

Mackenzie Good
Alma High School
Alma, MI
Bolivia, Factor 6: Sustainable Agriculture

Bolivia's Desire for Sustainability

“La Unión es la Fuerza” represents so much about the geographically largest landlocked country in the Americas. With such a multi-ethnic population and thirty-six indigenous languages, it is officially known as the Plurinational State of Bolivia. As a united state with nine different departments, it makes sense that their national motto would be “Unity is Strength”. Between mountains and their valleys, plateaus and their surrounding lowlands, and lakes and rivers and rainforests, Bolivia’s geography is the reason why agriculture is such a major part of their economical activities. Products of the agriculture industry have been the fastest growing of Bolivia’s exports. However, from least to most food insecure, the Global Food Security Index has ranked Bolivia number seventy out of one hundred thirteen countries, despite their dependence on agriculture for survival (The Global Food Security Index). As South America’s poorest country, the UN’s Human Development Index has ranked Bolivia as number one hundred eight out of one hundred eighty-seven. (New Agriculturalist) The Bureau of International Labor Affairs lists Bolivia as a country that resorts to child labor in the production of many agricultural products (United Nations High Commissioner for Refugees) Bolivia is a nation of under-education due to this, and as such, rural families in poverty are unable to get out of poverty because they aren’t uneducated enough. Out of an estimated population of 10.7 million people, two-fifths of these are involved with the agriculture industry (New Agriculturalist). But with erosion, deforestation, and a decreasing amount of natural resources, Bolivia is in need of some serious help.

In 2014, Bolivia’s average household size was listed as 3.6, suggesting that a family would commonly consist of two parents and one or two children. Diet in Bolivia is typically not great. Compared against the other 112 countries listed by the Global Food Security Index, their food safety is at -.02% below the world average, diet diversification is -6.4% below the average, protein quality is -10.8% below, nutritional standards are at -13.7% below, and their micronutrient availability -14.5% below the world average. Overall, Bolivia isn’t known for its quality education. One in every seven children on average will not complete primary school, which typically is grades kindergarten through eighth (Bolivia). “Over one million Bolivian citizens over the age of 15 are unable to read or write” according to FSD International. Children living in urban conditions average about 9.4 years of school, whereas children in rural areas average only about 4.2 (International, FSD). With three official languages and multiple other languages and dialects spoken, rural children face communication problems in their lives because they rarely reach bilingual education. The main reason for this lack of education, especially in rural regions, is that children are being pulled out of school to work on the farm and support family income (International, FSD).. In fact, about 70% of children aged 7 through 14 work in the agriculture industries (Findings on the Worst Forms of Child Labor - Bolivia). Health care services are available in Bolivia, but accessing them is often a challenge, especially for those in rural areas. Malnutrition is one of the biggest health risks in Bolivia (Bolivia fights malnutrition). With almost five million of its citizens barely able to get even their most basic requirements for survival, this poses the greatest risk to children and pregnant women. About 27% of Bolivian children under three years of age are undernourished, a significant reason for this being that the mothers weren’t getting enough nourishment during pregnancy. In poorer, rural areas, this numbers skyrockets to about 40% (Locations). Many women also pass along iron deficiency to their babies. Infant, child, and maternal mortality rates in Bolivia rank second highest in the southern

hemisphere, mostly due to malnutrition, which is caused not only by a lack of access to foods but also because of poor sanitary conditions. A lack of public health education has also led to a large number of citizens who have HIV/AIDS and malaria, along with several other potentially lethal diseases.

In Bolivia, there was about 2.4 hectares of arable land per person in 1993, but the population is rising each year and thus the amount of quality land for agriculture per family is decreasing (Bolivia - Arable land). On average, a family will have between one and three hectares of land, or between two and a half to seven and a half acres of land to themselves. In the east, the Amazon plains are popular for soybean production because of the rich nutrients (New Agriculturalist). In the mountains and plateaus of the west, many farms grow quinoa because it can only be grown at high altitudes and because of its increasing demand as a health food in the United States, Canada, and Europe (New Agriculturalist). Over a hundred different varieties of potatoes are also being grown on the *altiplano*, along with coffee, cocoa, corn, and rice, as well as tropical and temperate climate fruits (New Agriculturalist). Coca, the plant from which cocaine is produced, must also be included as it is a major cash crop and is beneficial due to its medicinal properties that help with reducing the effects of the altitude. However, this isn't a popular crop for subsistence farming because a family cannot rely on it for their survival. In addition, government-led eradication efforts are in play and a decrease in production has been seen because farmers are being offered monetary and social incentives to stop growing the crop (New Agriculturalist). Sheep, llamas, and alpacas are popular also due to the ability to use them for their furs, skins, and meat (New Agriculturalist). Farmers in Bolivia typically practice very traditional methods of growing their agricultural products. They terrace their hillsides and mountains and foot ploughs are often used by families with lower incomes (New Agriculturalist). Modern tractor use is relatively uncommon in Bolivia. In fact, by last estimate, there was 0.2 tractor per every 1000 hectares (Bolivia - Farming Technology). So that would mean that, if every farmer owned three hectares, only one in about 1600 farmers owned a tractor. Small farm size and outdated farming methods are huge contributors to Bolivia's agriculture problems.

