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## **Reducing Food Insecurity in Lao People's Democratic Republic**

### Introduction

Across the world families are struggling to become food secure. Many are caught in a vicious, yet unending cycle of plight and misfortune. Weather patterns are changing causing severe drought and flooding. However, the very farmers that are begging for these misfortunes to end are also causing these problems, many times by ignorance. Farmers need money in order to buy food in case their harvest is not enough for the year. Many farmers rely only on farming for their source of income. If the season unfavorable, they may not get enough products to both feed themselves and sell the surplus. This means that for the year, they have no money to buy other staple foods. In order to have enough harvest, farmers need money to invest in long-term farming techniques, but there is not any to spare.

Food security can be thought of as a cycle. The first step is preparing to plant and grow the food. The second is actually growing the food, and the third step is moving the food from the field. The fourth step is processing, selling, or storing the food. Finally, the last step is preparing and eating the food. There is much vulnerability to this cycle, including weather, roads, and political and economic stability. In addition, the food supply needs to be protected from spoilage, insects, mold, rodents, and poor handling during the harvest. If the cycle is disrupted by any of these factors or vulnerabilities, it can lead to food insecurity.

Some statistics about the Lao People's Democratic Republic (PDR) in Southeast Asia are as follows. About 38.6% of the population is below the national poverty line. About 27% of the entire population lives on less than \$1 US per day and another 71.4 % live on less than \$2 US per day. The rural population has worse statistics than these national ones. About 41% of the rural population lives in poverty and 78.8% of the population is rural. The life expectancy in this developing country is about 56 years. The infant mortality rate is high. This could be because there is only one doctor for 1,667 people in the country. The country also has one of the highest growth rates in East Asia at about 2.4% per year. Together, these two statistics are alarming. Lao PDR has a high growth rate, and a high infant mortality rate.

Many of the problems facing the residents of Lao PDR are caused by resource degradation, and much of this is caused by ignorance about long-term effects of farming decisions made for the short-term to just survive. Another cause of these problems is the lack of willingness to adapt to the changing climate and water scarcity. How might Lao PDR become more food secure by addressing the problems typical of rural families now and in the future?

### Typical Subsistence Farm

In Lao People's Democratic Republic, family is the main social unit. A family in this country consists of parents, children, grandparents, aunts, uncles, married children, and other extended family. The family lives very close if not in the same home. Family members have specific duties they have to perform. The father is the head of the household, and he is responsible for upholding family morals and traditions passed through the generations. The mother's duties are to maintain the family budget and household, and keep the family together and unified.

Education in Lao PDR is considered very important and valuable, but adults and children receive little, if any, formal teaching. This is because there are very few resources for schools and teachers. The schools are often bamboo with thatched roofs, and teachers are paid very little. There are very few books and other educational items. The schools and teachers are isolated, especially in the rural areas. Only 68.7% of the population age fifteen and up are literate. In 2005, 23% of the population who participated in the census had never been to school, and 42% had gone to school but had dropped out. While the attendance rate had increased since 1995, dropout rates have gone up.

In Lao PDR, adults keep the same job for their entire working lives. The idea of taking a different job or changing careers is completely alien to them. Their job also indicates their social status. Royalty are never expected to do manual labor like common men nor would they even consider it. In Lao PDR, 40.7% of the working population is women.

The typical family's diet consists of sticky sweet rice, a fish sauce called padek, hot peppers, and lemon grass. Some of the crops grown here are: coffee, corn, cotton, fruit, peanuts, soybeans, sweet potatoes, sugarcane, tobacco, vegetables, and rice. The only crop that is exported is coffee. Opium is grown in the high lands, but the export of this drug is banned today.

### Risks to Sustenance Farmers

The poor in Lao PDR tend to have low productivity and much bigger families to feed. This portion of the population tends to have small farms with little or no irrigation. Declining fertility of their land is causing more reliance on forest products making poverty worse. The poorer areas of Lao PDR, the mountains, also tend to become severely isolated especially during the rainy season when much of the country becomes accessible only to small planes and boats.

A full  $\frac{3}{4}$  of the population rely only on natural resources and agriculture. Sustenance farming is the main practice among farmers. However, only 4.1% of the land is arable in this forested and mountainous country. Within that 4.1%, only 17% of the cropland is irrigated. This makes farmers especially vulnerable to drought and water scarcity. In fact, as more rice paddies are put in at water sources, there is less and less water for other paddies, so paddies downstream tend to have more water shortages.

