



# PAMAYANANG LAGING HANDA

Compendium on the Establishment of Climate  
Resilient Agriculture (CRA) in Barangay Magsikap,  
General Nakar, Quezon

Submitted to:  
The Department of Agriculture, Philippines

Submitted by:  
The Department of Agriculture, Philippines

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Published by

Department of Agriculture  
AGRICULTURAL TRAINING INSTITUTE REGION IV- A  
Brgy. Lapidario, Trece Martires City, Cavite  
[www.ati.da.gov.ph/ati-4a/](http://www.ati.da.gov.ph/ati-4a/)

ISBN: 978-621-96241-2-1

Printed in the Philippines

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Compendium on the Establishment of Climate Resilient  
Agriculture (CRA) in Barangay Magsikap, General Nakar,  
Quezon

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# Preface



*It is thought that agriculture both causes and mitigates climate change. Farmers no longer have the ability to predict the wet and dry seasons' duration due to the sudden and extreme shifts. Although climate change has been noticed for a long time and may not be new to anyone, it has sadly been felt in more recent events, particularly with recurrent typhoons. As a result, farming and production suffer, which has the knock-on impact of compromising livelihood and revenue.*

*And in order to address these issues brought on by climate change, DA-ATI Region IV-A with the assistance of partner organizations, established the Climate Resilient Agriculture (CRA) Community Project. This project aided the municipality and key partners in understanding and addressing the risks and opportunities brought on by climate change and extreme weather events.*

*The municipality of General Nakar in Quezon province, particularly Brgy. Magsikap, was identified as the beneficiary of CRA project. General Nakar is the largest municipality in Quezon with 145,607.19 hectares land area or 16.73 % of the province's total land area. Based on the results study of ground truthing conducted by DA-ATI Region IV-A, Brgy. Magsikap was considered as the most vulnerable to climate risks and hazards among the two other municipalities, Brgy. Lubayat in Real and Brgy. Pinaglapatan in Infanta. Hence, Brgy. Magsikap in General Nakar was selected as the recipient of CRA project.*

*As Mattie Stepanek famously said, "Unity is strength... when there is teamwork and collaboration, wonderful things can be achieved." A strong link and connection between the community, stakeholders, and partner organizations played a vital role that led to the success of the CRA initiative. Through the collaborative efforts, the community's ability to maintain continuous output in the face of climate change was stabilized.*

*The CRA Community Project of DA-ATI Region IV-A has succeeded in enhancing farmers' resilience by implementing adaptation and mitigation measures to combat the effects of climate change. We hope that through this compendium, we will be able to widen our reach in promoting information sharing and technology transfer to community members, thus, making farming a viable source of income in the countryside.*

*As the lead implementing agency of CRA in Brgy. Magsikap, I was immersed on different farming practices, culture and the people in the community. For the last five (5) years of conducting several trainings/activities, documentation and evaluation study, Brgy. Magsikap imprinted a remarkable milestone in me. Through this compendium, I am honored to share the learnings, accomplishments and success of CRA project.*

  
**Rolando V. Maningas, PhD**  
TCS II/Center Director, DA-ATI Region IV-A



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# ABOUT THE COMPENDIUM

Climate Resilient Agriculture (CRA), generally pertains to the use of the existing natural resources such as crops and livestock for a long-term and higher productivity and income brought about by the climate variabilities (Srivanso, 2021). In the worldwide aspect, CRA is also known as Climate-Smart Agriculture (CSA) which is an integrated approach to managing crops, livestock, forests and fisheries as discussed by The World Bank (2021). They specifically mentioned that this aims to address the challenges in food security of small-holder farmers. Similarly, the Philippines share the same view on CRA and that these initiatives are believed to increase productivity, enhance resilience, and reduce greenhouse gasses as cited in CIAT; DA-AMIA (2017).

Based on the Philippine Exposure Map on Climate Change, the geographical location of Quezon Province is considered as the second largest province in Southern Tagalog with a population of 1.8 million with a density estimated at 216 person per square kilometers. Its poverty incidence is at 34.1%. Specifically, the eastern side of Quezon province belongs to Cluster IX which implies that the mentioned province experiences extreme heating events, extreme rainfall events, disturbed water budget, and sea level rise. Moreover, Quezon province is identified as an AMIA (Adaptation and Mitigation Initiatives in Agriculture) priority province. AMIA is focused on various initiatives for Bondoc Peninsula which paved the way to conduct CRA in Northern parts of Quezon (Hernandez & Herrera, 2021).

Since climate change is considered to be a pressing issue in agricultural activity, the Department of Agriculture – Agricultural Training Institute (DA-ATI) Region IV-A established the Pamayanang Laging Handa, a CRA community program in Quezon province in 2017. The chosen locale is specifically, Brgy. Magsikap, General Nakar in Quezon. It is a five-year project employed to 30 farmer beneficiaries.

## PHILIPPINE EXPOSURE MAP ON CLIMATE CHANGE



Various climate resilient trainings with focus on disaster risk reduction measures pertaining to CRA livelihood project were conducted to the locale to be aware and prepared in responding to risks and opportunities that future climate change and extreme weather events may bring. The project was turned over to the local government unit (LGU) of Gen. Nakar under the Municipal Agriculture Office.

With the effective implementation of CRA program, numerous notable accomplishments were recognized. One of which is the “3<sup>rd</sup> Best Extension Paper” awarded by the Southern Tagalog Agriculture, Aquatic, and Resources Research Development and Extension Consortium (STAARRDEC) during the 33<sup>rd</sup> Regional Symposium on Research, Development and Extension Highlights (RSRDEH) held on November 17, 2020. Moreover, Granjeros Integrated Farm was recently certified as Learning Site for Agriculture (LSA) of DA-ATI Region IV-A. The farm is owned by Mr. Jerone Tena, one of the CRA beneficiaries. Another CRA beneficiaries, Mr. Loreto Moises, also applied his farm to be one of certified LSAs under the Coconut Farmers and Industry Development Plan (CFIDP). As part of the achievements, Farmers Information and Technology Services (FITS) Center was established in General Nakar through the Office of the Municipal Agriculturist on December 1, 2017.

This compendium presents the evaluation study of the overall impact of the CRA program including the increase in the adoption of CRA practices of the farmer beneficiaries within the duration of the project and beyond. It also comprises the establishment of Pamayanang Laging Handa from community-based participatory vulnerability assessment to results evaluation on the after effect of the program. Furthermore, it highlights the stories behind the journeys of the beneficiaries which were written by partner agencies: Philippine Coconut Authority IV, Office of the Provincial Agriculturist - Quezon, Southern Luzon State University and Municipal Agriculture Office of General Nakar. Also, it covers the updates on the ongoing progress of CRA beneficiaries’ achievements. The compendium enunciates the inclusive outcome of different interventions of Pamayanang Laging Handa project to the 30 beneficiaries in Brgy. Magsikap, General Nakar, Quezon.



# ESTABLISHMENT OF PAMAYANANG LAGING HANDA

Paper presented during the STAARRDEC's 33<sup>rd</sup> RSRDEH



## Abstract

Climate change is one of the most pressing issues in agricultural productivity. Anchored on the National Framework Strategy on Climate Change by the Philippine Climate Change Commission – the Agricultural Training Institute Region IVA, mandated as the capacity builder, knowledge bank and catalyst of the Philippine Agriculture and Fisheries extension system, piloted the Climate Resilient Agriculture Community in Barangay Magsikap, General Nakar, Quezon Province dubbed as, “Pamayanang Laging Handa.”

The establishment of a Climate Resilient Agriculture Community addresses to assist the site and key partners to begin to understand and respond to risks and opportunities presented by future climatic changes and extreme weather events. With this modelling, the identified community will be supported and capacitated to prepare for climate change vulnerabilities.

Thru the convergence initiatives of various agencies and stakeholders, 30 farm family beneficiaries were initially formed as the core partners of the project and are now expanding the operation to the community. With the acquired knowledge and skills related to various capacity building activities on climate smart agriculture technologies, the beneficiaries were provided with livelihood opportunities designed to adapt sustainability amidst climate change.

After the prescribe period of interventions, the project was turned over to the local government unit thru the Office of the Municipal Agriculture for management and sustainability.



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## Introduction

The Philippine agriculture sector is extremely exposed and highly vulnerable to natural hazards and impacts of climate change. Climate-related natural disasters have been a recurrent challenge to the agriculture sector. Between 2006 and 2013, the sector was reported to have an average of ₱21.2 billion in damage and losses each year—nearly one quarter of the national budget allocated to the sector in 2014. And in the last two decades, the Philippines was ranked as the 5<sup>th</sup> most vulnerable country in the world in terms of fatalities and economic losses due to extreme weather events.

Low adaptive capacity is apparent with 21.6% of the population living below the poverty line and farmers and fishermen at the top of the list of sectors with the highest poverty incidence in the Philippines. They are further sunk into poverty by the diminishing productivity of their farm due to the increasing threats of land degradation, such as soil erosion, water pollution, and agricultural land use conversion.

Climate change affects agriculture in several ways, including through changes in average temperatures, rainfall, and climate extremes (e.g., heat waves); changes in pests and diseases; changes in atmospheric carbon dioxide and ground-level ozone concentrations; changes in the nutritional quality of some foods; and changes in sea level. There are 25.2 million Filipinos who live below the poverty line. 6.3 million of these are concentrated in cities/urban municipalities. The poor, in both urban and rural areas, suffer disproportionately from the impacts of climate change.



Coastal areas figure among the most vulnerable of all environments to global climate change. Coastal zones are also among the most dynamic natural environments on earth, providing a range of goods and services that are essential to human social and economic wellbeing. Many people have settled in coastal zones to make advantage of the range of opportunities for food production, transportation, recreation and other human activities provided here (Ramos, et al. 2014).



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According to Intergovernmental Panel on Climate Change (IPCC), climate change represents potential additional stress on systems that are already under intense and growing pressure in coastal zones. Of these changes, accelerated sea level rise has received much attention and may entail elevated tidal inundation, increased flood frequency, accelerated erosion, rising water tables, increased salt water intrusion, and other ecological changes. These biophysical changes are expected to cause various socioeconomic impacts, including loss of land infrastructure and coastal resources as well as decline in associated economic, ecological, cultural and subsistence values.

The Province of Quezon is the second largest province in Southern Tagalog in terms of its size, second only to Palawan, and ranked 6<sup>th</sup> largest in the Philippines. The province stretched as a tapered belt alongside the eastern shore of Luzon from Dasada Point, General Nakar in the north, down to Camarines in the south. The northern part of the province is sandwiched between the Sierra Madre mountain range and the Philippine Sea. The province has a population of 1,882, 900 with a density estimated at 216 persons per square kilometres. Poverty incidence in the province is at 34.1%, a 2.4% increase from the previous measures. With this, the province remains to have the highest number of poor families/population compared with the other provinces in the region.

The Provincial Government of Quezon focuses on agricultural modernization since its economy is predominantly agricultural, policies and programs that improve the sector are expected to facilitate inclusive and sustainable economic development. Climate change presents an even graver threat to the province economy. Climatic-related disturbances have been established to have the greatest impact on the volume of production in the area. As such, Quezon Province has been identified from the Adaptation and Mitigation Initiative in Agriculture (AMIA) project as one of the priority provinces to climate change initiatives. The ReINa area composed of the municipalities of Real, Infanta and General Nakar were the identified sites that underwent ground truthing and benchmarking as basis for the pilot community.

Using the multi-hazard map provided by the AMIA guide map, the community project site was selected using the following criteria:

1. The selected LGU must be willing to implement the program in the municipality.
2. The LGU must be willing to assign at least one (1) Agricultural Extension Worker, ENRO, and others to assist the project team.
3. Must be willing to provide extension and support services during the implementation of the project.
4. Has DRRM Plan and preferably has LCCAP

Among the three municipalities, General Nakar particularly Barangay Magsikap was identified to have more exposure risks with regards to climate change hazards. Based from the hazard susceptibility per barangay record of the MDRRM, Barangay Magsikap belonging to Baybay cluster is susceptible to hazards that include earthquake, flooding, liquefaction, tsunami and sea surge. It has a land area to be affected at 5, 742 hectares with a population of 1,894 individuals as of 2020.

The establishment of a Climate Resilient Agriculture Community address to assist municipality and key partners to begin to understand and respond to risks and opportunities presented by future climatic changes and extreme weather events. With this modelling, the identified community were supported and capacitated to prepare for climate change vulnerabilities. As such, several activities were successfully completed in order to fully maximize the learning potentials of the project.





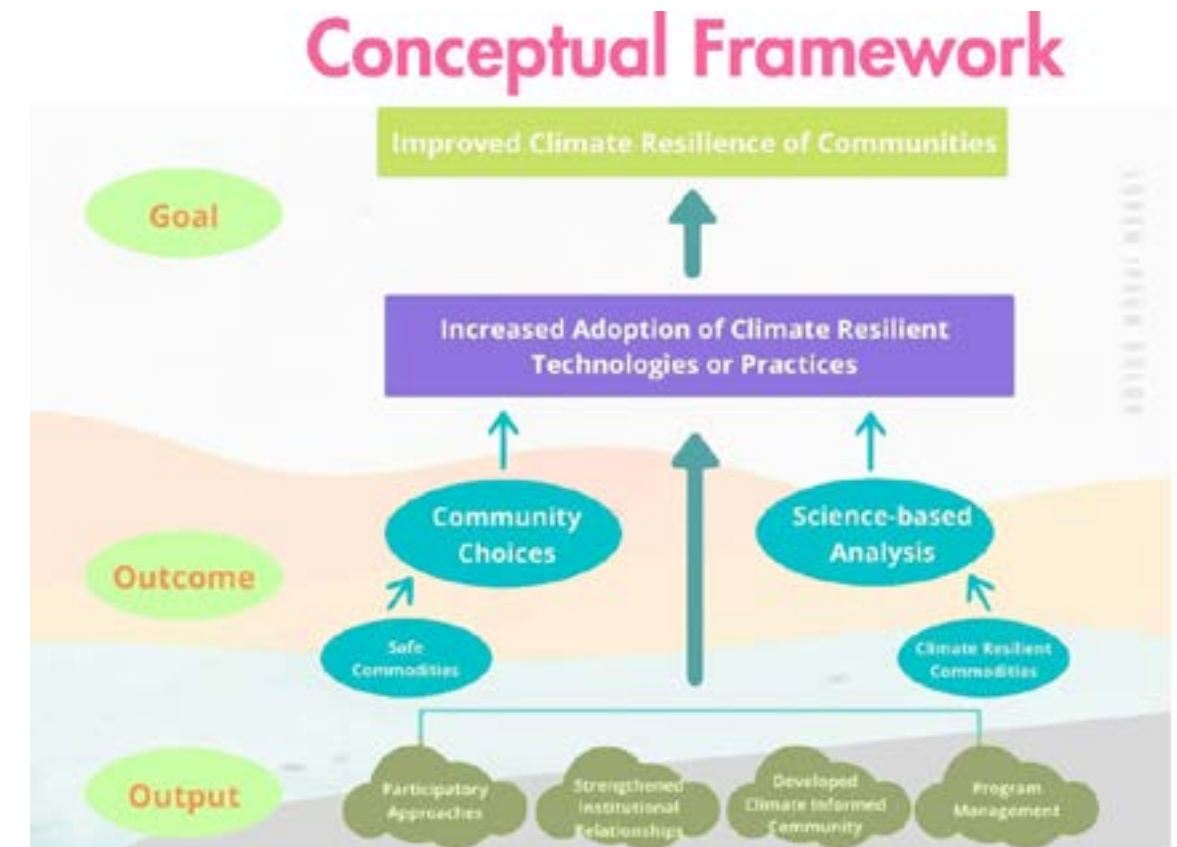
## Objectives

The general objective of the project is to establish a pilot area for the Climate Resilient Agriculture Community. Specifically, the project aims to:

1. identify and validate the climate risks and hazards and agricultural profile from identified community;
2. conduct convergence initiatives and consultative workshop for the institutional partners and stakeholders of the community;
3. conduct climate vulnerability and risks assessment to the identified community;
4. prepare and fund Livelihood Project for the farm family beneficiaries;
5. conduct climate resilient trainings with focus on disaster risk reduction measures pertaining to CRA livelihood project;
6. develop knowledge products such as IEC materials and compendium of good agricultural practices; and
7. develop a result evaluation of the project.

## Conceptual Framework

The framework that will serve as guide to the implementation of the project is as follows:



## Project Implementation

The key outcome of the project is increased adoption of climate resilient technologies or practices. This will be guided by the project logical framework as well as the status of outputs as of October 2020 as seen in Appendix 1. To realize this, the following outputs shall be delivered:

Output 1: Participatory approaches are used to surface community ownership of climate change extension interventions

### Performance Indicators

1. Participatory rapid rural appraisal conducted
2. Baseline profiles established with interpretation and analysis of the agro-ecosystem
3. Climate smart livelihood projects or technological options that the community intends to pursue are identified and validated
4. Climate smart livelihood kits are provided
5. Climate smart technology trainings/strategies/practices are conducted to ensure adoption of resilient technologies along the value chain are provided



Output 1 involves community-based participatory vulnerability assessment that will inform the beneficiaries on the science behind the hazards and vulnerabilities affecting the community. This participatory approach allows the beneficiaries to bring out their indigenous or local climate change practices (which they may knowingly or unknowingly practice) that can be considered along the recommended science-based platforms. From here, the institutions whether local or national can come up with a consensus in the community on what are the appropriate climate change technologies/practices and disaster risk reduction measures that the institutions can support as extension interventions.

#### 1.1. Conduct of Participatory Rapid Rural Appraisal (PRRA)

Central to appraising the community's vulnerability is the participation of the community. Having the first hand experience of the manifestations and impacts of climate change, the community will be validating the data and information generated from desk vulnerability assessment through the DA's National Color-Coded Agricultural Guide Map.

Fundamentally, the PRRA by the International Institute of Rural Reconstruction (IIRR) is composed of the following activities: 1) surfacing major changes or manifestations of climate change, 2) identifying livelihood assets, 3) identifying and characterizing risks and hazards, 4) surfacing impacts and coping mechanisms, and 5) identifying vulnerable sectors and livelihood.

#### 1.2. Establishment of baseline profiles with interpretation and analysis of the agroecosystem

Baseline profiling is undertaken to gauge the current knowledge and practices of the community in relation to its vulnerabilities, hazards and climate perils. This will then enable the team to determine how to target the community for information dissemination on climate change impacts and adaptation strategies. The results from this survey will provide indication for the results evaluation and impact evaluation which will be conducted on Year 3 and 5, respectively.

#### 1.3. Identification and validation of climate smart livelihood projects or technological options that the community intends to pursue

After the PVA and validation of results, the team facilitated analysis with the community to surface doable actions to address the risks and vulnerabilities. In doing so, the beneficiaries in the community will come up with a project proposal.

#### 1.4. Provision of climate smart livelihood kits

The climate smart livelihood kits will be based on the proposals submitted by the community, consistent with ATI's Guidelines in Extension Support to Training.

Partnerships and collaboration portrayed a role in the communities' support system as different institutions like DA-RFOs, the LGUs and even the community itself can provide their services whether in soft tasks of capacitation, credit, risk insurance or hard equipment in the form of farm tools, irrigation facilities, mechanization or even farm to market roads that will all contribute to the success of the livelihood component of the communities.

#### 1.5. Conduct of climate smart technology trainings/strategies/practices are conducted to ensure adoption of resilient technologies along the value chain

With the provision of livelihood kits, corresponding training will be provided to ensure





Output 2: Institutional relationships at the community level are strengthened

Performance Indicators

1. Local participatory project planning, project execution and progress monitoring are conducted
2. CRA practices at the community are documented
3. Appropriate IEC material for the community created by specialized agencies based on information needs survey and analysis

There are already existing institutional frameworks for climate change adaptation in local governance. What the project intends to come up is an observable cooperation among the NGAs and LGUs together with the private sector to assist targeted communities in adapting to the potential impacts of climate variability and change.

Convergence of ATI-RTCs, DA-RFOs, PCIC, ACPC and other national agencies performing climate change initiatives gives a clear signal to the LGUs and the communities that government resources can come together in one community to provide extension support services that can be replicated in other vulnerable areas. Duplication of climate-related extension services will likewise be avoided in a certain community.

Early orientation and continuous engagement of LGU local executives are needed to secure expenditures as they control the budget and the local extension workers. Local chief executives will become interested in radiating these initiatives as investment guides in their local climate change adaptation plans (LCCAP).



2.1. Conduct of local participatory project planning, project execution and progress monitoring

An important aspect of each year's implementation of the project is the synergistic engagement with the institutions in the planning, execution, and monitoring, drawing upon their expertise, while at the same time enhancing their capacities.



2.2. Documentation of CRA practices

During dialogues or other learning events with the farmer leaders, it may arise that there are already existing CRA practices (indigenous or science-based). These may be coming from their ancestors or even from the LGU programs. This is a key challenge to ATI-RTCs to do the documentation and characterization of these practices which later can be used in different knowledge sharing fora with the same type of agro-ecosystem.

To do so, the RTCs and LGUs will be trained and their capacity on process documentation and evaluation will be developed. Compilation of CRA practices with LGUs will be a useful strategy to enable the sustainability of development work in vulnerable sectors through provision of relevant information on climate risks and adaptation options even after the project has ended. In each year of this project, they will be able to come up with a compilation of a minimum of 2 CRA practices of the community. A packaged compendium of these CRA practices will be the at the end of the project.



Output 3: The community evolves into a “Climate Smart Community”

Performance Indicators

1. Climate Smart Farmer Business School integrated in the capability building exercises
2. Compilation of CRA practices made available to the community
3. Case studies made available to the community
4. IEC materials stored in the climate smart community for other farmers or visitors to take home for future readings
5. Farmers’ Information and Technology Services (FITS) Centers (online and farmers’ contact centers) massively utilized

2.3. Development of appropriate IEC material for the community created by specialized agencies based on information needs survey and analysis

What comes out from the existing CRA practices can be used as a source in preparation of IEC materials. This however, may be singular and addresses only a particular climate technology or practice. There are other technologies/practices in the community that the farmers/fisherfolk need but are not adequately addressed by extension in terms of access to climate information. Hence, information needs survey and analysis will be first conducted to effectively determine the information needs and dissemination modes for the community. Specialized agencies can then help in content development of IEC materials since knowledge products are critical to support the continuous learning of the farmer after participating in a learning event.

Selected villages of the project are proposed to be the climate change learning sites where more farmers from neighboring villages will come to learn and be aware of the climate perils within their agro-ecosystem. This becomes a platform for farmer to farmer learning which can also serve as a basis for scaling-up extension support services along the value chain within the project span.

3.1. Integration of Climate Smart Farmer Business School in the capability building exercises

To take their CRA knowledge up a notch, the Climate Smart Farmer Business School will also be integrated. In 25 weeks, this activity will assist the farmers in developing effective marketing strategies to gain better and more stable prices for their produce, and later the margins they receive.



3.2. Compilation of CRA practices made available to the community

The influence of having documented best practices (whether in print or in video) in CCA and DRR measures can be felt during promotional campaigns in learning events as the LGUs or other stakeholders performing CC extension become aware of a tested CCA and DRR measures which they can propose as an investment guide in their institutions.

3.3. Case studies made available to the community

This will enable experience-based learning from practitioners in the community as current climate projects or programs of the LGUs can be improved while seeing the case studies of farmers who tried and tested CCA technologies/practices and DRR strategies.



