaziland	12	Cuba

Guatemala is a middle income country with relatively high perceptions of corruption and an extremely unequal distribution of wealth. Conversely, the country's people report being very happy with their lives despite what the statistics provided above and below suggest—a harsh economic environment and some of the highest child malnutrition rates in the world (see graphs below).

Poverty and Extreme Poverty

According to the Departmental Development Plan for Totonicapán, elaborated by the Guatemalan Secretary of Planning and Programming (SEGEPLAN), Guatemala's rates of poverty (defined as living on less than two dollars a day) and extreme poverty (living on less than one dollar per day) stand at 54% and 17%, respectively. In Totonicapán the rates are well above the national average, with 76% of the populations living in poverty and 26% living in extreme poverty. In SMC, the situation is worse, with 88% of the populations living in poverty and fully 33% living in extreme poverty. For comparison's sake, refer to the graph below.¹⁴

¹⁰International Monetary Fund. *World Economic Outlook Database, April 2015*. Accessed May 20th, 2015:

<http://www.imf.org/external/index.htm>

¹¹ Transparency International. *Corruptions Perceptions Index 2014*. Accessed May 20th, 2015:

<https://www.transparency.org/cpi2014/results>

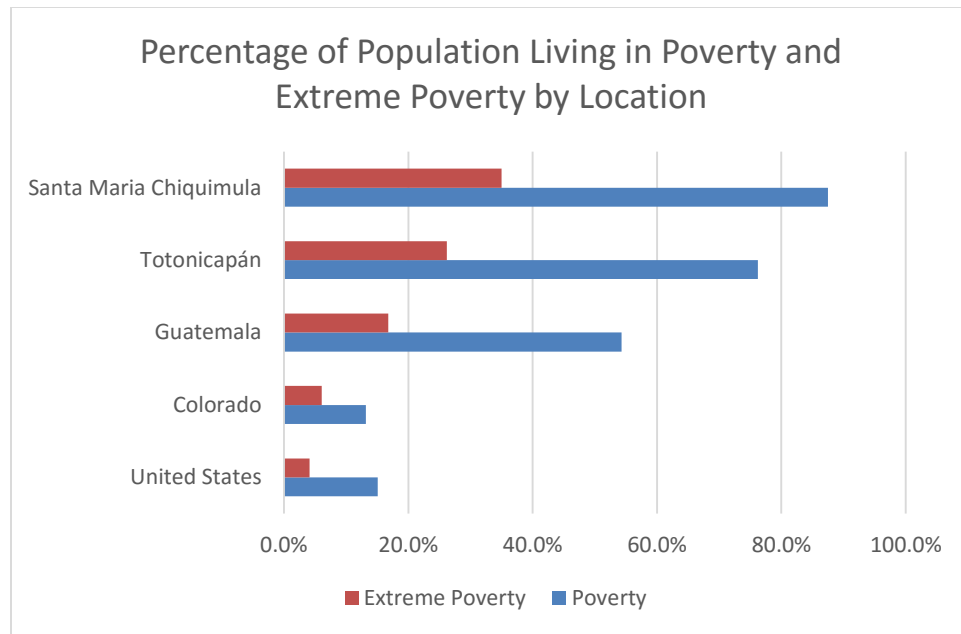
¹² United Nations. *United Nations Human Development Report, 2009*. Accessed May 20th, 2015:

http://hdr.undp.org/sites/default/files/reports/269/hdr_2009_en_complete.pdf

¹³ The New Economic Foundation. *Happiness Index 2014*. Accessed May 21st, 2015:

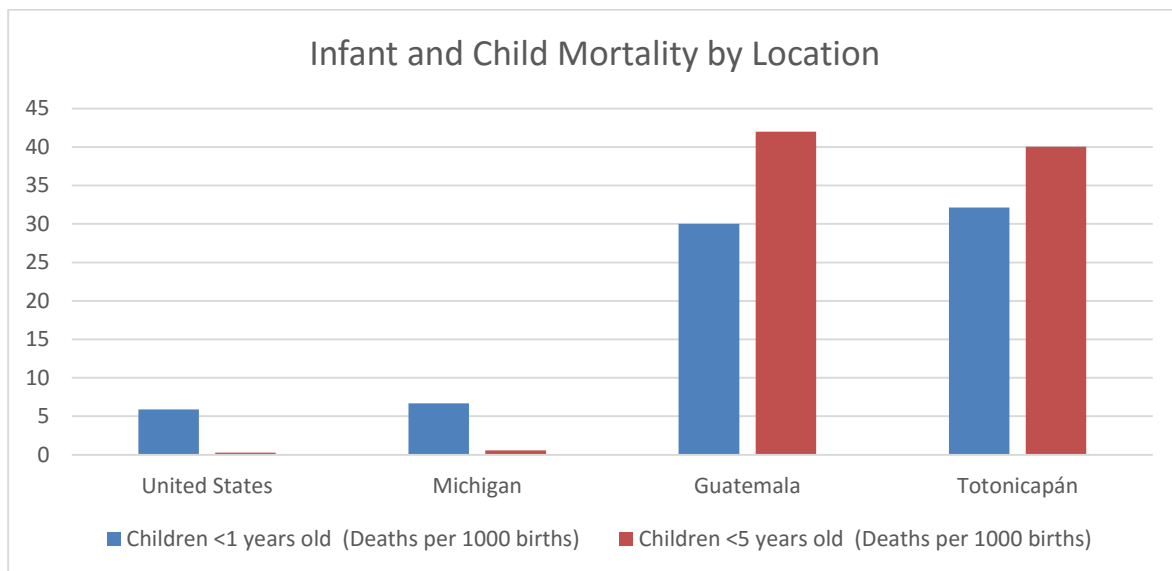
<http://www.happyplanetindex.org/data/>

¹⁴ Sources for the graphs in this section are found in the addenda along with data tables.



Infant and Child Mortality

At a glance, the graph below comparing infant and child mortality rates in the United States, Michigan, Guatemala, and the Department of Totonicapán is alarming. In SMC, roughly one in ten births is attended by someone with medical training, making childbirth in rural areas of the municipality a dangerous procedure for both mother and child. It also makes accurate data collection on infant mortality in SMC next to impossible.¹⁵ For these reasons, one can deduce that the data below for Totonicapán do not reflect un-reported cases of infant and child mortality and are actually higher than they appear.



¹⁵ SEGEPLAN, SMC. P. 29

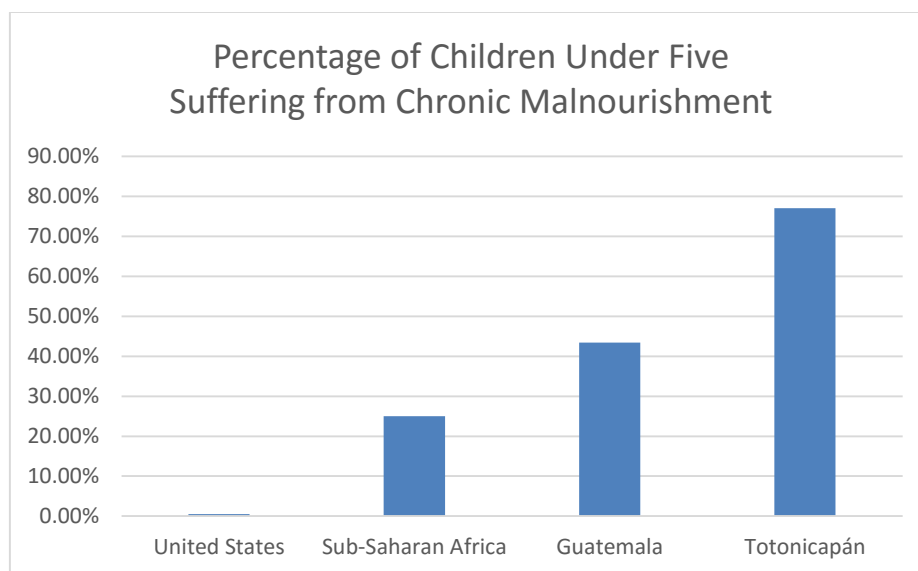
Malnourishment

According to the United Nations International Children's Emergency Fund, "Guatemala has the highest percentage of chronically malnourished girls and boys in Latin America, and the fourth highest in the world."¹⁶ Furthermore,

Four in ten children (43.4%) under five are chronically malnourished (as measured by height relative to age), a condition that causes them to drop out of school, lowers their productivity, makes them susceptible to illness and even loss of intellectual quotient, which are irreversible effects that last a lifetime. Chronic malnutrition affects eight in ten (80%) indigenous children.

