

# Outcome Harvesting in a Climate-Smart Village: The Case of Guinayangan, Quezon, Philippines (2014 - 2020)

Working Paper No. 393

Anne A. Limsuan  
Alice Joan G. Ferrer



RESEARCH PROGRAM ON  
**Climate Change,  
Agriculture and  
Food Security**



Working Paper

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## Abstract

The pioneering work of establishing a Climate-Smart Village (CSV) in Guinayangan, Quezon Province in 2014 became an avenue for promoting interventions to address climate change in a local government in the Philippines. The CSV served as a laboratory where climate-smart technologies and practices were tested, promoted, and scaled out. Through a CSV, Climate-Smart Agriculture was introduced as an integrated approach that aims to achieve short- and long-term agriculture development priorities in the face of climate change.

With the project coming to an end, the immediate, intermediate, and ultimate outcomes were identified among different sectors through the process of outcome harvesting. Evidence of change were collected and analyzed to identify the outcomes through engagement with farmers, key persons, and other local leaders. Identified outcomes included changes in awareness, knowledge, practices, approaches, and strategies, particularly with individual farmers, community organizations, municipality, and even at the national level.

Significantly, the CSV became a learning platform to farmers – experiences and knowledge were gained and spread not only within their learning groups, but also to other farmers, community organizations, and local executives in the municipality. The achievements and contributions of CSV in Guinayangan has reached a higher scale – it influenced the national implementation of the Adaptation and Mitigation Initiative for Agriculture (AMIA) Program, a flagship program by the Department of Agriculture (DA). AMIA villages were established across all regions of the Philippines, many of which were inspired by the opportunities to visit the CSV in Guinayangan on at least two occasions. The CSVs established by the International Institute of Rural Reconstruction (IIRR) served as an advanced CSV in the initial years of the DA AMIA National Program. IIRR supported the DA and FAO efforts to develop policy briefs based on experiences from the DA AMIA Program.

### Keywords

*Agriculture, climate change, climate-smart agriculture, smallholder agriculture, social learning*

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## Acronyms

AMIA	Adaptation and Mitigation Initiative for Agriculture
CBO	Community-based organizations
CCAFS SEA	Climate Change, Agriculture and Food Security Southeast Asia
CGIAR	Consultative Group on International Agricultural Research
CRA	Climate Resilient Agriculture
CSA	Climate-smart agriculture
CSO	Civil society organization
CSV	Climate-Smart Village
DA	Department of Agriculture
DA – RFO	Department of Agriculture Regional Field Office
DA – SWCCO	Department of Agriculture Systems-Wide Climate Change Office
IDRC	International Development Research Centre
IIRR	International Institute for Rural Reconstruction
KAP	Knowledge, Attitude, Practices
LGU	Local Government Unit
MAO	Municipal Agriculture Office
MPDO	Municipal Planning and Development Office
NGO	Non-Government Organization
OH	Outcome Harvesting
OMA	Office of the Municipal Agriculture
RIC Club	Rural Improvement Club
4H Club	Head, Heart, Hands, and Health Club

# Introduction

Agriculture plays a significant role in the economy of the Philippines. Recent figures suggest that about a quarter of employed Filipinos work in the agricultural sector. Despite its crucial importance in the economy of the Philippines and to the lives of those dependent on it, agriculture's relative contribution to gross domestic product (GDP) has been declining over the years (Brown, Decena, & Ebor, 2018). This occurrence may be attributed to several challenges that the agricultural sector has been facing, which include conversion of arable land, limited diversification, and low productivity. In addition, climate change is also an important challenge as its adverse impacts such as increased flooding incidence, drought, soil degradation, water shortages, and increased pests and diseases constantly threaten agricultural output and productivity (Brown *et al*, 2018).

Climate change continues to threaten agriculture as the Philippines ranked 9<sup>th</sup> place among 181 nations in the 2020 World Risk Index, which lists the countries most affected by extreme weather events; and 4<sup>th</sup> place in the Global Climate Risk Index 2021, which names the top 10 countries most severely hit by extreme weather events from 2000 to 2019. The damaging effects of climate change are worst among the poor and the vulnerable smallholder farmers and fisherfolk.

In response to all of these events and effects, Climate Smart Agriculture (CSA) was introduced, promoted, and scaled out. CSA contributes to the achievement of sustainable development goals as it integrates the three dimensions of sustainable development (economic, social and environmental) by jointly addressing food security and climate challenges. It is composed of three main pillars: (1) sustainably increasing agricultural productivity and incomes; (2) adapting and building resilience to climate change; and (3) reducing and/or removing greenhouse gases emissions, where possible (Food and Agriculture Organization of the United Nations, 2013).

Testing of CSA interventions (which include technologies and practices) in a real-world setting are done through a community-based learning platform called Climate-Smart Villages (CSV). The Climate Change, Agriculture, and Food Security (CCAFS) program of Consultative Group on International Agricultural Research (CGIAR) established CSVs in four countries in Southeast Asia, including the Philippines, in 2014. In the Philippines, CCAFS-South East Asia (SEA), through the International Institute for Rural Reconstruction (IIRR), established the first CSV in Guinayangan, Quezon.

IIRR partnered with the local government unit (LGU) of Guinayangan in the implementation of the CSA. This facilitated the participation of smallholder farmers. The partnership between CCAFS, IIRR, and the LGU of Guinayangan was expected to increase agricultural productivity using environmentally friendly regenerative approaches. The partnership also explored the effectiveness of municipal-level actions using ecosystems-based and ridge-to-reef approaches.

This year, 2021, the project is in its phasing out stage. An assessment and evaluation of the project is in place to understand and appreciate the extent of the project's achievements and impacts. The tool selected to accomplish the goal was outcome harvesting. Outcome harvesting collects evidences of what has been achieved rather than measuring progress alone (Wilson-Grau and Britt, 2012). In this study of the CSV program in Guinayangan, outcome harvesting was used as a summative evaluation tool to understand the significance of IIRR's intervention in influencing change among specific stakeholders at various levels of outcomes. It must be noted that these outcomes will take place not during the life of the project but will manifest several years after the project has ended.

## Objectives

The main objective of the study is to identify the outcomes of IIRR's Guinayangan CSV project (2014-2020) in addressing climate resilience and food security.

Specifically, the study aims to:

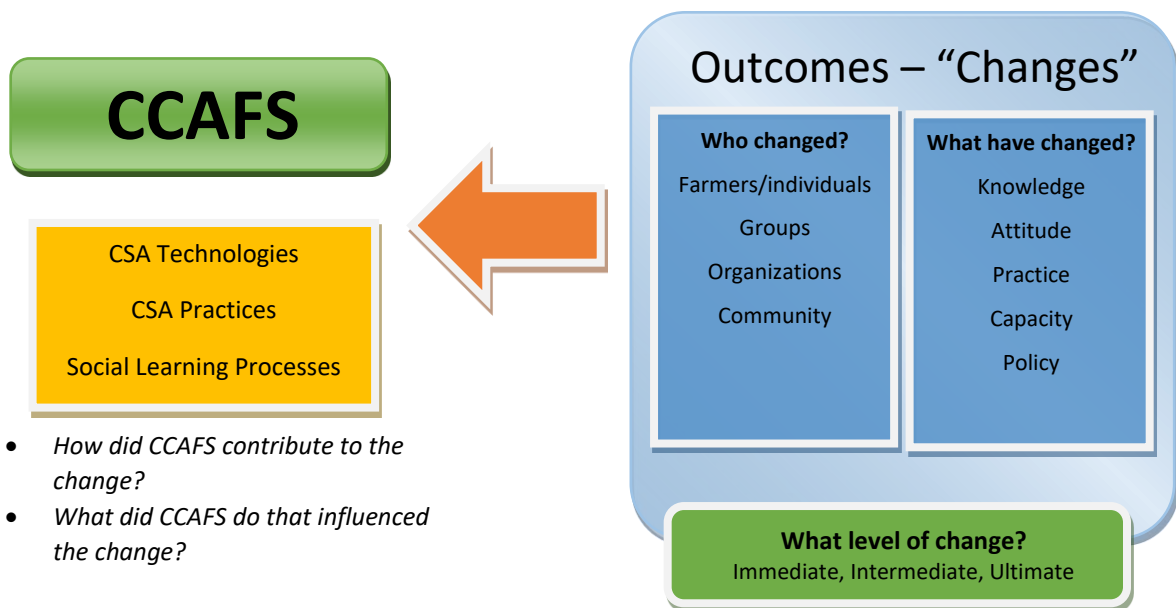
- 1) Identify outcomes from 2014 to 2020 among farmers, leaders of community organizations, and government officials and development workers;
- 2) Describe the identified outcomes;
- 3) Document evidences of these outcomes; and
- 4) Link the identified outcomes to the CSV implementation of IIRR in Guinayangan, Quezon.

# Conceptual Framework

Outcome harvesting was utilized to understand the process of change and how each outcome contributes to this change, whether positive or negative, intended or unintended, resulting from the implementation of CSV in Guinyangan, Quezon Province.

## Outcome Harvesting Framework

This study adopted the framework from Ferrer and Bernardo (2020), which is based on the outcome harvesting framework (Wilson – Grau, 2015; Wilson – Grau and Britt, 2013) with elements from the results-based management framework (Global Affairs Canada, 2016). Outcome Harvesting is a method that enables evaluators, grant makers, and managers to identify, formulate, verify, and make sense of outcomes. Outcome is defined here as a change in the behavior, relationships, actions, activities, policies, or practices of an individual, group, community, organization, or institution. Instead of focusing on the activities, perspective is shifted in identifying, analyzing, and interpreting outcomes.



**Figure 1. The framework of the study (Adopted from Ferrer and Bernardo, 2020)**

Evidences of change are collected and traced backwards to assess the contribution of CSV implementation in Guinayangan (Figure 1). The process determined whether and how the project contributed to the changes observed. Change occurs if something is done differently in relation to climate change-related knowledge, attitude, capacity, policy, or practice.

Outcomes are identified as immediate, intermediate, and ultimate (Global Affairs Canada, 2016). Immediate outcomes are the changes in the capacity of farmers and communities, as well as the technical and managerial staff in relevant municipal-level government agencies in Guinayangan, Quezon, including regional and national offices in the Philippines. Intermediate outcomes are the changes in the stakeholders' behavior, practice, or performance. The ultimate outcomes are the changes in the state, conditions, or wellbeing that the farmers and communities experience.

## Key Actors

In the identification of outcomes, the following key actors were involved in the process: the harvesters, outcome harvest users, social actors, and the change agent.

The *harvesters* or the external evaluators are composed of the lead group and the field team. The lead group designed the outcome harvest by identifying useable questions to guide the harvest. The field team, on the other hand, were the external facilitators that were outsourced locally in Guinayangan.

The *outcome harvest (OH) users* are the decision-makers who may benefit from the results of the harvest. OH users can be further categorized into primary and secondary users. The primary users are the ones directly affected by the impacts and are involved in the project. These are the LGU of Guinayangan, IIRR, CCAFS SEA, and the DA - Regional Field Office 4A (DA-RFO 4A). The LGU of Guinayangan can use the OH results in developing proposals and recommendations for the annual planning and programming of the Municipal Agriculture Office. OH results can benefit IIRR by providing an idea or a framework design for future projects. A journal, or a working paper, on CSV effectiveness will be a key interest for CCAFS SEA while the learning agenda for DA-RFO 4A are the recommendations for implementing AMIA-CREATE, the component that corresponds to enterprise development, in Guinayangan and San Francisco, Quezon. Identified secondary users, who may not be directly involved but can take advantage of the results from the outcome harvesting, are the following: other SEA CSVs, DA - Systems-Wide Climate Change Office (DA – SWCCO), other LGUs, and the International Development Research Centre (IDRC) research team. Other SEA CSVs may discover other approaches in CSV development. Meanwhile, the DA – SWCCO/AMIA-CREATE may discover some implications to AMIA-CREATE's implementation. Other LGUs may gain different perspectives and learnings with the results. Inputs to CSV research may be obtained by the IDRC research team.

