Breaking the Poverty Cycle of Agriculture in Ethiopia

Jaleta T. Cheryll D. Segni T. Naomi G.



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Takeaway and Reflection



1. Executive Summary

Growing up in a poor community where above 80% of the population are farmers in a tropical climate, with fertile soil, vast lands, and a fair altitude; it is difficult to comprehend why Ethiopia is so prone to food scarcity and drought. Moreso, to accept that 30 - 35% of the population experiences nutrition shortages. (Nutrition | Ethiopia | U.S. Agency for International Development, 2022) In fact, most small farmers of Ethiopia have a subsistence lifestyle. People eat what they produce, and no crop is left for the market or generating profit. In essence, these farmers are caught in a life cycle of poverty that is cross-generational, leaving nothing for their children except a small piece of land with no hope for change. Unfortunately, in an attempt to create large economic impact, current policies focus on corporate investment and growing big farms, which inadvertently exasperates the humanitarian problem by pushing small farmers off their land.

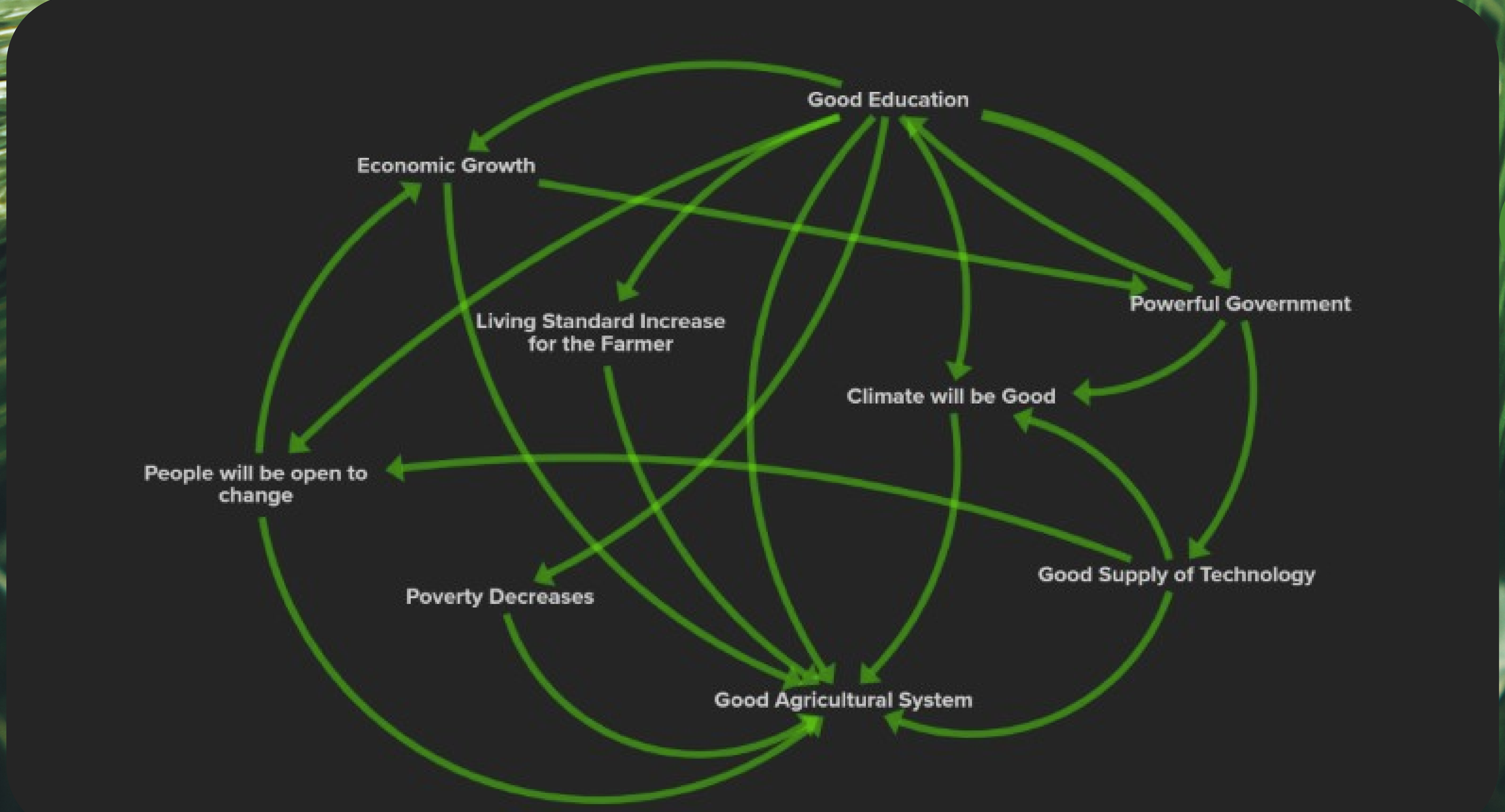
In this research we seek to unravel different factors behind the small farm cycle of poverty in Ethiopia. After examination of the current systems, we will review the existing solutions landscape and attempt to discover why they are not bringing about the needed change. Finally, we will address levers for change within the system and solutions landscape, and innovation that could result in an immense opportunity for bringing about positive change.

