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Taiwan, Factor 6 - Sustainable Agriculture

Taiwan: A Nation Under Constraint

Taiwan is a developing country that is composed of a dozen small islands with almost two-thirds of its land being composed of mountains with just over 250 peaks (Taiwan. 2013, par. 5). Their mountains are heavily condensed with trees and vary in height. The other third of the land is mostly made up of alluvial plains and contains most of the population of the island (Taiwan. 2013, par 6). Their climates vary greatly from the north to the south due to the country being virtually split in half by the tropic of Cancer. The north is a sub-tropical climate with moderate temperatures. Rain in the north is also very common during the winter months. The south side, on the other hand, has a lot higher temperature averages than the north. The south also gets a considerably less amount of rain (Taiwan. 2013, par. 6).

Currently, around 23.78 million people live on the island of Taiwan, which contains about 77.3% urban and 32.7% of the rural population. The government of Taiwan is a Democratic Republic. Their cultivated land is around 793,000 hectares which is equivalent to almost 1,960,000 acres and is about 24% of their total land (Taiwan. 2011, par. 1). The main crop grown in Taiwan is rice followed by soybeans, bananas, sweet potatoes, and wheat. Their main export commodities consist of refined petroleum, flat-rolled stainless steel, coated flat-rolled iron, silver, and copper foil. They also export a high amount of electrical machinery, vehicles and various types of technology. Their average farm size is around 1.1 hectares which is equivalent to 2.7 acres (Taiwan. 2011, par. 3).

The current average number of people living in a Taiwan home is 2.7 persons. The typical family living together is large and multigenerational with each member of the household acting as an important member with their separate important roles (Taiwan Average Household, par. 1). Their houses typically resemble the average house in Europe. There can be multiple types of architectural design between each household. The housing is generally multiple stories stacked up high with tight city streets (Hunt. O, par. 2-3). The typical family diet consists of dan bing (a thin egg filled pancake), congee (breakfast burger), scallion pancakes, or fried dough sticks on bread. This is most commonly washed down with milk tea, goats milk, or soybean milk (McEneaney, C. 2017). Mid-morning snacks usually consist of fruits. Their lunches most commonly consist of a large bowl of noodles or a lunchbox from a local restaurant. Lunchboxes typically consist of rice, vegetables, tofu, and a chicken leg or pork chop. Their noodles could be anything from cold noodles with peanut sauce to Taiwanese beef noodles. Their afternoon snack is a cup of pearl milk tea which consists of small tapioca balls and are available in a wide

variety of flavors. For dinner, they typically eat at home or a local buffet restaurant. These will range from sweet and sour pork to grilled fish, along with a large variety of vegetables. Their late night snack is Custard-filled cakes, red bean soup, and any kind of meat someone could think of to put on a stick (McEneaney, C. 2017) (Cultural Identity and Cuisine) (Lonely Planet).

They generally get their food from farmers markets, night markets, restaurants or cafes. The way they cooked their food has changed over the years from traditional cooking to more modern tactics that include many more flavor enhancers. With traditional cooking, they even stressed the color to make sure it looked as good as it would taste (Cultural Identity and Cuisine p.12-16).

Taiwan is a high-income advanced economy with a large range of jobs. They are heavily involved in engineering and software-based jobs. They also have jobs such as sales and human resources to name a few. The average wage based off of almost a thousand different salaries is around \$40,000 in U.S currency. Some sources say the average salary is even higher than that but many don't believe that is possible based on other conditions of the country (Taiwan, 2018/19, chart, 1-4).

They have access to many different types of education and health care at very affordable costs. They stress the importance of education and have a solid health care system (Wu, 2010. Par. 4-5). Schooling in Taiwan can be very intense and most students in Taiwan take classes from 7:30 in the morning until 5:00 at night. Students also have the option to take cram courses which would mean having school from early in the morning until very late at night. (Education in Taiwan, 2018).

In Taiwan, they have plenty of access to clean water and other necessary essentials. At times, it can be hard to find restrooms in Taiwan but people can normally find stores or other businesses that would allow them to walk in and use their restroom if asked nicely. They have one big problem which is their ability to produce electricity. Over 90% of their energy comes from outside sources while under 10% of their energy is actually produced in Taiwan (Horwitz, 2018, par. 2). Transportation in Taiwan is normally very congested along with many more dangers such as cyclists weaving in and out along with people crossing streets. The weather conditions can also cause severe dangers (Traffic and Road Conditions, par. 1-3). Phones in Taiwan are a priority among most and many people have them (S.I., 2014, par. 1-4). Most families are able to make a decent living and afford nutritious food for their families.

