

# Positive Peace and Food Security in Guam

Christie Nicoson

Rotary Peace Fellow, Uppsala University Rotary Peace Center

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## Abstract

Worldwide, about one in nine people are undernourished. They are food insecure, or unable to have sustained access to enough nutritious food. Food insecurity can contribute to instability or violence. Meanwhile, food security can boost a community's resilience and contribute to positive peace, or the greater well-being of society beyond an absence of violence.

The Pacific region faces particular obstacles to achieving food security, including a growing population, effects of climate change, and governance struggles. This case study explores food security in Guam and aims to contribute to a more holistic understanding of food security there. Interviews conducted with people involved in different types of local food initiatives – farmers, teachers, vendors, and activists – seek to highlight motivations for, challenges, and impact of local food on the food security situation. Concluding recommendations explore how strengthening local food initiatives can contribute to positive peace on the island, enhancing the well-being of society as a whole.

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## Executive summary and key recommendations

According to the Food and Agriculture Organization of the United Nations, about 795 million people worldwide are undernourished.<sup>1</sup> There are significant challenges for achieving food security, which exists “when all people, at all times, have physical, social, and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.”<sup>2</sup> *Availability, access, utilization, and stability* make up the four key pillars of food security. Food insecurity may contribute to the likelihood of instability or violence,<sup>3</sup> while food security can contribute to a community’s resilience and to well-being at the national, community, household, and individual levels.<sup>4</sup> The ability of people to have sufficient food contributes to positive peace, or the greater well-being of society beyond an absence of violence.

The many islands and nations that make up the Pacific region face particular obstacles to achieving food security. Population, climate change, and strong governance have been identified as primary concerns. On the Pacific island of Guam, other challenges include high food prices, disproportionate amounts of imported food, and vulnerability to impacts of climate change and weather patterns. Food availability in Guam is largely contingent on conditions favorable to imports, including in policy, weather, and trade. Furthermore, lack of accessible nutritious food options and widespread preference for diets high in processed foods contribute to a public health crisis.

This study aims to gather anecdotal evidence about food security in Guam. It draws on existing data in order to understand a holistic view of the island’s food security situation and compiles interviews with individuals involved in a number of local food initiatives, including organizations, farmers, educators, and vendors who are working to support local farmers and strengthen the presence of local food in people’s shopping habits and diets. Specifically, this study examines food security in relation to Guam’s prospects for positive peace. The case study is designed to highlight the goals, impacts, and challenges for local food initiatives in Guam so as to better understand food security in the context of positive peace.

Key findings from this case study show that local food initiatives are mostly focused on health, market conditions, and weather events. Goals and impacts as stated in interviews often reflect focus on improving health as well as contributing to import substitution or strengthening the local economy. Challenges include high costs for farmers, which make sales of local food less competitive with imported goods, and struggles with production due to high incidence of pests and weather events.

Recommendations of this study include the following actions to improve food security prospects in Guam:

- 1. Enhanced understanding of the situation** – Effective action around food security requires accurate and updated information. Studies, data collection, and analysis should not only be continued, but should increasingly feature collaboration between various

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<sup>1</sup> Food and Agriculture Organization of the United Nations, International Fund for Agricultural Development, and World Food Programme, “The State of Food Insecurity in the World. Meeting the 2015 International Hunger Targets: Taking Stock of Uneven Progress” (Rome, 2015), <http://www.fao.org/hunger/en/>: 8

<sup>2</sup> Anders Jägerskog and Ashok Swain, *Emerging Security Threats in the Middle East: The Impact of Climate Change and Globalization* (London: Rowman & Littlefield, 2016): 39.

<sup>3</sup> Emmy Simmons, “Harvesting Peace: Food Security, Conflict, and Cooperation,” *Environmental Change and Security Program Report* (Washington DC: Woodrow Wilson International Center for Scholars, 2013): 19-22.

<sup>4</sup> Clemens Breisinger et al., “Building Resilience for Food and Nutrition Security,” in *International Food Policy Research Institute*, 2014: 3.

community stakeholders. This would contribute to the availability of practical knowledge to better meet the needs of the community.

2. **Expanded education on nutrition** – Increased public awareness and understanding around basic nutrition and the links between diet and health are crucial to improving food security. Integrating knowledge and action around health and local food through nutrition would benefit people’s well-being and support local agriculture.
3. **Encouraging young farmers** –Education in schools and training programs to introduce young people to the farming industry and allow related practical experience are important steps toward increasing the number of local farmers and shifting the farmer demographic to include a younger population. This will also facilitate building continuity of skills and productivity and pass on local knowledge, both of which are increasingly important as the current farming population ages.
4. **Market expansion** – Opportunities for farmers to expand to supplying other sectors beyond grocery stores and farmers’ markets should be considered and could include contracts or arrangements with the tourism and military industries. The demands generated from these industries could support farmers, boosting the local food environment and economy.
5. **Improved communication and coordination** – Stronger channels of communication that facilitate sharing of knowledge, data, and resources between academics, policy makers, nonprofits, business, farmers, and other interested groups in Guam would enhance opportunities available to individual groups and the collective of local food initiatives.
6. **Targeted food accessibility programs** – Information should be gathered to assess which individuals and groups are in more vulnerable situations regarding food security. This information could inform programming to ensure that assistance programs do not reinforce harmful power structures and that healthy food is equitably accessible.

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The views in this report are my own and do not represent those of the aforementioned groups or individuals. Any mistakes or errors are my own.

# 1. Introduction

More than just providing sustenance, food brings people together, ties them to a time and place, forms culture, and shapes tradition. In modern history, humans have advanced agricultural practices, improved technology, and shaped an increasingly connected global market. Yet despite this progress, millions of people are unable to fulfill their basic food needs. Although food is recognized internationally as among the most basic rights guaranteed to all people, nearly 795 million people, one in nine people worldwide, do not have enough food.<sup>5</sup> Addressing this need is a matter of addressing adequate production and distribution and ensuring food security.

Food security is defined by the Food and Agriculture Organization of the United Nations as existing “when all people, at all times, have physical, social, and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.”<sup>6</sup> Food security is generally considered to have four key components: availability, access, utilization, and stability. These comprise a picture of food that not only includes food sources, but also equitable distribution of food, people’s knowledge of good nutrition, and the ability to sustain these traits over time.

This research aims to highlight how food security is connected to peace. The following case study report is an analysis of the food security situation in Guam. An unincorporated territory of the United States, Guam hosts multiple US military bases and the island itself has not been actively involved in war since World War II, during which time the Japanese invaded the island and the US fought to regain control. Guam is currently experiencing negative peace, that is, an absence of conflict. However, simply viewing peace as a lack of violence misses key components that make up the greater well-being of a society. There is more to peace than not fighting. Moving to look beyond the absence of violence allows a more dynamic picture of the true state of well-being. “Positive peace,” therefore, is a more useful term as it aims to understand the degree to which people are able to meet their needs and foster sustained peace. Positive peace is defined as “peace that exceeds the absence of violence, as characterized by the presence of justice, fairness, well-being in individual and group interactions.”<sup>7</sup> By examining different aspects of positive peace, it is possible to understand how food security may be an important component of this sustained well-being of society.

This report will begin in Section 2 with a discussion of how food security is related to peace and situate these topics regionally in the Pacific and locally in Guam. Section 3 will explain the research methodology used, highlight the results of a multiple-case study conducted in Guam, and provide a perspective of positive peace on the island. After discussing limitations, the report concludes with recommendations and opportunities for future work.

## 2. Context

### 2.1 History of Guam and globalization

Guam, or Guåhan in Chamorro, is a unique and interesting case for food security, particularly in light of the dramatic changes of globalization and the increased role of the military against a

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<sup>5</sup> Food and Agriculture Organization of the United Nations, International Fund for Agricultural Development, and World Food Programme, “The State of Food Insecurity in the World. Meeting the 2015 International Hunger Targets: Taking Stock of Uneven Progress”: 8.

<sup>6</sup> Jägerskog and Swain, *Emerging Security Threats in the Middle East: The Impact of Climate Change and Globalization*: 39.

<sup>7</sup> Johan Galtung and International Peace Research Institute, Oslo, *Peace by Peaceful Means: Peace and Conflict, Development and Civilization*, vol. 14, Peace and Conflict, Development and Civilization (London: GB: SAGE Publications Ltd, 1996).

backdrop of colonialism. The legacies of colonization and militarization continue to profoundly affect the current situation in Guam.

