

REFINED PROBLEM STATEMENT

Summary. The archipelago nation of the Philippines is one of the most vulnerable countries in Southeast Asia due to its exposure to natural hazards and the effects of climate change, such as typhoons, flooding, and sea level rise. These factors pose significant risk not only to the national economy, but also to the livelihoods of the most vulnerable populations, particularly those in the agricultural sector. Coconut smallholder farmers (SHFs) are among the least resilient in the face of economic stresses and environmental shocks such as natural disasters, market volatility, crop failure, and resource scarcity. Their ability to build assets as well as manage and mitigate risk is also severely constrained due to exclusion from the formal financial sector, propensity to cycles of low productivity, high levels of indebtedness, late detection of pest and disease outbreaks, lack of income diversification and limited market options.

Background. The Philippines is the 2nd largest producer and exporter of coconut products in the world. Produced by over 3.5 million SHFs in 68 of 81 provinces, coconut is the Philippines' top agricultural export and industry with 23 million people dependent for their livelihood in various coconut related enterprises. However, major challenges, including climate change related weather events such as typhoons, as well as pest and disease outbreaks, threaten coconut SHF livelihoods and pose major risks for the national economy. For example, super typhoon Haiyan caused \$400 million in economic loss and damaged 33 million coconut trees, wiping out all productive assets of 1 million coconut SHFs, while *cadang-cadang* disease decimates ~1 million trees annually.

Barriers to SHF Resilience. In the last two months, Grameen Foundation USA (GFUSA) conducted research involving private, public and NGO agricultural and financial sector stakeholders. GFUSA used Human Centered Design techniques to perform qualitative research with 71 coconut and cacao SHFs; and also collected quantitative baseline data from 276 SHFs in Quezon and Davao provinces. Based on analysis, GFUSA identified four key barriers to achieving household resilience of SHFs:

- 1) **Low productivity due to lack of information, low adoption of good agricultural practices and calamities (i.e. typhoons)** at the farm level prevents SHFs from achieving economic resilience through increased incomes and environmental resilience of crops. According to the data,
 - ✓ 97% have never received extension services, although 79% need farming advice.
 - ✓ 88% do not use any type of fertilizer to help boost yields.
 - ✓ 83% are unfamiliar with good agricultural practices.
 - ✓ 61% identified calamities i.e. typhoons as their top challenge to productivity but have not identified any coping strategies to adapt to this challenge.
- 2) **Lack of farm income diversification and low market prices** increase vulnerability to economic stress and shocks, reduce food security, and reduce crop resiliency to environmental stresses.
 - ✓ 99% did not recognize certification seals i.e. Fair Trade which pays higher prices for SHF products.
 - ✓ 82% practiced intercropping but income from intercrops only accounts for 20% of total income.
 - ✓ 62% reported having regular 1-2 buyers, but 56% are middlemen buying coconuts at low prices.¹
 - ✓ 15% reported low market price as their top constraint largely resulting from selling to middlemen.
- 3) **Lack of access to financial services i.e. loans, savings, household and crop insurance products.** SHFs are unable to tap financial tools that can provide a critical safety net in the face of environmental shocks and unable to overcome economic stresses, such as low farming returns that contribute to cycles of indebtedness. With access to financial services, SHFs can engage in risk mitigation and asset building. This enables farm investments to both improve productivity through higher yielding varieties or plant

¹ Middlemen or consolidators buy coconuts from SHFs at lower market prices, earn 1 peso per coconut collected, and sell at a higher price to buyers. These buyers process coconuts and sell value-added coconut products to domestic and global buyers and retailers.

renovation, and to meet market requirements, such as organic certification to secure higher prices and income. Over time, SHFs can reinvest in their household through financial products, continue building assets and achieve greater household economic resiliency.

- ✓ 66% of coconut SHFs state they borrow additional funds needed from family and friends.
- ✓ 49% of all SHFs surveyed cite lack of access to capital as their number one challenge.
- ✓ 11% reported have savings, but 9% use it as a primary coping strategy outside of farming.
- ✓ SHFs use capital for income smoothing, food purchases, or various aspects of farm management but rarely do they have the means to invest in their farms.