The *social actors* are the individuals, groups, or organizations where a change manifests as a result of

the intervention of the change agent. For this study, the social actors are the following: LGU of Guinayangan, individual farmers, farmers' groups, the development workers, development donors, CCAFS, and other LGUs.

The *change agent* is the individual/s or organization/s that influence an outcome. IIRR facilitates change by capacity-building through knowledge-sharing events such as trainings, roving workshops, study tours, action research, and other social learning approaches. IIRR also generates knowledge products and builds an evidence based on how out-scaling of CSA can be done through CSV approach.

## Outcome Harvesting Steps

The working framework was operationalized through the six outcome harvesting steps (Figure 2): (1) design the outcome harvest; (2) review documentation; (3) engage with human sources; (4) substantiate with external sources; (5) analyze and interpret; and (6) support use of findings (Wilson-Grau, R., 2019). The harvest evolves and adapts as the process unfolds and information emerges in a downward spiral. These steps are not wholly distinct; they may overlap and can be iterative. They are taken to be more as guidelines rather than a rigid formula to follow. The process that took place for this study was rapid; outcomes were more identified rather than determined based largely on the engagement done with the respondents.



Figure 2. Outcome Harvesting process (Wilson - Grau, 2019)

The design of the outcome harvest was created to agree on the process: what information is to be collected, how, from whom, when, and with what resources in order to credibly answer the questions. Reviewing of documents is followed by identifying and formulating potential outcome statements contained in secondary sources of information provided. For this study, the secondary materials reviewed included reports, primers, portfolios, summary briefs of CSA interventions that were shared and implemented in Guinayangan, and summary reports of the workshops held by the IIRR.

Engaging with human sources involved the harvester facilitating conversations with the people who have the most knowledge about what the intervention has achieved and how. Primary information was collected through face-to-face focus group discussions (FGDs) among farmers. Key informant interviews (KII) with key government officials and community-based organizations were also done face-to-face. On the other hand, KIIs with focal persons of the DA – AMIA project under several regional offices and some of the directors involved in the implementation at the national office were done through online meetings via Zoom. A knowledge, attitude, and practices (KAP) survey related to CSA/CSV was also administered to the farmers and agricultural extension workers.

The next step is to substantiate information with external sources, usually with one or more persons knowledgeable about the change but independent from the change agents. The data that was gathered were then analyzed and interpreted by organizing the outcome statements. Support for the use of these findings may eventually be realized as internal sources continually engage and come to appreciate the value of OH data and process.



# Methodology

## Guinayangan, Quezon, Philippines: An Overview

The municipality of Guinayangan in the province of Quezon is a 3rd class municipality composed of 54 barangays covering 22,800 hectares. Out of the 54 barangays, 22 of them became CSVs. These 22 barangays represented the different farming systems and are evenly distributed geographically across Guinayangan. The primary source of income is agriculture-based and marine products. The municipality has a population of 44,045 as determined by the 2020 Census, and most are engaged in the agriculture and fisheries sector.



**Figure 3. Location Map of Guinayangan, Quezon: National and Provincial Perspective**

The climate in the municipality is classified as Type IV Category where rainfall is more or less evenly distributed throughout the whole year. The climate affects the living condition of the populace, especially during heavy downpour where floods and soil erosions occur in some parts of the municipality.

The town's topography is generally hilly and mountainous with some barangays located in coasts fronting the Ragay Gulf. It has at least six distinct ecosystems (public forestlands, protected watersheds, upland coconut-based agroecology, lowland rice-based agroecosystems, river systems, and coastal areas). Sixty-eight percent (68%) or 14,235 hectares of its total land area is devoted to agricultural production. Much of the upland forest that once dominated the town's landscape before

the 1970s was converted to mono-crop coconut plantations, which has been the dominant production system in the municipality since then.

Guinayangan’s agricultural production is dominated by the coconut sector. Coconut is the main crop grown by farmers, with 79 percent of the total agricultural land devoted to its production. Other crops grown are corn, rice, banana, citrus, root crops, vegetables, and coffee. The majority of the farmers also raise livestock and poultry for family consumption and as a source of additional income. Other existing animal productions are basically for home consumption. With 10 coastal villages, fishery is another key sector in the municipality.

## Data and Collection Methods

Several data collection activities were done to identify and capture evidence of changes resulting from the implementation of CSV in Guinayangan. These changes were at the: individual or farmer level, organizational level, municipal level, and regional and national levels, if any.

**Table 1. Data and Collection Methods**

Method	Data	Participants
<b>Focus Group Discussion</b>	<ul style="list-style-type: none"> <li>• General changes in the community</li> <li>• Specific changes within the community based on perceptions of individual farmers</li> </ul>	Farmers
<b>Key Informant Interview</b>	<ul style="list-style-type: none"> <li>• General changes in the municipality</li> <li>• Specific changes per sector</li> </ul>	Local Government Executives, leaders of community-based organizations, DA-AMIA directors and focal persons
<b>Knowledge, Attitude, Practices (KAP) Survey</b>	<ul style="list-style-type: none"> <li>• Knowledge, Attitude and Practices in relation to the following:               <ul style="list-style-type: none"> <li>○ climate change</li> <li>○ climate-smart agriculture and climate-smart</li> </ul> </li> </ul>	Farmers and development workers

	<ul style="list-style-type: none"> <li>villages <ul style="list-style-type: none"> <li>○ social learning processes</li> </ul> </li> </ul>	
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## Outcome Harvesting Questions

There was a general set of questions that was outlined for the farmers and for the key informant interviewees (see Annex 2). Questions were designed to elicit particular changes. Both the identified positive and negative impacts of change were noted.

The questions in the first part for the farmers are the same with the KIIs except that the word ‘community’ was changed to ‘municipality’. For the second part, the questions were assigned based on the represented sector of the KII.

## Focus Group Discussions

On September 6 to 18, 2021, a series of FGDs were done among the seven clusters, consisting of 10 to 15 participants. These clusters are classified according to the different farming systems located in Guinayangan. Each cluster is represented by one or more barangays (see Table 2).

**Table 2. List of Farmer Clusters as Respondents for FGD**

Cluster	Barangay
<b>1. Upland Agroecosystems</b>	HimbubuloWeste, Magsaysay, San Pedro I
<b>2. Rainfed Rice</b>	Arbismen
<b>3. Irrigated rice</b>	Danlagan Central
<b>4. Coastal agriculture</b>	DancalanCaimawan
<b>5. Root and Tuber Crops</b>	San Luis I, San Luis II
<b>6. Upland corn</b>	Cabong Norte
<b>7. Native pig</b>	Arbismen, CapuluanTulon

A total of 87 farmers participated in the study. Sixty-six percent (57 participants) were women while 34 percent (30 participants) were men, which seemed to indicate farming was dominated by women.

The mean average age was 50 years old. Thirty four percent of the farmers (30 farmers) finished secondary education while 31% (27 farmers) graduated from elementary level.

The FGD covered two changes experienced: generic changes in the community and specific changes. Members of the group were encouraged to discuss among themselves and wrote their consensus on meta cards and posted them on the appropriate column in the matrix on a manila paper, which were based on the harvesting questions. Audio recordings of the FGDs were taken and transcribed. After the FGDs, the KAP survey was administered to the FGD participants.

## **Key Informant Interviews**

A series of interviews were conducted with key informants at the municipal, regional, and national levels. At the municipal level, interviews were conducted with the LGU officials including the mayor (the highest in rank) and heads of the Municipal Planning and Development Office (MPDO) and the Municipal Agriculture Office (MAO).

The leaders of the following community-based organizations were included as key informants: fisherfolk association, 4H Club, and the Rural Improvement Club (RIC). They have been selected as respondents because of their first-hand knowledge on the development of the local agricultural sector. The 4-H club is a youth development program where adult volunteers provide positive, hands-on, fun, and educational opportunities. The goal of 4-H is to develop citizenship, leadership, responsibility, and life skills of youth through experiential learning programs and a positive youth development approach. RIC, on the other hand, is a nationwide non-government organization in the Philippines, which is rural or barangay-based, uplifting the living standard of its members and making them effective and productive partners of the government in community development. They are a voluntary group of women composed of at least 25 members each group with varied interests and capabilities who are mobilized for socioeconomic projects.

At the regional and national levels, KIIs were done among the DA-AMIA Directors (both previous and current) and selected focal persons. DA's AMIA program is the flagship program for climate change in the Philippines. The interviews were all conducted online via Google Meet and Zoom. The interviews were digitally recorded and transcribed afterwards. Key informants from DA included the previous and current director of the DA-AMIA program and selected regional focal persons based in Luzon (Region 1 & Region 4A) and Visayas (Region 6).

## **KAP Survey**

Two sets of KAP survey were administered: one for the 87 farmers and another for the six development workers under the MAO. The development workers were male, with mean age of 38 years old, and had been working for nine years at the Office of the Municipal Agriculture (OMA).

To assess the knowledge of development workers, the following major dimensions were covered: climate change, climate-smart agriculture, and climate-smart villages. The topics were the same for the farmers, except that instead of CSVs, they were asked about social learning processes.

With regards to attitude, both farmers and development workers were given work suggestions in relation to CSA/CSV, and they were to answer whether they strongly agree, agree, neutral, disagree, or strongly disagree.

They were also given a set of practices and they had to choose among the following: they were already doing them before 2014 but stopped; already doing them before 2014 and are continuously doing them; newly practiced (2015 – 2019) but stopped; newly practiced (2015 – 2019) and continuously doing; and never tried at all.

## **Data Analysis**

Given the qualitative nature of the data from FGD and KIIs, content analysis was used. Information having the same or common idea were organized and categorized. Descriptive statistics (mean, frequency, and percentages) were used in analysing the survey data.

## **Findings**

The CSV in Guinayangan, Quezon became a learning platform for CSA technologies and practices that led to outcomes. The outcomes were identified at the farmer-level and also in higher level (Figure 4).