2. **An Ideal Farming System in Ethiopia**

....a thriving farm economy. This inclues:

- Guarenteed Food Security
- High income for farmers
- Modernized farming system
- High crop Yeild
- An improved lifestyle for Ethiopian farmers
- Reduced loss of land
- Increased literacy rate
- Modified agricultural and land policies









3. **Current Life of a Farmer**

In 2013, Ermias Gona Waja harvested four bags of maize and one bag of beans from his half-hectare plot in the village of Dubana Bullo. His beans barely sustained him and his family through the hunger season, and his maize brought him no surplus and no profits. He was living hand-to-mouth, unable to even imagine what he would do if an economic shock hit his family. He was living in extreme poverty with no opportunities to escape the cycle of suffering –he had no meaningful choice. (Nuru International, 2021). This is the story of almost every farmer in Ethiopia

Sewalew Fentaw, a 40-year-old sheep herder and father of three, lives an hour by road from Debre Markos city.If the grazing land is enclosed, “my fate will be migration”, he said (Nuru International, 2021)



Identifying the Problems

4.Economy

The economic system of Ethiopia has a negative effect on agricultural development in the country. When considering the economy, it’s not only GDP that contributes to the prevalent agricultural poverty cycle. Everything from the basic economic structure, to the lack of infrastructure all has a role to play. For instance, Ethiopia suffers from a lack of transportation options and proper roads. Therefore, farmers have limited transportation opportunity for selling products; leaving the option to sell to a third party for a lesser price or travel long distances by foot to sell their crop at markets. An article written by Abdo Wudad and Sultan Naser confirms that, "Rural infrastructures are important factors involved in agricultural development in Ethiopia. Among them, rural road facilities play a significant role in improving agricultural production and household income." (2021)

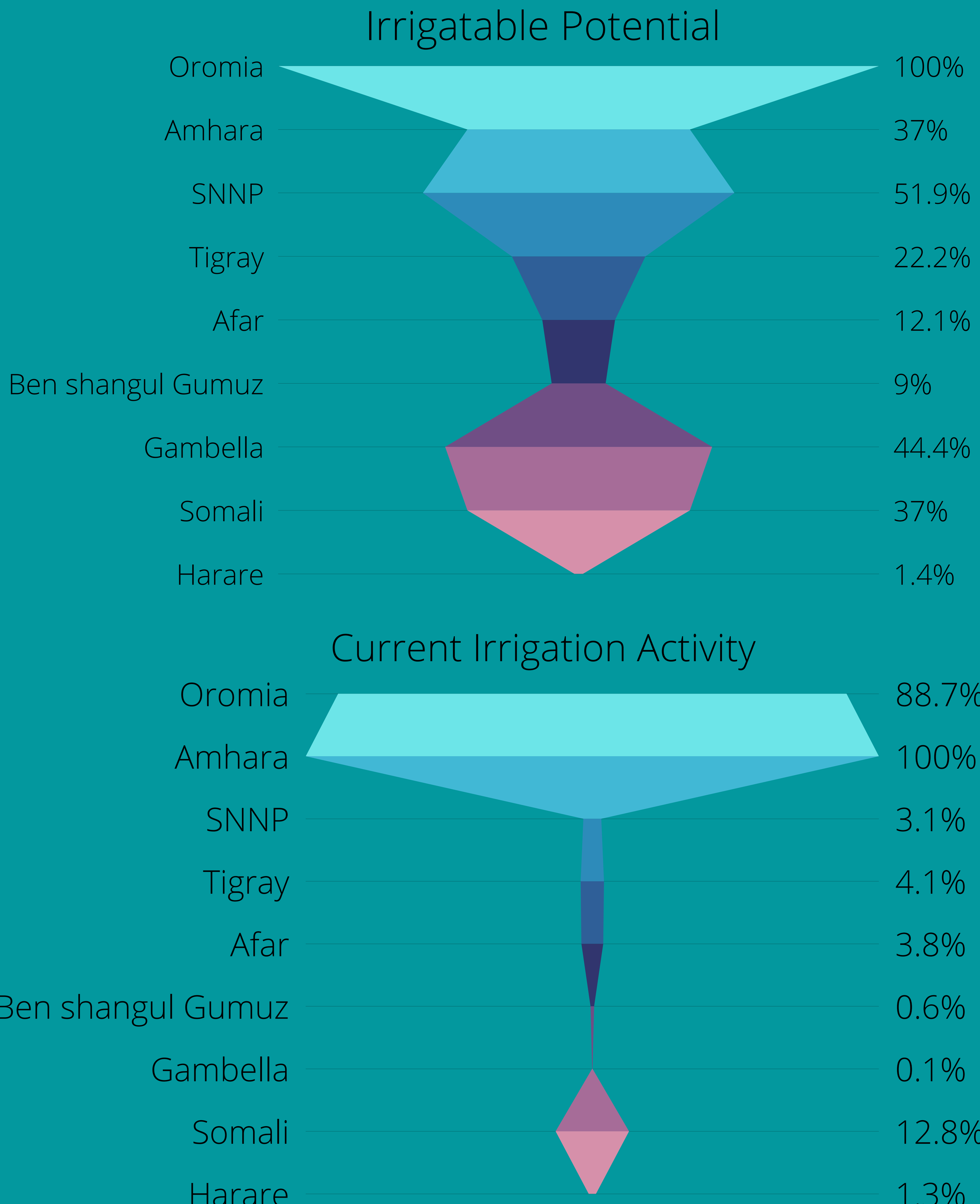
Individual and corporate investors also having a significant effect on agriculture economics and poor farmers in Ethiopia. To encourage investment, the government takes land from small farmers and distributes it to private investors. This kind of action directly affects small farmers and their livelihoods; which consequently creates a cycle of problems for agricultural improvement throughout the country.

