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**STRATEGIES OF ADAPTATION AND COPING TO CLIMATE CHANGE IMPACTS  
AMONG WOMEN FARMERS IN GUINAYANGAN, QUEZON, PHILIPPINES: A LIFE  
HISTORY AND COMPARATIVE APPROACH**

Miranda Jane Salters

A Capstone Paper submitted in partial fulfillment of the requirements for a Master of Arts in  
Climate Change and Global Sustainability at SIT Graduate Institute, USA

July 25, 2022

Advisor: Joseph Lanning, PhD, Assistant Professor/Chair of Development Practice

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Student Name: Miranda J. Salters

Date: July 25, 2022

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## Abbreviations and Terms

*Barangay*- The smallest administrative division in the Philippines. This is the native Tagalog term for “village” or “district” (Municipality of Guinayangan, 2021).

*Barangay Captain*- The highest elected official of the barangay. They are supported by a barangay council and conduct important government duties and minor judicial powers (Municipality of Guinayangan, 2021).

*Gleaning*- A fishing method used in shallow, coastal, and freshwaters or habitats with low tide events. This method is done with the use of the hands or simple tools to pick up or scoop fish, shellfish, sea cucumbers, seaweed, and other marine life (Nessa and Ambo-Rappe, 2019).

*Sustainability*- Although there are different working definitions of this term, the United Nations describes it as “meeting the needs of today without compromising the ability of future generations to meet their own needs” (United Nations, 2016).

### Abbreviations:

Climate Smart Agriculture .....	CSA
Climate Smart Village .....	CSV
Focus Group Discussion .....	FGD
International Institute of Rural Reconstruction .....	IIRR
Life History Interview.....	LHI
Sustainable Development Goals .....	SDGs
United Nations .....	UN



## **Abstract**

The unique struggles and needs of marginalized communities must be considered in a local context prior to addressing climate change mitigation on a global scale. The study uses life history interviews and focus group discussions to capture the challenges, diverse adaptation strategies, and coping mechanisms of women farmers from upland and coastal areas of Guinayangan, Quezon, Philippines. These perspectives may initiate advocacy efforts for increased support so that these agricultural livelihoods can continue to feed populations in the future, as climate change persists. Results suggest that both women from upland and coastal areas experience similar climate vulnerabilities, but the way that these climate vulnerabilities impact their daily lives are quite different. Coastal women adopt gleaning and fishing practices for supplemental income and food security, while upland women tend to turn to street vending and online sales. Both groups express the importance of their families, farming organizations, and the local government for support. However, policies and future actions should be personalized to address the needs of women in each location to provide consistent support into the future.

## 1. Objectives

Agricultural livelihoods have found themselves increasingly threatened by extreme weather, rising temperatures, and crop damage, amongst other challenges related to climate change (Aydinalp and Cresser, 2008). Due to heavy reliance on agriculture for income and food security, these significant impacts of climate change on croplands will pose extreme challenges for both the welfare of the population and the economic development of the nation (Bayot et al., 2021; Mendelsohn, 2009). Global surface temperatures have increased 0.74 degrees Celsius in the past 100 years, with the largest share of the increase (55 degrees Celsius) occurring in the last 30 years (IPCC, 2020; Lindsey and Dahlman, 2022; NASA, 2022). Although anthropogenic greenhouse gas emissions are largely associated with the use of fossil fuels in developed countries, the greatest impacts fall on less industrialized, developing countries (Anwar et al., 2013; Mahato, 2014). Developing countries, as described by the United Nations (UN), are those nations with low gross national income (GNI) according to thresholds established by the World Bank (United Nations, 2014). In addition, destruction by tropical cyclones and typhoons have seen an upward trend in the last 50 years (Chung et al., 2021; IPCC, 2020; NASA, 2022). Tropical regions experience additional burdens due to their existence at low latitudes where temperatures and humidity levels are already high, and soils lose nutrients quickly due to rapid decomposition processes in this climate (Kurukulasuriya and Rosenthal, 2013).

In the past few decades, there has been a push to focus on sustainable development and capacity building as a means to address the issue of a changing environment and the intersecting social, and economic issues that compound global climate change (Gomez-Echeverri, 2018); United Nations, 2016). Specifically, the UN developed the Sustainable Development Goals (SDGs) in 2015, with themes of alleviation of poverty, conservation, equitable access to food

and resources, capacity building, and environmental protection at the core (United Nations, 2016). These goals reinforce that sustainability is not just about environmentalism itself, but rather human well-being, equality, and alleviation of struggle in the effort to live a healthy and fulfilling life. A life in which all people can consistently meet their basic needs and experience physical, social, and mental well-being (United Nations, 2016; United Nations, 2017).

However, these SDGs fail to meaningfully address the unique challenges of rural populations, particularly women, and their experiences with climate change as it directly impacts their agricultural livelihoods and personal lives and intersects with their culture. The goals do not capture feasibility of different adaptations that can be possible for rural, developing regions of the world. In order to effectively plan for a healthy future in the face of climate change, it is crucial that attention be given to the unique challenges of rural individuals whose work in agriculture is the source of food security and sustenance for all people.

To this end, the principal objective of this research is to capture the unique challenges, diverse adaptation strategies, and coping mechanisms of women farmers in order to share their stories and advocate for increased support so that these agricultural livelihoods can continue to sustain populations in the future as climate change persists. Specifically, this study aims to compare the adaptation strategies and individual resilience of women landowners, tenants, and shareholders from both upland and coastal areas of the agricultural municipality of Guinayangan, Quezon, Philippines. In addition, the study seeks to learn the nuanced understandings and value placed behind sustainability from the perspectives of women, in addition to assessing the decision-making power that women hold in the dominating sector of agriculture in this part of the Philippines.

Through the use of both the life history interview (LHI) method and focus group discussions (FGD), this research draws from unique, in-depth personal experiences of women and allows for conversations surrounding how this community adapts to challenges and seeks to plan for a vibrant future in the face of a changing climate. First, this study provides an overview of existing literature on issues surrounding gender and climate change vulnerabilities, in addition to key conceptual frameworks for the case study. Second, the study explains the Climate Smart Agriculture (CSA) model, the nuances of the life history interview method, and background on the location of the study, Guinayangan, Quezon. Third, the methodology for the project's qualitative research is explained. Fourth, the results and discussion of the study are presented. Also, the study presents recommendations for the future of climate change adaptation in rural, developing areas, in addition to guidance and directions for further research on this topic.

## **2. Background to the Issue and Case**

The following sections provide insight regarding existing literature on the topic of study. The following literature review shares related studies from around the world in order to gain global insight on the themes of decision-making power and climate vulnerabilities of women, intersectionality of gender and environmental challenges, feminization of agriculture, and integration of the climate smart agricultural model.

### **2.1. Division of Labor and Climate Vulnerabilities of Women**

Women's empowerment and decision-making power is a crucial topic for the agricultural sector, as it is fundamental to establishing sustainable practices and livelihoods based on local perceptions and needs. Rao et al. (2019) emphasizes the importance of moving beyond the surface of climate change's impacts on community development, and towards unpacking

relations of power: inclusion and exclusion of women in decision-making and challenges to patriarchal beliefs that place women below men in society. Similarly, Ogunlela and Mukhtar (2009) explain that rural women farmers deserve more recognition and appreciation for their contributions to agriculture and rural development through their decision-making processes. In Nigeria, women make-up 60-80% of the agricultural labor force yet are seldom incorporated into leadership structures and roles. Ogunlela and Mukhtar (2009) note that female farmers in this setting are “voiceless” in terms of agricultural decisions. To compound this issue, Chandra et al. (2017) finds that in addition to **women doing the most agricultural work, they also are the ones who face the greatest impacts of climate changes**. From their case study in the Philippines, it is evident that climate change has a **gender interface that places women in a more vulnerable position than men**.

To expand on the issue of women’s vulnerability, **Rao et al. (2019)** explains how **projects aimed at strengthening community adaptive capacities often incorrectly evaluate gender issues**. They tend to frame rural women as **“weak” or “socially isolated”**. Women often carry the burden of subsistence farming and production of food for their households. Rao et al. (2019) affirms that discourse about vulnerability and female resilience in the face of climate change is complex and requires more in-depth study to recognize the nuances. Rao et al. (2019) draws comparisons about gender and development between agricultural communities in semi-arid Africa and Asia. Specifically, Rao (2019) finds that men and women develop concerns about different climatic changes because of their specific livelihood’s activities. These individual risk factors are what often lead men to leaving the rural livelihoods and instead taking up work in more urban areas in order to make a living. These differences in perceptions are important to note, however, it is

crucial to analyze how these differing roles and perceptions impact people's responses to climate change.

From the research conducted by Ogunlela and Mukhtar (2009) in Nigeria, it was found that this vulnerability applies here as well. Women carry the **burden of maintaining food security for their families in addition to their agricultural labor**. In the case of Nigeria, rural women have recently made significant demands for increased participation in development and decision-making in regard to agriculture and economic plans. The "Women-in-Agriculture" organization in Nigeria aims to integrate women into conversations surrounding development, agricultural reform, and policymaking. The organization ensures that there are female extension workers at every level of agricultural operations in every Nigerian state in order to have their voices heard and to support female laborers. However, struggle still exists when it comes to job training for women and allowing their voices to be translated into broader action in agricultural decisions and policy work. In addition, **Aurora-Jonsson (2011) deconstructs gendered stereotypes in development by noting how the focus on women's vulnerability and virtuousness distracts from the true inequalities in decision-making, access to resources, and norms that facilitate women's exclusion**. Assessing women's vulnerability and resilience in the face of climate change is something that must be framed in a local context as not to make assumptions nor reinforce existing North-South biases of gender and development.

To expand from women's existing challenges and burdens throughout their daily lives, Goh (2012) recognizes the added challenges that climate change creates and how it disproportionately impacts women. Specifically, **Goh (2012) explains that women are found to suffer more negative impacts of climate change in terms of their assets and well-being due to social and cultural norms surrounding gender roles**. These assets are broadly defined as "natural

capital”, “physical capital”, “human capital”, financial capital”, “social capital”, and “political capital”. These assets are especially crucial for agricultural communities when it comes to securing land, agricultural technologies, and livestock, to name a few, because they allow households to adapt to variability in income and cope with life changing climatic events. However, many agricultural communities in developing countries do not have the luxury of feeling comfortable in terms of these assets. From a human capital perspective, severe climatic changes can have significant negative impacts on **women’s health**. In the presence of food scarcity, women can become malnourished, and this can **reduce their immunity to diseases, especially during pregnancy** (Reyes, 2002). During floods and landslide events, pregnant women are also at higher risk for diarrheal diseases, cholera, dengue, and malaria (Reyes, 2002). These **health impacts on women can hence have implications across generations and devastate a household**.

A parallel conclusion is highlighted by **Buechler (2009)** as they found that **women experience more income losses from climate impact on agriculture than men**. In this study, it was found that drought and depletion of water sources in Sonora, Mexico, largely jeopardized women’s livelihoods and social capital. It became more difficult to access the fruits and vegetables that women traditionally sell at their store fronts, and it took away income from those women who work in picking and processing these fruits. From a social capital perspective, the water scarcity issue prevented women from being able to exchange food products as gifts, a traditional practice that establishes a women’s status in social networks. To compound this issue, **Buechler (2009)** also found that **single women with children were especially impacted by water stress and experienced income loss and food insecurity**. These single mothers were **forced to sell their livestock and other forms of financial capital in order to make money to feed their children**.

This inherently creates a negative financial impact in the long run. Since women are the main providers of food for the family, they bear the burden when there is a limited supply (Chanana-Nag & Aggarwal, 2020; Jungehülsing, 2010). It is visible that women's added responsibilities in the home, including caring for and mothering children, significantly impact their ability to cope with climate change realities and be resilient in the wake of extreme climate events.