The global economic crisis and the effects of climate change, particularly drought, are further affecting the economies and livelihood of indigenous families and the poorest, with boys and girls among the most affected.¹⁷

According to the Departmental Development Plan, 77.1% of the population of the residents of the Department of Totonicapán suffer from chronic malnourishment¹⁸, and Santa Maria Chiquimula has one of the highest rates of malnourishment of any municipality within the department, with 73.6% of the population experiencing chronic malnourishment.¹⁹ graph below shows the stark contrast in child under-five malnourishment rates in Guatemala, Totonicapán, and places readers may be more familiar with.



¹⁶ United Nations Children's Fund. *Fighting chronic malnutrition among impoverished children in Guatemala, 2009*. Accessed May 15th, 2015: http://www.unicef.org/infobycountry/guatemala_48087.html

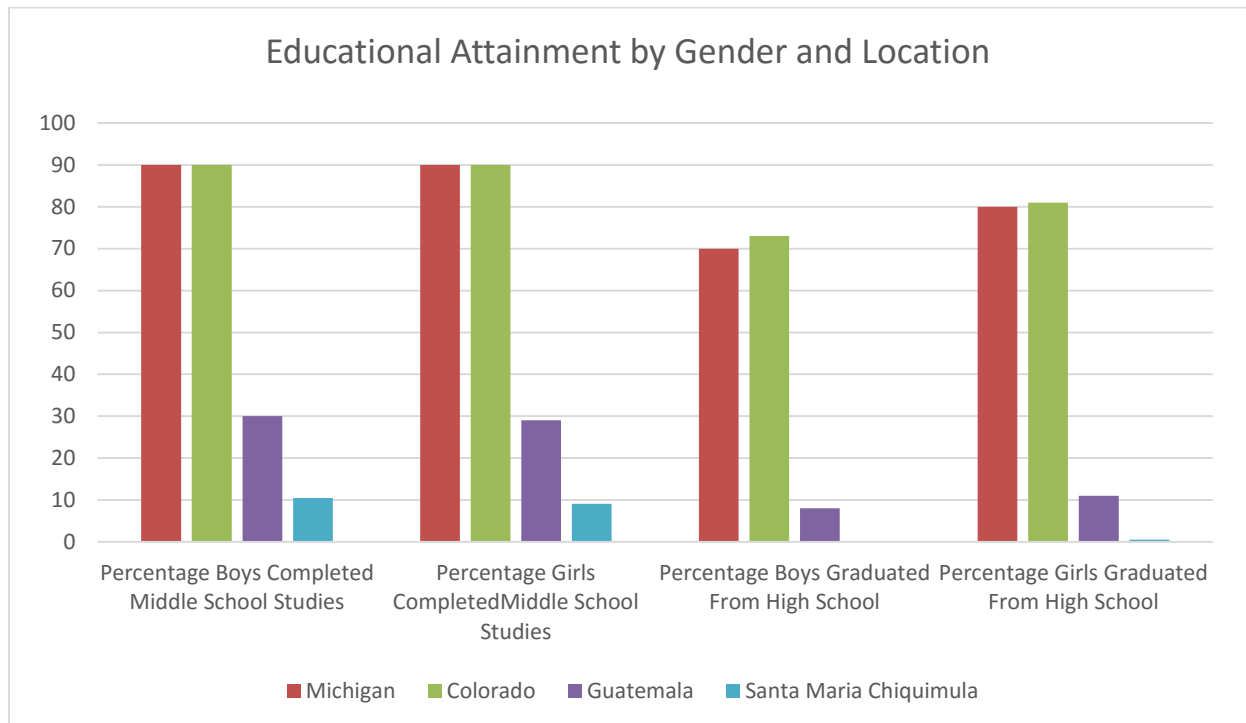
¹⁷ United Nations Children's Fund. *Malnutrition in Guatemala*. Accessed May 23rd, 2015: http://www.unicef.org/guatemala/english/overview_18012.htm

¹⁸ Secretary for Planning and Programming, Office of the President of Guatemala. Totonicapán, Departmental Development Plan, 2011-2021. P. 30

¹⁹ SEGEPLAN, SMC. P. 30

Educational Attainment

A graph comparing statistics on Guatemala, Totoncapán, and Santa María Chiquimula, alongside statistics from elsewhere in the world, is presented below. This graph details educational attainment rates from primary and secondary school by gender. Rates on United States citizens completing middle school were estimated at 90% based on mapped data and United States Department of Labor Statistics (the actual data may vary slightly).



According to the Global Education Fund,

Guatemala is one of the poorest countries in Latin America. Nearly 25% of the country's population is illiterate, ranking Guatemala 174 out of 194 countries in terms of literacy rate. That statistic jumps to more than 60% in the indigenous population. According to USAID, average schooling in Guatemala is a short four years and only three in ten children graduate from sixth grade.

The current state of the education system is substandard. Many classrooms, especially in rural Guatemala, do not have adequate teaching materials. Additionally, with more than half the population living below the poverty line, many children – especially rural and indigenous children – are forced to drop out of school to help support their families or because they are unable to afford the cost of uniforms, books, supplies and transportation.²⁰

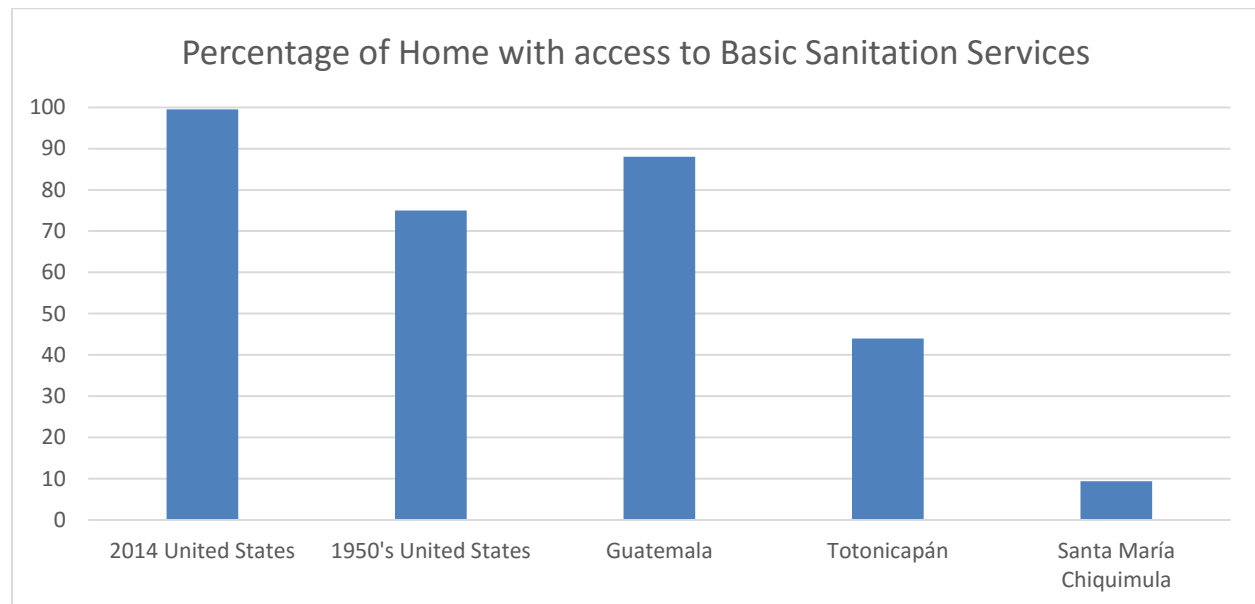
Based on these graphs, it may be apparent that many of these issues are interconnected. Countries with a high income inequality and high levels of corruption will not have as large a tax base to properly fund

²⁰ Global Education Fund. *Why Guatemala*. Accessed May 25th, 2015: <http://www.globaleducationfund.org/guatemala/>

schools. Chronically malnourished and stunted children will perform poorer in school, lowering a given family's motivation to continue sending their children to school. Furthermore, in areas where a vast majority of the population live in poverty or extreme poverty, such as Santa María Chiquimula, children are expected from a young age to work and support themselves and their family financially, which perpetuates vicious cycles of poverty and malnourishment.