Guam, located in the north Pacific, is the largest and southernmost island of the Mariana Islands in Micronesia. Scholars estimate that migration to the Pacific Islands took place between 2,000 B.C. and 500 A.D. Chamorros, Guam's indigenous peoples, are thought to have first settled the island during this time.<sup>8</sup> Following Portuguese explorer Ferdinand Magellan's landing in Guam in 1521, the Spanish claimed Guam in 1565 and colonized the island, spreading Christianity through Catholic missionaries and using the island to benefit Spanish commerce.<sup>9</sup> The Spanish occupied Guam for over 300 years, despite occasional conflicts and rebellion with Chamorros.<sup>10</sup>

The US captured Guam during the Spanish-American War, and the Spanish granted them the island through the Treaty of Paris in 1898.<sup>11</sup> During World War II, the Japanese occupied Guam for 31 months. During this time, the Japanese separated indigenous Chamorro families and subjected the people to newly imposed cultural and education systems, forced labor, incarceration, torture, concentration camps, and execution.<sup>12</sup> This occupation is thought to have resulted in the killing of as much as ten percent of Guam's population.<sup>13</sup> The US recaptured the island in 1944.<sup>14</sup> In 1950, the Guam Organic Act established Guam as an unincorporated organized territory of the US, making it one of the world's current seventeen non-self-governing territories classified by the United Nations and subject to the decolonization process.<sup>15</sup>

The Post-War period that followed brought many changes to the island: per capita incomes increased and modern shopping centers, churches, and infrastructure were constructed. Guam also made strides toward greater self-governance.<sup>16</sup> A growing population has also impacted current affairs in Guam. Population growth rates continue to increase annually. The population growth rate between 1990 and 2000 was 1.4 percent.<sup>17</sup> The 2010 Census counted a population of 159,358 people, a 2.9 percent growth rate from 2000.<sup>18</sup>

These changes have had other profound effects in Guam's development. Tourism has grown to become a major economic sector. According to Guam Visitors Bureau (GVB), tourism in Guam generates \$1.4 billion annually. The sector accounts for 60 percent of Guam's business revenue each year and employs 31 percent of the island's non-federal workers. The majority of visitors come from East Asia: 71 percent from Japan, with growing numbers from Korea and Taiwan. In 2012, there were over 1.3 million arrivals and projections for 2020 forecast two million visitors.<sup>19</sup>

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<sup>8</sup> Paul Carano and Pedro C. Sanchez, *A Complete History of Guam*, 9th ed. (Rutland and Tokyo: Charles E. Tuttle Company, 1982): 16-17.

<sup>9</sup> Ibid, 39, 44; 62

<sup>10</sup> Ibid: 61-87.

<sup>11</sup> Robert F. Rogers, *Destiny's Landfall: A History of Guam* (Honolulu: University of Hawaii Press, 1995).

<sup>12</sup> Carano and Sanchez, *A Complete History of Guam*: 267-290.

<sup>13</sup> Werner Gruhl, *Imperial Japan's World War Two, 1931-1945* (Transaction Publishers, 2007).

<sup>14</sup> Carano and Sanchez, *A Complete History of Guam*: 293-309.

<sup>15</sup>United Nations General Assembly, "Information from Non-Self Governing Territories Transmitted under Article 73e of the Charter of the United Nations, Report of the Secretary-General" (United Nations, 2015), <http://www.un.org/en/events/nonselfgoverning/nonselfgoverning.shtml>.

<sup>16</sup> Carano and Sanchez, *A Complete History of Guam*: 396-398.

<sup>17</sup> Bureau of Statistics and Plans, "Guam's Facts and Figures at a Glance 2013" (Hagåtña: Office of the Governor of Guam, 2014).

<sup>18</sup> United States Census Bureau, "Guam Demographic Profile Summary File: 2010 Census of Population and Housing," March 2014.

<sup>19</sup> Guam Visitors Bureau, "Vision 2020" (Tumon: Guam Visitors Bureau, 2014).

Another major economic sector is the US military, which has come to dominate the island both in physical and economic presence. The island economy is heavily dependent on the US military<sup>20</sup> and 28 percent, or roughly one-third, of the landmass is occupied by the military, as shown in Figure 1.<sup>21</sup> The military is a major employer, and recruitment programs start in high school. Guam's enlistment rate is among the highest in the US. In 2007, it reportedly ranked first among 54 states and territories in recruiting success in the Army National Guard.<sup>22</sup> Though there are many factors contributing to this, the heavy involvement with the military can be partly attributed to the experience of World War II that persists in living memory, as well as to economic necessity. In 2010, 25 percent of the population was considered poor.<sup>23</sup> Joining the military provides not only income, but also access to the military's base infrastructure, including hospitals, schools, and grocery stores with more affordable rates than most public facilities. According to a recent news article, Guam currently hosts six thousand military personnel and an expansion plan set for 2022 would bring an additional 5,000 marines and 1,300 dependents.<sup>24</sup>

**Figure 1: Military Presence in Guam**  
(Map: The Guardian, 2016)



Though the people in Guam are US citizens, they are denied a vote in presidential elections and lack full political representation in US Congress. Guam is allowed to elect a “delegate,” or a non-voting member, to the US House of Representatives.<sup>25</sup> The political status also affects the economy. For instance, the Merchant Marine Act of 1920 (P.L. 66-261), more commonly known as the Jones Act, regulates commerce by requiring that all goods or passengers transferred on ships between US ports – like Guam – must be carried on US-flag ships that are constructed in the US, owned by US citizens, and crewed by US citizens and US permanent residents.<sup>26</sup> The Jones Act is said to be important to supporting economic interests of the US shipping industry<sup>27</sup> and protecting national security.<sup>28</sup> However, the Act severely limits the goods that can be brought into the country. The constricted nature of the market imposes prices on the people of Guam that far exceed that of not only those on the continent but also neighboring islands, as explained later in this report.

<sup>20</sup> Natividad and Gwyn Kirk, “Fortress Guam: Resistance to the US Military Mega-Buildup,” *The Asia-Pacific Journal*, Japan Focus, 8, no. 19 (May 2010): 4.

<sup>21</sup> John Letman, “Proposed US Military Buildup on Guam Angers Locals Who Liken It to Colonization,” *The Guardian*, August 1, 2016.

<sup>22</sup> Natividad and Kirk, “Fortress Guam: Resistance to the US Military Mega-Buildup”: 5.

<sup>23</sup> *Ibid.*

<sup>24</sup> Letman, “Proposed US Military Buildup on Guam Angers Locals Who Liken It to Colonization.”

<sup>25</sup> United States House of Representatives, *48 USC Ch. 16: Delegates to Congress, Title 48 – Territories and Insular Possessions, Title VII, § 712, 122 Stat. 868*, vol. 48 USC 1752, 2008.

<sup>26</sup> United States Senate, *Merchant Marine Act, 41 Stat. 988*, 1920.

<sup>27</sup> Chris Jennewein, “Hunter Named ‘Champion of Maritime’ For Support of Shipbuilding,” *Times of San Diego*, September 30, 2015, <http://timesofsandiego.com/politics/2015/09/30/hunter-named-champion-of-maritime-for-support-of-shipbuilding/>.

<sup>28</sup> Daniel Gouré, “The Jones Act and Homeland Security in the 21st Century” (The Lexington Institute, July 2016), <http://lexingtoninstitute.org/wp-content/uploads/2016/08/Jones-Act-and-Homeland-Security.pdf>.

## 2.2 Food security, conflict, and peace

### 2.2.1 Food and conflict

Researchers with the International Food Policy Research Institute state “most wars of the late 20<sup>th</sup> century and early 21<sup>st</sup> century are ‘food wars,’ meaning food is used as a weapon, food systems are destroyed in the course of conflict, and food insecurity persists as a legacy of conflict.”<sup>29</sup> The connection between food and conflict is not surprising. Food is a basic necessity and scarcity or threats to access have serious repercussions on peoples’ lives. The connection works both ways: food insecurity can be both a cause and consequence of conflict.

Conflict may cause food insecurity in a number of ways, affecting all four aspects of food security: availability, access, utilization, and stability. Fundamentally, conflict affects availability of food through:

1. Disruption of food production;
2. Interruption of food delivery in both markets and humanitarian assistance;
3. Harm to investment in food systems by diverting funds; or
4. Destruction of food and related assets, such as equipment, livestock, seeds, and food stocks, harming both immediate and future food-production capabilities.<sup>30</sup>

As this list demonstrates, violence or unrest can disrupt production and market flows or destroy infrastructure that is crucial to the food system. People may be prompted to take preventative action in the face of such difficulties, withholding funds or resources they might otherwise invest in food and agriculture. These diminishing investments or withdrawal from the sector can reduce household income as well as food availability and accessibility.<sup>31</sup> In addition to affecting availability, conflict also disrupts and impacts access, utility, and stability of food systems, thus contributing to greater food insecurity.

Food security can also play a role in triggering conflict. Food can contribute to conflict through causing or perpetuating:

1. Extreme and sudden rises in food prices, as seen in food protests, riots, and other forms of unrest;
2. Competition for scarce resources, such as water, necessary for food production;
3. Inequalities, particularly in resource-rich countries;
4. Incentives for people to join rebel groups in order to secure food or other resources for themselves or their families; or
5. Instability that sustains conflicts.<sup>32</sup>

Potential for conflict is higher when inequalities or environmental degradation, or a combination of the two, cause “extreme marginalization of large segments of the population.”<sup>33</sup> Some research suggests that such a relationship between food insecurity and conflict is conditioned by socioeconomic positioning. Unrest as a response to spikes in food prices most often occurs among more affluent groups, less so among rural, poor, or marginalized populations. Notably, food insecure communities do not always resort to violence. Such instances of conflict are more common when groups are not overly repressed and are organized sufficiently, such as through strong political leadership.<sup>34</sup>

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<sup>29</sup> Ellen Messer and Marc J. Cohen, “Conflict, Food Insecurity, and Globalization,” *International Food Policy Research Institute*, May 2006: 1–45.

