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## **Expandable, Effective Efforts for Reducing Malnutrition in Ethiopia's Children**

### AUTHOR'S NOTE:

*2012 was a transforming year for me. That is the year my twin sisters left Ethiopia and joined my family in Michigan. At only five years of age, they had experienced and survived more vicissitudes than most people face in a lifetime. Back-to-back droughts had devastated their family's farm, leaving their family destitute, and with little food. Before the girls' third birthday, both parents had died of starvation, choosing to use what meager rations they had to keep the girls alive instead of eating it themselves. And while these valorous efforts enabled my sisters to survive, the twins' malnutrition, prenatally through the first formative years of their lives, has left them with irreparable physical, mental, and emotional scars.*

*This tragedy opened my eyes to the compounding effect that food insecurities have on individuals, communities and whole countries. In particular, it has led me to talk with Ethiopians, delve into literature, and speak with people who are researching solutions to food insecurities, in order to better understand the problems in Ethiopia. What I have discovered over these years is both hopeful and haunting. It is hopeful because I discovered that there are ingenious, successful programs already in place in Ethiopia that are eradicating the problem. It is haunting because, despite their success, they exist only in sporadic pockets of the population, leaving many families, like my sisters' birth family, without access to the help they need when they need it.*

*My goal in participating in World Food Prize is to use this paper to share what I have learned so that people can focus on expanding already effective solutions. It is my hope that through awareness and concerted efforts more food-vulnerable people can be reached, and, thereby, avoid the horrendous plight my sisters and their birthparents faced.*

## **Expandable, Effective Efforts for Reducing Malnutrition in Ethiopia's Children**

### Introduction

A child's first years are critical to his/her development. Unfortunately, due to malnutrition, millions of children won't receive the nutrients and protein they need to develop properly ("Malnutrition Rates Alarming"). Malnutrition leads to the death of nearly 3.1 million children under the age of 5 ("Malnutrition Rates Alarming"). Of the malnourished children who survive past 5 years, 1 in 4 will suffer from stunted growth ("Malnutrition Rates Alarming"). Stunting is devastating, because it not only affects a child's size, but it also increases the likelihood for illness and chronic disease, and diminishes mental abilities and learning capacity ("Stunting in a nutshell"). This means that even if stunted children go on to have proper nutrition for the remainder of their lives, they will continue to be plagued by the irreparable physical, mental and emotional damage stunting causes.

Fortunately, while stunting cannot be reversed, it can be prevented. Worldwide, health organizations have prioritized providing at-risk children with proper nutrition before stunting begins. However, while some countries are experiencing a decline in stunting, Ethiopia still ranks among the highest regions for stunting ("For Every Child"). It is estimated 1 out of 3 Ethiopian children are effected by stunting ("For Every Child"). At greatest risk are Ethiopian children between 12–35 months of age ("Demographics and Health Study" p. 187).

These grim statistics do not reflect a lack of knowledge on how to tackle the problem of stunting. In fact, several initiatives, which I will discuss in my paper, have shown great promise in addressing the problem. Unfortunately, these initiatives are located in a single region, aiding only a small segment of people, or are not yet being utilized within Ethiopia. As a result, where some communities are nearly eradicating stunting, others continue to watch their children suffer or die because of the failure to scale, replicate and/or fund successful programs.

This paper highlights some of the challenges Ethiopians face that lead to stunting. It then looks at several regional programs that are successfully reducing micronutrient and protein deficiencies through improved storage and access to nutritious food. It discusses the potential for replication and scalability of these programs in order to serve a greater number of food vulnerable Ethiopians. Finally, it addresses how the programs could be funded and sustained to ensure their on-going effectiveness.

### An Overview of the Country, Culture and Challenges

To aid in understanding why stunting remains prevalent in Ethiopia, it is helpful to have some familiarity with the country and its family culture.

Ethiopia is a geographically diverse, land-locked country, containing deserts, mountain ranges, and tropical forests. Due to this diversity, it has three different climate zones. Ethiopian summers typically bring heavy rains; while winter months are dry with occasional frosty mornings. The country's hottest temperatures occur in the spring months. A benefit of Ethiopia's weather pattern is that they are able to

have two growing seasons (“Crop Production” p. 2). This dual growing season has led to agriculture being the dominant industry.

At present, Ethiopia’s economy is quite good. Its GDP is 11% and jobs in the manufacturing sector are expected to grow by 20% (“World Bank Ethiopia”). According to the World Bank, the share of the population living below their nation’s poverty line has decreased. However, even with these developments, Ethiopia remains one of the poorest countries in the world. The per capita income is only \$783.00 annually (“World Bank Ethiopia”).