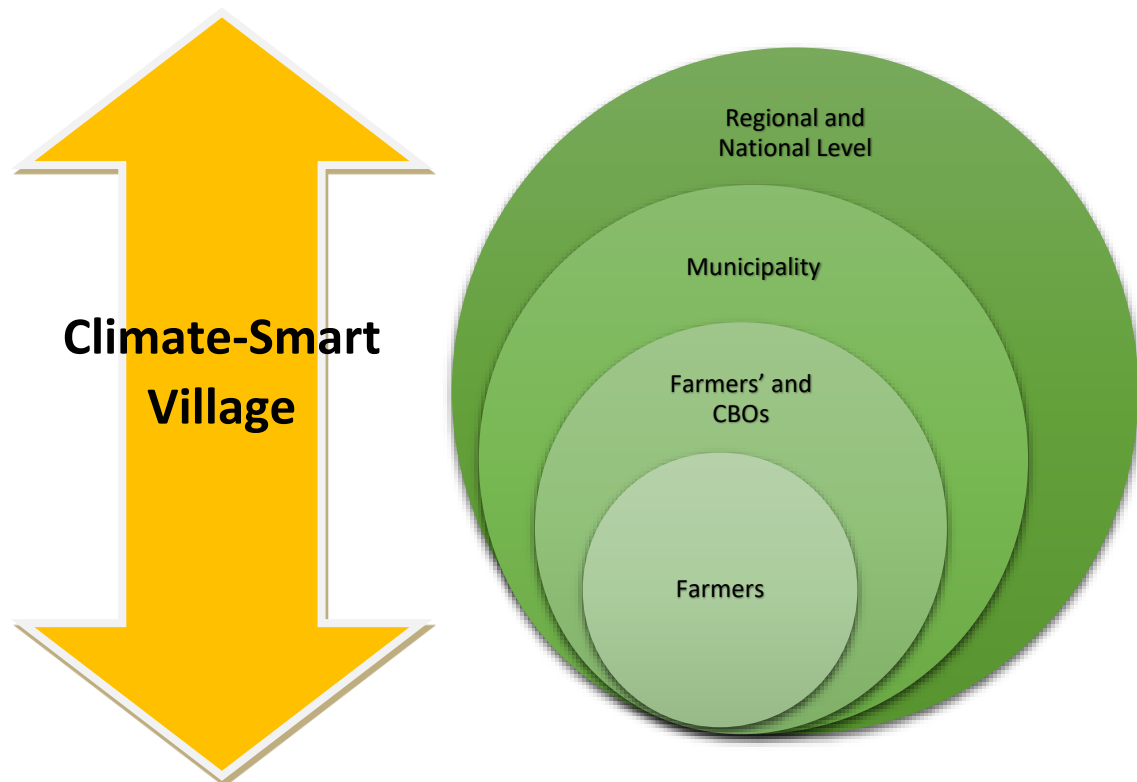


Figure 4. Different sectors with identified outcomes from the implementation of CSV

Outcomes were categorized into four: 1) outcomes associated with farmers; 2) outcomes associated with farmers and community-based organizations; 3) outcomes associated with the municipality; and 4) outcomes associated with the regional and national government agencies. Under each category, outcomes are presented as immediate, intermediate, and ultimate.

### Outcomes associated with individual farmers

Outcomes associated with the farmers were immediate and intermediate (Table 3). There were two ultimate outcomes aimed for and by the farmers, *reduced vulnerability to effects of climate change and improved economic and social wellbeing of household*, that are yet to be realized.

Table 3. Outcomes in relation to individual farmers

Outcomes		
Immediate	Intermediate	Ultimate*
<ul style="list-style-type: none"> <li>Improved awareness of climate change and CSA (e.g., manifestations of</li> </ul>	<ul style="list-style-type: none"> <li>Enhanced capacities to adapt to climate change risks and mitigate its</li> </ul>	<ul style="list-style-type: none"> <li><i>Reduced vulnerability to effects of climate change</i></li> </ul>

<p>climate change such as frequent flooding and drought, proper crop selection, and crop disease control and prevention)</p> <ul style="list-style-type: none"> <li>• Increase in CSA knowledge (e.g. suitable crops in the area, different approaches in crop production and animal husbandry)</li> </ul>	<p>effects/cope with shocks (e.g. recipients of seeds, seedlings, and different livestock, crop diversification, intercropping, and native pig production)</p> <ul style="list-style-type: none"> <li>• Increased resilience towards unexpected hazards - (e.g., African Swine Fever breakout, COVID-19 pandemic)</li> <li>• Increased farm productivity (e.g. yield increase facilitated by green leaf manure technology, diversification, land cultivation, shift to vegetable production)</li> <li>• Increased livelihood opportunities (e.g. native pig raising, black pepper production)</li> <li>• More favorable attitude and behavior towards farming and learning (e.g. open-minded towards new interventions, experimental approach towards farming, more diligent and persistent in farming)</li> <li>• Formation and development of more farmers' learning groups (more confidence and knowledge of climate change)</li> <li>• Adoption of CSA practices such as agriculture diversification (e.g. diversification of crop production - intercropping, multiple cropping, crop rotation, and agroforestry, diversification of farming)</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Improved economic and social wellbeing of household</i></li> </ul>
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	activities), livestock production using native species, saving of seeds for next cropping, use of alternative fertilizers (animal manure and green leaf manure)	
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*\*To be fully realized.*

### **Immediate Outcomes**

The two immediate outcomes identified among farmers pertained to change in their awareness and knowledge of climate change and CSA. Due to IIRR's conduct of trainings and seminars through the farmer learning groups, they are better aware now of what climate change and CSA are and have experienced increase in CSA knowledge regarding crop production and livestock production.

***Improved awareness of climate change and climate-smart agriculture.*** The farmers of Guinayangan, Quezon claimed that are better aware of climate change and CSA than in 2014. The FGD participants demonstrated knowledge of the association between frequent typhoons and prolonged dry season to climate change. The farmers in all barangays where the FGDs were conducted attributed their improved knowledge from the various trainings and seminars conducted by IIRR and the MAO. The municipal mayor, the MPDO, and the MAO shared the same observation of farming more aware about climate change and of the mitigating agricultural practices and technologies. According to Mayor Isaac,

*Before, we just disregard changes in climate. But lately, when typhoons hit, crops were affected and were all wiped out. So our farmers learned to do the ways and practices, which are based in the CSA program.*

- Mayor Cesar Isaac III

Mayor Isaac added that the introduction and adoption of CSA technologies and practices has a big impact on the farmers' learnings of what crops and specific varieties to plant in a particular season. The participatory action research approach implemented by IIRR enabled the farmers to experiment on approaches, which they cannot afford to do on their own given limited financial resources. One significant learning by the farmers is how to prevent and control crop diseases and the planting of suitable crops.



The head of the MPDO mentioned that the farmers were enlightened and became more in control of their livelihood. The farmers realized recently that they can cope with climate change with CSA T and Ps . This was also mentioned by the head of the Municipal Agriculture Office.

***Increase in CSA knowledge.*** According to the farmers interviewed, their knowledge of CSA greatly increased and was enhanced since the start of IIRR’s project implementation in partnership with the MAO. Two farmers from Barangay San Pedro 1 said,

*“My life significantly changed since they (IIRR) came. We (with fellow farmers) have learned a lot because they conducted numerous trainings and shared knowledge regarding composting and use of organic fertilizers. The agriculture office staff also assisted in this endeavor.” (Farmer 1)*

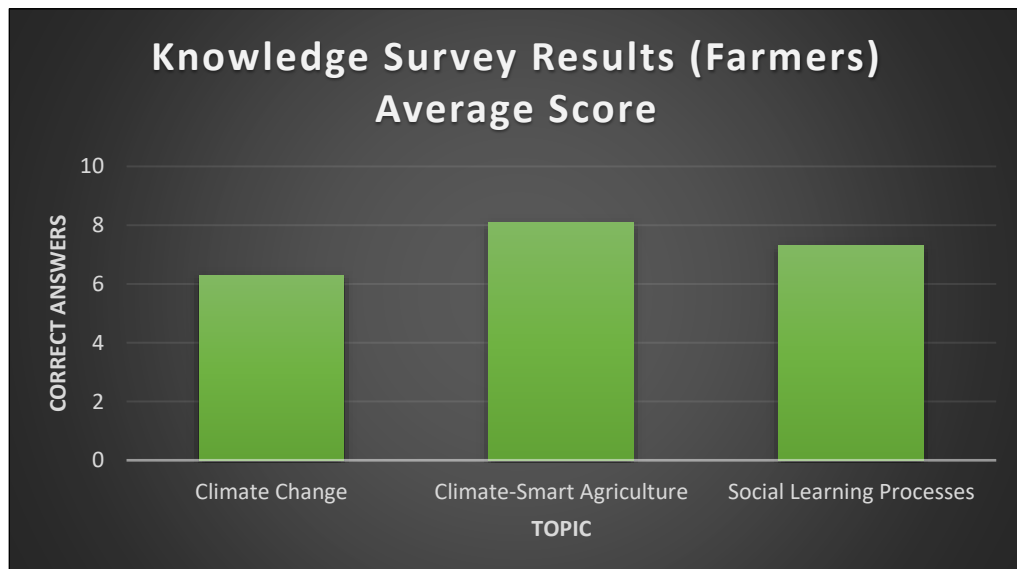
*“One of the most memorable events is participating in the seminars. We learned different approaches of appropriate crop and animal production. We considerably benefitted from the assistance that IIRR brought us. We are very thankful for their help.” (Farmer 2)*

The trainings and seminars that they have mentioned were facilitated through the Farmers’ Learning Groups (FLGs) that were also established by IIRR and co-supervised with the MAO. A FLG is composed of 10-12 persons, with a learning agenda. Farmers meet regularly (once a month) to share experiences among each other. Through these FLGs, interventions were shared and learned by the farmers and development workers. A total of 23 FLGs were formed during project implementation.

Farmers were able to discover suitable crops in their areas through the conduct of Participatory Varietal Selection (PVS) trials as part of the FLG experience, which were set in some barangays to determine the appropriate rice and cassava varieties to be planted. The PVS was farmer-led but was co-supervised by IIRR facilitators and staff of the OMA. In Danlagan Central, a rice varietal trial was done featuring upland, lowland, and saline varieties. In the process, they have discovered saline varieties that were high-yielding and one of the specific varieties is NSIC Rc 238. In San Luis, they had the cassava trial and discovered that the *Lakan 2* variety was suitable for growing and the taste was palatable.

Farmers also specified that knowledge gain can also be attributed to the holding of Farmers' Field Day, a culminating event conducted by the learning groups where farmers experience a field tour, assessment (i.e. sensory evaluation, visual observation and varietal comparison), sharing of experiences, reflection, and provision of kits.

The knowledge section of the KAP survey consisted of 30 questions covering three topics, namely: climate change, climate-smart agriculture, and social learning processes. There were 10 questions for each topic and the passing score is 5. The farmers will choose whether the given statements are right or wrong. Figure 5 shows that farmers got at least 60% correct answers for all the topics. Specifically, they got 80% and 70% correct answers for the topics on CSA and social learning processes, respectively. Meanwhile, 60% correct answers were achieved in climate change. These results can be interpreted as farmers having adequate knowledge for each topic.



**Figure 5. Average Score of Farmers based on the Knowledge Survey**

Based on the ranking of the scores, CSA got the most correct answers, which means it was the topic that the farmers are more familiar and have identified the most with. The two other topics closely follow suit, with only one point difference from one another.

### Crop Production

Farmers noted that they gained additional knowledge in terms of vegetable production. Some farmers particularly mentioned planting eggplants, sitao, and black pepper, which they have not been doing before. Planting of fruit trees such as cashew, calamansi, and soursop were also promoted by IIRR and

followed by the farmers. Nutrient management practices such as green leaf manuring, particularly the use of *madre de cacao* (*Gliricidia* spp) leaves, and composting were highly mentioned by the farmers as a new practice that they have learned. Recommended practices such as synchronous planting of corn and transplanted method of rice were also mentioned. All of these sets of practices were introduced and taught by IIRR. Other topics that were shared the following: systems for rice intensification (SRI), agricultural diversification, and re-introduction of indigenous crops such as talinum, Chinese malunggay, *lagikway*, *alugbati*, *saluyot*, and *kulitis*.