<sup>30</sup> Simmons, “Harvesting Peace: Food Security, Conflict, and Cooperation.”

<sup>31</sup> Barrett, “Food or Consequences: Food Security and Its Implications for Global Sociopolitical Stability”: 9-11.

<sup>32</sup> Simmons, “Harvesting Peace: Food Security, Conflict, and Cooperation:” 19-22.

<sup>33</sup> Messer and Cohen, “Conflict, Food Insecurity, and Globalization”: 15.

<sup>34</sup> Messer and Cohen, “Conflict, Food Insecurity, and Globalization.”

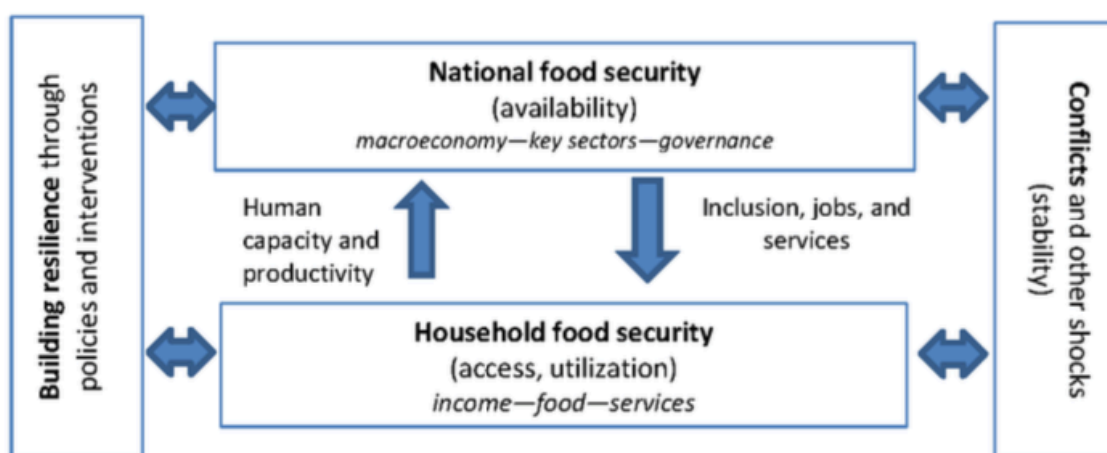
Although food is not found to be a direct cause of conflict, it is certainly an aggravating factor. Other factors, such as high unemployment, rapid urbanization, or government instability also contribute to vulnerability and could impact both food insecurity and conflict. Although a causal link is not possible to prove at this point between food and conflict, it is important to note that the relationship between the two can be observed both in research and as experienced by people in their daily lives.

### 2.2.2 Food and peace

Previous findings show that food, as essential to human life, is a potential contributor to conflict. Likewise, it can be a powerful means to promote peace. When food is approached with a civic perspective, it stands to be a force for fostering resiliency and sustainable positive peace.

Resilience is defined as a country or household’s ability to “prevent, anticipate, prepare for, cope with, and recover from conflicts,” such that they are better able to grow after a conflict, not simply survive one.<sup>35</sup> This enables a community to support itself in a way that will foster greater well-being and positive peace, such as through support for and promotion of adequate education, health care, and governing institutions. Figure 2 illustrates interdependencies of food security, conflict, and resiliency. This framework takes national food security as the “availability” pillar – dependent on a country’s ability to provide adequate food for all people. National-level food security depends on a country’s macroeconomic stability, sector policies, and governance. This entails not only an economic equality dimension, but also the ability of citizens to actively participate in the governing process, and for people to equitably access necessary services.

**Figure 2: The conflict resiliency-food security framework** (Image: Breisinger, 2014)



Household food security, meanwhile, here supports the “access” and “utilization” components of the term, in line with the FAO definition of food security that “all people, at all times, have physical, social, and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.”<sup>36</sup> Resiliency at this level can be built with this component that security at the national level, or availability, does not necessarily equate to food secure households or individuals. That is, simply because food is available, does not necessarily mean that all people will have equitable access to it or be able to use food in the best or most appropriate way. Therefore, household and individual resiliency is just as crucial as resiliency at the national level.

<sup>35</sup> Breisinger et al., “Building Resilience for Food and Nutrition Security”: 3.

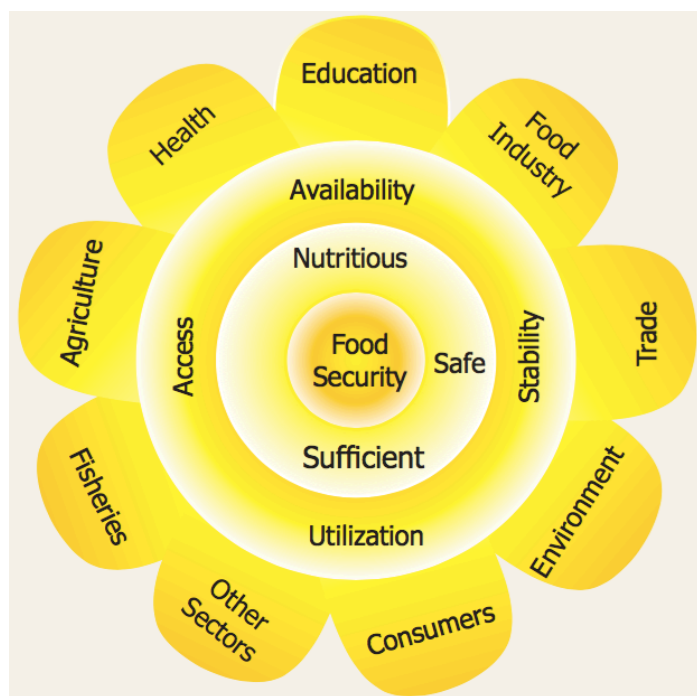
<sup>36</sup> Jägerskog and Swain, *Emerging Security Threats in the Middle East: The Impact of Climate Change and Globalization*: 39.



## 2.3 Food security in the Pacific

Traditionally, Guam and other Pacific islands were self-sufficient. They achieved food security through sustainable agriculture, fishing, and harvesting local produce. Increasingly, imports have provided for the majority of food needs, though often with lower quality substitutes for locally grown and produced foods.<sup>37</sup> This, along with many other inter-related factors, affects the state of food security. Figure 3 presents a model for the various components and influencing factors of food security. These sectors, groups, and circumstances represent the main impacts on food supply and demand, affecting overall food security.

**Figure 3: Conceptual model of food security in the Pacific**  
(Image: Food Secure Pacific Working Group, 2010)



Food security has increasingly been recognized as a challenge for the Pacific region. Leaders at the 39<sup>th</sup> Pacific Islands Forum in 2008 acknowledged “the high importance of food security as an emerging issue which poses challenges for the future well-being of people across the region” and urged high political commitment, calling on governments to take “immediate action to address food security issues nationally and, where possible, regionally through a range of measures across key sectors such as agriculture, fisheries, trade and transport.”<sup>38</sup>

Expanding on this model, the 2010 Pacific Food Summit, highlighted three factors as specific challenges for food security in the Pacific region: population, climate change, and governance. The Pacific Food Summit first addressed the challenge posed by population, highlighting the fact that in 2010 there were 10 million people living in the region, half of who live in urban areas, with a growth rate of 4 percent a year. It was also noted that families spend a significant portion of their income, between 39-50 percent, on food.<sup>39</sup> Climate change poses a significant challenge to food security, as fisheries and farmland have been and will continue to be impacted. Changes in precipitation patterns, increased disease vectors, and loss of land all have immediate impacts

<sup>37</sup> Food Secure Pacific Working Group, “Towards a Food Secure Pacific. Framework for Action on Food Security in the Pacific: 2011-2015” (Port Vila, 2010): 7.

<sup>38</sup> Ibid.

<sup>39</sup> Western Pacific Region, World Health Organization, “Pacific Food Summit,” Meeting Report (Port Vila: World Health Organization, April 2010): 3.

on agricultural production and contribute to decreased crop biodiversity.<sup>40</sup> In addition, the World Health Organization (WHO) notes that governments will face increasingly difficult demands of managing population and climate challenges alongside while economic growth, political stability, and self-sufficiency.<sup>41</sup>

Alongside these factors, other trends emerge across the Pacific. Notably, there is an increased consumption of imported foods, both as a product and consequence of changing global food systems. An increasingly urban population has contributed to shifting societal diets toward imported and less nutritious food. The WHO also finds consistent health trends across the Pacific: 70 percent of people in the region do not consume the recommended daily servings of fruit and vegetables, and obesity and diabetes rates have risen to some of the highest in the world.<sup>42</sup> These trends of consuming more imported food and increased health risks are central to food security issues throughout the region.