3.4. IEC materials stored in the Climate Informed Community for other farmers or visitors to take home for future readings

The Climate Informed Community is a source of knowledge on CCA and DRR strategies/ measures since they have the capability to showcase their technologies and practices. With the documented best CRA practices, it will provide technical guidance to the LGU technicians on how to develop IEC materials as well. These materials can be stored in the community learning sites for other farmers or visitors to take home for future readings.



3.5. Massive utilization of the Farmers' Information and Technology Services (FITS) Centers (online and farmers' contact centers)

Acquiring knowledge on CRA will involve massive utilization of the Farmers' Information Technology Services (FITS) Centers (online and farmers' contact centers).



Output 4: Outputs of ATI CRA Project are managed for results

Performance Indicators

1. Quarterly progress reports submitted
2. Annual progress review report produced from Year 1 to Year 5
3. Results evaluation conducted by Year 3
4. Impact evaluation conducted by final year of project

In all project undertakings, a monitoring and evaluation scheme will have to take shape in the planning process. This is to ensure that the ATI's climate change project outcome of increased adoption of climate resilient technologies will contribute to the goal of improved climate resilience of communities.

The progress monitoring instrument that was devised and subjected for comment during the Planning and Targeting Workshop of the ATI Climate Change Project serves as guide not only to inform management on how things are shaping up but given the limited resources, we can focus our interest on the action plans and give attention to issues that ATI training centers or even the ATI Central Office can do something about.

4.1. Submission of quarterly progress report

A Monitoring and Evaluation Officer from the ATI Central Office shall from time to time communicate with focal persons of the ATI-RTCs. Guidance will be provided on the different processes that are involved in the implementation of the RTC's action plans.

4.2. Conduct of annual progress review report from Year 1 to Year 5

Conduct of annual progress reviews will be a tool to assess the outputs, the significant changes that may have occurred as a result of the project, problems encountered, and recommendations for the following year.

4.3. Conduct of results evaluation by Year 3

Baseline information, which includes socio-demographic information, climate change coping mechanisms, adaptation, and mitigation knowledge and practices, and location/context specific climate resilient technology adoption, was collected at the start of the project implementation. The baseline pictures the situation before the project for ATI to gauge if its climate change capability building exercises results to a certain percentage of adoption by its learners. This evaluation is targeted by the third year of implementation.



4.4. Conduct of impact evaluation by final year of project

At the end of the project implementation, the impact evaluation will determine if the goal of improved climate resilience of communities is achieved compared to the baseline.

The project has the following components:

A. Ground Truthing: This activity covers the validation of climate risks and hazards generated from the AMIA risks map as well as secondary data from the identified community. This will serve as baseline information for the selection of the recipient of the project

B. Convergence Initiatives: This involves series of consultative workshops among stakeholders and partner institutions that will collaborate in the project. Each collaborating institution will set targets and commitments in support to the establishment of the climate resilient community.

C. Climate Risks and Vulnerability Assessment: CRVA is a methodology of learning rural life and their environment from the rural people. Hence, stakeholders must have full capacity in conducting CRVA because it aims to enable local communities to conduct their own analysis and to plan and take action (Chambers R. 1992).

D. Climate Resilient Livelihood Kits: provision of livelihood project to qualified farm families based on the assessment conducted. The provision strictly adhered to the guidelines set by the technical working team.

E. Climate Resilient Technology Trainings composed of several capability building activities to support the livelihood projects

F. Knowledge Management: development of information, education and communication materials in relation to the project

G. Result Evaluation: packaging of the overall result of the project



## Highlights of Accomplishment

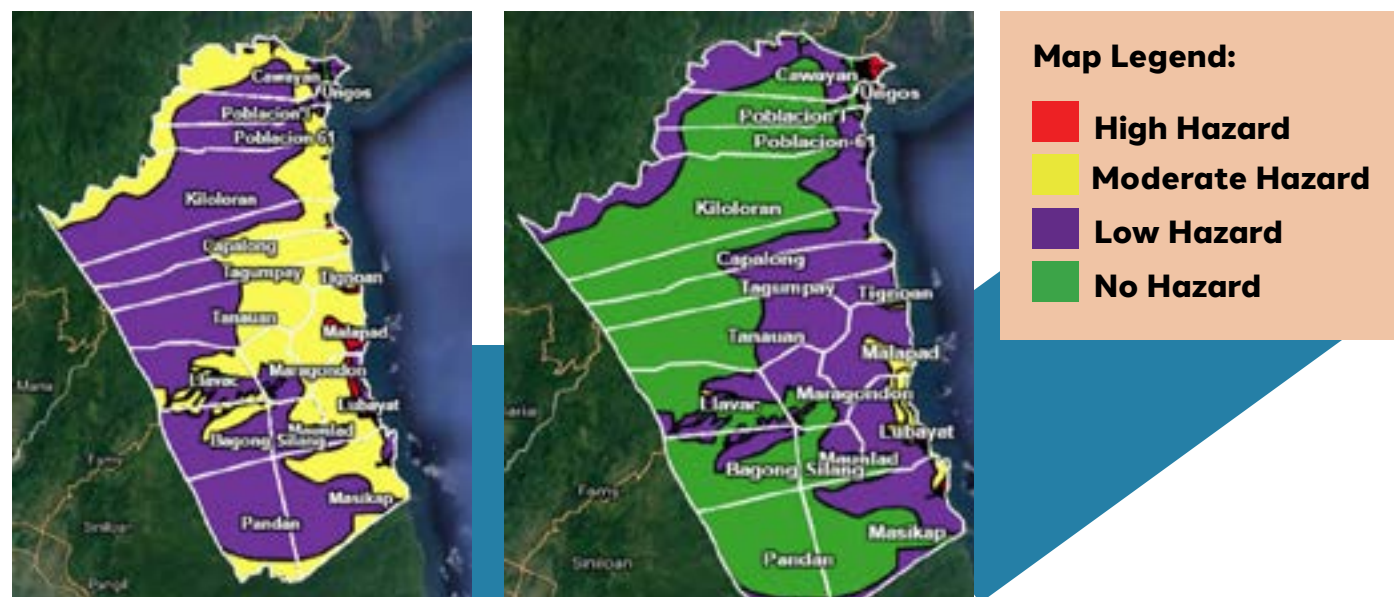
**Output 1: Participatory approaches are used to surface community ownership of climate change extension interventions**

### 1. Ground Truthing

Quezon Province is one of the high risk provinces to climate change as per AMIA, and REINA were considered to be the target area since AMIA research is working in the Bondoc Peninsula. The activity was conducted last April 3-7, 2017 in three municipalities of the Reina Cluster. This included identification of the barangays using the DA-AMIA multi-hazard map. As a result, Brgy. Lubayat in Real, Brgy. Magsikap in General Nakar and Brgy. Pinaglapatan in Infanta, Quezon were chosen as project sites.

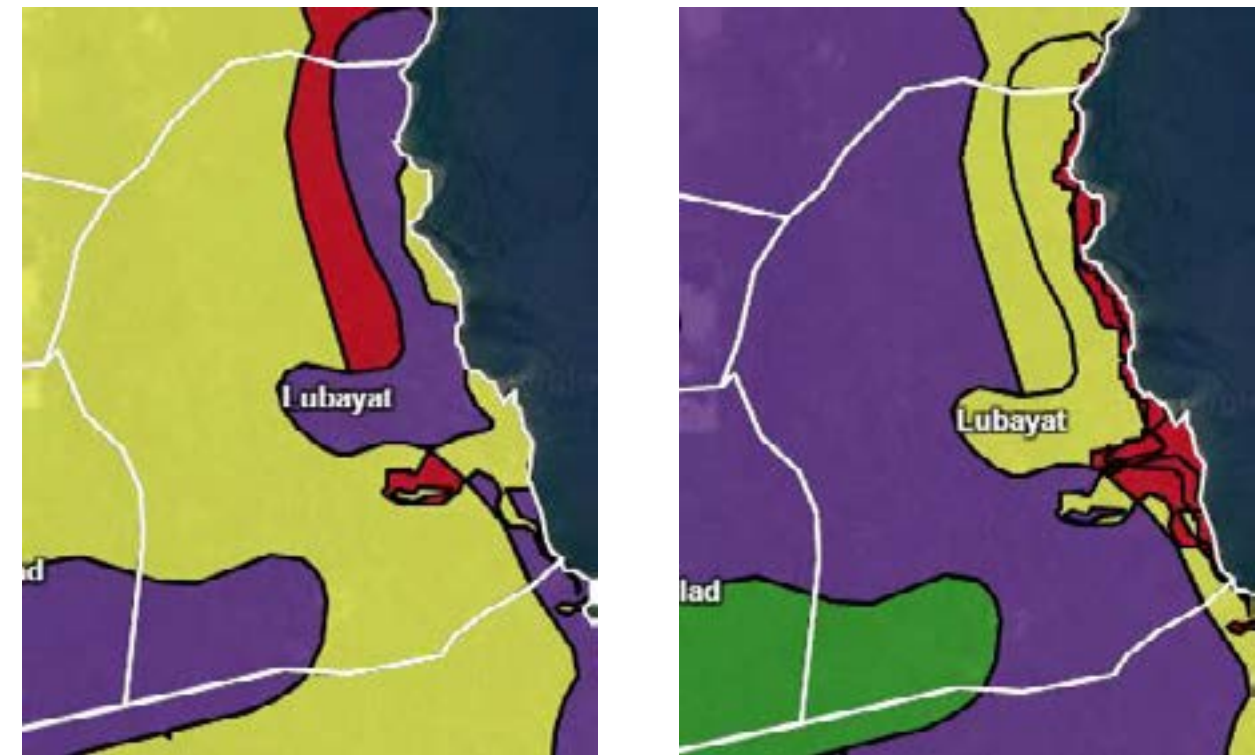
Municipal descriptive profiling were conducted as seen in Appendix 2. Utilizing the multi-hazard map developed by the DA-AMIA project, initial hazard assessment was done in consultation with the local government units.

Multi-Hazard Map of Real, Quezon



Land-based Hazards

Water-based Hazards



**Map Legend:**



From the multi hazard map, Barangay Lubayat was identified to have more exposure risks with regards to climate change hazards. These includes flooding, erosion, landslide and drought in most of their agricultural areas.

Barangay Lubayat Profile:

**Location:** Surrounded west by Lamon Bay and east by Barangay Maragondon, north by Barangay Malapad and south by Barangay Pandan

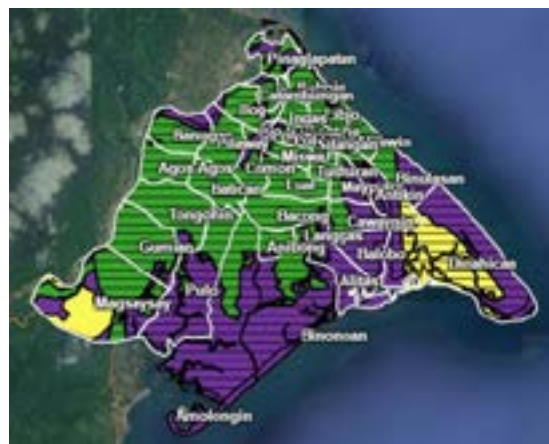
**Population:** 1566 individuals, 336 families, 313 households. 839 male and 727 female

**Road Network:** Lubayat to Real town (20km); Lubayat to Tinoan Hiway(8km); Lubayat to Barangay Malapad (2km) and Lubayat to Barangay Pandan (2km).

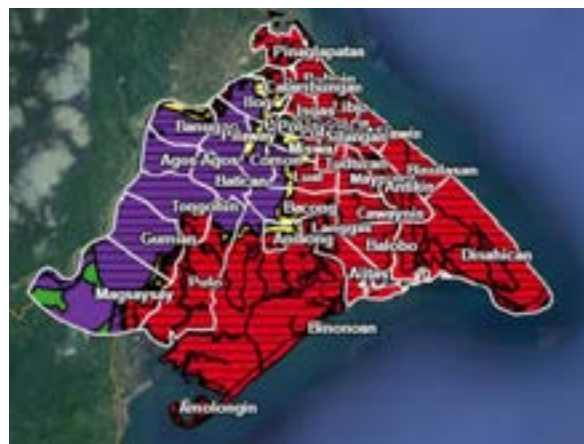
**Land area:** total land area: 5000 hectares, agricultural (coconut): 4,047 hectares, residential: 20 hectares; rice area: 5 hectares and sasahan: 1 hectare.

**Source of Income:** ornamental (cutfoliage); banana and vegetables; coco lumber, coconut, copra and fishing.

**Barangay Official:** Mario A. Orozco (Chairman); Dennis A. Arada (Lumutan); Sofronio A. Orozco (Centro); Mario U. Suaverdez (Tubo); Lionel L. Pranada (Lagyo); Wilfredo G. Marcelo (Molave); Reyes Q. Permejo (Magsikap) and Sonia A. Torre (Ilang-ilang).



**Land-based Hazards**



**Water-based Hazards**

**Map Legend:**



From the multi hazard map, Barangay Pinaglapatan was identified to have more exposure risks with regards to climate change hazards. These includes flooding, wind, landslide and drought in most of their agricultural areas.

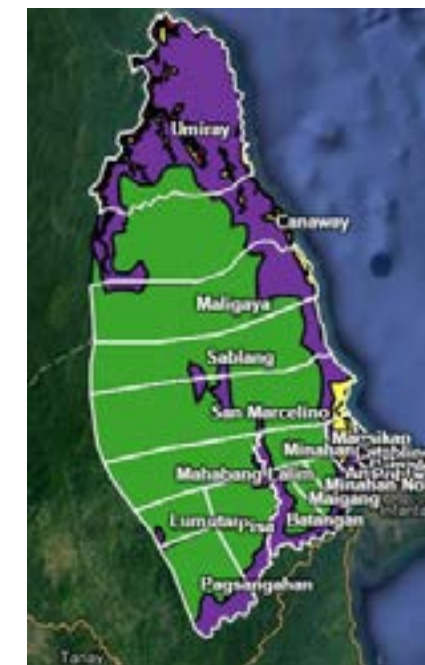
**Barangay Pinaglapatan**

Population:	1,204
Land Area in Hectares:	73.3094
Household Size:	235

Pinaglapatan is 2 to 3 km from the town proper. It is accessible through tricycle plying the route no. 01. Other light vehicles could also pass and access the said barangay.



**Land-based Hazards**



**Water-based Hazards**

**Map Legend:**



From the multi hazard map, Barangay Magsikap was identified to have more exposure risks with regards to climate change hazards. These includes flooding, storm surge, erosion, landslide and drought in most of their agricultural areas.

Based from the hazard susceptibility per barangay record of the MDRRM, Barangay Magsikap belonging to Baybay cluster is susceptible to hazards that includes earthquake, flooding, liquefaction, tsunami, sea surge. It has a land area to be affected at 5, 742 hectares with a population of 1,641 individuals.



Barangay Magsikap Profile

Population	: 1641	Land Area	: 5,742 Ha
Households	: 346	Agriculture	: 1,306.5 Ha
Houses	: 324	Farmers	: 211
Male/Female	: 846/754	Fisherfolks	: 45

**Baseline Information on Climate Change Adaptation and Mitigation Awareness**

The following table shows the result of the baseline survey conducted in the three municipalities of ReIna area. Random sampling was done in identifying the respondents. This will serve as initial information on their awareness to climate change adaptation and mitigation practices

Profile	Real	General Nakar	Infanta
Age	40-70	50-68	36-56
Gender (male/female)	50/50	100/0	90/10
CS (single/married)	10/90	0/100	0/100
Years in the Community	12-50	50-68	12-44
Households	3-8	2-11	3-9
Source of Income	Ornamentals, Coconut	Rice, Coconut, Vegetables, Fishing	Rice, Vegetables
Other income	Coal, Tricycle, Stores	Ornamentals, Milling	Fishing, Store
Organizations	FA	FA	FA
Farm Site	Upland/Lowland	Upland/Lowland	Lowland
Farm Size (Hectare)	0.1-3.8	0.5-10	0.5-2

Table 1: Demographic profile of the community respondents.

As depicted from the table, the age of the respondents ranged from 36 to 70 years old. However, it can be noted that most respondents from General Nakar belong to the average age for farmers. Same is observed on how long they are staying in the community where majority have been in the community since childhood.

With regards to agricultural engagements, Real were only limited to ornamentals particularly cut-foilage serving as their major activity in the farm, Infanta being a top rice producing municipality in the cluster, practice vegetable integration especially between season. General Nakar exhibited several agricultural activity in the area such as rice, vegetables, backyard livestock, fishing and coconut based farming

Parameters	Real	General Nakar	Infanta
CC knowledge	50.0	83.0	83.0
Weather Extremes, variability, uncertainty			
• Sudden increase in temperature	50.0	83.0	83.0
• Number of hot days increasing	50.0	83.0	83.0
• Changes in flowering time	83.0	83.0	100.0
• Incidence of pests and diseases	83.0	67.0	83.0
• Change in typhoon, monsoon or rainfall	100.0	83.0	100.0
• Increases in dry spell	83.0	100.0	83.0
• Prolonged rainfall	17.0	100.0	100.0
Secondary and Human Impacts			
• Decrease in crop production	33.0	83.0	100.0
• Reduction of agricultural areas	50.0	67.0	83.0
• Loss of income/resources/livelihood	50.0	83.0	83.0
• Increase in the incidence of malnutrition and food security	83.0	33.0	17.0
• Increase in water shortages	50.0	50.0	33.0
• Loss of property	67.0	17.0	33.0

Table 2: Climate Change Adaptation and Mitigation Knowledge and Practices

Table 2 show the climate change adaptation and mitigation knowledge and practices of the respondents. Clearly, General Nakar and Infanta are more aware of the various knowledge and practices on climate change. With regards to weather extremes, variability and uncertainty such as change in typhoon, monsoon or rainfall, all the communities are aware. However, with regards to dry spell and prolonged rainfall, Real registered low awareness.

Parameters	Real	General Nakar	Infanta
CAM Practices	33.0	67.0	33.0
Coping Mechanisms			
• Stockpile food	83.0	83.0	83.0
• Search for unconventional food	100.0	100.0	83.0
• Engage in off-farm employment	67.0	83.0	50.0
• Share knowledge, seek information			
• Relocate/migrate to areas safe enough from identified risk	33.0	67.0	67.0
• Strengthen or retrofit my house to lessen the damages caused	17.0	17.0	33.0
	17.0	87.0	83.0
Adaptation Mechanisms			
• Intercropping, diversification, CR	50.0	33.0	50.0
• Varietal change	17.0	83.0	50.0
• Crop insurance	17.0	0.0	83.0
• Early warning systems	83.0	83.0	100.0
• Backyard food conservation	67.0	100.0	67.0
• Farm waste conservation	50.0	83.0	83.0
• Irrigation water impounding	0.0	0.0	0.0
• Terracing, hedgerows, breakers, etc.	17.0	0.0	0.0

Table 3. Coping mechanisms, adaptation methods and measures to respond to climate

Table 3 showcases the coping mechanisms as well adaptation and mitigation practices in the community. It can be noted that General Nakar most claimed they are aware on these actions. Coping mechanisms such as stockpiling of food, searching for unconventional food and engaging in off-farm employment resulted high practice from all the respondents. However, relocating/migrating to areas safe enough from identified risk is not an option for them.

As for the adaptation practices, it can be noted that, insuring their crops through insurance services is not being practiced in General Nakar, water impounding is also not a practice for all the respondents. Awareness on some smart agriculture practices such as terracing, hedgerows and use of breakers is considered to be low.

Practices/Technologies	Real	General Nakar	Infanta
Organic farming	33.0	87.0	0.0
Methane capture	0.0	0.0	87.0
Cover cropping	17.0	50.0	0.0
Reforestation	67.0	87.0	17.0
Agroforestry	50.0	100.0	100.0
Nutrient Management (use of organics, balance fertilization)	50.0	100.0	100.0
Tillage management (zero, minimum)	17.0	0.0	0.0
Restoration of degraded areas	17.0	0.0	0.0
Pasture management	17.0	0.0	0.0
Alternate Wetting and Drying irrigation	17.0	0.0	0.0

Table 4. Technologies applied/practice to mitigate the effects of greenhouse gases

Mitigation activities utilizing available technologies were showed in Table 4. Organic farming in General Nakar is practice since this is one of the advocacy of the administration, there are some in Real but surprisingly, none were observed in Infanta. With regards to forest conservation, the community are very much aware since many NGOs are conducting related projects in the area. Technologies such as restorations, zero tillage, pasture management and AWDs are not practice in the communities.

Table 5 presents location specific resilient technology adaptation, as expected, General Nakar registered high mean practice on organic farming, composting, natural farming inputs and agroforestry. This is followed by Infanta and Real. However, with regard to the other listed technologies, all the respondents resulted none to low practice.

Crops Technology/Strategies	Real	General Nakar	Infanta
Organic Farming	2.17	4.50	4.00
Composting	3.00	4.50	3.50
Natural Farming Inputs	2.33	4.00	2.83
System of Rice Intensification	1.00	1.17	1.00
Palay/Check	1.00	3.83	1.83
Use of Climate-resilient Varieties	1.00	2.17	2.83
Use of Early maturing varieties	1.00	2.83	2.67
Sloping Agro-Livestock Technology	1.00	1.17	1.00
Agroforestry	3.17	4.33	3.83
Zero/Minimum Tillage	1.00	1.00	1.67
Relay Cropping	1.00	1.00	1.67
Multi-Story Cropping	1.00	1.00	1.00
Cover Cropping	1.67	3.17	1.00
Mulching	1.67	2.83	1.33
Ratoning	1.67	1.50	1.67
Integrated Diversified Organic FS	1.33	2.17	1.83
Weather Index-based Crop Insurance	1.00	1.17	2.33
Use of Weather Forecast in Decision making	1.00	1.83	3.00
Controlled Irrigation	1.00	3.00	1.67
Small Water Impounding	1.00	1.17	1.00
Shallow tube well	1.00	1.83	1.00
Renewable energy technologies	1.00	1.50	1.83
Overall	1.41	2.35	2.02

Livestocks Technology/Strategies	Real	General Nakar	Infanta
Proper Housing of Animals	3.50	1.25	3.25
Proper way of breeding	3.25	1.00	1.00
Nutrition/Feeds and Feeding	2.25	1.25	1.00
Pest and Diseases Management	2.50	2.00	1.00
Proper waste management	2.25	2.00	1.00
Overall	2.75	1.50	1.45

Table 5: Location specific climate resilient technology adaptation

Generally, General Nakar registered a mean of 2.35 while Infanta has 2.02, this means that these municipalities are aware of the technology, however, Real has a mean of 1.41 signifying unawareness.

With regard to livestock technology, Real registered a mean of 2.75 while General Nakar and Infanta has a mean of 1.50 and 1.45, respectively.



## Convergence Initiatives

Conducted last April 26-29, 2017 in General Nakar. The participants came from agencies including SLSU (AMIA Team), OPA Quezon (Climate Change Team), LGU General Nakar ( MDRRM, Planning, Nutrition and Agriculture) and representatives from farmers, fisherfolks, youth, women, senior citizen from Barangay Magsikap, General Nakar. Identification of problems and issues were conducted with corresponding plan of action is presented in Appendix 3. The outputs were presented to LGU executives and DA-RFO IVA for possible collaborations.

