



t e c h n i c a l r e p o r t

**Participatory Climate Vulnerability and Risk Assessment (PCVRA)
for Adaptation Mitigation Initiatives in Agriculture (AMIA) Villages**



CAPIZ

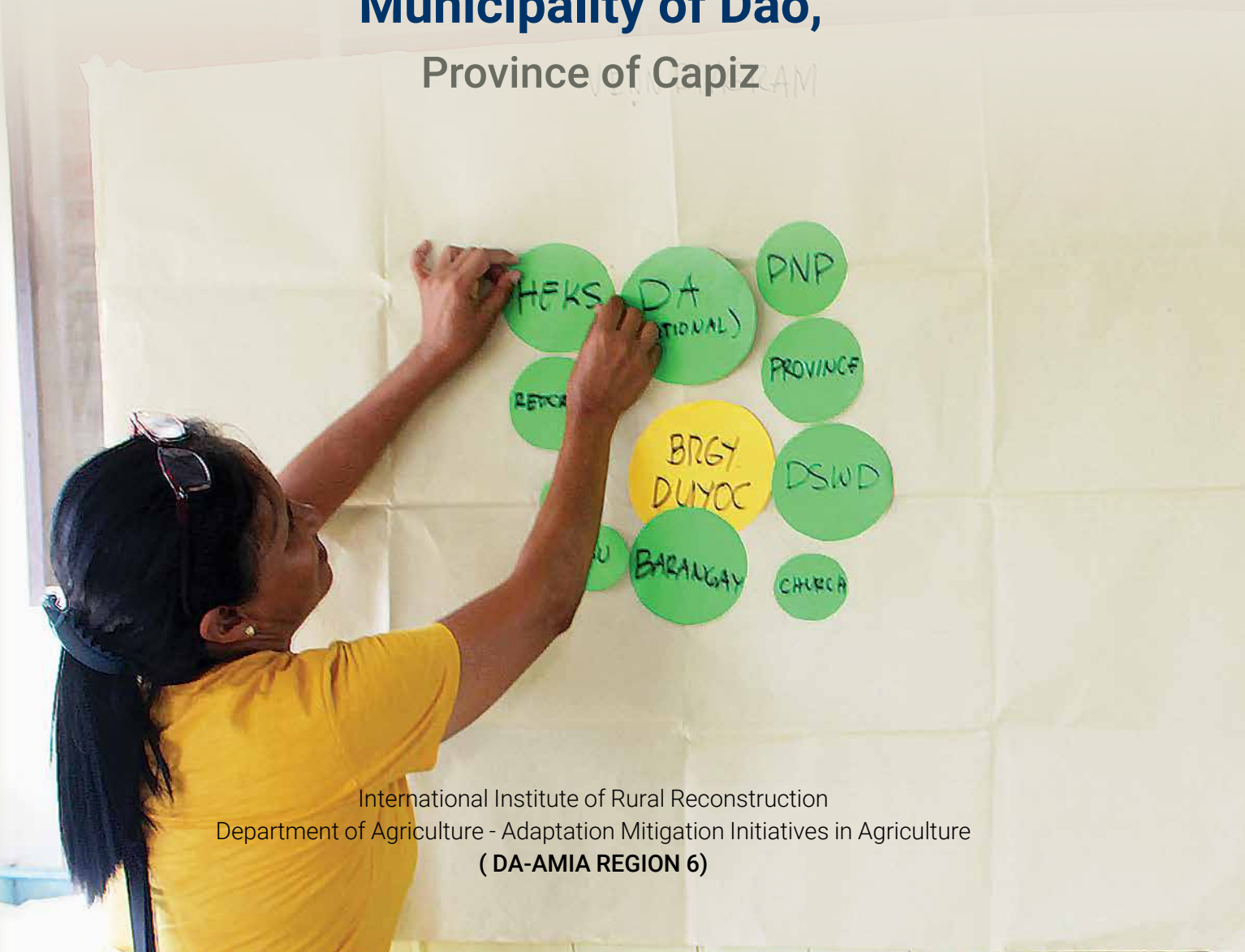
AMIA Villages in the
Municipality of Dao,
Province of Capiz

JULY 2023

technical report

Participatory Climate Vulnerability and Risk Assessment (PCVRA)
for Adaptation Mitigation Initiatives in Agriculture (AMIA) Villages

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Municipality of Dao,
Province of Capiz



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DAO, CAPIZ

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A. Background

Climate change poses a serious threat to the Philippines, putting development at risk and further endangering poor communities. The country's agri-fishery sector is particularly vulnerable. To combat these dangers, the Department of Agriculture introduced the **Adaptation and Mitigation Initiative in Agriculture (AMIA)**. This program aims to empower local communities in the agri-fisheries sector and help them adopt sustainable livelihoods and effectively manage climate risks. Climate change has varying impacts depending on the location and context, making certain sectors more vulnerable than others.

Development efforts should prioritize those who are most at risk, including small-scale farmers who rely on the climate, marginalized groups, and individuals lacking resources and access to information.

The **Participatory Vulnerability and Climate Risk Assessment (PCVRA)** promotes community empowerment through the creation of an information base that enables planning and action.

PCVRA aims to provide a better understanding of climate change to the community and inform them of the conditions and factors affecting their vulnerability. It also identifies the levels of risks to the community's livelihood and their capacity to adapt to the manifestations of climate change.

The main objective of the PCVRA is to identify the effects of climate change within the local populace and determine the nature of these climate-induced dangers in order to gain greater insight into their potential consequences and their effects on the community's vulnerability.

The **International Institute of Rural Reconstruction (IIRR)** facilitated PCVRA to provide local decision makers with comprehensive knowledge about climate-related risks and vulnerabilities, empowering them to develop effective solutions for addressing its impacts across multiple levels, ranging from households and farms to ecosystems and landscapes.

The outcomes of the PCVRA don't directly solve issues faced by rural communities. Instead, it becomes a basis for developing community-based strategies for adaptation. It is also used in decision-making processes involving various stakeholders. Ultimately, these efforts aim to improve the well-being of underprivileged individuals who are greatly impacted by climate change.

B. Methodology

Various sectors, including barangay council members, the Sangguniang Kabataan Chairman, barangay health workers, daycare workers, church representatives, school staff, businessmen, farmers, and fisherfolk were present at the event. The activity commenced with a short introduction followed by a discussion of the significance of PCVRA and its associated tools and techniques.

The following PCVRA instruments were used for information gathering:

1. **Timeline.** The group discussed past occurrences of climate hazards and the methods they utilized to manage them. They also strategized techniques to boost their resilience and improve their overall livelihood.
2. **Spot Map.** The community conducted a Spot Map exercise that pinpointed areas deemed vulnerable to hazards and risks. They also identified livelihood areas that are most affected by these dangers. Resource units, including crops, livestock, households, and natural resources, were discussed thoroughly with an emphasis on utilizing them effectively to meet the community's needs.
3. **Seasonal Calendar.** Showcases changes in weather conditions that have occurred over the past 5, 15, and 30 years. It encompasses details related to temperature, weather, crops, and livelihood.
4. **Livelihood Matrix.** It is a comprehensive breakdown of income-generating ventures. The participants are prompted to reflect on their involvement in these ventures and distinguish between gender-specific roles and decision-making responsibilities. The matrix is segmented into three primary age groups: Youth (aged 15-30), Middle Age (aged 31-59), and Senior Citizens (aged 60 and above).

5. **Resource Flow.** Identify the inflow (revenue earned from their means of livelihood) and outflow (costs incurred) of resources.
6. **Venn Diagram.** Utilized to depict the various institutions, associations, and individuals from the government and private sector that provide access to essential services. These categories are shown in proportions, with figures indicating the level or strength of each partnership with the community.

C. Provincial Profile

Capiz is a province in Western Visayas. Its capital is the city of Roxas. It is bordered by Sibuyan Sea on the north, Iloilo on the southeast, Antique on the southwest, and Aklan on the west. It has a total of 16 municipalities, one city, and 473 barangays.