Taiwan is currently facing many challenges in its agricultural sector. Some of these challenges consist of a low level of food self-sufficiency, growing age of farmers, small scale farming, rising

prices of fertilizer, natural disasters, and rapid changes in the world food economy. Taiwan's food self-sufficiency is currently very low, sitting at 30.6%, which means they must rely heavily on imports and do not have a very stable economy. Their total agricultural imports have increased over the years due to the expansion of livestock and fishery industries along with improving living standards (Huang, 2009, par. 1). Their current plan consists of three guidelines that are "Healthfulness, Efficiency, and Sustainability." They are trying to establish a stable food supply by revitalizing set aside land, and by providing technical assistance to developing countries. My solutions would fit into this very well because it would help to increase their efficiency and sustainability. It could also possibly have some great health impacts on both their people and land. (Council of Agriculture)

Taiwan's livestock farms remain largely in small scale operations ranging from only a couple head per farm so therefore they can't really compete with large multinational enterprises. It is also hard to keep control over the risk of exotic diseases being introduced to Taiwan due to them being completely surrounded by water. Catching smuggling is very hard due to the location of the country. The small availability of land for pasture has resulted in heavily concentrated livestock farming. The waste from these animals also causes another hazard for the animals' health along with the risk of human health as well. With consumers' product safety awareness on the rise, it is causing situations to become worse for the Taiwanese livestock producers. Compact livestock farming will soon not be available and the need for a new type of animal production will be needed which will in turn raise the cost of production. (Taiwan - Beef)

These problems are currently affecting rural and urban populations alike because there is already a limited amount of land available for livestock farming in the midst of everything else. Space could soon become a problem for everyone and everything that lives in Taiwan. They are also making decisions that are affecting the environment greatly because all of the waste being produced from livestock, along with the high risk for disease. The people of Taiwan have little ability to control diseases and this could cause massive problems in the near future.

Some of the many possible solutions for Taiwan could include a more focused crop production, a more efficient use of space for livestock, or lowering the number of livestock being produced. They could also boost renewable energy production to reduce their imports and reliance on other countries. My solution for their livestock situation is to try and build new confinement buildings with more efficient use of space to try and maximize the use with what space they have. Another possible option would be to cut back on the production of livestock to free up more space for crops. These two options could greatly improve the agriculture of Taiwan and also boost their economy. However, there would be a potential concern for monoculture due to them living on an island.

If they were able to focus their producers to a more specific crop such as rice or soybeans they could really improve their yields and abilities to raise a crop with a greater profit margin. They would also be able to better focus their imports and not have such a wide variety of products that they would need. If they would be able to convince farmers to change their growing habits, they would need to find a way to teach the farmers the best and most efficient way to grow these new crops. Once this is completed they could become a part of many different markets both locally and globally if it was implemented correctly. This may not be the best long term solution to fix their problems but it would be steps in the right direction to improve what they are doing. It would also be possible to cut back on their import of electricity by installing renewable energy sources on their land that is not suitable for living or agriculture. Some examples of this could be wind turbines and solar panels out in the ocean or in the mountains.

Having the understanding that narrowing down all of their varieties of crops and animals could cause monoculture problems such as a rapid spread of disease or the complete destruction of a crop but these disasters could possibly be lessened by the use of different crop varieties and proper vaccination along with the proper upkeep of animals.

The biggest problem that would come up when trying to fulfill these solutions would be the amount of space they have to work with. Their space is already limited as Taiwan is an island but it complicates the situation much more when two-thirds of their land is full of mountain ranges, which is not ideal land to farm or keep livestock on. This leaves Taiwan with very little land that they can use for agriculture while also having enough space to fulfill the needs of their urban populations that will only grow with time and cause the availability of space to shrink. Being able to focus their crops and install renewable energy could reduce their import numbers greatly. They may not look like huge changes but being able to lower their electricity from 90% down to 85% could mean a lot for the country along with being able to be more self-sustainable than 30.6%, which Taiwan is currently sitting at.

In conclusion, it will be very important for Taiwan to keep pushing for the idea of more focused crops and a better way to use their space with their livestock. Hopefully in the near future they discover a new way to save space with their livestock farms and have managed to lower their amount of reliance on other countries' imports. Using my ideas could possibly help propel them forward with their ongoing plan of being Healthy, Efficient, and Sustainable.

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