## 2.4 Food security in Guam

In addition to the food security trends demonstrated to exist throughout the Pacific, the food security situation in Guam is particularly impacted by a number of highly context-specific factors. Among these factors is Guam's political status, which has contributed to the increase of cheap imported food. Imports have largely created a situation where there is enough to eat – sufficient food availability – but insufficient nutritional value. Further, adequate access and utilization components of food security are lacking in Guam. Food prices, the spread of quality nutritious food, the geographic location of major supermarkets, food assistance programs, and diets and popular consumption patterns contribute to a larger picture of poor access and weak utilization of healthy food. Climate and weather events, including effects of climate change, affect the stabilization element of food security in Guam.

### 2.4.1 Availability and access

There is no immediate shortage of food in Guam. During regular times, grocery stores are well stocked and there are a variety of options for purchasing food. Markets range from warehouse style stores and supermarkets to 'mom and pop shops', farmers' markets, and roadside produce stands (pictured: *Food availability in Guam*). Food products vary between locally grown and imported, processed foods.

Imports constitute approximately 90 percent of the food in Guam. According to recent data from the Government of Guam's Bureau of Statistics and Plans, food data for the three-year period from 2011 to 2013, estimated that annual food imports in Guam consisted of \$8.25 million in vegetables and fruits; \$41 million chicken, pork, and beef; and \$14 million fish and seafood.<sup>43</sup> This figure includes commodities for resale; it does not include military, government, promotion, or personal items. The majority of all imports (of food and non-alcoholic beverage products and commodities) are from the United States, followed by Japan.<sup>44</sup> In 2013, total imports comprised 68.1 percent and 57.7 percent of all surface and air cargo respectively, while exports made up 11.8 percent of surface cargo and 19.9 percent of air cargo.<sup>45</sup> These figures show that import commodities largely outweigh exports.

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<sup>40</sup> John Campbell and Olivia Warrick, "Climate Change and Migration Issues in the Pacific" (United Nations Economic and Social Commission for Asia and the Pacific, Pacific Office, August 2014): 2.

<sup>41</sup> World Health Organization, "Pacific Food Summit."4.

<sup>42</sup> Ibid: 3.

<sup>43</sup> Gena Rojas, Fred Schumann, and Maria Claret M. Ruane, "Guam Farmer Survey: February-April 2014," PCEI Technical Report (Pacific Center for Economic Initiatives, University of Guam, May 2014).

<sup>44</sup> Lorileet T. Crisostomo and Albert M. Perez, "Guam Import Data," External Trade Section (Hagatna: Bureau of Statistics and Plans, December 2014).

<sup>45</sup> Bureau of Statistics and Plans, "Guam's Facts and Figures at a Glance 2013."



**Food availability in Guam.** In order clockwise: 1) Locally grown produce sold by the organization Farm to Table Guam at the Mangilao Night Market; 2) a produce stand at the Saturday morning Dededo Farmers' Market; 3) canned goods at a warehouse grocery store; and 4) the grocery section in a gas station market store.



Despite high food import figures, a pilot study found that grocery stores in Guam lacked nutritious products. Based on the US Department of Agriculture's Thrifty Food Plan, a majority of stores lacked an average of five of twelve categories of nutritious foods, and only 12 percent of stores fulfilled eleven or more categories.<sup>46</sup> SNAP (Supplemental Nutrition Assistance Program) is one of the largest national programs to grant food benefits based on individual and household needs. The average benefit granted to individuals in Guam in 2014 was \$191.08, while the average for the US was \$125.01. Guam ranks second highest in the country, after Hawaii, where the average benefit amount was at \$225.38. The household averages were \$443.02 in Hawaii and \$583.75 in Guam.<sup>47</sup> Comparing prices for food, the pilot study found that food in Guam was 15 percent more expensive than in Hawaii and 49 percent higher than in the continental US.<sup>48</sup> In 2013, the average income per person in Guam was \$30,500,<sup>49</sup> while the US average was \$54,000.<sup>50</sup> Given the relatively low per capita GDP and high prices of food, it can be difficult for people to regularly access healthy food.

<sup>46</sup> The Thrift Food Plan (TFP) is a measurement of the cost of nutritious diets. The Plan serves as the basis for the US food assistance program allotments, SNAP (Supplemental Nutrition Assistance Program).

<sup>47</sup> Food and Nutrition Service, "Supplemental Nutrition Assistance Program: State Activity Report, Fiscal Year 2014," State Activity Report (Supplemental Nutrition Assistance Program, Program Accountability and Administration Division, United States Department of Agriculture, October 2015), [www.fns.usda.gov/pd/snapmain.html](http://www.fns.usda.gov/pd/snapmain.html).

<sup>48</sup> Rojas, Schumann, and Ruane, "Guam Farmer Survey: February-April 2014."

<sup>49</sup> Central Intelligence Agency, "United States," Government, *The World Factbook*, accessed September 10, 2016, <https://www.cia.gov/library/publications/the-world-factbook/geos/us.html>.

<sup>50</sup> Central Intelligence Agency, "United States," Government, *The World Factbook*, accessed September 10, 2016, <https://www.cia.gov/library/publications/the-world-factbook/geos/us.html>.

Not only is the average food assistance benefit higher in Guam; a higher portion of the population depends on the assistance program. Comparing US census data and SNAP reports from 2014, Washington, D.C. had the highest percentage in the continental US, with approximately 22 percent of the population on food assistance, while an estimated 29 percent were on food assistance in Guam.<sup>51</sup> Furthermore, although food assistance benefits are accepted at some farmers' markets in Guam, anecdotal evidence shows that many SNAP beneficiaries purchase mainly nonperishable food items in large quantities. This means families dependent on food assistance purchase less fresh, healthy produce and more imported, processed foods, which affects their health. Although there are adequate amounts of food on the island, the nutritional wealth is not equitably distributed, and many households and individuals depend on government assistance to purchase basic food items. In addition to the numbers for food assistance and per capita GDP, recent data shows at least 1,745 homeless people in Guam. Over 400 of these are Chamorro and over 600 come from other islands in the Federated States of Micronesia.<sup>52</sup>

Estimating the amount of local food produced in Guam is a difficult task. The primary challenge involves counting the farms, followed thereafter by the fact that not all farms keep detailed records of their harvests. Censuses of agriculture collected by the U.S. Department of Agriculture provide at least a general picture of farms in Guam. The census defines a farm as any place "from which \$1,000 or more of agricultural products were produced and sold, or normally would have been sold, during a 12-month period." In 1993, the definition was set at \$100. The 1940 census found 2,529 farms. The 1998 census found 201 farms, approximately 65 percent of which were operated by individuals over 55 years of age,<sup>53</sup> and the census taken in 2014 totaled only 104.<sup>54</sup> These numbers are subject to some speculation, as it is often acknowledged that many farms go unaccounted for due to irregular record keeping, informal set-ups, and inconsistent communication. However, the numbers do reflect a real trend in the number of farms declining. Furthermore, the farmer population is growing older, as existing farmers age and fewer young farmers take their place. Further, the Guam Farmer Survey conducted by researchers at the University of Guam estimates that 64.62 percent of farmers gave unsold produce away, 3.08 percent threw it away, and 29.23 percent used it for personal consumption, animal feed, or other uses.<sup>55</sup> These findings show that there is great potential for increased food sales through, for example, produce marketing or production of value-added commodities.

#### **2.4.2 Utilization**

The utilization component of food security refers to whether people have the knowledge and means necessary for accessing and consuming a diet that will enable them to lead a healthy and productive life.<sup>56</sup> Health challenges in Guam have grown significantly in recent history. The Government of Guam Department of Public Health and Social Services (DPHSS) reports that Guam is facing a health crisis due to high rates of non-communicable diseases. The DPHSS and Non-Communicable Disease Consortium identify the pathway to non-communicable diseases as beginning with underlying causes of globalization, urbanization, and an aging population; aggravated by factors including an unhealthy diet; contributing to risk factors of obesity and

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<sup>51</sup> Food and Nutrition Service, "Supplemental Nutrition Assistance Program: State Activity Report, Fiscal Year 2014."

<sup>52</sup> Bureau of Statistics and Plans, "Guam Statistical Yearbook 2014" (Hagåtña: Office of the Governor of Guam, 2015).

<sup>53</sup> United States Department of Agriculture, National Agricultural Statistics Service, and Bureau of Statistics and Plans, Government of Guam, "1998 Census of Agriculture: Guam," Census, (October 2003).

<sup>54</sup> Rojas, Schumann, and Ruane, "Guam Farmer Survey: February-April 2014."