Water and Basic Sanitation Services

Basic sanitation services include flush or bucket pour toilets that are connected to plumbing, pit latrines or composting toilets. The percentage of homes with this access is seen in the graph below.



The World Health Organization has said that;

Using proper toilets and hand washing - preferably with soap - prevents the transfer of bacteria, viruses and parasites found in human excreta which otherwise contaminate water resources, soil and food. This contamination is a major cause of diarrhea, the second biggest killer of children in developing countries, and leads to other major diseases such as cholera, schistosomiasis, and trachoma.

Improving access to sanitation is a critical step towards reducing the impact of these diseases. It also helps create physical environments that enhance safety, dignity and self-esteem. Safety issues are particularly important for women and children, who otherwise risk sexual harassment and assault when defecating at night and in secluded areas.

Also, improving sanitation facilities and promoting hygiene in schools benefits both learning and the health of children. Child-friendly schools that offer private and separate toilets for boys and girls, as well as facilities for hand washing with soap, are better equipped to attract and retain

students, especially girls. Where such facilities are not available, girls are often withdrawn from school when they reach puberty.²¹

With regard to water access, the SEGEPLAN's Municipal Development Plan report states that 88% of all homes in the municipality have access to tap water in the home but goes on to specifically state that there is no data available on what percentage of those homes have water in their taps that is safe for human consumption.²² The author spent just over two years living in the municipality, and though he did have a tap in his home it only gave water approximately 7 months out of the year and would frequently expel dark green and brown vegetable matter upon being turned on.

It is worth noting that diarrhea, often the result of consuming contaminated food or water alive with harmful bacteria and parasites, is the second leading cause of child under-five death in Guatemala.²³

Economic Activity

The largest single employment sector in Guatemala is the agricultural sector. According to the CIA World Factbook,

Guatemala is the most populous country in Central America with a GDP per capita roughly one-half that of the average for Latin America and the Caribbean. The agricultural sector accounts for 13.5% of GDP and 30% of the labor force; key agricultural exports include coffee, sugar, bananas, and vegetables...The Dominican Republic-Central America Free Trade Agreement (CAFTA-DR) entered into force in July 2006, spurring increased investment and diversification of exports, with the largest increases in ethanol and non-traditional agricultural exports. While CAFTA-DR has helped improve the investment climate, concerns over security, the lack of skilled workers, and poor infrastructure continue to hamper foreign direct investment. The distribution of income remains highly unequal with the richest 20% of the population accounting for more than 51% of Guatemala's overall consumption. More than half of the population is below the national poverty line, and 13% of the population lives in extreme poverty. Poverty among indigenous groups, which make up more than 40% of the population, averages 73%, with 22% of the indigenous population living in extreme poverty. Nearly one-half of Guatemala's children under age five are chronically malnourished, one of the highest malnutrition rates in the world. Guatemala is the top remittance recipient in Central America as a result of Guatemala's large expatriate community in the United States. These inflows are a primary source of foreign income, equivalent to one-half of the country's exports or one-tenth of its GDP.

²¹World Health Organization. *Poor sanitation threatens public health; 6 in 10 Africans remain without access to proper toilet*. Joint News Release WHO/UNICEF. Accessed June 12th, 2015: <http://www.who.int/mediacentre/news/releases/2008/pr08/en/>

²² SEGEPLAN, SMC. P. 31

²³ World Health Organization. *Reducing Diarrhea in Guatemalan Children: randomized controlled trial of flocculant-disinfectant for drinking water*. *Bulletin of World Health Organization*. Accessed June 12th, 2015: <http://www.who.int/bulletin/volumes/84/1/28.pdf>

In Totonicapán, according to SEGEPLAN's Departmental Development Plan, a total of 73% of the men in the Department have access to jobs that pay a salary, while only 27% of women have access.²⁴ Additionally, upwards of 20% of all families in the Department have a minimum of one or two family members in the United States, sending remittance money so their families can meet their basic needs (food, clothing, medicine). The primary method of employment in rural areas of the Department is subsistence farming. Subsistence farmers work solely to ensure food security for themselves and their families. This "job" does not provide them with adequate income to meet other basic needs such as education or emergency health services.²⁵ Those who do work in more formal employment for the purpose of gaining income often work in the private sector and are self or family-employed in commercial activity, running small *tiendas* (kiosks/corner stores), making or repairing clothing and shoes, furniture, and purchasing and/or selling domestic and international products. Many women find income weaving traditional clothing, which remains the primary daily clothing of choice for women in Santa María Chiquimula.²⁶ The municipality is also well-known regionally and nationally for the production of a particular type of wheat bread known as *shecas*.

In general economic production in the area, particularly for those in the agricultural sector who constitute the majority of the municipality's inhabitants, is sub-standard. The primary crops grown in the area are corn and black beans, as well as squash, lemons and limes, pears and other sub-tropical fruit bearing trees, and we see significant avocado production in the municipality as well. However, the average family in rural areas is only capable of producing roughly 600 *quetzales* (79 USD) a month from this production, while the SEGEPLAN estimates that an average family would need 1,975 *quetzales* (260 USD) per month to satisfy their basic needs. Furthermore, the population has perceived a decrease in remittance money from the United States following the global economic crisis and increased surveillance along the Mexican/United States border, as well as an increase in deportations of Guatemalans and migrants from other countries.²⁷ Regarding basic livelihood, the SEGEPLAN report on SMC goes on to say that a combination of factors such as a lack crop diversification, absence of strategic projects to increase agricultural yields, and high levels of poverty prevent subsistence farmers from being able to invest in new initiatives to create employment.²⁸

²⁴ Secretary for Planning and Programming, Office of the President of Guatemala. Totonicapán, Departmental Development Plan, 2011-2021. P. 40

²⁵ Ibid. P. 33

²⁶ SEGEPLAN, SMC. P. 54

²⁷ Ibid. P. 30

²⁸ Ibid. P. 52

Personal Snapshot

Compilations of statistics can become overwhelming for a reader seeking a better understanding of an area of the world they may not be familiar with. Some readers may be more interested to hear about the personal lives of indigenous Guatemalan women who live in this area. This snapshot serves this purpose. Through her story, data previously presented may be contextualized and become easier to digest and understand on a more personal level. *Mujerave's* projects, after all, will benefit individual women, like Gloria Romelia.

Name: Gloria Romelia Lux Osorio (pictured at right)

Aldea: Racana, SMC

Personal History: At a young age Gloria's father left her mother and she was sent to live with her grandmother. In part due to cultural beliefs at the time (particularly among her grandmother's generation), she never attended a single day of formal schooling. She did learn to read and write as a young adult through a local literacy program. She married a man and had one child, but he was abusive and did not want to be the child's father, so she took the child and left her husband and returned to live with her grandmother.

In terms of economic activity, Gloria borrows sewing supplies from a female neighbor and can sometimes earn 75-150 *Quetzals* (10 to 20 USD) a month by making traditional Mayan *huipiles* or blouses. She grows corn and beans on her small plot of land, and raises chickens and sheep to supplement her income. In 2010 a prolonged heavy rain caused the river running by her home to flood, destroying approximately 1/3 of her arable land, a loss she estimates at 10-15,000 *Quetzales* (1315-1975 USD), which does not include year-to-year losses as she can no longer plant on the land which the river took.



This photo was taken in 2010 shortly after the flood. One may note the pre-flood level of land in the background.