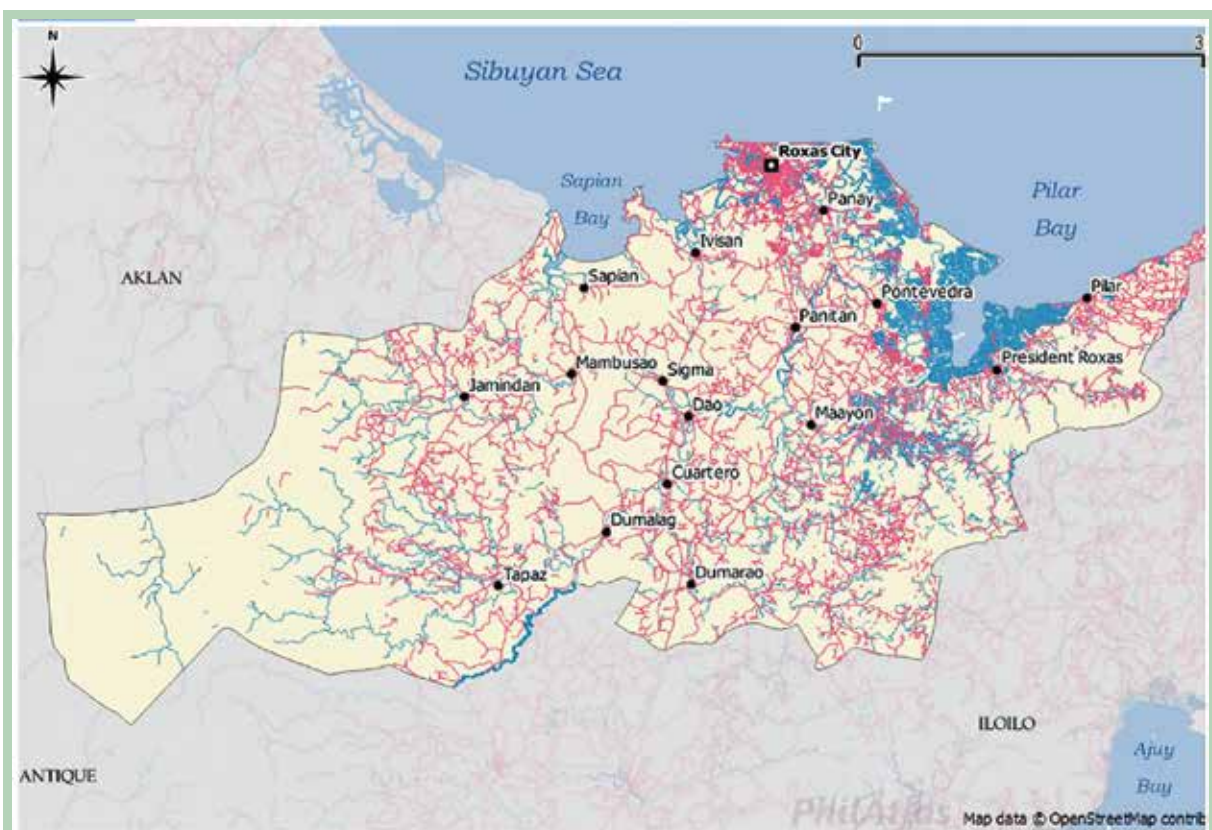
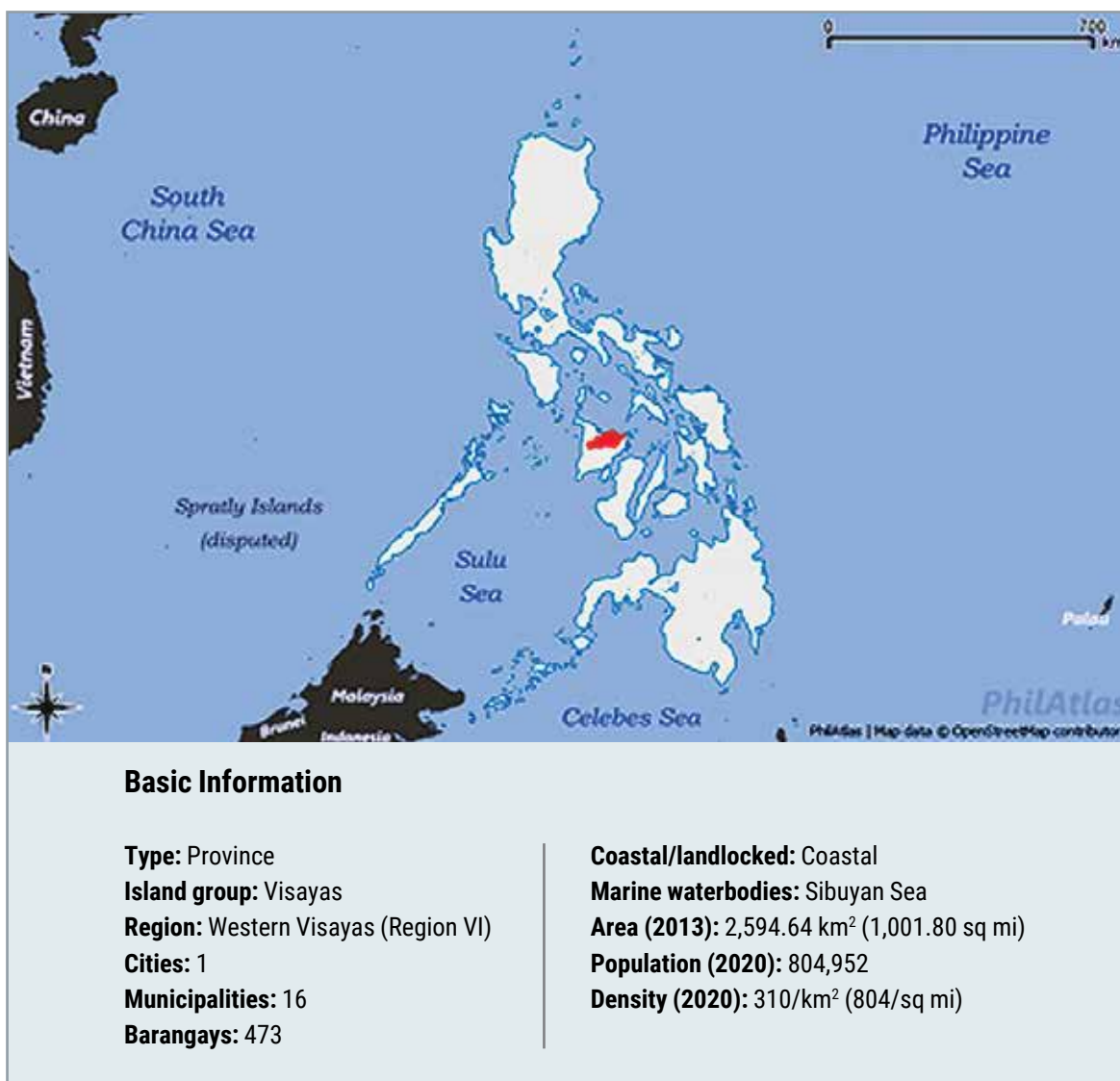


Figure 1. Provincial Map of Capiz.



The province has a land area of 2,594.64 km² or 1,001.80 sq mi. Its population as determined by the 2020 Census was 804,952. This represented 10.12% of the total population of the Western Visayas region, 3.91% of the overall population of the Visayas island group, or 0.74% of the entire population of the Philippines. Based on these figures, the population density is computed at 310 inhabitants per square kilometer or 804 inhabitants per square mile.

The province has a Type 3 climate, and seasonal changes are not pronounced. It is relatively dry from November to April and wet from May to October.

Primary Roads

- Iloilo-Capiz Road (new route)



Secondary Roads

- Capiz-Aklan Road
- Iloilo East Coast-Capiz Road
- Junction National Road Cuartero-Tapulang-Maayon Road
- Maayon-Junction Bailan Road
- Roxas City-Cagay-Sibaguan-Balijuagan-Cudian-Ivisan Road

Tertiary Roads

- a. Dao By-Pass Road
- b. Iloilo-Capiz Road (Old Route)
- c. Junction National Road-Ayuyan-Tinaytayan Road
- d. Junction National Road-Dumarao-San Rafael (Iloilo) Road
- e. Junction National Road-Jamindan-Linambasan-Camp V Peralta Road
- f. Junction National Road-Mi-anay-Duyoc-Calaan-Panitan Road
- g. Lanot-Loctugan-Panitan Boundary Road
- h. Mambusao-Imbug Road
- i. Roxas City Boundary-Panitan-Bailan Road
- j. San Roque-Baybay-Culasi Road
- k. Sigma-Mambusao-Jamindan Road
- l. Tapaz-Jamindan-Altavaz Road

Sources:

1. <https://www.philatlas.com/visayas/r06/capiz.html>
2. Data on National Roads is from the Department of Public Works and Highways.

D. Municipal Profile

Dao is a fourth class municipality. It is a landlocked area and is bounded by the municipalities of Maayon in the north, by Cuartero in the south, Sigma in the northwest and by Panitan in the northeast. Its land cover is 7,750 hectares.¹

Topography and Slope

Dao has flat, gently rolling plains and some mountainous terrain. About 38.5% of Dao's land area consists of flatlands that are suitable for palay farming. About 15% of its land area has a gradual slope of about 10.1 degrees, appropriate for intensive agricultural farming of cash crops such as corn, rice, sugar cane, and most root crops.²

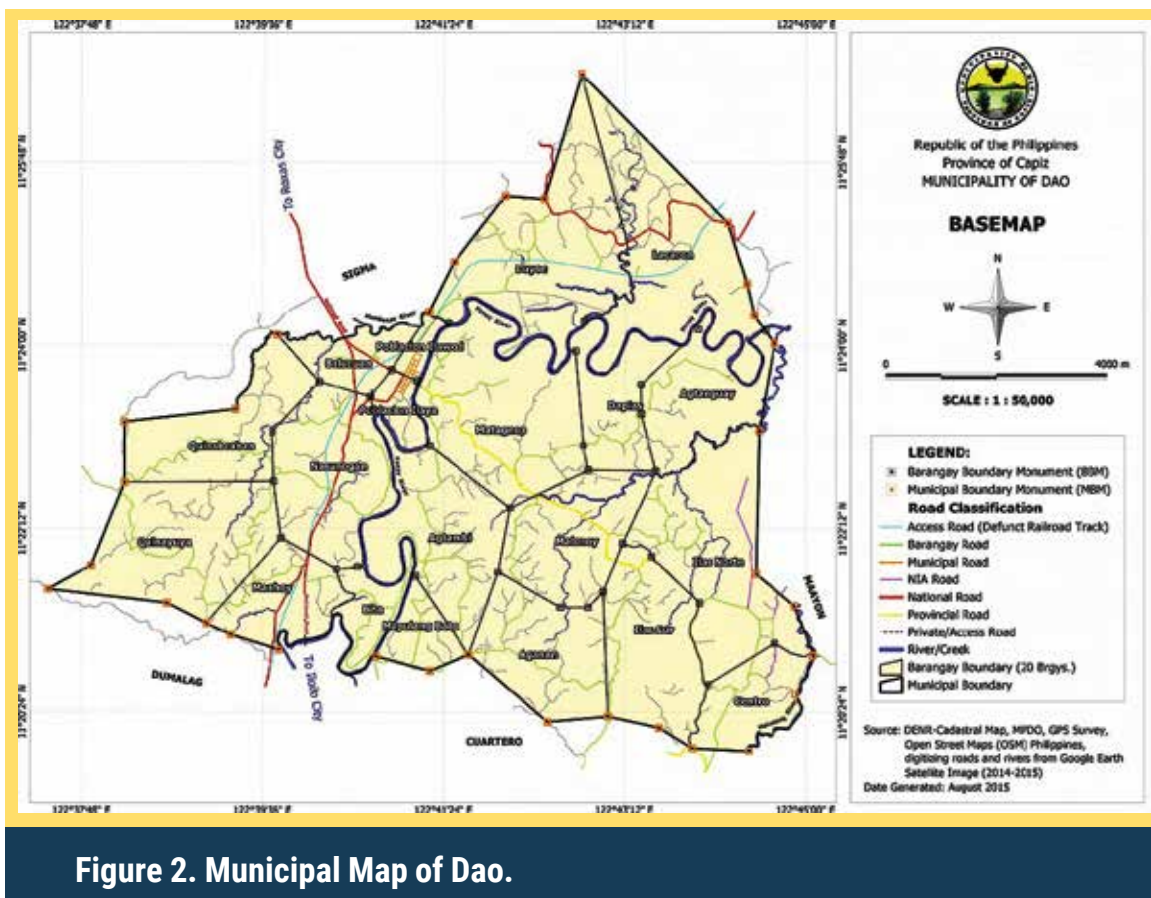


Figure 2. Municipal Map of Dao.