## Project Partners

### Partners Agencies

#### Department of Agriculture Regional Field Office IVA, Diliman, Quezon City

- provided equipment such as garden tools and agricultural inputs for the beneficiaries
- Provided technical expertise for the technology trainings

#### Southern Luzon State University, Lucban, Quezon

- provided technical expertise and took charge of monitoring of the project implementation in the community

#### Office of the Provincial Agriculturist, Lucena City, Quezon

- provided technical expertise and inputs such as fertilizers, seeds and seedlings, and water harvesting drums for the beneficiaries

#### Local Government Unit of General Nakar, Quezon

- took charge of logistics in the community and provided coco coir facility at the community
- continuously provide support and intervention to the community such as:
  1. Organic Fertilizer Production Facility
  2. Shredding Machine intended for the production of Organic Fertilizer
  3. Certified Rice Seeds every cropping season ( 180 sacks CS -wet and dry season)
  4. Organic Fertilizer Support (vermicast) for the production of organic rice and vegetables
  5. Regular supply of Vegetable Seeds
  6. Farm tools ( Shovel, Rake, piko, bolo, sprayer (25 pcs each)
  7. Manpower (1 job order for the operation of coco coir production facility)

### Collaborating Agencies

#### Philippine Coconut Authority Region IVA, Lucena City, Quezon

- provided training and capacity-building for stakeholders and coco coir equipment

#### Bureau of Fisheries and Aquatic Resources Region IVA, Quezon City

- provided fishing gears and banca for the fisherfolk beneficiaries



## Climate Risks and Vulnerability Assessment

Conducted last May 16-19, 2017, participated by the team created from the convergence workshop, attended by DA RFO, SLSU, OPA Quezon, LGU General Nakar and Barangay Magsikap representatives. Identification of the risks and hazards were done to different areas and plan of action were considered. Livelihood projects were also derived from the data gathered during the activity.

Activities included are participatory mapping and modelling, transect walks and guided field walks, seasonal calendar and time lines.

Anchoring on the national program framework for the CRA project, DA-ATI Region IV-A's mandate as the capacity builder, knowledge bank and catalyst of the Philippine Agriculture and Fisheries extension system, will be its advantage in the success of the project through the framework below:



The above framework will serve as the benchmark of activities to be done with implementing partners in the community.



## 2. Climate Resilient Livelihood Kits

Based from the several approaches applied, the following livelihood project were provided to the beneficiaries:

- Village-level Coco Coir Processing
- Village-level Organic Fertilizer Production
- Coco-based Cacao and Ubi Production
- Goat Raising
- Small-scale Fish Processing

Project	CRA support	Beneficiaries	Inputs
<b>COCONUT-BASED INTEGRATED FARMING (CACAO AND YAM PRODUCTION)</b>	1. Each of the 13 beneficiaries has coconut plantation, and to maximize such there is a need to intercrop cacao and yam plants with the monocrop coconut trees. 2. To increase their livelihood it is an opportunity to grab the market demand for cacao in the chocolate industry and yam for the food delicacy and ice cream making business.	Delia Prestado Lelanie Rutaquio Amador Bunaobra Nick Aumentado Jacinta Rubio Elena Avellano Loreto Moises Jovencio Avellano Feliza Despues Jerone Tena Marvin Antero Janet Cuervo	Cacao Seedlings Yam Tubers  Vermicast Bokashi Urea  Set of Garden Tools (wheel borrow, shovel, spade, rake, itak, sprinkler, pickmattock) Rainwater Drum
<b>VALUE ADDING SUPPORT TO FISHERFOLKS</b>	1. There is an abundance of fish in the area which is suitable for fish processing especially during peak season. 2. The demand for processed fish products is high and is a regular component of the farmers day to day food necessity.	Mano Crisostomo Benito Tena Rodney Ritual Normelita Ortillano Emerenciana Astrera Delcena Montales, Allan Ortillano	Set of Fish Processing Starting Kits (Smoker and Steamer with kitchen tools)  1 set of fiber materials for non-motorized banca construction
<b>GOAT RAISING</b>	1. As an additional income generating source for the 11 palay farmer beneficiaries. 2. There is an abundance of grasses for feeding requirements. 3. Market demand for goat meat is high.	Florentino Sanchez Maria Ruzol Nelson Ritual Regina Diesta Norberto Francia Jennylyn Torres Rizalito Astrera Sr Juanito Romantico Caroline Velasco Arturo Virrey	3 heads Native Goats (1 male, 2 female)
<b>COCO-COIR PROCESSING FACILITY</b>	1. Majority of the farmers and more than half of Brgy. Magsikap's agricultural area is planted to coconut - there is a great abundance of coconut husk. 2. To supplement the income of the farmers since there is a high demand for coconut locally and abroad. 3. All the creeks and rivers are being clogged by coconut husks during rainy season all the way to the open sea, hence utilizing these coco husks will help cleanse the water ways and prevent the tantamount proliferation of such in the seashore environmental wise, this will help maintain a clean and healthy surrounding.	Community	Building  Set of Decorticating Machine  Twining/Looming Implement  Tractor with Trailer  Sacks
<b>ORGANIC FERTILIZER PRODUCTION FACILITY</b>	1. There is a parallel abundance of coco peat supply in the coco coir production, and since coco peat is a very good source of plant nutrient it is but appropriate to maximize such. 2. To augment the income of the farmers by producing organic fertilizer to supply the requirements in the palay farms and other crops in the area and nearby farming communities.	Community	Shredding Machine Set of Tools (Shovel and Bolo)



### Climate Resilient Technology Trainings

The following training activities were conducted in support to the livelihood projects provided to the community, attended by the 30 farm family beneficiaries.

#### Year 1

- a. Community Empowerment Course, July 12-14, 2017
- b. Climate Change Resilient Community Course, Aug. 23-25, 2017
- c. Technical Training on Coco Coir Processing, Aug. 28-31, 2017
- d. Climate Smart Farm Business School, Sept. 4-13, 2017
- e. Package of Technology (POT) for Cacao, Ubi and Goat Raising, Sept. 20-22, 2017
- f. Training Course on Organic Fertilizer Production, Oct. 9-1, 2017
- g. Training Course on Fish Processing, Oct. 11-13, 2017

#### Year 2

- a. Training Workshop on the Development of Local Climate Change Action Plan in Support to CRA Pilot Project, March 16-18, 2018
- b. Establishment of Palayamanan Plus, June – October , 2018
- c. CRA Pilot Project Value Chain Analysis: Planning for the Development of Market-oriented Agricultural Enterprises, September 5-7, 2018

#### Year 3

- a. Writeshop for Pamayanang Laging Handa: A Compendium of Climate Change Resilient Practices and Stories, May 28-31, 2019

#### Year 4

- a. Skills Training on Coco Coir Handicraft Making, September 23-25, 2020



Preparing the Community for disaster response

## Katuwang sa Pag-unlad na Samahan at Ugnayan ng mga Magsasaka, Mangingisda at Kababaihan (KAPAGSUMAMAKA)

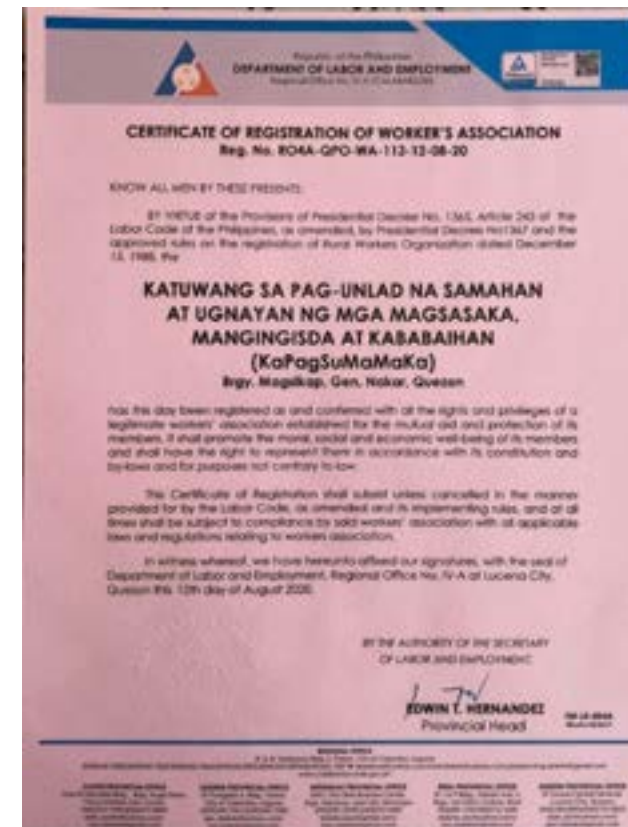


Figure 1. Certificate of Recognition of Worker's Association of KaPagSuMaMaKa

One of the soft components of the project is to organize the recipients into a registered farmers association. A training on organizational development was conducted for capacity enhancement and improved coordination of the community that aimed at contributing to the resilience of communities against the effects of calamities and disasters.

The farmer association known as Katuwang sa Pag-unlad na Samahan at Ugnayan ng mga Magsasaka, Mangingisda at Kababaihan (KaPagSuMaMaKa). Accredited by DOLE with a certificate of registration as workers association with registration number: RO4A-QPO-WA-113-12-08-20. The association is tasked to manage the coco coir facility for the production and marketing of raw and processed coco coir products.



Before 2017 ends, the LGU entered into a Memorandum of Agreement with ATI Region IVA for the Project Management Turnover. In this manner, the LGU will be in sole responsibility in ensuring the smooth flow of project deliverables.

ATI RTC IVA led-project monitoring was conducted after a year of implementation surfacing problems encountered in the community.

Thirty (30) beneficiaries received various trainings and other extension interventions for the whole year. One of these was the provision of extension support as additional livelihood for the beneficiaries. Out of the 30 beneficiaries, 13 (43.33%) received integrated farming inputs (includes cacao seedlings, yam tubers, vermicast, bokashi and set of garden tools) each; 10 (33.33%) farmers received native goats (1 male and 2 female each); and 7 (23.33%) beneficiaries received a set of fish processing starter kits (smoker and steamer with kitchen tools).

The evaluation is significant in order to assess, and make conclusions and recommendations to further improve the effectiveness of the CRA Community Program. The evaluation was scheduled one year after ATI IV-A's intervention with the community and was conducted through a one-shot interview with a complete enumeration of the beneficiaries last July 29-31, 2018 at Brgy. Magsikap, Gen. Nakar, Quezon. Out of the 30 original beneficiaries, only 28 (93.33%) were interviewed for the evaluation. The other 2 (6.66%) beneficiaries were not available in the community during the date of the interview.

### Project 1: Native Goat Recipients

A total of 30 native goats were given to 10 beneficiaries at the start of the program. Among the beneficiaries, only one beneficiary was able to sustain the three native goats provided, one beneficiary still has 2 native goats and another with has one healthy native goat. On the other hand, all the native goats of the remaining five beneficiaries have died with the sole reason of sickness (cold and diarrhea) as a result of the past rainy season of the year.



### Project 2: Integrated Farming Inputs Recipients

Thirteen (13) beneficiaries received integrated farming inputs with an average of 250 pieces of cacao seedlings and 40 kilograms of yam tubers, plus fertilizers as additional source of income at the start of the program. During the course of the evaluation, all 100% of the beneficiaries were interviewed.

The beneficiaries experienced loss from the planting materials with as much as 60% mortality rate with the cacao seedlings and as much as 75% with the yam tubers. All the beneficiaries agreed that seedling stress during transportation was the main cause of low survival rate for the cacao, while most of the yam tubers were already affected by fungus upon delivery.

The fertilizers however, were utilized by the beneficiaries with the rest of their farms. On the positive end, the garden tools provided for each farmer were still complete and the beneficiaries were still committed in continuing the propagation of cacao with majority of them started grafting methods from existing cacao trees so they would produce new planting materials.



Project 3: Fish Processing Starter Kits Recipients

A pair of smoker and steamer with a set of kitchen tools were provided to seven beneficiaries of the program. All beneficiaries were present during the evaluation period. One hundred percent (100%) of the farmers were recorded to have a complete set of usable equipment and tools.

Three beneficiaries (42.86%) mentioned that one of the problems they encountered was the low quality of door hinges used with the equipment that resulted to rusting and damage. The beneficiaries however, shouldered the cost of repair for the said equipment. In addition, all the recipients mentioned that the main problem for them was the high-priced raw fish to be processed due to unavailability of resources within the community.

#### Recommendations

Continuous support and intervention must be given to the pilot site, in collaboration with project partners. In addition, regular monitoring on the community and individual livelihood projects must be sustained by the local government unit and ATI team. When it comes to the extension support provided, the respondents have requested additional interventions in the future including coconut by-products/handicraft making and co-choir processing trainings.

They also requested for livelihood trainings for women, inland fishery training mushroom production, goat raising technology with artificial insemination and by-product processing, and financial literacy or credit loan briefing, meat processing using smoker, Palayamanan, organic pig raising, marketing training, cacao processing training, provision

To ensure smooth implementation of the project, regular monitoring and documentation were conducted. Process flow and video production were some of the strategies included. Information, Education, Communication (IEC) materials such as news broadcasts, articles and success stories both print and video were made available to inspire other members of the community on the adoption of climate smart technologies in agricultural productivity.

### Output 3: The community evolves into a “Climate Smart Community”

Considering the benefits of CSFBS, it is essential to equip the farmers with its concept to make their farming endeavour sustainable and more profitable. The conduct of CSFBS (farmer level) will be supported by ATI-RTC IVA and the LGU that includes sessions, market survey, benchmarking, field day and graduation.



Intensive 10-Day Climate Smart Farm Business School

To achieve more sustainable outcomes, the Climate Resilient Agriculture (CRA) project needs to pay more attention to the local marketing systems and work with farmers within their marketing context. Value chain analysis is an important tool in such planning as it studies and maps out specific physical commodity flows within a sector and the inter-relationships between actors involved in all stages of the marketing channel (Kaplinsky and Morris 2001). Used in a participatory way, such as part of a stakeholder consultation, value chain mapping provides a focus for risk analysis, which facilitates useful discussions about risk issues; thus promote good risk communication (FAO 2012). CRA Pilot Project Value Chain Analysis : Planning for the Development of Market-oriented Agricultural Enterprises was conducted on September 5-7, 2018. Maximizing social media, the project is now marketing their products online.





### Establishment of Farmer's Information and Technology Services (FITS) Center

LGU managed one-stop knowledge hub for technical and information services for farmers and fisherfolks. Established in 2017 – the center provides technical support to the community in terms of IEC materials and climate-related information as well as farm business advisories.



### Output 4: Outputs of ATI CRA Project are managed for results

The Central Office is regularly monitoring RTCs quarterly progress accomplishment reports. They also convene the Climate Change Focal Person for mid-year and year-end assessment and planning workshop.



### Other Significant Project Accomplishments

#### 1. Expansion of Coco Coir Processing Facility and Services

One of the community-based project, the beneficiaries were able to maintain a sustainable operation and were able to market their produce in and out of the municipality. Through social media, the project provides an online opportunity to market the products. They also established direct link to garden suppliers during the pandemic. Recently, value added products were produced and ready to market.



## 2. Native Chicken dispersal from DA RFO

Continuous intervention were provided to the community especially for those under the fish processing beneficiaries. The beneficiaries were provided starter kits composed of 2 male and 10 female native chicken.



## 3. Outstanding Farm Family

The chairman of the farmer association and one of the beneficiary of the project is one of the awardee during ATIng Parangal 2019 as Natatanging Kaagapay sa mga Espesyal na Proyekto. The awards showcase successful implementation and partnership in extension activities.



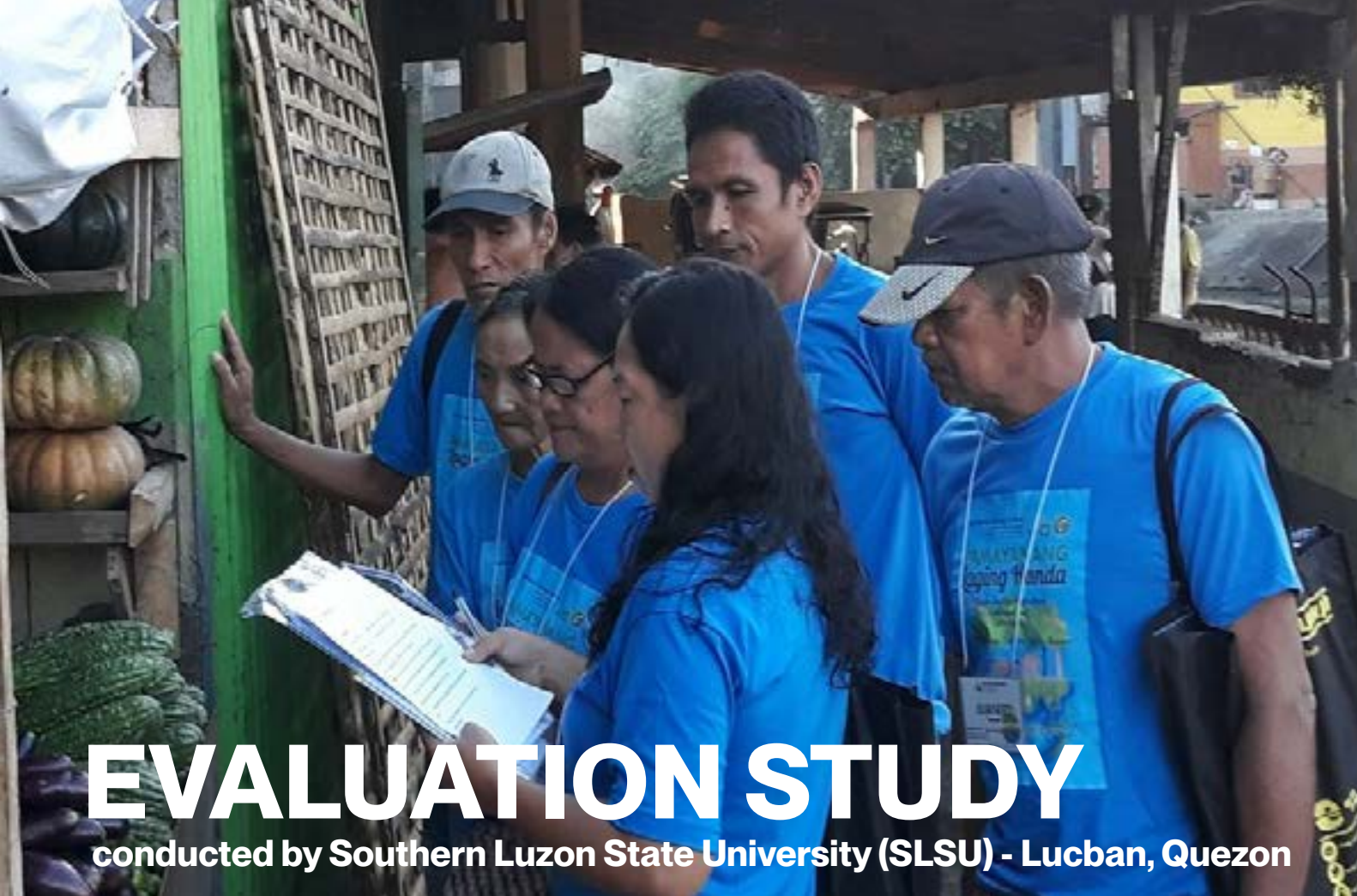
# Project Recommendations

To ensure the attainment of the project deliverables, the following recommendations must be taken into consideration:

1. Continuous and regular project assessment must be conducted. In this manner, actual needs and resources can be strategically planned.
2. Project intervention through collaborations with other agencies must be considered to provide a wide and much responsive activities for the community.
3. Strengthen the farmer association skills in marketing and linkages. Provide assistance to client and market targets for continuous supply both raw and processed products.
4. Expose the project proponents on the prospects of product development. This will widen their market coverage and potentials.
5. Ensure budget availability for the project sustainability







# EVALUATION STUDY

conducted by Southern Luzon State University (SLSU) - Lucban, Quezon

The proposed study is primarily focused on evaluating the increased adoption of the CRA practices provided for the selected beneficiaries who, in this project, are farmers of Brgy. Magsikap, Gen, Nakar, Quezon. It specifically attempts to identify the suitable climate resilient technology in the mentioned locale in relevance if income of the beneficiaries is sustained and improved. Moreover, the study looks into their satisfaction and other practices that help improve the sustainability of the project. Therefore, the study is centered on the final monitoring and evaluation of the impact of the CRA project, specifically the sustainability of the livelihood projects and the status of their community organization. The study is also limited to the locale of Brgy. Magsikap where the CRA was employed from 2017 and it attempts to recognize the involvement of both the LGU and the community on the project. It also utilizes the responses of the beneficiaries from the various climate resilient technologies as the main data of the evaluation. The present study reveals that the beneficiaries have

increased their adoption of CRA practices. The beneficiaries expressed interest to continue practicing the climate resilient technologies for crops and livestock but may not be able to do so in fish processing. Furthermore, their resourcefulness is evident as they resort to alternatives and other practices as their coping mechanisms for climate change. As for its economic impact pertaining to income, it was manageable particularly during the pre-pandemic season. During the pandemic, they encountered problems in marketing their products due to lack of potential clients and availability of some materials due to weather conditions. The study also found out that the village-level coco coir processing is the suitable climate resilient technology in the locale. It is recommended to provide the locale with training in marketing strategy to assist them in their product sales. Further support to the appropriate climate resilient technologies is also recommended in order to maximize the potential of the beneficiaries on this.



## OBJECTIVES OF THE STUDY:

This study generally intends to evaluate if the selected beneficiaries have increased their adoption of CRA practices. Specifically, this will:

1. Determine the improvements in the practices of beneficiaries for the past years using the climate resilient technologies employed.
2. Identify other practices employed by the beneficiaries that help improve the sustainability of the project.
3. Examine the economic impact of the climate resilient technology to the beneficiaries.
4. Determine the climate resilient technology/ies that suits the locality from the beneficiaries' experiences.



## SIGNIFICANCE OF THE STUDY:

Upon the completion of the study, the findings are believed to be beneficial to the farmers and LGU of Brgy. Magsikap, Gen. Nakar, Quezon. It could also benefit agriculturists and agricultural organizations.

The farmers, specifically the selected beneficiaries, would be made more aware of their adoptability to the climate resilient technologies taught and introduced to them for the past years and find out which is/are more appropriate for them and their locality. This evaluation study would also provide them with income progress from their livelihood practices. Moreover, they would be informed of the other practices that work for the sustainability of the project.

The LGU of Gen. Nakar, Quezon is of significance in terms of knowledge on the condition and situation of their farmers within the duration of the CRA project. In connection, they would be more prepared for the needs of the farmer beneficiaries with what is lacking or what needs to be improved particularly with the challenges brought about by climate change. Thus, they would be able to provide quality services to their people. Moreover, sustainability practices would also be more convenient for them.

As for the agriculturists and agricultural organization, they would be more encouraged to propose and develop projects, programs and technologies to further improve the resilience of farmers to climate change. This present study would assist them on providing appropriate project and services.