The low economy affects the poor farmers access to technology and this makes it difficult for them to make good use of the lands, maximize yields, and improve their farming practices. ..."Adoption of improved agricultural technologies is an important means of adapting to climate change, improving agricultural productivity..."(2021).Without these technologies Ethiopian farming systems are antiquated and not able to adapt to changing climate conditions. The result is a prevalence of cyclical poverty. "The number of people who live below the poverty line in the world is estimated to have declined; however, there are still about 800 million people suffering from chronic hunger (FAO,2013). Sub-Saharan Africa remains the region with the highest prevalence of undernourishment (FAO,2013). The poor in sub-Saharan Africa usually live in rural areas (DFID,2004, IFAD,2011), and more than 90% earn less than $2/day (IFAD,2011)." This means many people are suffering from hunger, especially in rural areas; while the technology and knowledge exist to help them.(Wendimu, 2021)



5.Land Managment

In Ethiopia, the practice of land management started three decades ago to address the problem of land degradation says the article published by Multidisciplinary Digital Publishing Institute and to further boost agricultural production. However, the impact of land management practices in curbing land degradation problems and improving the productivity of the agricultural sector is insignificant. (Nebere et al., 2021) The main causes of land degradation in Ethiopia are rapid population growth, deforestation, overgrazing, over cropping, and inapt farming practices. A research program called, Cgiar, has found that it has been the years of unsustainable farming practices that depleted the land, and farmers have begun to annex marginal lands to sustain their production, further aggravating the degradation of the landscape.((Mekuria, 2020) Agriculture productivity has been severely affected by poor land management in Ethiopia, resulting in land degradation, which causes rural poverty and food insecurity. There is so much arable land in Ethiopia, yet so little is being used and the rest is used poorly. Farmers do not understand the land they have, and beyond the basic immediate needs, nothing special goes into protecting and preserving it. Furthermore, the same poor systems are applied on different types of land. Not only are these potentially fruitful lands mismanaged and misused; they are being degraded into wastelands. There is so much potential, yet so little being activetly used.



Graph 1: The Comparison between the Irrigatable Potential and The Current Irrigation Within The Regions of Ethiopia(Eshete et al., 2020)

6.Environment

The surrounding environment of most regions of Ethiopia is actually good, but there are many problems to be addressed. Although Ethiopia lies within the tropics, the wide range of altitudes leads to various climatic conditions. The agriculture sector is highly dependent on these variations as it is rainfall-dependent. This very case might account for the increase in climate change vulnerability, which he attributes to rapid population growth, high dependency on rainfall-based agriculture, severe poverty, chronic food insecurity, frequent natural drought, and extreme environmental degradation (Marie et al., 2020). According to Wendimu, the variation of climate change in Ethiopia is not limited to rainfall but includes temperatures, relative humidity, wind, and others. The lowlands are vulnerable to increased temperatures and prolonged droughts, while the highlands suffer from more intense and irregular rainfall.(2021) A lot more goes into this problem ranging from variations of climate change to rapid population increase, soil erosion, and lack of proper irrigation system. Irrigation in Ethiopia is practiced in small-scale irrigation schemes, which are often characterized by low water productivity. Thus, efficient water use and management are currently major concerns (Derib et al., 2011). Ethiopia is a country with ample water resources having 12 river basins. Yet, despite abundant rainfall and water resources, Ethiopia’s agricultural system does not fully benefit from irrigation and water management technologies. (Eshete et al., 2020) Consequently, soil erosion is a severe problem in Ethiopia. Even on the incredible plateaus, where good volcanic soils are found in abundance, simple means of cultivation have exposed the soils to heavy seasonal rain, causing extensive gully and sheet erosion. Mehretu, 2022)