Of the 6 million people living in Lao PDR, about 30% have insufficient food for at least half of the year. Due to this, 21% of the population is malnourished. Some reasons for this are natural disasters including flood and drought, pests, environmental degradation, relocation of people to land with insufficient resources for rice paddies, ban on opium production, and poor education.

Another reason for insufficient food is that about  $\frac{2}{3}$  of the land has Unexploded Ordnance (UXO) in it due to the American involvement in neighboring Vietnam between 1964 and 1973. Due to this and the war for independence during the French colonial period, Lao PDR is now the most heavily bombed nation in the world per capita. About 22% of all UXO accidents occur when farming and 31% of accidents occur in rice paddies in both high and low areas. The presence of UXOs has shown a direct relationship to poverty and food insecurity due to injury, loss of cropland, death, and contamination of soil and water. Landmines leave behind craters, mercury, lead, uranium, cadmium, and nickel which contaminate the topsoil.

In recent years, internal migration has caused resource strain in other areas of the country. Farmers of land with decreasing fertility are moving to areas with more resources causing increased strain. Moving to a different part of the country is a problem within itself because the new farmers do not know the best farming practices for the area and can cause long-term damage through their ignorance.

Deforestation is a major risk to the livelihood of many farmers. Even though commercial logging gives Lao PDR export opportunities, it causes resource strain and pressure. Timber is in great demand worldwide and corporations are willing to turn to illegal logging practices to get a profit at the cost of natural resources. Over 68% of Lao PDR is covered in forest making it an ideal place for harvesting timber.

Deforestation causes many unwanted consequences. It leads to the sedimentation of valuable water sources because without trees, topsoil flows downhill to water sources causing silt buildup. The removal of trees causes soil erosion too; without the protection of the trees, rain and wind is allowed direct contact with the fertile topsoil. Without tree roots, landslides occur more because soil is allowed to flow downhill. The removal of trees also disrupts the fragile biosphere. There is decreased food for animals as plant life is removed causing less access to protein for many families. Deforestation also causes the displacement of jungle tribes. The government claims that they are illegal squatters, but millions of people are being forced to move causing the end of life and tradition as they know it. The average villager requires one to two tons of firewood per year for energy, and deforestation is disrupting this. Finally, deforestation also causes increased flooding because the surface flow is increased with the removal of the tree's protection.

Swidden or slash and burn farming is often practiced in Lao PDR. In this shifting cultivation technique, the natural vegetation is cut and left to dry. Then when it is dry, the remaining dead vegetation is burned, and crops are planted there for a few years. After a few years, the natural vegetation is allowed to regenerate for 10 to 20 years in what is known as a fallow period. Approximately ¼ of the rural farmers practice swidden farming within village communities that collectively decide the year's crops and locations.

Swidden farming has advantages and disadvantages. Some advantages are that the slash and burn technique cuts down on harmful weeds and insects in the area. Also, when the dead vegetation is burned, helpful and fertile organic material is released into the soil, which encourages bountiful, healthy crops. One major disadvantage is that there are so many residents of the Lao PDR which is causing resource strain; so fallow periods are being greatly reduced to as little as two or three years. This causes soil erosion and decreased crop yields.

In the 1990s, the government began the Land Use Planning and Land Allocation program or LUPLA. This program puts the management of natural resources down to the village level. This encourages villages to use their resources efficiently. The land is divided into three categories: agriculture, forest, and community; however, LUPLA allows for swidden farming and states that fallow periods cannot be over three years or else the land will be returned to the community. This causes many farmers to plant rubber trees, a cash tree, on the property in order to keep it. This is technically not allowed because the agricultural land is not considered to be production forest.

The government of the Lao PDR is trying to reduce shifting cultivation practices throughout the country because the long-term effects are now being discovered. Some farmers have moved to sedentary farming, while others are complementing sedentary farming with swidden practices, and the rest are not making the transition to sedentary farming at all for various reasons. Some reasons for this are: a lack of access to flat land, limited knowledge of wet rice cultivation and science, a lack of manpower due to small families, and cultural traditions of cultivation. There are approximately 48 different ethnic groups in Lao PDR alone that have different dialects and traditions.

### Solutions to Food Insecurity

SALT is one solution for the farmers of Lao PDR to become food secure. SALT stands for Sloping Agricultural Land Technology. A slope is simply a hilly area. It is an integration system between livestock and crops that when used properly, will protect the integrity of the soil and land. By protecting the integrity of the land and soil, farmers will be more productive in the long-term and, will therefore, become more food secure.