¹ Municipal Profile, Municipal Planning and Development Office (1999).

² Ibid.

Climate and Rainfall

The municipality belongs to a Type 3 climate. The even distribution of rainfall throughout the year and the rare occurrence of typhoons makes the municipality suitable for agriculture. In some low-lying areas, sustained and accumulated rainfall during the typhoon season and heavy monsoon rains can cause extensive flooding and massive destruction of agricultural crops.

Population

According to the 2020 census, its total population is 33,842. Dao consists of 20 barangays and was recently re-classified into a fourth class municipality. It belongs to the Second Congressional District of Capiz, which consists of 10 municipalities, namely, Ivisan, Sigma, Dao, Cuartero, Dumalag, Dumarao, Tapaz, Mambusao, Sapián, and Jamindan.

Economic Activity

Farming is the main source of livelihood in the municipality as 80% of land is devoted to agriculture. Its arable lands are planted with palay, corn, sugarcane, and coconut. Livestock production (such as hog and cattle) and poultry farming remain small-scale economic activities.

Small family-oriented businesses such as sari-sari stores, small groceries, rice retailers and millers, and merchants of farm inputs define most of the trade and business in the area.



E. Executive Summary

BARANGAY DUYOC

Description of Hazards	Impacts	Capacity of the community
<p>The community identified two climate-related hazards – typhoons and El Niño. They consider typhoons with flood as the secondary hazard that puts them the most at risk.</p> <p>Typhoons have been occurring regularly for the past years. They have observed that it brings more rain and less wind. Floods are experienced even without typhoons, due to the intensifying monsoon season. The village suffers from flood, especially when rains come from the upland.</p>	<p>Agricultural livelihoods are greatly affected by floods brought by typhoons.</p> <p>90% of agricultural produce have been damaged. Roads become inaccessible even after the typhoon has passed since the floods remain for at least a week. This further deteriorates the roads that provide access to the market. Farmers, particularly households living under the poverty line, experienced hunger due to having lost most of their livelihoods to flood.</p>	<p>The community has access to response programs from the local government and various national agencies such as the Department of Agriculture (DA).</p> <p>Most of them are registered in the RSBSA so they are given agriculture capital such as seeds and inputs. They are also insured under the PCIC so they can claim insurance for their produce.</p> <p>They have an active local government unit that provides assistance and food packs when they experience disasters. They also receive help from the private sector. The LGU has an existing DRR and contingency plan and has set up flood warning devices.</p> <p>Recorda is conducted by the Barangay official. A motor-banca is also provided for rescue operations.</p> <p>Various credit institutions such as microfinance institutions (MFIs) and cooperatives abound in the area.</p> <p>Farmers' ages range from 30 to 70 years old. A majority of them do not own the land they till and are only tenants.</p>

BARANGAY LACARON

<p>Typhoons and El Niño have been the two hazards that affected the community in the past years.</p> <p>However, they consider flood as the secondary hazard caused by typhoons. It is the most destructive and most likely to happen. They observed that typhoons have been bringing more rain, are more intense and take longer than before to subside.</p> <p>As a result, floods are usually 5 to 10 feet deep and take longer to subside.</p>	<p>Farmers' produce such as rice, corn, sugarcane, livestock and their poultry products are often completely damaged as they are submerged by the flood.</p> <p>With floods taking longer to subside, farm-to-market roads are destroyed, affecting their commerce.</p>	<p>There is a presence of a responsive local government that provides immediate response after a disaster and the barangay has an existing DRR and contingency plan.</p> <p>The DSWD and private sectors also provide immediate assistance via food packs. Meanwhile, a majority of the farmers are RSBSA registered and have availed (95%) of insurance from the PCIC after disasters. The DA also provides seeds and fertilizers to support the farmers.</p> <p>There are different financial institutions that farmers have accessed such as MFIs and farmer cooperatives.</p> <p>However, farm-to-market roads remain a challenge as the majority of the road works in the barangay are rugged and most are unpaved.</p> <p>In general, the barangay has a young farming age range, with farmers ranging from 20 to 70 years old.</p> <p>Although they are near the Panay River, the barangay has no irrigation available for their rice area. Rice season is twice a year and is dependent on the availability of rain.</p>
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Discussion

Both barangays identified flood as a hazard that impacts their livelihoods and is most likely to recur especially since they are bounded by the Panay River. Their location is both an advantage and a disadvantage. They are able to produce rice at least twice a year despite being rainfed which ensures more production for food and livelihood. However, their proximity to the main river poses a danger to them due to intensifying rains for the past years and the swelling of the river.

Although government response is forthcoming, it is usually centered on saving human lives. These efforts should be extended to key livelihood assets that will help households recover faster. Readiness and adaptation initiatives should also be in place. For example, palay drying is still done manually using barangay roads. With the changing and unpredictable weather patterns, an alternative and more efficient drying method should be made available to rice farmers. Livestock death due to flooding is also considerable, thus this should also be considered during preparations and disaster response.

Financial support with the presence of MFIs and cooperatives in both barangays is an asset. However, the process of acquiring loans should be simplified and rates should be made affordable or given at a concessionaire rate.

Human resources for both barangays are young. Labor will not be a problem while livelihood opportunities are present in the barangay.

AMIA Program

The Adaptation and Mitigation Initiative in Agriculture (AMIA) is a comprehensive and forward-thinking program designed to address the complex challenges and opportunities within the agricultural sector in the context of climate change and environmental sustainability. AMIA is primarily focused on promoting agricultural practices that are both adaptable to changing climatic conditions and mitigative of greenhouse gas emissions.

Climate change poses a significant threat to global food security and agricultural sustainability. Rising temperatures, altered precipitation patterns, and increased frequency of extreme weather events have the potential to disrupt crop yields, affect livestock production, and compromise the livelihoods of millions of farmers worldwide. Furthermore, agriculture is a notable contributor to greenhouse gas emissions through practices such as deforestation, soil degradation, and inefficient land use.

The AMIA emerged as a response to these pressing challenges. It was conceived with the understanding that the agricultural sector can be both a victim and a solution to climate change.

AMIA aims to bridge the gap between agricultural adaptation and mitigation' efforts by integrating them into a holistic framework.

AMIA seeks to enhance the resilience of agriculture to climate change by implementing climate-smart practices. This includes using drought-resistant crop varieties, improving water management, and developing early warning systems for extreme weather events.

In addition to adapting to climate change, AMIA places a strong emphasis on mitigating the environmental impact of agriculture. It promotes sustainable farming practices that reduce greenhouse gas emissions, such as reduced tillage, agroforestry, and the use of renewable energy sources.

AMIA is rooted in a community-centric approach. It recognizes that the success of adaptation and mitigation strategies relies on the active involvement of local farmers, communities, and relevant stakeholders. The program engages with farmers to co-create and implement solutions that are tailored to their specific needs and contexts.

AMIA collaborates with various stakeholders, including government agencies, non-governmental organizations, research institutions, and the private sector. These partnerships facilitate knowledge sharing, capacity building, and resource mobilization to support the program's objectives.

Research and innovation are at the core of AMIA. The program actively encourages the development and dissemination of cutting-edge agricultural technologies, practices, and policies that can enhance adaptation and mitigation efforts.

AMIA acknowledges the need to scale up successful adaptation and mitigation strategies and replicate them across different regions and agricultural contexts. This approach enables the program to have a more extensive impact and contribute to global sustainability goals.

To ensure the effectiveness of its initiatives, AMIA maintains a robust monitoring and evaluation system. Regular assessments are conducted to measure the impact of adaptation and mitigation strategies on agricultural productivity, environmental sustainability, and the well-being of rural communities.

AMIA in Aklan

The program started in Dao, Aklan in 2022 . The Duyoc-Lacaron AMIA Village Farmers Association (DLAVFA) was organized, federating 4 farmers' association, namely:

1. **Lacaron Farmers Association** (Male-118, Female-27)
2. **Duyoc Irrigators Farmers Association** (Male-19, Female-8)
3. **Kabatanga Farmers and Labors Association** (Male-213, Female-34)
4. **Sitio Balud Farmers Association** (Male-39, Female-8)

Initiatives were introduced by advancing alternative livelihoods that are climate smart such as:

1. Livestock Production

- a) Babuyang Walang Amoy Technology (BWAT) (20 heads of hybrid pigs, 10 bags of grower feeds)
- b) Native Pig Production (18 heads of native pigs)

2. Poultry production: Establishment of communal production system for native chicken where associations were provided with stocks and housing (50 heads, housing materials) and individual where farmers were given 5 heads per farmer partners.