<sup>55</sup> *Ibid.*

<sup>56</sup> Simmons, "Harvesting Peace: Food Security, Conflict, and Cooperation."

high blood pressure; and leading to chronic diseases.<sup>57</sup> Heart disease, malignant neoplasms (cancers), cerebrovascular disease (such as stroke or hypertension), diabetes, and septicemia (such as life-threatening infections) made up five of the top six leading causes of death in 2014.<sup>58</sup> Life-style behaviors, including diet, have led to alarming increases in rates of diabetes, cancer, obesity, heart attacks, and strokes.<sup>59</sup> These diseases cause 58.8 percent of the overall death rate, which is 8.5 percent higher than that of the United States, as shown in Table 1.<sup>60</sup>

**Table 1: Age-Adjusted NCD Death Rates per 100,000 Population, Guam and the United States, 2010<sup>61</sup>**

|                                | Guam  | United States |
|--------------------------------|-------|---------------|
| Deaths, all causes             | 810.6 | 747.0         |
| Heart disease                  | 254.9 | 179.1         |
| Cancer                         | 133.6 | 172.8         |
| Cerebrovascular disease/stroke | 71.6  | 39.1          |
| Diabetes                       | 37.7  | 20.8          |

This data shows that people in Guam die from life-style and preventable diseases such as hypertension, strokes, heart disease, and diabetes at much greater rates than people in the continental US. Diets in Guam promote obesity, another contributing factor to these diseases, through high occurrence of fast food, processed food, high sugar, salt, trans fat, and highly saturated foods. In 2012, 32.4 percent and 29.1 percent of people in Guam were considered to be overweight and obese, respectively.<sup>62</sup> In particular, Guam childhood obesity rates are about 23 percent, compared with 17 percent in the US.<sup>63</sup> This is partly attributed to the fact that in 2009, only about 24 percent of people in Guam ate adequate servings of fruits and vegetables daily.<sup>64</sup>

Furthermore, even produce that is purchased at local grocery stores may lack nutritional value. Imported produce, which constitutes the majority of food sold in grocery stores in Guam, is harvested before it is fully ripe and is often ripened using gassing or other unnatural techniques to ensure it lasts during the shipping process and holds a shelf-life in stores.

Lifestyle is an important component in considering the utilization and health crisis in Guam. Food sharing has been and continues to be an important component of social gatherings in Guam, particularly at fiestas. Fiestas, barbecues, and other similar events take place nearly every weekend in many locations throughout Guam. These events are an opportunity for family and community members to gather or celebrate special occasions, and where food is prepared in abundance. A typical menu includes meat and fish, rice, and cakes, among other dishes. A recent study on the nutritional composition of fiestas found the fiesta menu presented high availability of food but a nutritional imbalance. The availability of food is credited to a long tradition of reciprocal behavior in Guam, extending from early Chamorro society and

<sup>57</sup> Government of Guam Department of Public Health and Social Services and Non-Communicable Disease Consortium, "Guam Non-Communicable Disease Strategic Plan 2014-2018," Live Healthy Guam (Mangilao: Non-Communicable Disease Consortium, December 2013).

<sup>58</sup> Bureau of Statistics and Plans, "Guam Statistical Yearbook 2014."

<sup>59</sup> V. Peter Roberto, Department of Health and Social Services, quoted in Western Pacific Region World Health Organization, "Pacific Food Summit," Meeting Report (Port Vila: World Health Organization, April 2010).

<sup>60</sup> Office of the Governor of Guam, "Health Revolution."

<sup>61</sup> Government of Guam Department of Public Health and Social Services and Non-Communicable Disease Consortium, "Guam Non-Communicable Disease Strategic Plan 2014-2018."

<sup>62</sup> Office of the Governor of Guam, "Health Revolution."

<sup>63</sup> Yvette C. Paulino et al., "Overweight and Obesity Prevalence among Public School Children in Guam," *Journal of Health Care for the Poor and Underserved* 26, no. 2 (May 2015): 53-62.

<sup>64</sup> Office of the Governor of Guam, "Health Revolution."

exemplified by the exchanging of food dishes and goods today, especially at fiestas. Though there is plenty of food at fiestas and other events, there is little variety or nutritional content. Most foods at fiestas were found to be high in energy, fat, and saturated fat.<sup>65</sup> The shift away from traditional foods such as breadfruit, taro, yams, and seafood toward lower quality imported food and cooking methods high in fat value affect the nutritious intake and health of many in Guam.

### 2.4.3 Stability

Finally, the fourth component of food security is stability, whether conditions of access, availability, and utilization can be sustained over time. One of the factors impacting stability in Guam is the climate. Currently, the major factor associated with climate affecting food is pest management. The climate in Guam is well suited to many types of pests and invasive species that pose a threat to crops, affecting farmers' livelihoods and food production. Examples vary from the Ageratum yellow vein virus (AYVV) that infected tomato plants in northern Guam around 2007, to the brown tree snake that arrived more than 60 years ago and effectively led to the extinction of nearly every native bird species in Guam and is projected to cause changes in tree distributions and reductions in native trees as well as power outages.<sup>66</sup>

Furthermore, climate change is affecting weather patterns and sea levels in the Pacific. Climate change will bring more frequent and intense extreme weather events and alter water and land resources, such as suitable farmland, fresh water availability, and fisheries. Throughout the Pacific, climate change is expected to contribute to an increase in tropical cyclone speed by up to 20 percent; variation in rainfall, storm and extreme weather event-related damage or destruction of farmland; as well as inundation of coasts, freshwater salinization, shifting fisheries, and increased incidence of disease.<sup>67</sup> These events will not only affect food production and storage in Guam, but will impact fuel prices and transportation of imports to the island. When Super-typhoon Pongsona hit Guam in 2002, the storm destroyed infrastructure, causing power outages, loss of water pressure, and fuel shortages. Emergency food stamps were issued for those who lost their food, including some of the more than 3,000 families whose homes were damaged or destroyed, but gasoline stocks were so low that DPHSS employees struggled to get to work and many beneficiaries could not reach the food stamp centers.<sup>68</sup> Similarly, because Guam is so reliant on imports, other events such as worker strikes, technical problems, slowed or failed negotiations, market crashes, or acts of terror could similarly severely impact the island's food security. These factors combined with Guam's increased appetite for cheap processed foods have left the island more susceptible to shocks in food and fuel prices.

## 3. Case study: local food initiatives in Guam

Although food security is a multidimensional term, this case study focuses specifically on the concept of access. As demonstrated in Section 2, availability has been the focus of a number of studies and utilization has, at least in part, been addressed by other papers.<sup>69</sup> Stability will likely be affected by increased severe weather events and other effects of climate change, which could impact both local production and imported resources. Other events, many of which might be

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<sup>65</sup> Paulino et al., "Overweight and Obesity Prevalence among Public School Children in Guam": 233–44.

<sup>66</sup> Vince Stricherz, "Brown Tree Snake Could Mean Guam Will Lose More than Its Birds," *UW Today*, August 21, 2008, <http://www.washington.edu/news/2008/08/21/brown-tree-snake-could-mean-guam-will-lose-more-than-its-birds-2>.

<sup>67</sup> Food Secure Pacific Working Group, "Towards a Food Secure Pacific. Framework for Action on Food Security in the Pacific: 2011-2015."

<sup>68</sup> Scott Radway, Mark-Alexander Pieper, and Steve Limtiaco, "Gasoline Shortage Adds to Guam's Post-Typhoon Trauma," *Pacific Daily News*, December 12, 2002, [http://usatoday30.usatoday.com/weather/news/2002-12-12-guam-gas-shortage\\_x.htm](http://usatoday30.usatoday.com/weather/news/2002-12-12-guam-gas-shortage_x.htm).

<sup>69</sup> E.g. John Connell, "Food Security in the Island Pacific: Is Micronesia as Far Away as Ever?," *Regional Environmental Change*, no. 15 (2015): 1299–1311.

more unpredictable, such as security threats, acts of terrorism, and economic slumps or crashes, also have the potential to greatly impact the food security situation in Guam, as they could affect or interrupt import shipments. Meanwhile, the matter of access requires more research and, in this report, can best be understood through a systems perspective. As outlined in Section 2, access is affected by food prices as well as inequalities, policy and political climates, location of markets and stores, and other factors.

This case study aims to enhance understanding of the multiple dimensions of food security, particularly the accessibility component. Specifically, this research is designed to highlight local food initiatives, examining goals and impacts in relation to food security, in relation to prospects for positive peace in Guam. The following sections will first explain the research methodology, including defining key indicators; second, discuss the research more broadly; and third, present the findings. These results will be further explored the recommendations and opportunities presented in Section 5, after a discussion of limitations in Section 4.