### Livestock Production

In terms of livestock production, the knowledge of farmers increased by IIRR's introduction of growing native species. Before 2014, farmers were more accustomed to growing commercial and imported breeds of pigs, chicken, and goats. Farmers from San Pedro I specifically shared that they have discovered that they can grow goats while being contained. Goat rearing is a traditional practice of farmers especially in the upland areas, where there are more diverse sources of forage. The usual practice is free ranging. As the density of people in the rural areas increases, however, goat raising started to lessen as it became a source of conflict among neighbors when goats eat in the neighbors' gardens. Now they have learned to rear goats in containment, as shared by IIRR. Alternative sources of organic feeds were introduced also by IIRR such as cassava and *madre de cacao*.

### **Intermediate Outcomes**

There were several intermediate outcomes identified, which referred to changes in the practices, performance, behavior, and attitude. These included farmers' adoption of CSA practices, enhanced capacities to adapt to climate change, increased resilience and productivity, and more livelihood opportunities.

#### ***Enhanced capacities to adapt to climate change risks and mitigate its effects/cope with shocks.***

Based on the farmers' experiences, their capacities and capabilities were developed to adapt to the different events of climate change, and they were able to mitigate the corresponding effects. Rice farmers who were affected by drought and consequently experienced not only decrease in production but also were unable to plant rice were able to cope since they were taught to diversify by planting vegetables and rearing native pigs. Farmers who are into coconut production resorted to intercropping of banana or corn in between spaces where the coconuts are planted. Aside from those spaces, they planted wherever there are vacant lots. Other farmers also shifted from monocropping to multiple cropping, such as planting fruit trees like mango, lanzones, cacao, rambutan, banana, and

calamansi. In some areas where the river dried up, those whose livelihood relied on catching seafood such as shrimps, crabs, shells, *talangka*, *urong-urong*, and *sisi*, also shifted to vegetable production. These experiences are examples of agricultural diversification, one of the strategies shared by IIRR in reducing climate risks. There are two types of diversification: 1) diversification of crop production; and 2) diversification of farming activities. Intercropping, multiple cropping, crop rotation, and agroforestry are examples of the former. These practices have agronomic and ecological benefits, including reduced pest and weed pressure, improved soil health, reduced soil erosion, and increased crop production. Diversification provides stability and increases resilience to shocks. Farmers were also able to practice diversification through IIRR's provision and distribution of seeds, seedlings, and different livestock. Farmers were able to test for themselves the CSA options because they were initially given the means or the needed inputs and materials.

Since IIRR's intervention from 2014 to 2019, farmers became more inclined to growing native species, with emphasis on native pigs, as it became more popular because of the demand for 'lechon', or roasted pig, a common dish served during special occasions.

*Previously, we don't care much about native pigs. But since the time IIRR taught us about growing native pigs, we considered it. When we saw the benefits, we continued doing so until now.*

- Farmer from San Pedro I

Aside from the demand, native pigs are genetically more adaptable to a harsher environment and are more resilient to climate variations compared to the more preferred commercial or imported breeds. Although native pigs require low-cost input, they are of high value.

***Increased resilience towards unexpected hazards.*** Farmers have built and increased resilience over the years towards unexpected hazards. One case is the breakout of African Swine Fever (ASF) in 2019. As declared by the farmers and also attested by the mayor, those who were growing native pigs were not affected because the native pigs did not get infected by ASF. Meanwhile, those who were growing the typical white breed pigs were the ones greatly affected because their pigs got infected, which translated to income loss.

Another unexpected hazard that turned into disaster is the occurrence of the COVID-19 pandemic. Due to the lockdowns and travel restrictions that were imposed, the farmers were among those who are most vulnerable and greatly affected by this event. Many have lost their livelihoods and also

experienced poverty and hunger as a result. Some farmers were able to cope due to their experience and application of growing native pigs and planting crops such as vegetables, banana, sitao, cassava, camote, and other crops as well. In a separate study on the impacts of COVID-19 to the local food systems, a study in Himbubulo Weste revealed that the livestock farmers are practicing low commercial input feed system by making use of cultivated root crops, tubers, and bananas. These crops are not just for household consumption but also an animal feed. During the disruption of COVID-19 lockdowns, the availability of local feeds has prevented problems related to disruption in input supply, expenditure from commercial and expensive feeds, and transport cost to buy them (Espino et al, 2020).

***Increased farm productivity.*** As mentioned in the FGDs, increased yield was observed by the farmers as a result of applying the knowledge they have gained about CSA. Some factors cited by the farmers that were helpful and allowed them to increase their yield were the following: use of green leaf manure technology, having additional crops such as corn, and land cultivation in coconut production – all of which were introduced by IIRR in trainings and seminars. Consequently, the increase in yield translated to higher income. Some of the farmers were taught not only to produce for their own consumption but to have additional produce that they can sell to add to their income. Farmers observed that they were able to manage livestock production more effectively, specifically with the native pigs. Not only were they able to produce for their own consumption and for selling purposes but they were also able to give piglets to other members of the association they belong to or to neighbors and friends. This livestock pass on was facilitated by IIRR as a sustainability mechanism to distribute benefits to more farmers over time.

***Increased livelihood opportunities.*** Due to the introduction of diversifying produced crops and integrating livestock production in farming, farmers have increased their livelihood opportunities. Among women, the most mentioned practices were growing native pigs and planting black pepper.

Members of the community who were previously dependent only on fishing have also added growing native pigs as one of their sources of livelihood. The MPDO chief stated that farmers were surely being geared towards the right direction in their livelihoods – by doing agricultural practices that are inclined to being climate-smart.

***Changed attitude and behavior towards farming and learning.*** Changes in the farmers' attitudes and behavior towards their farming practices and ways of learnings were observed. They acknowledged

that they have become more open-minded towards new interventions because of added knowledge, and they were more open to opinions and suggestions as compared to the previous years. One farmer from Himbubulo Weste said, *“What pushed us to open our minds to new ways of doing things were the seminars, trainings, and studies that we have experienced and also the meaningful interactions that we had with other farmers.”*

They have also become experimental in their approach towards farming. One example was the leader of KASAKA (*Kasaganahan sa Kabukiran*) in Brgy. Danlagan Central. After experiencing the use of green leaf manure as fertilizer, he also tested a combination of madre de cacao leaves and small amounts of synthetic fertilizer.

Farmers from Dancalan Caimawan said that while they have been planting before, they declared they have become more diligent, persistent, and persevering since IIRR have shared seeds of planting crops such as pigeon pea, sitao, cashew, yam, and calamansi. The farmers were able to pay it forward by sharing the seeds from the harvest to their fellow farmers.

**Table 4. Attitude Survey Results Among Farmers**

Statement	Percentage of Farmers		
	Agree	Strongly Agree	Total
1. I have learned the importance of saving or allotting a certain amount of seeds for the next cropping season.	40%	85%	94%
2. The expenses in production lessened because of I used animal manure and green leaf manure as fertilizers.	30%	62%	92%
3. There were local executive plans regarding agriculture were created for the farmers.	44%	47%	91%
4. The conduct of roving workshops and farmers’ field days has given me the opportunity to know other farmers from different areas.	40%	48%	89%
5. There were linkages and networks made and established with experts and fellow farmers.	36%	53%	89%
6. I learned many ways on how to respond to climate change accordingly.	37%	47%	84%
7. I have learned to consider the different needs and responsibilities of both men and women.	47%	37%	84%
8. I gained knowledge because of the CSA trainings that I attended.	38%	45%	83%
9. There were financial assistance given to support farmers in addressing climate change.	38%	45%	83%

The KAP survey revealed the attitude of how farmers agree or disagree with statements that are related to CSA. Table 4 shows some of these statements. Among the 14 statements, the most number of farmers who agreed and strongly agreed with is that they have learned the importance of saving or allotting a certain amount of seeds for the next cropping season. Ninety-four percent (94%) of farmers agreed to this statement. Ninety-two percent (92%) or 80 farmers agreed that their production expenses decreased with the use of animal manure and green leaf manure as fertilizers. In addition, almost the same number of the farmers (79 farmers) also agreed that there were local government plans regarding agriculture that were formed and created for the farmers. Meanwhile, a total of 77 farmers (89%) have the same opinion that they had the opportunity of knowing other farmers and key people in other areas because of the roving workshops and farmers' field days conducted. There were established connections among farmers and also with experts. Forty-five of these 77 farmers strongly agreed to this. Eighty-four percent (84%) of the farmers or 73 of them believed that they have gained a lot of knowledge in terms of ways on how to address or respond to climate change and that there should be consideration for the needs and responsibilities of both men and women. There was knowledge gained among 72 farmers because of the CSA trainings that they have attended. They also agreed that financial assistance was given as a form of support to farmers in enhancing their capacity to address climate change.

***Adoption of CSA practices.*** Farmers were asked in the KAP survey regarding their agricultural practices. Based on the results, the most mentioned practice they have adopted is crop diversification and livestock production using native species. Fifty-nine percent (59%) of farmers responded that they have been doing them since it was introduced by IIRR since 2014. Other farm practices they were doing since 2014 up to now are: taking a portion of seeds from harvest so that they have stock for the next cropping season and the use of animal manure and green leaf manure as fertilizers to their crops.

### **Ultimate Outcomes**

An ultimate outcome is the highest-level change to which an organization, policy, program, or project contributes through the achievement of one or more intermediate outcomes. It takes the form of a sustainable change of state among beneficiaries. Ultimate outcomes take time to manifest and are not realized until after the end of the project. But we can see certain indications such as gradual positive changes in the lives of the farmers and their environment during the life of the project that points to the direction of achieving the outcomes. The following identified ultimate outcomes are yet to be fully realized once the project ends.

***Reduced vulnerability to effects of climate change.*** Efforts have been done in lowering the vulnerability level of farmers to the effects of climate change. In coastal areas, the planting of mangroves was initiated by IIRR by employing community members residing near these areas. Likewise, alternative livelihoods, which were also introduced by IIRR such as crop and animal production were offered to them so that they will not completely rely on fishing as their only source of income. In the event of typhoons, even though they would experience a decrease in fish and other seafood caught, they will still have other sources of income. Also, the force of the typhoons will be lessened because of the presence of mangroves, which act as coastal bioshields. They also serve as habitat of fish so that the number of fish in the sea will be replenished.

***Improved wellbeing of household.*** Families of farmers have experienced an improvement in their social and economic wellbeing because of the benefits derived from adopting CSA technologies and practices. There were mentions of increased income due to increased farm productivity. Native pig production was the most declared practice that brought high income because of the high demand for it, since they also discovered that meat of native pig is ideal for “lechon”, or roasted pig, which is commonly served during special occasions.

The president of the fisherfolk association revealed that they were able to buy essential, everyday needs since they adopted CSA. Meanwhile, other farmers said that the education of their children can continue without needing to take out loans because there is a steady income derived in growing livestock and planting different crops. On the other hand, one farmer champion in Arbismen, Mrs. Gloria Macaraig, shared that she was able to wed off her son. The MPDO chief also observed that farmers were starting to have better and more suitable houses and some of them can already afford to buy motorcycles.

## **Outcomes associated with farmers’ and community-based organizations**

Outcomes were observed through the different organizations that were either existing already for a long time or were newly created. Immediate and intermediate outcomes were identified among them (Table 5).



**Table 5. Outcomes in relation to farmers’ and community-based organizations**

Outcomes	
Immediate	Intermediate
<ul style="list-style-type: none"> <li>Increased capacity of members (e.g. CSA practices that included agricultural diversification, organic fertilizer management, native pig production, and capacity to share knowledge gained to other farmers) through knowledge sharing events.</li> </ul>	<ul style="list-style-type: none"> <li>Improved access to resources (finance, labor, farm inputs such as seeds, fertilizers, machineries such as transplanter, combine harvester, hand tractor, dryer), and support to enhancing capacities for adaptation and mitigation.</li> </ul>

**Immediate Outcome**

An immediate outcome identified was the change in capacities of the members through knowledge sharing events. These added capacities are related to the CSA technologies and practices, which were learned with the guidance of IIRR in partnership with the Guinayangan LGU.