3. Organic vegetable production where materials were provided (e.g. 44 drums , garden tools and vegetable seeds 40 gallon molasses, 120 bags of vermicast)

4. Vermi-composting facility composed of 1 storage room and 8 vermi bins (20 kilos vermi worms)

5. System of Rice Intensification (SRI) Technology (7 demo sites)

F. Recommendations

1. Consider a more programmatic initiative in addressing recurring floods and advocate for the better management of the Panay River Basin.
2. Support credit options for smallholder farmers and tenants. Make the process simple and the credit options available at concessionaire rates to enable them to financially recover and prevent the building up of debt to stop the vicious cycle of poverty in this sector.
3. The local government and the DA should facilitate anticipatory planning for specific actions for securing livelihood assets.
4. Make production and post-harvest support publicly managed, such as through cooperatives and farmer associations
5. Create an intensive capacity-building program to capacitate young farmers to use new technologies that could reduce risks to their livelihoods.
6. Have local governments lead impact-based forecasting based on PAGASA data.

Barangay Duyoc

1. Introduction

1.1. Barangay Profile

Duyoc is a barangay in the municipality of Dao, Capiz. Its population as determined by the 2020 Census was 2,733. This represented 8.08% of the total population of Dao. In 2022, it increased to 3,017, where 1,571 are male and 1,444 are female, with a growth rate of 0.629. Households total to 723, with 958 families. The total land area is 599,310 hectares.

1.2. Household Classification

- Lower class 70%
- Middle class 20%
- Upper class 10%

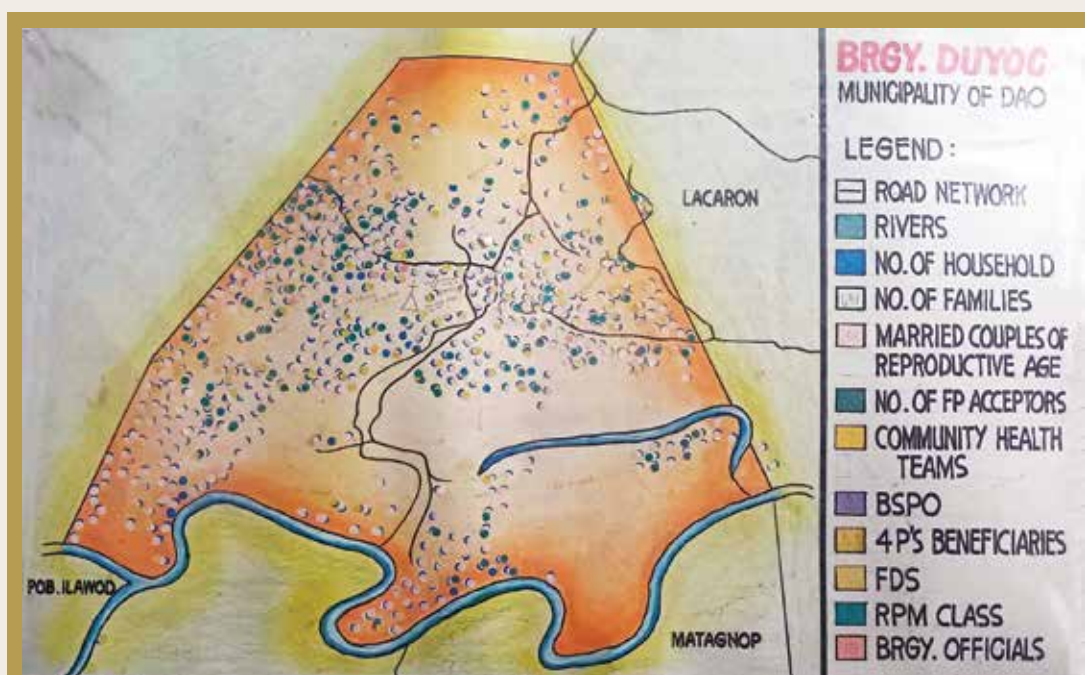


Figure 3. Map of Barangay Duyoc

1.3. Livelihood Status

Rice farming is the main source of income in Duyoc. The community maximizes its Type 3 climate and plants twice a year and even three times if rain is available. They use certified seeds so they can use them again in the next season. Mungbean is also intercropped during the dry season. More are engaged in rice farming compared to 30 years ago, as rain has been constant for the past decade. The average income from one season of rice is PhP 8,900.

Sugarcane is produced by a few households. Labor is provided by some farmers in the community.

Livestock, particularly swine fattening, is one important livelihood. On average, one household raises 3 to 4 swine for fattening. They rely on commercial feeds for faster growth. They gain PhP 7,800 per production cycle which usually lasts for 3 to 4 months. Backyard chicken raising is done as an alternative source of food and livelihood for at least 20% of the farming households.

1.4. Sectoral Involvement

a. Rice farming

Men are more involved in all the production and post-production activities of rice farming, including decision-making. Women are significantly involved in preparation. Maintenance of drainage canals is pegged at 30%, harvesting at 23%, and seed preparation at 10%. Women have limited involvement in the rest of the activities. Although adults perform most of the activities, the youth considerably contribute in fertilizing, harvesting, and marketing.

b. Swine production

Women have a considerable role in this production process, especially in taking care of the livestock. Men are involved in ensuring livestock health through vaccination and castration. They also lead in preparing the livestock housing. Men and women decide equally, except in feed management and selection of stocks, where women lead more of the decision-making. Youth participation is evident in health management which is usually led by men. Interestingly, the participation of the elderly sector is almost the same in health management.



2. Climate Change Perception

2.1. Climate Hazard

Typhoons, floods, droughts, and pest infestations were the climate-related hazards identified by the community. However, flood as a secondary hazard caused by typhoons has been identified as the most likely to occur and cause impact to their livelihoods. They further claim that the occurrence of floods in their area is caused by the intensifying monsoon season, much so that even rains from the upland affect their farms as water traverses the Panay River.

Typhoons have been a regular occurrence, with the seasonal calendar indicating that typhoons occur on the fourth quarter of the year. However, for the past 5 to 10 years, typhoons have started around September and are felt up to the first quarter of the year. Unlike 30 years ago, typhoons only typically occur in the last two months of the year.

The community observed that the volume of rain has been intensifying for the past years, but it is accompanied by weaker winds. With the high volume of rains, floods usually take longer to subside. For example, floods caused by Typhoon Haiyan took almost two weeks to recede.

Farmers also observed changes in temperature. In the past five years, the temperature has been intense with the highest recorded temperature at 46° C.

2.2. Impact

Damage to agricultural produce from floods usually comes up to 90%. Rice, corn, and sugarcane are submerged during the occurrence of flood. Livestock and poultry production are also affected. Floods and typhoons damage houses, household appliances, and other assets. With water subsiding only after more than a week, roads become inaccessible and eventually further deteriorate making the transportation of goods more difficult after the disaster. Farmers, particularly households living under the poverty line, experience hunger having lost most of their livelihoods to flood.

2.3. Coping Mechanism

The local government is responsive when it comes to disasters. They implement early evacuation and provide immediate assistance such as food packs during and after disasters as part of their program. Recorda is conducted by the Barangay official, and motor-banca is provided for rescue operations. They have also set up flood warning devices to monitor flood levels.

The Department of Agriculture (DA) also provides seed support to give farmers capital after disasters. As the majority of the farmers are registered in RSBSA, many are able to claim insurance from PCIC.

2.4. Capacity of Community

Most of the community have agri-based livelihoods. Some of them also engage in alternative sources of livelihood and non-agricultural labor. They engage in buy-and-sell businesses, vending, and in transportation such as tricycle driving.

90% of Duyoc farmers are registered under the RSBSA and avail of PCIC services. The age range of farmers is 30 to 70 years old.

They are able to receive support from the local government and the DA during times of disaster. MFIs and farmer cooperatives (e.g. Pontevedra People's Multi-Purpose Cooperative, Dunganon) provide farmers affected by hazards with access to credit. However, farmers find it difficult to recoup their expenses and loans through these credit institutions which further bring them to dire situations.

Farmers have access to production machinery, however, these are often privately owned. They utilize barangay roads for rice drying. Only 50 of the farmlands are owned and the other half are mostly rented by tillers.

2.5. Initial Plan

Implications	Solutions
Longer occurrence of flood	Improve waste disposal since garbage is a factor in clogged waterways. The community is also aspiring for the development of the Panay river basin for better flood control in the future. It is being prioritized by the government.
Flood even during monsoon season	10-day forecasting, including rain intensity

3. Summary and Findings

Rainfall has been intensifying since at least more than a decade ago. The community has observed these changes in the seasonal pattern. Flooding has become a regular occurrence even during the monsoon season which often wipes out their livelihoods. Government response and recovery programs seem to be available, but these are limited to immediate food needs, seeds, and inputs. The presence of MFIs, especially cooperatives, is advantageous although rates should be more accessible to smallholder farmers and farmer tenants who need to recoup expenses lost during the flood.

Access to production and post-production is meager, especially since it is controlled by private individuals. The community needs more efficient means drying of palay since rice is a major commodity and livelihoods are wanting.

Though DRR and contingency plans are in place, incorporating actions to secure livelihood assets is not clear.

The human resource of the community is fairly young and will benefit from programmatic capacity-building.

4. Recommendations

1. Post-harvest support, especially in palay drying.
2. Lower rates for production support especially for those affected by disasters.
3. Provide training on low-input swine production to minimize production costs and increase profit margin.
4. The local government should include contingency planning for livelihood assets such as palay and livestock.
5. Firmer solid waste disposal policy.

