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Taiwan, Overfishing
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The United States Department of Agriculture defines food insecurity as “the limited or uncertain availability of adequate and safe foods, or limited or uncertain ability to acquire acceptable foods in socially acceptable ways,” and it has been found that about one fourth of households experience severe conditions of it (“Food Security in the U.S. - Frequency of Food Insecurity | Economic Research Service”). This issue has been found to impact a variety of individuals from a range of backgrounds, but most heavily affects children, and people with disabilities (Murthy). While most countries are trying to implement more beneficial organizations to prevent this, like the World Food Programme and Food and Agriculture Organization, groups of people are still being hurt from the issue daily (“FNS Nutrition Programs | Food and Nutrition Service”). For example, although Taiwan has relatively strong food access compared to many countries, overfishing and economic issues are threatening long-term food security. By implementing sustainable fishing policies, improving environmental protections, and expanding public education, Taiwan can protect both its food supply and marine ecosystems (Huynh et al.).

To better understand how food insecurity impacts Taiwan specifically, it is important to examine the country’s agricultural limitations and food production systems. Agriculture is necessary for families in Taiwan, although available farmland is limited due to the country’s mountainous terrain and dense population. The average Taiwanese household includes several family members, which can make it difficult for lower-income families to consistently access nutritious food (Po-hsuan and Jason Pan). Compared to the United States, they have a noticeable amount of less land, which leads them to farm in smaller areas of land. Usually, they rely on urban agriculture as their main farming technique; this allows even more impoverished families to grow large amounts of food without enough land. There is also a network of community gardens and markets for families to buy from that contain crops like rice, sugarcane, and bananas (Foster).

Because of these land limitations, alternative farming methods have become especially important in Taiwan. Urban agriculture is used in a variety of ways, but it is best known for its ability to take up little amounts of arable land for agricultural purposes. This can be done with a variety of ways, like rooftop gardens, which can be helpful through providing people with more healthy products and clearing the air around the living areas. Another way that this can be done is through controlled environment agriculture, which is when plants are grown inside with artificial light. In addition to using little land, this also requires small amounts of technology, and is by far one of the most accessible forms of farming for more underdeveloped countries (“Urban Agriculture”).

While these agricultural strategies help address land shortages, economic and population factors also play a major role in food access. Taiwan has an estimated population of nearly twenty three million people (“Taiwan Population (2026)”), and only 20% of the people reside in rural areas (Copper). The other 80% live in urban areas. With food insecurity affecting 7.8% of Taiwanese residents, rural areas are most heavily affected by it. Getting a job that provides families with enough profits to be financially stable is challenging. In Taiwan, employment competition is a big factor that influences how people live. With that in mind, most Taiwanese citizens choose to work in services, and often receive an average of $900 monthly in United States conversions (“Everything To Know About Poverty in Taiwan”). That implies that the average citizen receives about $10,800 each year, which can heavily prevent people from getting fresh food. More often than not, people eat at food stands, night markets, and food stalls because they are cheap and play a large role in Taiwanese culture. While this does get them some nutrients, it is not nearly enough to keep them healthy. This further develops the fact that people in less developed areas are more likely to face food insecurity from their little opportunities (Hung and Lien).

In addition to economic challenges, Taiwan’s reliance on specific food sources further shapes its food security. Seafood is also one of the most important food sources in Taiwan, and it has shown to be healthier than the food sold at the food stands, as well as more prominent than vegetables and fruits sold in community gardens. According to Katherine Lee, more than 80% of Taiwanese residents eat seafood at least once a week (Lee). This level of consumption is even higher than the weekly consumption of chicken in the United States, demonstrating a growth of 5% (Chicken Check In). Popular dishes such as steamed fish, shrimp burgers, and fish balls are common meals that provide an important source of protein. Protein is necessary for maintaining strong muscles and helping the body repair tissues. Along with carbohydrates and fats, it is one of the main nutrients that is needed for a healthy diet (Center for Health Protection). Because of seafood being such a significant provider of nutrients in Taiwan, any disruption to fish populations could directly affect the nutrition and health of many residents.