***Increased capacity of members through knowledge sharing events.*** According to the mayor, the members of organizations were capacitated to practice CSA and to diversify by shifting from monocropping to intercropping. He justified that when typhoons hit, there will be some crops left and farmers will be able to recover their capital.

The leaders of KASAKA, a farmers’ organization, and the fisherfolk association both said that they appreciated attending seminars, which featured the recommended fertilizer management using madre de cacao. Since then, they have been practicing it and have observed good results.

The president of the 4-H Club for Youth Agri Entrepreneur was mentored by IIRR under the NUTRESPONSE project by being a volunteer. He became more familiar with native vegetables, which he did not know before. He was able to share with other 4-H Club members his knowledge and the importance of eating vegetables. He also learned and practiced native pig production, which is one of the reasons why he was chosen as one of the Outstanding Young Farmers in Quezon Province at 24 years old. He was also awarded the Gawad Saka Award last 2020.

Because of the roving workshops, farmers testified that they were able to go to other places and meet other farmers, which led to gaining more knowledge by learning from their fellow farmers and sharing their own knowledge.

The farmer champion in Brgy. Arbismen narrated that she was able to join different trainings inside and outside the country not only to learn but to also share her experiences in adopting CSA technologies and practices.

Across all FGDs and KIIs, what was always mentioned was the conduct of different knowledge sharing events that was spearheaded by IIRR in partnership with Guinayangan's LGU. The trainings, seminars, roving workshops, mentorship, and social learning exchanges were facilitated since the establishment of CSVs and the promotion of CSA, which started in 2014.

### **Intermediate Outcome**

An intermediate outcome identified was that members of newly formed and strengthened existing organizations were able to have better access to different resources in augmenting capacities for climate change adaptation and mitigation.

***Improved access to resources (finance, labor, seeds, etc.) and support to enhancing capacities for adaptation and mitigation.*** With the formation of new farmers' organizations and strengthening of already existing ones, the farmers were able to have greater access to different resources, most notably those that were being distributed by the local and provincial DA office. The newly formed organizations can be attributed to the creation of farmers' learning groups (FLGs) established by IIRR. Most of the FLGs decided to register their group as a legitimate farmers' organization. Some of those organizations are as follows: Association of Native Pig Growers, Samahan ng Magsasaka ng San Pedro, G-Café Association (San Pedro I), KASAKA (Kasaganahan sa Kabukiran) (Danlagan Central), Healthy Farming Association (San Luis I and II) and CASACA (Cabong Norte, San Isidro Corn Association). The priority list of resource recipients from the local and provincial government units includes members of organizations. Specific resources are farm inputs such as seeds and fertilizers, and machineries such as transplanter, combine harvester, hand tractor, and dryer.

Improved access to resources and services of farmers is also evident due to the presence of CSA-related infrastructure investments by the local government. These infrastructures were inspired by the community support facilities initiated and established through IIRR that were meant to significantly increase the availability of climate resilient practices on the ground.

In addition, since Guinayangan was also selected as one of the municipalities to be supported by the DA-AMIA project under RFO – 4A, farmers also benefit and have access to the program's services.

Guinayangan was selected because IIRR proposed to DA that the municipality be granted funds from AMIA. Dr. Julian Gonsalves, who is the former director and now Senior Global Adviser of IIRR invited Director Alice Ilaga, the Director-Coordinator for DA Climate Resilient Agriculture Office, to visit and observe the CSV in Guinayangan. Director Ilaga was elated and satisfied with the observations; according to the MAO, this led to the granting of 3 million pesos worth of budget for the enhancement of the AMIA project in the area. The focus of the DA-AMIA project in Guinayangan are native pig production and agroforestry.

## Outcomes Associated with the Municipality

In the municipal level, outcomes that are immediate, intermediate, and ultimate were identified (Table 6).

**Table 6. Outcomes in relation to the municipality of Guinayangan, Quezon**

Outcomes		
Immediate	Intermediate	Ultimate
<ul style="list-style-type: none"> <li>Enhanced capacities in scaling (e.g. additional knowledge of development workers and capacity to scale out)</li> </ul>	<ul style="list-style-type: none"> <li>Improved policy and institutional support to agri-fishery communities (e.g. construction of farm-to-market roads and bridges, coffee processing center, water impounding facility to support rain harvesting, and CSA-related infrastructures such as CSA demonstration farm and ecopark, animal breeding center, and crop museum)</li> <li>Creation of crop mapping specific to Guinayangan</li> <li>Changed attitude and behavior of development workers towards implementation of agriculture programs</li> <li>Government authorities, farmers networks, and CBO partners are learning CSA</li> </ul>	<ul style="list-style-type: none"> <li>Improved governance geared towards promoting and sustaining CSA</li> </ul>

	and are influenced to incorporate CSA initiatives into their respective extension services for smallholder farmers	
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**Immediate Outcome**

The enhancement of the development workers’ capacities in scaling out was identified as an immediate outcome. This is evidenced in the additional knowledge gained and the farmers that were reached by the project in the municipality.

**Enhanced capacities in scaling.** The capacities of development workers involved in the project’s implementation of the project were enhanced through sharing their knowledge and capabilities related to climate change, CSA, and CSV. The enhanced capacities in scaling can be evidenced through the farmers they have reached. The mayor estimated that 70-80% of Guinayangan farmers were already aware of CSA and 50% of them are already practicing CSA.

The development workers’ capacities were also strengthened by their increased knowledge of the three topics, as evidenced in the KAP survey results. The KAP survey revealed that their correct answers had an average of 6 out of 10 items for climate change and 9 out of 14 for both CSA and CSV. This shows that the development workers have adequate knowledge in all the topics covered.

The development workers or the agricultural technicians, with the leadership and guidance of the MAO, are moving towards scaling out the established CSVs to reach more farmers in other areas of the municipality not covered by the project. Not only do they continuously monitor the farmers and farmers’ groups involved if they are still adopting CSA, they are also in the business of looking for other community-based and farmers’ organizations that will be willing to learn to hit the target of saturating the whole municipality with farmers who practice CSA.

The municipality was also able to scale out in showcasing Guinayangan as a CSV by accommodating 402 documented visitors, which were composed of individuals and groups from other municipal government units, provincial and regional organizations, state universities and colleges, and international organizations. The enhanced capacities in scaling can be attributed to the close partnership that existed between IIRR and the LGU through the MAO in the CSA establishment and implementation.

### **Intermediate Outcomes**

Several intermediate outcomes were identified related to change in attitude, behavior, and performance of municipal government officials and development workers. Change in policy and institutional support to agri-fishery communities was also observed.

***Improved policy and institutional support to agri-fishery communities.*** One of the evident intermediate outcomes is the improved policy and institutional support in the development of the agri-fisheries communities. This translates to the extension services and investment priorities leaning towards complementing the efforts of CSA implementation. From the farmers' perspective, they have noticed several changes in terms of infrastructure development in the municipality. They have observed the construction of farm-to-market roads and bridges. Other buildings were also constructed and improved such as the barangay hall and school buildings. In addition, there is the development of CSA-related infrastructures: (1) CSA Demonstration Farm and Eco Park (which also houses the fruit tree nursery, tilapia breeding pond, production area for native pigs, goats, and forages); (2) Animal Breeding Center; and (3) Crop Museum (where the seedbank will eventually be located). Furthermore, there are other supporting mandates by the LGU.

Two vehicles were recently procured for the purpose of transporting the agricultural products of farmers to a consolidation area where they can market their produce. These vehicles are being managed by OMA. The establishment of the consolidation area is also an effort to support the farmers. Originally, the area was meant to be a banana packaging center; but since there will be times when banana is not available, it was decided that it will be used to consolidate the produce of backyard farmers, who harvest 10-20 kilos of crops. The LGU will assist in linking their produce to the market. Even though the price is not much compared to the offer of middlemen, this kind of arrangement has a good impact on the farmers because of the increased price value of products realized.

Having identified numerous areas that have potential for cacao and coffee production through the influence of IIRR, there is now an ongoing construction of a coffee processing center. The G-Café association, with a total of 35 members, will manage the center. They are now looking for land so that coffee production will expand to increase coffee supply. In addition, a water impounding facility is in place to support rain harvesting, which was also promoted as a CSA practice to mitigate the effects of drought.

At this time, the municipality is geared towards mechanization. With the LGU's ownership of harvesters, transplanters, and farm tractors, it is estimated that the municipality is already 60% mechanized.

***Changed attitude and practices of development workers towards the implementation of agriculture programs.***

Attitude

Based on the KAP survey results, in terms of attitude, majority of the development workers strongly agree with the following:

- The climate information service (CIS) should be done regularly to all farmers every 10 days.
- The participation of the community should be ensured when formulating local climate change adaptation plans.
- Farmers should be allowed to form and manage their own community support infrastructure such as crop nursery, livestock propagation, and breeding center.
- Representatives from the community should always be present at all the stages of creating municipal agricultural programs.
- Programs initiated by NGOs should be continued by the development workers even beyond the time the NGO has already phased out from the program.

To add, they also agreed on the following: 1) Seed distribution is beneficial in building the resilience of the farmers towards climate change; 2) A portion of LGU funds should be allotted to building community support facilities in each barangay; 3) There should be an agricultural plan formulated specifically for women, taking into consideration their needs and responsibilities; 4) A process should be created to influence the private sector to invest in farmers; and 5) Making native pig production as one of the primary sources of livelihood in the community.

Varied responses (strongly agree, agree, disagree, or neutral) were garnered from them with regards to the following concerns: 1) They should only listen to experts because only they have the capacity to solve problems in the community that are related to agriculture; 2) Allotment of funds for building of infrastructures such as roads and bridges should be given priority because all of the community members can benefit from them; and 3) Acquiring crop insurance is one way of mitigating the effects of climate change.

## Practices

Majority of the development workers responded that the identified practices they have started doing from 2015 to 2019 and continue to do so until now are:

- Promotion of CIS
- Cash grant distribution as community innovation fund (CIF)
- Building of community support facilities as CIF
- Direct distribution of seeds and other materials as CIF
- Formation and strengthening of FLGs and farmer associations
- Providing platform to farmers where they can experiment such as participatory action research (PAR)/community participatory action research (CPAR)
- Conduct of farmers' field day/harvest festival in support to farmers in sharing their knowledge gained through PAR/CPAR

These observed changes in attitudes and practices of development workers towards implementation of agriculture programs can be credited to the fact they were highly involved in the implementation of the project, in close coordination with IIRR.

***Government authorities, farmers networks, and CBO partners are learning CSA and are influenced to incorporate CSA initiatives into their respective extension services for smallholder farmers.*** The LGU of Guinayangan, through DA, is currently implementing several programs that assist in the improvement of the welfare of farmers in terms of agricultural practices. One of them is the conduct of Farmers' Field School (FFS), which showcases the recommended practices and technologies that are suitable to crops and livestock production. Farmers observed that the development workers were incorporating CSA in the FFS delivery to heighten awareness of CSA among farmers.

The mayor is currently pursuing the finalization and completion of crop mapping specific to Guinayangan. This is still in its development phase. The crop mapping was inspired by the CSA implementation, wherein the right crop to be planted on a specific season is identified, depending on the area chosen.