Annex A. PCVRA Tools Used

1. Timeline

Typhoon Agathon, April 2022			
Events/ Features	Impacts on livelihood	Coping strategies implemented	Strategies in case of reoccurrence of the event
Typhoon Agathon			
Signal No.4 Heavy rainfall	<ul style="list-style-type: none"> Rice fields, corn, sugarcane, vegetables, poultry, and livestock were submerged in four sitios in Duyoc. The overall damage is estimated to have reached 90%. 	<ul style="list-style-type: none"> People were evacuated to the school and Barangay Hall. Received assistance from the Department of Agriculture (DA) for seeds, PCIC insurance claims, fertilizers, and cash. 	<ul style="list-style-type: none"> National Irrigation Administration (NIA) proposes a project (hydro drainage by the year 2030). Development of the Panay river basin. This is a project of the provincial government.
Floods from dam			
	<ul style="list-style-type: none"> 90% of houses were totally damaged. Cars, appliances, etc. were submerged. Hunger, as there was a food shortage for almost 2 weeks. Road is impassable 	<ul style="list-style-type: none"> 90% insured under Rice Competitiveness Enhancement Fund (RSBSA). Food packs from (LGU, BLGU, DSWD, and private individuals). Acquired (MFI) for additional capital and renovation of properties. Flood warning devices (watch level). Recorda is conducted by the Barangay official, and also, provides a motor-banca for the rescue operation. 	<ul style="list-style-type: none"> Synchronize planting pattern. PCIC insurance. Campaign to stop illegal logging. Synchronize planting of rice to maintain insurance.
Pest/rat infestation			
2022 Last Quarter	<ul style="list-style-type: none"> Crops have died which leads to low production 	<ul style="list-style-type: none"> Insurance provided by the Philippine Crop Insurance Corporation (PCIC). 	
El Niño			
1993, 8-9 months Jan-September	<ul style="list-style-type: none"> Monocropping in rice Hunger/food shortage Water crisis Domestic animals died. 	<ul style="list-style-type: none"> Planting of root crops Acquire loans through MFIs (Dungganon Lending) Moved to another place for employment. Barangay LocalGovernment Unit (BLGU) conducted Recorda to increase community awareness. 	<ul style="list-style-type: none"> Stockpiling of foods Water conservation

2. Spot Map



3. Seasonal Calendar

30 Years Ago	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
CLIMATE PATTERN (Wet & Dry)												
TYPHOON											✓	
TEMPERATURE	↑	↑	↑	↑	↑	↑	↑	↑	→	→	→	→
RAINFALL												
LIVELIHOODS:												
A. Rice 80%	Mung bean	Mung bean	Mung bean	Mung bean	Mung bean	1st Cropping	Mung bean	Mung bean	Mung bean	2nd Cropping	Mung bean	Mung bean
B. Sugarcane	Planting									Harvest		
C. Native pig (fattening)	ALL YEAR ROUND											
D. Native chicken (backyard)	ALL YEAR ROUND											

15 Years Ago	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
CLIMATE PATTERN (Wet & Dry)												
TYPHOON								✓		✓	✓	✓
TEMPERATURE	→	→	↑	↑	↑	→	→	→	→	→	→	↓
RAINFALL												
LIVELIHOODS:												
A. Rice 80%	3rd Cropping	Mung bean Corn	Mung bean Corn	Mung bean Corn	Mung bean Corn	1st Cropping	Mung bean Corn	Mung bean Corn	Mung bean Corn	2nd Cropping	Mung bean Corn	Mung bean Corn
B. Sugarcane	Planting									Harvest		
C. Native pig (fattening) 50%	ALL YEAR ROUND											
D. Native chicken (backyard) 20%	ALL YEAR ROUND											

5 Years Ago	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
CLIMATE PATTERN (Wet & Dry)												
TYPHOON				✓				✓	✓	✓	✓	✓
TEMPERATURE	↓	→	→	↑	↑	→	→	→	→	→	→	↓
RAINFALL												
LIVELIHOODS:												
A. Rice 80%	3rd Cropping	Mung bean Corn Peanut	Mung bean Corn Peanut	Mung bean Corn Peanut	Mung bean Corn Peanut	1st Cropping	Mung bean Corn Peanut	Mung bean Corn Peanut	Mung bean Corn Peanut	2nd Cropping	Mung bean Corn Peanut	Mung bean Corn Peanut
B. Sugarcane	Planting									Harvest		
C. Native pig (fattening) 50%	ALL YEAR ROUND											
D. Native chicken (backyard) 20%	ALL YEAR ROUND											

LEGEND:

CLIMATE PATTERN	TEMPERATURE	RAINFALL
Wet	↑ High	High
Dry	→ Average	Moderate
	↓ Low	Low
		No Rain

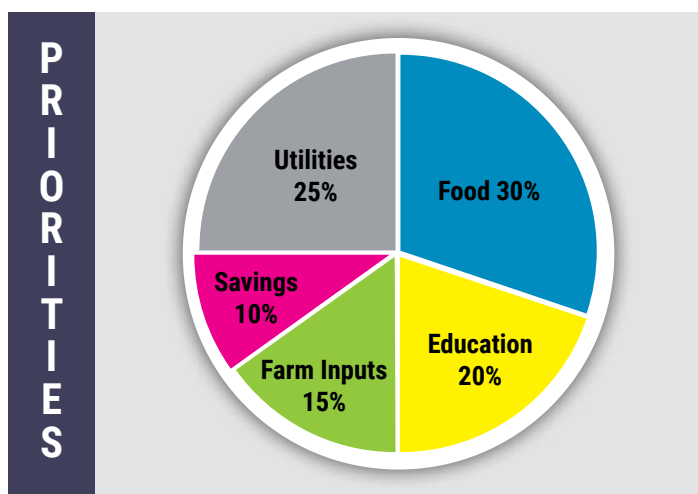
4. Livelihood Matrix

LIVELIHOOD: RICE FARMING	Roles		Decisions		Sectoral Role		
	Women	Men	Women	Men	Youth 15-30	31-59	Senior Citizen
1. Land preparation (Land cultivation, clearing, machineries, and tractor operator)	2%	98%	10%	90%	5%	80%	15%
2. Seed preparation and soaking	10%	90%	10%	90%	5%	80%	15%
3. Making of drainage/canal	30%	70%	10%	90%	10%	80%	10%
4. Spraying of fungicide/handpicking golden snail	5%	95%	10%	90%	15%	80%	5%
5. Seed bed preparation	3%	97%	10%	90%	10%	85%	5%
6. Transplanting/direct seeding/broadcast	5%	95%	10%	90%	5%	90%	5%
7. Spraying of herbicides		100%		100%	30%	65%	5%
8. Fertilizer application (1st dressing)	2%	98%		100%	25%	70%	5%
9. Pesticides application		100%		100%	30%	65%	5%
10. Fertilizer application (2nd dressing)	2%	98%		100%	25%	70%	5%
11. Harvesting (after 3 months)	23%	70%		100%	30%	65%	5%
12. Drying	2%	98%	10%	90%	20%	75%	5%
13. Marketing/selling	5%	95%	5%	95%	40%	55%	5%

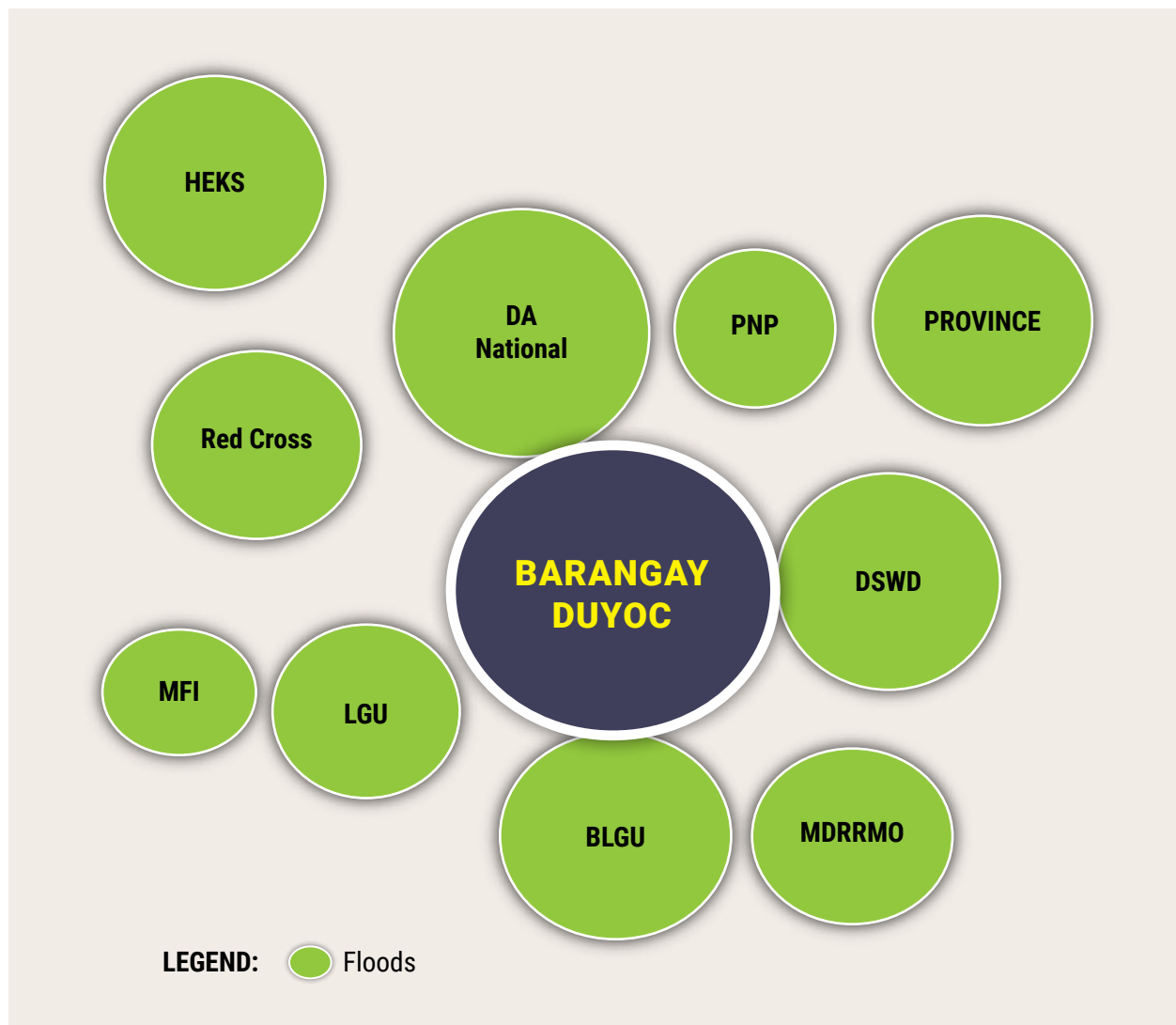
UPGRADED SWINE (Fattening)	Roles		Decisions		Sectoral Role		
	Women	Men	Women	Men	Youth 15-30	31-59	Senior Citizen
1. Construction of pen	10%	90%	50%	50%	20%	70%	10%
2. Purchase of piglets	70%	30%	70%	30%	5%	80%	5%
3. Purchase of feeds	30%	70%	80%	20%	5%	80%	5%
4. Vaccination	5%	95%	50%	50%	40%	60%	20%
5. Deworming	50%	50%	50%	50%	40%	70%	20%
6. Castration	2%	98%	50%	50%	50%	50%	20%
7. Feeding	80%	20%	50%	50%	20%	80%	20%
8. Marketing	50%	50%	50%	50%	10%	80%	10%

