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Tuvalu, Factor 5: Climate Volatility

## **Tuvalu:**

Britanica identify's Tuvalu as an island located in the South Pacific Ocean, halfway between Hawaii and Australia. It's the fourth smallest nation in the world, with a size of about 10 square miles. Tuvalu was formerly known as Ellice Islands, a previous British colony gaining independence on October 1st, 2018. The archipelago of Tuvalu consists of 6 coral atolls and 3 reef islands. The nation of Tuvalu has a population of about 11,000 people; with about 6,000 people living on the main island of Funafuti. Tuvalu sits about 15 feet above the ocean, a victim of climate change. Actually, climate change is one of the major threats that Tuvalu faces. Within decades the islands of Tuvalu may face extinction, completely disappearing or becoming inhabitable due to rising sea levels and deadly storms. The rising waters also create issues in the Tuvalu's Agriculture sector, making it difficult to farm. The impact of climate change can be found in everything from the economy to daily life. Tuvalu as a nation, also depends heavily on foreign assistance from other countries, such as Australia and New Zealand to name a few. Climate volatility is a major problem Tuvalu has to face. What is climate volatility? Climate volatility is the change that occurs in climate conditions and weather patterns, dramatically and on a short/long term scale. Due to climate volatility and change, Tuvalu is extremely fragile. For reference, the wet season which lasts from October to March leads to tropical cyclones which inflict extensive damage on local infrastructure, agriculture and major food sources. Then the dry season which lasts June to September introduces an increasing number of droughts which contribute to the depletion of freshwater sources available. Adding to that, saltwater intrusion caused by rising sea levels and pollution have made groundwater resources unsuitable for human consumption. Tuvalu relies on rainforest water as their main source of freshwater. Rising sea levels combined with extreme weather events is contributing to an increase of flooding in low lying areas. Coastal erosion is also a major problem in Tuvalu. Since most Tuvaluans live within coastal areas, more stress is being placed on the already vulnerable and fragile marine ecosystem. Rising sea temperatures are also contributing to coral bleaching and decreasing marine productivity. With this in mind, it should be easier to understand the problem climate volatility and change presents to Tuvalu.

### 1. Overview of Tuvulaun Life

Tuvalu is one of the smallest countries in the world, it also has a small population. According to the World Factbook (CIA), as of 2019, the population of Tuvalu is estimated to be 11,448 people, leaving it as one of the least populated countries in the world. Tuvualans make-up 86.8% of the ethnic groups in Tuvalu, with 5.6% Tuvaluan/I-Kiribati, 6.7% Tuvaluan/other , and 0.9% other making up the rest of the ethnic groups. The total median age is 26.6 years; the median age for males being 25.6 years while the median age for females is 27.6 years. Religion is an important aspect for many Tuvaluans; 92.4% Tuvaluans are Protestant (Congregational Christian Church of Tuvalu 85.7%, Tuvalu Brethren Church 3%, Seventh Day Adventist 2.8%, Assemblies of God .9%). The other 7.6% of Religions practiced in Tuvalu are Baha'i (2%) , Jehovah's Witness (1.3%), Mormon (1%), none (0.2%), and other (3.1%). The Congressional Christian Church of Tuvalu is very involved with the Tuvulaun community. The Church of Tuvalu performs services on important national events and festivals. Each of the country's islands have Alikis, who are traditional chiefs and members of the Church of Tuvalu that are responsible for overseeing church duties on their respective islands. The official languages of Tuvalu are Tuvaluan and English with Samoan and Kiribati (on the island of Nui) also being used. About 6,152 (53%) of all Tuvaluans live on

the main island, Funafuti, while the rest are spread across the other islands. The people of Tuvalu have a very tight-knit community, most Tuvaluans live together with extended family.

Tuvalu's economy is relatively undeveloped. Due to the nation's climate and environment, there are very few natural resources available. A majority of their economy is based on subsistence farming, fishing, and informal economy. Subsistence agriculture and fishing remain the primary economic activities. The government has traditionally controlled many of the main economic sectors and played a major role in the economy. The Tuvulaun government has also privatized a significant portion of functions in the economy along with other reforms, all in means to improve the economy. Healthcare in Tuvalu is funded by the government, with free preventive and primary care, medication and hospital stay provided to all Tuvaluans. In fact, Tuvalu's legislation actually prohibits any private healthcare facilities and pharmacies Princess Margaret Hospital, located on the main island of Funafuti is the only hospital in Tuvalu. The hospital provides basic primary care, dental and pharmaceutical services. Tuvalu also has nurses who can provide primary and preventative care. two healthcare clinics on the main island and eight health centers that serve the outer islands.

Most Tuvaluans are in some way related to one another and know each other's general kinship ties. Households are shared by the extended family. Women cook, feed the livestock, make household items such as mats and thatched roof panels, see to the needs of the family, and work in the pulaka (swamp taro) pits. Men fish, help in the pulaka pits, and are responsible for agriculture. Mothers are often responsible for disciplining their children, but fathers intervene when matters are serious. The elderly are usually cared for by their children and often help raise their grandchildren. Grandparents are considered the most qualified to raise children and teach them how to behave in culturally required ways; with all family decisions being approved by them. The typical fale (house) is a rectangular structure made of timber posts from matured coconut stumps, which support a pandanus thatch roof that covers a loose coral floor (concrete in some homes). The floor is elevated above a coral foundation and is made comfortable by rough coconut-frond mats under fine pandanus mats. The home is fitted with woven coconut-frond shutters that are lowered when it rains. Education is free and mandatory for children between the ages of six and 15. Youth are required to attend school until at least the age of ten for males and eleven for females.