## 3.1 Methodology

### 3.1.1 Definitions

There are a number of key terms that have been used throughout the research process and feature in this report. They are defined and measured as follows:

*Food security* “exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life.”<sup>70</sup>

*Positive peace* is defined as “peace that exceeds the absence of violence, as characterized by the presence of justice, fairness, well-being in individual and group interactions.”<sup>71</sup> Positive peace is measured with guidance from the Global Peace Index (GPI), which qualifies it as “the attitudes, institutions, and structures that create and sustain peaceful societies.”<sup>72</sup> The GPI highlights eight factors that comprise this concept of positive peace, defined as:

1. **Well-functioning government:** a government that provides public and civil services, fosters trust, maintains political stability, and upholds the rule of law.
2. **Sound business environment:** economic conditions and support for private businesses are sound; business operations are regulated properly.
3. **Equitable distribution of resources:** resources are equally and equitably accessible, including healthcare, education, and wealth.
4. **Acceptance of the rights of others:** basic human rights and freedoms are not only safeguarded by laws, but also practiced and observed through social and cultural norms.
5. **Good relations with neighbors:** peaceful relations are maintained with neighboring countries.
6. **Free flow of information:** free and independent media sources allow people to access information.
7. **High levels of human capital:** the skills, knowledge, and behaviors of a citizenry.

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<sup>70</sup> Jägerskog and Swain, *Emerging Security Threats in the Middle East: The Impact of Climate Change and Globalization*.

<sup>71</sup> Galtung, *Peace by Peaceful Means: Peace and Conflict, Development and Civilization*.

<sup>72</sup> Institute for Economics & Peace, “Positive Peace Report: 2015” (New York City: Institute for Economics & Peace, October 2015).

8. **Low levels of corruption:** where corruption exists, governments work for prevention, and also strive to hold responsible parties accountable.<sup>73</sup>

Furthermore, the idea of positive peace represents society's ability to "meet the needs of citizens, reduce the number of grievances that arise and resolve remaining disagreements without the use of violence."<sup>74</sup> For this case study, specific attention was paid to the third indicator, to understand how local food initiatives affect the equitable distribution of resources. This measurement lends itself to better understanding the access component of food security.

*Local food initiatives* are each identified based on the operating individual's or group's expressed interest or active involvement in the production, processing, selling, or consumption of local food. Initiatives are furthermore classified and prioritized based on the amount of time and activities dedicated to local food, most often a full-time job. A local food initiative might, for example, be a restaurant that strives to source ingredients locally or an organization focusing on different aspects of local food education, marketing, or production.

### **3.1.2 Research design and parameters**

This research is designed as a case study with in-depth interviews to optimize learning about the multi-faceted stories behind local food initiatives, their dynamic goals, and varied methods of measuring success. The multiple case study design allows for an exploratory and interpretive approach. Opportunistic and convenience sampling techniques are used in order to take advantage of unexpected and relevant cases. This sampling technique was particularly well suited to this study because of the research's relation to the local community. Being independent and a visiting researcher lends itself to a fresh, unbiased, and neutral perspective. However, much of the networking and information sharing in Guam is informal or undocumented. For example, some businesses, organizations, or events are shared primarily through word of mouth, and might not be listed in either hardcopy, electronic, and online resources. In order to reach a representative and wider sample of local food initiatives, the researcher worked to create a network while simultaneously conducting interviews and gathering data. By first identifying the desired types of groups for contact within the defined "local food initiative," the researcher was then able to form networks and navigate among contacts to facilitate interviews with relevant and appropriate parties.

The target grounds identified for the sample within the definition of "local food initiative" include:

- Organizations (food or farm cooperatives, nonprofit organizations)
- Farms
- Educators (University research and extension service, educational farm)
- Vendors (restaurants, markets)

At least two cases were selected for each target group category. Cases were chosen based on 1) *relevance*: if the case displayed a significant interest in local food, which was measured based on their stated mission and goals, as well as the types of programs they sponsored or in which they participated; 2) *availability*: many individuals were difficult to reach due to schedule conflicts, the nature of work being conducted primarily off-line; and the researcher's restraints due largely to the brevity of the research period; and 3) *prominence*: because this study is particularly interested in larger systems at play and noticeable impacts on the community, parties that held a prominent or growing role in the community were given first priority.

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<sup>73</sup> Institute for Economics & Peace, "Positive Peace Report: 2015."

<sup>74</sup> Ibid: 9.



This study was conducted from June to August 2016 on the island of Guam. All interviews were limited to a discussion of activities on the island. Featured local food initiatives are all current and ongoing projects and all individuals interviewed are currently involved in such work.

### 3.2 Research findings

Anecdotally, food security is easily identified as an issue in Guam. Conversations around food quickly turn to a discussion of the reliance on imports or the recent changes in public health – including increased rates of obesity and diabetes – in connection with the processed foods that comprise a large part of many people’s diets. In conversations as well as throughout the case study interviews, the primary concern seems to focus on the availability and, to a certain extent, utilization pillars of food security. Meanwhile, the access component of food security is strikingly absent from most conversations, research, and programming around the matter. This gap was the driving question behind the case study research.

#### 3.2.1 Trends across and between groups

Responses during the case study interviews yielded a number of trends. These trends are particularly useful in understanding the overlaps and gaps between different sectors or initiatives happening in Guam. The trends can be classified into a few thematic areas. The areas detailed below highlight priorities suggested by the local food community, particularly as they relate to developing and sustaining positive peace. The areas of interest include market constraints for local produce, the lack of quality labor in the local agriculture sector, opportunities for improved communication among interested parties, and the need for education around nutrition related to local food. Table 2 presents the top interests comparatively across groups, according to their top goals, perceived impacts, and observed challenges.

**Table 2: Local food initiative goals, impact, and challenges**

| Group         | Goals  | Impact   | Challenges   |
|---------------|--|--|--|
| Farmers       | <ul style="list-style-type: none"> <li>• Import substitution</li> <li>• Provide healthy, quality, variety foods</li> <li>• Improve the health of the land</li> </ul> | <ul style="list-style-type: none"> <li>• Job creation</li> <li>• Providing local, natural food</li> <li>• Providing for health benefits</li> </ul> | <ul style="list-style-type: none"> <li>• Costs of farming: power and water prices, etc.</li> <li>• Competing with foreign farmers, both internationally and in Guam</li> <li>• Pests and invasive species</li> <li>• Weather and climate events</li> <li>• Politics</li> <li>• Lack of sufficient labor</li> </ul> |
| Organizations | <ul style="list-style-type: none"> <li>• Support local farmers</li> <li>• Encourage healthy eating</li> <li>• Improve the health of the island</li> </ul>            | <ul style="list-style-type: none"> <li>• Supporting the local economy</li> <li>• Supporting healthier food options</li> </ul>                      | <ul style="list-style-type: none"> <li>• Competition with import prices</li> <li>• Invasive species</li> <li>• Weather events</li> <li>• Poor communication between groups</li> </ul>  |
| Educators     | <ul style="list-style-type: none"> <li>• Import substitution</li> <li>• Improve crop production</li> <li>• Encourage self-</li> </ul>                                | <ul style="list-style-type: none"> <li>• Fostering young people’s interest in farming</li> <li>• Supporting local</li> </ul>                       | <ul style="list-style-type: none"> <li>• Climate and weather changes</li> <li>• Lack of labor</li> <li>• Heavy use of</li> </ul>   |

|         |  |  |   |
|---------|--|--|---|
|         | sufficiency for more people<br><ul style="list-style-type: none"> <li>• Encourage young farmers</li> </ul> | farmers  | chemicals on farms<br><ul style="list-style-type: none"> <li>• Poor marketing for produce</li> <li>• Loss of land</li> <li>• Weak consumer industry</li> <li>• Poor communication between groups</li> </ul> |
| Vendors | <ul style="list-style-type: none"> <li>• Encourage healthy eating</li> </ul>                               | <ul style="list-style-type: none"> <li>• Providing healthy food</li> </ul> | <ul style="list-style-type: none"> <li>• Unstable availability of produce</li> <li>• Difficult sourcing of locally grown and processed meats</li> </ul>   |

All types of local food initiatives prioritized issues related to health, market conditions, and weather events. Discussing goals and perceived impact, many interviewees highlighted their focus on and contribution to improving the health of the island. Farms, organizations, educators, and vendors all stressed both their goals and their impacts related to producing or supporting local produce in order to increase peoples’ nutrition and health.

Goals, impact, and challenges for many also focused on issues related to the import market. Import substitution was a common goal and multiple interviewees also perceived one of their greatest impacts to be related to import substitution. Their impact in supporting the local economy, whether through job creation or supporting local farmers, was repeated several times. Furthermore, multiple respondents noted challenges related to the import market, such as the struggle for local farmers to remain competitive with imports in light of the high costs they face.

Finally, challenges related to climate change and weather events also featured prominently in groups’ responses. Many interviewees cited weather events such as storms and typhoons that destroy crops, damage infrastructure and property, or hinder production, as well as changes in weather patterns and related pest issues as major challenges facing the local food community.

### *3.2.2 Potential for positive peace*

#### **1. Favorable market conditions for local produce**

Nearly all interviewees commented on the current market conditions as a barrier to increasing local food production and consumption in Guam. Many individuals estimate that local products make up less than 10 percent of what is currently sold in Guam. Farmers cannot realistically dedicate the necessary time or resources to producing at high capacity unless they are confident of a return on their investment. If there existed a greater space in the market or a higher priority on selling local food and locally produced value-added goods, farmers would be better able to increase their production.