Ethiopia is also the second most populous nation in Africa. Current estimates set the population at about 108 million citizens. Trends indicate this population is growing at approximately 2.4% annually (“Ethiopia Population”). In addition, Ethiopia is home to an estimated 883,546 asylum seekers and refugees from Somalia, Eritrea, Sudan and South Sudan (“Ethiopia”). The capital city, Addis Ababa, has an estimated metro population of 4.6 million and approximately 1,274,000 citizens live in the country’s other major cities (“Ethiopia Population”). However, the majority of the remaining population lives rurally.

Family is very important to the Ethiopian culture. In rural areas, family households are usually multi-generational, consisting of the grandparents, their unmarried children, and the families of their married sons. Rural couples usually have large families of four or more children (“Ethiopian Culture”).

In summary, the ‘typical’ food-vulnerable Ethiopian household, therefore, is usually rurally based, large, impoverished, and reliant on an agricultural income.

The main reasons for malnutrition in Ethiopia are diets lacking of animal proteins, and poor micro nutrient intake. Sometimes, this is a result of food availability. It is also a factor of food affordability. Families will often cope with financial downturns by providing children with smaller and/or fewer portions of food; or by substituting less nutritious food (Tsegaye, Adino Tesfahun). This food reduction is for adults, as well. Unlike other countries, there does not seem to be any discrimination in families against children or by gender.

Many factors lead to the unavailability and/or unaffordable cost of nutritious food in Ethiopia, but the main factor has been frequent droughts. These droughts have made it hard for farmers to develop a stable footing on their land, and make the already scarce animal products even harder to find. The scarcity of food drives up market prices. This, in turn, means families with limited incomes are not able to purchase the food their children’s diets require. For example, a quart of milk is about 28 Birr or (\$3.96/gallon US), and the average cost of a dozen eggs is 55 Birr (\$1.94) (“Cost of Living in Ethiopia”). This puts these foods beyond the budget of most Ethiopians, who are trying to house, clothe, and feed large families on a weekly income of \$15 (“World Bank Ethiopia”).

Ethiopia also has issues with flooding affecting infrastructure. Seasonal flooding routinely washes away bridges and roads. This results in food transportation being expensive, and at times impossible or delayed. Consequently, people have to rely on what is locally available to them. Exasperating the problem is the lack of cold storage in rural areas. Cold storage is mostly nonexistent due to lack of reliable electricity. Only 20% of the population has access to the electrical grid (“Ethiopia Energy Situation”). This means food already harvested cannot be readily stored for use at a later time.

For these reasons, any efforts aimed at effectively countering the availability and affordability of food in communities impacted by droughts and flooding must address both the lack of cold storage and the need to increase access to locally available, low-cost, nutritious food. Furthermore, to be successful, these efforts should be cost-effective to operate, sustainable, and implemented in a way that could be scaled or replicated in as many areas as needed.

A review of existing efforts has isolated some grassroots organizations and businesses that are successfully addressing the goals above. These efforts also show potential for scalability/replication. By focusing on expanding these efforts, versus re-inventing the wheel, Ethiopia could make great inroads into reducing stunting.

### Grassroots Efforts That Address the Challenges

One Egg is an organization that aims to reduce malnutrition in Ethiopia's children by increasing animal protein consumption (<https://www.oneegg.org>). One Egg does this by providing eggs to food vulnerable children. Eggs have 18 different types of proteins and 9 different types of vitamins (<https://www.oneegg.org>). They are one of the most efficient ways to provide animal protein to children. The organization has noticed major improvements in the program participants' health, and it has helped reduced the risk of stunting (<https://www.oneegg.org>).

In my interview with One Egg's Executive Director, Chris Ordway, he explained that One Egg works with local farms to source eggs. Ordway said One Egg helps the farms develop best practices for chicken care and increased egg production. They then purchase the eggs for distribution to local, food vulnerable children. Presently, One Egg is only in Yatebon, Ethiopia. However, One Egg has successful chapters in 10 countries, demonstrating that the program's methods are scalable (<https://www.oneegg.org>).

Other Ethiopian communities could duplicate the One Egg initiative to provide a year-round source of animal nutrition to their children. Husbandry practices would enable the program to be sustainable by setting aside some eggs for brooding in order to replace aging hens, who are no longer laying. The nearby locale of the chicken farm reduces transportation issues and costs, improving availability and affordability. In addition, the locally operated farms would not only provide eggs to the community's children, they would sustain and/or create jobs for the community.

Two additional organizations working to increase animal protein consumption in children are Project Mercy and Heifer International. These organizations are addressing the fact that the majority of at risk children do not have any milk in their diet. These organizations have developed modern farms with cows that have a higher milk production to make milk more available and affordable. Project Mercy is already successfully operating in one Ethiopian community (<https://www.projectmercy.org/>). Heifer International presently does not have a program in Ethiopian; however, it intentionally designed its program so that it can be readily replicated and scaled in other countries (<https://www.heifer.org>).