Through their global-scale interview search, Shinbrot et al. (2019) examines the challenges that women face in sustainable development. They found an overwhelming concern with the patriarchal structures that stand as a barrier to women's leadership opportunities. However, lack of self-confidence among women also was found to impede access to leadership. Similar trends were found in a study conducted in rural Turkey to assess how rural women's agricultural work impacted their home lives and perceptions of self (Akpınar, 2005). Karami and Mansoorabadi (2007) add another layer to these noted challenges by comparing attitudes of both male and female rice growers towards sustainability. They found that women tend to have more positive attitudes towards agricultural sustainability and felt more motivated to enact sustainable practices. When looking at the Philippines, Vilei (2011) found that, in resource-poor villages, farmers were optimistic about sustainable farming practices to adapt to climate change and grow their farm's size.

## **2.2. Gender and Climate Challenges**

The intersection of food security, sustainability, and gender is an essential interface that must be recognized when building community resilience and adapting to climate change. Mahendra Dev (2012) notes that while humans are the drivers of anthropogenic climate change and its related impacts, there is a discrepancy in who is creating the problems and who is experiencing the impacts. McMahon (2002) digs further into a gendered perspective on the topic



by expressing how rural women bear an even greater burden in regard to food security because they are the ones whose primary responsibility is seen as putting food on the table for their children and extended families. Rural women who work in agriculture experience the frustration that climate change poses for their work and, in addition, feel the impacts at home in the form of financial strain and food insecurity. From their research in rural Nepal, Tamang et al. (2014) found that men resort to urban work and labor migration due to frequent struggles in the agricultural industry throughout the world. This leaves women as the main drivers for change and development in the agricultural industry at home.

In relation to this, Butt et al. (2010) conducted a study in Pakistan with rural women and found that they have incomplete access to the needed education and technology required to enhance agricultural output in a way that will be sustainable in the face of climate change. Tamang et al. (2014) notes that more than men women also are leading households and taking on new roles outside the home, additional draws on their time and energy. However, existing agricultural policies do not fully account for this shift to a female-dominated agricultural sector. This certainly is the case in the Philippines where agricultural policies do not adequately account for women's predominance in the field and increased vulnerability to climate change impacts.

### **2.3. Feminization of Agriculture and Shifting Norms**

The rise in women-led agriculture is referred to as the "feminization of agriculture". Pattnaik et al. (2018) found that the feminization of agriculture has raised questions about the changing character of rural India, especially in terms of women's social and economic roles. While many scholars interpret the feminization of agriculture as a gateway towards female empowerment and food security, Asadullah and Kambhampati (2021) note that this will require critical policy interventions in the sector, such as the monetization and economic recognition of

women's labor and a shift in social norms- including more equitable sharing of household roles between men and women. From her research on the feminization of agriculture in rural Latin America, Deere (2009) suggests a further refocus away from the non-traditional, agro-export sector which is favored under neoliberalism. In Latin America, the production and packaging of fresh vegetables, fruits, and flowers draws heavily from women's labor. In rural southeastern Mexico, Radel et al. (2012) found that men migrate heavily to the United States, facilitating increased female participation in agriculture at home. Mexico has a long history of large transnational labor migration to the United States. That case is useful also to inform the case of the Philippines: the nation with the most emigrants in the world. According to the IOM, Filipino citizens leave their country in search of greater economic opportunities (IOM, 2020) which may disproportionately impact women working in agriculture and raising their families in the Philippines.

Expanding from this concept of "feminization of agriculture", Khatri-Chhetri et al. (2019) explores the potential of climate smart agriculture in reducing women's labor struggles in farming. The climate-smart agriculture (CSA) approach is emerging as a new paradigm for developing adaptive solutions to climate change in the agricultural sector Slavchevska et al., (2016). Specifically, this concept aims to improve productivity, create regenerative food systems, reduce greenhouse gas emissions, and build resilient agricultural communities (Steenwerth et al., 2014). This initiative can involve a range of adaptations, from implementation of drought-tolerant crops to raising native species, amongst other things. However, depending on the needs of the locations, larger transformative measures can be taken to adjust to new climate realities. Another CSA focused study is potentially relevant, as it points out that the efficacy of CSA is limited if the gender gap in agriculture is not addressed (Khatri-Chhetri et al., 2019). Particular

roles that women play in land preparations and crop harvesting can carry great implications for the implementation of CSA. However, little discussion has been placed on how CSA especially targets women to help reduce their labor burdens (Chaudhury et al. 2012; Huyer et al. 2015). In their top-down assessment of CSA technology in Nepal, Khatri-Chhetri et al. (2019) found that in climate vulnerable “hotspots”, CSA technologies including direct seeded rice, zero tillage machines, and green manuring were successful in reducing women’s labor burdens and creating more sustainable solutions to daily challenges.

#### **2.4. Climate-Smart Agriculture Model and Outlook**

Climate-Smart Agriculture (CSA) and the Climate-Smart Village model (CSV) is a core, ongoing project initiated by the International Institute for Rural Reconstruction (IIRR). The CSV model creates a participatory arena to address climate change impacts on agriculture, specifically, in small farming communities. As mentioned above, the CSA practices take a holistic approach in which they consider ecological, cultural, and gender issues to help solve crucial issues related to agriculture and climate change. Relevant CSA and CSV literature for this research includes Working Paper No. 375, Integrating Gender Dimensions in the Myanmar Climate-Smart Villages. The main goals of this project include addressing food security, adaptation, and support services targeted towards women in smallholder agriculture. In a broader sense, the study aimed to ensure equal opportunities for women in the community (Dayo et al., 2021). The CSV model was introduced in response to conventional innovation efforts that focused on new technology that farmers may be unable to afford (Lipper et al., 2014). This kind of technology-reliant development may promote further marginalization of poor farmers (Dayo et al., 2021; Lipper et al., 2014). Instead, the CSV approach considers social contexts of

agricultural development in the face of climate change, poverty, food insecurity, and other related issues.

Another CSA focused study is potentially relevant as it examines Guinayangan, Quezon, the site of this present study. It assesses the household resilience to climate change through the CSA model. Educating farmers and agricultural communities on cost-benefit analysis in addition to planting native fruit trees and raising native pigs are crucial for increasing adaptive capacity to the changing climate and fostering a more resilient system (Manilay et al., 2021). Intercropping and diversifying coconut-based systems through agroforestry are components of the CSA approach in order to minimize loss of livelihood and provide supplemental income. Overall, the study found that the CSA effort contributes to community empowerment, better resource management, and farmer unity in this coconut-dominant region (Manilay et al., 2021). These studies are important to consider when exploring adaptation strategies and resilience amongst women farmers because it provides an outlook on what agricultural techniques are already being implemented and establishes a knowledge base for which to build from. This CSV effort also reveals the extent to which the local organizations and local government are invested in educating and facilitating sustainable agricultural efforts.

This collection of literature provides a substantial background in which to frame the present research. The intersection of gender and climate vulnerability is a recently explored topic from a broader sense. However, this study aims to take a more personalized approach through life history interviews and in-depth focus groups to provide valuable insights into the lives of rural Filipino women in agriculture in the coastal municipality of Guinayangan, Quezon, Philippines. The literature allows for substantial comparisons between related studies on women agriculturists, climate change vulnerabilities, and adaptation that can further inform future efforts

towards rural resilience, female empowerment, and agricultural capacity development in the face of climate change.

## **2.5. Implications of Life History Interviews**

The backbone of this study which makes a unique is that it employs life history interviews as a core methodology for collecting qualitative data for the study. This section is situated amongst the existing literature in order to emphasize the significant role that life histories play in framing the study. It is valuable to gain a thorough understanding of the implications of life histories through assessing existing studies that employ this approach. The life history method is unique in that they are not fully structured interviews, rather conversations that go beyond the proposed interview questions. In addition to answering some more concrete questions, participants are asked to verbally document their own life over a period of time. Life histories allow participants to pull out significant moments in their lives as indicators and pieces to the puzzle that address larger research questions (Chen and Lou, 2020). Slater (2001) uses a life history approach to assess the relationships between urban agriculture and women's empowerment in Cape Town, South Africa. Slater (2001) collected qualitative data from the participants through life history interviews in order to gain insight on their upbringing, life challenges, life successes, and other circumstances in order to draw conclusions about their role in urban agriculture. From this data, it was found that urban agriculture contributes to the empowerment of low-income women and allows them a positive social network and sense of security. Goodson and Choi (2008) stress the importance of allowing the participant to share their story in their own words and not make any assumptions on the participant's own story.

In addition, like the present study targets a specific population of women farmers in rural Philippines, Richie (2001) explores the challenges of incarcerated women as they re-enter their

communities. Goodson and Choi (2008) notes the importance of maintaining confidentiality when working with vulnerable groups. Building trust and creating a comfortable environment are crucial to collecting the most substantial data and ensuring an ethical data collection process. Richie (2001) uses the life histories in conjunction with existing theory and background research in order to put their conclusions into a broader context. Gathering extensive life histories as the source of data creates a platform for sharing personal experiences as drivers for future change in a certain area. The collection of stories from the incarcerated women allows Richie (2001) to build a case to promote the need for neighborhood development initiatives, post-incarceration programs, policy reform, and social change.

## **2.6. Background on Guinayangan, Quezon, Philippines**

In order to draw a substantial analysis and understanding of the study's findings, it is crucial that ample background information is provided to paint a clear image of the region where the research is taking place. The Municipal Disaster Risk Reduction and Management Council's Local Climate Change Action Plan for 2021-2030 provides ample background information in addition to an updated plan to tackle climate change-related issues in the municipality. The municipality of Guinayangan is one of 39 municipalities in Quezon Province. It is located in the southeast portion of the province and has a coastline facing east to the Ragay gulf. The municipality is 132 kilometers (km) from the provincial urban capital of Lucena City, and about 255 km from the country capital of Manila. In terms of land area, Guinayangan comprises 22,800 hectares and is made up of 54 legislative villages, called Barangays (Municipality of Guinayangan, 2021). Quezon is a part of the larger Calabarzon region, the most populous region in the Philippines. The region consists of five provinces: Quezon, Laguna, Batangas, Cavite, and Rizal (Calabarzon, 2020). The population is 45,155, with an above average growth rate of 1.54%

compared to the rest of the province. Compared to other Southeast Asian countries, the Philippines is experiencing rapid population growth (PRB, 2022). The rate of natural increase is 2.2% compared to only 0.8% in Thailand and 1.9% in Malaysia (PRB, 2022). This rapid population growth poses challenges for the future of development in the face of climate change.



*Figure 1.* A map featuring the province of Quezon with the municipality of Guinayangan highlighted (Limsuan and Ferrer, 2021).

The Philippines has a tropical and maritime climate, experiencing high temperatures and high humidity throughout the year with a mean temperature of 26.6 degrees centigrade (79.88 degrees Fahrenheit (Municipality of Guinayangan, 2021). The country has four different climate zones that classify rainfall patterns, with Guinayangan falling into type IV mostly, experiencing an even distribution of rainfall throughout the year (Bohra-Mishra et al., 2017; Tolentino et al., 2016). However, portions of the municipality in the far north and far south experience type II, with maximum rainfall occurring between December and February. The warmest months in the

area are from March to May and the coolest months are from December to January (Tolentino et al., 2016). The natural topography of the municipality facilitates the drainage of run-off into various tributaries and streams (Bohra-Mishra et al., 2017). However, Guinayangan is highly prone to flooding and needs an upgraded sewage and drainage system (Municipality of Guinayangan, 2021). In addition, the municipality experiences water scarcity during the summer months and must create a water service schedule to control water usage (Tolentino et al., 2016). Especially with the rapidly growing population, water must be carefully managed and conserved.

Agriculture is a core sector for Guinayangan and is the source of many livelihoods in the area. Nearly 74% (16,807 hectares) of the total land area of the municipality is composed of agricultural land, with 13,337 hectares used solely for coconut cultivation (Municipality of Guinayangan, 2021). Bananas comprise the second largest amount of agricultural land, covering 1,303 hectares and rice comprising 1,054 hectares. The municipality yields an average of 271,773 metric tons of coconuts, 9,200 metric tons of bananas, and 5,248 metric tons of rice annually. In addition, coffee, cacao, banana, mango, and pineapple are high value crops that are used as intercrops of coconuts. Guinayangan's 13 coastal barangays are also rich in coastal resources, mangroves, sea grasses, corals, and beautiful beaches. These areas are crucial for the artisanal and commercial fishing activities in the municipality.

