Michael Laumbach
Academy for Allied Health Sciences
Scotch Plains-Fanwood, NJ
Nauru, Dietary Diseases

Creating Agricultural and Social Change in Nauru to Prevent Dietary Diseases and Obesity

Nestled in the blue expanse of the Pacific is a single raised coral island, one of many. This one, in particular, is special, however, as it holds the people, culture, and government of an entire nation. Unlike neighboring Pacific Islander states, this nation is not a collection of islands, but just one: Nauru. This tiny slice of the Earth is remarkable in more ways than one, especially in terms of the resiliency it's people have shown. This island had to endure years of colonialism, under many different flags, before finally gaining its own in 1966. Yet it was able to prosper on its own for quite some time, retaining economic and political independence. Unfortunately now in this 21st century, Nauru finds itself seemingly stuck in a rut and increasingly propped up and reliant on the whims of foreign powers. The nation is plagued by multiple problems, from the political to the economical, yet one issue stands out amongst the rest as the most pressing matter. It is that Nauruans today are some of the unhealthiest people in the world. Nauru suffers from by far the highest rates of obesity and other dietary diseases in the world, with an average BMI of a staggering 32.5. This tragedy should not be allowed to continue, nor does it have to, especially when there are ways through good policy and action to bring healthy sustainable change. The keys to reversing the obesity epidemic lie in the proper education of healthy living and sustainable agricultural practices. Efforts need to be taken to change public perception of obesity and increase understanding of its danger. In addition, the island needs to achieve self-sustainable agriculture so that it can provide the fresh produce it's citizens direly lack. Finally, when fresh produce can not be provided as such, it is critical that the nutritional value of imported food be greatly improved. Through such initiatives Nauru can be an example for other beleaguered nations, a shining city upon a hill, to bring about a global green revolution.

To understand the situation in Nauru, one must go back to the 70s. During this time, the Nauruan economy was booming. The reason: Phosphate mining. Phosphate mining is a controversial subject topic in Nauru. It brought unmatched prosperity, making Nauru for a while the richest nation in the Pacific, despite being the smallest. Though, the industry would soon prove to be more harm than good. The phosphates were a finite resource, but the environmental degradation, and in ways the social degradation, the practice wrought would prove permanent. As the phosphate profits dropped, the ills the industry wrought would only be exacerbated. For one, the industry triggered a population boom. While a positive in most situations, on a small island of only 21 square kilometers, it creates extreme pressure on the coastal fringe, which is currently the only space available for housing and agriculture (Commonwealth). In addition, phosphate mining has the result of degrading a once lush tropical island to a barren rocky wasteland. Extensive phosphorus mining has left only 20% of the land suitable for agricultural use, meaning only about 4 square kilometers of the island is arable, but this estimate is further reduced by the fact that (Commonwealth). This leaves Nauru in a difficult position. With such a large population, but lacking an agricultural base to feed it, Nauru relies heavily on imported food. Yu-Xing (Grey) Ding, a veterinarian part of the Taiwan Technical Mission (an effort to develop home gardening

and build animal farms), states, “Compare with where I am from (Taiwan), I would say the cost of food or beverage here is 2-3 times higher. More than 90% of goods in Nauru were imported from Australia, Fiji, or other Pacific countries,”(Nauru.sk). Importing a majority of food is expensive, so Nauruans make up most of their diet with cheap foodstuffs, such as canned goods. These foods are high in salt, fat, and sugar, and so contribute to the growing burden of dietary disease in the nation.

The beginnings of the slippery slope towards obesity could be seen as far back as the mid-1900s. A study in the 1980s found that “previous morbidity and mortality data on the Nauru population revealed no evidence of significant problems from hypertension, diabetes, or coronary heart disease until after the World War II. Even during the 1950s, infection (especially tuberculosis) was the major cause of death.” and that “Historical evidence suggests that the move from the traditional diet of coconut products and fish to a reliance on store foods became significant by the mid-1920s.” and led to a diet dangerously high in salt and fat (Taylor). This trend caused not only the disappearance of traditional farming techniques but also a dangerous normalization of obesity. Obesity in Nauru is the highest in the world. A Nauru governmental NCD Risk Factor report in collaboration with the World Health Organization (WHO) found that “About 96.9% of the population consumed fewer than 5 combined servings of fruit and/or vegetables per day. The majority of the surveyed population (82.2%) was overweight or obese, and the obesity rate was 58.1%,” (Bacigalupo). High obesity rates are coupled with an increase in early-onset dietary diseases, seeing as most Nauruans are developing diabetes at a young age and have a long duration of diabetes. While no doubt a result of reliance on unhealthy imports, a large part of the problem is rooted in the perception of obesity by the majority of the population. The same study found that obesity was not viewed as a health risk, but rather an indicator of health. Furthermore, it was found that sections of their society could view obesity to be a positive attribute and an indicator of a person's 'quality' (Bacigalupo). These revelations set a dangerous precedent. Obesity is not just a product of a ruined economy but ingrained within the very fabric of society. While changing societal attitudes has proven to be difficult, it is doable and critical in a situation like this one. The solution lies in schooling. As mentioned, poor health is starting at a very young age, but young people have the greatest ability to change. The WHO recommends a phased approach which, “starts by regulating the school environment and its immediate environs, and gradually expanding to the national scale,” (Foster). These efforts to increase awareness through schooling would have the effect of creating a new generation of Nauruans who retain their customs and values, but with a newly ingrained knowledge of the dangers of obesity. Another reason obesity needs to be curbed is the cost it and other dietary diseases incur. The estimated annual national cost of diabetes by the Nauru government was AUD1.2 million, approximately 20% of the respective government’s annual health care expenditure. Additionally, high unemployment and relatively low income per capita in Nauru mean any out-of-pocket expense incurs a significant financial burden (Win Tin). However, educating citizens about the dangers of diabetes will only shift this cost. Healthier imports would be more costly and offset any reduction in costs and would more likely than not prove more expensive for the government and families. Therefore, the second root of the problem must be addressed: the lack of local, sustainable agriculture.