Source: Author's Photograph

Home Type: Adobe (bricks of clay and straw, produced and sun-dried on-site) with locally produced tiles for the roof. According to the SEGEPLAN Municipal Development Report, 95% of homes in the municipality are of this type.²⁹

Access to Electricity: One light bulb per room with frequent outages. According to the SEGEPLAN Municipal Development Report, 78% of homes in the municipality have some form of electricity, but streets and other public spaces are only provided with light in the urban center of the municipality.³⁰

Access to Water: A well with a drop bucket approximately 20 minutes' walk down a steep slope from the home. Gloria can carry one *tinaja* or traditional jug at a time. (You can see a *tinaja*, green with vertical stripes, pictured below resting on her *pila*, a large water storage tank with built in washboards for washing clothes or dishes). She hand washes all of her family's clothes in the river behind her house and only occasionally uses her *pila* for clothes washing. According to the SEGEPLAN Municipal Development Report, 88% of homes in the municipality have a tap for water, none of which is treated to ensure that it is safe for human consumption.³¹

Access to Basic Sanitation Services: Her home does not have a toilet of any kind. According to the SEGEPLAN report, this is the case in over 90% of the homes in the municipality.³²



Gloria's home is very typical of the area, scarce electricity, and no running water or sanitation services.
Source: Author's Photograph

²⁹ SEGEPLAN, SMC. P. 35

³⁰ SEGEPLAN, SMC. P. 31

³¹ SEGEPLAN, SMC. P. 38

³² SEGEPLAN, SMC. P. 38

Key Informant Interviews

Three Key Informant Interviews were conducted in Santa Maria Chiquimula. One was held on January 19th, 2015 with the President of the Association for the Development of Santa Maria Chiquimula, a local NGO that has historically carried out projects that support education and increased access to formal employment opportunities for rural *aldeas* in SMC. Another interview was carried out with the Director of another local NGO, Ajtikonel (Maya K'iche' for *one who plants corn*) on April 19th, 2015. On April 25th, 2015 a third interview was held with a local resident and *Secretaria* at the Health Center in Santa Maria Chiquimula, Lydia Lux Cac. The questions asked and the interview results from each participant are presented in the Addenda. What follows is a summation of the information gleaned during these key informant interviews.

The most pressing needs as presented across the interviews were relatively “typical” chronic problems that plague indigenous communities in Guatemala. As per the interviewee responses, the primary human development dilemmas in the municipality include:

- Malnutrition
- Unemployment
- Lack of access to health information
- Respiratory Illnesses (among children in particular)
- Diarrhea
- Lack of access to potable water

According to the interviewees who are directors of local non-governmental organizations, projects that have been shown to improve some of these condition and that they have experience with are:

- Small animal husbandry
- Greenhouses
- Grey-Water Filtration (to reuse water already used once for dish washing/laundry clothes)
- Family Gardens/Experimental Agriculture
- Technical/Educational Workshops

According to Lydia, who is employed at the municipal health center, many health problems are the result of an already weakened immune system, which is itself the result of chronic malnourishment and chronic diarrhea from the consumption of contaminated food or water. She stressed that preventative health education is the primary tool employed by health professionals in the area. It is a relatively low-cost way to disseminate information that communities may find useful to improve the hygiene of their homes. For example, by simply ensuring that water from a water tap, well, or nearby river is properly boiled, a family can dramatically reduce the instances of diarrhea. It is worth noting that according to the World Health Organization, diarrhea and pneumonia account for nearly 40% of all deaths in children under five in

Guatemala, at 13% and 24%, respectively.³³ Furthermore, with regards to pneumonia, the World Health Organization goes on to say,

While most healthy children can fight the infection with their natural defenses, children whose immune systems are compromised are at higher risk of developing pneumonia. A child's immune system may be weakened by malnutrition or undernourishment, especially in infants who are not exclusively breastfed. Pre-existing illnesses, such as symptomatic HIV infections and measles, also increase a child's risk of contracting pneumonia.

The following environmental factors also increase a child's susceptibility to pneumonia:

- indoor air pollution caused by cooking and heating with biomass fuels (such as wood or dung)
- living in crowded homes³⁴

This confirms Lydia's testimony and exemplifies the situation that many children under-five face in Guatemala, especially in rural areas like the municipality of Santa María Chiquimula.



Two young girls pose before their open pit or "Maya three-rock" stove in SMC during a stove installation project in 2008.

Source: Author's Photograph

The interviewees reported that a formerly active local non-governmental organization (ADESMA) lost its funding sources and has been incapable of organizing any projects during the last year. The other local non-governmental aid organization that exists in SMC is Ajtikonel, whose director reported in his interview with the author of this report that their organization has begun a micro-finance loan organization that has allowed his organization to continue to have a presence in community vis-à-vis the projects mentioned earlier.

He also mentioned that his organization has supported large scale greenhouse projects in the past, and would be willing to provide similar services in the future. This could include but need not be limited to constructing the physical greenhouse and providing training and technical support to the greenhouses operator.

³³ World Health Organization. Guatemala American Region Neonatal and Child Health Profile Department of Maternal, Newborn, Child and Adolescent Health. Accessed June 1st, 2015: http://www.who.int/maternal_child_adolescent/epidemiology/profiles/neonatal_child/gtm.pdf

Guided Community Based Assessments

The guided Community Based Assessments involved two meetings. One was an extension of Mujerave partner organization Ajtikonel's annual Board Meeting and Strategic Planning Meeting, which took place on the 5th of March, 2015. This meeting involved representatives from across the municipality with experience in executing sustainable development projects. As is common for the municipality, less than 10% of the attendees at this meeting were women.

According to the *Junta Directiva* (Board of Directors) for Ajtikonel the largest needs in the municipality of SMC are as follows:

- Malnutrition
- Extreme Poverty
- Unemployment

The Board generally agreed that these problems are typically solved by men as the primary bread-winner and caretaker of the family. Projects that they see as having a significant impact in terms of alleviating the suffering of the municipality's residents are:

- Family gardens
- Organic fertilizer
- Small animal husbandry
- Greenhouses
 - It was noted by the Board that without technical assistance and plans for replacing the plastic walls once they have worn down the projects are not likely to have strong or long-term impact

When pressed about which projects they felt would have the most immediate and the largest impact on the problems they have identified, the Board was able to provide the following ranking (with 1 being the most impactful option):

1. Greenhouses
2. Pig raising
3. Family gardens
4. Technical assistance for tomato production
5. Plastic rolls and seed for various crops (used locally for makeshift low hanging greenhouse creation)

A second, more involved Guided Community Based Assessment meeting was called by the author of this report on March 25th, 2015, and involved the following participants:

- Director of Ajtikonel, Chuacorrall I, Santa María Chiquimula
- Technical Advisor of Ajtikonel, Chuacorrall I
- Catarina Osorio Tum – Artesanal Merchant in Santa María Chiquimul
- Lydia Micaela Lux Cac – Secretary of the Municipal Health Center, Santa Maria Chiquimula
- Walter Jose Rosales Caniz – Agricultural Engineer in Totonicapán, Totonicapán

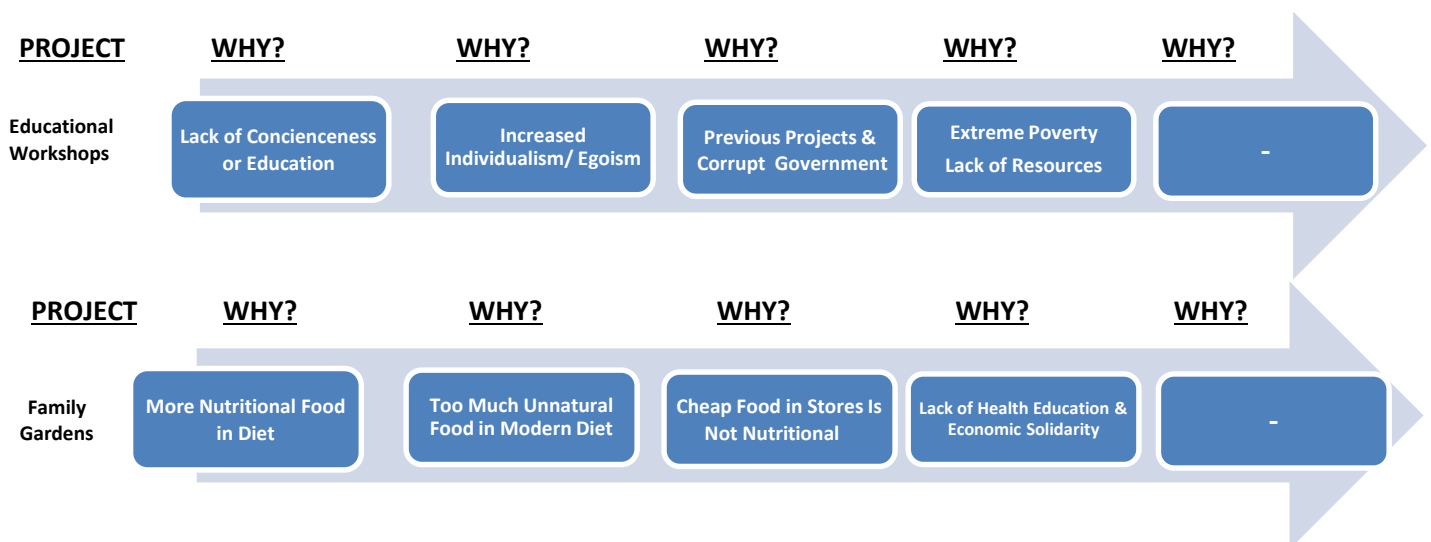
- Gloria Romelia Lux Osorio – Weaver of Traditional Textiles, Small Scale Agricultural Producer, Aldea Racana
- Female 1 – Small Scale Agricultural Producer, Chuacorrall II, Santa María Chiquimula
- Female 2³⁵ – Small Scale Agricultural Producer Chuacorrall II, Santa María Chiquimula

Note that over 50% of the attendees at this meeting were women.