4) **Limited visibility into the incidence and spread of new diseases**, and lack of understanding of mitigation techniques lead to SHFs' inability to detect, prevent and control pest and diseases.

- ✓ 100% of coconut SHFs report being affected by pest and disease, i.e. scale insects and rodents.
- ✓ 78% are unfamiliar with integrated pest management practices.
- ✓ 12% of cocoa SHFs site pest and disease as a key challenge.

Profile of a Coconut SHF. Despite being part of a multi-billion dollar industry, coconut SHFs are among the poorest in the Philippines with 60% living at or below the poverty line of 20,000₱ (US\$444) per year. A typical coconut SHF is on average 45 years of age or older, heads a family of 6 and works on a 2.21 hectare (Ha) plot of land with trees averaging 30 years of age. Household income averages 20,000-25,000₱ (US \$450-\$564) based on securing 5₱ per kg (1 coconut = 1kg) with farms harvesting 4,000 kg per Ha annually. Female members are generally involved in farming activities with 39% reporting as female heads of the farming household. (See *Social Safeguards* section for role of gender). In terms of farming practices,

- ✓ 99% do not apply any form of fertilizer because they consider it too expensive.
- ✓ 99% have never received any extension service from local government or the Philippine Coconut Authority, despite recognizing the importance of receiving farming advice and training.
- ✓ 82% perform intercropping as a coping strategy with banana and corn as the top two crops planted.
- ✓ 80% lack integrated pest management practices to control pest and disease spread.

For trade and financial needs, SHFs also travel 13.16 km to the nearest trading center and 24.15 km to access the nearest bank. In fact, 58% of respondents have not availed of any financial services from organizations or banking institutions with 25% relying on securing credit from traders and suppliers.

Although there is considerable global market demand for coconuts, SHFs are trapped in a cycle of low-productivity as they have limited access to the resources and information needed to improve yields due to aging trees, soil nutrient deficiencies, pest and disease and typhoons. Combined with existing value chain structures, low productivity and consequently low supply limit SHFs from capitalizing on global market access and opportunities through soaring demand for all types of coconut products, such as coconut water and coconut oil.

Project Approach. To address the drivers of vulnerability and promote resiliency among SHFs, the team is employing a multi-sectoral approach to bring together public, private and NGO actors: value chain actors, agronomists, technical experts, government agencies and financial institutions to deliver integrated solutions that enable SHFs to anticipate, manage, and mitigate complex risks. GFUSA will serve as a convener, driving collaboration between and among coconut stakeholders to better serve SHF households through our Community Knowledge Worker model, which mobile equips a network of trusted rural agents. This network of last mile agents will optimize existing services, coordinate access and delivery of resources, and accelerate the effectiveness of mobile solutions to build household resiliency of SHFs. To this end, GFUSA will work with SHF households, where 92.6% of total income is dependent on the farm, and where building farm resiliency is the foundation of building household resiliency. Therefore, increasing household adaptive capacity involves building farm assets and diversified livelihood strategies, through crop and product diversification, decreasing farmers' vulnerability to typhoons as well as pest and diseases, and building strong farming systems.