According to the MAO, IIRR also assisted in developing and maintaining the water reserve in the Maulawin Spring Protected Landscape (MPSL), one of the proclaimed protected areas in the Philippines. IIRR organized the Payment for Ecosystem Services (PES) through the assistance of Ms.

Magnolia Rosimo. An ordinance was created that mandated to collect a certain amount as environmental fee from those who are utilizing water that is being sourced from MPSL. The PES is facilitated by an organized council, which is overseen by the Water District as manager, and other stakeholders as well such as the MAO, Municipal Environment and Natural Resources Office (MENRO), Disaster Risk Reduction and Management Office (DRRMO), and the Municipal Health Office. The first batch of payment collected was spent in buying additional land to expand MPSL so that they can plant more trees that will help preserve the ecosystem.

The promotion of CSA initiatives in the municipality was also strengthened through enhancement of AMIA with the continuous distribution of native pigs and chickens, development of agroforestry, and encouraging the shift of focus from single commodity production to high value crops – fruit trees, vegetables, and root crops.

#### **Ultimate Outcome**

An ultimate outcome identified was the change in governance as it incorporates the promotion and sustainability of CSA in the municipality. The LGU is focusing its efforts in the development of community support facilities such as the crop museum and local programs.

***Improved governance geared towards promoting and sustaining CSA.*** According to the MPDO chief, he observed that the current administration is in the right direction of governance because it is planning in accordance with the needs of Guinayangan – an agricultural municipality and composed, in majority, of farmers. The leader of the 4-H Club, who is also currently working under the MAO, stated that the mayor considered the needs of those who are vulnerable and poor and was able to focus on development programs, especially the promotion and sustainability of CSA. Since the integration of CSA in local programs, the LGU is now considering it to become a part of the promotion of tourism in their town as a potential source of additional livelihood for the community.

The LGU is now focusing its efforts in establishing the crop museum and seed bank, which will be established in Barangay Arbismen. They see their big potential to be a learning platform not only to Guinayangan locals but also to the visitors of the crop museum. It will also be a sustaining mechanism in promoting and further scaling CSA and to continually live up to the branding of being a climate-smart municipality, as influenced by the project implementation of IIRR.



## Outcomes Associated with the Regional and National Level

Since 2015, the Department of Agriculture mainstreams climate-resilient agriculture (CRA) across all its programs, functions, and agencies through the national and system-wide AMIA program. As part of the AMIA program, DA created “AMIA villages” in 21 sites across 17 regions, following the example of CCAFS’ CSVs, specifically that of IIRR’s implementation in Guinayangan, Quezon. According to Director Alice Ilaga, the following were adopted from IIRR’s implementation: 1) Conduct of Participatory Climate Risk and Vulnerability Assessment (PCRVA) as tool to identifying hazards; 2) Organizing of people on the ground; and 3) Grouping them into learning groups.

The LGUs are the main implementing units for agricultural policies, while DA-RFOs are responsible for the overall coordination and management, e.g. the AMIA villages, and the liaison between LGUs and the national government.

Immediate and intermediate outcomes were identified in relation to the implementation of the AMIA program, as influenced by the example of CSVs (Table 7).

**Table 7. Outcomes in relation to the regional and national level**

Outcomes	
Immediate	Intermediate
<ul style="list-style-type: none"> <li>• Knowledge products and project-derived experience used to influence the design and implementation of the DA-AMIA program</li> <li>• Capacity building of DA-AMIA Regional Focal Teams and Persons</li> </ul>	Mainstreaming climate change adaptation in DA’s programs, plans, and operations

### Immediate Outcomes

Immediate outcomes include the creation of knowledge products and use of project-derived experience to influence the design and implementation of the DA-AMIA program. In addition, the DA-AMIA Regional Focal Persons were capacitated in terms of program implementation.

***Knowledge products and project-derived experience used to influence the design and implementation of the DA-AMIA program.*** Information, Education, and Communication (IEC) materials were developed in partnership with IIRR and funds from the Food and Agriculture Organization (FAO), according to the former director of the Department of Agriculture – Systems-Wide Climate Change Office (DA-SWACCO). These materials were used to influence the design and

implementation of the DA-AMIA program. IIRR packaged the materials and these materials assisted in facilitating the mainstreaming of CRA across DA's banner programs.

Through the strengthened partnership and networking of DA and IIRR, the expertise, knowledge, and experiences of resource persons, specifically Dr. Julian Gonsalves, Ms. Emily Monville-Oro, and Ms. Magnolia Rosimo, were tapped upon the invitation of AMIA focal persons in the conduct of their trainings. This was specified by the AMIA regional focal person for Region 1 from 2017 to 2020. The current AMIA focal person for Region 4-A also confirmed this by citing that they were tapped as resource persons for the conduct of PCRVA.

***Capacity building of DA-AMIA Regional Focal Teams and Persons.*** In preparation for the full-scale operational implementation of the AMIA program, a total of 17 regional teams were capacitated. According to the focal person of Region 4-A, the national directorate tapped IIRR for capacity building of AMIA program implementors in the regional field offices. One of the approaches used was the conduct of roving workshops, which is an IIRR initiative. Another focal person attested that the roving workshop approach was a very good way of facilitating learnings among agricultural extension workers because they can see in actual what was being shared and they are able to hear directly the testimonies of farmers. These learning experiences greatly helped in implementing the AMIA program on the ground. The roving workshop was also experienced by farmers who were involved in the established AMIA villages as cited by the AMIA regional focal person for Region 6. The farmers' roving workshops were overseen by the focal persons. The focal persons were also capacitated in developing strategies on how to collect data in the field. Their knowledge was broadened with the actual events and experiences of farmers on the ground. The conduct of PCRVA, an assessment tool of IIRR, also helped in the targeting of AMIA sites.

### **Intermediate Outcome**

An intermediate outcome identified was the mainstreaming of climate change adaptation across DA programs, especially in its implementation on the ground.

***Mainstreaming climate change adaptation in DA's programs, plans, and operations.*** The experiences in CSA testing and the social learning approaches used in developing Guinayangan CSV were used in developing AMIA villages and in the mainstreaming of climate change adaptation across DA's programs. Director Alice Ilaga confirmed that IIRR became the link in spreading advocacy of CCAFS to DA with regards to climate adaptation. CCAFS' program became an input in mainstreaming especially on the ground action. Initially, Director Ilaga claimed that they found it difficult to wrap their heads around the idea of how to do mainstreaming. But through the help of IIRR, especially the

exposure and learning from the CSV models in the municipalities of Guinayangan and Ivisan (a CSV in Capiz Province also established by IIRR), they were able to have an idea on how to build resiliency on the ground.

All the AMIA regional focal persons that were interviewed stated that the AMIA villages established in their own regions were patterned after the CSVs of Guinayangan and Ivisan, but were duly modified according to the context of their areas. The different regions are now currently scaling out to different provinces.

## Conclusion

The CSV in Guinayangan, Quezon became the epicenter of ripples of change in terms of building climate change resiliency and enhancing the welfare of the farmers, the community, and the country. The CSA interventions, which included technologies, practices, and processes, have made great impact based on the collected evidence of change.

Significant changes in knowledge, attitude, behavior, practices, and approaches that are related to climate change were observed. With these changes, outcomes were identified among different sectors as influenced by the CSV implementation of IIRR, which included individual farmers, community and farmer organizations, municipality, and national level.

The CSV has successfully contributed to a number of immediate and intermediate outcomes and a few ultimate outcomes. The identified outcomes can be fully realized and sustained if the farmers will continue to practice CSA, development workers and local executives will complement and continue what IIRR has started, and mainstreaming of the DA-AMIA project will be sustainable.

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## **Annexes**

Annex 1. Supplementary Table of Outcomes

Annex 2. Invitation Letter for Mayor

Annex 3. Harvesting Questions

Annex 4. KAP Survey for Farmers

Annex 5. KAP Survey for Development Workers

Annex 6. Pictures

## Annex 1. Supplementary Table of Outcomes

**Supplementary Table 1: Summary of Outcomes Identified in the Guinayangan Climate-Smart Villages, 2021**

LEVEL OF OUTCOMES	Individual Farmers	Farmers' and Community-Based Organizations	Municipal Government	Regional and National Level
<b>Immediate</b>	<ul style="list-style-type: none"> <li>▪ Improved awareness of climate change and climate-smart agriculture</li> <li>▪ Increase in CSA knowledge</li> </ul>	<ul style="list-style-type: none"> <li>▪ Increased capacity of members on CSA through knowledge sharing events</li> </ul>	<ul style="list-style-type: none"> <li>▪ Enhanced capacities in scaling (e.g., additional knowledge of development workers and capacity to scale out)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Knowledge products and project-derived experience influencing the design and implementation of the DA-AMIA program</li> <li>▪ Capacity building of DA-AMIA Regional Focal Teams and Persons</li> </ul>
<b>Intermediate</b>	<ul style="list-style-type: none"> <li>▪ Enhanced capacities to adapt to climate change risks and mitigate its effects/cope with shocks</li> <li>▪ Increased resilience towards unexpected hazards</li> <li>▪ Increased farm productivity</li> <li>▪ Increased livelihood opportunities</li> <li>▪ More favorable attitude and behavior towards farming and learning</li> <li>▪ Formation and development of more farmers' learning groups (more confidence and knowledge of climate change)</li> <li>▪ Adoption of CSA practices such as agriculture diversification, livestock production using native species, saving of seeds for next cropping, use of alternative fertilizers</li> </ul>	<ul style="list-style-type: none"> <li>▪ Improved access to resources and support to enhancing capacities for adaptation and mitigation</li> </ul>	<ul style="list-style-type: none"> <li>▪ Improved policy and institutional support to agri-fishery communities</li> <li>▪ Creation of crop mapping specific to Guinayangan</li> <li>▪ Changed attitude and behavior of development workers towards implementation of agriculture programs</li> <li>▪ Government authorities, farmers networks and CBO partners are learning CSA and are influenced to incorporate CSA initiatives into their respective extension services for smallholder farmers</li> </ul>	<ul style="list-style-type: none"> <li>▪ Mainstreaming climate change adaptation in DA's programs, plans, and operations</li> </ul>
<b>Ultimate*</b>	<ul style="list-style-type: none"> <li>▪ Reduced vulnerability to effects of climate change</li> <li>▪ Improved economic and social wellbeing of household</li> </ul>		<ul style="list-style-type: none"> <li>• Improved governance geared towards promoting and sustaining CSA</li> </ul>	

## Annex 2. Invitation Letter for Mayor

receiving copy



International Institute of Rural Reconstruction (IIRR)

02 September 2021

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IIRR Y.C. James Yen Center,  
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Philippines

**Founders**  
Y.C. James Yen (1893-1990)  
Alice Huie Yen (1895-1980)

**Trustees**  
David S. Bassiouni  
James C. Diao  
Paul Marquardt  
Stephanie Pullings-Hart  
Mary Racelis  
Dane Smith  
George SyCip

**Trustees (Officers)**  
Ricardo A. Anzaldúa-Montoya  
(Chair)

Emily Cheng  
(Vice-Chair)

James F. Kelly  
(Treasurer/ Secretary)

Peter G. Williams  
(President)

**Trustee Emeritus**  
Jane Boorstein

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**Hon. Cesar J. Isaac, III**  
**Municipal Mayor**  
**Guinayangan, Quezon**

Dear Mayor Boyboy,

Greetings po!