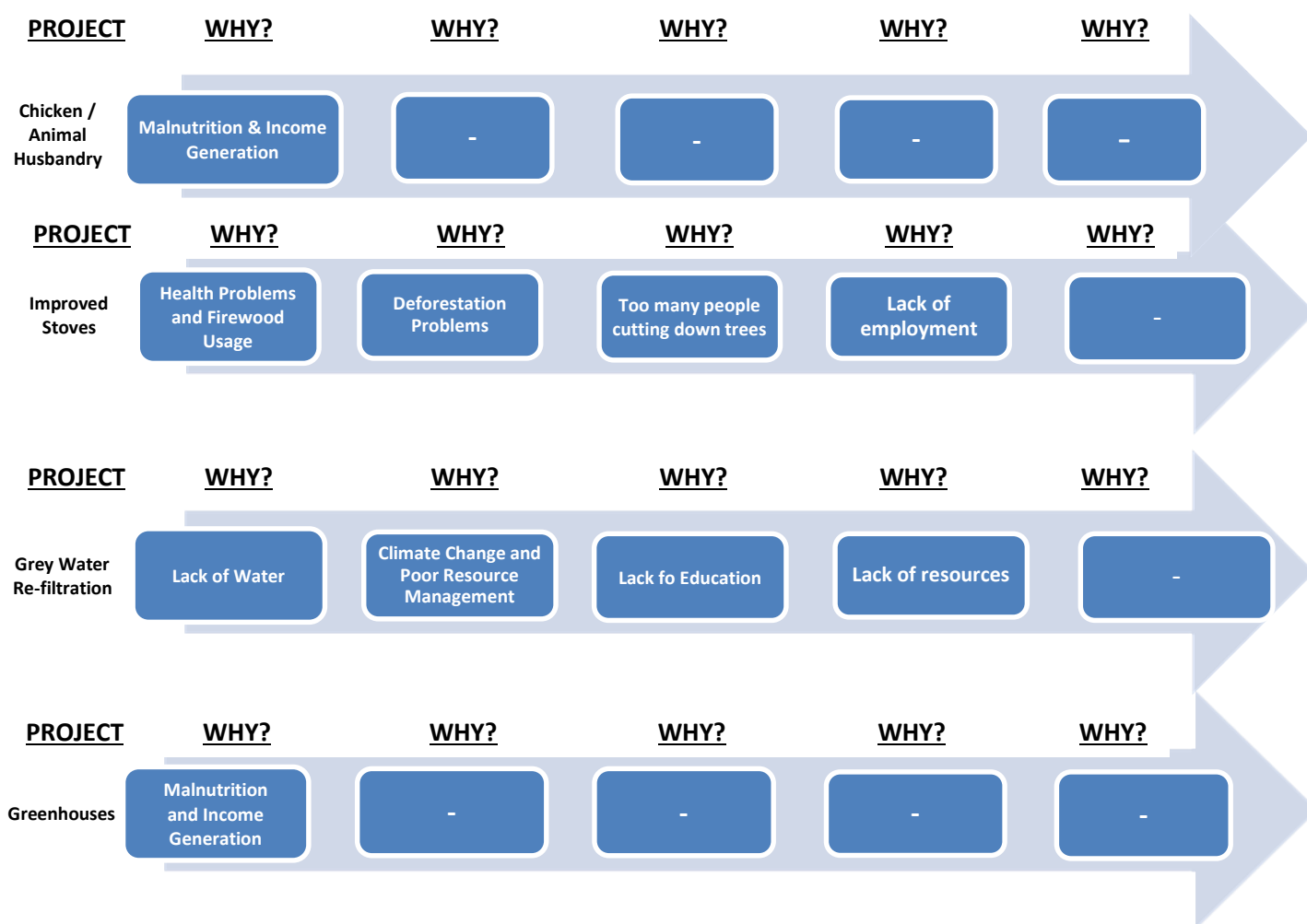
In small groups, and then later by consensus, the group organized the most pressing needs in the community in the following order:

- Chronic malnutrition
- General Health
- Consciousness – Education
- Unemployment
- Lack of economic resources
- Climate Change
- Cyclical Poverty
- Hygienic conditions

In general, a need has been identified, in this case, a sustainable development project that has been shown to help improve health or overall quality of life in the Guatemalan Highlands is suggested by the group. Community members are asked why, and their first response will often address a surface issue. When pressed, however, deeper issues are revealed, until another “why” can scarcely be asked if the response is to remain within the realm of the possible. Below you will see un-edited results that came directly from community members, primarily rural women.



³⁵ Only those who specifically consented to having their names used in the report are listed by name.



This activity was used to tease out the root-cause of problems that result in residents of SMC desiring sustainable development projects. Let us examine the results.

As we can see from the visual above, each of the six projects suggested by the group ended in either a lack of resources, a lack of education, malnutrition, or a lack of economic resources. It is important to note that these were conclusions drawn by the group themselves, and that a group composed predominantly of women came to these conclusions. Therefore, this activity would indicate that the root-causes of the development problems faced in SMC are: lack of economic resources; unemployment; malnutrition; and a lack of education or awareness about these issues. Each of these issues seem to be contributing to either a maintenance of the status quo (extreme poverty and chronic malnutrition) or a deterioration in the quality of life over time.

Furthermore, an asset-based assessment (an activity which confirms that the community is equally aware of their strengths and resources as it is its shortcomings and needs) was carried out during this Guided Community Based Assessment. This activity is particularly useful once the transition from assessing needs to project planning takes place, but the information is also useful for a needs assessment as it helps us

further understand what the community lacks and also what supplies, services, and knowledge can be leveraged from within the community.

As Mujerave is an organization whose primary objective is women's empowerment, the activity included a strengths based assessment for the community overall, but also for women in particular. The results are displayed in the chart below.

Strengths/Assets of Overall Community	Strengths/Assets of Women
Human resources (capacity to work)	Women make children the priority
Good Land for Producing Crops	Women carry children to term, care for them and provide milk for babies
Technical/Farming Knowledge	Women are family health experts
Organization (though stronger amongst women)	Women administer family budgets, ensuring basic needs are met whenever possible
Desire to improve community	Women teach children homemaking skills
Desire to participate in projects	Women maintain the indigenous language
Desire to earn more money for families	Women maintain the culture, not just language, but also through dress and other customs
	Women are experts in family asset abundance or scarcity
	Women act as family phycologists
	Women are often more knowledgeable about traditional and medicinal plants and their uses

Authors note: At this phase in the realization of the needs assessment, a meeting was held with the Strategic Planning Committee within the Board of Directors of Mujerave. It was relayed during that meeting that greenhouses were a project that were being brought up continuously in the community as a project with a track record of producing results, not only as a tool for diet diversification and to reduce incidences of malnutrition, but also as a tool for income generation. Therefore, it was decided that a further investigation be made into the need and the manner in which a greenhouse project may be designed by Mujerave, in particular how best it would meet the actual community-identified need. The section that follows is a result of that meeting and mandate from the Strategic Planning Committee within the Board of Directors of Mujerave.

Focus on Greenhouses

Greenhouses are a project that have been implemented in the past in Totonicapán, and in SMC specifically. However, previous projects were noted by local non-governmental organization employees to be insufficient. At times, the projects did not include adequate monitoring and evaluation to ensure long-term viability. Others, as in the case of a project recently executed in SMC that produced the sweet or bell peppers in the photo below, rolls of plastic we distributed to area families with no accompanying technical training. Furthermore, prices for local produced crops change throughout the year.