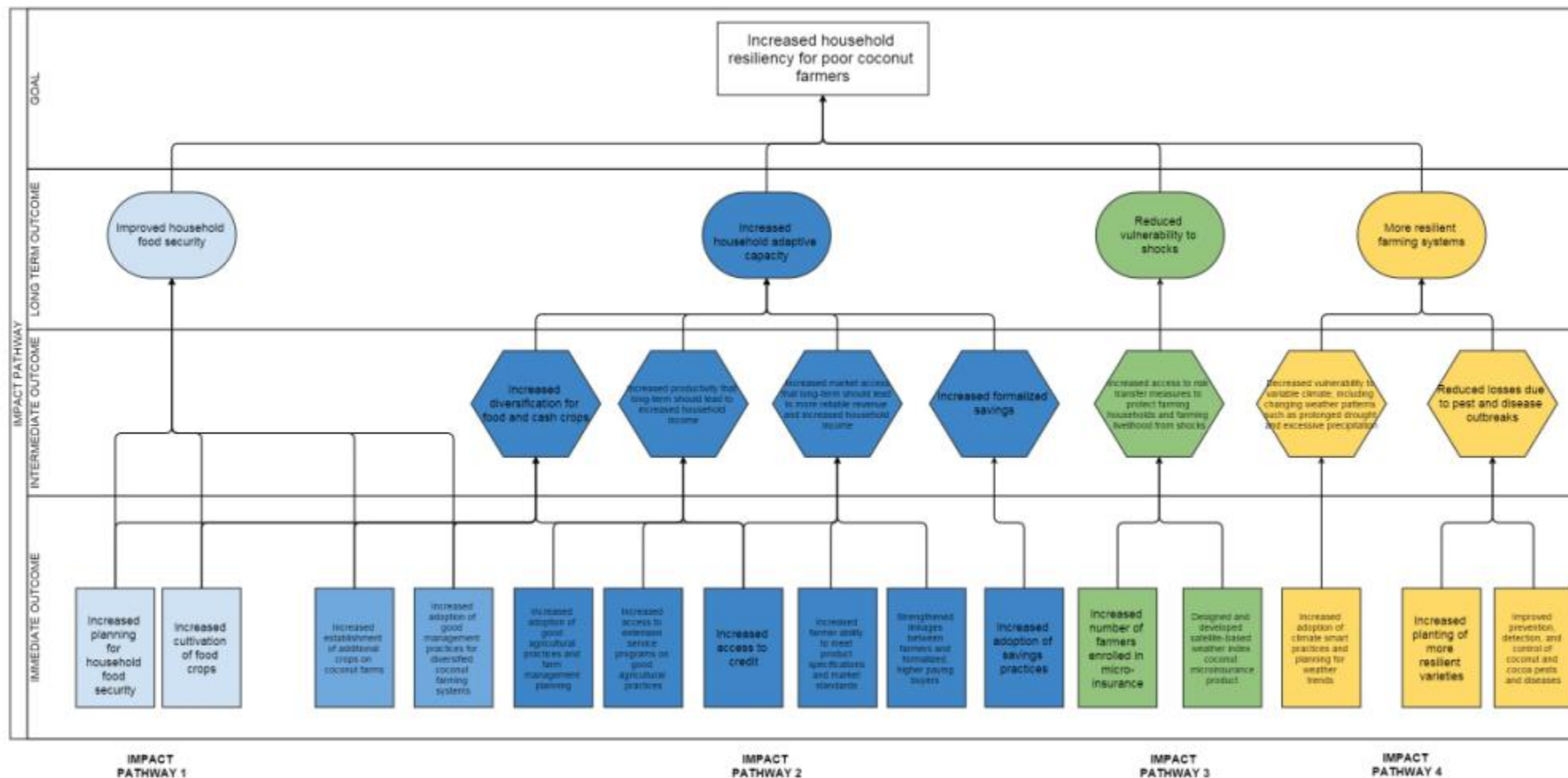
Community Knowledge Worker (CKW) Model. GFUSA will deploy its CKW model of trusted rural agents to reach and empower last-mile coconut SHFs through mobile devices and tailored mobile solutions. Our human-centered mobile solutions are designed to help strengthen CKW networks to build dynamic, two-way channels to collect and share data, and help catalyze behavior change through access to information and extension services that leads to increased SHF resiliency. The model helps increase efficiency, effectiveness and scalability of reaching SHFs with timely, accurate and relevant information. The model also builds the capacity of coconut SHFs to become reliable, skilled and preferred value chain actors in the coconut market. As part of our intervention, GFUSA will provide SHFs with localized data about their farm localities that contain weather trends, which increases their capacity to adapt their cropping cycles and farming practices to changing weather patterns. At the same time, GFUSA will share data collected from cooperatives of SHFs with identified agribusinesses focused on intercropping to diversify SHF income sources and with financial service providers to access capital needed for crop diversification.