## SCOPE & LIMITATIONS:

The study is generally limited to the evaluation of the CRA project for the past five (5) years from 2017 in Brgy. Magsikap, Gen. Nakar, Quezon. It primarily focused on effectiveness of the training and technologies provided for the selected beneficiaries who, in this project, are farmers of the mentioned locale. Through the acquired livelihood training, the study also aims to verify if the income of the beneficiaries is sustained. Therefore, the study is centered on the final monitoring and evaluation of the CRA project

## THEORETICAL FRAMEWORK

The CRA project for Brgy. Magsikap, Gen. Nakar, Quezon Anchored on National Framework Strategy on Climate Change by the Philippine Climate Change Commission as shown in Figure 1 :

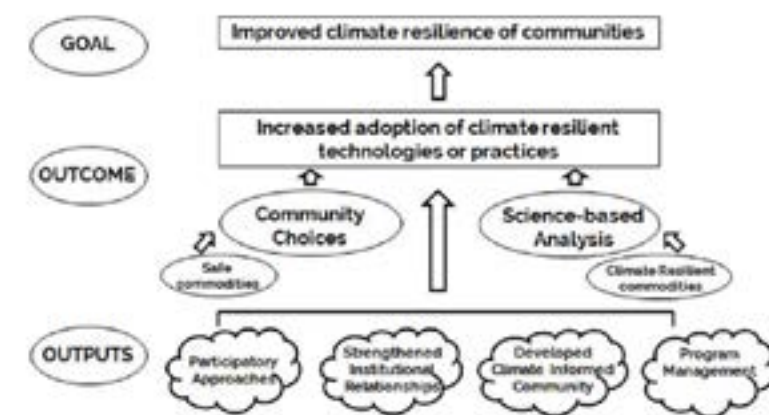
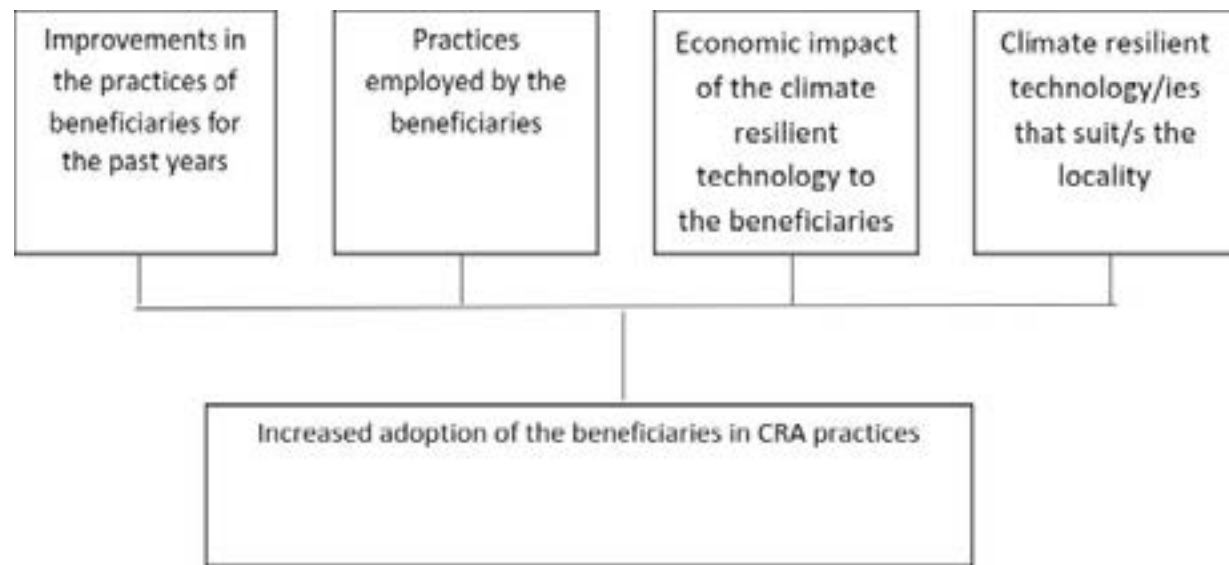


Fig. 1. National Framework Strategy on Climate Change

The entire design of the CRA project is anchored in the figure. This framework serves as a guide on the implementation of the project. It includes the potential outputs such as participatory approaches, strengthened institutional relationships, developed climate informed community and program management that is believed to result in an outcome of increased adoption of climate resilient technologies or practices. This arises from the community choices and science-based analysis based on safe commodities and climate resilient commodities respectively. Therefore, these expected outputs and outcomes lead to the general goal of an increased adoption to climate resilient technology and to an improved climate resilience communities.

## CONCEPTUAL FRAMEWORK

Foregrounding on the framework for climate change, this evaluation study followed the conceptual framework below.



*Fig. 2. Evaluation Study Framework*

This evaluation study follows the framework presented on figure 2. It shows the general intention of evaluating the increase in adoption of the beneficiaries in CRA practices which will be attained through the specific objectives of determining the following: a) improvements in the practices of the beneficiaries for the past years; b) practices employed by the beneficiaries; c) economic impact of the climate resilient technology to the beneficiaries; and d) climate resilient technology/ies that suit/s the locality. Survey questionnaires and interviews responses are the main instruments used in collecting the data of the study. The data were subjected to quantitative and qualitative analysis. Moreover, testimonies from the respondents' experiences are also utilized to further the analysis of this evaluation study.

## METHODOLOGY

### Research Design

This evaluation study is descriptive research that aims to evaluate the overall impact of the five-year CRA project. It employed a quantitative and qualitative method in analyzing the data from survey and interview administered and conducted to the respondents.

### Research Locale

The study was conducted in Gen. Nakar, Quezon specifically in Brgy. Magsikap.

### Participants/Respondents

The respondents of the study are the beneficiaries of the CRA project for the past five (5) years. Twenty-six (26) respondents participated and are grouped according to their respective training attended/completed.





## Data Collection

Primary data was used in determining the level of adoption of CRA practices. The data was obtained through personal interviews with the farmer-beneficiaries. The interviews were conducted through an adopted and self-made questionnaire.

The farmer-beneficiaries in the pilot community represented the population. The same participants are interviewed for monitoring in the training. A total of 22 respondents were present in the community for impact evaluation.

## Data Analysis

This study used qualitative and quantitative descriptive methods. An adopted and self-structured questionnaire through focus group and one-on-one interviews was administered to gather the information needed to fulfill the objectives.

## Results and Discussion

This part presents the results and discussion of the evaluation study. Data are presented in tabular and graphical forms for comprehensive visualization. Numerical data and word responses are also provided to further support the analysis and findings of the study.

Demographic Profile		Frequency	Percentage
Age	20-29	1	4.55
	30-39	3	13.64
	40-49	3	13.64
	50-above	15	68.18
Gender	Male	12	54.55
	Female	10	45.45
Civil Status	Single	1	4.55
	Married	20	90.91
	Widow/Widower	1	4.55
Educational Attainment	Elementary	6	27.27
	Secondary	10	45.45
	College	4	18.18
	TESDA	2	9.09
Number of Children	0	1	4.55
	1-3	7	31.82
	4-6	8	36.36
	7-above	6	27.27
Land Status	Owner	15	68.18
	Tenant	5	22.73
	Others	2	9.09
Income per year	10,000 and below	7	31.82
	10001-40,000	8	36.36
	40,001-70,000	3	13.64
	70,001 above	4	18.18
<b>Total</b>		<b>22</b>	<b>100</b>

Table 1. Demographic Profile of the Respondents

Based on Table 1, majority of the beneficiaries are 50 years old and above (68.18%) while there is the same number of beneficiaries (13.64%) for ages 30-39 and 40-49. Only 1 (4.55%) participant ages between 20-29. There are more male (54.55%) than female (45.45%) participants in this training. Most of them are married (90.91%) while the rest of the beneficiaries are single (4.55%) and widow/widower (4.55%). Furthermore, when it comes to the educational attainment, 10 out of the 22 beneficiaries are from secondary level (45.45%); followed by elementary (27.27%) and College level which is 18.18%. Two (9.09%) among the beneficiaries have skills training from TESDA.

Eight (8) beneficiaries (36.36%) have 4-6 children while seven (31.82%) of them consists of 1-3 children and 6 of them (27.27%) have 7 and above number of children. Only 1 (4.55%) participant has no child. In land status, majority of the farmer beneficiaries are owners (68.18%) while 5 of them are tenant (22.73%). Other farmers (9.09%) are borrowing the land from their co-farmers to plant their own crops and palay. Lastly, 36.36% of the beneficiaries earned between P 10,001 and P 40,000 a year from farming. This is followed by 31.82% (7 out of 22) participants who earned 10,000 and below. Four (4) of the farmers who participated in this training earned a minimum of P 70,000 while the remaining beneficiaries (13.64%) earned from P 40,001 to P 70,000.

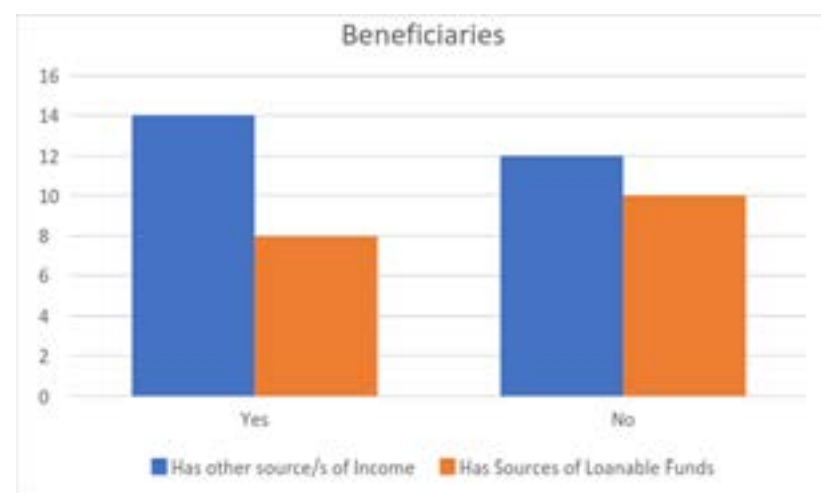


Fig. 3. Beneficiaries' Source of Income

In the bar graph presented in Figure 3, 14 out of 22 participants have other source/s of income while less than half of them (8 out of 22) have no other source of income. On the other hand, there are more beneficiaries (55%) who have a source of loanable funds than participants with no source/s of loanable funds which is 45%.

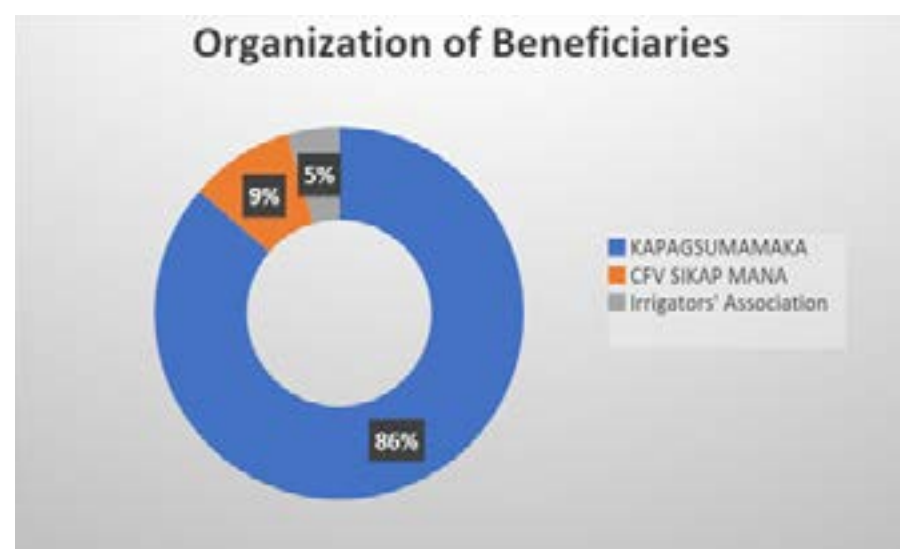


Fig. 4. Organization of Beneficiaries

In this chart of Figure 4, majority of the participants are members of "KAPAGSUMAMAKA" organization while the remaining participants are from CFV SIKAP MANA (9%) and Irrigators' Association (5%) organization.

**RO 1: Determine the improvements in the practices of beneficiaries for the past years using the climate resilient technologies employed.**

WEATHER EXTREMES, VARIABILITY, AND UNCERTAINTY	FREQUENCY (N = 22)	PERCENTAGE (%)
Sudden increase in temperature	18	81.82
Number of hot days increasing	17	77.27
Changes in flowering time	16	72.73
Change in typhoon, monsoon, or rainfall pattern	18	81.82
Increases in dry spell (El Nino: some farmers may relate it to El Nino, so you can state it or remove it from the form)	16	72.73
Prolonged rainfall (La Nina: some farmers may relate it to La Nina, so you can state it or remove it from the form)	14	63.64
Decrease in crop production	18	81.82
Reduction of agricultural areas	11	50.00
Loss of income/resources/livelihoods	15	68.18
Increase in the incidence of malnutrition and food insecurity	8	36.36
Increase in water shortages (for irrigation or drinking)	14	63.64
Loss of property	4	18.18

Table 2. Climate change experiences

In Table 2 presented above, 19 out of 22 participants (86.36%) responded that they experienced incidence of pests and diseases related to climate change in their community in the past 3-5 years. This is followed by observing sudden increase in temperature, change in typhoon, monsoon, or rainfall pattern, and decrease in crop production (81.82%). On the other hand, 77.27% of the farmers noticed an increase of hot days and rainfall such as timing, duration, intensity while 16 out of 22 respondents encountered changes in flowering time and increase in dry spell such as El Niño. Having loss of income, resources, and livelihood is what the farmers undergo with the percentage of 68.18%. Further, there are 14 out of 22

beneficiaries who experienced prolonged rainfall such as La Niña and increase in water shortages such as for irrigation and drinking purposes. Half of the participants said that they are having a reduction of agricultural areas as the climate changes and 36.36% of them have come across an increase in the incidence of malnutrition and food security. Loss of property has the lowest response when it comes to experiencing climate change with 4 out of 22 farmers who encountered it. The situation encountered by the majority of participants was related to the study of Lemic, et. Al. (2021). They stated that climate change produces ecological niche which provides portal for insect pests to establish and spread from one area to another.

<b>COPING MECHANISMS</b>	<b>FREQUENCY (N = 22)</b>	<b>PERCENTAGE (%)</b>
Stockpile food	19	86.36
Search for unconventional food sources	18	81.82
Engage in off-farm employment/ find alternative livelihoods	13	59.09
Share knowledge, seek information, network with others	12	54.55
Relocate/migrate to areas safe enough from identified risks	5	22.73
Strengthen or retrofit my house to lessen the damages caused by these hazards	8	36.36

*Table 3. Coping Mechanism of the Beneficiaries*

In this data presented in Table 3, almost all the farmers (86.36%) in Barangay Magsikap are stockpiling foods as their coping mechanism when they experience sudden climate change followed by searching for unconventional food sources with 18 out of 22 participants who responded to it. They also engage in off-farm employment or alternative livelihoods with more than half of them doing that (59.09%) such as E-loading/remittance center, selling fishes, taking care of animals, planting vegetables and ornamental plants, “pagrorosal”, being “utility” in school, putting up sari-sari store. On the other hand, (12 out of 22) sharing knowledge, seeking information, and networking with others are what they also do to help them cope up with the crisis. 36.36% of the beneficiaries are strengthening or retrofitting their house to lessen the damages caused by the hazards, while 22.73% of them are relocating or migrating to safe enough areas from identified risks.

According to Mubiru et.al., (2018), there is a need to minimize the post-harvest losses due to increasing changes in climatic conditions and climate variability. They also added that with the adoption of food storage technologies, the farmers can have the opportunity to store the crops for a longer period of time. By that, they can sell it to a later date and gain prices that will generate their income and increase their food security. This food storage practices were also evident among farmers in Ilocos where they usually kept a portion of their rice produce for year-round for home consumption, though households that fell short of capital for their dry season crops sold part of their rice allocation to buy farm inputs then procured the replacement when they have earned income from their dry season crops as stated by Catundan and Martin (2013).

<b>FARMING METHODS TO COPE UP WITH CLIMATE CHANGE</b>	<b>FREQUENCY (N = 22)</b>	<b>PERCENTAGE (%)</b>
Intercropping (diversification, crop rotation)	20	90.91
Varietal change	16	72.73
Crop Insurance	16	72.73
Early warning systems	11	50.00
Backyard food conservation	20	90.91
Farm waste conservation	18	81.82
Irrigation water impounding	7	31.82
Terracing, hedgerows, wind breakers, fire breakers, buffer zones	17	77.27

*Table 4. Coping Mechanism to Climate Change in terms of Farming*

Table 4 presents some of the farming methods beneficiaries do to cope up with sudden weather changes are intercropping and backyard food conservation with the percentage of 90.91%. This is followed by farm waste conservation with 18 out of 22 participants who responded to it. However, 77.27% of the Barangay Magsikap farmers said that they are doing terracing, hedgerows, windbreakers, fire breakers, and buffer zones while having varietal change and crop insurance (72.73%) are what they also prepare for hazards. Half of the participants involved in the early warning systems with the proportion of 11 out of 22. Only 31.82% of the farmers said that they make irrigation water impounding for weather uncertainties.

Crop diversification according to Kandlinkar and Risbey (2000) is one of the important adaptation techniques in agriculture as a risk management strategy. With this approach, the commitment on crop diversification has been enhanced because of their efficiency on limited land-holdings, improvement of soil fertility and boosting crop yields among other benefits. On the other hand, Castel (2009) documented experiences from collective gardening in regards to its potential as a catalyst for neighborhood improvements in EU and the US, which our farmer beneficiaries are trying to cope with this changing climate. Meanwhile, farm waste conservation in the form of composting is a workable means of transforming various organic wastes into products that can be safely used and beneficially employed as biofertilizers according to Ayilara, et al. (2020).

AGRICULTURAL METHODS TO REDUCE THE EFFECTS OF CLIMATE CHANGE	FREQUENCY (N = 22)	PERCENTAGE (%)
Organic farming	21	95.45
Methane capture (i.e., biogas)	1	4.55
Cover cropping, green manuring	14	63.64
Reforestation (plant trees or prevent cutting of trees)	16	72.73
Agroforestry	17	77.27
Nutrient management (i.e., use of organic fertilizer, balanced fertilization)	19	86.36
Tillage management (i.e., zero, minimum)	18	81.82
Restoration of degraded areas	4	18.18
Pasture management	3	13.64
Alternate wetting and drying irrigation	1	4.55

Table 5. Agricultural Methods of the Beneficiaries for Climate Change

As for the agricultural methods to reduce the effects of climate change as seen in Table 5, nearly all participants are using organic farming (95.45%) while they utilize nutrient management such as use of organic fertilizer and balanced fertilizer with 19 out of 22 beneficiaries using this method. Also, 18 out of 22 farmers practice tillage management, followed by 77.27% beneficiaries who adopt agroforestry. Reforestation (72.73%) like planting trees or prevention of cutting trees is another way for farmers to cope up with the weather uncertainties. 14 out of 22 farmers use cover cropping and green manuring to reduce the effects of hazards. Nevertheless, only 4 out of 22 beneficiaries are restoring degraded areas as well as pasture management with 13.64% of them using it. One of the participants practices methane capture and alternate wetting and drying irrigation.

From the study of Scialabba and MullerLindenlauf, (2010), Muller, (2009), Muller et al. (2013), organic farms often sustain higher species diversity which improves the resilience of agroecosystems against adverse climate conditions. Further, having a resilient and diverse agricultural system prevents economic losses and reduces economic risks especially to farmers. Thus, Flierbach et al. (2007), organic farming is more resilient to climate change mainly on extreme droughts and rainfalls.

AGRICULTURAL METHODS TO REDUCE THE EFFECTS OF CLIMATE CHANGE	FREQUENCY	PERCENTAGE
Village-level Coco Coir Processing	5	16
Village-level Organic Fertilizer Production	5	16
Coco-based Cacao and Ube Production	9	29
Goat Raising	9	29
Small-scale Fish Processing	3	10
<b>TOTAL</b>	<b>31</b>	<b>100</b>

Table 6. Training received by the beneficiaries

In these trainings shown in Table 6, participants are assigned based on their willingness to join the respective training. Some of them got more than one (1) training and Coco-based Cacao and Ube production and Goat Raising have the highest number of participants consisting of 29% or 9 out of 22 beneficiaries. Furthermore, Village-level Coco Coir Processing and Village-level Organic Fertilizer Production have the same number of trainees where 16% of them joined while the remaining participants (10%) got the training for Small-Scale Fish Processing.

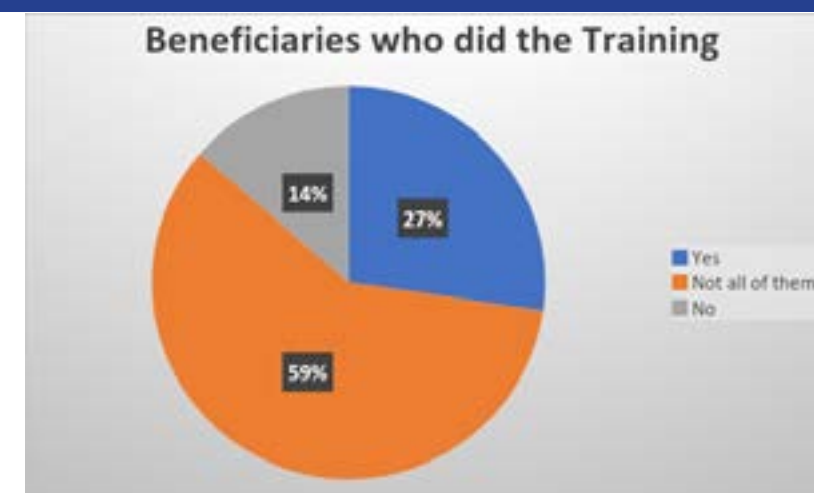


Fig. 5. Participation of Beneficiaries in the training

Although the farmers-beneficiaries received different trainings, it could be noted in Figure 5 that the majority (59%) of them apply some of the knowledge gained during the training. Despite that 27% of them applied the technologies learned, 14% revealed non-adoption of any of the technologies learned.

Those that adopt the technologies revealed that the trainings given are understandable and comprehensive. Note that there are multiple responses included in each respondent because some of them got more than one (1) training.

REASONS OF BENEFICIARIES FOR ADOPTING THE TRAININGS	FREQUENCY (N = 22)	PERCENTAGE (%)
Increase of income	4	18.18
Trainings are easy to understand	9	40.91
Trainings are easy to follow	9	40.91
The yield increased when the learnings are applied	4	18.18
Convinced by the trainings	7	31.82
Trainings made jobs easier	2	9.09
Related to their practices	3	13.64
Knowledge acquired from the trainings are enough	9	40.91
Have available capital	2	9.09
Beneficial effects are guaranteed	3	13.64

Table 7. Reasons for Training Adoption

In Table 7, most of the beneficiaries stated that the series of training is easy to understand and to follow and the knowledge acquired from it are enough with the percentage of 40.91%. There are seven (7) out of 22 participants who are convinced by the training and 4 out of 22 got their income and yield increase. Conversely, there are only 3 farmers who did not adopt the technologies for reasons that they are already practicing the same technologies and are already convinced of the beneficial effects. Having availability of capital has the lowest response from the beneficiaries with 9.09%. Note that there are some respondents who have multiple responses because some of them got more than one (1) training.