The Local Climate Change Action Plan explains that the people of Guinayangan are now aware of the changes in temperature and rainfall as a result of climate change (Municipality of Guinayangan, 2021). Farmers are especially aware of these changes as they are having trouble predicting rainy or dry seasons and therefore seeing decreases in agricultural outputs. Particularly, annual mean temperatures for the Philippines are expected to rise by 1.8-2.2 degrees Celsius in the year 2050 (Municipality of Guinayangan, 2021). In addition, heavy rainfall that



creates flooding is more frequent. Extreme weather events such as monsoons and typhoons are growing more frequent and more damaging, especially for coastal communities of Guinayangan. However, despite heavy rainfall, the municipality struggles with water shortages for the months of May through August. During these months, people may only be able to access water from their personal or local source during selected hours of the day. Some days may even be completely dry. Due to infrastructure issues, those who live on non-ground level units have even more limited access to water. This is a constant struggle for the community as water is needed for washing clothes, bathing, and using the toilet amongst other things. Even with the widespread awareness of climate change and its impacts, the community, local government, and partner organizations are still constantly striving to develop sustainable plans and mitigation measures to protect the citizens of Guinayangan.

### **3. Research Question**

In order to better plan for a sustainable future for agricultural livelihoods in Guinayangan, Quezon and other small agricultural communities, this study aims to address the following core questions:

1. How do the experiences of climate change impacts and the coinciding adaptation strategies compare between women farmers from upland and coastal areas of Guinayangan?
2. What decision-making power do women hold in agricultural policy and practice? How does this benefit or hinder sustainability and adaptation?

3. How can women in the agricultural sector be best supported to achieve success in the face of climate change? How do these needs differ between women from upland and coastal regions?

In addition, the study aims to gain an understanding of how women farmers experience impacts of climate change not only in their livelihoods as agriculturists, but also in their homes as mothers, grandmothers, wives, caretakers, and matriarchs of the household. When exploring the nuances of adaptation and coping mechanisms in the intense livelihood of farming, it is crucial to recognize the intersection of professional and personal lives as both can impact each other and at the same time, serve to support each other. In this same vein of support, this study aims to discover how this community of women farmers in Guinayangan support each other in times of hardship, as well as providing a group for which to innovate and learn together. Furthermore, the interviews and focus group discussions will provide insight into how this community of women perceive their roles as farmers and how they believe their livelihood is valued and understood by the rest of their village and Guinayangan as a whole. In addition, discovering how women farmers in Guinayangan conceptualize and value sustainability and put such efforts into practice, will provide insight on their outlooks for the future of their livelihoods.

Within this framework, it is anticipated that topics surrounding relationships between climate change related challenges and household food security will arise, as well as conversations about food security of the surrounding village. The findings from this study will hopefully serve to provide an outlook on how farmers in agricultural villages, specifically women, have unique experiences with the impacts of climate change and how they create adaptation strategies and persist through hardship, for the purpose of providing this data to the

institutional level and local government bodies in order to assess and address the additional support needed for these farmers to thrive.

#### **4. Methods**

When developing an understanding of the implications for the future in the face of climate change and developing strategies to move forward, it is pivotal that policy and action recognize the challenges, perceptions, and needs of vulnerable populations, specifically, women in small agricultural communities in developing nations. Agriculture is a cornerstone for such communities as this sector provides primary livelihoods and food security for farmers and the whole population alike. The following sections will briefly describe the study site and the implications for participant selection, in addition to an in-depth explanation of the data collection processes and procedures.

##### **4.1. Study Sites and Participant Selection Process**

As introduced in the Background section, Guinayangan is a third class, agricultural municipality in the province of Quezon, Philippines. The municipality comprises 54 barangays, which are the smallest administrative division in the country and is the Filipino term for “village” or “district” (Philippines Statistics Authority, 2010) The major sources of livelihoods in the municipality are agriculture and ecotourism. Over 57% of Guinayangan’s labor force are involved in agriculture and the populations in the coastal areas rely heavily on fishing (Bayot et al., 2021). The core cropping systems include coconut and rice, followed by banana and vegetables (Limusuan and Ferrer, 2021; Tacugue et al., 2021). The International Institute for Rural Reconstruction (IIRR) plays a large role in educating farmers on climate change and supporting them through providing resources such as seeds and equipment in order to carry out

the goals of the Climate Smart Agriculture (CSA) initiatives (Barbon et al., 2021; Bayot et al., 2021). By having a connection with IIRR, this allowed access to government officials and offices such as the Department of Agriculture and the Department for Natural Disaster Preparedness. Both offices provided necessary background information on the livelihoods of different barangays as well as background on the geography and the capacity development of Guinayangan as it relates to agriculture.

Likewise, IIRR played a significant role in the identification and selection process for the participants due to their extensive work experience in Guinayangan and their relationships with the village leaders and farmers alike. A core variable in this research is the agroecological zone (upland or coastal) of which the participants both live and practice agriculture. The goal was to gather a diverse group of women to provide a robust collection of perspectives on the topic at hand. The participants came from four different barangays, from either upland or coastal areas. The barangays have their own Captain and panel of administrators which were consulted prior to the visitation. These barangays included Arbismen, Cabong Norte, Capuluan Tulon, and Dancalan Caimawan. It was important to draw from different barangays as each has their own set of local policies and individualized needs based on their geography, population, and primary agricultural activities. These four barangays were selected also because of their familiarity with IIRR and their reasonable distance to the municipal center. The barangays of Poblacion and Calimpak are the administrative centers of the Guinayangan because they house the office and residence of the municipal mayor, municipal hall, local department of agriculture, and the largest marketplace for which to sell produce, livestock, fish, and other goods.

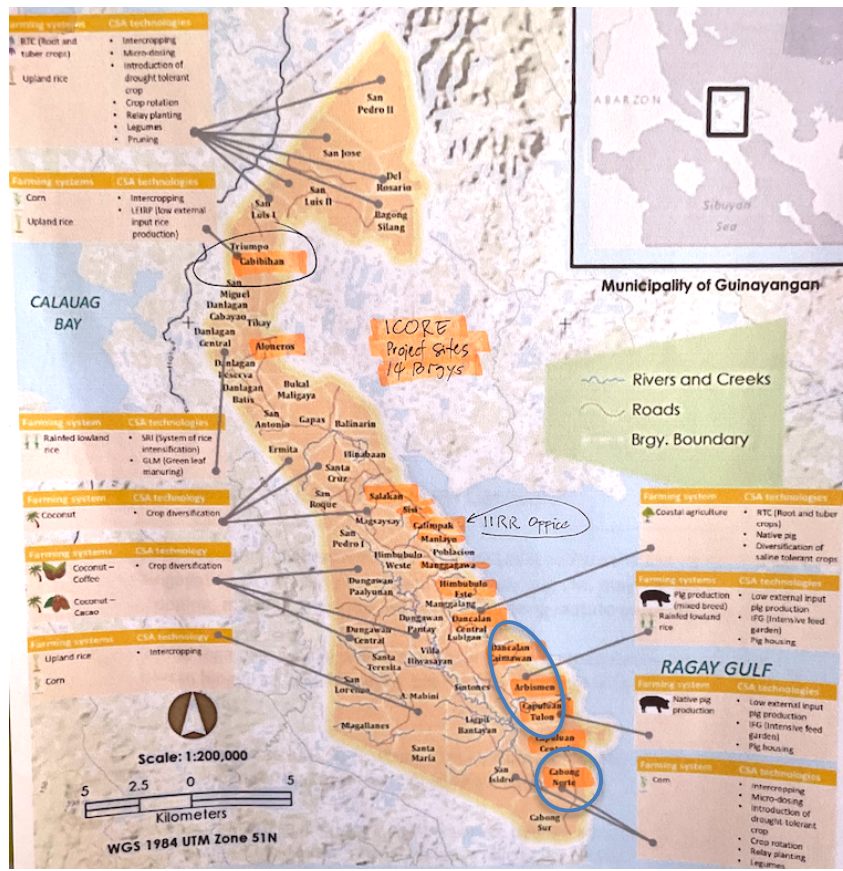


Figure 2. A map of the municipality of Guinayangan, featuring all 54 barangays. The four barangays used for this study are circled towards the bottom right of the map. Image credit: IIRR.

The methods of this study consisted of both life history interviews (LHI) and focus group discussions (FGD) in order to generate personalized conversations on climate change adaptation and pair these perspectives with group-based dialogue on the same topic. This mixed method interview approach is useful to gain both in-depth responses as well as discourse regarding different questions. In order to identify the individual participants from these barangays, a letter was drafted, explaining the purpose of the LHIs and FGDs and the broader research project. The letter also included the dates for the visits to each barangay. The letters were typed originally in English and then translated into the local language of Tagalog by three people at IIRR. By having more than one person translate this letter, it ensured that the translation was as accurate as

possible. Due to limited internet access for these rural barangays, each letter was delivered in-person. From there, each barangay captain reached out to local farmers in their barangay to see who was available and interested in participating in the study. The letter to the Barangay Captains can be found in Appendix A.

Having the Barangay Captains, a familiar face for locals, reach out to the participants was crucial in making them feel safe and comfortable during the process. The selection was based on the following criteria: participants identified as women, participants were above the age of 18, participants had a primary livelihood of farming in some capacity (land owner, tenant, shareholder, laborer). For the sake of travel and logistics, all the first FGD participants were from the same barangay (Cabong Norte) and the second FGD participants were from the same barangay (Dancalan Caimawan). The five LHIs consisted of three participants from Capuluon Tulon and two from Arbismen. A visualization of the participants and sites can be found in Figure 1. Breaking it down in this manner made it easier for the Barangay Captains to gather their community members and give them a specific time and place to be in order to avoid any wasted time out of their busy workdays.

One of the challenges throughout the planning process was deciding the best way in which to reach this diverse array of participants. Due to the long distances between each barangay, it would not have been feasible to ask participants from different barangays to join in one space for an FGD. Therefore, the FGDs were made up of women from the same barangays. The first FGD consisted of tenants, landowners, and shareholders from upland areas of Cabong Norte, while the second FGD consisted of tenants, landowners, and shareholders from coastal areas of Dancalan Caimawan. Similarly, the LHI participants were from upland and coastal regions of two different barangays. Table 1 shows the breakdown of participants for the LHIs.

	<b>Agri-ecozone</b>	<b>Landholding</b>	<b>Barangay</b>	<b>Crops</b>	<b>Livestock</b>
<b>Interviewee #1</b>	Upland	Tenant	Capuluan Tulon	Eggplant, papaya	Carabao, cow, goat, pig, chicken
<b>Interviewee #2</b>	Coastal	Shareholder	Capuluan Tulon	Sweet potato, eggplant	Chicken
<b>Interviewee #3</b>	Upland	Landowner	Capuluan Tulon	Sweet potato, eggplant, coconut	Chicken
<b>Interviewee #4</b>	Coastal	Landowner	Arbismen	Banana, coconut	Pig, chicken
<b>Interviewee #5</b>	Upland	Tenant	Arbismen	Banana, coconut, cassava	Chicken

**Table 1.** Breakdown of life history interview participants based on agriecozone (upland or coastal), landholding status, crops grown, and livestock raised.

Both FGDs took place in the barangay meeting hall of the respective barangay and were reserved for this specific activity to ensure privacy for all participants. The LHIs were also conducted in the barangay halls, however, the participants were brought into a smaller office in the barangay hall to create a more personal and productive space where they could feel comfortable to share their stories regarding life challenges and climate change related hardships. Although it would have been ideal to capture insights from more than just five interviewees, each interview was time consuming and required travel which was difficult given the unpaved roads and frequent flooding. Despite the small sample size, for both the interviews and focus groups, rich dialogue and knowledge sharing was experienced. The sample size was feasible to conduct research during the short period of time and generated a variety of responses from each participant.