Sustainability and Scaling. GFUSA has secured commitment from Nutiva, a leading US certified organic and Fair Trade coconut buyer and retailer, to invest resources for resilient coconut varieties, intercropping and organic and Fair Trade certification initiatives. Through certification, SHFs can access higher paying markets and earn more income for their coconuts as well as intercropped fruits and vegetables. GFUSA will also work with local partners: Franklin Baker and Malagos, who source directly from SHFs and are willing to invest in quality and productivity measures. By paying SHFs directly and rewarding them for higher quality coconuts, they can earn more for each coconut sold. By investing in quality and productivity measures, partners like Nutiva and Franklin Baker not only help SHFs increase quality supply, which leads to increased income, but also strengthens and builds more resilient supply chains to achieve long-term economic growth and stability. In addition, GFUSA is in the process of securing a partnership with Philippine Coconut Authority (PCA) to scale nationally. PCA has an existing network of 1,800 coconut extension officers that can be deployed to provide information to SHFs via mobile phones, and serve as response teams to manage pest and disease outbreaks once early detection systems are created. However, GFUSA will pilot and test solutions with a smaller group of extension officers in select provinces.

Notably, our approach both ensures sustainability for SHFs through market partners who will buy increased supply and offers scalable mobile tools and solutions to strategic private and public partners. By focusing on increased stakeholder participation, greater access to resources, efficient resource management, and collaborative development of innovative mobile tools and solutions, together we can build more durable business relationships and achieve sustainable development for SHFs. Our approach also creates shared responsibility, knowledge and technology among stakeholders enabling SHFs to build assets, diversify livelihood strategies, access risk management strategies and information. In turn, these factors promote farm resiliency, and ultimately improve household food security, increase household adaptive capacity, reduce vulnerability to shocks, and build more resilient farming systems through initiatives like intercropping and organic production systems that promote environmental resiliency.

Scaling. Coconut SHFs identified insufficient capital, low productivity, and low product market price as the top key challenges in achieving household resiliency. These are similar to challenges SHFs face in other tree crop value chains like coffee and cacao in Southeast Asia. We originally intended to scale in the Philippines first, then in Indonesia with coconut and cacao SHFs. However, given the project scope, anticipated timeframe of 24 months, and resources, we recognize the need to focus on coconut SHFs with cacao as an intercrop in key coconut production regions of the Philippines. The team also recognizes the potential to scale proven solutions to build farm resiliency and address challenges in other strategic commodities and countries upon securing additional funding following completion of the GRP.

DRAFT THEORY OF CHANGE & IMPACT PATHWAY



ENVIRONMENTAL AND SOCIAL SAFEGUARDS

Environmental Safeguards: Grameen Foundation (GFUSA) is aware of agricultural industrialization's impact on forests particularly throughout the Philippines, which is ranked 18th in the world in terms of biodiversity. Southern Luzon, in particular, and its surrounding smaller islands have experienced large scale deforestation with agricultural expansion and peri-urbanization as primary drivers in this process. SHFs' efforts to increase yields can also lead to increased use of agrochemicals, resulting in significant hazards both to plant and animal biodiversity and to people. There is no expected environmental impact throughout program implementation; however, certain environmental production standards of partner agribusinesses will be promoted that include: (i) Enhance soil by applying sustainable irrigation practices, such as crop rotation; (ii) Source water sustainably and reduce water use over time; (iii) Report current benefits to ecosystems and current methods of carbon emission reductions; (iv) Report new methods to improve biodiversity or limit carbon output; (v) May choose to focus on specific targets by incorporating environmental goals into a development plan; (vi) No selling, using or distributing any prohibited materials, including GMOs; (vii) Handle and store all agrochemicals safely; (viii) Avoid aerial spraying over rivers and other water; (ix) Control pests in a safe and sustainable way; (x) Farmers educated on the use of approved organic-based pesticides; (xi) Alternatives to chemical pest control must be explored; and (xii) Develop disposal plans for hazardous waste in an environmentally sustainable manner.