The only way Nauru can truly and absolutely free itself the burden of poor health and diet is with the creation of its own sustainable agricultural system. One method is education. As aforementioned, education is the most potent way to change a society, as each generation has the

capability to build on previous change. In addition, education is the best way to address the social degradation that has occurred in terms of farming. Due to the long-time shift towards imported foods, many natives have forgotten traditional farming methods and the amount of farming taken place on the island is exorbitantly low, even taking into account the limited land. Education initiatives, such as the Household Food Garden Development Project focus on encouraging school children, young people, and willing individuals to start small scale horticulture which will give their families a variety of food crops (Commonwealth). It is hoped that this will set an example to others and help to combat rising obesity and high-cholesterol levels amongst the population. These efforts should be doubled down on, and encouraged, to usher in a new generation of educated Nauruan farmers. The government also has other plans to develop sustainable agriculture, which it lays out in its 2005-2025 National development strategy. The short term goal is a Nauruan diet is sourced from locally produced food and the plan is to do so through increased levels of domestic agricultural production initiatives such as kitchen gardens, fish farms, milkfish, and yabbie ponds to reduce dependence on imported food and to address food security (National Sustainable Development Strategy). However, these initiatives are lackluster and more drastic measures should be taken to bring about a quicker, permanent change. They also fail to address the limit environmental degradation has placed on the island's agricultural capabilities and do not suggest any revolutionary efforts that could be taken to overcome this limitation. For one kitchen gardens and fish farms are good enough initiatives for most nations, but for a nation as small as Nauru, this is needlessly separating a process which could be coupled together. Aquaponics would not only produce vegetables and the Nauruan staple of fish but would need no arable land. Aquaponics is the process of combining conventional aquaculture (which would include fish and yabbies) and hydroponics (the cultivation of plants in water). The process of aquaponics has already been implemented successfully in poorer communities for the purposes of sustainable livelihoods. A Food and Agricultural Organization (FAO) study into small scale implementation of aquaculture around the world found that "aquaponics could play an important role in securing food and livelihood in many areas across the world. The production of fish and plants with small plots allows vulnerable people to produce income, adds value to household work and empowers women at the community level," (Somerville). Though aquaponics would have the effect of killing two birds with one stone, it would still not be enough to totally sustain Nauru's population. Nauru is a small island, meaning most agriculture initiatives will be limited by a lack of space. But, there is one way that Nauru can build that will have no limits, and that is up. A study on sustainable food production systems found that "Solutions for improving future food production are exemplified by urban vertical farming which involves much greater use of technology and automation for land-use optimization. The vertical farm strategy aims to significantly increase productivity and reduce the environmental footprint within a framework of urban, indoor, climate-controlled high-rise buildings," (Benke & Tompkins). Instead of replacing those households located on arable land with farms, efforts should be taken to upgrade those households into 'farms' themselves. Vertical farming itself is the practice of producing food and medicine in vertically stacked layers, vertically inclined surfaces and/or integrated into other structures (such as in a skyscraper, used warehouse, or shipping container). While not as cheap a solution as aquaculture, the implementation of vertical farming would be the ultimate form of sustainability. It has already been identified as a key resource in the fight for sustainable agriculture as more and more land globally becomes inarable. Nauru's small size also allows such a program to easily sustain an entire nation. Therefore, such a project could attract many investors hoping to use Nauru as a success story to propel a new 'Green Revolution' within their own countries and abroad.