## **4.2. Life History Interview (LHI) Method**

As described in the Background section, the LHI approach is a core element of this study as this method allows the stories and experiences of the participants to be shared in their own words. The following subsection explain the formulation of the semi-structured, open-ended interviews.

### **4.2.1. Consent and Interview Question Development**

Participants were read the Participant Informed Consent Form where they were able to consent to being interviewed and having their responses documented in this study. The participants were assured complete privacy of any personal identifiers such as names or addresses. In addition, the participants had the option to consent or deny consent to be audio recorded by the interviewer for preservation of information throughout the duration of the study. The participants were told that the audio recordings would be destroyed no later than a week after the final research paper is complete. Additional information regarding consent can be found in the Appendix.

Upon obtaining consent, participants were asked to fill out a short “participant profile” form that included their classification as a “landowner”, “tenant”, or “shareholder” as well as a written list of the crops and livestock grown on their farm. Next, the interview questions were developed, with the aim of creating all open-ended questions, allowing the participant to provide a personalized response in their own words. These questions used for the LHIs were developed starting with questions related to background information regarding family structure, livelihoods, and size of the household. These questions were more concrete and aimed to gather baseline information for which to understand the participant better. These initial questions put the proceeding questions into a more understandable context. More specifically, participants were



asked to describe the livelihood of their family as children and their specific role on their farm currently. Unlike other interview methods, the life history interview method seeks to capture answers to complex questions through the telling of life stories from the words of the participants themselves. Therefore, it is crucial to gain context of the participants' life as well as capture personal stories that create a more robust understanding to the larger research question rather than more structured, brief interview methods. These background questions flowed into more abstract questions regarding the greatest challenges and successes they have experienced, what motivates them in their day-to-day lives, and what they hope for the future of their agricultural livelihood and their family's lives in the face of a changing climate.

The questions were developed and then evaluated by the IIRR field office team in Guinayangan and by the program coordinator at SIT to ensure that they were culturally appropriate and captured the essence of the study to effectively answer the larger questions. Furthermore, the IIRR field office in Guinayangan translated the questions into the local language of Tagalog and helped to adjust the phrasing of certain questions so that they would translate properly with the same meaning. Due to limitations regarding participants' schedules and transportation challenges, each interviewee was visited once. Each interview lasted between one hour and one hour and fifteen minutes. The interview guide for the LHI questions can be found in Appendix C.

#### 4.2.2. Successes and Challenges

The interpreters work for IIRR and have familiarity with the communities in each of the barangays that were visited, which allowed for a comfortable environment where participants were able to feel that their personal information and responses were safe and relayed correctly through translation. However, being that the interpreter had much familiarity with the

community and the topics at hand, it was important to continually remind them to translate the exact answers of the participants themselves and not give their own input. Once this was emphasized to the interpreter, it was effective, and the interpreter asked the participant to take more pauses in their responses to ensure that they were being directly translated and nothing was getting lost. Significant successes were found when taking pauses in between the questions, especially the more extensive and open-ended questions, because participants would then elaborate further or share more about their livelihood and life challenges.

After completing the first interview, it became easier to manage notetaking while simultaneously employing effective active listening skills to stay engaged in the interview. In addition, during the following interviews there was a more natural flow and follow-up questions and clarifying questions were easier to approach and fit into the conversation. In terms of engagement and responsiveness, each participant provided impactful responses and rich side stories that made each interview unique and rich.

### **4.3. Focus Group Discussion (FDG) Method**

The FGD method provides a space for discourse amongst the participants. The following subsection provides insight on the question development and reflection on how the method was employed in the study.

#### **4.3.1. Question Development and Preparation**

The same consent process was employed for the focus group discussions in which the Participant Informed Consent Form was read aloud and shared visually to each member of the focus group. As mentioned above, the Participant Informed Consent can be found in Appendix **B** at the end of the document. Upon obtaining consent, participants were asked to fill out the same “participant profile” form that included their classification as a “landowner”, “tenant”, or

“shareholder” as well as a written list of the crops and livestock grown on their farm. In addition, each participant was given a number in order to keep track of who was providing what response without revealing their name. These numbers corresponded with the seating arrangement so that each person’s response could be noted throughout the discussion.

In terms of the discussion questions, some were the same as in the interviews, while others provoked more of a discourse and allowed room for disagreement or consensus. Specific, personal background questions were not asked in the focus groups, rather questions focused much on shared experiences of climate change related challenges, community value of sustainability, and the extent of support systems. As noted above, the questions were developed and then evaluated by the IIRR field office team in Guinayangan and by the program coordinator at SIT to ensure that they were culturally appropriate and captured the essence of the study to effectively answer the larger questions. These questions were also intentionally crafted to be open-ended, allowing for participants to engage in discussion, respectful disagreement, and share personal experiences. FGD1 lasted one hour and thirty minutes and FGD2 lasted one hour and twenty minutes. Furthermore, the IIRR field office in Guinayangan translated the questions into the local language of Tagalog and helped to adjust the phrasing of certain questions so that they would translate properly with the same meaning.

#### 4.3.2. Successes and Challenges

The focus group discussions proved to be more complicated than the interviews because it required multiple people to join in one place at the same time. Because farmers are coming from a variety of locations, some from quite remote areas with rough terrain, it was difficult to start on time. At the start of the discussion, I introduced myself along with the interpreters and other staff from IIRR. The purpose of the study was explained further so that the participants

were able to understand how and why their input was important. Throughout asking the questions and receiving responses, it was quite difficult to capture everyone's exact response because participants were often speaking over one another and having short side conversations. This was especially difficult given that the discussion was being translated from Tagalog to English. Nonetheless, fruitful discussion was brought to the table as the participants were able to respectfully disagree on certain things and concur with others. It is also important to note that not all participants contributed as much as others. FGD1 had two out of eight participants who did not speak at all. FGD2 had a more equal distribution of contribution across members of the group. Following the focus group discussion, additional notes were taken and clarifying questions were asked to the interpreters regarding certain indigenous crop names and acronyms were not defined prior to holding the FGD.

#### **4.4. Data Analysis**

Data Analysis involved reading through the responses from each interview and focus group discussion and identifying universal themes. Essentially, responses were sorted into five main themes of climate vulnerabilities, adaptations, decision-making power and visibility, familial and personal well-being, and support systems and resources.

#### **5. Ethical Concerns**

Entering a new community for a limited amount of time always carries with it ethical concerns to some extent. In addition to this, entering a new community in a foreign country for a limited amount of time creates even more challenges and things to consider. It is important to reflect on my positionality as a visitor in the community. I entered the municipality of Guinayangan with the prior understanding that I was a guest in the town and that I should not

take more than I give, and I should strive to make connections, but not leave any physical trace.

It was inherently visible that I was the only foreigner and more specifically, the only white person amongst an all-Filipino community. Because of the high value placed behind whiteness in rural Philippines provincial areas, I was concerned that people would feel the need to provide me with a certain answer, maybe the answer that they thought I would want to hear. Especially given the Filipino created stereotype that Americans are rich, I was concerned about the openness and honesty of the participants in the study.

In addition, in everyday instances I faced people who said that they were “too shy” to talk to me. The team at the IIRR field office in Guinayangan explained that people feel rather intimidated or overwhelmed by seeing a foreigner, especially a white-American because there is a heavy desire for whiteness and aspects of American culture. Also, they explained that there are not many foreigners at all; they recalled that there may be only one foreigner every four years, but that is the extent of foreigners visiting the small agricultural municipality. I made it a point to be an active listener, to ensure that the community members felt like they were being heard and their responses valued. Participants were not pressured to answer all questions and had the ability to opt in or out of the study through the Participant Informed Consent Form.

### **5.1. Addressing the Human Subjects Review**

Because the participants involved in the study were those who have faced a variety of challenges and hardship, climate change induced or personal, it was important to create a space where they did not feel forced to give a response. Having the support and involvement of IIRR was crucial to making participants feel more comfortable. The people working at the Guinayangan field office are members of the local community and have put years of effort into

connecting to people and serving the municipality. By having them join me in the outreach process for finding participants, this created familiarity for the barangay captains and their community members and added credibility to the study. The study was even further legitimized by having the support of IIRR, increasing the desire for people to participate.

As noted in the Human Subjects Review (HSR) form, there was a translator present for all interviews and FGDs. Although it is common for Filipinos to speak some amount of English, it was important that participants could express themselves fully and in the way that they felt most comfortable- in their local language of Tagalog. During these interviews and FGDs, the participants were welcomed into the barangay hall, a quiet and familiar space where they could feel comfortable and know that their responses would be kept confidential. Although participants consented to audio recordings and to using their responses in the study, all personal identifiers were kept confidential, and participants were referred to by a number as not to give away their name. In addition, I explained my purpose in Guinayangan and my background as a student researcher and guest.

Overall, the participants were not asked to give more than one hour and 20 minutes of their time so as to not create a great burden or significant interruption to their day.

Upon being asked about the purpose of the study, I aimed to be transparent on the implications of the research and where the data was going to be documented. I explained that the final research paper would be available on my school's online collection and that hard copies would be made available by IIRR for those who wish to see the outcomes of the study. I explained that my hope for this study would be to share the adaptation strategies and resilience of this

community of women and most importantly, highlight what actions should be taken in the future and how they can be supported in their livelihoods.

## **6. Findings**

Participants offered personal insights into how climate change impacts their daily lives, how they adapt and cope with challenges, and what is needed in order to be successful in the future, in the face of a changing climate. Responses from all participants are shared and organized under the following five core themes: climate vulnerabilities, adaptations, decision-making power and visibility, familial and personal well-being, support systems and resources. Additional discourse is broken down into subthemes within these main categories. These themes were developed from repeated and similar responses shared across the interviews and both FGDs.

### **6.1 Climate Vulnerabilities**

Understanding the specific environmental challenges that stem from climate change and how these impact rural women farmers is the first step to understanding their adaptation strategies and resilience building. Following the more basic questions, the participants were asked about their greatest challenges on their farm and if they have experienced environmental related issues and changes. It is important to recall from the “Background section” of the study, that the farmers in Guinayangan, and the greater population, are rather familiar with the concept of climate change and are aware that it is happening to their environment to some capacity. When the participants were asked about their biggest challenges on their farms, they were not probed with the intention of getting an environmental related response, however, all the

challenges described by the participants were environment related. They were later asked what they felt were the causes of these challenges and explained that climate change is at the root of these challenges. These climate vulnerabilities are broken into subthemes: Typhoons, water scarcity and increased heat, and disease and pests.

#### 6.1.1. Typhoons

When asked about the greatest challenges in their livelihoods, typhoons were often brought up as most devastating to not only their crops and livestock, but also their homes. All five of the participants reported typhoons are the greatest challenge and most devastating. From the FGDs, both groups cited typhoons as a major challenge and vulnerability, with the coastal FGD spending more time describing the impacts and all discussion members noting some kind of impact from the events. FGD1 also emphasized the impacts of typhoons; participant #2 from FGD1 (upland) explained that the most recent typhoon created extreme flooding that led to landslides that inherently damaged homes and farms alike. Specifically, participant #4 from FGD1 stated that while the typhoons are detrimental to the farm as a whole, “crops including papaya, leafy vegetable, and eggplant are most prone to severe damage and almost 100% loss after a typhoon.” Similarly, Interviewee #4 from the coast shared the same experience of losing both papaya and leafy vegetables. She also noted that banana trees were devastated, yet could somewhat be salvaged by recovering fallen bananas and identifying the few trees that were still somewhat intact and trying to cultivate them again. In addition, Interviewee #5 from upland explained that “although bananas are not that strong of a tree, they are a staple crop here! It is really difficult to see these trees constantly being devastated by typhoons because of their importance to our community.” In addition, Interviewee #1, from upland, added that because she



and her family live near the river, they are at even higher risk for flooding as a result of the typhoons.