Gloria Romelia shows off bell peppers growing in a neighbor's greenhouse.
Source: Author's Photograph

Without proper training and technical assistance through the life of the greenhouse, profits margins are limited and the beneficiary may have less motivation to maintain the greenhouse. In the case of bell peppers, for example, the month leading up to Christmas see a progressive spike in prices in local markets. Women can earn two to three months more selling sweet peppers in December than other times of the year. But, when must sweet peppers be planted and how should the environment in the greenhouse be maintained in order to maximize sweet pepper production to meet the community demand? This type of information exists in the community, but it appears that this type of information had not been an integral part of previous greenhouse projects. If local women receive guidance and training, and opportunities to share information with local agricultural experts, they may know when to plant which crops to ensure the highest level of financial gain for themselves and their families.

With these ideas in mind, the following sections was drafter to answer the following questions:

- If greenhouses are indeed an effective way to alleviate malnutrition and eradicate poverty (the core themes of Mujerave's mission and vision), then how should they be constructed?
 - Community greenhouses?
 - Single family greenhouses?
 - Greenhouses at schools?
- What can be grown in them?

- How much money can they generate?
- How can we ensure this money directly benefits women?
- What will women do with the money?
- How can communities ensure adequate water supply for these greenhouse?

To begin, a SWOT analysis on the three different proposed ideas to construct greenhouses. The results are displayed below.

Community Greenhouses (Female heads of household work together)

<u>Strengths</u> The work (agriculture, delivery to market, irrigation) is lighter, less resource intensive, knowledge expands, women can continue to manage other needs, community information is shared, they encourage each other	<u>Weaknesses</u> Some work, others do not work (irresponsible, greedy), others take advantage of the other partners, conflicts do not usually reach a good agreement, enmity develops between women and children
<u>Opportunities</u> Variety of beneficiaries, workload, cost and profit sharing, potential for strengthening community bonds	<u>Threats</u> Rumors dismantle family and community relations, sour organizations community image, adverse weather conditions, insufficient water

Individual Greenhouses (Female heads of household work individually)

<u>Strengths</u> Greater responsibility, greater accountability, easier to monitor and evaluate, calculate cost inputs and resources produced, greater community interest, allows lifestyle maintenance	<u>Weaknesses</u> Lack of initiative, laziness, alcoholism (usually father takes family income for alcohol), lack of agricultural knowledge, no strength in numbers
<u>Opportunities</u> Take advantage of market swings, save transportation time by building closer to markets, improve locally available produce options in the community market, directly benefit individual family diet	<u>Threats</u> Storms, overflowing rivers , lack of water for irrigation, contamination, no long term saving strategies in place for future maintenance or reconstruction in the event of a disaster

School Greenhouses (School and local women share control, students learn maintain & use greenhouses)

<u>Strengths</u> Exchange of knowledge between students, teachers and farmers; easy to manage needs (school provided structure); contributes to strengthening the responsibility of children	<u>Weaknesses</u> Irresponsible children if not supervised by the teacher, poor management can harm the group, underpaid school staff have increased responsibility they may not take seriously
<u>Opportunities</u> Improved diet in schools, encourages children to eat properly , the community can use the space during vacation time, and dissemination of relevant technical information	<u>Threats</u> Suspension of classes for greenhouse lessons, the holiday from October to first week of January, lack of water for irrigation, extreme weather conditions, greenhouse easily damaged

In general, community members nearly unanimously agree that it simply is not feasible to have community-run greenhouses. Furthermore, this author has been warned against such lofty project planning by several seasoned development experts. One even likened it to a Westerner winning the lottery in terms of how much money being suddenly injected into the community can destroy family and community relations. This is heightened given that the communities in which Mujerave will be working are living in poverty and in many cases extreme poverty. For the reasons listed above, and the support provided from trusted experts, projects which rely on work-load and profit sharing among disparate community members are not advised.³⁶ However, this does not mean that project beneficiaries should not be clumped in certain neighborhoods (based on other needs-based criteria such as female heads of household) to facilitate training and the sharing of technical information.

What can be grown in greenhouses?

Greenhouses in the area are used to grow tomatoes, sweet or bell peppers, watermelon, and of course they can be used as tree nurseries, allowing fruit trees to grow quickly in their infancy and sold to the community. In terms of the SWOT analysis noted above, one possibility for community greenhouses that was mentioned was that communal land could be used for a greenhouse, community managed for the purposes of growing fruit trees, and then those trees could be sold at a symbolic cost to maintain the greenhouse and allow families to plant fruit trees for a dramatically reduced costs. Any use of communal land does, however, requires extensive buy-in from local political actors and become susceptible to corruption.

How much money can greenhouses generate?

Using figures from previous projects, local non-governmental organizations, and potential Mujerave project partner Ajtikonel, estimates that a properly managed greenhouse that is 8 meters by 12 meters with a capacity for 200 tomato plants could produce approximately 3,500 USD per year.

How can we ensure this money directly benefits women and their families?

³⁶ Thanks again to Lynn Roberts.

Mujerave would develop contracts with both project partners and projects beneficiaries. These contracts may include husbands/brothers who would agree ahead of time that the money earned from the greenhouse is income for the woman who will receive the training to use as she see fits. Care will be taken to ensure this is handled in culturally appropriate ways. Monitoring and evaluation would include follow-up regarding who controls the profits and whether the contract is being honored. Pre-construction technical training would be aimed at women, ensuring that their knowledge base would later be leveraged to maximize production. Furthermore, if the greenhouse is built close to the home, it falls within local cultural definitions of the “women’s domain”.

What will women do with the money?

Though it is difficult to know with certainty in each case how women will spend the money, it is safe to say that increased income for women in rural Guatemala will directly benefit families through increased spending on children’s education, healthcare, and diet diversification. The World Food Program estimates that “if women farmers had the same access to resources as men, the number of hungry in the world could be reduced by up to 150 million.”³⁷ Furthermore, from the United Nations Women’s Office comes the following data around women’s economic empowerment and the immediate effect it has on overall family health and wellbeing:

- When more women work, economies grow. An increase in female labor force participation—or a reduction in the gap between women’s and men’s labor force participation—results in faster economic growth.
- Evidence from a range of countries shows that increasing the share of household income controlled by women, either through their own earnings or cash transfers, changes spending in ways that benefit children.
- Increasing women and girls’ education contributes to higher economic growth. Increased educational attainment accounts for about 50 per cent of the economic growth in OECD countries over the past 50 years, of which over half is due to girls having had access to higher levels of education and achieving greater equality in the number of years spent in education between men and women [4]. But, for the majority of women, significant gains in education have not translated into better labor market outcomes.
- A study using data from 219 countries from 1970 to 2009 found that, for every one additional year of education for women of reproductive age, child mortality decreased by 9.5 per cent.³⁸

How can communities ensure adequate water supply for these greenhouses?

³⁷ World Food Program. *Hunger Statistics*. Accessed June 12th, 2015: <http://www.wfp.org/hunger/stats>

³⁸ - United Nations Women. *Facts and Figures: Economic Empowerment Benefits of economic empowerment*. Accessed June 12, 2015: <http://www.unwomen.org/en/what-we-do/economic-empowerment/facts-and-figures#sthash.BgEG4VL4.dpuf>

Mujerave has relied extensively on the knowledge of Ajtikonel, a non-governmental organization with an agricultural focus, in SMC. Ajtikonel has significant experience building and maintaining water tanks or *aljibes* that are fed by recycled grey water. Using multiple way-point tanks which are filled with gravel, charcoal, and sand, water that has been used to wash dishes, clothing, or even bathwater, can be recycled via these relatively inexpensive materials, and used a second time to water gardens or crops in a greenhouse.

Water is a scarce resource in the communities that Mujerave operates in. Using grey-water filtration systems combined with rainwater catchment systems, Mujerave is confident that greenhouses can be supplied with adequate water for the production of tomatoes and other crops.