IIRR commissioned a researcher to conduct an **Outcome Study** that **aims to identify the realized outcomes from the implementation of Climate Smart Agriculture (CSA) in Guinayangan in partnerships with the Municipal and Barangay LGUs and the farmers.** The CSA project aimed to influence other programs and policies of the government towards addressing climate resilience and food security.

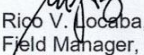
This outcome research study would try to understand the process of change and how each outcome contributes to this change, whether positive or negative, intended or unintended.

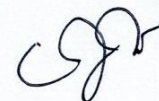
Part of the study process is to conduct interview with the different stakeholders including the LGUs and community members. We would then request an hour or so from you on **September 7, 2021, Tuesday, at about 9am – 10am** at your Office, **or any other time or date that you may be available for our Researcher Ms. Anne Limsuan** to have a dialogue with you.

We are attaching herewith the schedule of the study and the duration of the researcher's stay here in Guinayangan for our reference.

We will be very grateful if our request would be granted. Thank you very much in advance.

Kind regards,

  
Rico V. Locaba, MSc  
Field Manager, IIRR Quezon

Recd:  
  
9/3/21



## Annex 3. Harvesting Questions

For Farmers and Development workers

### 1. General changes in the community

- 1.1. What changes were observed in the community in the period between 2014 and now?
- 1.2. When and where did the change take place?
- 1.3. Who were affected by the change? How were they affected?
- 1.4. *(If changes related to Agriculture are not mentioned)* Did you notice any change with regards to agriculture? What are these?
  - a. When and where did the change take place?
  - b. Who were affected by the change? How were they affected?
  - c. Why were these changes not mentioned before?
- 1.5. Identify which from among changes are most significant, and why?
  - a. Identify the drivers which facilitated these changes (for each one) and how.
- 1.6. Rank these observed changes according to significance.

### 2. Specific changes within the community based on perceptions of individual farmers

- 1.1. What are observed changes in your community in terms of the following in the period between 2014 and now? List and describe.
  - a. Production systems and practices (crops, livestock, fisheries)
  - b. Activities, practices, dynamics of groups (for those who are members of groups)
  - c. Community assets and resources
  - d. Gender roles in production systems/livelihood
  - e. Community traditions
  - f. Local environment, landscapes, ecosystems
  - g. General socio-economic conditions of community
- 1.2. When and where did the change take place?
- 1.3. Who were affected by the change? How were they affected?
- 1.4. Rank the changes observed based on their impacts/significance.

Additional Portion For Development workers only

#### Specific Changes per Sector

- 2.1. What are observed changes for the following sectors in the period between 2014 and now?
  - a. Programs and policies for agri-fishery development  
**To be answered by: MAO, MPDO, MFA Head**
  - b. Socio-economic status of farming and fishing households  
**To be answered by: Mayor, Vice Mayor**
  - c. Crops, livestock, and fisheries  
**To be answered by: Leaders of Community-Based Organizations (4-H, RIC, Fisherfolk Association)**
- 2.2. When and where did the change take place?

- 2.3. Who were affected by the change? How were they affected?
- 2.4. Rank the changes observed based on their impacts/significance.

## Annex 4: KAP Survey for Farmers

### KNOWLEDGE ATTITUDE AND PRACTICES SURVEY

#### Farmers

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Pangalan: \_\_\_\_\_

Age: \_\_\_\_\_

Gender: \_\_ Female \_\_ Male

Barangay: \_\_\_\_\_

Tanong	Tama	Mali
1. Sa pagbabago ng klima (climate change), mas apektado ang mgakababaihankaysakalalakihan.		
2. Ang mas madalasnagbagyo ay dulot ng climate change.		
3. Ang mas madalasnaglindol ay dulot ng climate change.		
4. Ang mas madalasnagpasok ng tubig-alatsamgalupangmalapitsabaybayin ay dulot ng climate change.		
5. Ang agrikultura ay isangsanhi ng climate change.		
6. Ang kalikasan ay isangsanhi ng climate change.		
7. Ang industriyalisasyon ay isangsanhi ng climate change		
8. May epekto ang climate change sadami at kalidad ng ani.		
9. May epekto ang climate change sapagkakasakit ng mgaalaganghayop.		
10. May epekto ang climate change sadami at kalidad ng hulingisda.		

## 1. KAALAMAN

### 1.1. Climate change

Sagutin ng “tama” o “mali” ang mgasumusunod, lagyan ng X ang katumbasnasagot

### 1.2. CSA technologies

**Piliin ang tamangsagotsamgasumusunod:**

Tsekan( / ) kung tama o Ekisan ( X ) kung mali ang mgasumusunodnapangungusap.

- 1.1. Ang sabayangpagtanim at pagaalaga ng livestock ay pang angatkabuhayan ( )
- 1.2. Mas matibaysainitkapagtinatabunan ng bunot ng niyog ang puno ng pananim ( )
- 1.3. Ang multiple cropping ay nakakatulongsapagpapataas ng ani at kita ( )
- 1.4. Nakakasamasalupa ang paggagamit ng organikongpataba ( )
- 1.5. Ang system of rice intensification ay gumagamit ng 20 butilbawatpuno ( )
- 1.6. Ang pagtanim ng ibat ibang uri ng pananim ay bahagi ng CSA ( )
- 1.7. Ang pagaalaga ng native nababoy ay magastossapakain ( )
- 1.8. Ang pagtanimsapagitan ng ibang halaman ay magandangpamamaraan ( )
- 1.9. Ang salitannapagtanim ay nakakasamasakondisyon ng lupa ( )
- 1.10. Matibaysasakit at pabagobagongklima ang native nababoy ( )

### 1.3. Social Learning Processes.

**Tsekan( / ) kung tama o YES ang inyongsagot at Ekisan ( X ) kung mali o HINDI ang inyongsagotsamgasumusunod:**

- 1.3.1. Ang farmer learning group (FLG) ay pribadonggrupo ( )
- 1.3.2. Ang pinaguusapansa FLG meetings ay tungkolsaikabubuti ng kabuhayan ( )
- 1.3.3. Ang innovation fund ay para lang samgamayayaman ( )
- 1.3.4. Nakakatulongsapagpataas ng kaalamansapagsasaka ang farmers field day ( )

- 1.3.5. Pag aari ng pribadong tao ang Community Support Facility or CSF ( )
- 1.3.6. Walang naitutulong ang CSF sapagpapalago ng kabuhayan ( )
- 1.3.7. Mabisa ang farmer-to-farmer naparaansapagpapatupad ng CSA ( )
- 1.3.8. Pinangungunahan ng gobyerno ang farmer-to-farmer extension ( )
- 1.3.9. Nagbibigaykaalaman ng sabayangpagaaralsaaksyon research ( )
- 1.3.10. Ang direktangpamimigay ng pananim ay malakingtulong ( )

**2. Attitude**

Sagutin ang mgasumusunodnapanukalaayonsainyongpananaw.

Suggestions (mgapanukala)	Strongly agree (Lubosnasumasang-ayon)	Agree (Sang-ayon)	Neutral	Disagree (Hindi sang-ayon)	Strongly disagree (Lubosnahindisumasang-ayon)
1. Nabubuhay ang palaykahitisangbutil lang bawatpuno o tudling					
2. Tumataba ang lupasapaggamit ng dahon ng madre de cacao					
3. Mas kumuntina ang gastosngayonsaproduksyon dahil sapaggamit ng dumi ng alaganghayup at pinabulokna dahoon					

4. Tumaas ang linisnakita (net income) dahil sa CSA practices					
5. Maramiakongnatutunangparaan para labanan ang climate change					
6. May mgakaragdaganakongkaalamanna nakuha dahil sa CSA trainings					
7. May mga nagging bagongkakilalasa ibang lugar dahil sa roving workshops o farmers field day					
8. Nalaman ko ang kahalagahan ng pagiimbak o pagtatabi ng pananim para sasusunodnataniman					
9. Mas napakinabangan ko ang mgadati ay nakatiwangwangnalupa dahil saibat ibang pananim at livestock di tulad ng datinaumaasa lang saniyog					
10. Mas di na ako ngayon nag aalalaspagkain at kita at sahinaharap (future) sa pang kalahatan					
11. May mganabuongpakikipagugnayansamgakapwamagsa saka at mgaeskperto					
12. May mganabuonglokalnaplano para samgamagsasakakaugnaysaagrikultura					
13. May mgatulongpinansyalnanabigayna may					

kinalamansapagtugonsapagbabago ng panahon					
14. May pagsasaalangalangsamgatungkulin at pangangailangan ng mgakababaihan at kalalakihan					

### 3. Practices

Practices (Kasanayan)	Dating ginagawabago 2014 ngunititinigil	Dating ginagawabago 2014 at ipinapagpatuloy	Bagong ginagawamula 2015-2019 at itinigil	Bagong ginagawamula 2015-2019 at ipinapagpatuloy	Hindi ginawakailanman
1. Palagihang paggamit ng purong “kemikal” na abonosapananim					
2. Palagihang pagi-spary ng “kemikal” na pamatayin insektosahalaman o pananim					
3. Pagsusunog ng mga parte ng pinaganihan o pinutol nasanga at dahon ng mga halaman					
4. Nakadepende lang talagasabunga ng niyog					
5. Pagtatabon ng mgabinuno na damosapuno ng punong kahoy sa halip nasunugin					
6. Pagtatanim ng ibat ibang uri ng pananim					

7. Pag-aalaga ng hayup o livestock					
8. Pag-gamit ng pinabuloknabahagi ng halamanbilag compost naabono					
9. Pag-gamit ng dumi ng mgaalaganghayupbilangabonosapana nim					
10. Pagtatago ng binhisainani para sasusunodnataniman					



## Annex 5: KAP Survey for Development Workers

### KNOWLEDGE ATTITUDE AND PRACTICES SURVEY

#### Development and Extension Workers

---

Name: \_\_\_\_\_ Age: \_\_\_\_\_ Gender: \_\_ Female \_\_ Male

Number of years in the current position: \_\_\_\_\_

#### 1. Knowledge

##### 1.1. Climate change

Sagutin ng “tama” o “mali” ang mgasumusunod, lagyan ng X ang katumbasnasagot

Tanong	Tama	Mali
11. Sa pagbabago ng klima (climate change), mas apektado ang mgakababaihankaysakalalakihan.		
12. Ang mas madalasnagpagbagyo ay dulot ng climate change.		
13. Ang mas madalasnagpaglindol ay dulot ng climate change.		
14. Ang mas madalasnagpagpasok ng tubig-alatsamgalupangmalapitsabaybayin ay dulot ng climate change.		
15. Ang agrikultura ay isangsanhi ng climate change.		
16. Ang kalikasan ay isangsanhi ng climate change.		
17. Ang industriyalisasyon ay isangsanhi ng climate change		
18. May epekto ang climate change sadami at kalidad ng ani.		
19. May epekto ang climate change sapagkakasakit ng mgaalaganghayop.		
20. May epekto ang climate change sadami at kalidad ng hulingisda.		