REASONS OF BENEFICIARIES FOR ADOPTING THE TRAININGS	FREQUENCY (N = 22)	PERCENTAGE (%)
Decrease of income	4	18.18
Trainings are difficult to understand	0	0.00
Trainings are difficult to follow	0	0.00
The yield has no changes.	4	18.18
Not convinced by the trainings	0	0.00
Trainings are not making the jobs easier	0	0.00
Not related to their practices	0	0.00
Knowledge acquired from the trainings are not enough	1	4.55
Have no available capital	2	9.09
Beneficial effects are not guaranteed	0	0.00

Table 8. Reasons for not adopting training

Most of the participants as evident in Table 8, did not adopt the training they received because their income decreased, and their yield has no changes at all (18.18%). However, they also did not utilize what they learned due to lack of capital (9.09%) and the knowledge they acquired from the trainings are not enough. Nonetheless, there is no response to the remaining reasons: trainings are difficult to understand and follow, not convinced by the trainings and it made their jobs easier, not related to their practices, and beneficial effects are guaranteed. Note that there are some respondents who have multiple responses in which they answered reasons for adopting and not adopting training at the same time because some of them got more than one (1) training.



SOURCE OF THEIR PLANTED CROPS	FREQUENCY	PERCENTAGE (%)
Fellow Farmers	1	11.11
Municipal Agriculture Office	1	11.11
Own crops	1	11.11
Bought from store	0	0.00
<b>Total</b>	<b>9</b>	<b>100</b>

Table 9. Source of the Beneficiaries' planted crops

Table 9 shows that the majority of the beneficiaries' crops are provided by the Agricultural Training Institute (ATI) with the percentage of 66.67% while the rest of their sources was given by their fellow farmers, Municipal Agricultural Office, and own crops (11.11%).

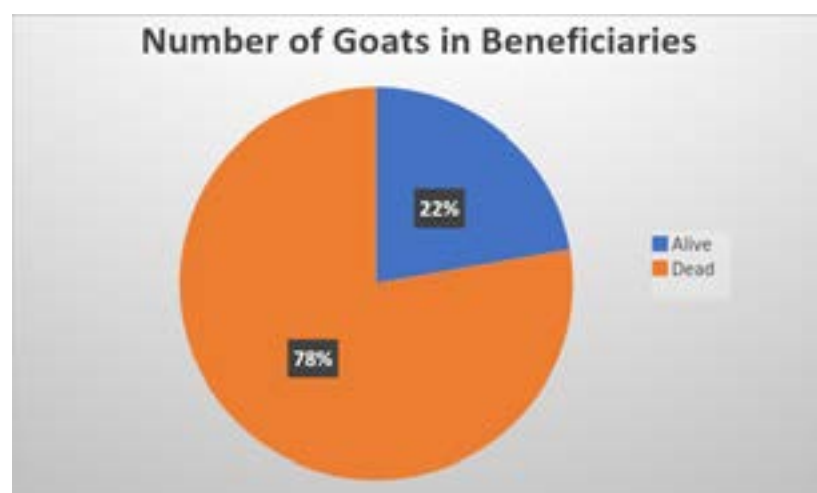


Fig. 6. Goat Beneficiaries

In monitoring the number of beneficiaries with alive goats, it could be noted that only 22% (2 out of 9 goat beneficiaries) of them have goats in their farm that are still alive, while most of the beneficiaries (7 out of 9) revealed that their goats were not able to survive the cold weather condition in General Nakar, Quezon, hence goats only lasted for 3 months then died. Those who have goats that remained alive revealed during the interview that their previous experience in goat-raising became an advantage, thus they were able to raise those goats productively as proof of the new kids produced in his farm. In addition, one beneficiary has remaining three (3) goats aside from the other 3 adults he reproduced. Meanwhile, another trainee has still one (1) remaining.



	<i>f</i>	%	SAMPLE RESPONSES
Production	6	66.7	<i>Sa Cacao ang nabuhay ay 50+</i>
Alternative	9	100	<i>Humihina man ang ani sa palayan at niyogan ay buti na lang nagagamit ko sa ornamental crops</i>

Table 10. Improvements in the practices of farmer beneficiaries on Coco-based Cacao and Ube Production

Note. N= 9 respondents

\*The table shows only the themes with frequent responses from the participants.

Table 10 above presents the responses of the farmer-beneficiaries on coco-based cacao and ube production. Based on the nine respondents, they appear to be successful in the planting of Cacao since more than 50 cacao trees survived planting in addition to their existing cacao trees. It only shows that the beneficiaries were knowledgeable of their craft. In terms of ube production, one of the beneficiaries, being all farmers, have always been well-versed in farming. One of them stated, "Sa ube nakakadalawang sako, minsan lang makatanim, maraming sira," which they attributed to changing climate conditions. Since they have observed extreme rainfall and heat and its increasing duration, their crops are greatly affected. Thus, they improvised and used alternatives. All of the beneficiaries revealed that they opt to grow ornamental crops, while waiting for the fruiting of cacao as an alternative source of livelihood. They grow rosal (*Gardenia jasminoides*), and harvest its foliage once a week and market the same to their neighbor trader who brought it to Manila. This way, they are able to earn a living by sustaining their production of rosal despite the sudden and abrupt climate changes.

These findings are in accordance with Denny et al (2019) and Morton et al (2015) that since farmers seem to easily recognize changes in climatic conditions, they are flexible and keen to apply other adaptation measures. Moreover, Miller et al (2020) also concluded that resulting in alternatives is an urgent and natural response to the challenges of climate change.

	<b>f</b>	<b>%</b>	<b>SAMPLE RESPONSES</b>
Knowledge	6	66.7	<i>Ang kaalaman po sa pag-aalaga ng kambing ay natutunan ko po sa mga trainings na ibinigay at dito ko lang po ibinase o sinunod ang proseso ng pag-aalaga</i>
Experience	5	55.6	<i>Sa karanasan ng iba mas maganda ang laya at nakawala ang kambing sa pag-aalaga</i>

Table 11. Improvements in the practices in terms of Livestock

Note. N= 9 respondents

\*The table shows only the themes with frequent responses from the participants.

The table 11 shows the improvements in the practices of beneficiaries in terms of livestock. Majority of the respondents who underwent training on goat-raising had their goats die due to climate change and inappropriateness of the farm animal in the weather condition of the locale. Some goats have lived for a year and were able to reproduce but eventually experienced sickness and died as well. Nevertheless, the respondents assured that they learned a lot from the training and assistance employed to them as evident in the sample response above. They carefully applied the process in raising their goats, thus, they learned from experiences as well as narrated by one of the respondents, “*Sa karanasan ng iba mas maganda ang laya at nakawala ang kambing sa pag-aalaga.*” After all, they have observed that goats may not be appropriate with their location and appear to be sensitive to extreme climate changes.

The findings are relevant with Saravejo (2011) who claimed that goats are bright, inquisitive and highly adaptable but also conform with Knave (n.d) that despite the goats’ adaptability, they are afraid of rain and wetness as these make the goats prone to pneumonia. With the climate change and the cold weather of Brgy. Magsikap, the beneficiaries believed that these are great factors that affected the health of their goats within the duration of the project.



	<b>f</b>	<b>%</b>	<b>SAMPLE RESPONSES</b>
Knowledge	4	100	<i>Natuto po talaga kami. Nadagdagan po sa kaalaman kumbaga po eh may maipagmamalaki ko po na marunong ako nito.</i>
Experience	4	100	<i>Sa karanasan ng iba mas maganda ang laya at nakawala ang kambing sa pag-aalaga</i>

Table 12. Improvements in the practices in terms of Fish Processing

Note. N=4 respondents

\*The table shows only the themes with frequent responses from the participants.

The Table 12 above presents the improvements in the practices of beneficiaries in terms of fish processing. The collective response of the beneficiaries is evident in their willingness to learn fish processing. They all agreed that they participated in this climate resilient technology because it is something new and they found it interesting. Therefore, the respondents are greatly benefited in their acquired knowledge and skills in fish processing. With the help of the equipment provided and given to them, the procedures were clearly applied. The other three (3) respondents also agreed in one of the responses stating, “*Natuto po talaga kami. Nadagdagan po sa kaalaman kumbaga po eh may maipagmamalaki ko po na marunong ako nito.*” Therefore, the interest to adopt this is clear. However, the increase in adoption on fish processing was not sustained due to the unavailability of bangus in the locality neither abundantly caught in their waters. This implies that they cannot always apply their skills in fish processing as part of their income. But then again, their skills on this are something that they are grateful for. They declared that although they may not be able to use it to sustain income, they tend to use it on special occasions for their food on the table.

This finding is at par with the classic belief of Legaspi (n.d.) that in terms of adoption to technology an important factor to consider is its relevance to the present situation. Since climate change and pandemic affected the beneficiaries and the locale, their adoption was not sustained. Moreover, financial factors are also to be considered since bangus is scarce

in their barangay. But then again, the interest of the beneficiaries is a good indication in the start of adoption since as argued by Legaspi (n.d.) as well, the interest will lead to adoption. It may be gradual since fish processing is still a developing technology in the Philippines but certainly possible.

**RO 2: Identify other practices employed by the beneficiaries that help improve the sustainability of the project.**

Climate resilient technologies for Crops	Mean (SD)	Interpretation
<b>Organic Farming</b>		
Composting	4.56 (0.73)	Adopted
Natural Farming Inputs	4.22 (1.09)	Adopted
Cover cropping	3.89 (1.69)	Decided
Mulching	2.22 (1.48)	Aware
Zero/Minimum Tillage	2.78 (1.64)	Interested
Relay cropping	2.78 (1.64)	Interested
Palay Check System of Rice Intensification	4.56 (1.01)	Adopted
Use of Climate-resilient Varieties	3.78 (1.30)	Decided
Use of Early Maturing Varieties	2.89 (1.69)	Interested
Sloping Agro-Livestock Technology	2.89 (1.62)	Interested
Agroforestry	3.78 (1.39)	Decided
Multi-Story Cropping	3.67 (1.58)	Decided
Ratooning	1.67 (0.71)	Unfamiliar
Integrated Diversified Organic Farming System	4.67 (0.50)	Adopted
Weather Index-based Crop Insurance	2.44 (1.59)	Aware
Use of Weather Forecast in Decision Making (Use of Rice Crop Manager and other mobile climate information)	3.67 (1.58)	Decided
Controlled Irrigation	2.78 (2.11)	Interested
Small Water Impounding	1.11 (0.33)	Unfamiliar
Shallow Tube Well	3.56 (1.94)	Decided
Renewable energy technologies	3.33 (1.66)	Interested
<b>Weighted Mean</b>	<b>3.26 (1.36)</b>	<b>Interested</b>

Table 13. Climate Resilient technologies for Crops

Based on Table 13, the respondents are interested in practicing climate resilient technologies for crops. Most of them adopted organic farming, specifically composting and natural farming inputs. They also adopted palay check system of rice intensification (4.56) with standard deviation of 1.01. On the other hand, beneficiaries are willing to adopt cover cropping (Mean = 3.89), use of climate-resilient varieties (Mean = 3.78), agroforestry (Mean = 3.78), Multi-Story Cropping (Mean = 3.67), use of weather forecast in decision making (Mean = 3.67), and use of shallow tube well (Mean = 3.56). It also shows that they are interested to follow the

training practices including zero/minimum tillage, relay cropping, use of early maturing varieties, sloping agro-livestock technology, controlled irrigation, and renewable energy technologies with mean of 2.78, 2.78, 2.89, 2.89, 2.78, and 3.33 respectively. However, mulching (Mean = 2.22, SD = 1.48) and having weather index-based insurance (Mean = 2.44, SD = 1.59) are they mostly aware of. Nevertheless, they are unfamiliar with ratooning with the mean of 1.67 and standard deviation of 0.71.

Climate resilient technologies for Crops	Mean (SD)	Interpretation
<b>Proper Housing for Animals</b>		
Familiarity of the benefits of the proper housing? It is elevated or not? (If for goats)	3.78 (0.67)	Decided
Feeding box	3.56 (1.24)	Decided
Floor type	3.11 (1.36)	Interested
Slotted housing	2.67 (1.58)	Interested
	3.11 (1.05)	Interested
<b>Proper Way Breeding</b>		
Breeds	3.56 (1.59)	Decided
Climate resilient cultural practices in breeding	4.56 (0.73)	Adopted
<b>Nutrition/Feeds and feeding</b>		
Proper nutrition/feeds feeding for animals	3.44 (1.01)	Decided
Tethering or semi confinement	3.11 (1.62)	Interested
Make own fed formulation	3.56 (1.13)	Decided
Early morning feeding prevention	4.11 (1.05)	Decided
<b>Pest and disease management</b>		
Botanical herbs for pests and disease	3.22 (1.39)	Interested
<b>Proper Waste Management</b>		
Effective Microorganism as disinfection?	3.33 (1.87)	Interested
Use of biogas	2.11 (1.69)	Aware
Collection and processing of waste into fertilizer	3.44 (1.24)	Decided
<b>Weighted Mean</b>	<b>3.38 (1.28)</b>	<b>Interested</b>

Table 14. Climate Resilient technologies for Livestock

It summarizes on Table 14 that the beneficiaries are interested to practice the training they got which is concerning climate resilient technologies for livestock with the mean of 3.38 and standard deviation of 1.28. Specifically, they are willing to pursue the adoption of the proper housing benefits (Mean = 3.78), elevated housing for goats (Mean = 3.56), proper way of breeding (Mean = 3.56) and nutrition for animals (Mean = 3.44), making own fed formulation (Mean = 3.56), early morning feeding prevention (Mean = 4.11), and collection and processing of waste into fertilizer (Mean = 3.44). Further, some of their practice interests are use of feeding box, floor type and slotted housing, tethering or semi-confinement, botanical herbs for pests and diseases, effective microorganisms for disinfection with the mean and standard deviation of 3.11 (SD = 1.36), 2.67 (SD = 1.58), 3.11 (SD = 1.05), 3.11 (SD = 1.62), 3.22 (SD = 1.39), and 3.33 (1.87), respectively. Furthermore, beneficiaries are aware with the use of biogas (Mean = 2.11).

According to (IFAD, 2010), modification of production and management as an adaptation includes diversification of livestock animals and changing the timing and location of farm operations. This can increase livestock production and combat the effects of weather variability when animals are diversified (Batima et al., 2005, IFAD, 2010, Kurukulasuriya and Rosenthal, 2003).

Climate resilient technologies for Crops	Mean (SD)	Interpretation
<b>Smoking</b>		
Source of fish	1.50 (0.58)	Unfamiliar
Technology used in smoking	2.25 (1.26)	Aware
Marketing strategy	1.50 (0.58)	Unfamiliar
<b>Proper Way Breeding</b>		
Source of fish	2.00 (0.00)	Aware
Technology used in deboning	2.00 (0.00)	Aware
Marketing strategy	2.00 (0.00)	Aware
<b>Nutrition/Feeds and feeding</b>		
Source of fish	2.25 (0.50)	Aware
Technology used in deboning	2.25 (0.50)	Aware
Marketing strategy	2.00 (0.82)	Aware
<b>Weighted Mean</b>	<b>1.97 (0.47)</b>	<b>Aware</b>

Table 15. Climate Resilient technologies for Fish Processing

Table 15 reveals that the participants are primarily aware of the climate resilient technologies for fish processing with the mean of 1.97 and standard deviation of 0.47. Specifically, they are aware of technology usage in smoking (Mean = 2.25); deboning (Mean = 2.00) such as source of fish, technology usage, and marketing strategy; canning and bottling including sources (Mean = 2.25), technology to use (Mean = 2.25), and where to sell products (Mean = 2.00).

**RO 3: Examine the economic impact of the climate resilient technology to the beneficiaries.**

	f	%	SAMPLE RESPONSES
Crops Income-generating	6	40.9	<i>Nakakabenta po sa mga products lalo na po noong bago magpandemya.</i>
Livestock Not income-generating	8	36.4	<i>Namatay po ang mga kambing namin kasi may kinagat ng aso, may hindi kaya ang lamig. May nagakakasakit pag nilalagay sa ulahan.</i>
Fish Processing Not income-generating	4	18.2	<i>Dahil nga po walang available na bangus dito, hindi po namin siya magawa. Kailangan pa pong bilhin yung isda pero wala kaming puhunan para doon.</i>

Table 16: Economic impact of Climate resilient technologies

Note. N= 22 respondents

The economic impact of this present study specifically pertains to the beneficiaries' income during the climate resilient technology employment. As revealed in Table 16, among the climate resilient technologies employed, only crops specifically coco-coir production is income-generating. This is because first, almost all of the beneficiaries have knowledge and are interested in adopting this technology. Second, it appears to be a group effort because they do it together and they allot at least once a week where they get together and make some materials from coco-coir. Third, materials are easily available, thus, production is continuous. As a result, income is generated. However, livestock technology, particularly goat-raising is not income-generating based on the beneficiaries because first, the goat is not appropriate in the locale due to weather conditions. Because of this, the goat acquired disease and eventually died. Second, they were not able to provide proper housing for the goats. Third, the productions from the goats are mostly used for personal consumption rather than for selling purposes. Then, fish processing is not also income-generating because the main problem is the availability of bangus in the area. According to the beneficiaries, the need to continue the adoption is costly. But then again, they are able to sustain and manage their household income from their other sources aside from the technologies taught to them.

**RO4: Determine the climate resilient technology/ies that suits the locality from the beneficiaries' experiences.**



**1. Crops (Coco-Coir Production)**

**Beneficiary A** is a farmer and one of the beneficiaries under this CRA technology, coco coir production. He mentioned that he also processed yam (ubi) within the duration of the CRA project. In the interview, during the conduct of the evaluation study, he revealed that the majority of the beneficiaries continuously produce ropes from coco coir. Then, Beneficiary A, bought these ropes from other beneficiaries and used them in his basket-making. A basket of about 20 cm diameter and a height of 25 cm could use 30 pieces of 10-meters long rope. Furthermore, he described that the number of ropes used depends on the size of the basket. This implies that this CRA technology is sustained and applied. In terms of income, Beneficiary A shared that when walk-in buyers came, they could sell their baskets ranging from 150-500 pesos each. This is an occasional situation since he does not have any fixed marketing plan yet and pricing also depends on the size of the basket. According to Beneficiary A, despite the presence of trading center (located beside the Municipal building) for the coco coir products from the farmer beneficiaries, the volume of sold products is still insufficient to finance the daily needs of farmer beneficiaries, hence they opt to grow rosal (*Gardenia jasminoides*) which were used as foliage in many flower arrangements. Accordingly, the foliage is harvested once a week and a trader nearby picked-up bunches of these foliage for market in Manila.



## 2. Livestock (Goat Raising)

**Beneficiary B** is a college graduate and president of an organization, KAPAGSUMAKAKA, who has reproduced his goats twice since he received it on the start of the CRA project. According to him, the three (3) goats he bred were gifted to an occasion, sold to the market, and consumed as their food. He discussed that raising goats had provided benefits to them not just for their livelihood but for personal consumption as well. Therefore, he was personally benefited by the technology provided in the training project. Presently, Beneficiary B tries new strategies to keep the goats alive since he observed the challenge of raising goats due to climate change. Moreover, he observed that in their locale goats barely survived due to cold weather. As a result, it is believed to be one of the factors affecting its reproduction. He added that he wants to study the proper way of housing goats in order to sustain the lives of his animals. From these experiences, Beneficiary B is looking forward to another training concerning all the strategies and knowledge that he can gain and generate his income.



## 3. Fish Processing

**Beneficiary C** is an adult woman those other beneficiaries look up to. She is well-respected in the barangay and considered as a leader by other beneficiaries. Being one of the responsible ones, she is also considered as their spokesperson. Beneficiary C was one of those who underwent training for this CRA project. Among the different technologies offered to them in the duration of the project, she took interest in fish processing. According to her, she found this as something new and something that she wanted to learn. It is also a skill that she is unaware of before perceiving it as something unique. As for knowledge, she greatly appreciated what she learned from the training and she can confidently say that she now has an adequate know-how of fish processing. She consistently attended every training session and looked forward to learning more. Beneficiary C also became well-versed with the equipment used in fish processing and is deeply grateful that they are provided with such because, as she said, she can practice more. Therefore, as for skills, she improved a lot and she witnessed the great result of it together with her co-beneficiaries.





## Synthesis

The experiences of the beneficiaries are represented by an individual's testimony for each of the climate resilient technologies from crops (coco-coir production), livestock (goat-raising), and fish processing (bangus) respectively. From their statements, it clearly shows that the suitable climate resilient technology in Brgy. Magsikap, Gen. Nakar, Quezon is the village-level coco-coir production. In terms of materials, it is believed to be readily available in the area in which the beneficiaries can utilize each and even transform it into other useful crafts. For instance, they can produce ropes from coco-coirs and those ropes are utilized in creating baskets, lanterns or any other useful products or ornaments.

This is shared from the experience of Beneficiary A. Since there has been an increase in adoption from coco-coir production it resulted in sustainability of the project leading to a favorable economic impact in their income. Personally, Beneficiary A was able to market his products to walk-in buyers before and during pandemic. Although there is no fixed marketing strategy yet, income from the product is manageable. On the other hand, goat-raising and fish processing posed a challenge in its sustainability and adoption.

Beneficiaries of livestock in the form of goats have experienced death of their animals due to weather conditions, disease and other animal bites. Thus, due to climate change, improper way of raising and breeding of goats and inappropriateness of the animal in the locale became contributing factors why goat raising appears to be unsuitable. Housing provisions are necessary through a goat house or a shed (Knave, n.d) to provide adequate shelter for goats. In addition, location, flooring and even fencing must also be considered. The problem with fish processing is the availability of bangus since the body of water in the area of Gen. Nakar does not necessarily cater to the mentioned fish. In relevance, Yap, Antonio, Villaluz, Soriano and Santos (2007) argued that this technology is dependent on the location, climate, water current and depth and even the availability of land or space. Nonetheless, the success stories of Beneficiaries B and C benefited to the objective of the CRA project. There was still an increase in adoption with the help of the resourcefulness and initiatives of the farmers themselves with their alternatives and other practices employed. Their growing interests are also a good sign as this eventually leads to adoption (Legaspi, n.d)

She also shared her experience that after a year of training, they had a demonstration of their fish processing skills. In general, her interests and willingness to learn the skill in fish processing are evident and this is something that she is proud of knowing that she learned something new. Moreover, her skills in fish processing are sustained since first, equipment is provided and is still working properly and second, her resourcefulness is exercised if the main ingredient, which is bangus, is scarce in the locale. Despite the benefits of the training in fish processing, the adoption of this technology is not fully sustained since, as mentioned, bangus is not readily available in the area. Beneficiary C revealed that unfortunately applying the learned skill is too expensive. With the scarcity of bangus, she cannot continue doing so since she still has to buy the fish on the market and then bring it back home for processing and then bring it back again to the market for selling. With this, she believed that it is costly and time-consuming because the product will be compromised and its quality will be affected. Thus, fish processing technology is interesting for her but not necessarily income-generating. But then again, she may not be able to use it for sustainability she gladly mentioned that, '*Ang natutunan ko po sa fish processing ay maipagmamalaki ko po na alam ko kung paano gawin ito. Hindi ko man po siya magamit para kumita, nagagamit ko po siya kapag may espesyal na okasyon kung saan nakakabili ako ng bangus at ginagawa naming handa.*'





## IMPACT OF PAMAYANANG LAGING HANDA

The beneficiaries of Brgy. Magsikap have increased their adoption of CRA practices. For the past years, the respondents encountered problems related to climate change in their community which made them adapt to the changes they had through the basic coping mechanisms. They focused on organic farming, intercropping, and backyard food conservation to combat the effects of the crisis.

Through comprehensive and understandable trainings, the respondents are interested to continue practicing climate resilient technologies for crops and livestock, while in fish processing they showed awareness in the practice but not to adopt it. There may be some problems selling their products due to weather conditions but they were able to manage and generate their income particularly during the pre-pandemic season. Meanwhile, with the pandemic, they encountered problems in marketing their products due to lack of potential clients and availability of some materials due to weather conditions.