Ajtkonel maintained water filtration system and tomato producing greenhouse in SMC, along with their logo.
Source: Author's Photograph

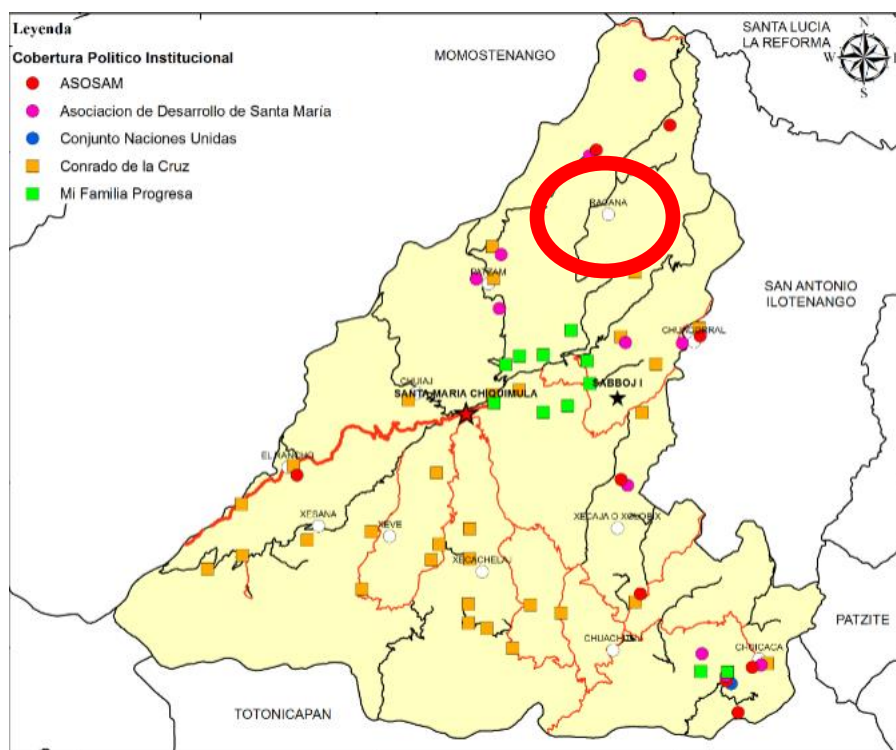
Non-Governmental and Non-Profit Organization Coverage

Though it can difficult to obtain official statistics on international and local non-governmental organizations with a specific, regional focus like Mujerave, anecdotal evidence suggests that certain geographic areas in Guatemala do tend to see higher concentrations of non-profits and NGOs than others.

Not surprisingly, tourist areas such as La Antigua, Guatemala, or Lake Atitlan are home to a disproportionate number of organizations focused on social change. Picturesque settings that are easily accessible and safe to foreign visitors and volunteers, these areas more easily attract interest and financial support than the nation's poorest areas, like SMC. Mujerave chose to have a regional focus in the department of Totonicapán in part based on this admittedly anecdotal evidence. Frankly, less "sexy" areas of the country get less attention, and this is true in the realm of international NGOs and Non-Profits, and the donor money that accompanies them.

In Santa Maria Chiquimula specifically, international NGOs do sporadically carry out projects in the area, but are so infrequent that residents often cannot recall the last time a foreign organization carried out projects in their neighborhood. Furthermore, as reported earlier, one of the more active local NGOs in SMC has been defunct for nearly two years and has found it increasingly difficult to operate in the wake of the 2008 global financial crisis.

The map below, taken from the SEGEPLAN's report of SMC, details where development organizations currently operate in SMC.



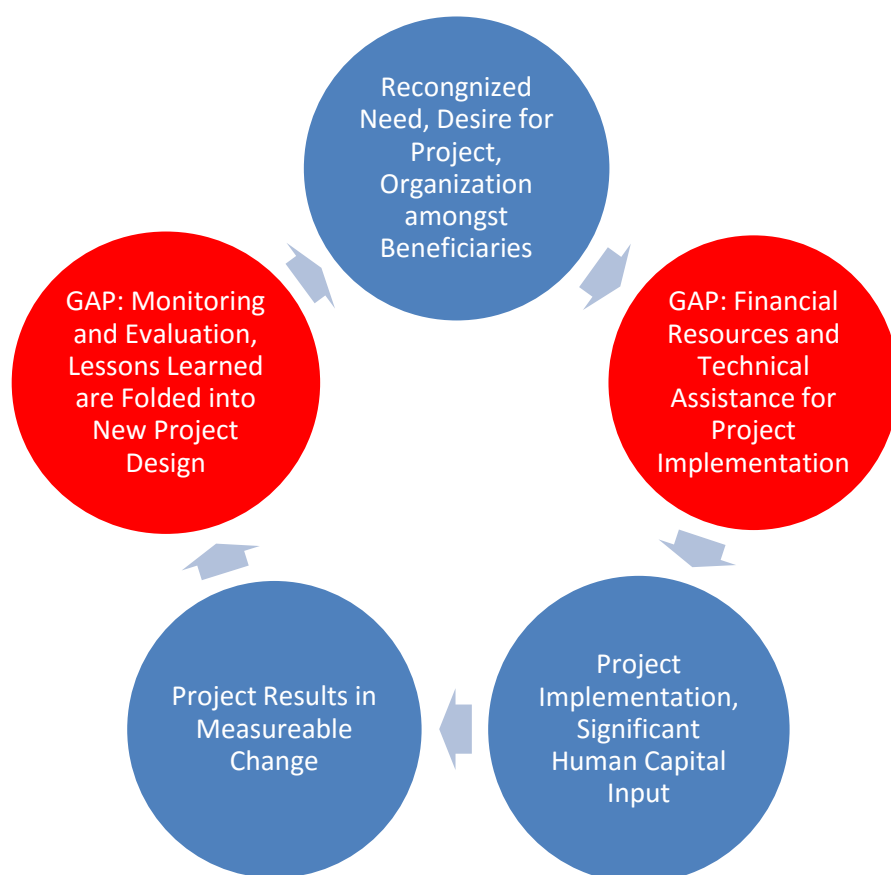
You will notice a red circle around an *aldea* of Racana. There, Mujerave plans to launch its pilot projects in part because, as is obvious in the map above, Racana is an underserved area in an underserved Department.

Conclusion

The key conclusions that can be drawn from the data, existing research, interviews, and Community Based Assessment meetings compiled in this MNA are as follows:

- Lack of economic resources and unemployment, insufficient food supply, as well as basic health and sanitation are significant root causes of many development problems in SMC
- Lack of support for education, low attainment rates, and lack of targeted interventions that involved adult education significantly exacerbate these problems
- Women are in a unique position as community experts on family health and well-being to appropriately leverage new income and external support
- The community is sufficiently organized and aware of how to work with external organizations on project to improve their livelihood.
 - There is also a desire for projects which are self-sustaining

Based on the results of community diagnostic tools mentioned above, Mujerave's involvement in sustainable development projects would seek to fill the gaps displayed in the diagram below.



As an organization, our ability to successfully support sustainable development projects in Santa María Chiquimula, Totonicapán, Guatemala will rely on our ability to develop relationships with appropriate local non-government organizations and to seek their guidance on technical assistance and with regard

to maintaining healthy community relationships. More importantly, Mujerave will need to be able to raise financial resources so that it can fund projects that support its mission and vision, and develop and maintain appropriate corporate infrastructure policies and procedures to raise and distribute these funds.

Suggested Pilot Projects

Appropriate pilot projects for Mujerave based on the results of this Mujerave Needs Assessments are as follows:

- One Greenhouse for an individual family
 - To construct the greenhouse, supply it with water, initial plants, and provide technical training to the head of household, Mujerave would need approximately 2,000 U.S. dollars.
- Improved Wood Burning Stoves (Peace Corps Design)
 - To construct 10 stoves and provide training on how to maintain and clean the technology, Mujerave would need approximately U.S. 1,200 dollars.

Proposed rough-budget for pilot project costs: 3,200 USD.

A properly designed greenhouse project would serve to address all four of the community-identified root causes: lack of economic resources; unemployment; malnutrition; and a lack of education or awareness about these issues. By creating income, we meet the unemployment and lack of economic resources needs, and malnutrition is eased by the introduction of new vegetables that the local environment cannot support with a greenhouse. Training sessions, from the technical sessions pre-construction to cooking classes featuring the newly abundant crop would help overcome the lack of information that aids the persistence of these problems.

Stoves are a relative inexpensive technology that would address at least two of the root causes of suffering identified by the community: lack of economic resources and a lack of education about issues which plague the community. Training prior to the execution of the project would include information about the health benefits of the technology, and the harms of cooking over an open fire in the home. Furthermore, a properly designed stove can significantly reduce the amount of firewood needed to prepare food. This equates to an overall decrease in deforestation. It also means either an increase in financial resources for those families who purchase firewood, or an increase in time for families who gather wood. Loss of food due to spillage as well as a decrease in injuries caused by burns are also benefits of stove projects the author of this report has observed in SMC.