Social Safeguards - Gender Integration: The Philippines has long been recognized for its efforts in empowering women and responding to gender concerns. Indeed, the Philippines ranks 8th of 135 countries on gender parity, ranks 1st for gender parity in health and education, and is the only country in Asia, one of 8 worldwide, to have closed the gender gap in these areas.² The Philippines has also adopted legislation to ensure that women are better protected against economic, cultural and political discrimination. While Filipino women are better educated and represented in professional and technical jobs, the Philippines still ranks relatively low in terms of income equality, 63% men vs. 37% women, and labor force participation, 78% men vs. 49% for women. The issue is not the result of exclusion from education or employment, but rather from lower earnings and lack of access to services that can help improve earnings and living standards.³

In rural households, there is significant equality between men and women in terms of access to and control over agricultural production resources. Among coconut SHFs, women are active farm participants with 39% serving as heads of farming households. Moreover, 33.88% of women aged 15+ years have formal bank accounts compared to 21.97% of men in the same age range.⁴ In fact, women have a higher degree of financial literacy than men, thereby affirming our qualitative research that women play a central role as the family *treasurer*. Thus, the gender gap for formal bank accounts is smaller between men and women in the Philippines compared to other Southeast Asian countries. Despite these positive factors, GFUSA focuses on building and disseminating sustainable business solutions for the poorest and most vulnerable around the world, most of whom are women. GFUSA seeks to increase women's participation in decision-making, trade, and capacity building. By understanding the roles that women play to strengthen the resiliency of household income streams and safety nets, GFUSA's program will be developed to ensure that they are empowered with the appropriate knowledge and tools they need to either support farming as their primary livelihoods option. In addition, women will be recognized as equal partners and players in the value chains.

² 2011 World Economic Forum's Global Gender Gap Report

³ USAID Philippines FY2012-FT2016 Country Development Strategy Document,

⁴ 2014 data in the Global Financial Inclusion Database (Findex)

RISK MATRIX AND MITIGATION

RISK	Mitigation Proposed
SHF coconut quality improvements are not achieved.	Our commercial partners purchase significant quantities of coconut, but farmer training is needed to ensure that higher quality becomes consistent and reliable. Through strong monitoring and evaluation, we can detect deficiencies in a timely manner, fine tune project activities, and deploy training and resources, as needed, to ensure goals are met.
SHF productivity fails to increase supply.	SHFs are motivated to boost yields per Ha as a key strategy for increasing income. However, most SHFs have received little or no support for improving agricultural practices. Lead farmers and project agronomists will monitor productivity using mobile tools to capture farm data. Real-time visibility allows us to adjust activities to achieve target gains.
SHFs cannot command a higher price in the global market, despite quality and supply increases.	By partnering with committed coconut buyers including Nutiva, early sales, price and market positioning are assured. As the coconut industry sees Filipino coconut quality and supply increase, perceptions will change, and interest and price will follow.
Partnership with Philippine Coconut Authority (PCA) not secured.	We are working with a consortium of coconut and cocoa agribusinesses, farmer cooperatives and non-government agencies to deliver integrated solution components through their networks of agronomists or technical assistance staff.
PCA's management systems for pest and disease are ineffective and unable to deploy response programs.	We are examining the ability of agribusinesses and input suppliers to provide resources to manage pest and diseases.
Microfinance partners do not have appropriate financial products for SHFs.	We are mapping financial service providers in target areas of proposed implementation to identify existing relationships that Grameen Foundation can build upon.
Identified agribusiness partners shift strategy from sourcing directly from SHFs.	We will ensure program alignment with partners at the onset and sustain business development efforts throughout implementation to build a pipeline of partners to build in sustainability for the SHFs.
Inaccurate, localized data from technology platform.	Engage local agricultural experts who will validate data prior to information dissemination to farmers.
Reliance on various technologies requires integration of platforms, and increasing complexity.	The Team will work with Palantir Technologies, a global leader in integrating disparate data sets and presenting complex analytics. GFUSA will also build in additional deployment time and ensure concepts are field prototyped prior to building.
Dependency on accurate satellite imagery for the early warning system.	Clearly define technology architecture, functionalities and capabilities that will determine timeline of development and cost structure.
Use of tech platform is too costly for implementing partners preventing uptake, scale and sustainability.	Design business model for agribusinesses and the Philippine Coconut Authority to illustrate efficiency gains and other potential revenue streams outweigh initial set up costs
Efficiency gains are not enough to continue providing the services.	Couple information dissemination with other services that can be utilized by agribusinesses and the government

MEASURING RESILIENCE

Approach: Our monitoring activities will focus on measuring intended outcomes of the program both at the farmer level and the partner level since both sets of actors will be crucial in effecting the theory of change. Both programmatic and operational indicators will be used to track the status of project implementation, monitor results and enable program design iteration. Monitoring programmatic results also enables implementing partners to improve their policies, strategies and programs for SHFs.