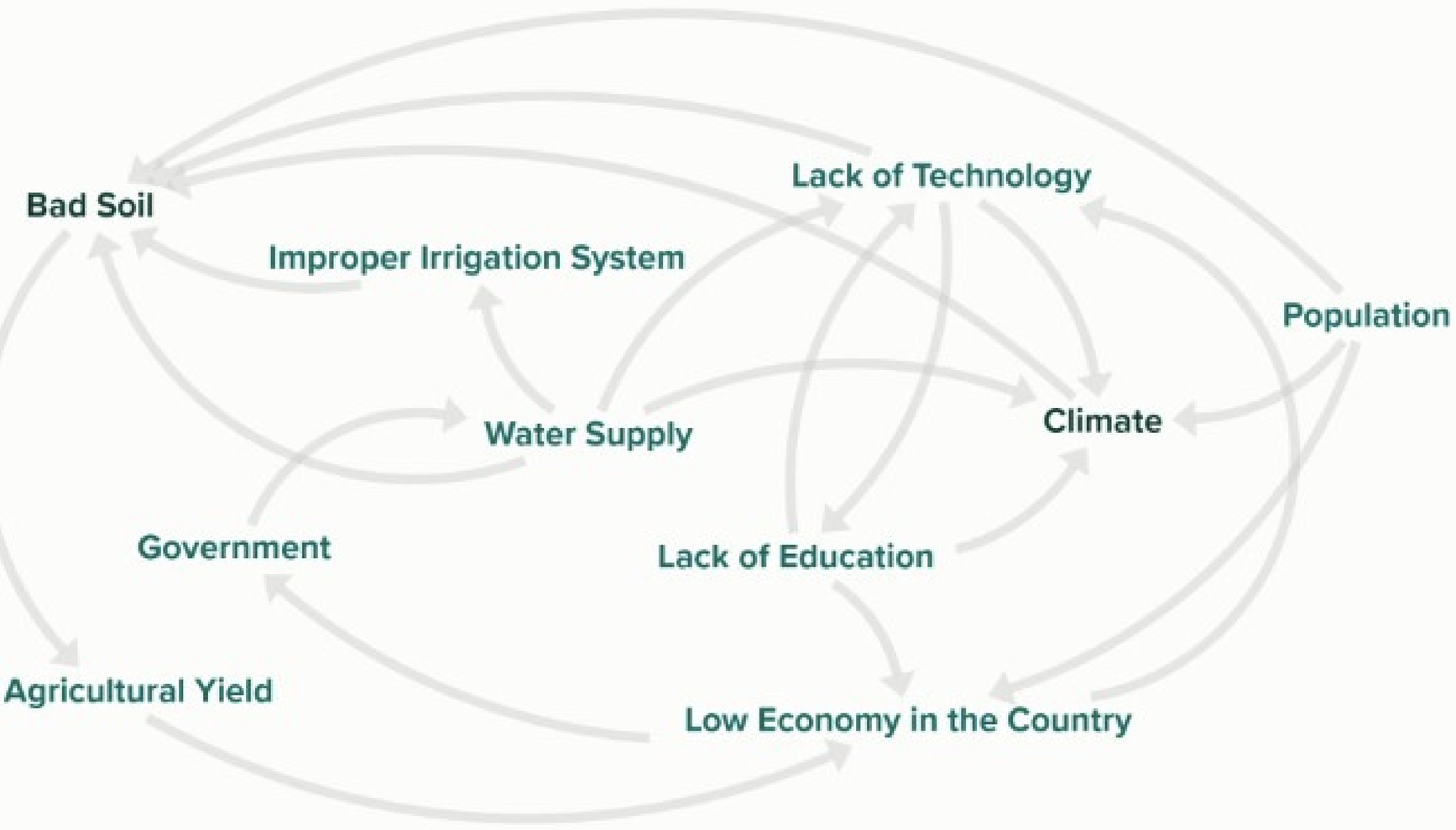
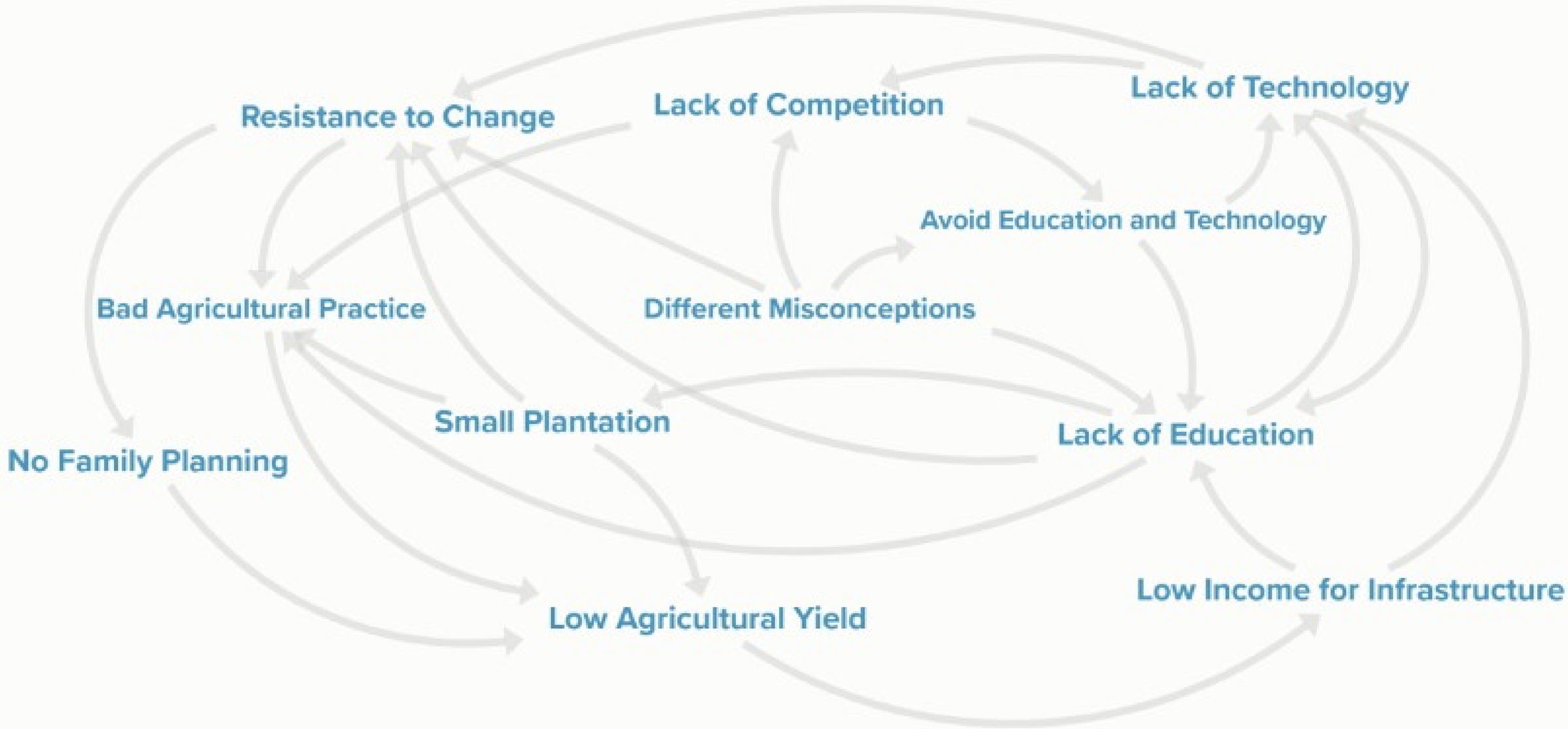


Figure 3: How does Ethiopian Environment loop affects the Ethiopian Agriculture

7.Culture

According to Anthropologist, James Spradley, culture is the acquired knowledge people use to interpret experience and generate behavior. (Eiselein, 1972 This holds true for agriculture, as it is a practice that has been passed from generation to generation. Farming techniques are taught to youth by their elders and as such, they continue utilizing traditional methods. Pragmatic logic leads them to assume, if the current system worked best for experienced farmers in the past, it must be good practice. Cultural reason elevates traditional practices to a connection between family members, their communities, and their shared histories and beliefs. Consequently, many farmers are very resistant to change. In his article, Luc Christiaensen mentions that “Farmers are slow to respond to modern methods of farming such as the use of modern inputs and mechanization, land improvement and irrigation.” (2017) Therefore, when markets, climates, and technologies change, it is difficult for farmers to adapt without explicit training that breaks the cycle of farming as a cultural connection to the past.

