

2 ZERO HUNGER

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Executive Summary

Locally grown crops, livestock and fisheries are essential to the domestic food supply and export economy of Tonga, and can be wiped out or inundated with saltwater by a disaster. As tropical cyclones and volcanic activity are a regular occurrence in Tonga and increasing in frequency due to climate change, this presents a long-term issue. Most recently, the volcanic explosion and accompanying tsunami resulted in the country's crops being wiped out or inundated with salt water.

Tonga's main exports are fish and produce, but their imports exceed their exports significantly. While livestock is important for food, it also remains important for culture and the economy.

Most growers use older farming techniques, aren't aware of many food preservation techniques, don't send their food for processing and haven't worked to improve livestock productivity. With the younger generation largely disinterested in farming, and the older generation largely disinterested in new techniques or technology, there are significant roadblocks to the change required to prevent full reliance on imports.

Hackathon Challenge A

How might Tonga stabilise their agricultural economy to withstand climactic events and ensure consistent food supply for growers, locals and export.

Persona

Malohi is a 45 year old yam farmer in central Tongatapu. He grew up with his parents farming yams primarily to feed their family, and trading with neighbours and at markets for the food they didn't produce themselves. Malohi left high school to help out with the family farming operation and has been doing so ever since. When he took over the farming, he started selling part of his crop to exporters, which helped his family pay for his children to go to school. His children are adults now and work in the city, while he still tends the farm. Yam farming is physical work, Malohi removes or cuts down weeds, then ploughs the soil at least 3 times before it is ready for seedlings. He plants them in soil around July and waits 8-9 months until they are ready for harvest. Harvest is then done by hand, to ensure the yams aren't damaged.

When the volcano and tsunami hit, his crops were devastated, the ash covered everything. The soil was inundated with salt water, the leaves were damaged and there wasn't much hope for a productive harvest in the coming months. In the weeks following the eruption, Malohi had no food to sell at market and there was very little food available to trade with neighbours. Because he couldn't sell his crops, he was running out of money to buy food, and there wasn't much food on the shelves anyway. On top of this, his house was damaged, and he hasn't been able to finish repairs yet. As the months progressed, the business closures, lockdowns and curfews from the covid outbreak have made it even harder to get repair supplies or food.

Cyclones have hit before, but nothing has damaged his livelihood like this before. He's praying that this is a once in a lifetime disaster, that his crops will recover and life will be normal again. Malohi doesn't have an income or education outside of his home farm, and would likely resort to working on a larger farm. He wants to keep growing the crops he knows how to grow, but as he grows older, the work is taking more of a toll on his body. With his children working in offices and hoping to move to New Zealand for higher paying work, he's not sure what the future will look like.



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Tonga Recovery Factsheets

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'All agriculture is ruined' - Tonga facing food shortage after tsunami impact

https://pacificmedianetwork.com/articles/all-agriculture-is-ruined-tonga-facing-food-shortage-after-tsunami-impact

Tonga: Red Cross tackles triple disaster -COVID-19, volcanic fallout, tsunami

https://www.ifrc.org/press-release/tonga-red-cross-tackles-triple-disaster-covid-19-volcanic-fallout-tsunami

Assessing the Aftermath of Tonga's Volcanic Eruption and Tsunami

Assessing the Aftermath of Tonga's Volcanic Eruption and Tsunami – The Diplomat https://www.ifrc.org/emergency/tonga-volcano-and-tsunami

Tong Education and Lireracy

http://uis.unesco.org/en/country/to?theme=education-and-literacy

Tonga, Investing in rural people

https://www.ifad.org/en/web/operations/w/country/ tonga







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The annual frequency of natural disasters is rising, making disaster preparedness and response vital. Tsunamis, cyclones, storm surges, and flooding are the most common causes of death and destruction of housing, crops, and livestock, especially when preceded by a volcanic eruption as occurred in Tonga in January this year. Tonga, a Polynesian archipelago of islands, sits above the Pacific "Ring of Fire" where earthquakes and volcanic eruptions are common. When the volcano on Hunga Hunga-Tonga Ha'pai erupted, it was one of the largest explosions ever recorded. Although the loss of life was minimal (3 people died), the economy and infrastructure of the nation took a massive hit - over US\$90 million of financial damages were incurred. It is estimated that 85% of the population has been affected by the loss of 600 buildings and the significant impact to crops, livestock and fisheries.

The population of Tonga relies heavily on agriculture for their livelihood, with 88% of all residents living in rural areas. Most farmers are smallholders practicing a mix of subsistence and cash crop production, which provides food security, employment and income. Impacts of the disaster include:

 Ashfall: ash can delay or stunt agricultural harvests, with serious detrimental effects on crops and livestock depending mainly on ash thickness, the type and growing conditions of the crop, the timing and intensity of subsequent rainfall, condition of pasture and animals prior to ashfall, and availability of uncontaminated feed and water.

- Crops: roots such as sweet potato and yams are at risk, however the biggest impact is to fruit and vegetable (banana, pineapple, watermelon and tomatoes) crops across the archipelago.
- · Saltwater inundation: increased soil salinity is expected to delay agricultural recovery.
- Livestock plays an important role in the social, cultural and economic environment of Tongan communities. Many of the important social and cultural events in island life cannot be properly carried out without the slaughter and presentation of livestock in sufficient numbers.
- Infrastructure: Addressing basic infrastructure needs is essential for rural communities, to support their subsistence farming and the development of small-scale commercial activities. Moreover, the competitiveness of import substitutes and export products is linked to inland and inter-island transportation availability and costs.





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