#### *Opportunities and positive peace*

A key opportunity here is to conduct a study about market conditions and capacity. Many people reported that produce is grown in response to farmers and others’ perception of what customers look for or request. A survey would be helpful in capturing information about what type of produce is currently being produced, as well as better articulating what produce is needed and wanted in Guam to suit the economy, diet, and growing conditions, and evaluating the potential for more value-added products. Furthermore, this type of research could be expanded to help establish appropriate, standardized price lists.

Another opportunity for enhancing market conditions would be to assist farmers in expanding their options in the type of vendors they supply. There are currently several farmers' markets in Guam and many food stands selling local produce. Though some farmers already sell to local grocery stores, there seems to be strong potential for more to do so. The feasibility study might further explore such an opportunity. It will also be important for local farmers to expand beyond these outlets. For example, hospitals, schools, hotels, and the military are all large markets with significant purchasing power. Greater organization of farmers through cooperatives or other community organizations guided by reliable and recent research would be helpful in facilitating these processes.

These initiatives stand to make a substantial contribution to positive peace on the island. Greater availability of local food in the market could lead to more competitive prices. This would make healthy food potentially more accessible to larger groups of people, such as those limited to buying less expensive options. Favorable market conditions could also encourage farmers to produce not only more food, but also a greater variety of produce. More availability, choice, and reliability of local produce in stores could help create a shift in how people buy and what they eat. Presumably, this would benefit farmers' livelihoods, consumer budgets, and public health.

## **2. Sufficient labor in local agriculture**

Not only are there far fewer farms in Guam today than there were 40 or 50 years ago, but the farmer demographic is aging. Existing farmers tend to be older and there is a lack of interest or commitment among younger generations to take on farming either as a family tradition or new endeavor. This tendency has been attributed to growing jobs in the military or government, and more generally toward urbanization. More people are moving to urban areas or looking to work in office environments, rather than in farm fields.

Existing farmers also struggle to find enough quality labor to help in their fields. Several farmers and other interviewees who work closely with farmers noted that there is not sufficient quality labor available. They cited struggles to find abled individuals with strong work ethic who could adequately contribute to farm productivity. Many also noted an increasing number of foreign-owned farmers or foreign workers on farms. Interviewees noted that foreign-owned farms may not pay the same fees and dues as local farmers, such as social security taxes or a minimum wage to workers, and that they might source pesticides and other goods through unofficial channels. This is perceived to create not only an imbalanced cost scenario, but also the potential of serious risks to the environment and food safety.

### *Opportunities and positive peace*

One avenue for addressing the labor issues is through increased education. Some nonprofit organizations, community groups, and academic institutions focus on involving students and young people in the agricultural process. Weekend science programs, field trips to farms, school farming and gardening initiatives, and educational programs teaching basic nutrition represent such efforts to shift eating habits, connect young people to their land, and reintroduce an appreciation for farming. Greater support of such efforts through official channels, such as government programming, conducive policy framework, targeted grant programs, and dedicated resources could greatly improve the situation.

Involving more young people in farming and agriculture stands to contribute to Guam's overall positive peace. Such efforts could yield greater interest among young people for farm work, farm ownership or operation, support of local agriculture, and healthy and nutritious diets based on local food. In turn, such outcomes could lead to improvements in the industry, enhanced production, preservation and further development of local and traditional knowledge, circulation of money in the local economy, as well as a more diversified economy and improved

island health. Though these changes may take years to be realized, education is a crucial component of fostering the process and long-term change.

### **3. Enhanced communication among local-food interest groups**

A number of interviewees emphasized the need for better communication between the many different actors in Guam who are working in local food. Repeatedly, there was reference to the perception that different groups act either without regard for or without consultation of other related groups. For instance, the perception of programs being conducted without specific care for farmers' interests; distributors, vendors, and farmers all misunderstanding the constraints that keep them from reaching local-food goals; or grants that are received without the recipient group being fully aware of what is necessary or without being able to properly carry out the specified activities.

These perceptions were found across groups: among and within farms, organizations, educators, and vendors. Although these perceptions are not always accurate, or only partially correct, they point to a more important issue: there is room for more effective communication among local-food interests in Guam.

#### *Opportunities and positive peace*

Sharing knowledge, resources, and data among different actors and sectors could potentially reduce redundancies in work; increase all sectors' productivity, through enhanced resources and opportunities; and support more democratic decision-making and boost community support or public buy-in.

One example of this is in discussion of organic certification. Although there are a number of individuals who are trained in organic certification in Guam, there is not yet an organic certification board on the island. Without this board, produce in Guam cannot be marketed as an organic product. Perceptions vary as to whether this step is truly necessary. A study might be useful in determining whether there is a significant demand for organic produce in Guam. Further identifying key priorities for actively engaging farmers, distributors, and vendors would be essential to successfully implementing an organic certification process. Alternatives to organics might also be a worthwhile consideration. Establishing a system similar to that of Hawaii Organic might be more context-appropriate and could potentially meet the needs of the local community more effectively.

A more connected community with strong networks stands to be more resilient. Networks provide and facilitate connections between and within sectors to address challenges and embrace opportunities. For instance, strong lines of communication and more direct collaboration could mean academic and civil organizations would be better equipped to build on each others' strengths and contribute more efficiently to shared goals and objectives. Such networks could also be more apt at navigating market or political systems or pushing for necessary changes. Sharing resources to address challenges fosters greater resiliency that will be crucial as Guam faces increased impacts of globalization, militarization, and climate change.

### **4. Targeted education highlighting nutritional benefits of local food**

Almost all interviewees stressed the importance of the health benefits of local food. This is not surprising, given that the health challenges currently facing the island are largely food related, such as diabetes, obesity, and other diseases. Several cases also noted the need for increased education to promote the benefits of local food and teach young people and families about the impact their diet has on their health. In another example that emerged during interviews, a local restaurant owner leads weekend programs about nutrition and to teach families how to adopt more healthy diets. Although some such education efforts already exist, more is needed in order to combat current unhealthy diet trends and widespread consumption of imported, highly processed foods.

### *Opportunities and positive peace*

In addition to restaurants or other businesses and community groups leading such education efforts, there are a number of other entry points for incorporating nutrition education. School lunch programs and health classes are natural fits for teaching about the benefits of eating healthy. Schools, businesses, and community groups focusing on health programming should strengthen connections with the health sector as well. In response to the health crisis, more public health campaigns, local clinics, and organizations promoting health have emerged. Partnerships between these initiatives and actors in the local food sector could be mutually beneficial.

Such intersectional efforts could reach a wider audience by introducing campaigns at large community gatherings. For example, more healthy food stands or stalls that promote an understanding of healthy lifestyles in connection with local produce might be well suited at the Wednesday evening Chamorro Village or other events with large audiences. Local village marts also provide good settings for expanding nutrition education. Local marts often hold prominent roles in the community and many become destinations for individuals and families to look for specific products. Featuring nutrition information and healthy options regularly at such locations has the potential for nutrition efforts to reach more people in a way that would also benefit local businesses.

Efforts to improve the overall health of the island through a local-food approach would have wide reaching benefits for positive peace. Aside from enhancing well-being directly through contributing to healthier lifestyles, such efforts could also benefit the business community, more equitably distribute resources and make information more readily accessible. Integrating nutrition information more widely and mainstreaming local food across such initiatives is an effective way of addressing multiple challenges currently facing Guam, especially if done through cross-sectional and collaborative channels.

### **3.2.3 Further areas for exploration**

Although interviews covered a wide range of responses and highlighted many important issues facing the local food community in Guam, there were certain topics that remained underrepresented in conversations. These topics may warrant further consideration and examination. In particular, this report found that food initiatives either lacked or did not prioritize the following:

#### **1. Diversified access to local food**

More attention should be dedicated to understanding *who* has access to local, healthy food. For example, physical points of sale for local food at farmers' markets, food stands, or grocery stores, may be inaccessible to some people. Prices of food may further exclude some people from buying or producing local food. Particular attention should be paid to whether these occurrences disproportionately impact certain groups that may be in vulnerable or disadvantaged situations owing to their socioeconomic, geographic, or other situations. For example, data should be compiled to highlight intersections between demographics (socioeconomic, ethnic, racial, age, gender, etc.), health, reliance on food assistance benefits, homelessness, geographic location, and nutritional consumption. Alternative approaches to improving food accessibility might be considered, such as implementing policies to support job growth and nutrition interventions, rather than simply increasing food benefits. The *Community Food Security Assessment Toolkit*, available through the Electronic Publications from the Food Assistance and Nutrition Research Program, highlights techniques for such data collection with regard to community leadership in assessing all aspects of household food security.