An even greater influence of culture on agricultural yields in Ethiopia is highly linked to a lack of education. Primarily one that leads to the cultural belief that having a lot of children is seen as a success or an achievement in the rural community. This compounds the negative affect of low yields because minimal yields and more mouths to feed leads to more poverty, a laborious existence, and economically unstable livelihood. Moreover, these children will not be sent to school, because they are needed to help on the farm and learn how to plough based on generational knowledge. This puts more pressure on the land, further minimizing yields and degrading land quality; leaving nothing for the children but more mouths to feed and less land to plough. The culture revolving around gender roles needs to improve as well for agricultural productivity. In an article about farm transition the writer mentions that policies and programs need to address the differences between male and female farmers, as women now account for 14% of principal farm operators. (2013)) These differences and other cultural impacts hinder a farmer’s ability to have a land with maximum efficiency.


Resistance to Change
Lack of Competition
Lack of Technology
Avoid Education and Technology
Bad Agricultural Practice
Different Misconceptions
Small Plantation
No Family Planning
Lack of Education
Low Agricultural Yield
Low Income for Infrastructure

8.Government

The Government in Ethiopia has a large impact on agricultural systems. Since agriculture is the backbone of the economy, the government controls almost all of the state affairs around agriculture. It is involved in aspects ranging from land policies, taxation, the supply chain, and even fertilizers. The Ethiopian government seems to be trying to positively affect and promote a sustainable economy for the farming community. According to a research article, “The government in Ethiopia has implemented various agricultural policies such as market liberalization, structural adjustment, Agricultural-Led Industrialization, Sustainable Development and Poverty Reduction Program, Participatory and Accelerated Sustainable Development to Eradicate Poverty and successive Growth.” (Shikur, 2020) However, these efforts are not fixing the farm economy because the policies fail to take into account other systems that also affect the economy.

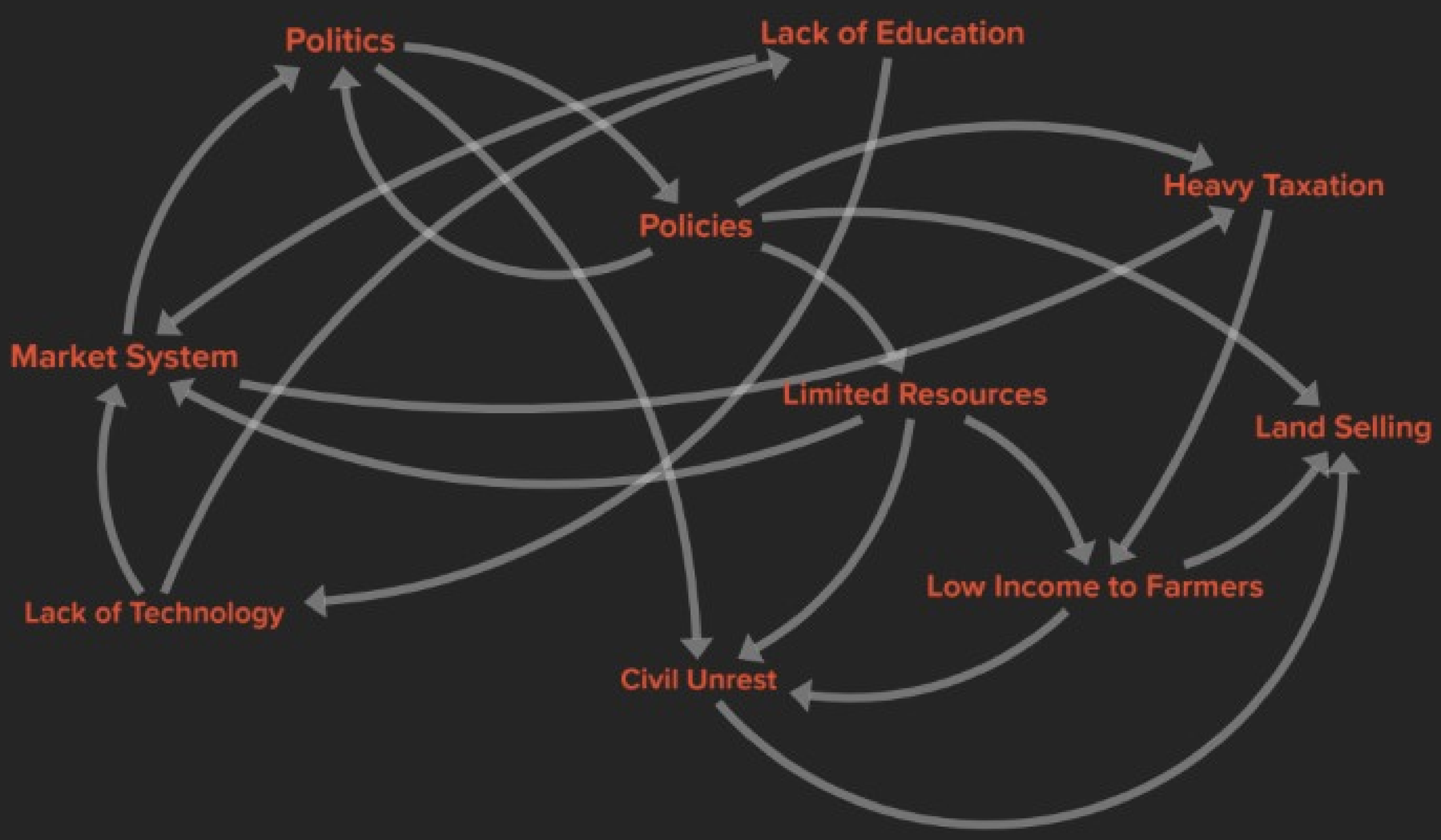


Figure 5: How does Ethiopian Government loop affects the Ethiopian Agriculture

on

direction

Polices	Effects on the Farming Community
Taxation	Taxation in Ethiopia follows a vertical rule (the more you earn the more you pay) (source) Even though this looks fair, farmers produce so little, have more responsibility and yet they get taxed equally to an individual that sits around and gets the same amount. Thus, vertical taxation seems to fail here.
Land Selling	Ethiopian policy in selling land also affects a farmer's potential to buy land. (source) A farmer is charged equally for a land that a blur collar worker is buying for his home or private purposes. This policy doesn't promote farmers but rather dampers their incentives.
Foreign Investment	Additionally, Ethiopia highly promotes foreign investment. Foreign investors also have more advantage in buying a land for a large-scale investment or a large-scale mono plantation. This again leaves the farmer in competition with the private investor and if the farmers are moved out of his/her land they are either forced to relocate or work as a laborer for the investor that is occupying their land.