Key Performance Indicators (KPIs) will form the basis of evidence to measure the extent of intended outcomes. At the SHF level, these behavioral changes will be tracked during implementation:

- ✓ Adoption of GAP for crop cultivation leads to improved household food security
- ✓ Adoption of GAP, management practices and farm planning practices leads to increased crop diversification and in the long term, contributes to increased household adaptive capacity
- ✓ Ability to meet product quality and market standards leads to increased market access & income
- ✓ Adoption of savings practices contribute to increased household adaptive capacity
- ✓ Adoption of climate smart practices leads to decreased vulnerability to climate & weather patterns
- ✓ Ability to prevent, detect and control pest and diseases

At the partner level, these operational indicators will be monitored:

- ✓ Number of reports that inform policies, strategies and programs for SHFs through tech platform
- ✓ Number of farmers reached by mobile-equipped extension agents
- ✓ Number of loans disbursed
- ✓ Number of savings account opened
- ✓ Number of pest and disease management programs deployed and linked to early warning systems

Data sources and data collectors are detailed in Annex E.

Methodology: Results from the quantitative research recently conducted in Quezon and Davao plus the insights from the human-centered design (HCD) research process will serve as the initial baseline data. During the monitoring activities, data will be collected on a regular basis by extension agents from the Philippine Coconut Authority and the agribusiness partners using Grameen Foundation's existing mobile tools and technology platform. This will enable a 2-way feedback loop between farmers and implementation partners and will inform the consortium on needed program iterations.

Value for Money: Based on the value for money framework provided by the GRP, Grameen Foundation identified the key metrics below to capture effectiveness, economy and efficiency.

Value for Money Consideration	Key Measures
Effectiveness (improvements in farmer outcomes)	<ul style="list-style-type: none"> ▪ Number of SHFs provided with localized, timely and actionable information that contribute to food security and increased productivity. ▪ Number of SHFs linked to formal financial institutions to access savings and credit.
Economy (improvements in partner operations)	<ul style="list-style-type: none"> ▪ Productivity of extension agents in terms of number of SHFs reached per month. ▪ Response time of the PCA in managing pest and disease incidences. ▪ Increased purchase of coconut due to increased, stable high quality supply.
Efficiency (cost per improvement)	<ul style="list-style-type: none"> ▪ Total program cost / Total number of SHFs provided with localized, timely and actionable info that contribute to food security and increased productivity. ▪ Total program cost/ Total number of SHFs linked to formal financial institutions to access savings and credit.

APPENDIX

Annex A – Qualitative Human Centered Design Research: SHF profile, Key pain points & Challenges

Annex B – Quantitative Research: Key challenges identified by SHFs

Annex C – Sample satellite images for early warning system

Annex A – Qualitative Human Centered Design (HCD) Research: Coconut SHF Profile, Key Pain Points & Challenges Identified by SHFs

A video⁵ detailing the HCD process conducted and highlights of the findings can be viewed here:
<https://vimeo.com/127490273> password: Grameen



⁵ Note that the video still needs to be finalized to include GRP branding, add graphs, and final edits

Key Pain Points



Storms

Typhoons are the most devastating events to a farmer. Many don't get the information they need in time to respond, and even when they do, there is very little they can do to secure their crops. Recovering from a typhoon takes time and devastates family income. The crops they earn the most from (e.g., bananas) are often the hardest hit. The only thing farmers told us you can do is save up enough to cover the loss of income.



Health

While not as destructive as storms, sickness can devastate a family's finances by eliminating the manpower that keeps farms on track for a successful harvest. Families where men had fallen sick talked to us about the economic impact it had on the family and the importance of men staying healthy in order to keep the family harvests on track.



Pests

Concerns about pests were usually reactive to previous experience having seen pests impact a harvest, either theirs or that of a community they know of. And while pests were seen as an issue, many farmers felt pests were manageable either through traditional solutions passed down through generations (e.g., burning a tire at the base of an infected tree) or solutions they could access as needed.