5. Resource Flow

LIVELIHOODS	Outflow	Income
1. Rice Farming (1 ha.)	<ul style="list-style-type: none"> ● Pag arado <ul style="list-style-type: none"> - 20 liters gasoline x 55/liter = PhP 1,100 ● Labor 9 days = PhP 3,000 ● Pesticide 1 liter = PhP 1,500 ● Ronstar = PhP 1,200 ● Abono 5 sacks PhP 2,700 = PhP 13,500 ● Magnum 5 liters PhP 500 = PhP 2,500 ● Rice seeds 5 sacks (1200) = PhP 6,000 ● Laborer (Pagsab-og) x 400 x 1 day = PhP 1,200 ● Laborer (harvest) <ul style="list-style-type: none"> - 10 x 3 days = 8 ½ sacks = PhP 6,800 (Payment for laborer that converted to cash) ● Food expenses = PhP 3,500 <p style="text-align: right;">Total : PhP 40,300</p>	<p>Harvest</p> <p>70 sacks – 8 sacks(laborer) = 61.5 sacks x 50 kilos = 3,075 x 16 / sacks</p> <p style="text-align: right;">Total: PhP 49,200</p> <p>Inflow: PhP 49,200 Outflow: PhP 40,300</p> <hr style="width: 50%; margin-left: auto; margin-right: 0;"/> <p style="text-align: right;">Total income: PhP 8,900</p>
2. Swine (Fattening)	<ul style="list-style-type: none"> ● Piglets PhP 3,500/ head X 4 = PhP 14,000 ● Feeds (starter) PhP 1,900 x 2 sacks = PhP 3,800 ● Hog mass/grower <ul style="list-style-type: none"> - PhP 1,800 x 4 sacks(1 month) x 2 = PhP 14,400 <p style="text-align: right;">Total : PhP 32,200</p>	<p>Disposal</p> <p>4 heads x PhP 10,000/head</p> <p style="text-align: right;">Total: PhP 40,000</p> <p>Inflow: PhP 40,000 Outflow: PhP 32,200</p> <hr style="width: 50%; margin-left: auto; margin-right: 0;"/> <p style="text-align: right;">Total income: PhP 7,800 (3 months)</p>



6. Venn Diagram



Barangay Lacaron

1. Introduction

1.1. Barangay Profile

Lacaron is a barangay in the municipality of Dao, in the province of Capiz. Its population as determined by the 2020 Census was 2,355. This represented 6.96% of the total population of Dao. Lacaron is situated at approximately 11.4155, 122.7311, in the island of Panay. Elevation at these coordinates is estimated at 28.0 meters or 91.9 feet above mean sea level.

1.2. Household Classification

- Lower class 95%
- Middles class 5%
- Upper class 0%

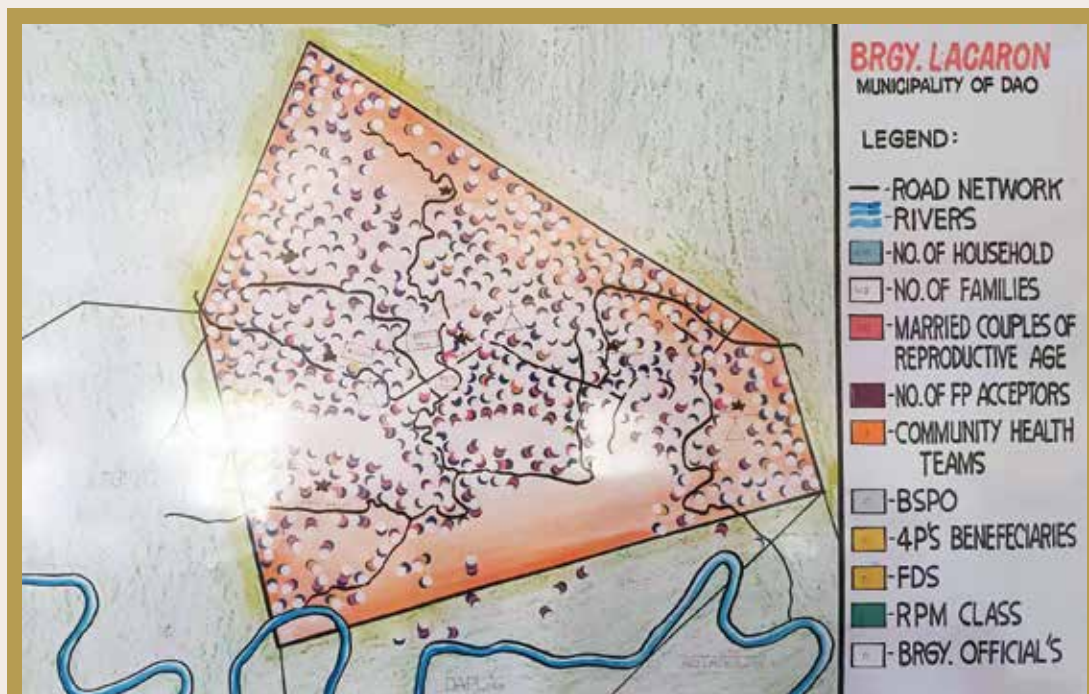


Figure 4. Map of Barangay Lacaron

1.3. Livelihood Status

Barangay Lacaron has the same agro-ecological characteristics and livelihood options as its neighbor Barangay Duyoc. Rice farming is also their main source of livelihood and they are able to plant two times a year. The farmers shared that the average income from rice farming is PhP 51,538 during the best conditions. However, if pest infestation or a typhoon affects their production, they only average around PhP 8,698.00.

Maize is another major crop produced by Lacaron. Per season, the average income is only PhP 5,000 due to high production costs, including labor. Many corn farmers shifted to rice production due to having access to the water pump.

Sugarcane is also grown by a number of farmers who offer labor to their neighbors. Vegetable production started only a decade ago with the following as the main crops: eggplant, okra, squash, peanut, and beans. However, only a few are engaged in this. 30 years ago, only indigenous vegetables like lupo and kulitis were available. Cassava used to be a popular root crop 30 years ago but in the past decade, sweet potato and peanuts have also been produced.

Swine fattening and breeding is another source of income for Lacaron.

1.4. Sectoral Involvement

a. Rice farming

Men are more involved in all the production processes. Women are more involved in seed selection at 25%. Harvesting, drying, and marketing are all at 30%. Decisions in production are controlled by men, but it is equal between men and women in marketing. Youth participation in production almost equals that of adults.

b. Corn Production

Women are more involved in this production system as they dominate the participation in most of the activities. Men's participation is only greater during land preparation, shelling, and application of herbicide. Decision-making in production is shared. Youth participation in the activities is also significant.



c. Swine production

There is a significant difference in role in the production system for swine. In the breeding system, men are more involved, while men and women have equal participation in fattening. The same goes for decision-making. Youth participation is evident but the elderly participate more in both systems.



2. Climate Change Perception

2.1. Climate Hazard

The community identified floods as a secondary hazard that is most likely to recur given the increasing rain intensity in the past decade. There is also a more regular occurrence of typhoons in the last quarter of the year. El Niño was experienced but this happened only in the 1990s. They said that intense rains lasting up to 3 to 5 hours have caused floods 5 to 10 feet deep that lasted for a week before subsiding.

2.2. Impact

All areas (sitios) are affected during typhoons. Floods submerge their rice fields, root crops, vegetables, and corn areas. Farm-to-market roads were greatly affected, with floods remaining for a significant time. These eventually created pot holes in the roads.

Local business was slow as commerce was affected by the flood and took long to subside.

Households, especially those in the lower income group, have claimed to experience hunger as their sources of income and houses were wiped out.

2.3. Coping Mechanism

The local government responded by implementing early evacuation and having announcements through recorida. Food packs were also distributed during and after the hazard.

As the majority (95%) of the farmers are RSBSA-registered, assistance from the DA was immediate with free inputs and cash. Those who have registered under the PCIC were able to claim insurance.

The community also has access to credit for capital to restart their livelihoods and to enact repairs with the help of MFIs such as ASA Dungganon, RAFI Finance, and Life Bank, and farmer cooperatives such as Pontevedra (PVDCI).

2.4. Capacity of Community

The community classified themselves as having households with middle and low class as many are dependent on agricultural-based livelihoods. Alternative livelihoods are available only to those who can afford to set up a sari-sari store and a few professionals. There are also households that have family members who need to go overseas for work due to the lack of opportunities in the area.

The farming population in Lacaron is young with an age range of 20 to 70 years old. 95% of the farmers are registered to RSBSA and can avail of PCIC services. The community also benefits from the presence of organized farmers' associations which can provide production machinery such as tractors, dryers, and harvesters. Private individuals also rent out these tools.

Among the sitios, Sitio Balud is the most vulnerable given its location. It is nearest the Panay River and most of the low-income households reside in the area.

The local government has consistently provided support during and after hazards. They have prepared DRR and contingency plans and the Department of Agriculture also gives support by providing farming input.