Despite Taiwan’s heavy reliance on fishing, the industry also contributes to environmental challenges. Some fishing practices increase the risk of overfishing, which reduces fish populations and disrupts marine ecosystems. In addition, pollution from industrial waste, illegal dumping, and maritime activity can contaminate the ocean and damage marine habitats (Lu). Taiwan has attempted to address these problems through environmental regulations and monitoring programs aimed at reducing industrial discharge and protecting marine environments. However, progress has been slow, and enforcement remains difficult. Without stronger protections, continued environmental damage could further threaten both the country’s ecosystems and its food supply.

As these environmental issues worsen, they create a cycle that further intensifies both ecological and economic problems. As fish populations decline, fishermen must catch more fish to maintain their income and food supply. This increased pressure on marine ecosystems leads to even greater depletion of fish stocks. At the same time, pollutants and chemicals entering water systems can contaminate seafood and pose health risks for consumers (Washington State Department of Health). If this issue continues, fish populations may decline to levels that cannot support the needs of Taiwan's population or its fishing industry. Despite the wording seeming extreme, the problem is starting to show effects in Taiwan already. While the country is known for its high recycling rates, it is also dealing with river modification that impacts ecosystems (Quick et al.). Furthermore, it was found that the stocks of twenty four fish species are already decreasing due to overfishing. Greenpeace found that "the nation's marine resources are in urgent need of protection," which shows how organizations are openly discussing the trends involving the issue. Without these protections, the problem is growing in severity, and both big companies that rely on commercial fishing and poor families are being impacted. As stated in the previous paragraph, fish stocks are going down drastically due to overfishing. This was found through the fish census at a news conference in Taipei–a region within Taiwan. With worsening stocks, not only is the environment reflecting results of harm, but also the country's economy. This needs to be kept in mind when trying to develop a solution, because sustainability can potentially lead to less profits, despite its importance in the world.

Given these challenges, developing a solution is necessary. It can be assumed that the most effective solution to reduce environmental degradation caused by overfishing in Taiwan is the implementation of a Smart Fishing Monitoring System. This would require commercial fishing vessels to install GPS trackers and devices that report where fishing occurs and how many fish are being caught. The information would be transmitted in real time to Taiwan's fisheries management agencies, allowing them to monitor fishing activity more accurately and ensure that vessels follow legal fishing zones and catch limits. If boats enter protected areas or exceed quotas, the system could immediately alert authorities, helping prevent illegal or unsustainable fishing practices. By collecting detailed data on fish populations and harvesting patterns, scientists and policymakers would also be able to make more informed decisions about conservation and fishing regulations. This approach would not only protect marine ecosystems and prevent the depletion of fish populations but also support the long-term stability of Taiwan's fishing industry. Unfortunately, this would be difficult to implement because it will be extremely economically straining for individuals in the fishing industry. GPS trackers, devices that report catches, and general data systems can be costly, especially because most fishing businesses in Taiwan are small and receive little profits regularly. Unfortunately, If the government does not give these products sufficient funding, it will ultimately fail. Furthermore, there are technological limitations that will come as a result of this. Over the sea, there can be difficulties with tracking because there will be limited connection from the land and higher chance of signal losses. Because of this, there will be higher chances of there being malfunctions from them for the fishermen, and tracking the fishing will be difficult. Lastly, privacy concerns can be a large issue. Some fisher men may be uncomfortable with the idea of being tracked, and some may believe that it will influence them to have lower incomes if their activity is being monitored.

Looking at other countries provides evidence that similar solutions can be successful. Several countries have successfully reduced overfishing through stronger regulations and monitoring systems. For example, Norway enforces strict catch quotas and uses satellite tracking to monitor fishing vessels, allowing scientists to adjust limits based on fish population data. Similarly, New Zealand uses a Quota Management System that sets yearly catch limits and allocates portions to licensed fishers, encouraging sustainable harvesting. Iceland also requires vessels to report catches and uses monitoring technology to prevent illegal fishing. These strategies show that combining regulations with modern tracking systems can help protect fish populations while keeping fishing industries productive.

Ultimately, these examples reinforce the importance of taking action before the problem worsens further. In conclusion, food insecurity is an issue that impacts individuals around the world, and is a growing problem globally. Despite Taiwan not being heavily impacted by it, residents and businesses are facing their own struggles through environmental degradation. In order to get healthy, sufficient food, the country relies on fish imports, overall influencing overfishing and pollution in the country. This is why the government needs to enforce a system that monitors the activity of fishing boats and try to prevent the issue from growing before it leads to future problems involving food insecurity and harming the residents in Taiwan.

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