One of the most major barriers to improving agriculture in Bolivia is the fact that farmers have so little income coming in that they are doing all they can to get as much out of their crops and animals as they can, despite how damaging it might be to their land. Because they are so focused on bringing in more money, they are pulling their children out of school as early as they possibly can. While this is a good option short-term, this ultimately is bad in the long run, because these children are losing out on knowledge that they would be able to use to help dig their family out of poverty. With families simply unable to afford to send their children to school and so desperate for immediate monetary relief, they are setting themselves up to be in poverty forever. And for these uneducated children, continuing to work on the farm is truly their only option for employment. Their lack of bilinguality leaves them unable to communicate with potential future employers or colleagues and they have no experience to speak of in any other industry. With only a few arable acres on their property, families are unable to acquire adequate nutrition because they can only grow a limited amount of one or two crops, depending on the climate of the region they live in, and can only raise a limited number of animals. After feeding themselves, there is little else left over to sell, meaning that they do not have the money to purchase other foods necessary to create a balanced diet. In addition, synthetic fertilizers are very expensive to import, so subsistence farmers are rarely using any fertilizers, herbicides, or pesticides, which means what yields that they are harvesting are substantially reduced. All of these things hinder Bolivia's productions of agriculture, leaving its citizens hard-pressed and in poverty.

Bolivia would benefit from developing and implementing sustainable agriculture practices. While ownership of llamas, sheep, and alpacas are an important part of Bolivian agriculture, overgrazing has increasingly become a problem. This has led to deforestation, desertification, and soil erosion, depletion, and infertility, which is directly affecting crop yield and production. Soil in both the highlands and lowlands of Bolivia have little depth to begin with, and are easily eroded. Poor soil quality produces poor crops and poor yield. Low quality yields are the reason why families are unable to produce enough crop to feed themselves, let alone bring in an income, leading to insufficient monetary earnings and inadequate nutrition. Overgrazing is very blatantly degrading the environment at a relatively severe level. Developing countries are certainly more at risk for this because they are doing all they can to try to bring in more income for themselves but they aren't realizing just how much damage that they are really doing. With the population steadily increasing every year, family size is also increasing, however, the amount of land available to rural citizens is remaining the same. More and more people are struggling to make their way, and they do this by raising a variety of plants and animals. Overgrazing is an issue that is increasing. To make matters worse, there is a lack of knowledge, education, training, technical assistance, technology transfer, and veterinary services to help with the practical raising and processing of these livestock. Meat and milk extraction and processing is low due to a lack of technology, and reproduction is low due to a lack of knowledge and veterinary assistance. Feeding these animals takes ingredients that could go towards feeding more people. Bolivia's economy overall could be improved with the movement of livestock to higher-income regions that are more educated and better equipped to deal with such creatures, leaving the farmers in other regions to grow crops more suitable to their altitudes and environments. Bolivia's sustainability issues cannot solely be attributed to overgrazing, however. Unsustainable practices such as slash and burn and illegal logging operations are also to blame. Uncontrollable forces such as irregular natural disasters associated with climate change and El Nino have led to rapid melting of glaciers, droughts, floods, forest fires and erosion, none of which are helping to improve Bolivia's fragile situation.

Many rural family farmers would be unable to afford the price of fertilizers, herbicides, and pesticides even if they were sold down the street, but the fact that they must pay import prices makes them even less of an option. However, to improve the quality of the soil and therefore the quality of their crops, fertilizers, whether synthetic or in the form of manures, need to be invested in. On top of that, applying fertilizers will lessen the amount of soil erosion that is occurring. Some practices, such as slash and burn, can easily be stopped by simply outlawing or prohibiting them unless in cases in which it is necessary, in which case it should be a government-regulated and carefully planned activity. Delegating certain areas for livestock production and certain areas for crop production could go a long way towards building back up what has been lost environmentally. For Bolivia, the reduction of poverty is currently the number one goal. But the way that they are going about this is simply not worth it long-term. Sustainable agriculture practices should rank just as important, as the two ideas go hand in hand. Building back up their environmental and natural resources will make Bolivia a more productive country.

Bolivia's citizens are struggling economically to build and maintain a way of living that will sustain themselves and their families. They are so desperate for money and food that they are pulling their

children out of school after only a couple years so that they can help out around the farm, efficiently making them unable to get the education they need to help pull the family out of poverty. Subsistence farms are being relegated to malnutrition, disease, and poverty for the too many years to come, unless this problem is addressed. Sustainable agriculture practices would go a long way to increase the quality of life for these rural farmers. Delegating certain areas for livestock and certain areas for crop production is just the first step to overcoming the problem caused by overgrazing. Rules should be put in place to protect from slash and burn practices and other such farming methods that are harmful to the environment and are increasingly depleting nutrients in the soils. Government assistance seems to be the best plan for increasing crop quality, yield, and production, as well as soil quality and reversing the effects of deforestation and desertification. Bolivia requires some serious attention. The citizens need monetary help and aid in acquiring adequate nutrition, education, and health care. Things are not looking up for the country of many nationalities, but they could be. Implementing practices of sustainable agriculture, prohibiting methods that are harmful to the environment, and increasing yield quality through obtaining access to fertilizers, Bolivia's agriculture industry could be increased, and therefore, the food security that its citizens have.

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