2.5. Initial Plan

Implications	Solutions
Flood	Proper waste disposal River control
Impact on community and livelihoods	Stockpiling of enough food to support for a longer time. Improve information dissemination by upgrading equipment such as handheld radios.

3. Summary and Findings

Rainfall has been intensifying since more than a decade ago. The community has observed these changes in the seasonal pattern. Flooding has become a regular occurrence even in the monsoon season. This has often wiped out their livelihoods. Government response and recovery programs seem to be available, but these are limited to immediate food needs, seeds, and inputs. The presence of MFIs, especially cooperatives, is advantageous, although they should offer lower rates to smallholder farmers and farmer tenants who need to recoup the expenses they lost during the flood.

Access to production and post-production is meager due to its control by private individuals. With rice as a major commodity, the community needs more support to dry palay more efficiently and to pursue other forms of livelihood.

Although DRR plans and contingency plans are in place, the local government still needs to incorporate steps to secure the people's livelihood assets in case of emergency situations.

Labor and human capital in the community is fairly young and can benefit from programmed capacity-building.

4. Recommendations

1. Maximize the presence of farmer associations to build up community support. There should be programmatic organizational development to enable these associations to provide easy access to various support for their member farmers and the community.
2. The local government should include contingency planning for livelihood assets and pay special attention to Sitio Balud.
3. They should explore suitable alternative livelihoods since opportunities are very limited in the barangay. This could include diversification of current crops. Intercropping of legumes in corn will not only improve the soil but can possibly provide an additional source of income or even feed for livestock.
4. Firmer solid waste disposal ordinance.

Annex B. PCVRA Tools Used

1. Timeline

Super Typhoon Yolanda, November 8, 2013			
Events/ Features	Impacts on livelihood	Coping strategies implemented	Strategies in case of reoccurrence of the event
Typhoon Yolanda			
Heavy rain and Strong wind (6 hours)	<ul style="list-style-type: none"> Total damage to rice fields, corn, sugarcane, vegetables, poultry, and livestock is estimated to be 100%. Destruction of farm-to-market roads Economic and business disability Humans and animals experienced phobia and nervous breakdown 30% of properties were totally damaged, while 70% were partially damaged Approximately 100% of sugarcane, rice, corn, chickens, goats, and swine were submerged 	<ul style="list-style-type: none"> Evacuated to the school and Barangay Hall Sought assistance from DA (Seeds, PCIC Insurance claims, fertilizers, and cash) 95% Insured To RSBSA Different food packs came from the Local Government Unit (LGU), Barangay Local Government Unit (BLGU), Department of Social Welfare and Development (DSWD), and other private individuals Accessed credit through microfinance institutions (MFI) for additional capital and renovation of properties Recorda conducted by Barangay official DA gave support by providing seeds and fertilizers Crop insurance from Philippine Crop Insurance Corporation (PCIC) 	<ul style="list-style-type: none"> Proper Waste Disposal Stockpiling of food Provide DRRM Facilities and handheld radio River control Seeds subsidies
Floods			
Heavy rains (3 to 5 hours) Flooding from 5 to 10ft deep		<ul style="list-style-type: none"> Received cash and relief goods from the local government Food shortages and poverty 	<ul style="list-style-type: none"> Need capital to support livelihoods Continuous support from DA for seeds and fertilizers Early awareness
Pest/rat infestation			
2022 Last Quarter	<ul style="list-style-type: none"> Crops died Low production/yield 	<ul style="list-style-type: none"> Insurance claimed 	<ul style="list-style-type: none"> Synchronize planting of rice to continue to register insurance

Super Typhoon Yolanda, November 8, 2013			
Events/ Features	Impacts on livelihood	Coping strategies implemented	Strategies in case of reoccurrence of the event
El Niño			
1997 8-9 months January to September	<ul style="list-style-type: none"> • 1st cropping in rice was burned • Hunger • Water crisis, no source of water • Domestic animals died • Unable to plant and have no alternative livelihoods 	<ul style="list-style-type: none"> • Planting of root crops • Access to MFI • Sought alternative livelihood 	<ul style="list-style-type: none"> • Stockpiling of food • Water conservation • Establishing an irrigation system

2. Spot Map



3. Seasonal Calendar

30 Years Ago	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
CLIMATE PATTERN (Wet & Dry)												
TYPHOON											✓	
TEMPERATURE	↑	↑	↑	↑	↑	↑	↑	→	→	→	→	↑
RAINFALL	[Rainfall bar: dark brown from Jan to Aug, light brown from Sept to Dec]											
LIVELIHOODS:												
A. Rice 75%		Harvest			Land Prep	Planting 1st crop			Harvest	Land Prep	Planting 2nd crop	
B. Corn 50%		Harvest			Planting 1st crop			Harvest				Planting 2nd crop
C. Livestock (backyard)	ALL YEAR ROUND - Native pig											
D. Root crops	ALL YEAR ROUND - Cassava											
E. Vegetables	ALL YEAR ROUND - Indigenous vegetables (lopo, kulitis, etc.)											

15 Years Ago	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
CLIMATE PATTERN (Wet & Dry)												
TYPHOON						✓					✓	
TEMPERATURE	→	→	↑	↑	↑	↓	↓	↓	→	→	→	↓
RAINFALL	[Rainfall bar: yellow from Jan to May, brown from June to Oct, red from Nov to Dec]											
LIVELIHOODS:												
A. Rice 75%		Harvest	Mung bean	Mung bean	Land Prep	Planting 1st crop			Harvest	Land Prep	Planting 2nd crop	
B. Corn 50%		Harvest			Planting 1st crop			Harvest				Planting 2nd crop
C. Livestock Native/upgraded	ALL YEAR ROUND - Native pig											
D. Root crops, legumes	Sweet potato	Sweet potato	2nd harvest peanut	Planting peanut	Sweet potato	Sweet potato	Sweet potato	Sweet potato	1st harvest peanut	Sweet potato	Sweet potato	Planting peanut
E. Vegetables	Eggplant Okra String beans	Eggplant Okra String beans	Eggplant Okra String beans	Eggplant Okra String beans	Eggplant Okra String beans							

5 Years Ago	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
CLIMATE PATTERN (Wet & Dry)												
TYPHOON										✓	✓	✓
TEMPERATURE	↓	→	↑	↑	→	→	↓	↑	↑	↓	↓	↓
RAINFALL	High	High	High	High	High	Moderate	High	High	High	Moderate	Low	No Rain
LIVELIHOODS:												
A. Rice 75%		Harvest			Land Prep	Planting 1st crop			Harvest	Land Prep	Planting 2nd crop	
B. Corn 50%		Harvest			Planting 1st crop			Harvest				Planting 2nd crop
C. Livestocks (Upgraded swine)	ALL YEAR ROUND - Backyard											
D. Peanut			2nd harvest peanut	Planting peanut					1st harvest peanut			Planting peanut
E. Vegetables	Eggplant Okra String beans	Eggplant Okra String beans	Eggplant Okra String beans	Eggplant Okra String beans	Eggplant Okra String beans	Eggplant Okra String beans	Eggplant Okra Squash	Eggplant Okra Squash	Eggplant Okra Squash	Eggplant Okra Squash	Eggplant Okra Squash	Eggplant Okra Squash

LEGEND:

CLIMATE PATTERN	TEMPERATURE	RAINFALL
Wet Dry	↑ High → Average ↓ Low	High Moderate Low No Rain