The climate resilient technology that suits the locality based on the respondents' experiences is the Village-Level Coco Coir Processing. Based on the interview, majority of the beneficiaries showed that they are more interested to pursue what they have learned in the training mentioned above due to their background knowledge in "pagrorosal". However, beneficiaries of each training specified that while they can earn money from the skills they learned from the project, it may not be enough to sustain their livelihoods due to the seasonal income-generating products and livestock. Additionally, they admitted that they need marketing assistance to boost their income and further introduce their goods. Representatives of the trainings added that they are looking forward for more knowledge that can enhance their skills and improve their means of support.

Nevertheless, the CRA Community Project of DA-ATI Region IV-A in General Nakar, Quezon gave an impact through skills enhancement and income-generating opportunities to some. With the assistance of LGU of General Nakar in the continuous monitoring of the project and interest of the beneficiaries, the livelihood project is ensured to develop and sustain for the improvement of the participants especially on introducing their products to the market.



## Recommendations

This study recommends the training in the marketing strategy of the farmer-beneficiaries to support them in boosting their product sales. Through marketing assistance, it will help them to expand into new markets that will increase their client base. Getting introduced to the target market will provide them with an understanding of the potential aim and devise a strategy to consider marketing, sales, distribution, and increase production to meet the demand. In addition, this research supports the climate resilient technologies that are suited to the locality which include coco-coir processing that is related to what they practiced before they were introduced to the training. It is further recommended to consider the other interests and needs of the beneficiaries to guarantee their participation again on the next project after all they are looking forward to it.



# JOURNEYS OF THE CLIMATE RESILIENT AGRICULTURE (CRA) BENEFICIARIES

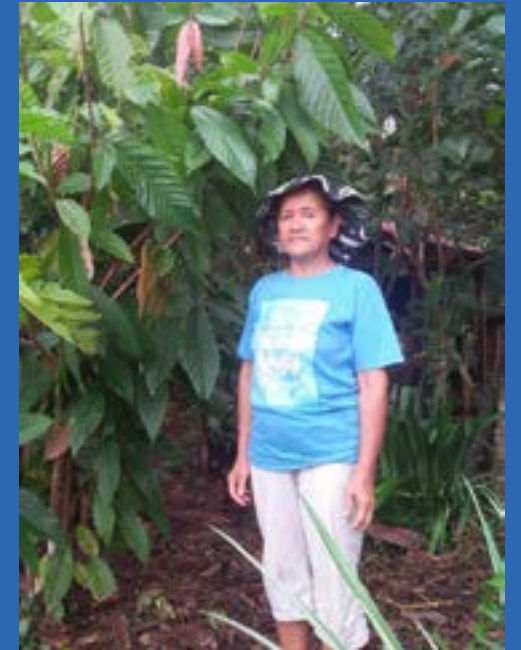
## REVITALIZING THE COUNTRY'S TREE OF LIFE

*Alexander C. Garcia, Assistant Provincial Agriculturist  
Office of the Provincial Agriculturist - Quezon*

May 30, 2019, almost four years ago since we performed a transect walk in this community. I felt excited as we paced around Brgy. Magsikap, a secluded town in the mountains of General Nakar, Quezon Province.

Farmers in this community have been recipients of 'Pamayanang Laging Handa,' a collaborative project of DA-ATI Region IV-A headed by Dr. Maningas in partnership with the DA RFO IVA, the Philippine Coconut Authority (PCA) IVA, Quezon Provincial Government, Southern Luzon State University (SLSU) and LGU of General Nakar.

The project which started in 2017, aimed at building resiliency among farmer beneficiaries through ecologically-sound Agriculture Practices and the creation of sustainable agro-enterprises. Almost two years since its implementation, we're here to document some possible improvements in the beneficiaries' knowledge, practices and incomes.



It took us almost thirty minutes by jeep to get to the area from the town proper. Aside from distance, the hilly and rugged landscape of the area contributes to the community's seclusion, which in turn makes the area vulnerable to climate change.

The area abounds with the ubiquitous coconut trees, which isn't quite surprising given that Quezon province is the country's topmost producer of coconuts. On a yearly average, Quezon harvest around 1.8 million tons of coconuts.

Sadly, coconut farmers are also some of the marginalized farmers in the Philippines. Statistics (Philippine Coconut Authority, 2017) shows that on average, a coconut farmer only earns about Php 20,000 a year- barely enough to sustain a dignified living. This meager income also exposes coconut farmers to the impacts of economic crises and environment degradation. When disaster strike – it hits the poorest the hardest. This dire situation is about to change. Pamayanang Laging Handa (PHL) gives coconut farmers leverage against economic environmental stresses through sustainable agri-practices and diversified coco-based enterprises.





Ms. Delia Prestado or Nanay Delia, a resident of Brgy. Magsikap, is one of the many beneficiaries of the project who's a living proof that there's hope to our ailing coconut industry after all. *"Before the project, I haven't thought that our conventional way of farming affects the environment,"* Nanay Delia said.

She also shared that through component trainings of Pamayanang Laging Handa, she was able to know and practice organic farming practices. She now produces organic vegetables for her family's consumption. Aside from vegetables, she's also able to cultivate ube and ginger as well as intercropped cacao with coconuts through the project.

Nanay Delia is also a member of 'Samahan Ng Magsasaka, Mangingisda at Kababaihang Katuwang sa Pag-Unlad' (SAMAKAPA), a rural-based organization formed through the project which produces and sells ropes and geo-nets out of discarded coco-husks.

*"Through PLH, I was able to become more financially stable which is critical for me since I'm a single mom with nine (9) children to feed and send to school,"* said Nanay Delia. Through the project's ecological agri-practices and sustainable enterprises - 'PAMAYANANG LAGING HANDA' revitalized the country's "tree of life".



## UNROTTEN

*Hannah Phoebe Romero, Administrative Assistant II  
Office of the Provincial Agriculturist - Quezon*

Age sometimes limits an individual to perform specific tasks. As they grow older, their bones break and memory fails. These minimize their ability to adopt from the changes encountered in a particular environment.

But a simple story captured my interest which contradicts this idea. Listening to his experience, I thought he never could but he did.

From a secluded area in Gen. Nakar, Quezon, I met Mr. Juanito Romantico. He was a driver of Infanta to Manila. He stopped when he suffered from stroke.



In 2000, he started utilizing his one-hectare farm in palay production. Driven to expand his knowledge, he participated in several trainings and became one of the beneficiaries of the Climate Resilient Agriculture (CRA) project implemented by the Agricultural Training Institute (ATI).

Throughout the project, he practiced new technologies such as organic farming and crop rotation. From being a synthetic chemical user, he began processing animal manure as fertilizers and engaged in ornamental plants and livestock production.

As part of this project, he received three (3) goats from DA-ATI Region IV-A as an additional source of income. However, goats did not survive due to weather conditions.

Moreover, in 2018, Mr. Juanito got ill and affected his farming. He then stopped farming and focused in their sari-sari store.

Amidst these challenges and age, he still searches for opportunities to develop and engage in agricultural activities.

*“Kaya kahit ako’y mahina ay napunta roon, dahil alam kong may patutunguhan,”* he exclaimed.

## COCONUT FARMING, A SOURCE OF LIVING

Cherry C. Favor  
Southern Luzon State University



Traveling in a long and winding road, scenic views of mountains and coasts, you will experience the most as you go by the town of General Nakar, a municipality in northern most part of Quezon province. As I look around, a prominent view along mountain and hill sides or even along road sides are the rows of growing ornamental plants. I am full of joy as I set foot on the place, the second time around. The warm welcome and the yummy food makes me more compelled to work. I am so excited to meet a lady in her mid-seventies and have a little chat of how her life has been for the past few years with the knowledge she has with DA-ATI. We went directly to her house which took as a few minutes of walk before reaching her place from the barangay hall, we called for her name but no one answered, so we resorted to collecting the fallen ripe pomelo fruit and enjoyed its mouthwatering bitter sweet taste. We move and search for her, in her daughter’s place but still she is nowhere to find. We look around until noon but still we failed to see her. As she was best described, she is a jolly and happy person who loves

to tour around. And finally, we’ve met her daughter, Cherrylyn D. Avellano, and said “mahirap po talagang hagilapin si nanay”. For me, to meet my goal and collect information about my target recipient, it was her daughter as a co-beneficiary of the program I talked to in her place.



Nanay Feliza Despues is a beneficiary of the coco-based farming. She is a widow and living alone, thus she needs to work hard in order for her to live. Before the program was awarded to her, *“namasukan siya bilang kasambahay at sumubok ng ibang pagkakakitaan.”* She attended several trainings of DA-ATI Region IV-A, like how to make and use organic inputs. She also applies all the learning she gained as a beneficiary of coco-based farming.

They were given tools and 200 pcs. seedlings of cacao to be planted under the coconut tree. At this time, they are still waiting for the cacao tree to grow and bear fruit to be harvested and later processed as



raw material for chocolate makings. For her, learning the science of these farming system she believes in time this will help her more to earn money and be a good source for her living.

In the mean time, while she is waiting for harvest time, she looks for a place where she can grow ornamental plants like rosal, or to sell her harvested plant and even buy for a neighbor's plant to buy and sell. This becomes her past time for an additional income. She earns a net income of Php 1,000.00 per month in ornamental plants which for her is already great help for her day-to-day living. Almost everyone in town, do the same alternative source for living, they cultivate ornamental plants, let it grow, reap and sell. Because of this, General Nakar and the neighboring towns become the major supplier of ornamental plants in Dangwa in Manila which is the Philippine center for trading of flower and flower arrangements. No wonder it was the reason why ornamental plants are growing all around.

From what I have heard and in the way Nanay Feliza was described by her daughter, in my mind I started to have a picture of how she looks like. *Isang simpleng Filipina, masayahin, pala kaibigan, may katamtamang pangangatawan at kakikitaan ng bakas ng mga taon ng pakikibaka sa daloy na buhay, subalit may katatagan, kasipagan at may pagpapahalaga sa biyayang ipinagkaloob ng Maykapal.*

A story of life that is full of hope, an inspiration that age is not a reason to stop learning, believing and accomplishing. *Isang patotoo sa kasabihang habang may buhay ay may pag-asa.*

## AGOS

*Prof. Percival C. Verano  
Southern Luzon State University*



Ang buhay natin ay puno ng aral, habang tayo ay naririto sa mundo, ang mga tanong sa ating mga isipan ay makakasampung din ng kasagutan sa pamamagitan ng mga karanasan at mga pangyayari sa ating paligid, sa ating kapwa at maging sa ating sariling karanasan. Maaring maranasan natin ang magreklamo kung ano tayo ngayon subalit kung ating susuriin at lilimiin ang meron tayo na wala ang iba, ay masasabi nating salamat dahil hindi tayo naging kagaya nila.

Sa aking pagtungo sa bayan ng General Nakar, Quezon, isang bayang may kalayuan sa kalayawan ng mundo sa pagiging payak at simpleng pamumuhay ng mga mamamayan, dito ko pa pala lubos na mauunawaan ang kahalagahan ng buhay at pagpapasalamat sa kung anong bagay ang meron ako ngayon. Isang biyaya na noong una ay tinanong ko ang aking sarili bakit ako napabilang sa mga taong ipinadala ng aming Unibersidad sa gawaing ito. Tatlong araw na pagsasanay tungkol sa pagsusulat? Gawain ko ba ito? Sana sipagin ako, yun ang napasaisip ako na sana matapos ko ang pagsasanay na ito, wala kasi sa hilig ko ang magsulat.

Lumipas ang maghapon, naging masaya naman ang pagsasanay at may mga bago ring nakilala mula sa iba't ibang ahensya ng pamahalaan. Doon ay inihanda kami sa aming patutunguhan at gagawin sa susunod na mga araw. Handa naman ako sa ganitong gawain kasi sanay naman ako sa paggawa sa mga *extension activities* ng aming paaralan at nakarating na rin naman ako sa barangay na nabanggit sa aming pagsasanay.

Kinabukasan, araw na ng aming pagtungo sa Barangay Magsikap ng General Nakar, Quezon. Maagang naghanda ang lahat at ang iba pa ay umakyat sa bubungan ng jeep parasa kakaibang karanasan pagtungo sa lugar. Marami ang naglalaro sa aking isipan habang sakay ako ng jeep, ano kaya ang daratnan ko roon? Sana maging maayos ang taong kakausapin ko. Sana hindi ako mahirapan sa pakikitungo sa kanila, sana marami akong makuhang impormasyon, sana matapos na ito, sana sana at nakarating na pala kami sa Barangay Magsikap. Isang payak at simpleng pamayanan ng tanging habal habal o malalaking jeep lamang ang tanging transportasyon patungo sa lugar. Mabundok, maraming punongkahoy, may malawak na ilog na dinadaluyan ng napakalinis na tubig at ang hangganan ay ang dalampasigan ng karagatan. Naalala ko tuloy ang aking simpleng pamumuhay ng aking kamusmusan noong ako ay nagsasaka kasama ang aking tatay at kapatid sa aming munting sakahan.

Naghintay kaming saglit sa bahay pamahalaan ng barangay hanggang sa dumating at nakilala ko si Mang Benito Tena, may asawa at limang anak. Nagpasya kaming lumipat ng



lugar sa may entablado ng barangay sa kadahilanan na mas presko at maginhawa doon na dulot ng ihip ng hangin mula sa palayan sa gitna ng kainitan ng panahon. Isang pangkaraniwang mamamayan si Mang Benito, bakas sa kanyang mukha ang hirap ng buhay na pilit niyang pinagtagumpayan sa lahat ng panahon at mararamdaman mo sa kanya ang katapatan at pagiging handa sa pagsasalaysay ng kanyang buhay.

Matagal tagal na rin na naninirahan si Mang Benito sa barangay. Dito sila nagsimulang manirahan kasama ng kanyang kabiyak simula ng sila ay nagsama taong 1979. Nabiyayaan sila ng limang anak, sina Noel, Rene, Reynalyn, Michael at Angelica. Sanay si Mang Benito sa hirap kaya sa pagiging matiyaga at pagsisikap ay pinilit nilang mag-asawa na itaguyod ang kanilang sambahayan kahit hindi sila parehong nakapagtapos ng elementarya. Nakaranas siyang mamasukan, magsaka, mangisda at kung anu-ano pa para lang maitaguyod ang pangangailangan ng kanyang sambahayan. Pilit nilang pinapag-aral ang kanilang mga anak sa paniniwala na ito ang tangi nilang maipamamana sa kanila at nang maging mas maayos ang kanilang pamumuhay. Ganito ang karaniwan nilang kalagayan, simple, masaya at nakakaraos sa pang-araw-araw hanggang dumating ang pinakamatinding dagok sa kanila.

Taong 2004, ika-24 ng Nobyembre, nagbadya ang bagyong Yoyong sa Luzon partikular sa bayan ng Real, Infanta at General Nakar, Quezon. Isa sa mga pamilya ng General Nakar ay ang pamilya ni Tatay Benito, isang mangingisda ng Sitio Lupa Barangay Magsikap. Isang pangkaraniwang araw lamang para sa kanila ang pagbuhos ng ulan kahit may naiulat na bagyo noon na hindi nila inalintana sapagkat hindi naman kalakasan ang ulan ng mga sandaling iyon. Sa kanilang limang anak, ang dalawang pinakabata na sina Michael, 17 anyos at si Angelica 14 anyos ay mga maagang naghanda pagpasok sa eskwela sapagkat inisip nila na wala namang kakaiba kahit may nasabing bagyo ng araw na iyon. Nagpatuloy ang gawain ng bawat isa, maulang araw subalit hindi nila alam kung ano ang magiging kalupitan nang walang tigil na pag-ulan na sisira at wawasak sa munting pangarap ng Pamilya Tena.

Patuloy ang pagbuhos ng ulan na umabot ng dilim, payapa ang pamilya ni Mang Benito sapagkat sanay sila pag-uulan pag mayroong bagyo at inihanda nila ang pagpapatibay ng kanilang munting kubo. Dahil sa madilim na ay inisip nila na ang kanilang dalawang anak na sina Michael at Angelica ay nanatili na lamang sa paaralan kaya hindi na sila nakauwi sa kanilang tahanan, maaaring hindi na sila pinauwi ng kanilang guro dahil sa walang tigil na pag-uulan. Lumipas ang oras at sa sanhi ng maghapon at walang tigil na pag-ulan pala ay magdudulot ng pagtaas ng tubig sa ilog at nadagdagan pa sa pagbaba ng baha na naipon mula sa kabundukan kasama ng malalaking kahoy na inagos dahil sa pagto-troso sa mga kabundukan. Dahil dito, biglaan ang pagtaas ng tubig at pagdaloy na nagdulot ng pagkasira ng mga ari-arian kasama ang tahanan nina Mang Benito. Nabigla sila sa mga pangyayari, niragasa ng malaking baha ang kanilang munting dampa at hindi nila malaman ang kanilang gagawin sa gitna ng kadiliman. Walang nailigtas kahit anuman ang pamilya maliban sa konting pagkain at kagamitan na nasagip nila sa kanilang paglikas. Sumakay sila sa bangkang trolley kung tawagin sa kanilang lugar at sinuong ang daluyong ng tubig at karimlan ng paligid. Nakarating sa isang ligtas na lugar ang pamilya ni Mang Benito at doon sila nagpalipas ng magdamag na basa, pagod at hindi alam ang masisilayan nila sa pagsikat ng araw.

Kinabukasan ay noon nila namasdan ang bagsik ng bagyo, sira ang halos mga kabahayan ng barangay, halamanan at maririnig ang panaghoy ng bawat pamilya na winasak ang mga kabuhayan at nawalan ng mga mahal sa buhay. Hinanap niya agad ang dalawa niyang anak na di nakauwi mula sa kanilang paaralan. At noon niya nalaman na ang mga mag-aaral ay pinauwi na kahapon pa sapagkat kinansela ang pasok dahil sa bagyong Yoyong. Halos hindi malaman ni Mang Benito kung ano ang nangyari sa kanyang dalawang anak, nasaan na kaya sila? Buhay pa kaya sila? Sana... sana... Lumipas ang mga araw na patuloy na hinanap ni Mang Benito ang kanyang mga anak kasama ang ilan pang nawawalan din ng mga mahal sa buhay. Sa kanilang paghahanap ay naroon na may matagpuan silang mga bangkay na nagbigay sa kanya ng kawalan ng pag-asa na matagpuan pa ang kanyang mga anak na may buhay pa. Subalit hindi ito naging hadlang para ipagpatuloy pa niya ang paghahanap sa kanyang mga anak hanggang matagpuan nya ang bangkay ng kanyang anak na babae makalipas ang 24 na araw. Halos mawasak ang kanyang puso sa kanyang namasdan sapagkat di na siya makilala maliban sa kanyang kasuotan. At nabalitaan naman niya



makalipas pa ang ilang araw ang nangyari sa kanyang anak na si Michael na natagpuang palulutang lutang sa karagatan kasama ng mga naglalakihang troso na napadpad sa isla ng Polillo na binawian din ng buhay sa tagal ng hirap, gutom at uhaw na dinanas sa karagatan. Hindi na nila nakita pa ito sapagkat inilibing na ito ng mga nakakuha sa kanya sa bayan ng Polillo. Ang sakit at pighati ay aking nadama habang nagsasalaysay si Mang Benito subalit nakita ko sa kanya ang tapang at katatagan para mapagtagumpayan ang pagsubok. Sinabi niya na napakahirap na muling makabangon matapos noon, walang tahanan, kabuhayan, kagamitan at nawalan pa sila ng dalawang anak. Subalit hindi sila sumuko at ipinagpatuloy ang hamon ng buhay. Isang matinding dagok para sa isang ama, na mawalan ng kabuhayan at mga mahal sa buhay. Paano nga ba niya muling sisimulan ang buhay? Isang tanong na walang malinaw na kasagutan nang mga oras na iyon. Nawalan ng gana na mangisda si Mang Benito at nagpanimulang itayo muli ang nasirang tahanan mula sa mga pwede pang pakinabangan. Nagsimula siyang maghalamanan upang muling itaguyod ang kanyang pamilya. Pinagsikapan nilang maging maayos muli ang kanilang pamumuhay hanggang nagkaroon na rin ng sariling pamilya ang kanyang mga anak sa paglipas ng mga taon.

Taong 2017, dumating sa Barangay Magsikap ang DA-ATI Region IV-A at naglunsad ng iba't ibang programa. Kabilang dito ang fish processing training para makatulong sa pagtaguyod ng kabuhayan ng mga mamamayan. Isa si Mang Benito sa mga nagkainteres sa 10 nagsimulang magsanay. Sa una ay nahirapan sila sa mga itinurong teknolohiya gaya ng paggawa ng sardinas, deboning at pagtatapa ng isda. Nagkaroon sila ng mga pagbisita sa iba't ibang lugar para makita ang tagumpay at kakayanan ng fish processing sa pagbabago ng kanilang buhay. Mula sa sampu ay siyam ang nagpatuloy at nagtulungan na mapahusay ang kanilang produkto sa pagbibigayan ng mga pamamaraan na mas makabubuti sa kanilang produkto ayon sa kanya kanyang pamamaraan. Naging masigasig muli si Mang Benito at pinaghusay nyang lubos ang pagtatapa ng isda. Muli ding bumalik ang sigla niya sa pangisda at ang huli niyang isda ang kanilang nilinis at tinatapa at binebenta ng kanyang asawa at minsan ay ng mga apo sa kanilang lugar. Napatunayan ni Mang Benito na sa pagsisikap at tiyaga ay pwedeng mabago ang buhay ng bawat isa sa awa ng Maykapal. Sa patuloy na pagtutulungan ng mag asawa at pagsisinop ay nakapagsadya sila ng sakahing lupa na may sukat na kalahating ektarya at lupang pagbabahayan na may sukat na 200 sqm. Ayon nga kay Mang Benito, "natutunan kong maging matulungin sa kapwa. Kapag may pumunta sa amin na nangangailangan at dapat silang tulungan, gumagawa ako ng paraan ayon sa aking kakayanan sapagkat naranasan ko noong panahon na walang wala kami na masakit pag ikaw ay walang maasahan sa oras ng pangangailangan." Sa ngayon ay natanggap na ni Mang Benito ang nangyaring pagsubok sa kanilang buhay at ipinagpapasalamat sa Panginoon ang muling pagbibigay sa kanila ng mga pagpapala.



Nagkaroon muli sila ng isang anak at muli ay pinangalanan niya itong Michael na sa kasalukuyan ay nasa Grade 7 na sa kanilang paaralang lokal.

Sa pagpapatuloy ng mga isinasagawang pagsasanay ng DA-ATI, buong sigla na dumalo si Mang Benito at natutunan din niya ang mga pamamaraan sa mga iba't ibang kalamidad na dulot ng climate change at pagpapabaya at pag-abuso sa kalikasan. Nagkaroon siya ng mga bagong kaalaman upang mapaghandaan at di na muling mangyari ang dati nyang karanasan lalong lalo na sa bagyo at baha.

Sa pagwawakas, maaring sabihin natin na mahiwaga ang buhay at tanungin ang Diyos sa mga pangyayaring pagsubok na ating nararanasan. Subalit sa huli, kung itutuloy lang natin ang buhay, malalaman natin ang kasagutan sa patuloy na paglangoy sa agos ng pagsubok at pagtitiwala sa Poong Maykapal. Gaya ng naging kasaysayan ni Mang Benito, maging gabay nawa sa ating lahat ang maging mapagpasalamat sa lahat ng bagay, maging mahirap man o malungkot minsan, na huwag tayong mawalan ng pag-asa at patuloy na magtiwala sa Diyos sapagkat habang may buhay ay may pag-asa basta may sikap at tiyaga.