In the SALT plan, herbivores such as goats and cattle are used to produce manure for the crops, meat, and milk. They in turn feed off of the waste products of the crops or the hedgerows. Both of these food sources would require the cut and carry system, so the animals don't destroy the crops. Cattle can also be used as draft power since much of Lao PDR is still without tractors and other farm machinery.

Hedgerows are planted in order to protect the soil between crops from erosion. Hedgerows are also useful because they can provide additional food and money for the farmers and their family. On gentle slopes, legumes are usually planted as hedgerows, and bamboo or trees are traditionally planted on steeper slopes.

In order to be successful, crop-crop and crop-livestock compatibility should be kept in mind so that the maximum amount of product is produced. Results should be measured at the farm level. The reduction of sediment is also a good indicator of resource degradation because soil erosion is lessened. Therefore, it should also be measured at the waterways. Success would be less waste and sediment in the water source. SALT promotes soil, water, and nutrient conservation.

Not all farmers are open to this idea. SALT has been introduced to countries such as the Philippines, Indonesia, and Thailand which all have similar problems as Lao People's Democratic Republic. In these countries, it was found that farmers with medium to high incomes were the most likely to adopt this new practice because they had money to invest in the long-term. They could withstand a less productive year as the hedgerows were planted and contours were developed. The farmers with small incomes tended to think about the short-term and could not afford to have a less productive year.

However, currently Lao PDR is dependent upon foreign aid to get by each year. If that money were invested in the poor farmers to begin SALT, Lao PDR would become more productive and require less and less foreign aid each year. Australia is helping Lao PDR to move off of the developing nation list by educating Laotian residents in Australia if students desire it. The goal should be to promote Lao PDR to become self-sufficient, and SALT could do that.

Another solution to help Lao PDR to become more food secure is to educate residents. Many are ignorant to the fact that some of their farming practices are hurting the fertility of the soil. Most residents know that today's swidden farming is harmful to the soil, but they do not have the education or the resources to change their ways because most have been practicing this type of farming for generations.

Deforestation should also be controlled. It is a good economic stimulus for the country; however, many companies are replanting cash trees rather than the native trees. These cash trees do not provide the same protection, nor do they fit into the biosphere. The same type of trees should be replanted and the amount of acres of trees felled per year should also be controlled in order to protect farmers because the trees protect the soil from erosion, flooding, and landslides, so the integrity must be kept intact.

Irrigation should also be an investment because so few farmers have it; they are more vulnerable to the conditions that Mother Nature gives them for the year. Irrigation would provide a safety net for these farmers and give their crops more stability.

Finally, the presence of UXOs needs to be greatly reduced in order to protect the lives of farmers, animals, and children. The greatest resource in the area is people, and UXOs greatly reduce this. They contaminate the scarce water and greatly reduce the integrity of the soil. There are many programs that are working to reduce the number of UXOs, but their goal is to clear much of the country between 2015 and 2020. These weapons will take many lives in this time, however.

## Conclusion

Food insecurity is a very serious problem. It causes stress on the bodies and minds of many human beings in the world. The problems in Lao PDR are prevalent in many other nations in Southeast Asia and need to be addressed also. Sadly, most of the victims of malnutrition and food insecurity are children because most of them are unable to cope. They are helpless and cannot protect themselves from its' consequences.

Lao People's Democratic Republic has many obstacles to face in order to become a more developed and food secure nation. Australia has been helping to guide this Southeast Asian country for many years, and many other developed countries have also provided foreign aid. The country will not be forgotten. With a little bit more help, it will be able to achieve its' goal of becoming a developed country.

Deforestation needs to be greatly reduced, and education is the answer. A little knowledge can go a very long way, especially in a country that has so many uneducated residents. Literacy is the key to success, and in order to educate much of the country, it needs to be united. Lao PDR is made up of so many ethnic groups with many different practices and beliefs, and this prohibits many of the policies of the nation to be enforced. A united Lao PDR could mean a more successful and self-sufficient nation.

If the cycle of food is disrupted at any point, it can be very disastrous. In order to allow Lao PDR to be self-sufficient, the cycle of food must run smoothly. Troubleshooting and problem solving is key. Vulnerabilities need to be reduced in order to protect the food supply.

Lao PDR may not be at the top of the list for the least developed or poorest countries because it's on its way to coming off the least developed list. The country just needs another push to get there. Residents of Lao PDR die everyday from UXOs and malnutrition. Over one-third of the country is below the poverty line, and that is too much. Poverty may not be completely wiped out, but with help, it can be reduced.

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