MISSION

Political instabilities, civil wars and unrest also suppress the growth of agricultural economics and productivity in Ethiopia. Research indicates that: "Socio-economic shocks, technogenic catastrophes, and armed conflicts often have drastic impacts on local and regional food security through disruption of agricultural production and food trade, reduced investments, and deterioration of land and infrastructure ... Conflict leads to different failures in this context it decreases the productivity, and which will lead to hunger and many other problems" (Shield Square Captcha, 2017). This, along with an overall low GDP, may be leading the government to under-emphasize small farming communities, which tends to downplay their role in the economy. A position that weakness incentives for small farmers; by focusing education and technological advancement on urban centers and youth.

9. Education

The government has actively been working towards promoting education throughout the country. They opened more schools, advertised more children should be enrolled in school, opened more higher learning institutions, and education has been growing ever since. Yet, promoting education throughout the country has not resulted in equitable use. Rural parts of the country still seem to have less access to education. The correlation between agriculture productivity and getting an education has a great impact on the methods and techniques of farming. In research by Sharada Weir, she mentions that at least four years of primary schooling are required to have a significant effect upon farm productivity. Moreover, she suggests that “there may be considerable opportunities to take advantage of external benefits of schooling in terms of increased farm productivity if school enrolments in rural areas are increased.”(1999)









Education for Farmers

· Better understanding of their land and how to optimize it.

· Better understanding on how to use technology.

· Become more open to change

· Better framing techniques: terracing, land rotation etc.

· An improved business mindset: handling finances and more profit.

· Abolishing bad farming practices: overgrazing and deforestation.

· Breaking the cycle of generational backwardness that revolves around agriculture.

More Agricultural Yield

Figure:Illustrates how education can help a farmer increase their productivity

The lack of education and rural outreach also contributes to Ethiopia's population explosion, which is holding this underdeveloped country deep in the shadow of extreme poverty. The education system promotes youth moving into more urban industry and blue-collar jobs. Then educated youth become removed from their agriculture roots and forget to return and improve the system and farming community they came from. Thus, the uneducated and poor are stuck in a cycle of bad farming practices with very poor outcomes. Given that agriculture accounts for 40% of the country's GDP and 75% of their workforce, this cycle has a very negative affect on Ethiopia's overall economy. (Agriculture and Food Security | Ethiopia | U.S. Agency For, 2022)