When a follow up question was asked regarding the suspected cause of these typhoons, an overwhelming response of “climate change” and “global warming” were verbalized. In fact, Interviewee #5 from upland recalled her childhood and past experiences to today by noting, “when I was growing up, we had heavy rain and some flooding, but now typhoons are happening much more often. We had three back-to-back typhoons in 2020. This is from the intensification of climate change.” Interviewee #1, from upland, concurred that typhoons are growing more common and that when they hit your crops, you must “wait another year sometimes, until the next growing season for that crop... I had to wait a whole year to plant new eggplant again.” Coming from a different perspective, participants in FGD2, from the coast, emphasized the massive destruction caused to their homes on the shore, their livestock, and their smaller fisher boats. They also noted the extreme flooding from typhoon events. FGD2 participant #5 explained, “the impacts of the typhoon are very strong, especially where we live on the coast... My neighbor died last year because of fallen debris and it just devastated our small community...we are worried that this will be a repeated tragedy as typhoons get more intense.” A brief follow-up question was asked, “why stay? What motivates you to remain on the coast despite the high risk of typhoons?”, participant #1 from FGD2 explained:

This [coastal community] is our home and we need to protect it... We do not have enough money to move our family to a new place and build a new home somewhere else. We must keep rebuilding and moving forward- there is no other way. But the community is strong and we work together through these challenges.

All participants from both FGDs emphasized that 2021 was a difficult year where they experienced the strongest super typhoon on record for the month of April. In addition, they recalled eight other typhoons, four of which developed into super typhoons. Collectively the responses from both the FGD participants and the interviewees reflected the severity of the typhoons and the frustration of being constantly on edge, anticipating the next typhoon.

#### 6.1.2. Water Scarcity and Increasing Temperatures

Another emergent sub theme included the municipal-wide water shortage, compounded by increased temperatures. In addition to creating discomfort and inconvenience, most participants noted that these impacted their schedules and time management. Interviewee #1 explained that she must wake up earlier in the day in order to start work on the property prior to the extreme heat of the day. She explained:

I now wake up at 4 AM, so that I can get an early start on the day and take a break from 11 AM until 2 PM because that's when the heat is most extreme...I then return to work from 2PM until 4PM before doing home chores and cooking... Even the animals must be moved into a shaded or covered area because it is too hot for them. I also wake up early to collect the water for the day since water is not available all day (Interviewee #1).

Other interviewees noted similar forced changes in their schedules due to increased heat and the water shortage. Participants in FGD1 explained that the Municipal Water District sets a schedule that determines when certain neighborhoods can access water from their facets. Water from the facet is essential for not only bathing, but also flushing the toilets and washing dishes and clothes. Interviewee #5, from upland, explained that some homes or apartments have a deep well, which allows for a more constant water source, but “it is very expensive, and you must walk a far distance while carrying heavy buckets [of water]” (Interviewee #5). Interviewee #2 from the

coast, explained that “it is frustrating to not have enough water and even though we get heavy rainfall, these storms only cause flooding and are very damaging to the crops.” In this same vein, Interviewee #4 noted that in addition to the municipal water shortage, she believes that the banana and coconut are not getting enough consistent rainfall, instead they are being damaged by aggressive storms. Interviewee #4 also shared that because she has a large family with children, it is difficult to collect enough water for all members to bathe and wash clothes, she must travel to the Barangay meeting hall to bathe. Interviewee #4 shares, “...I go to the barangay hall for a bath because that sitio has a steadier water supply there.” Although water is available from the facet during and right after a large rainstorm, there is no consistent access to water and only those who can afford it, may build a deep well.

#### 6.1.3. Disease and Pests

Several participants referred to issues with livestock and crop diseases that greatly hindered their ability to make an income and consumed many resources. The diseases varied depending on the crops grown and the types of livestock raised on each respective woman’s farm. In FGD1, five out of the eight participants verbalized issues with at least one kind of pest or disease. Participant #2 from FGD1 explained coconut farmers have been recently struggling with the “Cadang-Cadang” disease in coconut. They noted that “2021 was a bad year for the ‘copra’. The disease is fatal to the for the ‘copra’... basically, the disease kills off the leaves and the fruit, leaving you only the trunk of the palm” (Participant #2; FGD1). The participants explained that the “copra” is the mature coconut, while the “buko” is the young coconut that supplies fresh coconut water or “buko juice” as they referred to the drink. Interviewee #3 explained that there was another disease that damaged the buko by drying it out and leaving it

without any water inside. Interviewee #3 noted that, “these coconuts are too dried [out] and they fall off the tree and are not consumable or useful.” Unfortunately, the participants shared that a portion of their coconut trees are lost by this disease every year.

In addition to coconuts, farmers raising livestock found much difficulty dealing with the African Swine fever (ASF). Interviewee #5, from upland, explained that she lost both of her pigs to the ASF because “it [ASF] spreads so quickly and easily, so once I discover[ed] that one has the disease, it is too late.” Participants from FGD2 also emphasized their struggle with the ASF. They explained that pigs are an important asset to have on your farm because “pork is important in Filipino dishes and there is always someone who will buy...” (Participant #5, FGD2). However, the ASF has deterred people from wanting to raise pigs. The farmers explained that this is the primary reason for transitioning to raising only native pigs, as a component of the CSA model, as described earlier in the Background section of this paper.

## **6.2. Adaptation Strategies**

After gaining an understanding of the main challenges, stemming from climate change, the participants were asked to share what adaptation measures and adjustments they must make in order to persist despite these difficulties. A combination of both innovative adaptations for approaching crop and livestock issues as well as adaptations that are more lifestyle changes that impact the farmer and her family in the long run. Therefore, two subthemes were developed: Agricultural adaptations and alternative livelihoods.

### **6.2.1. Agricultural Adaptations**

A wide array of adaptation strategies was shared on how to approach many of the climate vulnerabilities from above. Although noted as not the most economical or innovative adaptation,

the women in FGD2 concurred that they often just try and plant a surplus of vegetables, knowing that many of them will get damaged by extreme weather or eaten by pests. In addition,

Interviewee #1, from upland, explained:

With the increase in typhoons and heat, it is difficult to grow certain vegetables... I live near a river, so there is also a lot of flooding after storms. You cannot relocate the vegetables, but you can relocate the animals, so it is easier to manage during the storms... The animals are more resilient to climate change, so I focus on my livestock more than my vegetables now (Interviewee #1).

Participants in FGD1 (upland) explained that they also rely heavily on livestock because they can be relocated if necessary and they are more adaptable to climate change. They also noted that there are medications needed to combat disease, but they are quite expensive. The coastal FGD2 participants explained that disease is more difficult to combat in their neighborhoods because the homes are closer together. In order to combat this, they tend to keep their pigs and chickens underneath their stilted houses to separate each family's livestock and protect them from harsh weather. In addition to focusing on livestock, in times of harsh weather and severe damage to crops, Interviewee #5, from upland, explained that sometimes she and her neighboring farmers must raise the prices of their livestock in order to compensate for the loss of income from crops.

When the community is aware of an incoming typhoon, Interviewee #3, from upland, explained that she stocks up on rice and asks her neighbor for space in her refrigerator to store other goods; she emphasized:

After seeing these typhoons devastate the community year after year, I know there will be a lot of crop loss and people will not have enough food... I make sure to always store food before a storm so that my family can eat and I can share with my neighbors. Having close neighbors is very important because we always work together to get through hard times (Interviewee #3).

Other preparation involves trying the best they can to keep their crops safe from the storms.

Upland resident, Interviewee #5, explained that when she is aware that a storm is coming, she goes out and cuts leaves off every banana tree she owns in order to make them less top heavy.

Although this may not always work, she explained, “it is something I can do to lessen the impact on the tree and have some hope that it will make it through the storm and we can still harvest [the banana]” (Interviewee #5). In regard to the water shortage, FGD1 explained that they have just opened their homes up to one another to take water when needed. Because different homes can access water at different times, they work together to ensure that everyone can have water when they need it. However, the homes are far apart, so water must be collected in buckets or connecting hoses to their drums. In addition, some interviewees explained that they pay a portion of money to owners of deep wells near them so that they can access their water. The inundation of well was noted as a large issue, creating lines and crowds around this area. Farmers also mentioned that they map out their growing seasons beforehand to determine which crops need more water than others. Participant #4 from FGD2 explained:

The water shortage forces us to adjust our schedules in many ways, but that is just what we have to do... for my crops, I know that some require additional water than others... okra does not require a lot of extra water, so I plant more of those from march through July, which tends to be the dry season lately and the time of water shortage” (Participant #4, FDG2).

As mentioned under the previous theme, the water shortage, increased heat, and changing dry and rainy seasons have created burdens that require extensive adaptation and often inconvenient changes to one’s schedule.

## 6.2.2. Alternative Livelihoods

In order to make extra income and maintain food security for their families, participants noted perusing additional work outside of their farming livelihoods. The following sections describe the two distinct subcategories reflected in the findings.

### 6.2.2.a. Gleaning and Small-scale Fishing

The participants of coastal FGD2 as well as both interviewees from the coastal areas explained that because of the challenges described above, they have resorted to gleaning and small-scale fishing as an alternative livelihood to supplement their income and food security alongside their agricultural activities. Coastal participant, Interviewee #4, explained:

I now go to sleep early and wake up at 1 AM in order to catch shrimps because they are most active at night. I then feed my children and go to the farm to tend to the livestock and crops. I also go out in the late afternoon when it is not too hot to catch crabs and other seashells. My husband has a small boat, but it is not much. It is just enough to catch some more food for the family and make some extra income (Interviewee #4).

When following up on discussion over alternative forms of income and food, participants were asked how they would describe the practice of gleaning. FGD2 participants explained gleaning as a form of shallow-water fishing where they do not use a boat or expensive equipment, instead only buckets, small nets, scoopers, tongs, or their hands to catch primarily fish, seashells, and shrimps at low tide. The participants explained how gleaning is a relatively simple way to get more food and make a bit of income by selling the catch at the local market and also making the local staple food of “bilad” or “sun dried” fish and selling it for income. The coastal women noted that they have been embracing fishing more over the recent years because of many noted challenges that make growing crops increasingly difficult and unpredictable.

### 6.2.2.b. Craft-making and Street Vending

Both coastal and upland women revealed having additional livelihoods that do not even directly related to agriculture or fishing. Interviewee #2, from the coast, explained that she supplements her income by selling clothing online. She shared, “While my husband is out fishing before 6 AM, I am on my phone posting clothes online to sell. I sell both old clothes and new clothes that I make. After that, I go out to feed the chicken and tend to the crops” (Interviewee #2). Similarly, upland participants from FGD1 explained how they craft household items such as broomsticks, handheld fans, and coasters. They sell these either to local shop owners or just from their own home to make some extra income.

Both interviewees #4 and #5 mentioned that they are utility workers at the barangay meeting hall where they cook food for special events and clean the facility as a source of supplemental, steady income. Interviewee #5, from upland, shared, “I am glad that I work at the barangay hall because it is a form of steady and consistent income and I enjoy supporting my barangay.” Participant 1 also explained that she and other farmers will share a stall and sell homemade Filipino street food such as banana-cue, suman, bilo-bilo, and pancit. All participants noted that they would spend more time on their alternative livelihoods when the heat is too extreme, or they anticipate more crop loss.

### 6.3. Familial and Personal Wellbeing

While adaptation measures have been implemented by women farmers in response to climate change challenges, there are externalities of these adaptations. These climate vulnerabilities and the coinciding adaptations impact the personal lives of women, their families, and their communities in different ways.



### 6.3.1. Impacts of Income loss

Although farmers are implementing adaptations and resorting to additional livelihoods to respond to climate change, farmers noted that they still experience loss of crops, livestock, and inherently portions of their income. When asked how financial losses impact community events, farmers of FGD1 explained:

Nothing can stop us from celebrating together, we just have to budget in order to provide our family with enough food first. Celebrations like the Gayang fiesta and special events like birthdays and graduation are important for us, so the family joins together anyway... we just will not have as many luxury foods, gifts, or things like that... Family is the most important (Participant #5, FGD1).