## 7 DAYS A WEEK WEREN'T ENOUGH

*Julius R. Elardo, Coconut Development Officer  
Philippine Coconut Authority - Quezon I*

The effects of climate change are very prominent nowadays. The prolonged drought, higher heat index, sudden change in weather patterns, and don't forget the longer stay in air-conditioned or well-ventilated rooms. This is what common people would observe and feel especially if they are in urban areas. On the other hand, how it feels like if we are in sub-urban or in rural areas?

We are here in General Nakar, Quezon, a first-class municipality with a land area of 134,390 hectares including the vast agricultural land of 83,115 hectares. One of the municipality's barangay is Magsikap. It was identified as having a high-risk area on land and water in connection to the hazards of climate change. Having observed the situation, DA-ATI Region IV-A, in collaboration and partnership with different government agencies, launched "Pamayanang Laging Handa": A combination of different strategies or measures on how to lessen the effects of climate change through various climate resilient agricultural practices.



Loreto Moises, or "Kuya Nato" as the local calls him, is one of the 30 beneficiaries of the project. He was born on July 21, 1956, a very experienced farmer, and a father of nine (9). His wife, Myrna T. Moises, cultivates ornamental plants like rosas, yellow corm, white corm, fortune plant, and delivers them to Manila for livelihood. Their children who are now working as seaman, accountant, teacher, and OFWs are supporting him financially.

His farm is about 300 meters from the Barangay Hall of Magsikap, and to reach it, we have to cross a wide river, with shallow water about half-foot deep (during our visit). The farm has around 350 coconut trees, 350 cacao trees of about three (3) years, 500 coffee plants, and ornamentals all intercropped in a 2.7-hectare farm.

I asked him what problems do he usually encounter on his day-to-day activities in the farm. He said, he observed and is well aware of the sudden change of weather condition, prolonged drought, and sudden heavy rainfall. Before, he has an enclosure or pond for shrimp production, but now, there's no water coming from the spring so he stopped the shrimp farming. He also added that was used to get drinking water from the spring, but now it has also dried up. I asked him when did he start or learn about intercropping? He said, he observed from the farms he visited in other places that they have intercrops in between coconut, so he also tried intercropping, yet, he doesn't know the term intercropping then. He started to join some trainings and seminars, and from then, he learned a lot in farming techniques and current farming practices.

"Kuya Nato" also shared that before he has coconut only planted in his farm, and harvests them every three (3) months. Before, the copra price is high, and sufficient enough to support his family's needs. However, to date according to him, it's only around 16 per kg.



As a coconut development officer, I explained to him the reasons why the copra price is low as the price is dependent on the world market and that is beyond the control of any government agency. What we can do is shift from relying only on raw coconut products like whole nut and copra, and the farmers should form, or strengthen the coconut farmer organization. This way, they would be able to represent the coconut farming community to resolve concerns and help one another.

Another way is to practice intercropping, like what he is doing now, in times time when the trees are bearing, it will give him an additional income. Also, practice livestock integration under the coconut, he showed us his five (5) pigs. I also explained to him that the coconut has a lot to offer aside from just whole nut or copra. It can be turned into something more valuable if processed into coco sugar, virgin coconut oil, coco vinegar, coconut coir fiber and a thousand more from the roots up to the leaves of the coconut. He told us that he is very much likely to do those ways, but it seems that seven (7) days a week seemed like it's not enough for him to do the work.

He expressed his gratitude for the agricultural inputs he received and the learning he gained from attending different seminars. He showed us the contour cropping system of his wife's ornamental plants, and the coffee plants with offshoots arising from the lower part of the coffee plant. It is a proof that he is applying what he had learned during the seminars that he attended. He also promised that he will take good care of the farm inputs he received and that one day, when they are all bearing and are productive, it will help increase his income.



## I TAKE THE CHALLENGE

*Ronalyn F. Mendoza, Agriculturist I  
DA Regional Field Office IV-A*

Pamayanang Laging Handa Project of DA-ATI Region IV-A assists the most vulnerable communities to understand and respond to the risks that may be caused by extreme weather conditions and climate change. It is a great help to farmers like Mr. Amador B. Bonaobra Sr., a coconut farmer from Brgy. Magsikap, Gen. Nakar, Quezon.

Mr. Bonaobra grew up in a farming family and depends mainly on farm income to provide the needs of his family. He is a father to five (5) children. They've spent years living to different municipalities including Polillo Island, Batan Island, Infanta, and now in Gen. Nakar, hoping to find a better place to settle and have a stable life.

Wherever he goes, Mr. Bonaobra found farming as his only source of living. Although he tried other jobs like construction worker and factory worker, he decided to focus on farming. He is currently tilling a 3-hectare land as a tenant. It is mostly planted with more or less 300 coconut trees. He, then add intercrops like banana, jackfruit, Pakbet vegetables like squash, eggplant, bitter melon, sitao, and okra, and other crops like sponge gourd, pepper and ginger.

Just like any other farmers, he wakes up even before the sun rises and goes straight to his farm. He regularly monitors his crops to make sure that there are no pests and diseases attacking his crops.

Farming has also brought out leadership potentials of Mr. Bonaobra. He is the vice chairman of a community-based organization called SAMAKAPA or Samahan ng mga Magsasaka na Katuwang sa Pag-unlad. Thirty (30) members of the organization are among the beneficiaries of Pamayanang Laging Handa. He is active in attending and participating in different seminars, trainings, and projects of government agencies that providing these.

He now has diverse ideas on improving and developing his coconut farm to make it more productive.



Even though at this time, copra and wholenut prices are low, he is not even alarmed because of the additional income he's getting from his intercroops. "Hindi ako naalarma dyan", he said. But it cannot be denied that there are still negative effects of the changing weather patterns and conditions to the farm output. He may not be affected by the low copra price, but combined with low productivity is a different story. Extreme heat causes the coconut to become smaller and have thinner meat, which means lower return since it is sold based on weight and size.

As a result of the said project, Mr. Bonaobra along with other beneficiaries learned and understands the importance of being resilient and knowledgeable to the climatic changes. The project provided tools and equipment, agricultural inputs like additional intercroops including cacao, guyabano, and ube, and numerous seminars and trainings. This is in

partnership with the Philippine Coconut Authority, Southern Luzon State University, Office of the Provincial Agriculturist, and the Local Government Unit of Gen. Nakar.

Beneficiaries have undergone trainings on Community Empowerment, Meat and Fish Processing, Climate Smart Farm Business School, etc. Being a persuasive and determined coconut farmer, Mr. Bonaobra uses what he learnt to improve his farm and generate more income. He is now making vinegar, "toyo" and coffee out of coconut water. From this, he gains P20.00 per liter from vinegar, P50.00 per bottle of "toyo", and P40.00 per cup of coffee.

From reading books provided to him, he learned that there are similarities in the content of coconut water and coconut sap. That is why he has the thought of producing these products from coconut water.

"Nagkaroon lang ako ng ideya nito, noong nag-aral kami ng paggagawa ng sugar. Kasi yung research na ginawa ng UP at ng PCA, may libro silang binigay sa akin, tiningnan ko yung research nila, yung mga beneficial element sa sabaw ng niyog kapareho ng sa coconut sap. Kaya naisip ko ano kayang pwedeng gawin doon sa sabaw na product, ay pareho pala ang content niya dun sa sap", he stated.

He turns the coconut water that is being removed when making copra and is wastes into value adding products. Coconut sap is also known to be processed into these products. "Ang aking natutunan sa DA-ATI na napakahalaga kaugnay sa climate change, kailangan yung magsasaka, hindi ka lang nakafocus na nagtatanim ka lang, kailangan nakatuon ka din sa processing. Inaaral mo din ang pagpoproseso", he emphasized.

The challenge he is facing in this kind of processing are the legitimacy of the products he produces. He admits that he lacks the financial requirement to undergo registration of his products. It will not also pass the packaging, facility and other aspects according to him since he has no budget to improve these. He is hopeful that in the coming years, he will be able to do these, can legally sell his products, and may reach its market.



With the help of Pamayanang Laging Handa, farmer like Mr. Bonaobra becomes more resilient and stronger whatever comes his way. It has greatly influenced him to maximize what his farm has and go beyond what was taught and given to him by the project.

"Ang benepisyo ay yung mga kaalaman na siyang magpapalakas sa magsasaka na hindi siya lulugo-lugo kahit na may mga ganitong kinakaharap na mga phenomenon. Alam niya kung paano ang gagawin niya, kung isasabuhay niya yung mga training na kanyang pinagdaanan, na katulad ko."

He is always thankful and appreciative to the effort that the agricultural extension workers of different government agencies exert to the farmers like him. He does not put those efforts to waste, instead he always put those into mind and make it fruitful.

"Mas lalong na-empower ako dahil mayroong mga institusyon na sumusuporta sa katulad ko o katulad namin. Ako personally ay lumalakas sa mga ganoong ginagawa nila, na mayroon na nakakakita na institusyon na tumutulong sa amin na mas lalong palakasin. Ako bukas ang isip ko na dapat mayaman yung magsasaka." "Nasa kapabayaang na ng mga magsasaka kung di niya ma-absorb yung mga ganung mga turo, pagsisikap ng mga institusyon na nagsusulong din ng pagpapaangat sa buhay ng mga magsasaka," he added.

Aside from continuously making his farm productive, he is planning of establishing a fish pond in his farm because he sees its potential in the area.

DA-ATI's project didn't stop when they've accomplished providing them the inputs and trainings. It continues and will forever be there as long as there is someone like Mr. Bonaobra who put it in the mind, in the heart and into action.

For Mr. Bonaobra, living is found in farming.





## TAYA: A Story of Smarter and Bigger Leaps through Trainings and Taking Risks

*Kaela Marie S. Ruzol, Agricultural Technologist  
Office of the Municipal Agriculturist - Gen. Nakar, Quezon*

“Farming is a gamble. But if you know what cards to play, you will have higher chance of success.”

In every intervention there will always be early adopters, late adopters, and traditional practitioners. We really cannot blame a humble and simple farmer, because a failure in one cropping season means the failure to provide for the needs of their families. For most in the community, farming is a gamble. Especially for those farmers with no other alternative livelihood.

Despite the challenges of trying new technology, I admire those farmers for their courage and trust in different agencies of the government that give intervention. I was nervous when I was informed that I will be one of the speakers for Climate-Smart Farm Business School (CSFBS) as part of Climate-Resilient Agriculture (CRA) Project of DA-ATI Region IV-A. I was afraid that I do not have enough experience to share, that I will not sustain their attention and interest in my lecture, and that they will not listen. But I was surprised by their warm welcome, their dedication to learn new technology, and by their immediate interest in my topic.

One of the warm-welcoming farmers is Mr. Hector M. Ronquillo whom I had a chance to learn his story. He is not a native of Brgy. Magsikap but his wife, Mrs. Dely. Mr. Ronquillo was a line mechanic for 12 years in a factory in Cainta, Rizal. They decided to move to Brgy. Magsikap in 2000 because his wife owns a land there. There was no electricity back then,



so he invested in “Betahan” or small-cinema as a source of income. Moreover, they grew ornamental foliage to support their financial needs. They also work in his mother-in-law’s coconut farm to produce copra. His “Betahan” was destroyed by the strong typhoon in 2004. He later focused on planting.

He was not in the original list of beneficiaries for CRA project, but when he was told to attend trainings, he regard this as an opportunity to learn and improve his practice in farming.

The topic that caught his attention is on climate change and adaptation. He learned that in every season, there are certain crops to plant to ensure its survival and productivity. Before, he just plants whatever he wants, and thus fail. After the training, he is able to produce vegetables and sell them in the community. He was one of the beneficiaries of coconut-based farming. He was given 700 seedlings of cacao as an intercrop for coconut. However, due to improper handling and stress in transport, 50% of the seedlings did not survive. On the bright side, he applied his learnings about organic farming. He incorporated organic fertilizer and foliar fertilizer in his cacao plants now giving him healthy and already-flowering trees.

He was given a chance to visit the coco coir production in Gumaca, Quezon and got inspiration for their community. He actively participates in making geo nets every Thursday. He stated that they can produce more than their present production, however some of their members are turning inactive and they have few twining machines. In addition, the decorticating machine needs to stop intermittently because the motor is not powerful enough to continuously run due to the heating up of fan belt. Despite these challenges, he encouraged his wife to participate in the coco coir production because he can see various opportunities in this enterprise. They continue the production because they want to show the government that they give importance to the intervention given to them. *“Nagpa-plano na kaming gumawa ng ibang handicraft para maibenta sa Foundation Day. Ipinagpapatuloy namin ito at kami ay nagsisikap upang sumikat ang Brgy. Magsikap.”* He shared that there was an estimated 10% increase in his income after the interventions.

I admire that he is persistent in saying that he wants the community to become a model of other barangays. They are the pilot community and he said that when this turned out to be a success it will be easier for other community to adopt these technologies and improve their livelihood.

He shared his insights and gratefulness for the different agencies that contribute to this project, and suggests that swine production, and fruit-trees will also be a good livelihood in their community.

After the interview, I have realized that trying new technology is a risk for farmers and as a new Agricultural Extension Worker (AEW), it is my duty to help them build courage to practice farming beyond traditional way. I have an important responsibility to provide research-proven technologies to assure that when they adopt what is introduced to them, they will gain more of what they have risked. Moreover, I will be more credible if I will capacitate myself and practice the same technology that I teach. Through these, I can show farmers concrete evidence and they will be more encouraged to gamble their traditional ways into new ones and see it for themselves. There will be more adopters if they will be assured, and that is my mission as an AEW.



## PROGRAMANG PAMAYANANG LAGING HANDA, TUGON SA PABAGO-BAGONG PANAHOON

Jamila Monette B. Balmeo, Information Officer II  
DA-ATI Region IV-A

### Panimula

Tinaguriang “tree of life”, ang niyog ang isa sa mga pangunahing pananim na matatagpuan sa lalawigan ng Quezon partikular na sa Brgy. Magsikap sa bayan ng General Nakar. *“Dahil napakalawak ng niyugan, ang bunot ay nagiging basura, bumabara pa sa ilog, sa sapa. Matapos matapasan, nakatambak na lang dyan. Yung iba para lang mabawasan, sinusunog noon,”* ani G. Vic Jose Yabes, Agricultural Technologist mula sa Office of the Municipal Agriculturist ng General Nakar. Dagdag pa niya na ang ibang niyog na may bunot pa ay ipinapaagos sa sapa at kalaunan ay napupunta sa dagat patungo sa dagat at nagiging basura. *“Kaya sabi namin baka pwedeng pag-aralan kung paano pakinabangan ng tao yung niyog,”* banggit pa ni Vic.

### Ang Pamayanang Laging Handa

Sa tulong ng programang “Pamayanang Laging Handa” ng DA-ATI Region IV-A, bahagyang naibsan ang suliranin ng komunidad. Ang programa ay inilunsad noong 2017 sa Brgy. Magsikap, General Nakar bilang tugon sa mga panganib na dulot ng pabago-bagong panahon. Isa sa mga proyektong itinaguyod sa ilalim ng programang Pamayanang Laging Handa ang coco coir processing facility. Ang samaha ang SAMAMAKAKAPA (Samahan ng Magsasaka, Maningngisda, Kababaihan Katuwang sa Pag-unlad) ang nagawaran ng nasabing proyekto.



### Ang SAMAMAKAKAPA

Ang SAMAMAKAKAPA ay nabuo bago pa man mailunsad ang Pamayanang Laging Handa. Ang mga kasapi nito ay may 30 miyembro na sila ring benepisyaryo ng nasabing programa ngunit bukas pa naman sa mga nais lumahok sa proyekto. “Binuo ang SAMAMAKAKAPA para makatuwang talaga ng mga stakeholders lalo na yung mga tumulong kung paano mapapangalagaan yung mga naipamahaging kaalaman saka lalong



mapapangalagaan yung mga naipamahaging kaalaman saka lalong lalo na yung mga proyekto dahil kung walang samahan baka kung saan na rin mapunta,” ayon kay G. Rizalito Astrera, pangulo ng samahan. Hindi rin naging madali ang simula ng pagpapalaganap ng proyektong coco coir processing. Labing-lima (15) mula sa 30 na lamang ang aktibong miyembro ng SAMAMAKAKAPA. “Sa pangkalahatan parang di pa nila masyado nararamdaman,” paliwanag ni Rizalito. “Kailangang maipakita muna ng mga miyembro na makakatulong, at makakapagbigay ng dagdag hanapbuhay. Pag nakita ng tao na mapagkakakitaan, sila ay magkakainteres na din na sumama,” sabi pa ni Vic.

Hindi naman naging hadlang sa ibang miyembro na ipagpatuloy pa ang kanilang nasimulan para na rin mabawasan ang basura na sanhi ng bunot ng niyog. Para sa ilan ay nagbibigay hanapbuhay ang pagpoproseso ng coco coir na ginagawang eco fiber kabilang, na rito si G. Ronilo Francia. Siya ang naatasan na mangasiwa ng paggamit ng decorticating at sieving machine. Mula rito ay kumikita siya ng P 250.00 kada araw. “Malaki ang naitulong sa akin at pinagkukunan ko ng pandagdag gastos sa aking mga estudyante,” patunay ni Ronilo. Nakapagpatapos siya ng anak sa kursong BS Criminology. Para naman kay G. Hector Ronquillo, miyembro at benepisyaryo, “nakakatulong din. Kumikita rin kami kahit papano.

Sa kaalaman naman, nagkakaroon kami ng kaalaman tungkol sa coco coir.” Sa bawat 17 metrong coco twine na nagagawa ay kumikita sila ng P 2.45.

Sa katunayan ay nakapagbenta na ang SAMAMAKAKAPA ng eco fiber mula sa produktong coco coir sa halagang P 10,000.00. Ang kanilang mga nagawang produkto ay dinadala nila sa Eco Fiber Philippines sa San Pablo City, Laguna. “Ang laki ng interes ng mga tao ngayon na pagkakitaan yung bunot kasi pwede silang magkaroon ng pera. Yung mga miyembro ng SAMAMAKAKAPA na may niyugan na rin, pinagkakakitaan na nila ngayon yung bunot,” ulat ni Vic.

## Mga Plano para sa Pagbabago



Hangad ng samahang SAMAMAKAKAPA na mapagkalooban sila ng mas malaking decorticating machine. “Sa karanasan, hindi kaya ng makina yung tuloy-tuloy na operasyon. May panahon talaga na kailangan mong itigil para makapahinga kasi maliit yung makina. Isang nakakasagabal dyan yung quality ng makina, maliit, mahina,” paglalahad ni Vic. Sa malaking makina mas mabilis at madaming produksyon ang magagawa.

Bukod sa makina, nais din ng samahan ng makagawa ng iba pang produkto mula sa coco fiber tulad ng tsinelas, bag, garden pot at doormat. Higit sa lahat, “ang plano namin mainvolve sana yung buong community. Ma-replicate pa ang project sa ibang barangay,” kwento ni Rizalito.

Patuloy na pagkakaisa ang layunin ni Rizalito bilang pangulo ng SAMAMAKAKAPA. Sa bawat pangarap ay kaakibat na responsibilidad para may mapuntahan at posibleng maitaguyod ang inaasam. “Ang susi ng tagumpay naman yung pag palagiang nagkaka-ugnayan. Nakikita natin yung mga kahinaan natin, kung ano ang dapat nating gawain,” pagtatapos ni Rizalito.

## THE EMERGING SUCCESS OF COCONUT INDUSTRY

Janine L. Cailo, Information Officer II  
DA-ATI Region IV-A



Coconut production plays a pivotal role in the economy of Philippines. In the past 10 years, coconut industry faced challenges such as outbreak of Coconut Scale Insect (CSI), low price of copra, and high price of agricultural inputs. Consequently, coconut farmers were forced to cut down trees or shift to more profitable crops.

In Brgy. Magsikap, Gen. Nakar situated in the province of Quezon, a coconut community-based processing center manpowered by SAMAMAKAPA o ang Samahan ng Magsasaka, Mangingisda, at Kababaihan Katuwang sa Pag-unlad, is like a dim of light of hope to the coconut industry.

## The Beginning

One hour away from the town, going to Brgy. Magsikap welcomes the residents with rough road and unfinished pavements. Despite of the situation, the town is blessed with breathtaking view mountain range of Sierra Madre.

According to Adaptation and Mitigation Initiative in Agriculture (AMIA) of Department of Agriculture, Gen. Nakar is one of the high-risk municipalities in Quezon. “Nagkaroon ng malaking sakuna dito sa ReINa,” Gen. Nakar Agricultural Technician Mr. Vic Jose C. Yabes. Back in 2004, three (3) municipalities of province of Quezon namely Real, Infanta, and Gen. Nakar known as ReINa experienced flash flood causing an estimated of 1,400 casualties and leaving thousands of families homeless.



After 15 years, ReINa particularly Gen. Nakar recovered and continue to develop along with other municipalities. However, climate change is inevitable.

## Hand-in-hand

To assist municipality like Gen. Nakar on the understanding and to respond on the risks and opportunities presented by future climatic changes and extreme weather events, the DA-ATI Region IV-A together with Local Government Unit of Gen. Nakar through the Municipal Agriculture Office, Philippine Coconut Authority Region IV-A, Regional Field Office IV-A of Department of Agriculture, Office of the Provincial Agriculturist of Quezon, and Southern Luzon State University, implemented Climate Resilient Community dubbed as Pamayanang Laging Handa.



According to the Municipal Agriculture Office of Gen. Nakar, Quezon, farming is the major source of income of the residents of Brgy. Masikap namely coconut, rice, and ornamentals (rosal and pistil) were the major crops.

*“Bagama’t hindi naapektuhan ang bayan ng Gen. Nakar ng CSI, malaki ang epekto ng mababang presyo ng copra,”* Mr. Yabes added.

Beneficiaries of Pamanayang Laging Handa undergone various trainings on climate change and received agricultural inputs such as goat, cacao and ube seedlings. Moreover, fisherfolks received small-scale fish processing trainings such as smoked fish and bottled sardines. *“Bukod sa mga trainings, nabigyan kami ng pasilidad at makinarya para sa paggawa ng coco coir and organic fertilizer”*



According to Mr. Yabes, coir pith undergo two processes: 1. the decorticating machine will separate the fiber and coco pith; and 2. the shredded coco fiber will transfer to sieving machine were the second produce of coir pith will be harvested.

*“Marami ang pumupunta at bumibili ng coir pith,”* Mr. Astreta added. They sell one sack of coir pith at selling price of 60 to 80 pesos.

## Waste to profitable organic fertilizer



One of the by-products of coco coir is coir pith. According to Mr. Yabes, coconut husk is composed of 70% of coir pith. *“Ginagamit ito bilang fertilizer at soil conditioner,”* he added.

Aside from the coco coir, which is the main product of the organization, coir pith served as additional income to SAMAMAKAPA. *“Ang kita namin sa coir pith ay ginagamit namin sa pag-ooperate ng facility tulad na lang gasoline o krudo,”* SAMAMAKAPA President Mr. Rizalito T. Astreta mentioned.

