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Timor-Leste, Sustainable Agriculture

Timor-Leste Agricultural Has Left the People Slash and Burned Out

Timor-Leste is a small country that shares a border with Indonesia and only recently gained independence from the colonial powers that had controlled it for over a century. Founded on May 20, 2002, Timor-Leste is currently working, with some foreign aid, to establish its own government and infrastructure. Despite some civil unrest that has led to assistance from Australia, the young nation has been relatively successful in this (CIA, 2019). However, the population continues to struggle with food production.

Roughly eighty percent of the country's population is engaged in subsistence agriculture and fifty percent live in poverty (Borgen Magazine, 2014). Due to poor soil maintenance and unpredictable periods of flooding and drought, many people, dependent on their own crops for food, struggle to feed themselves. Without being able to eat properly, sixty percent of Timorese children suffer from stunted growth due to malnutrition; this nationwide health struggle is exacerbated by the extremely low physician density in the nation, 0.08 physicians per 1,000 citizens. To put this into perspective, the United States' physician density is 2.57 per 1,000 citizens (CIA, 2019). Without enough food to provide for the coming generations or doctors to treat them for the issues that they develop from this lack of food, the situation for the Timorese is currently bleak.

The best way to reduce hunger in Timor-Leste is to educate the population on better agricultural practices. At the moment, the practices done by farmers are extremely incompatible with the terrain and climate of the land. Timor-Leste experiences alternating periods of flooding and droughts, which lead to erosion and reduced soil quality on the already mountainous geography. Coupled with methods that reduce soil quality even further, the subsistence farmers of the nation are unable to produce enough food to properly feed their families. This lack of food is demonstrated in the high rates of malnutrition in the nation, leaving children's growth stunted which makes them unable to work to their full potential, so families need to have more children to carry out the work, meaning there is even less food to go around, and the cycle continues.

Remedying this situation by educating the Timorese would likely cause a snowball effect towards improving the quality of life and reducing hunger in the nation as a whole. With improved agricultural methods, crops will be more stable in the nation, and subsistence farmers will be able to have a reliable food source for their children. Steady nutrition will then decrease the number of children suffering from reduced growth rates, allowing more Timorese citizens to grow up and lead healthy lives.

Hopefully, with these improvements, the nation would be able to transition out of the instability involved with their current state (stage one) in the demographic transition model. This model shows the ratio between the different age brackets within a country and can be used to classify

the countries development as a whole. Stage one has high birth rates but a low life expectancy and is the lowest stage of development as families in this phase typically have many kids hoping that they can aid in working and making money for the family, but the kids receive little education and few live healthy lives. Families in Timor-Leste do fit this description, with the countries fertility rate being 4.67 children born per each woman that is of childbearing age (CIA, 2018). By exiting stage one, the life expectancy of children will increase, meaning

families will no longer have several children, stabilizing the nation, improving the economy, and reducing the youth dependency ratio, which was last recorded at 83.7 (CIA, 2015).

To improve the agricultural methods of the Timorese, the primary goal would be to educate the population on the dangers of overusing slash and burn agriculture, a method of farming that involves cutting down vegetation and burning the remains to create a fertile field for planting (Developing Agricultural Communities). World Vision International, a Christian humanitarian organization, has already done some work in this aspect. Timorese farmers utilized slash and burn techniques in order to maintain the fertility of their land, but increasing population and prolonged use of this method have led to deforestation, dramatically increased carbon dioxide emissions, and soil erosion. Carbon dioxide emissions clearly rise from the burning of such large quantities of organic material, and deforestation comes as farmers clear more land for their crops by simply cutting down surrounding forests and burning them. However, soil erosion is the greatest hindrance to the farmers, and slash and burn has brought it on because, since it eliminates all vegetation in the area being burned, there are no root systems to hold the soil together allowing it to wash and blow away without resistance (EcoLogic). The reduced soil quality, in particular, is dangerous because, in Timor-Leste, seven-month droughts alternate with monsoons, and soil health is paramount to guaranteeing crop survival (CIA, 2019). World Vision has had success in other countries, including Ethiopia and Niger, by converting farmers to using more conservational farming practices such as intercropping and composting to improve crop yields.

Intercropping would be particularly beneficial in Timor-Leste because of the extreme fluctuation in the weather of the region. Intercropping is a method of farming that involves growing two or more crops in the same field, interspersed between each other. For the subsistence farmers of Timor-Leste, this would make the most use of their fields since each field could produce multiple crops simultaneously. The increase in food production will also provide improved nutrition for the children of the country. Furthermore, it improves soil structure and resilience of the crops. With multiple root types in the soil, erosion is reduced and the increased biodiversity defends the plants from various pests and diseases (Engels, 2016).

The most efficient way to implement this educational program would be to work with the Timorese government, which would also foster an economic relationship between the United States and the growing nation. By working with the government it would be possible to send a team of people trained to educate the farmers on conservational practices, similar to what World Vision has done in the past but on a larger, nationwide scale. The team could also be relatively small, given that the nation is only 14,874 square kilometers, roughly the size of Connecticut (CIA, 2019). At a maximum, 50 volunteers could go to the nation and organize meetings in various regions to speak with farmers, help to educate them on the negative side effects of their

current practices, and demonstrate how to implement more sustainable agriculture. The people of Timor-Leste will likely be receptive to learning about these improved practices, especially if they are told how it will improve the lives of not only themselves but also their children.

A difficult factor in the success of such a program would be ensuring that the Timorese people actually implement these practices and continue to use them after they have been educated and trained. Again, assistance from the Timorese government would be vital here as they could set in place regulations to limit the use of slash and burn by farmers, which would make it difficult for farmers to revert back to their old methods. With those habits out of the picture, it would make sense for the farmers to rely on the new skills they gained.

Even with improved practices, it is an unfortunate truth that, due to its mountainous regions and inconsistent rainfall, Timor-Leste is not ideal for the agricultural production of food for human

consumption. Keeping this in mind, the ultimate goal for the nation would be that, with improved health and life expectancies brought on from the implementation of more sustainable agricultural practices, future Timorese will be able to obtain jobs other than continuing to run farms for their families. At that point, when the population is no longer dependent on subsistence agriculture, the country would be able to transition its agricultural industry to fostering the growth of its forests.

The lumber industry is very profitable, estimated at contributing over six hundred billion dollars to the global economy and employees 54.2 million people (The World Bank, 2016). The forests of Timor-Leste naturally grow teak, redwood, sandalwood, and mahogany (Nations Encyclopedia). For these reasons, forestry would be the ideal alternative for the Timorese to turn to once they have regulated their personal food production.

Transitioning to a new industry is vital for the continued growth and development of the nation. Once the Timorese people are able to produce enough food to provide nutrition for themselves and their families, the next goal would be to reduce the number of people actively engaged in agriculture, allowing for people to pursue careers outside of the agricultural sector. Lumber provides an opportune method to make use of a booming industry in a product that Timor-Leste is naturally suited to. From the lumber industry, economic growth will create even more jobs for the Timorese.

With this plan to make Timorese agriculture more sustainable, the country will be able to slowly ascend from poverty. Increased crop yields will improve the health of the nation's children, allowing future generations to profit and, eventually, to stem into careers rather than working fields to sustain themselves. Once the people of Timor-Leste no longer grow their own food, agriculture can shift to more profitable industries that are better suited to the nation's environment, boosting the country's economy and allowing the nation as a whole to flourish.

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