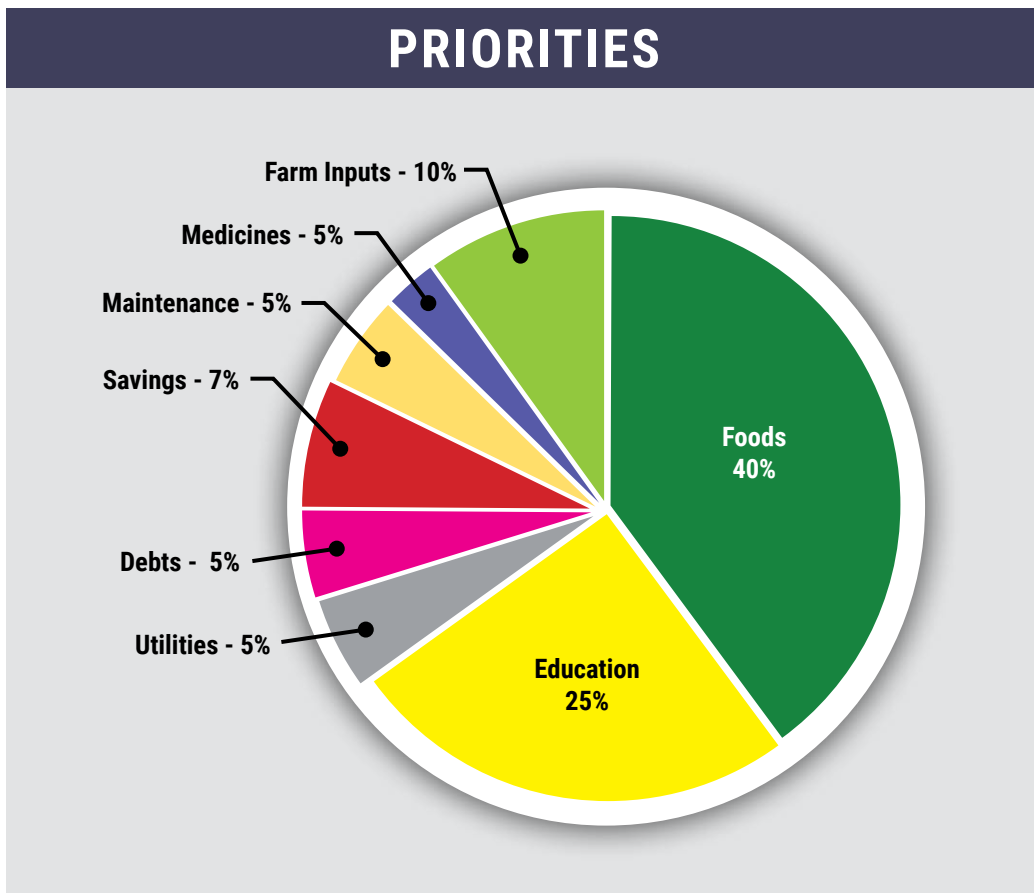
4. Livelihood Matrix

LIVELIHOOD: RICE FARMING	Roles		Decisions		Sectoral Role		
	Women	Men	Women	Men	Youth 15-30	31-59	Senior Citizen
1. Seed selection	25%	75%	20%	80%	30%	50%	20%
2. Land preparation	10%	90%	10%	90%	30%	60%	10%
3. Seed soaking		100%		100%	20%	40%	40%
4. Seed incubation (after 24 hours)		100%		100%	45%	45%	10%
5. Seed broadcasting	25%	75%	20%	80%	10%	70%	20%
6. Spraying of herbicides (onwards)	20%	80%	10%	90%	40%	50%	10%
7. Fertilizer application (1st dressing)	10%	90%	20%	80%	30%	50%	20%
8. Spraying of insecticides and pesticides	20%	80%	10%	90%	40%	50%	20%
9. Fertilizer application (2nd dressing)	10%	90%	20%	80%	30%	50%	20%
10. Foliar fertilizer application	10%	90%	10%	90%	40%	50%	10%
11. Harvesting	30%	70%	20%	80%	40%	50%	10%
12. Drying	30%	70%	50%	50%	40%	50%	10%
13. Marketing/selling	50%	50%	50%	50%	10%	70%	20%

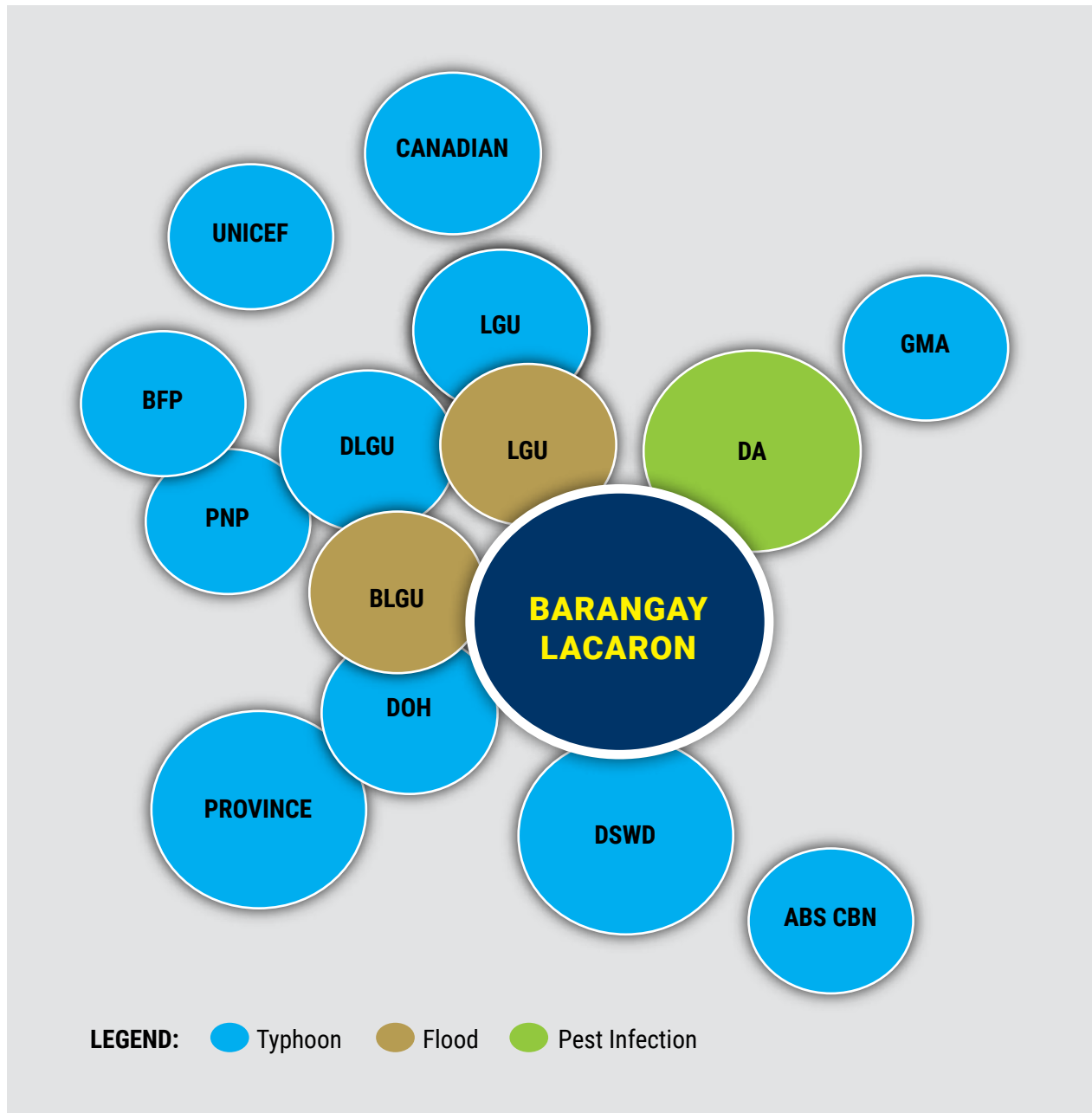
LIVELIHOOD: CORN	Roles		Decisions		Sectoral Role		
	Women	Men	Women	Men	Youth 15-30	31-59	Senior Citizen
1. Seed selection	30%	70%	50%	50%	10%	80%	10%
2. Land preparation		100%	50%	50%	30%	60%	10%
3. Planting	80%	20%	50%	50%	30%	60%	10%
4. Fertilizer application (1st dressing)	70%	30%	50%	50%	30%	60%	10%
5. Herbicide application		100%	20%	80%	40%	50%	10%
6. Fertilizer application (2nd dressing)	70%	30%	50%	50%	30%	60%	10%
7. Harvesting	30%	70%	50%	50%	10%	80%	10%
8. Corn shelling	10%	90%	50%	50%	40%	50%	10%
9. Marketing/selling	50%	50%	50%	50%	10%	80%	10%

5. Resource Flow

LIVELIHOODS	Outflow	Income
1. Rice Farming (1 ha.)		
	<ul style="list-style-type: none"> • Land prep, tractor w/labor (package: rent, labor, gasoline) = PhP 8,000 • Binhi/seeds w/ labor - PhP 1,400 x 4 = 5,600 + 300 = PhP 5,900 • Abono/Pesticides(w dressing) <ul style="list-style-type: none"> - Triple 14- 1,700 x 2 = PhP 3,400 - Urea- 1,400 x 2 = PhP 2,800 • 1ST Application of herbicide w/ labor-1400 + 300 (6 days) = PhP 1,700 • 2nd application fertilizer (command plus brand)w/ labor-1800 + 300 (10 days) = PhP 2,100 • Application of pesticide w labor (top dressing 45 days)- 1200 + 300 = PhP 1,500 • Spray pesticide (zimbus brand) w/ labor -1 liter 1,100 + 300 = PhP 1,400 • Application of polliar <ul style="list-style-type: none"> - 800/liter + 300 = PhP 1,100 • Water management (16 liters x 62/liters) = PhP 992 • Hauling = PhP 5,250 	<p>Harvest</p> <ul style="list-style-type: none"> • Harvester (15 sacks paid to harvester) • Owner 105 sacks x 48 kilos/sack = 5,040 x 17/kilo = PhP 85,680 <p>Regular/average harvest:</p> <p style="text-align: right;">Inflow: PhP 85,680 Outflow: PhP 34,142</p> <hr style="width: 100px; margin-left: auto; margin-right: 0;"/> <p style="text-align: right;">Income: PhP 51,538</p> <p>If there is pest, flood, typhoon: PhP 42,840.00 (85,680÷2) PhP 34,142</p> <hr style="width: 100px; margin-left: auto; margin-right: 0;"/> <p style="text-align: right;">Income: PhP 8,698</p>
TOTAL:	PhP 34,142	
2. Corn (1 ha.)		
	<ul style="list-style-type: none"> • 14 sacks /has (MAO) <ul style="list-style-type: none"> - 7 Urea x 2100 = PhP 14,700 - 7 triple 14 x 2400 = PhP 16,800 - Labor 30days x 6 laborer x 1 day = PhP 2,100 • Arado/herbicide spray <ul style="list-style-type: none"> - 1 gallon x 1,500 = PhP 1,500 - Labor 40/spray x 8 = PhP 320 - Seeds 2sacks/ha x 5,500/sack = PhP 11,000 - Eras/pakyaw = PhP 1,000 - Panggas/transplant 10 laborer x 350/head = PhP 3,500 - Hauling 80 x 14 = PhP 1,120 • Harvest (paluak) <ul style="list-style-type: none"> - 60 sacks x 180 sacks = PhP 10,800 • Sheller <ul style="list-style-type: none"> - 160 sacks -15 shot =145 x 50 = PhP 7,250 	<p>Harvest</p> <p>14 sacks x50 = PhP 7,250 7,250 x 14 = PhP 101,500</p> <p>Tenancy fee: PhP 101,500/4 = PhP 25,375 PhP 101,500-70,090 = PhP 31,410</p> <p style="text-align: right;">PhP 75,000 PhP 70,000</p> <hr style="width: 100px; margin-left: auto; margin-right: 0;"/> <p style="text-align: right;">Income: PhP 5,000</p>
TOTAL :	PhP 70,090	



6. Venn Diagram





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 Brgy. Lacaron Council

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Farmers' Association

Duyoc Irrigators Farmers Association
 Kabatanga Farmers and Labor Association
 Lacaron Farmers Association
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 Sitio Balud Farmers Association

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