##### 1.2. CSA technologies (based on programs):

Piliin at biluganangtamangsagotsamgasumusunod:

- 1.2.1. Alin samgaito ang halimbawa ng cover crop namaaringitanimsapagitan ng mais?
- Mani at munggo
  - Mani at balinghoy
  - Munggo at saging
  - Balinghoy at saging

- 1.2.2. Ano ang pakinabang ng pagtatanim ng open-pollinated variety (OPV) ng mais?
  - a. Maaaringpagkunan ng binhi
  - b. Matatagsapabago-bagongpanahon
  - c. Napapakinabangan ng tao at hayop
  - d. Lahat ng nabanggit
  
- 1.2.3. Ano ang maaaringgawinsalupangpagtatanimanupangmakatulongsapagtubo ng ugat ng puno o halaman?
  - a. Maghukay ng malalim
  - b. Maghukay ng malapad
  - c. a at b
  - d. Wala sanabanggit
- 1.2.4. Bakit kailangang may sapatnadistansya (20-30 cm) sapagtanim ng palay?
  - a. Napapalago ang ugat at tumatangkad ang halaman
  - b. Naiiwasan ang kompetisyon ng mgahalaman para sasikat ng araw at sustansyasalupa
  - c. a at b
  - d. Wala sanabanggit.
- 1.2.5. Sa Sipag-Palay o SRI, ilangpunla ang dapat itanimkadalok?
  - a. 1
  - b. 2
  - c. 3
  - d. 4
  
- 1.2.6. Alin samgaito ang hindiangkopitanimsamgapalayannamalapitsadagat?
  - a. NSIC Rc 222
  - b. NSIC Rc 326
  - c. NSIC Rc 328
  - d. NSIC Rc 340
- 1.2.7. Alin samgaito ang tama?
  - a. Mas maselansasakit ang native breed kumparasa commercial breed
  - b. Mas maselanmagbuntis ang native breed kumparasa commercial breed
  - c. Hindi maselansasakit ang native breed kumparasa commercial breed
  - d. Hindi maselanmagbuntis ang commercial breed kumparasa native breed
- 1.2.8. Sa Intensive Feed Garden, gaanokalawak ang dapat natanimanupangmagkaroon ng sapat ng pagkain para samgaalagangbaboy?
  - a. 10 m<sup>2</sup>
  - b. 100 m<sup>2</sup>
  - c. 1000 m<sup>2</sup>
  - d. 10000 m<sup>2</sup>
- 1.2.9. Ang *Trichantherasp.* ay mayamansaanongsustansya?
  - a. carbohydrates
  - b. protein
  - c. vitamin C
  - d. vitamin D
- 1.2.10. Upangmaiwasan ang pangangamoy ng bahay ng baboy, ang sahig ay dapat gawasa:
  - a. bato at simento
  - b. lupa at ipa

- c. kahoy at kawayan
  - d. lahat ng nabanggit
- 1.2.11. Bilang alternatibong pagkakakitaansapang ingisda, ano samgaito ang maaaring itanim salupang malapit sa baybayin?
    - a. Mais
    - b. Bakawan
    - c. Mani
    - d. Ipil-ipil
  - 1.2.12. Ano samgaito ang epektibong pananggalang sa bagyo o malakas na alon?
    - a. Mais
    - b. Bakawan
    - c. Mani
    - d. Ipil-ipil
  - 1.2.13. Ano samgaito ang pinakamahasag gamitin bilang kumpletong pataba?
    - a. Mais
    - b. Kakawate
    - c. Saging
    - d. Ipil-ipil
  - 1.2.14. Bakit kailangang mag-alaga ng iba't ibang uri ng pananim sa pagsasaka?
    - a. Upang dumami ang volume ng aanihin
    - b. Upang dumami ang pinagmumulan ng pagkain at kita
    - c. Upang makaiwas sa pagabago-bagong panahon
    - d. Lahat ng nabanggit

### 1.3. CSV approach

Piliin at bilugan ang tamang sagot sa mga sumusunod:

- 1.3.1. Alin samgaito ang tamang tumutukoy sa Farmer Learning Groups (FLGs)?
  - a. Ito ay binuo upang talakayin ang mgabalakid na kinakaharap sa pagsasaka o paghahayupan
  - b. Ito ay binuo upang makapag-palitan ng obserbasyon, kuro-kuro at napag-aralansa "farmer research" o Participatory Action Research (PAR)
  - c. Ito ay binubuo ng hanggang 12 miyembro
  - d. Lahat ng nabanggit
- 1.3.2. Bakit isinasagawa ang PAR?
  - a. Upang pag-usapan ang mgabagong proyekto sa pagsasaka o paghahayupan
  - b. Upang pag-aralan ang mgamaaring solusyon sa mgabalakid sa pagsasaka o paghahayupan
  - c. Upang makakuha ng suportang pamahalaan
  - d. Lahat ng nabanggit
- 1.3.3. Ano ang layunin ng Community Innovation Fund (CIF) o support facility?
  - a. Magbigay ng libreng pananim
  - b. Kumalap ng suportang pamahalaan
  - c. Makatulong para sa pagsasagawa ng PAR
  - d. Lahat ng nabanggit
- 1.3.4. Kailan isinasagawa ang Farmers' Field Day?
  - a. Bago magsimula ang PAR
  - b. Sa kalagitnaan ng PAR
  - c. Pagkatapos ng PAR
  - d. Sa kabuuan ng PAR

- 1.3.5. Bakit karaniwangnamamahagi ng binhisapagtatapos ng Farmers' Field Day?
  - a. Upangmagbigyan ng pagkakataon ang mgainteresadonasubukanito
  - b. Upangmagbigaytulong ang pamahalaan
  - c. Upangmahikayatnabumili ang mgamagsasaka
  - d. Lahat ng nabanggit
- 1.3.6. Isinasagawaitoupangmatukoy ang mgakahinaan ng mgasektor ng kabuhayansa climate change:
  - a. Participatory Action Research (PAR)
  - b. Participatory Vulnerability Assessment (PVA)
  - c. Participatory Varietal Selection (PVS)
  - d. Participatory Rural Appraisal (PRA)
- 1.3.7. Nagsasagawa ng Roving Workshop upang:
  - a. Mamasyalsa ibang lugar
  - b. Mamili ng pasalubong
  - c. Matutosakanayan ng iba
  - d. Lahat ng nabanggit
- 1.3.8. Ito ang unangtinutukoyupangmagbigay-gabaysapagsasagawa ng PAR at roving workshop.
  - a. Learning agenda
  - b. Feedback session
  - c. Registration process
  - d. Program flow
- 1.3.9. Sa pagtatapos ng Farmer's Field Day, ginagawaitoupangbalikan at suriin ang buongproseso, at magbigaypunasamganatutunandito.
  - a. Learning agenda
  - b. Feedback session
  - c. Registration process
  - d. Program flow
- 1.3.10. Anu-anongmgaimpormasyonnamakikitasa climate information service (CIS)?
  - a. rainfall forecast, tide forecast, cyclone warning
  - b. rainfall forecast, tide forecast, farm advisories
  - c. rainfall forecast, cyclone warning, farm advisories
  - d. tide forecast, cyclone warning, farm advisories
- 1.3.11. Ano ang ibigsabihin ng PCIC?
  - a. Philippine Climate Information Council
  - b. Philippine Crop Insurance Corporation
  - c. Philippine Cattle Innovation Cooperative
  - d. Wala sanabanggit
- 1.3.12. Hangarinnito ang magkaroon ng pagkakapantay-pantay ang bawatkasariansapag-unlad at pahalagahan ang kontribusyon ng mgakababaihansakaunlaran.
  - a. Gender And Development (GAD)
  - b. Gross Domestic Product (GDP)
  - c. Girl Scouts of the Philippines (GSP)
  - d. Lahat ng nabanggit
- 1.3.13. Ayon sa National Climate Change Action Plan (NCCAP), saanong Thematic Area nabibilang ang AMIA bilang flagship program?
  - a. Climate-Smart Industries and Services
  - b. Human Security
  - c. Ecosystem and Environmental Stability
  - d. Food Security

- 1.3.14. Alin samgaito ang hindisakop ng crop insurance?
- Natural nakalamidatlongarawbagoanihin ang pananim
  - Natural nakalamidatlongarawmataposanihin ang pananim
  - Natural nakalamidatlongarawbagomamulaklak ang pananim
  - Natural nakalamidatlongarawmataposmamulaklak ang pananim

## 2. Attitude

Sagutin ang mgasumusunodnapanukalaayonsainyongpananaw.Lagyan ng check ang napilingpananaw

Suggestions (mgapanukala)	Strongly agree (Lubosnasumas ang-ayon)	Agree (Sang- ayon)	Neutral	Disagree (Hindi sang-ayon)	Strongly disagree (Lubosnahindisu masang-ayon)
1. Mamigay ng binhi dahil nakakatulong ito sakatatagan ng mgamagsasakasa climate change.					
2. Pakinggan lamang ang mga eksperto dahil sila lang ang may sapat na kakayahang sapaglutag ng mga problema ng kaugnayan ng agrikultura sa komunidad.					
3. Maglaan ng pondo ang LGU sapagpapatayo ng community support facilities sa bawat barangay.					
4. Gawing isa samgapangunahing pakikitaan ng mganasakomunidad ang pag-aalaga ng native nababoy.					
5. Gawing regular ang pagpapaabot ng climate information					

service (CIS) sa lahat ng magsasakakada 10 araw.					
6. Magbalangkas ng hiwalaynaprogramang pansakahan para samgakababaihan.					
7. Magkaroon ng kinatawan ang komunidadsa lahat ng yugto ng pagbabalangkas ng mgaprogramangpansa kahan.					
8. Ipagpatuloy ang mgaprogramangnasim ulansatulong ng mga NGO kahitmataposbawiin ng NGO ang kanilangsuportarito.					
9. Mas bigyan ng prioridad ang paglaan ng pondosapagpapatayo ng imprastraktura (gaya ng mgadaan, tulay, at pasyalan) dahil mas napapakinabanganito ng lahat ng mamamayan.					
10. Pahintulutan ang mgamagsasakasapagbuo at pamamahala ng kanilangsarilingcommunity support infrastructure tulad ng nursery, livestock propagation at breeding center.					
11. Bumuo ng mgahakbangupangmahikayat ang pribadongsektornamamuhunansapagsasaka.					

12. Pagbuo ng local climate change adaptation plans na kasama ang komunidad					
13. Ang crop insurance ay isangpamamaraan ng mitigation					

### 3. Practices

Tukuyin ang mgasumusunodnakasanayan kung ang mgaito ay ginagawa/ipinatutupad, lagyan ng check ang napilingtaon/panahon

Practices (Kasanayan)	Dating ginagawa (before 2014) ngunititinigil	Dating ginagawa (before 2014) at nagpapatuloy	Bagong ginagawa (2015-2019) ngunititinigil	Bagong ginagawa (2015-2019) at nagpapatuloy	Hindi ginawakailanman
1. Pagpapalaganap ng CIS (climate information system)					
2. Pamamahagi ng cash grant bilang community innovation fund (CIF)					
3. Pagpapatayo ng community support facilities bilang CIF					
4. Direktang pamamahagi ng binhi at iba pang materyales bilang CIF					
5. Pagbuo at pagpapalakas ng mga farmer learning group at asosasyon ng magsasaka					

<p>6. Pagbibigay ng platapormasamga magsasakana mag ekperimentotulad ng participatory action research(PAR)/ community participatory action research (CPAR)</p>					
<p>7. Pasuportasangama gsasakanaibahagi ang kanilangnapag-aralansa PAR/CPAR tulad ng farmer's field day/harvest festival</p>					



## Annex 6: Photo Documentation



*Picture 1. Interview with mayor*



*Picture 2. Interview with municipal agriculture officer*



*Picture 3. Interview with municipal planning and development officer*



*Picture 4. Interview with RIC club president*



Picture 5. Interview with 4H club president



Picture 6. Zoom Interview with DA-AMIA Director



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