#### **2. Focus on traditions and culture values** – A small number of interviewees highlighted connections to traditional knowledge, practices, and food. Increasing attention to this

component could serve the local food community in a number of ways, not least of which include preserving indigenous species of plants. These benefits would contribute to the overall health and biodiversity of the island and could potentially encourage production of goods and services for the tourism industry that would boost the local economy. Furthermore, indigenous and local knowledge and practices such as risk management and resource preservation make important contributions to local food security and should be further recognized and actively engaged.

- 3. Connection to colonialism** – The policies, practices, and current situation in Guam is inextricably tied to not only the legacy of historic colonialism, but also to Guam’s current political status as an unincorporated organized territory of the US. Understanding and addressing historical and modern impacts Guam’s political status are essential to forming a complete picture of the food security situation and to take effective steps to remedy harms and provide for positive, sustained growth that focuses most on the needs of the local community.

Excluding these topics may prevent a complete understanding and thorough approaches necessary for strengthening local food initiatives and benefiting the community. As the local food community continues to grow in Guam, it will be important to address these and other issues that may arise in order to better serve the entire community and to foster food security as well as positive peace.

## 4. Limitations

There were a number of factors limiting this research. Primarily, time was a major obstacle. This affected which groups were included in the study and the overall spread of the research. The time constraints on this research limited the type of data that could be collected. An extended research period and more collaboration with local actors would allow this case study to benefit from a mixed methods approach, such as combining the interviews with surveys to capture, for example, more consumer experiences. Furthermore, a research period that allowed for baseline data collection regarding positive peace indicators, as well as a data collection at a future point would allow for useful comparisons to track developments and measure impact of local food initiatives on positive peace.

Another factor limiting this research was the lack of relevant data. For example, it was noted that farm census data has not been consistently collected and available results are not completely reliable. This meant that assessing the number of farms and levels of farm production is difficult in Guam. Furthermore, some studies on aspects of food security have been initiated and either not completed or not published. The lack of publicly available research and consistent, reliable data on this topic is a barrier to those seeking to create well-informed projects based on data and facts. Further research will help address this gap.

## 5. Recommendations

- 1. Enhanced understanding of the food security situation** – Effective action around food security must build on accurate and updated information. Studies, data collection, and analysis should be continued and increasingly collaborate with community stakeholders. This would contribute to available knowledge practically so as to better meet the needs of the community. Areas for further study might include:
  - a. Farmer surveys to measure productivity, types of produce being grown, potential for increased capacity, etc.;
  - b. Consumer interest and market space for greater variety of local produce;
  - c. Potential for introducing more value-added products;

- d. Surveys and studies to better understand market saturation and opportunities; and
  - e. Research on connections between population demographics and access to and utilization of healthy food.
2. **Expanded education on nutrition** – Increased public awareness and understanding around basic nutrition and links between diet and health are crucial to improving food security. There is much work being done in Guam to improve health, specifically to decrease rates of diabetes and other diseases. This work could be combined with efforts to raise awareness of the health benefits to eating local produce. Integrating knowledge and action around health and local food through nutrition would benefit people’s well-being and support local agriculture.
  3. **Encouraging young farmers** – Programs targeting and engaging young people in food systems could help encourage more of them to work on or start farms. Education in schools and training programs to introduce young people to farming and allow them to experience it are important steps toward increasing the number of local farmers and shifting the farmer demographic to include a younger population. This will also help to build continuity of skills and productivity and to pass on local knowledge, both of which are increasingly important as the current farming population ages.
  4. **Market expansion** – Studies and surveys could provide greater potential for expanding the market. Large opportunities exist in Guam that are relatively underdeveloped for local farmers. Opportunities for farmers to expand to supply other vendors besides typical grocery stores and farmers’ markets could include contracts or arrangements with the tourism industry and military. The tourism industry is projected to continue growing. With many hotels and restaurants, there is potential to market “local food” as a selling point for tourists and for local food sales to increase. There is also an expected increase in military presence. While this may have other effects on the food security situation, one opportunity might be to work with the military to supply local food both to base stores in Guam and to export food from Guam to other US military bases. This opportunity could be beneficial to military personnel and their families by enhancing their quality of life and healthy food options, and to farmers in Guam through added demand for their produce.
  5. **Improved communication and coordination** – Stronger channels of communication between interested groups in Guam would enhance the opportunities available to individual groups and the collective of local food initiatives, benefitting the food security situation. Between academics, policy makers, nonprofits, business, and farmers, there are many different goals and strategies for addressing food security dilemmas. Sharing knowledge, data, and resources more effectively both within and across these groups could benefit food security efforts and improve the overall resiliency of the island.
  7. **Targeted food accessibility programs** – Equitable distribution is a key factor in achieving food security. Using data to assess the community’s food security situation could indicate which individuals and groups are in more vulnerable situations. This information could influence targeted programming to ensure that assistance programs do not reinforce harmful power structures and that food is equitably accessible.

## 6. Conclusion

Food is connected both as a cause and consequence of conflict and is reciprocally linked to peace. Violence can lead to or exacerbate food insecurity by disrupting food production,

interrupting distribution, hindering investment in food sectors, or destroying infrastructure and assets. Likewise, food insecurity has been shown to be a contributing factor in conflict, though not definitively as a cause in itself. Food can aggravate conflict through, among other things, contributing to riots and instability over food price spikes, resource competition, and inequalities. Food is also a means for achieving or stabilizing peace. Food resources are essential to fostering household and country resiliency and can enable a community to adapt to, recover from, and thrive after conflict.

The Pacific islands have faced particular challenges in achieving food security. Population, climate change, and governance have and are projected to continue to influence food security. In Guam, these factors are further complicated by context-specific factors. Perhaps most consequential to food security in Guam are the island's political status and related trade policies, the widespread dependence on food assistance, a market economy that favors imports, and diet trends that have contributed to poor nutrition and a health crisis.

This report has highlighted different aspects of food security in Guam and analyzed these factors in the context of positive peace. Guam has been shaped by history that is rich in indigenous and local knowledge and skills. The Chamorro people have long been a self-sufficient people. Developments in globalization and militarization have greatly influenced this and other aspects of life on the island. Modern political, economic, social, and other developments have had many positive impacts on the daily life of people in Guam, but have also contributed to challenges and obstacles to realizing positive peace, including food security.

Strengthening the presence and consumption of local food in Guam offers the potential to improve the well-being of the population. Local food plays an important part in the food security situation on the island and relates to the pillars of positive peace. According to findings presented by the International Food Policy Research Institute (IFPRI), national level food security is required before household food security can be achieved.<sup>75</sup> This means that availability of food must be secured before access and utilization can be fully realized and enjoyed. This requires more government policies and investments, whereas household security can be built through specific programs.<sup>76</sup> Food quantity and options are widely available in Guam. Grocery stores are well stocked under normal conditions and vendors carry a wide range of food options. The recommendations outlined in this report lend themselves to further strengthening this, targeting availability and stability aspects of food security through strengthening the local economy, supporting local farmers, and mitigating and adapting to effects of climate and other impacts. The recommendations further aim to enhance the accessibility and utilization aspects of food security through addressing health issues and ensuring equitable access to healthy local food.

In addition to the limitations previously addressed, this study's attempts to link food security and positive peace have been relatively incomplete. As stated, efforts to define and evaluate the current food security situation have been hindered by the lack of consistent and reliable data. Although there are studies on specific aspects of food security, researchers and practitioners in Guam have identified gaps in available data, such as the inconsistent farmer surveys. This kind of data is essential for forming a holistic picture of the situation, as well as for understanding finer aspects, such as equitable access to nutritious food across demographics. In the context of this case study, these obstacles made it difficult to have a well-informed perspective of food security necessary to then discuss food in relation to positive peace.

In order to better understand how food security will contribute to positive peace, there is a need for better metrics on both subjects. More disaggregated data concerning the current food

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<sup>75</sup> Breisinger et al., "Building Resilience for Food and Nutrition Security."

<sup>76</sup> *Ibid.*



security situation is needed, including information on what farmers produce, potential for greater production and value-added products, nutrition consumption, and household food security detailed by demographic. The interviews in this case study provided a useful basis for considering how local food initiatives currently impact and aim to influence aspects of positive peace and well-being through local food. These conversations and the recommendations that emerged from interviews are valuable and would further benefit from an analysis of positive peace indicators. Positive peace indicators and information about the food security situation before, during, and after World War II, as well the current situation and future projections would not only enhance understanding of the relationship between conflict, peace, and food, but also help shape future efforts so as to effectively contribute to positive peace.

Food security promises to be an increasingly important consideration for Guam, other Pacific islands, and beyond. As factors such as globalization and climate change continue to impact food production and distribution, it will be essential to better understand the multi-faceted dynamics of food security. Addressing food security continues to be a matter of ensuring people have enough to eat and that no one is limited by hunger or perishes due to starvation. But in communities where there is negative peace, where people are not actively engaged in conflict, food security takes on added importance in contributing to the greater well-being of society. Adaptive measures must benefit food security in a way that fosters positive peace. Food security is essential if society is to do more than survive; it is paramount to our ability to thrive.

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