Addenda

Sources for Graphs Provided

Child Health

Location	Children <1 years old (Deaths per 1000 births)	Children <5 years old (Deaths per 1000 births)
United States	5.9 ³⁹	.255 ⁴⁰
Michigan	6.7 ⁴¹	.55
Guatemala	30	42
Totonicapán	32.12	40.04 ⁴²

³⁹ Child Trends Data Bank. *Report on Child and Infant Mortality 2011*. Accessed May 23rd, 2015:

<http://www.childtrends.org/?indicators=infant-child-and-teen-mortality>

⁴⁰ Center for Disease Control. *Child Health Fast Stats 2015*. Accessed May 23rd, 2015:

<http://www.cdc.gov/nchs/fastats/child-health.htm>

⁴¹ Michigan Department of Health and Human Services. *Live Births, Infant Deaths and Infant Mortality Rates by Race, Michigan Residents 2000-2013 with Michigan Resident Estimates for 2014*. Accessed May 23rd, 2015:

<http://www.mdch.state.mi.us/pha/osr/Provisional/InfantDeaths2014.asp>

⁴² Secretary for Planning and Programming, Office of the President of Guatemala. *Totonicapán, Departmental Development Plan, 2011-2021*. P. 28 (Source of all figures for Totonicapán and Guatemala in this chart).

Percentage Living in Poverty

Location	% Living in Poverty	% in Extreme Poverty
United States	15.1 ⁴³	4.1 ⁴⁴
Colorado	13.2 ⁴⁵	6.1 ⁴⁶
Guatemala	54.3	16.8
Totonicapán	76.21	26.18
Santa Maria Chiquimula	87.5	35

Child Under-Five Malnutrition

Location	Children Under Five Suffering from Chronic Malnourishment
United States	.5% ⁴⁷
Sub-Saharan Africa	25% ⁴⁸
Guatemala	43.4% ⁴⁹
Totonicapán	77.1%

⁴³ United States Census Bureau. *Income, Poverty and Health Insurance Coverage in the United States: 2010*. Accessed May 21st, 2015: http://www.census.gov/newsroom/releases/archives/income_wealth/cb11-157.html

⁴⁴ National Low Income Housing Coalition. *Extreme Poverty on the Rise in the United States*. Accessed May 21st, 2015: <http://nlihc.org/article/extreme-poverty-rise-united-states>

⁴⁵ United States Census Bureau. *Quick Fact Beta Colorado*. Accessed June 12th. 2015: <http://quickfacts.census.gov/qfd/states/08000.html>

⁴⁶ REACH Pikes Peak. *Colorado Poverty Statistics*. Accessed May 21st, 2015: <http://www.reachpikespeak.org/our-story/poverty-statistics/#.VXN3tbIFDmQ>

⁴⁷ World Bank Database. *Malnutrition prevalence, weight for age (% of children under 5)*. Accessed May 20th, 2015: <http://data.worldbank.org/indicator/SH.STA.MALN.ZS> May 20th

⁴⁸ World Food Program Database. *Hunger Statistics*. Accessed May 20th, 2015: <http://www.wfp.org/hunger/stats>

⁴⁹ Secretary for Planning and Programming, Office of the President of Guatemala. Totonicapán, Departmental Development Plan, 2011-2021. P. 23 (Source of all figures for Totonicapán and Guatemala in this chart).

Educational Attainment Rates by Location and Gender

Location	Percentage Boys Completed Middle School Studies	Percentage Girls Completed Middle School Studies	Percentage Boys Graduated From High School	Percentage Girls Graduated From High School
Michigan	90	90	70 ⁵⁰	80
Colorado	90	90 ⁵¹	73 ⁵²	81
Guatemala	30 ⁵³	29 (same source)	8	11 ⁵⁴
Santa María Chiquimula	10.46 ⁵⁵	9.09	.13	.54

Access to Basic Sanitation by Location

United States ⁵⁶	99.5
1950's United States ⁵⁷	75
Guatemala ⁵⁸	88
Totonicapán ⁵⁹	47
Santa María Chiquimula ⁶⁰	9.4

Responses to Key Informant Interview Questions

Question Posed	Interviewee Responses
----------------	-----------------------

⁵⁰ Mack, Julie. *M-Live: A closer look at the gender gap in high school graduation/dropout rates*. Accessed May 23rd, 2015: http://www.mlive.com/news/kalamazoo/index.ssf/2012/04/a_closer_look_at_the_gender_gap.html

⁵¹ Geographic Information System Map Gallery. *Education Levels in the United States*. Accessed May 25th, 2015: <http://www.edgetech-us.com/map/EduLvls.htm>

⁵² Colorado Department of Education. *Education Statistics*. Accessed May 25th, 2015: <http://www.cde.state.co.us/cdereval/gradcurrent>

⁵³ The World Bank. *Educational Attainment and Enrollment around the World*. Accessed May 24th, 2015: http://iresearch.worldbank.org/edattain/profiles/gtm_2011_i2/datasheet.txt

⁵⁴ Latin American and Caribbean Education Profiles 1999–2004. *Increasing Education Access, Quality, and Equity in Guatemala*. Accessed May 25th, 2015: http://www.avivara.org/images/INCREASING_EDUCATION_ACCESS_QUALITY_AND_EQUITY_IN_GUATEMALA.pdf

⁵⁵ SEGEPLAN, SMC. P. 31 (Source for all Santa María Chiquimula information in this graph).

⁵⁶ Ingraham, Christopher. Washington Post. *Living without indoor plumbing*. Accessed June 12th, 2015: <http://www.washingtonpost.com/wp-srv/special/national/county-plumbing-facilities/index.html>

⁵⁷ Ibid.

⁵⁸ The World Bank. *Improved sanitation facilities, urban (% of urban population with access)*. Accessed June 12th, 2015: <http://data.worldbank.org/indicator/SH.STA.ACSN.UR>

⁵⁹ Secretary for Planning and Programming, Office of the President of Guatemala. Totonicapán, Departmental Development Plan, 2011–2021. P. 47

⁶⁰ SEGEPLAN, SMC. P. 38

	Director of ADESMA	Director of Ajtikonel	Lydia Lux Cac
Which organization do you work for, what is your role, and what do you see as your organizations role in SMC?	Director of the Association for the Development of SMC (ADESMA)	Director of Ajtikonel	Secretaria, Municipal Health Center, Santa María Chiquimula
What kinds of things does your organization do to fulfill this obligation?	We work in employment generation, greenhouses, environmental education, self-sustaining agriculture projects	Grey water re-filtration systems (for use in family gardens and greenhouses) technical support for green house projects, experimental agriculture, organic fertilizer production, small animal husbandry	We provide free health services to the population of the entire municipality, referring them to hospitals when necessary. Member of our team also work in local schools and do house visit to ensure adequate healthcare coverage
What kinds of projects or community engagement was your organization involved in last year?	We did not realize any projects last year because our international funding sources have almost entirely dried up	Grey water re-filtration systems experimental agriculture, organic fertilizer production, small animal husbandry	As mentioned, working with local schools to deliver health related workshops and events, training and providing materials to rural health centers throughout the municipality, doing home visits
What are the most common health problems in SMC?	Chronic malnutrition, lack of hygiene and sanitation education	Lack of employment, lack of financial resources, poor health/malnutrition, respiratory illnesses	Respiratory illnesses, weak immune systems, seasonal illnesses (changes in weather tend to affect indigenous populations with weaker immune systems) poor hygiene and diarrhea, malnutrition, lack of water and basic sanitation services
What are the most pressing needs in SMC?	Malnutrition, food security, lack of employment, discrimination against women	Employment generation and education to decrease chronic malnutrition and help communities better understand how to improve their livelihoods	Education regarding how to make what people have work for them and their families
What are the biggest challenges in terms of seeking solutions to meet these needs?	Lack of financial and technical support	Financial support, politics and competition amongst the existing organizations	Not sure, lack of trained people who can relate to the community
Other comments:	We would like to build the organization a greenhouse and start an organic seed bank for community use, we would need 4,500 Q to do, but feel it would sustain itself and allow us to carry out other projects	Ajtikonel would like to work with other international organizations and is always looking for ways to bring money and technical support into the community and would be available to provide technical assistance for future projects	Mujerave sounds like a great idea, I would love to be involved.