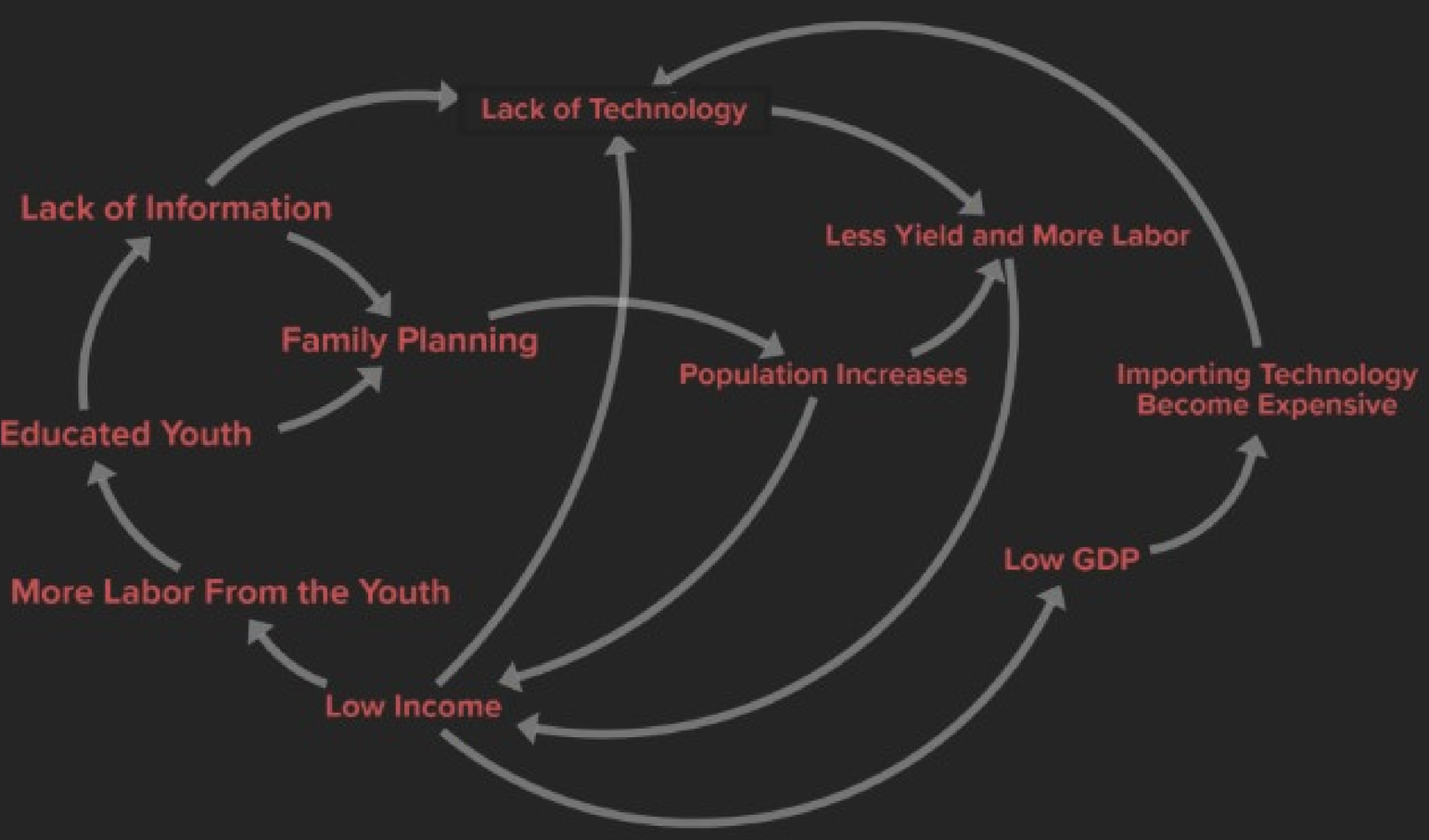


Figure 2: How does Ethiopian Education loop affects the Ethiopian Agriculture

EXISTING SOLUTIONS

10. Attempted Solutions

While the problems in agriculture are prevailing, there are also initiatives and institutions trying to break the poverty cycle of agriculture. Let us consider a few of the institutions who are trying to make a change in Ethiopia.

ACDI VOCA, a USAID-based organization, is helping to accelerate the agricultural growth in Ethiopia. The company assists by different supplies and demands and tries to show and give the mechanization services delivery. (Agriculture and Food Security | Ethiopia | U.S. Agency For, 2022)

- FEED THE FUTURE is program that helps farmers improve agricultural production for both household consumption and market sales, helping families earn more while improving their diets. (Nutrition | Ethiopia | U.S. Agency for International Development, 2022)

World Bank

- The World Bank Group's Board of Executive Directors approved a US$80 million grant from the International Development Association to support the government of Ethiopia to boost agricultural productivity and enhance market access for smallholder farmers. (World Bank Group, 2020)

Figure: Institutions and their missions

Private Institutions

- In partnership with the Purdue Center for Global Food Security and with the financial support of the World Bank, an African Center of Excellence (ACE II) for Climate Smart Agriculture and Biodiversity Conservation was recently established at Haramaya University, the premier institution of agricultural higher education in Ethiopia. (Haramaya University - Purdue Center for Global Food Security - Purdue University, n.d.)

- ATTSVE, announced in February 2015 by the Government of Canada with an event on Dal's Agricultural Campus, was officially launched in Ethiopia in July 2016 alongside the revised National Development Agent (NDA) curriculum. Dal's Faculty of Agriculture has been selected to help lead a country-wide review and improvement of Ethiopia's agricultural education system, a partnership that builds on the faculty's six-year, $18-million development project in the country. (Thompson, 2016)
- The Addis Ababa University (AAU) launched a project aimed at scaling up agricultural production through research and capacity building. (AAU Launches Project to Boost Agricultural Productivity - Ethiopia, 2012)

The U.S.

- U.S. and Ethiopia launch a new $2.2 billion phase of the productive safety net program. Safety net programs protect families from economic shocks, natural disasters, and other crises.

United Nations

· The Water and Food Security PIRE project aims to improve agricultural productivity and water management in low-income agricultural communities in the Blue Nile Basin in northeast Africa. This institution aims at improving Water and Food Security in Ethiopia Through Research with a People-Centered Approach. (United Nations, n.d.)

Figure: Institutions and their missions

11. Setbacks

A lot of hands are cooperating and launching projects to make a sustainable agricultural community. However, Ethiopia has not discerned herself from the corners of poverty and is still prone to drought and famine. Although institutions are conducting detailed studies and trying to improve the poor agricultural system that is in place now the results are minimal. Thus this leaves the question of why it is not working to why are these massively funded organizations not showing a rapid change. Let us assume an esteemed private organization is on a mission to better and change the agricultural system of a certain rural community. This organization with a focused vision, no lack of resources, and diligent researchers will only not have a productive output for external reasons. The cultural aspect of the farmers might lead to rejecting an improvement suggested by these scientists or the policies around it are not flexible to allow implementation. If the innovation consists of new machinery, the poor infrastructure is going to make electricity scarce or the farmers don't have the literary to even handle it, even more, the poor agrarian society might not be able to afford it. This discussion all leads back to considering the system and the elements of agriculture. An organization or a single component can’t act alone, detailed study and synergy of the system remain a requirement to catapult the agricultural system of Ethiopia.

A New Perspective

12.Levers for change

Research suggests that increasing agriculture productivity reduces poverty. (K. Schneider, M. Gugerty) Eighty-seven percent of Ethiopian smallholder households are supporting an average family size of 8 on less than 5 acres of land and reaping $4.00 per day. (ICCO) Given the level of knowledge, experience, wealth, and technology that exist in the world; this unhealthy cycle of poverty is unnecessary and inexcusable. As was indicated, there are numerous programs and initiatives seeking to solve this problem, but it appears there may be some levers of opportunity that rely on multiple changes being enacted at the same time.