Participants #6 and #7, from FGD1, emphasized how they always make sure that their neighboring farmers have food to eat, “If someone does not have enough money for food, we always bring food to their house or invite their family over to eat... I know that they [would] do the same thing for my family if we are in that same difficult situation” (Participant #6, FGD1).

Participants from FGD2 similarly noted that it was important that they focus on budgeting during times where they experience greater crop loss and issues with livestock because they must plan for income loss, pesticides, and livestock medications.

Interviewee #2 also noted that they struggle to make enough money to pay for the proper house repairs after the typhoons. She explained that her family in the neighboring barangays helped her to finance her repairs. Similarly, Interviewee #5 said that she must ask her daughter, who is working abroad, to send money home so that she can pay for more food and other resources.

### 6.3.2. Burden to Home Life

While alternative livelihoods are important for making extra income, this also takes more time out of the day and adds an extra burden when it comes to household responsibilities and

family. Specifically, the public school system in Guinayangan is still not allowing full time, face-to-face classes for elementary, high school, or senior high school. This means that students must complete modules at home, which for young students, requires parental support and supervision. Participants in FGD1 explained that they must stay home often to teach their children and help them with their schoolwork if they do not have older children to help out. Similarly, Interviewee #4, from the coast, explained:

I must wake up earlier in order to complete my chores, fish, and tend to the crops so that I can then teach my children. They are very young, so somebody must stay at home with them... They often need help with their school, so I am the tutor... The modular school format makes it difficult for working mothers to help their children and complete their own tasks at the same time (Interviewee #4).

However, members of FGD1 also noted that they try to work together by having the children join in one house for their modular learning so that they do not all need separate supervision. They try to teach the children in a communal space so that they can also continue their farming responsibilities.

Another stressor related to home life is the pressure that women carry to send their children to quality institutions for college. When asked about their biggest successes in regard to their livelihood, many participants emphasized that making enough money to send their children to college is their biggest achievement. Interviewee #1 explained that “my motivation and my biggest success is sending my daughter to college so she can be a teacher. I am also very proud that I was able to send my other children to school years ago” (Interview #1). In addition, Interviewee #5 said, “I am proud that we could make enough money to build our house, send the children to school, and provide a lot of food for our family” (Interview #5). Every interviewee expressed that their motivation and proudest part of their work was making enough money to

feed their children and send them to school. Participants in the FGDs expressed similar thoughts, in addition to making enough money to share with extended family.

#### **6.4. Decision-Making Power and Women's Visibility**

Assessment of decision-making power is important to understanding if and how much women are listened to in the farming community and on an institutional level with the Department of Agriculture. When asked about their accessibility to decision-making, the participants in FGD1 (upland) proudly explained that they have their own women's empowerment association called "KALIPI" where they are able to learn from one another to better their livelihoods and develop programs and policies to help their farming community.

Participant #6 from FGD1 explained:

In our organization, we meet to discuss different issues we are experiencing in our livelihoods. We make sure that every woman is heard, and we vote on different policies or decisions before they are finalized. This organization is a venue for women to also express their needs without interruption. The leaders of the organization will send these needs up to the local government... for example, we asked the KALIPI leader if they could provide us with rice seeds to plant since rice is a staple here in the Philippines... this took a long time, but we [did] receive the seeds to plant (Participant #6, FGD1).

In addition, all farmers have regular meetings and workshops run by the department of agriculture where new opportunities are given to the farmers and they can learn about new methods. The Head Agriculturist is a woman and the participants in FGD1 said that it is clear that she takes pride in being in charge of Guinayangan's Department of Agriculture. They added that seeing a woman in this leadership role makes them feel more comfortable expressing their needs on the institutional level. There are also farmer organizations for each barangay that include both men and women. Interviewee #4, from the coast, explained that she feels like the president of Arbismen's farmer association chapter makes an effort to ask women for their opinion and makes final decisions based on the majority vote.

Interviewee #1 works alongside her husband on their family owned farm and explained that, “when there are important decisions to make for our farm, my husband and I discuss together and assess our budget together in order to make a decision that we can agree on. I am equally involved in decisions for our farm” (Participant #1). FGD2 (coast) explained that they also have a fisherfolk association that helps with coastal related issues. Participant #5 emphasized that “women always have a voice in the big decisions” (Participant #5, FGD2). Overall, there was a universal concurrence noting that women are able to express their needs and their opinions effectively in shared spaces.

## **6.5. Support and Resources**

As mentioned above there are organizations designed specifically for women farmers and all farmers alike to provide support, relay information, and present new ideas. In addition to these, the farmers shared their experiences with not only other organized groups, but also more localized informal support systems. Both support systems and resources are crucial for coping with the impacts of climate change in agricultural livelihoods. The following responses share insight on the support and resources these women have access to and what they hope to receive in the future.

### **6.5.1. Support Systems**

The participants in FGD1 emphasized both their formal and informal group of women that they lean on in stressful times and on a regular basis. As referenced above they rely on the KALUPI organization for resources and connections to the local government. However, when asked about their support systems and coping strategies in difficult times, participant 1 explained:

It’s important not to stress out because that does not help us. Our community is very strong... the women here come together to support each other, and we rely heavily on our

families as our primary supporters in difficult times such as the typhoons, financial troubles, illness, and other things. We look to them first and then we reach out to the community for additional help (Participant #1, FGD1).

The Barangay Captains were also noted to be a source of support, especially in emergency situations where money was needed urgently such as accidents. Interviewee #3, from upland, shared her difficulties from this past year where her son got in a severe motorcycle accident, and she needed support:

As a single mother and landowner, it is already a lot of work trying to manage my coconut trees and other crops, in addition to caring for my family. However, when my son got in a motorbike accident last year, the community was there for me and helped me take care of my family and my farm. I had to spend many days at the hospital with him, so it took away from my time on the farm... the hospital bills are very expensive, but I reached out to the Barangay Captain and he was able to fund the hospital expenses, which was very helpful and generous (Interviewee #3).

It is visible that the village stands together in times of need and that they live a communal lifestyle where everyone contributes to each other and lends a helping hand when needed.

#### 6.5.2. Government and Organizational Assistance

In addition to these more informal support systems, the local government of Guinayangan, specifically the local Department of Agriculture and “The Kabuhayan at Kaunlaran ng Kababayang Katutubo” or “4K” for short. This is a 3-year special initiative hosted by the National Department of Agriculture which aims to alleviate poverty in Indigenous Cultural Communities by developing their land or regions through sustainable agriculture. FGD1 expressed how their barangay’s farmer organization has reached out to the local Department of Agriculture for many different resources. For example, participant #3 noted that when they were experiencing pests or diseases damaging their crops, the government supplied pesticides to alleviate the issue. In addition, Interviewee #1, from upland, expressed:

When we were struggling with the coconut disease, the government gave us a supply of pesticides to spray on the trees. In addition, when you are a registered coconut farmer,

you are connected with the Philippines Coconut Authority, which also provides these types of necessary resources...The government also provides fertilizer, but these resources are given one time only... They should continue to supply us with these important things for our crops because they are very expensive for us to buy on our own (Interviewee #1).

Others noted that they appreciate the fertilizers and pesticides but want them to be provided on a continuous basis, rather than just one time.

Similarly, coastal farmers who also practice fishing noted that they are able to be involved in the local “Fisherfolk” organization that strives to connect with the local government to provide for the coastal residents. However, Interviewee #2, from the coast, shared:

We raise concerns at our fisherfolk meetings, but the government does not always hear us. We are asking for more fishing nets and equipment, but we still have not received them. Instead, we must pay for them ourselves even though we are all short of money. We need the nets to catch fish to feed the community and our families (Interviewee #2).

When asked why they continue to be a part of these organizations, Interviewee #4, from the coast, explained that being involved in the local farmers organization provides them with a variety of different seeds to plant as well as 3000 pesos to use for their farm. In addition, they shared that there are micro financing and micro lending opportunities when farmers want to do larger projects or need help with major repairs. When asked how women could be supported more in the future, Interviewee 4 explained that she thinks there should be more agricultural education opportunities. “The Farmers Field School is only possible for women who do not own their own land and have another job on the side too” (Interviewee #4). FGD2 (coastal) emphasized more native pig and native chicken distribution events and more fishing nets from the government and partner organizations.

## **7. Discussion**

Although the participants of the FGDs and the interviewees make up only a small portion of women farmers in the municipality and the greater province of Quezon, the findings suggest prominent themes surrounding the implications of climate change as experienced by women farmers in Guinayangan. Overall, the substantial and diverse array of perspectives on climate change impacts, adaptation strategies, available resources, and hopes for the future reveal that as a community, women farmers can relate based on shared experiences. They value opportunities for their voices to be heard in both barangay-level and municipal-level spaces in order to facilitate the successful future they aim for- one where they can feed their communities, provide for their families, and nurture their children's dreams. The following section will discuss and analyze the themes as they relate to the literature.

### **7.1. Comparing Climate Change Impacts and Adaptations**

Generally speaking, the climate change vulnerabilities that participants expressed were those challenges that are familiar to that geographical region, especially as climate change intensifies. These included typhoons, water scarcity, temperature increases, and livestock and crop diseases. When looking at how these climate change events impact *women*, it was evident in the findings that a significant concern was loss of income and loss of crop yield, which contributes to a fear of being unable to nourish the family. However, this fear exists simultaneously with the pride that women shared in being able to provide for their families and community. From their research in Nigeria, Ogunlela and Mukhtar (2009) noted that women face greater vulnerability from climate change due to the additional burdens they take on in the home. Women are the ones who carry the responsibility of maintaining food security for their families,

cooking the food, cleaning the home, in addition to their farming responsibilities. Drawing back to McMahon (2002), the findings too revealed that women experience negative impacts not only on their farm, but also in their home in the form of financial stress and food insecurity. The findings highlight this aspect of the literature and corroborate an understanding of women's vulnerabilities to climate change, pushing even further to suggesting an expectation of women to carry the massive responsibility of supplying food for the family. This theme was seen amongst both upland and coastal participants, suggesting that the challenges that women in Guinayangan face, ultimately create some of the same concerns, one being food security for the family.

Although it is clear that women bear great burdens upon responding to severe climate impacts, participants seldom compared their work to that of their male counterparts. Tamang et al. (2014) noted that men lean towards urban work and migrate to cities due to the frequent struggles faced by agriculture. Hence, the agricultural labor becomes solely placed on the women (Tamang et al., 2014). This theme was not supported by the findings, rather brief mentions were made by participants regarding the *support* of their male partners. Those participants who share landownership with their husbands or do similar work as their husbands, noted collaborative planning for future endeavors and mutual understanding of the distribution of farm and home responsibilities. Coastal women noted how they join their husbands in fishing and gleaning practices. Aside from this, the roles of male figures were not shared and there was no suggestion of men transitioning to city environments for work. The tight-knit nature of families and communities in Guinayangan as described by the participants, suggests that perhaps men pursue livelihoods close to home, in order to remain integral members of the support system.



When looking closer at the comparisons between the experiences of upland and coastal women farmers, the findings reveal that while both groups experience the **same climatic events and vulnerabilities, there are differences in the impacts as determined by their geographical location in Guinayangan.** After harsh typhoons, coastal women expressed witnessing tragedy in their neighborhoods, with destruction of homes and even death due to their proximity to the water, high winds, and stilted homes, lending them to poor stability during typhoons. Both Fuchs et al. (2011) and Sales (2009) describe the risk that Southeast Asian coastal communities have with facing severe flooding as well as sea level rise. Reyes (2002) also emphasizes the vulnerabilities that coastal women experience from floods and extreme weather events, which tie in with the coastal participants' struggle to protect their families and homes. They recalled having to relocate their livestock and evacuating to safe locations to protect their children in the wake of such events. The literature highlights similar struggles of coastal folks and advocates for the integration of a coastal protection plan to address these unique vulnerabilities of coastal women (Fuchs et al, 2011; Sales, 2009). Such suggestion is certainly relevant in this specific Southeast Asia setting of rural Philippines.