## Looking Forward



***“Malaki ang potential ng livelihood na ibinigay saamin,”***

Mr. Astreta said. With this, the SAMAMAKAPA plans to acquire a bigger decorticating machine. *“Plano rin namin na makadalo pa sa maraming trainings upang mahasa at mapaunlad pa namin ang livelihood na ito,”* Mr. Astreta added.



## Fast Forward and Beyond Coco Coir Production



Katuwang sa Pag-unlad na Samahan, Ugnayan ng Magsasaka, Mangingisda at Kababaihan or also known as KAPAGSUMAMAKA continuous the production of coco coir as one of their sources of living. Some of the products out of coco coir are coco peat, fiber and rope.

KAPAGSUMAMAKA sell their coco coir products in nearby towns like Infanta. While, some are used for handicrafts making such as coco fiber pole, hanging pot, fiber mat, fiber tray and seedlings pots. They maximize the advantages of social media as platform in marketing their products. With all the earnings, KAPAGSUMAMAKA saves funds as strategy to boost the production of coco coir.

## As certified Learning Site for Agriculture

Granjeros Integrated Farm, owned by Mr. Jerone Tena who is one of the CRA beneficiaries, was recently certified as Learning Site for Agriculture (LSA) of DA-ATI Region IV-A. Ceremonial launching and awarding of certificate as certified LSA will be held early 2023. The farm showcases rice-based and rice-duck-fish farming system. They also integrate livestock with coconut. As of now, Granjeros Integrated Farm has three (3) heads of cow and three (3) heads of sow/pig. To persistently develop the farm, Mr. Tena and his wife apply all their learnings from Training on Climate Smart Farm Business School (FBS) conducted by DA-ATI Region IV-A. He also completed the 10-day Training of Facilitators on FBS of DA-ATI Region IV-A in partnership with Villar SIPAG Farm School.

On the other hand, another CRA beneficiaries, Mr. Loreto Moises, also applied his farm to be one of certified LSAs under the Coconut Farmers and Industry Development Plan (CFIDP). His farm focuses on integration of coconut, cacao, native chicken and livestock. It was validated on November 2022.



## ACKNOWLEDGEMENT

We would like to extend our deepest gratitude to the following who played a big part in the establishment of Pamayanang Laging handa as well as the development of this compendium:

- Department of Agriculture – Agricultural Training Institute Central Office
- Our partner agencies: Department of Agriculture Regional Field Office IVA, Lipa City, Batangas; Southern Luzon State University, Lucban, Quezon; Office of the Provincial Agriculturist, Lucena City, Quezon; and Local Government Unit of General Nakar, Quezon
- Collaborating Agencies: Philippine Coconut Authority Region IVA, Lucena City, Quezon and Bureau of Fisheries and Aquatic Resources Region IVA, Quezon City
- Thirty (30) beneficiaries of Pamayanang Laging Handa Program
- Writers of journeys of the CRA beneficiaries

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## APPENDIX

Appendix 1: Project Logical Framework – Status of Implementation

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Assumption/Risks	STATUS (as of October 2020)
<b>GOAL:</b> Improved climate resilience of communities	(i) 20 to 30% of beneficiaries with sustained livelihoods (ii) 20 to 30% of beneficiaries with increased average income (₱)	Impact Evaluation	Beneficiaries weren't able to sustain the livelihood kits provided due to unexpected disaster events	Scheduled on May 2022
<b>OUTCOME:</b> Increased adoption of climate resilient technologies	(i) 20 to 30% of beneficiaries adopted climate resilient technologies (ii) 20 to 30% of beneficiaries with increased yield of commodities (in metric ton/ha)	Results Evaluation	Beneficiaries didn't appreciate and used the climate resilient technologies taught	Scheduled last June 2020 but due to the pandemic, rescheduled 1st Quarter 2021 OR as soon as possible.
<b>OUTPUTS:</b> 1. Participatory approaches are used to surface community ownership of climate change extension interventions	Participatory rapid rural appraisal conducted	Training Accomplishment Report (TACR) Quarterly Progress Report		Conducted April 26-29, 2017 Outputs: 1. Baseline Result Analysis 2. Stakeholder Analysis 3. Problem Tree Analysis
	Baseline profiles established with interpretation and analysis of the agro-ecosystem	Quarterly Progress Report Community baseline profile document	Baseline data collection is not taken seriously resulting to incorrect and misrepresented information	Conducted April 3-7, 2017 Outputs: 1. Municipal Profile 2. Baseline Survey
	Climate smart livelihood projects or technological options are identified and validated	Quarterly Progress Report		Conducted CRVA on May 16-19, 2017 Outputs: 1. Participatory mapping. Modelling

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Assumption/Risks	STATUS (as of October 2020)
				2. Transect walk 3. Seasonal Time-line and calendar 4. Risk and Hazard Analysis 5. Localized project framework
	Climate smart livelihood kits are provided	Quarterly Progress Report Field Validation Report	No collaborative efforts were made due to conflicts in the schedules and availability of resources	Provided Climate Smart Livelihood Starter Kits  1. Comunty-based a. Coco Coir Processing b. Organic Fertilizer Production  2. Farm Family Kits a. CoCo-based Cacao / Yam Production b. Goat Raising c. Home-based Fish Processing
	Climate smart technology trainings/ strategies/ practices are conducted	TACR Quarterly Progress Report	Trainings include a component on disaster risk reduction measures	Conducted various CRA support trainings: a. Community Empowerment Course, July 12-14, 2017 b. Climate Change Resilient Community Course, Aug. 23-25, 2017

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Assumption/Risks	STATUS (as of October 2020)
				c. Technical Training on Coco Coir Processing Aug. 28-31, 2017 d. Climate Smart Farm Business School Sept. 4-13, 2017 e. Package of Technology (POT) for Cacao, Ubi and Goat Raising Sept. 20-22, 2017 f. Training Course on Organic Fertilizer Production Oct. 9-1, 2017 g. Training Course on Fish Processing
2. Institutional relationships at the community level are strengthened	Local participatory project planning, project execution and progress monitoring are conducted	TACR Quarterly Progress Report	Collaboration/ implementing modalities with partner institutions are strengthened.	Farmer Association Meeting – July 14, 2017 Project Launching – August 04, 2017 Project Turn-over – December 04, 2017  Quarterly FA meetings including needs assessments  ATI PMEU after 1-year Monitoring – July 29-31, 2018
	CRA practices at the community are documented	Compilation document	The compilation includes a minimum of 2 samples of good agricultural practices	Regular monitoring and documentation thru LGU report



Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Assumption/Risks	STATUS (as of October 2020)
				Conducted Writeshop for Pamayanang Laging Handa: A Compendium of Climate Change Resilient Practices and Stories, May 28-31, 2019  Conducted Video Documentation for best practices mid 2019
	Appropriate IEC material for the community created by specialized agencies based on information needs survey and analysis	Quarterly Progress Report IEC Material	At least 1 IEC material is developed and translated into local dialects	Develop IEC materials 1. CRA Briefer 2. CRA write-ups for ATI newsletter 3. CRA Stories
3. The community evolves into a "Climate Informed Community"	Climate Smart Farmer Business School integrated in the capability building exercises.	Quarterly Progress Report		Conducted 10-Day Intensive Climate Smart Farm Business School, Sept. 4-13, 2017
				Conducted c. CRA Pilot Project Value Chain Analysis: Planning for the Development of Market-oriented Agricultural Enterprises September 5-7, 2018
	Compilation of CRA practices made available to the community	Compilation document		On process for the Compendium of CRA Practices due for release December 2020

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Assumption/Risks	STATUS (as of October 2020)
	Case studies made available to the community	Actual case study written		For Proposal-based activities c/o SLSU Infanta Campus
	IEC materials stored in the climate smart community for other farmers or visitors to take home for future readings	IEC Material		Established Barangay FITS Knowledge Kiosk in 2021
	Farmers' Information Technology Services (FITS) Centers (online and farmers' contact centers) massively utilized	Quarterly Progress Report		Established in July 2018  Appointed 2 Magsasaka Siyentista on Rice and Organic Farming  CC-Enhanced FITS Center in 2018  RCM Enhanced FITS Center in 2019
4. Outputs of ATI CRA Project are managed for results	Quarterly progress reports submitted	Quarterly Progress Report		Quarter report submitted to the National Secretariat
	Annual review report produced from Year 1 to Year 5	Annual review report		Annual Report presented during the CRA assessment and planning workshop
	Results evaluation conducted by Year 3	Results Evaluation		Scheduled in 2021 due to pandemic
	Impact evaluation conducted by final year of project	Impact Evaluation		Scheduled in 2022

## Appendix 2: Target Municipal Profiling

### Municipality of Real

The municipality of Real is part of the REINA (Real, Infanta, General Nakar) region of the Province of Quezon. It is bounded on the north by the municipality of General Nakar and Infanta, on the south by the municipalities of Mauban and Sampaloc, on the east by the Lamon Bay, and on the west by the provinces of Rizal and Laguna. Geographically, it lies at coordinates 14° 60' 00" North Latitude and 121° 36' 00" East Longitude. A well-paved concrete road connects the Municipality of Real with northeast Manila at a distance of approximately 145 kilometers, while Lucena City, the provincial capital is 133 km away. By water transportation, Polillo Island can be reached within 2.5 hours by motor launch, and almost the same number of hours to reach the town of Mauban.

Real is a first-class municipality, comprises of 17 barangays with aggregate land area of 56,380 hectares. Fourteen (14) of these barangays are categorized rural and three (3) urban covering 91 and 9 percent, respectively of the municipality's total land area. The municipality has the second largest land area among the municipalities of Quezon Province, which is next to General Nakar (134,000 ha).



Municipality	Real
Province	Quezon
Region	IV-A CALABARZON
Total Land Area	56,380 ha
Location	Northern Quezon
Latitude	121° 00' 00"
Longitude	14° 07' 00"
Congressional District	1st District
Income Classification	FIRST CLASS
No. of Barangay	Seventeen (17) barangays
	Ten (10) barangays Coastal
	Seven (7) barangays Upland
	Three (3) barangays Urban
Major Economic Undertaking	Fourteen (14) barangays Farming, Fishery
Total Population (NSO, 2010)	35,188
Total Households (NSO, 2010)	7,647 HH

Barangay	Number of Households	Population
Agona Sierra	233	913
Calayan	465	1,964
Chayon	454	2,088
Chonon	417	1,977
Lave	613	2,999
Lubay	234	1,249
Maragondon	475	2,132
Makap	389	1,151
Masikap	1,066	7,071
Maurice	177	627
Pandan	228	1,167
Poblacion 1	1,198	7,522
Poblacion 2	625	2,755
Tapitany	84	284
Tamban	204	1,014
Tiguan	771	3,654
Ungos	844	4,188

### Agricultural Land and Crop Production

Potential agricultural land covers 48% of the total land area of the municipality. With the exception of Poblacion 1 and Barangay Ungos having no agricultural land, and Barangay Masikap with 618 hectares, the rests of the barangays have more than 1000 hectares agricultural land.

The topography of Real is rugged hilly and mountainous, which justify the majority of the crops grown that consist the fruit trees, root crops, vegetables and coconut. Irrigated rice area comprises only 101.75 hectares equivalent to 1% of the total existing agricultural lands. Upland rice covers an area of 30 hectares. Coconut is the dominant crop grown in the municipality with 6,443.5 hectares or 88%, followed by banana, citrus, and rambutan with land area of share of 300, 50, 45 hectares. In terms of volume of production, coconut

produced 33.8 million nuts, followed by banana with 1000 metric tons, rice with 450 metric tons and cassava with 170 metric tons.

The staff of the Office of the Municipal Agriculturist is as follows: Ms. Evangeline F. Paril (Municipal Agriculturist); Ms. Ligaya M. Avellano (AT/Livestock Inspector); Ms. Filomena R. Azogue (AT); Mr. Lemuel O Azogue (AT/Meat Inspector) and Mr. Bryan E. Potestades (AT/OIC MENRO).

### Municipal Disaster Risk Reduction and Management Plan (2016)

Programs/Project/Activities	Status/Remarks
A. Disaster Prevention and Mitigation Program Mainstreaming and updating of DRRM activities and CCA Formulation of Local Climate Change Action Plan	Ongoing Resolved to be simultaneously formulated with E-CLUP
B. Disaster Preparedness Community based Disaster Risk Reduction and Mgt Formulation of multi hazard GIS Development of early warning systems Capacity development on disaster preparedness and response, search, rescue and retrieval operations Conduct of simulation exercise at various level to test plans and skills Real DRRM council meeting, MDRRM office operations and other activities Acquisition of equipment and/or equipage for MDRRMC/MDRRMO operations and activities Acquisition of equipment and/or equipage for vehicular accident extrication, rescue and retrieval operations Acquisition of equipment and/or equipage for high angle high rise rescue and retrieval operations Acquisition of equipment and/or equipage for water search and rescue operations (swift/open sea) Acquisition of automated external defibrillator (AED) Installation of fire hydrants Provision of Calamity Insurance for ACDVs	70% completed Completed Completed Completed Completed Completed Continuing Completed Completed Completed Completed Completed Completed Completed Completed Completed Completed
C. Disaster Response Provision of basic subsistence needs of the affected people at times and in the aftermath of calamities	Implemented

## Municipality of Infanta

The municipality of Infanta is a first-class municipality in the province of Quezon, Philippines. According to the 2010 census, it has a population of 64,818. It is situated on the northern part of Quezon province. It is one of the 13 municipalities comprising the first congressional district. It is bounded on the north and northwest by General Nakar, on the east and southeast by Polillo Strait and Lamon Bay, on the south by Real and on the west by the provinces of Rizal and Laguna. The global position of Infanta is latitude 14°44'33"N and longitude 121°38'58" and it is located 144 kilometers (89 mi) northeast of Manila, and 136 kilometers (85 mi) north of Lucena City.

Infanta is accessible from Manila by land through the eastern Rizal Highway from Antipolo to the eastern Lakeshore towns of Laguna de Bay, thence through the winding 60-km Famy-Infanta road across the Sierra Madre range. Through this route Infanta is approximately 145 km from the City of Manila. A shorter route, the Marikina-Infanta Highway

Region	Calabarzon (IVA)
Province	Quezon
Barangays	36
Population	69,079
Density	200/km2
Income Class	1st class, partially urban



### Municipal Agriculture and Fishery Profile

Number of barangays	: 36
Total land area	: 342.76 km2 (132.34 sq. miles)
Total population	: 64,818
Rice	: 5,671.16 MT; 2,196 farmers; 1312.34 Ha
High Value Crops	: 132.09 MT; 144 farmers; 47,26 Ha

### Risk Profile of Infanta, Quezon

By virtue of its geographic location and topography, is vulnerable to a host of hazards namely hydrometeorological and geological. The ever-changing climate and fast rate of urbanization further render Infanta open to other forms of hazards mostly human-made.

Hydrometeorological hazards includes typhoons, rainfall induced landslide, flood and flashfloods and storm surge while geological hazards include ground rupture, earthquake induced landslide, liquefaction and tsunami. Other hazards include human induced such as road accidents, fire and epidemics. It may also include water spout and tornado and drought.

## Municipality of General Nakar

General Nakar is the northernmost municipality of Quezon province. It is bounded on the north by the Municipality of Dingalan, Aurora, on the east by Polilio Strait, on the south by the municipalities of Real and Infanta, Quezon, and on the west by the provinces of Rizal, Bulacan and Nueva Ecija. It lies geographically between 121° 8' and 121° 42' east longitudes, and 14° 45' and 15° 20' north latitudes.

General Nakar is the largest municipality of Quezon province with 145,607.19 hectares land area or 16.73 % of the province's total land area. It is named after the hero of World War II General Guillermo Peñamante Nakar who hailed from Barangay Anoling. The town prides itself of its bountiful natural resources attributed to its forest area which is 94% of its total land area. Numerous species of flora and fauna thrive in the area. Mostly agricultural, the people are dependent on farming and fishing which through the efforts made by the local government is shifting to organic farming production on both palay and vegetable production. Manufacturing as a new industry is seen highly as a potential for livelihood of many women in barangays in the production of herbal products and supplement. General Nakar also has a variety of natural tourist attractions such as its fine sand beaches, waterfalls and springs which make it ideal for nature tripping, trekking, hiking and camping. About 72.36 % of the municipality's total land area is covered by barangays Umiray and Pagsangahan sharing 38.57 % and 33.79 %, respectively.

The major source of income includes Agriculture, Agro-Industry, Commerce and Trade, Services and Manufacturing.

Income Classification: 1st Class  
 Congressional District: 1st District  
 No. of Barangays: 19  
 Land Area: 145,607.19 has.  
 Population (NSO, May 1, 2010): 25,949  
 Registered Voters (COMELEC, May 2016): 18,918



### Municipal Land Use

Based on the estimated area of various land uses taken from the present land use map of BSWM, forest land is the dominant land use of the municipality. This covers 141,865.57 hectares or 97.43 % of the municipality total land area. Other land uses include agricultural areas, build up areas brush land and other uses covering 3,332.02 (2.28 %), 209.85 (0.14 %), 13 ha (0.008%) and 186.75 (0.12%), respectively.

Agricultural land uses, consisting of rice, coconut and crops rotated with upland and high value crops intercropped to coconuts are found on the lowlands and some undulating to rolling areas of the municipality.

Forest land account ted for the upland portions of the municipality mostly above 18% slopes. Purely forest of various species and mixed with shrubs exists. Possibly, at this time primarily or virgin forest could no longer be found in the municipality's forestlands, which attributed to the massive commercial logging operations in the past year.

Other purposes have the smallest coverage among the land uses with 186.75 hectares or

0.14 % of the total land area of the community. These land uses consist of open space, water zone and road is concentrated in the Poblacion and the population center of the barangays and sitios.

Patches of beach sand occupy areas along the coastlines and mouth of rivers. Beach sand or mouth of rivers is developed as laid down sediments carried by flood waters from the uplands. On the other hand, beach sand along the coast is created by movements of sea waves.

Land Use	Area (Hectare)	Percent of Total
Agricultural	3,332.02	2.28
Rice land	683.46	
Coconut land	1,678.14	
with brushland	805.92	
Idle land	164.50	
Brush land	13.00	
Forestland	141,865.57	97.43
Protection	41,505.54	
Production	95,111.28	
Built-up areas	209.85	0.14
Others	186.75	0.12
Total Area	145,607.19	100

Agricultural lands cover 2.17 % of the total land area in the municipality. Barangays of Kabilogan area which include Anoling, Catablingan, Pamplona and Banglos are the dominant agricultural barangays of the municipality. With regards to irrigated rice land, which covers a total area of 784 hectares or 24.77% of the total agricultural land. Of this total area, more than half or 57% can be found in barangay Umiray, Catabilangan and Magsikap. The rest are distributed in other barangay of the municipality. Other agricultural crops grown in municipality include corn, cassava, banana, citrus and lanzones.

### Appendix 3: Problems identified and proposed intervention

Problems Identified in Barangay Magsikap	Proposed DRRM Plan Intervention	ATI Proposed Activity	Partners Proposed Intervention
FOCAL PROBLEM: MALAKI ANG GASTOS SA PAGSASAKA			
PAGBABAYAD SA MGA TAONG KATUWANG SA PAGSASAKA			Provision of farm implements
KULANG ANG MAKABAGONG KAGAMITAN SA PAGSASAKA			Provision of farm implements
MABAGAL O HALOS WALANG AKSYON SA MGA RESOLUSYON NG F.A.		Propose consultation with LGUs and NGAs	
MAY IRIGASYON SUBALIT WALANG TUBIG		Coordinate with NIA	
MALING PAMAMAHALA NG IRIGASYON		Coordinate with NIA	

Problems Identified in Barangay Magsikap	Proposed DRRM Plan Intervention	ATI Proposed Activity	Partners Proposed Intervention
FOCAL PROBLEM: MAS BINIBIGYANG PRAYORIDAD ANG IBA PANG TRABAHO			
HINDI SUSTENABLE ANG PAGSASAKA BILANG HANAPBUHAY		Provide Climate Resilient Livelihood to 30 selected farm families	Provide support in terms of inputs and implements to selected beneficiaries
MONOCROPPING		Conduct technology training for intercropping	Provide after training support
KULANG SA SEMINAR AT ORIENTATION SA MGA MAKABAGONG PAMAMARAAN		Conduct technology training for intercropping	Provide after training support
KULANG SA KAPITAL		Provide Climate Resilient Livelihood to 30 selected farm families in terms of inputs and implements	

Problems Identified in Barangay Magsikap	Proposed DRRM Plan Intervention	ATI Proposed Activity	Partners Proposed Intervention
FOCAL PROBLEM: HINDI AKMANG PROGRAMANG EKSTENSYON			
KAKULANGAN O LUMANG MGA DATOS NA PANG AGRIKULTURA AT CLIMATE CHANGE	Continuous update/ revision of datum for Population at Risk		
HINDI TULOY-TULOY NA PAGSASAGAWA NG PAGSASALIKSIK AT PAGKALAP NG SUSTENABLENG IMPORMASYON		With the MDRRMO, conduct a result evaluation of municipal interventions on DRR and Climate Change	
LIMITADO O MALAYO ANG MGA PAGKUKUNAN NG PANGUNAHING IMPORMASYON NA MAYROON SA MGA IBA PANG AHENSYA NG PAMAHALAAN	Awareness and campaign on disaster preparedness and response conducted and disseminated in schools and 19 barangays	Conduct a participatory IEC Development Workshop and Distribute IEC to targeted areas	Gather IEC from different DA attached agencies and distribute such on the targeted area
LIMITADONG MGA POLISIYA AT MGA INOBASYON SA LARANGAN NG CLIMATE CHANGE	Formulation of 5-years DRRM Plan, Contingency Plan, and Local Climate Change Adaptation Plan (LCCAP)	Encourage farmers and fishers to participate in the crafting of such plans	Conduct a farmers and fishers meeting and identify DRR-CCA needs and submit it to MDRRMO.
LIMITADONG KAALAMAN NG MGA TEKNIKO SA PAGPA-PLANO AT PAGLIKHA NG MGA PROGRAMA SA CLIMATE CHANGE	Conduct of trainings and seminars for Disaster Vigilance and Responsiveness to MDRMC, BDRRMC, and Community	Conduct a specialized on developing DRR-CCA sensitive agricultural programs and projects	Fund training programs and sponsor speakers for the trainings to be conducted by DA-ATI Region IV-A
HINDI AKMA ANG PINAG-ARALAN SA POSISYONG NAIBIGAY SA TEKNIKO		As long as staff are part of the Municipal Agriculture Office, they will be included in the different proposed capacity building activities	

Problems Identified in Barangay Magsikap	Proposed DRRM Plan Intervention	ATI Proposed Activity	Partners Proposed Intervention
FOCAL PROBLEM: MABABA ANG PRESYO NG ANI			
MARAMING BAGONG PAGKAIN NA DI GALING SA GEN. NAKAR			
MAHIRAP MAGDALA NG PRODUKTO SA MERKADO		Conduct training on consolidation and market matching to minimize cost of transportation	
MAHAL ANG PAMASAHE		Conduct training on consolidation	
HINDI MAAYOS ANG DAAN			Assess possible construction of FMR under PRRD
WALANG KATIYAKAN SA UGNAYAN SA SENTRONG PAMILIHAN		Conduct FBS with benchmarking activity to ensure need-based commodities	
MARAMING TINDAHAN SA PAMILIHAN		Conduct training on value chain analysis	
HINDI MAAYOS NA PAMAMALAKAD NG MERKADO		Conduct organizational management training to farmers and market officers	



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