While changing Nauru from within its borders can spread a message far beyond them, so too can change beyond Nauru's borders affect the health and wellbeing of its citizens. As the bulk of Nauruans current diet is made up of foreign imports, we must also look to those nations and seek areas where they can improve in terms of food production and export to ensure that the food making it to Nauru is of good nutritional value. One nation of significant importance to Nauru, almost to the extent that one might consider Nauru wholly propped up by it, is Australia. According to data collected for the International Trade Database on Nauru as of 2017, Australia makes up 63% of Nauru's imports. However, out of all Australian imports, fresh fruit and vegetable products make up a measly 5.7% while processed foodstuffs and frozen meats make up a staggering 33% (Gaulier and Zignago). This demonstrates a clear difficulty in the transportation of foodstuffs. Food needs to be shipped between the nations and the increased travel time and energy costs translate into a much higher price upon arrival. Due to this, food that requires more energy for preservation and has a smaller transportation time window such as fresh foods and vegetables are being neglected or upon arrival are horribly expensive. Already the Australian parliament has identified problems with its current export laws and has updated them with the Export Control Bill 2017, which is set to be effective as of 2020. The bill identifies that current export policy could lead to inefficient export procedures, increase transaction costs and delay the clearance of agricultural goods for export in the longer term. As a result, the bill aims to improve the legislative framework to better support exporters and facilitate trade (Dept. of Ag. AUS). These improvements should be built on and implemented to their fullest to ensure that inexpensive fresh produce is being made available through the channel of Nauru's largest trading partner.

Many problems may plague Nauru, but her citizens remain proud and resilient. They are willing to fight for their nation's survival, so why not give them a way to do so. Through education, the nation can usher in a new generation of Nauruans more conscious of the dangers of obesity and with the knowledge to develop sustainable agricultural practices. Through said sustainable agricultural practices such as vertical farming and aquaculture, Nauru can cast off the health burden of its import-reliant diet and provide fresh produce for all Nauruans. Nauru now is the most obese per capita nation in the world, but with these efforts, it could become the least. As Yu-Xing (Grey) Ding states, "Even though there are more and more young people studying or working abroad, they still want to come back to this Pleasant Island one day." Let's make the island they return to a place they can stay, through sustainability and agricultural innovation!

Works Cited

Bacigalupo, Maree, et al. “NAURU NCD Risk Factors STEPS Report.” NAURU NCD Risk Factors STEPS Report, Nauru Ministry of Health, 2007. In collaboration with WHO and the Centre for Physical Activity and Health, University of Sydney. Web. 4 Feb. 2019.

Cestovanie, Naetoo. “How Looks Life in Nauru.” Life in Nauru | Nauru - Pacific Island, Nauru.sk, nauru.sk/life-in-nauru.php. Interview of Yu-Xing (Grey) Ding. Web. 4 Feb. 2019.

“Export Control Bill 2017.” Department of Agriculture AUS, http://www.agriculture.gov.au/market-access-trade/improving-export-legislation/export-control-bill-2017.

“Finding Agriculture Expertise in Nauru.” Commonwealth of Nations, The Commonwealth Organization, www.commonwealthofnations.org/sectors-nauru/business/agriculture/. Web. 4 Feb. 2019.

Foster N, Thow AM, Unwin N, Alvarado M, Samuels TA. Regulatory measures to fight obesity in Small Island Developing States of the Caribbean and Pacific, 2016 – 2017. Rev Panam Salud Publica. 2018; 42:e191. https://doi.org/10.26633/RPSP.2018.191 Web. 4 Feb. 2019.

Guillaume Gaulier & Soledad Zignago , 2010. "BACI: International Trade Database at the Product-Level. The 1994-2007 Version," CEPII Working Paper 2010- 23 , October 2010 , CEPII.

Kurt Benke & Bruce Tomkins (2017) Future food-production systems: vertical farming and controlled-environment agriculture, Sustainability: Science, Practice and Policy, 13:1, 13-26, DOI: 10.1080/15487733.2017.1394054 Web. 4 Feb. 2019.

“Nauru.” The Commonwealth, The Commonwealth Organization, thecommonwealth.org/our-member-countries/nauru. Web. 4 Feb. 2019.

“Nauru: National Sustainable Development Strategy 2005-2025.” Nauru: National Sustainable Development Strategy 2005-2025, Nauru Government, Development Planning and Policy Division, Ministry of Finance and Economic Planning, 2005. Web. 4 Feb. 2019.

Somerville, C., Cohen, M., Pantanella, E., Stankus, A. & Lovatelli, A. 2014. Small-scale aquaponic food production. Integrated fish and plant farming. FAO Fisheries and Aquaculture Technical Paper No. 589. Rome, FAO. 262 pp Web. 4 Feb. 2019.

Taylor, R, and K Thoma. “Mortality Patterns in the Modernized Pacific Island Nation of Nauru.” American Journal of Public Health, vol. 75, no. 2, 1985, pp. 149–155., doi:10.2105/ajph.75.2.149. Web. 4 Feb. 2019.

Win Tin ST, Iro G, Gadabu E, Colagiuri R (2015) “Counting the Cost of Diabetes in the Solomon Islands and Nauru.” PLoS ONE 10(12): e0145603. doi:10.1371/journal.pone.0145603 Web. 4 Feb. 2019.