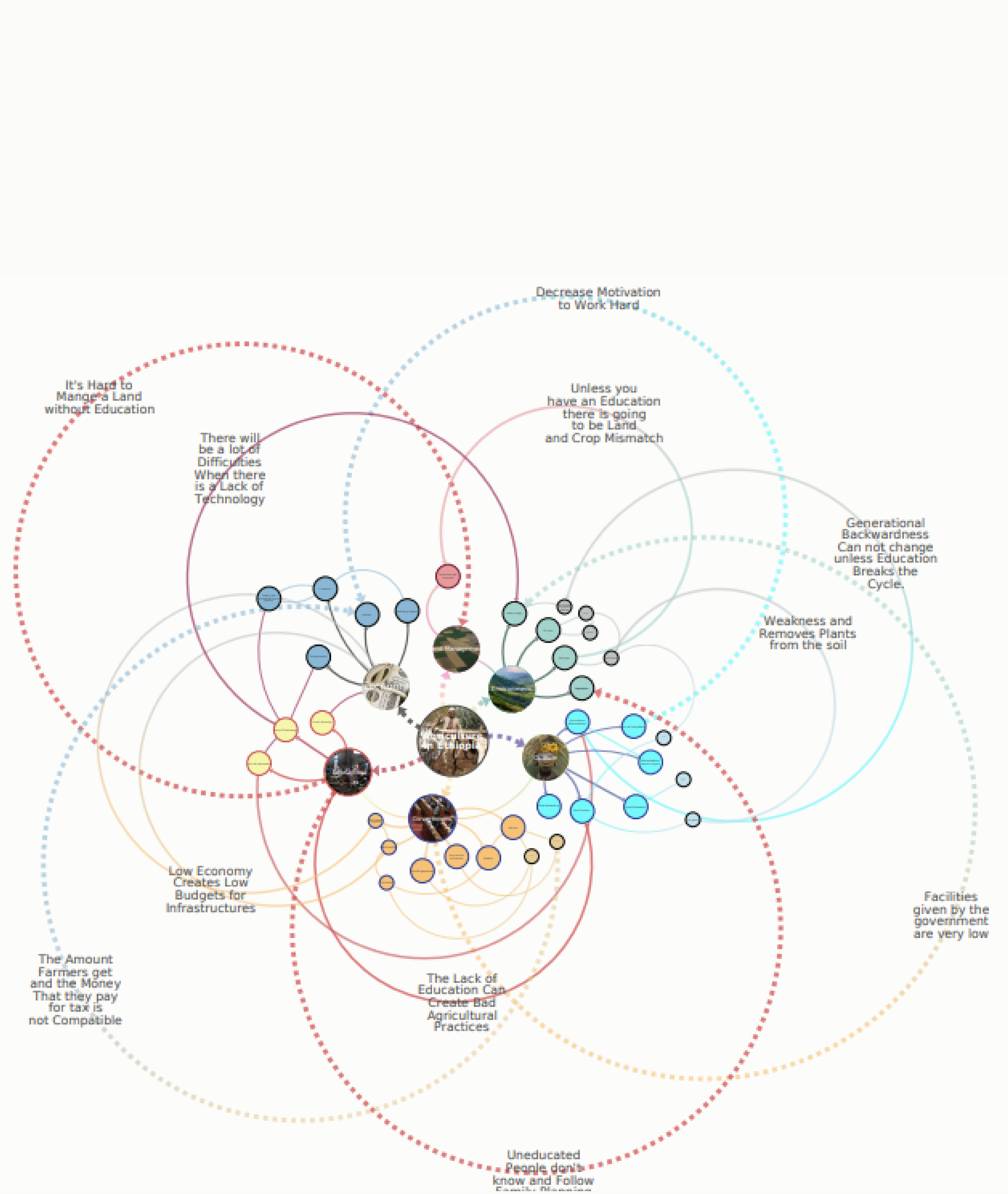
Prospects for change exists where education, technology, government, and NGO endeavors overlap and have opportunity to synergize. The cycle of poverty for a small Ethiopian farmer consists of working physical labor year after year to make just enough to barely feed their family with a meager subsistence. Efforts to improve yields come at a cost. They require better inputs, training on new techniques, technology for better analysis and decision making, and improved access to markets. When you live from hand to mouth, these inputs become unaffordable luxuries.

13. A New Innovation

To envision this in action, we devised the following scenario. A group of social entrepreneurs starts a technology company to design and develop a tool for analyzing soil properties and requirements on Ethiopian small farms. They chose a likely audience and take the time to discover all the existing resources in place; getting to know the local culture and agriculture practices of their target small farmers. After review, they build a team to tackle the collaborative efforts necessary for helping break the cycle of poverty. Goals are set for improved community-wide agriculture yields and financial outcomes. Non-profit organizations and industry partners are solicited to provide additional technology support and education simultaneously.A commercial product is produced, preferably within a region near the target audience. Teams of infrastructure and economic developers are consulted, and village leadership is enlisted to ensure at least one functional marketing channel is available when the farmer receives his first yield improvement. Minimally viable infrastructure resources could come from Foreign Aid, or any host of philanthropy organizations that are interested in helping the area prosper. After the first measure of success, a second round of education is disseminated to ensure participants are given the knowledge and ability to turn their profits into personal net worth. Once a farmer sees the value of utilizing new ideas and technologies to increase their yields and subsequent net-worth, the government is solicited for increased infrastructure, research, and education. Thereby capitalizing on whole system changes that break the cycle of agriculture poverty in Ethiopia and starting a cycle of higher-yields and economic prosperity.

Takeaway and Reflection

Our team has explored systematic issues facing Ethiopian farmers caught in a cycle of cross-generational working poverty. Knowledge and technology exist to break this cycle. There are a lot of institutional and social fragments working toward this end. To accelerate action and end unnecessary suffering, this Systems Map can guide better decision-making processes, offering opportunity to bring cohesion to existing efforts


Decrease Motivation to Work Hard
It's Hard to Mange a Land without Education
There will be a lot of Difficulties When there is a Lack of Technology
Unless you have an Education there is going to be Land and Crop Mismatch
Generational Backwardness Can not change unless Education Breaks the Cycle.
Weakness and Removes Plants from the soil
Low Economy Creates Low Budgets for Infrastructures
Facilities given by the government are very low
The Amount Farmers get and the Money That they pay for tax is not Compatible
The Lack of Education Can Create Bad Agricultural Practices
Uneducated People don't know and Follow