Pricing Fluctuations

Small holder farmers lack leverage in negotiations with traders and as a result rarely feel they are compensated fairly for their harvests. In many cases, they feel their harvests are poorly timed for the marketplace but can't be held long enough for the market to change. In other cases, they simply do not have the financial ability to wait. In both cases, farmers end up feeling they aren't compensated fairly for their harvests.



Accessing Transportation

Many of the people we spoke to lived and farmed quite far from the nearest road. As a result, many farmers struggle to get their crops to the marketplace. The farmers we spoke to talked about wanting to go directly to buyers but that those buyers were often 2 or 3 towns away and they don't have the transportation or infrastructure to make that happen.



Accessing Information

Farmers struggled to get the information they needed to make smarter decisions about their crops. They are among the last to know about everything from typhoons to pests and rarely are armed with the appropriate response in time.

Key Challenges

Access To Market

How do we help farmers who lack the transportation and infrastructure reach the marketplace more efficiently in order to, ideally, trade at a higher level within the value chain?

Leverage

How do we help small hold farmers increase their leverage in negotiations with traders in order to secure fair prices for their harvests?

Access To Knowledge

How do we help farmers who currently lack connectivity to telco networks or internet access to knowledge and information they need in order to make smarter decisions about their farms?

Risk Management

How do we help farmers minimize the inherent risk and impact of uncertainty on their livelihood?

Prosperity

Resiliency



Transportation



Pricing



Information



Pests



Storms

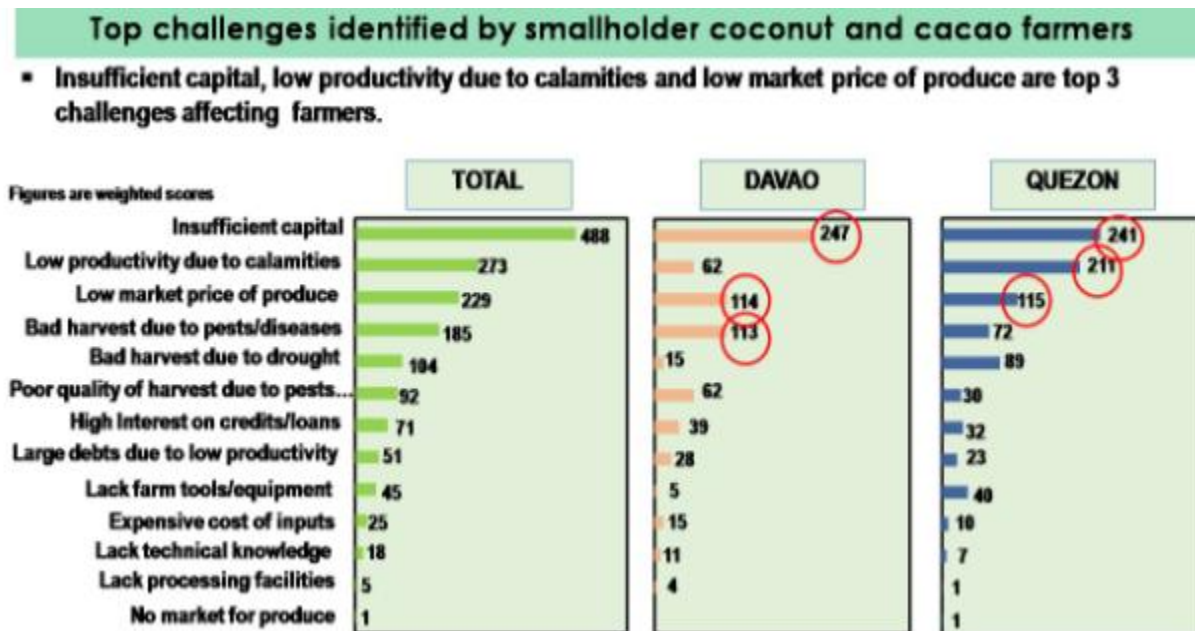


Pests



Pricing

Annex B – Quantitative Research: Key challenges identified by SHFs



Annex C – Sample satellite images that can be used for determining scale of typhoon damages and pest and disease incidences for the early warning system