The Tuvaluan diet consists of pulaka, futi (plantains or cooking bananas), fuaga mei (breadfruit), cooked or raw fish, pork, chicken, crayfish, and local vegetables like laulu (spinach). Many dishes are prepared in lolo (coconut cream). Tropical fruits like oolesi (papaya) and bananas are eaten. Foods are normally steamed, boiled, or roasted in a ground oven. Tuvaluans quench their thirst by drinking pi (coconut milk). Lots of imported food like flour, sugar, rice, corned beef, and tea to name a few are also a part of the Tuvaluan diet.

## 2. The Challenge

Since the average Tuvulaun diet is generally based on the food crops able to be grown and the marine environment; it is severely impacted by climate volatility and change. As more severe cyclones, storm surges, coral reef bleaching and acidification and drought; the more inhabitable Tuvalu becomes. One of the biggest issues, saltwater intrusion, affects the soil in Tuvalu and kills many crops in the process. Climate change and volatility is also contributing to an increase in salinity besides contributing to rising

sea levels. For example, the pulaka pits that many Tuvualans work in are one of many that die as more and more saltwater intrudes into the soil available. Issues with climate also impacts the financial security of the nation as less and less locally grown food is able to be farmed and exported. This also leaves many Tuvaluans who have started relying on much more imported food (rice, corned beef, salt beef, sugary products etc) as locally grown vegetables and fruit become harder to grow and fish become more scarce. According to the Borgen Project, “imported rice makes up more than 34% of the food consumed, coconuts make up 19%, white sugar makes up 17%, and fish make[s] up 7%,” with Tuvualans eating only about “one-fourth of the recommended intake of fruits and vegetables per day.” Tuvalu’s food production and ability to be inhabited is severely impacted by the issues climate volatility and change has created. Tuvalu has already been greatly impacted by these issues, in 1992, Cyclone Nina, created storm surges and seawater flooding on the islands of Nanumea, Nanumaga, Niutao, Nui and Vaitupu which has lead to the saltwater contamination of the islands vegetation. Meaning that many things were killed through this saltwater contamination. It can easily be understood that climate volatility and climate change pose a major threat to sustainable agriculture, which impacts daily life, the economy, and in general, the whole nation.

### 3. Solutions

There are a few ideas that come to mind that can greatly impact Tuvalu positively. Simply put, an increase in foreign aid and awareness of the immediate impact climate change and volatility has on Tuvalu, an increase in contributions and education from non-government organizations (NGO) and more digital access can contribute towards a better Tuvalu.

As stated in the 2017 Tuvalu Population and Housing Mini-Census, the ‘Tuvalu Agriculture Strategic Marketing Plan, 2016 – 2025’ identified six key objectives for the agriculture sector, including:

1. Increase local food consumption and decrease reliance on imported food;
2. Generate foreign exchange earnings by exporting prime local products;
3. Revive traditional integrated organic farming practices and consequently increase land productivity;
4. Preserve and breed more climate-resilient traditional food crops and tree varieties by cultivating them with innovative crops and trees that are bred to be more resilient to climatic changes;
5. Increase knowledge and awareness of the benefits of local food; and
6. Increase the sale of local produce and quality traditional handicrafts in Tuvalu.

All of these objectives can be aided by foreign aid, contributions and education from non-government organizations (NGO) and more digital access. For instance, foreign aid has been given to Tuvalu from Australia’s Department of Foreign Affairs and Trades (DFAT). According to DFAT, Australia pledged to spend \$500 million over five years (2020-2025) to strengthen climate change and disaster resilience in the Pacific at the 2019 Pacific Islands Forum (which was built off of a prior commitment of \$300 million from 2016-2020). Australia is a great example of the government providing foreign aid and helping their neighbors. Even now, amidst a global pandemic, the Tuvalu Food Futures Project Phase 1 (\$0.8 million, 2019-2020) funded by the DFAT and being completed by Biofilta in partnership with Live & Learn (an environmental education NGO working in the Asia-Pacific Region), is establishing food gardens using Foodcube technology (wicking garden systems) to improve long-term food security in Tuvalu. This project is critical for supporting food security in Tuvalu especially during a global crisis such as COVID-19. Phase 2 of the project (\$1.7 million, 2020-2021) is expanding the work to two outer islands; Nukufetau and Nukulaelae with additional Foodcubes for Funafala. This is giving Tuvaluans

opportunities to grow vegetables and other staples through regenerative farming by learning effective ways to develop compost and rainwater harvesting; combating the challenge of inadequate soil and water scarcity. So far this project has been successful in its initial trial and is now being implemented in a larger installation in Fongafale and at the University of South Pacific. This is just one of many examples of funded foreign aid projects making a difference.

As said earlier, an increase in contributions, education, and awareness through foreign aid, NGOs, and digital access can significantly help Tuvalu survive and battle food security issues caused by climate volatility and climate change on a broader scale.

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