Both upland and coastal women experienced significant losses of their crops and livestock from typhoons and extreme weather events. They also noted patterns in which crops were more resilient versus those that were more difficult to manage. However, in regard to diseases and pests, coastal women expressed having to put more thought into where they keep their livestock since the homes are very close together, further emphasizing the need for a climate action plan personalized for coastal areas. However, this is not to neglect the difficulties

that upland women face in relation to climate change, but to highlight the unique needs of different areas.

Both coastal and upland women experienced challenges with the water shortage in Guinayangan. The findings revealed that the water scarcity issue had the greatest impact on women's time and their busy schedules because instead of simply turning on their faucets, they emphasized the need to trek to either a deep well, shared faucet, or having to wait for their scheduled time to turn on their water source. This impacts the time of day in which their family members can bathe, wash clothes, wash dishes, and even use the toilet. They use large drums to store water, but it is often not enough for the whole family. Buechlar (2009) assessed drought and depletion of water in Sonora, Mexico and how it negatively impacts women's "social capital". Buechlar (2009) expressed that this climate vulnerability harmed women's social capital by limiting networking opportunities due to the lack of fruit and vegetable exchanges between women. However, I argue that this differs from the experiences of the women in Guinayangan. Although water scarcity was noted as a significant inconvenience for the participants, I argue that the adaptation strategies employed by these women do not necessarily damage their social capital. Contrary to the discourse of Buechlar (2009), the participants described how they share with their neighbor and rely on one another for support. They create networks in which they share their household water supplies, making them more communal. This interaction between natural assets and social assets are what influence the future of the agricultural livelihoods as they express the importance of successful crop production for the sustenance of their families and community. Although an obstacle, the participants' reactions to the water shortage did not involve large losses in direct financial capital but called for increased community collaboration

as the adaptation strategy. This is not to minimize the burden of the water shortage, but to highlight the resilience of the women in this community and reveal how they innovate and adjust difficult situations and remain positive and hopeful for the future.

In addition, the responses revealed that alternative livelihoods were a core adaptation strategy, from small-scale fishing to street food vending. Similarly, to Tamang et al. (2014), the study reflected how women often lean towards alternative livelihoods in addition to their farming roles, to make more income and support their household food security. While these new outside roles are for the purpose of bettering the family, they also inherently extract from their time and energy (Butt et al., 2010; Tamang et al., 2014). Especially during a time of modular school format for young children, mothers in Guinayangan must juggle their primary livelihoods, alternative livelihoods, and their children's education.

While these alternative livelihoods create additional responsibilities, it is important to recognize the nuances of the alternative activities of both coastal and upland populations. All coastal women revealed practicing gleaning or other small-scale fishing activities in order to earn more money and catch their own food for their family. Women from the upland areas did not reveal fishing activities, but rather craft-making and street food vending as additional sources of income. A portion of the coastal women also expressed practicing one of these other alternative livelihoods on top of fishing and agriculture. Stacey et al. (2019) expresses recent efforts to diversify alternative livelihood activities in developing coastal communities in order to reduce poverty and improve well-being. They also sought to assess the gender-based norms associated with certain livelihoods. Although fishing activities are coded as being more along the lines of "men's work", coastal farmers in Guinayangan look straight to fishing and gleaning as accessible

ways to adapt to the struggles with agriculture. However, this alternative livelihood is also not immune to climate change disruption. As mentioned in the findings, the water temperature is increasing and inherently deterring certain sea species. This explains the need for coastal women to adopt more than one alternative livelihood activity, as noted in the findings. The array of unique alternative means for income is just one example of the resilience that the participants exude.

Due to agricultural livelihoods being directly dependent on environmental resources and stability, climate change inherently creates difficulties in every aspect of society. Therefore, it is crucial that the local government also adapt to the impacts of climate change to accommodate and relate to the people they serve. **Alternative livelihoods can generate other benefits besides income, however, the participants emphasized how they contribute to additional stress and responsibility for women in their home lives. This emphasizes the disproportionate impact of climate change on women, especially rural women. As Kaushik and Sharma (2015) explain, this calls for modifications to policies and additional policies that will help facilitate growth and success for their community's food providers. Kaushik and Sharma's (2015) call for amendment to policies directly relates to the findings of this study as women expressed the desire for additional government support through the form of more resource distribution such as fertilizers, pesticides, seeds, livestock medication, and fish nets.**

## **7.2. Women's Empowerment and Decision-Making Power**

The findings suggested that women *do* feel heard in their community and that they are a part of decision-making processes both in their own home and in local organizations. Participants noted involvement in a variety of different organizations that facilitate success in their livelihood

and contribute to personal wellbeing. In addition, participants noted that the Head Municipal Agriculturist is a woman. This inspires the women farmers and allows them to feel like they are being represented in the local Department of Agriculture, creating the potential for cohesion between the government and the people they serve. Upon asking these questions regarding women's participation in decision-making, the women did not hesitate to emphasize their involvement in important decisions in the agricultural sector and within their own lives.

This contrasts with Rao et al., (2019) and their notion of agriculture being a patriarchal sector. In addition, the prevalence of women's contributions in the sector and community, supports the narrative that they are the opposite of "weak" or "socially isolated" (Rao et al., 2019). Similarly, Ogunlela and Mukhtar (2009) found that women were "voiceless" in the realm of agricultural decision making. However, this could not be farther from the truth in Guinayangan- women express significant involvement both in agricultural policy and practice in order to gain information and receive assistance in the face of climate change. The integration and elevation of these voices generates new perspectives that account for women's needs, furthering the potential for a sustainable future, one where they may continue to provide for the community.

These findings contribute to the understanding of "feminization of agriculture", as it is visible that women are integral to Guinayangan's agriculture, seeking to be leaders and sharing their ideas. The literature conceptualizes this phenomenon as the rise of women- led agriculture, creating a gateway towards female empowerment and food security (Asadullah and Kambhampati, 2021; Puttnaik, 2018). However, this is not without appropriate policy reform and targeted support that addresses women farmers directly. Specifically, Asadullah and

Kambhampati (2021) assert that monetization and economic recognition of women's labor are critical policy interventions that must be implemented. Although the findings did not dive into the nuanced economic issues in agriculture and how these interact with women's labor, it is important that policies and government support accommodate the changing needs of women as they grow more involved in the sector and experience increased challenges.

### **7.3. Limitations of Research**

When conducting this research there were different factors that hindered certain aspects of the research, starting with the selection of the barangays. IIRR explained that certain barangays were off limits for the research because of political unrest and resistance to NGO involvement and participatory research. Although they did not specify the exact barangays, this inherently created a barrier for the data collection as some places were off limits and the sample size may not be representative of the entire municipality. Likewise, the barangays that were visited were in the southern part of Guinayangan, which leaves out the potential to collect information from the northern part, as Guinayangan stretches far up the coast. This limitation was also due to financial and time constraints for the practicum organization to transport both me and the interpreters to these different locations. It would not have been feasible to go to farther barangays. In a similar vein, the distance to the barangays, insufficient transportation, cost, and tight schedules did not allow for multiple visits to the research participants.

Another limitation is created by my lack of fluency in the native language of Tagalog. This limitation perhaps puts a strain on comfortability of the participants and the researcher, while simultaneously limiting the potential for stronger connections. In addition, attention should be brought to the length of the research stay. Due to the length of the semester calendar and

academic deadlines, the research was limited to two months, rather than a full annual term. An annual stay could have exposed other issues and climate change impacts that are relevant to specific times of the year. Participants often noted different challenges in rainy season versus dry season; a year-long stay would have provided the opportunity to experience these seasons and gain more information on the related impacts. When suggesting future endeavors, it would be interesting to compare the experiences of women from barangays that are of greater distance from each other and greater distance from the municipal center. It could also be interesting to compare the experiences of men and women from these locations to gain greater insight into how gender norms reflected in the literature reveal themselves in real life context in Guinayangan, Quezon.

## **8. Directions for Future Research**

Given the small sample size of the study and limited social research in this location, there is a multitude of opportunities for future research. First and foremost, increasing the sample size of the study would allow for a more comprehensive collection of perspectives and experiences of women farmers. As noted in the Background section, women comprise more than half of the labor force in the agricultural sector, the sample size can be expanded to reflect this reality. Adding additional participants to the study would create a more robust collection of data, and potentially uncover new perspectives that were not reflected in responses from the current sample of participants. A more robust collection of data would corroborate existing themes and even lead to the development of new themes, therefore strengthening the results. These additional participants should be recruited from a wider variety of barangays, including those in

the northern parts of the municipality. This would highlight how participants living further away from the municipal capital experience support from the local government and partners. It could also reveal new climate vulnerabilities not shared in the current sample.

In relation to sample size, future research could employ perspectives from men in the agricultural sector in order to compare the experiences of women and men in Guinayangan. This would place more emphasis on gender dimensions of agriculture and how experiences with climate change impacts and adaptations differ by gender in this location. This would foster new discourse with the existing literature by focusing more specifically on division of labor and how gender roles are perceived and practiced in Guinayangan. In the same vein, more questions could be asked to women regarding their collaboration and interaction with men in the sector. This would facilitate a more robust discourse regarding the “feminizations of agriculture” discussed in the literature.

In addition, an approach could be to focus on intergenerational challenges of women farmers by intentionally selecting women of different generations for interviews. This would create more of a historical analysis of the challenges experienced by women farmers in the community, revealing the evolution of climate change adaptations. Comparisons would be drawn between different generations of women and perhaps provide a unique outlook on how different strategies have come and gone throughout generations of farmers. This too would further elevate discourse with literature regarding the shifting norms of the agricultural sector. This could inform both the farmers and the local governing body on how to further nurture the success of women in the agricultural sector.



## 9. Conclusion

The objective of this capstone research was to collect insights on the unique challenges, diverse adaptation strategies, coping mechanisms, and empowerment of women farmers through a mixed methods approach of life history interviews and focus group discussions. Drawing comparisons between women of upland areas and women of coastal areas of Guinayangan allow for intentional planning for the future in the wake of climate change. Approaching this topic using data from both life history interviews and focus groups allows for more personalized conversations and individual perspectives alongside broader discussion and complex discourse to gain different outlooks on the same topic.

Despite the small sample size of this study, the interviews and focus group discussions provided great insight into their overall experiences with climate change as it impacts their livelihoods and wellbeing, in addition to honest hopes for the future. It was found that while both women from upland and coastal areas experience similar climate vulnerabilities, the way that these impact their daily lives look quite different. Coastal women experience extensive damage to their low-lying homes and vulnerable crops in the events of frequent typhoons. Although both groups struggle with the municipal-wide water shortage, upland women find difficulties with sharing their supplies due to their farther distance between their homes. The adaptive measures taken by these women range from trimming their banana trees and creating communal water storage systems to adopting separate livelihoods in addition to their primary farming livelihoods. While coastal women practice gleaning and other fishing activities and upland women frequent street vending and crafting for alternative income, both groups sought out community alliances to share concerns, relate on different issues, and grow educated on different aspects of

agriculture. Perhaps the most important role of these organizations was the role they play in connecting farmers to the local government where they can access important resources.

Participants highlighted the positive impacts of the local government's pesticide distribution, seed donations, and native livestock training, amongst other things. However, they emphasized that such "one-time" contributions lack consistency and hinder their ability to move forward in their livelihood.

The utilization of the "life history" approach played a crucial role in bringing such issues to light and uplifting the voices of people who often go unheard. This approach better addresses rural women in the Philippines and perhaps elsewhere by humanizing such a topic (climate change) that is often spoken about in blunt, scientific language that removes personal experiences from the conversation. This study effectively ties the issue of climate change back to the individual and the community through their own words and experiences. These personalized interviews allowed for the individual to express their honest perspectives, facilitating a more productive space for capturing/identifying their needs for the future. As a result of these findings, I recommend the following next steps for the agricultural sector as we aim to support women farmers in their efforts to feed the local community in the face of climate change:

1. Establish more frequent and consistent distributions of key resources such as fertilizer, pesticides, seeds, and livestock medication. In addition, there should be an increase the frequency of native chicken and native pig distribution events as to make these available to more farmers, especially those farther from the municipal capitol.
2. Modify the timing and structure of trainings and educational opportunities such as the Farmers Field School (FFS), to make these more accessible to women who are full-time farmers, mothers, and caretakers. Gaining insight into the daily lives of women farmers will allow the local government and other partners to accommodate women's schedules so that such informative events can generate their maximum impact in the farming community.
3. Facilitate more opportunities for financial support such as microfinancing programs and incentives for participation in climate smart agriculture and sustainability

initiatives. In addition, continue to provide financial support to the localized farmer and fisherfolk (applicable to coastal areas only) organizations and women's farming associations in each barangay.