The availability of milk in a child's diet has long been shown to reduce his/her risk for malnutrition. Recently, the South East Asia Nutrition Surveys found children who did not consume dairy had a prevalence of stunting of 21.4%; whereas, the prevalence was only 10% in children who consumed dairy on a daily basis (Nguyen Bao, Khanh Le, et al).

Project Mercy's program centers on importing Jersey cows. A typical Ethiopian cow produces only 2 quarts of milk per day, whereas Jersey cows can produce up to 12 quarts of milk per day

(<https://www.projectmercy.org/>). By breeding these cows and expanding their populations, Project Mercy makes it easier and more affordable for local residents to access milk. These operations also sustain and create year-round jobs in communities, which also impacts the ability to purchase food.

Similarly, Heifer International works with farmers in at-risk communities to help them develop better herd management. They show farmers how to breed a better cow, maintain herd health, and provide cows with a proper diet. As a result, milk production increases, enabling farmers to not only have enough milk for personal consumption, but also milk to sell (<https://www.heifer.org>). By creating centrally located creamery cooperatives, these farmers can then cost-effectively chill and transport milk to local markets and markets outside their community (<https://www.heifer.org>). Heifer International's program not only provides more animal protein for children through increased milk production, it has seen household incomes double for participants due to excess milk sales (<https://www.heifer.org>).

Fresh Box and Cold Hubs are private businesses addressing the challenge from another angle: cold storage. It is estimated that 245,408 tons of food is lost post harvest in Ethiopia (Postharvest loss assessment, p. ix). Without cold storage, fruits and vegetables can lose their nutrients and spoil before they can be brought to market or eaten. Fresh Box and ColdHub lease farmers space in low-cost, solar-panel-powered, walk-in coolers (<http://www.coldhubs.com/>). Farmers can reserve space for about \$0.50 per day. This allows several farmers to share cooler space and store food longer. While renting space in these coolers may presently prove too expensive for the poorest citizens, with time and more competition, leasing prices should come down.

Fresh Box co-founder, Thomas Schmedding, says, "By increasing the longevity of a fruit or vegetable's selling period by up to 950 percent, our cold storage system can provide more consistent revenues to the retailers in produce markets and provide more consistent availability of nutritious produce" (<https://www.freshbox.co.ke/>).

Like previously mentioned initiatives, these companies not only increase the local availability of nutritious food, they create jobs and improve families' incomes. Schmedding noted, "... one of our best customers now has earned an extra US\$500 in revenue for mushrooms that would've spoiled without us over the past six months" (<https://www.freshbox.co.ke/>).

Presently, neither company operates in Ethiopia. ColdHub is in Nigeria and FreshBox is in Kenya. However, their products are scalable. ColdHub began with one cooler, and quickly expanded to 5 coolers operating at full capacity within a short time (<http://www.coldhubs.com/>). They are set to soon expand their operation by 20 more coolers (<http://www.coldhubs.com/>).

### Funding

The livestock based programs (One Egg, Project Mercy, and Heifer International) have organized themselves as non-profit organizations. As such, they have found success in funding their projects as charities. They solicit funds from individuals and corporations to get the projects started, but once started, the programs sustain themselves. Fresh Box and ColdHub, on the other hand, are for profit companies wanting to expand. They receive revenue from the cooler space they lease. Similar projects starting in other communities could follow these funding models.

Additionally another method of funding for these projects would be to provide farmers with access to low-cap loans. The cost of buying hens and cows, or building a cooler, is minimal by first-world

standards; but to someone living in poverty, they can seem astronomical. Organizations, like Kiva, that provide small loans to people in developing countries, have found great success. They have experience loaning money for coolers/refrigeration and African livestock programs. The best part about this program is that the money repaid can be reinvested. To date, Kiva has loaned more than \$1 billion with a 96.8 repayment rate (<https://www.kiva.org/>).

### Conclusion

The Ethiopians have a proverb, “When spider webs unite, they can tie up lions.” Similarly, through a concerted effort, stunting in Ethiopia can be drastically lowered by duplicating or scaling innovative projects such as One Egg, Project Mercy, Heifer International, Fresh Box and ColdHub. By building on these ideas, animal protein and micronutrient rich foods can become more readily available, and their cost could be made more affordable. At the same time, these initiatives would help create jobs and increase profits for local community members. This, in turn, would allow families to afford a proper diet for their children. Charities and low-cost loans can help with the startup costs, but once operating, these programs can sustain themselves. In this way, more vulnerable children can have access to the nutrition they need to develop, and stunting will destroy fewer lives.

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