4. Call on the Bureau of Fisheries and Aquatic Resources, an agency within the Department of Agriculture, to not only focus on the larger, income-generating fishers in the municipality, but support the subsistence fishers and gleaners who do this as an alternative livelihood alongside farming as a means for food security and minimal income generation. It is crucial that this body connect with fisherfolk organizations across the municipality to aid women who are juggling these two livelihoods while simultaneously responding to devastating typhoons and flooding on their coastal property.
5. Continue to uplift the voices of women in conversations regarding future agricultural development, natural disaster planning, and communal climate change adaptation strategy. As farming grows more challenging, it is critical that women have space to express their concerns and share their ideas for adaptations moving forward.

It is important to recall that the municipality of Guinayangan is unique in that organizations such as IIRR have positive and collaborative relationships with the local Department of Agriculture and actively facilitate climate smart agriculture into the community. This should provide perspective and show how even municipalities that are leaders in such agricultural sustainability efforts *still* have farmers who struggle with the impacts of climate change. It is crucial that these struggles are listened to and addressed properly as these are the voices of the people who put food on the table for the whole community. As this research found women farmers experience many of the same challenges and address them differently depending on their resource availability and geographical location. Therefore, it is reasonable to believe that women farmers in other agricultural municipalities of the Philippines and beyond, share similar experiences and will benefit from these recommendations in the future as they navigate their livelihoods in a changing climate.

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## Appendix A: Outreach Email to Barangay Captains

Dear [Insert Barangay Captain Name],

I hope this letter finds you well. I am excited to share that I am interested in conducting research in [insert barangay] as a part of my capstone for my Master's degree in Climate Change and Global Sustainability. I am currently an international intern for the International Institute of Rural Reconstruction (IIRR) at the Guinayangan field office. I am originally from Maryland, United States and this is my first time in the Philippines! In order to fulfill my graduation requirements, I am designing and conducting my own climate change-related study.

My research aims to compare climate change adaptation and mitigation strategies used by women farmers in coastal and upland areas of Guinayangan, Quezon. To achieve this, I am conducting five interviews and forming two focus groups where a collection of open-ended questions will be asked to gain insight into the perspectives of rural women in different barangays. I am requesting your assistance with recruiting women farmers from your barangay to participate in my study.

[This section inserted for barangays where focus group discussions will take place]

Specifically, I am interested in forming a focus group in [insert barangay], consisting of at least five participants from the [insert upland or coastal] region of this barangay. A diverse group of landowners, tenants, and shareholders is preferred in order to gain a spectrum of perspectives. The focus group discussion will not exceed 1 hour and 30 minutes in length. Participants are asked to join in the barangay meeting hall at 9 am, on [insert date].

[This section inserted for barangays where life history interviews will take place]

Specifically, I am interested in interviewing 2-3 women farmers from [insert barangay], with at least one residing on the coast and one residing in the upland region of this barangay. Diversification in landownership is encouraged (landowner, tenant, or shareholder) to gain a spectrum of perspectives. Each interview will not exceed 1 hour and 20 minutes. Participants are asked to come to the barangay hall in a staggered manner on [insert date]. Participant #1 is asked to come at 1 pm, participant #2, at 3 pm, and participant #3 (if applicable) at 5 pm.

In the end, I hope to learn how women farmers support each other in their efforts to adapt to climate change, what challenges they face daily, and how they interact with the local community for decision making. When completed, this research can be used to inform the community and local government on strategies for tackling climate change related issues in agriculture and to learn how to best support and empower women farmers in the Guinayangan municipality. Thank you for your flexibility and support.

Sincerely,  
Miranda (Mimi) J. Salters

## **Appendix B: Participant Informed Consent**

**TITLE OF THE STUDY:** Comparing Adaptation Strategies and Coping Mechanisms Women Farmers from coastal and upland Guinayangan, Quezon, Philippines: A Life History and Conversational Approach

**RESEARCHER NAME:** Miranda Jane Salters

My name is Miranda Jane Salters and I am a student with the SIT Global Master of Arts in Climate Change and Global Sustainability program. I would like to invite you to participate in a study I am conducting (for partial fulfillment of my MA in Climate Change and Global Sustainability). Your participation is voluntary.

Please read the information below, and ask questions about anything you do not understand, before deciding whether to participate. If you decide to participate, please sign this form and you will be given a printed or electronic copy of this form.

**OR**

Please listen to the information, and ask questions about anything you do not understand, before deciding whether to participate. If you decide to participate, please give consent orally either at the beginning of the recording or in another form of documentation (e.g., “You may say “yes” if you consent, and I will record it in my field notes”).

### **PURPOSE OF THE STUDY**

The purpose of this study is to gain insight into the perceptions and practices of sustainable agriculture of women in rural and peri-urban Philippines. The collection of life history interviews will provide background about participants’ role in the agricultural community and how they cope with climate change in their work.

### **STUDY PROCEDURES**

For this study, participants are asked questions regarding their agricultural background, work responsibilities, and concerns for the future of their work, amongst other things. Semi-structured interviews will not exceed one hour and will occur a maximum of six times for key participants during the study period. These interviews will take place in a quiet space at the International Institute of Rural Reconstruction (IIRR) campus. With your consent, an audio-recording will take place to ensure information is not missed. However, you can still participate in the study even if you do not wish to be recorded.

### **POTENTIAL RISKS AND DISCOMFORTS**

There are no foreseeable risks to participating in this study and no penalties should you choose not to participate; participation is voluntary. During the interview you have the right not to answer any questions or to discontinue participation at any time.

### **POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY**

The data from interviews will be used to write a paper. This paper will be made available by IIRR and through the SIT website. The study aims to empower rural women and explore possibilities for the future of agriculture in the Philippines.

### CONFIDENTIALITY

Data collected from interviews will be kept on a password protected external drive. This documented data will not be shared with anyone except for the researcher (me), the translator, and the interviewee (you). Interviews will be conducted in a private space. Audio recordings will be destroyed a month after the paper is complete. In the final paper, you will be identified by “Interviewee 1”, “Interviewee #2”, etc. Your name any other specific identifiers will be kept confidential.

### FUTURE USE OF DATA

The data from this study and your personal information will not be used for future research studies or distribution.

### VOLUNTARY PARTICIPATION AND WITHDRAWAL

Your participation is voluntary. Your refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study.

### RESEARCHER’S CONTACT INFORMATION

If you have any questions or want to get more information about this study, please contact me at [miranda.salters@mail.sit.edu](mailto:miranda.salters@mail.sit.edu) or my advisor at [Joseph.lanning@ihp.edu](mailto:Joseph.lanning@ihp.edu)

### RIGHTS OF RESEARCH PARTICIPANT – IRB CONTACT INFORMATION

In an endeavor to uphold the ethical standards of all SIT proposals, this study has been reviewed and approved by the SARB or SIT IRB. If you have questions, concerns, or complaints about your rights as a research participant or the research in general and are unable to contact the researcher please contact the Institutional Review Board at: [irb@sit.edu](mailto:irb@sit.edu) .

*School for International Training, Institutional Review Board, 1 Kipling Road, PO Box 676, Brattleboro, VT 05302-0676, USA [irb@sit.edu](mailto:irb@sit.edu), +001-802-258-3132*

“I have read the above and I understand its contents and I agree to participate in the study. I acknowledge that I am 18 years of age or older.”

*Participant’s signature:* \_\_\_\_\_ *Date:* \_\_\_\_\_

*Researcher’s signature:* \_\_\_\_\_ *Date:* \_\_\_\_\_

### OTHER STUDY ELEMENTS

#### Consent to Quote from Interview

I may wish to quote from the interview with you in the capstone paper resulting from this work. "Interviewee #" will be used (instead of your name) in order to protect your identity.

Initial one of the following to indicate your choice:

\_\_\_\_\_ (initial) I agree to consent to quote from an interview

\_\_\_\_\_ (initial) I do not agree to consent to quote from an interview

**Consent to Audio-Record Interview**

Initial one of the following to indicate your choice:

\_\_\_\_\_ (initial) I agree to consent to audio record an interview

\_\_\_\_\_ (initial) I do not agree to consent to audio record an interview

## Appendix C: Interview Guide

### LIFE HISTORY INTERVIEW QUESTIONS

#### *Background-related Questions*

1. What is your role on the farm?
2. How long have you been involved in this work?
3. What was your family's size and livelihood when you were growing up? In what ways did this contribute to your career choice?
4. Can you take me through your day-to-day life? What motivates you each day?

#### *Perception-based Questions*

5. Can you describe the importance of agriculture in your community?
6. How do women work together to benefit one another? Do you have a strong network of family and friends to look to when there are difficulties? When challenges arise, who do you rely on in your family (e.g. parents, spouse, children, etc.) and community (e.g., local leaders, neighbors, friends, etc.)?
7. How do you feel your work is perceived by your community and fellow farmers?
8. What are your greatest successes on your farm? What were the main contributors to these successes?
9. What challenges have you experienced on your farm? To what extent were these challenges a result of environmental factors/climate change? What kinds of environmental changes were these?
10. What adaptations did you make as a result of these challenges? What were the difficulties with these measures and how did you overcome them?
11. Do you feel that you have a voice in your community for making change and sharing your ideas?
12. How are ideas raised and decisions made in your family and community? What role do women play in this process?
13. Who is instructing you to make these change, if anyone?
14. In what ways have your daily tasks changed over the course of your career? How much of this is because of environmental factors?
15. Is it important to you that your farm/your work is aligned with the climate smart initiative? Why? Is sustainability of high importance to you? In what ways does your work reflect this?
16. How does your community perceive climate change and the importance of climate smart agriculture? Do you feel supported and prompted to grow involved in these efforts?

17. Do these climate adaptations and mitigation measures create additional burden on your household responsibilities? If so, how? (food security, time with family, etc.?)
18. Do you wish you had more support? If so, from whom and in what manner?
19. Do you feel hopeful that these adaptation measures will be successful? What are your hopes and predictions for the future of this farm and of your career?

## FOCUS GROUP DISCUSSION QUESTIONS

1. Can you describe the importance of agriculture in your community?
2. Does the term “sustainability” mean anything to you? If so, what? Where did you gain knowledge/education about climate change?
3. How do women work together to benefit one another? When challenges arise, who do you rely on in your family (e.g. parents, spouse, children, etc.) and community (e.g., local leaders, neighbors, friends, etc.)?
4. How do you feel your work is perceived by your community and fellow farmers?
5. What challenges have you experienced on your farm? To what extent were these challenges a result of environmental factors/climate change? What kinds of environmental changes were these?
6. What adaptations did you make as a result of these challenges? What were the difficulties with these measures and how did you overcome them?
7. How did you learn about/how to implement these adaptation measures? Do you feel that you have a voice in your community for making change and sharing your ideas?
8. How are ideas raised and decisions made in your community? What role do women play in this process?
9. Who is suggesting these adaptation strategies and changes?
10. How does your community perceive climate change and the importance of climate smart agriculture? Do you feel supported and prompted to grow involved in these efforts?
11. Do these climate adaptations and mitigation measures create additional burden on your household responsibilities? If so, how? (food security, time with family, etc.?)
12. Do you think climate change adaptations are taking away from a certain cultural or traditional practice on the farm/in the community/in culture?
13. Do you wish you had more support? If so, from whom and in what way?
14. Do you feel hopeful that these adaptation measures will be successful? What are your hopes and predictions for the future of agriculture in the community?