



# PROMISE PROJECT

DAGUPAN CITY  
PHILIPPINES

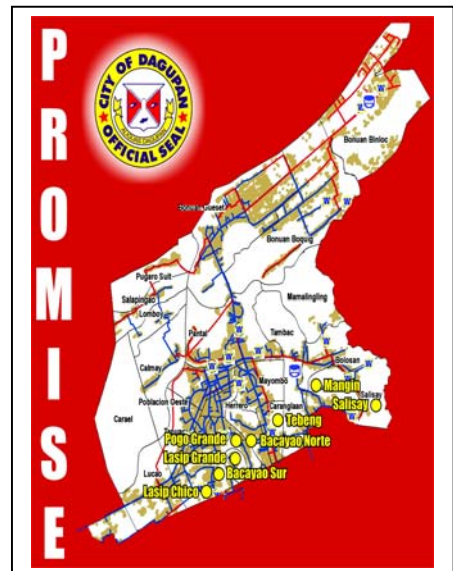
## PROGRESS REPORT ON COMPONENT 1

Implemented By:

*Center for Disaster Preparedness Foundation, Inc.*

Submitted To:

ADPC  
November 2006



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## Introduction

### 1.1 Introduction on the ADPC-USAID Program

ADPC has picked up five candidate cities from Bangladesh, Pakistan, Philippines, Sri Lanka and Vietnam in consultation of the lead partner in respective countries through an analysis conducted in South Asia and South Asia for city demonstration projects. The selected sites among the most vulnerable secondary cities subjected to hydro-meteorological events in the recent history. They are rapidly urbanizing and have the potential to be impacted severely affected by hydro-meteorological events in the future. City authorities of the respective candidate cities consider risk management as one of the priority issues among the problems faced by residents of the respective city and have shown a keen interest to take up activities under city demonstration projects. ADPC has included a concept note on the potential project and the detail project proposal should be in line with the concept note, which we have already shared with Project leading partners.

Based on the above assessment, ADPC has identified the following secondary cities as primary target area for project implementation, namely Chittagong in Bangladesh, Rawalpindi in Pakistan, Dagupan in the Philippines, Kalutara in Sri Lanka and Da Nang in Vietnam.

### 1.2 Introduction on PROMISE Philippines- Dagupan City

The city is located in the mid-north section of the Province of Pangasinan along the Gulf of Lingayen and lies in the southwestern part of Region I. It is 212 kilometers from Manila, the country's capital and 70 kilometers from Baguio, the country's summer capital.

It is bounded by Lingayen Gulf on the north, San Fabian on the northeast, Mangaldan on the east, Calasiao on the south and Binmaley on the west. The city falls with latitude 16 01 to 16 07 north and longitude 120 18 to 120 23 east.

The major land formation in the area includes a coastal plain having an almost flat terrain with slopes ranging from 0 to 3%, while the rest are considered as swampy areas, ponds and other forms of wetlands or water bodies.

There are seven (7) river courses crisscrossing the city, namely: Magueragday-Anolid River, Bayaoas River, Patogcawen River, Calmay River, Dawel River, Tanap River and Pantal River

Dagupan City is relatively a small city but it is the center of trade and commerce, education and health care in northwest Luzon. The city is always driving hard to achieve more than its inherent capacity. But its fast progress normally grinds to a halt every time natural calamities such as typhoons, floods and earthquake come its way. Immediately after the onslaught of disaster, however, the city immediately moves forward and makes business as usual.

Coping with disaster has become a way of life. The people have learned to automatically respond to disaster. The City Government has no solid structure for its systematic and scientific operations before, during and after disasters.

**Total Land Area:** 4,446 hectares  
**Land Use-Agriculture:** 1570.00 hectares  
**Land Use-General:** 1,618.50 hectares  
**Annual Rainfall:** 28.04 mm  
**Population:** 145,326  
**Population Density:** 32.68 per hectare  
**Household:** 28,941  
**GDP per Capita:**  
**Monthly Average Income:** Php 2,001.00

### 1.2.1 Disasters Affecting Dagupan City

The entire city is practically water saturated and hence, vulnerable to liquefaction and ground shaking. Dagupan was formed out of the opposing actions of the sea and the rivers that drain into it. The rivers carry off silt from the headwaters and deposit their load into the sea. For its part, the sea pushes back the silt through wave action and piles it up into the shore. This interminable hydro-geological process is responsible for the creation of a river delta, which in reality is reclaimed land out of layers upon layers of silt and sand and muck. The pile of solid particles reaches no more than 2 meters above the level of the sea. Consequently, what appears to be dry land on the surface does not get to be thoroughly drained but is in fact saturated with both fresh and salt water.

The condition of the subsoil is not a solid foundation for building heavy structures. In time of ground shaking like in an earthquake event, materials trapped underground which are of lighter buoyancy tend to squirt out thereby displacing or unsettling structures on the surface. Liquefaction-prone areas are therefore a constraint to urban development in that building on these areas whether out of ignorance or in full awareness of the risks invariably entails costs. Building them over out of ignorance entails immeasurable costs in terms of potential damage to property and possible loss of lives. On the other hand, to prevent disaster by carefully conducting the necessary geotechnical investigations and designing complaint structures will involve high financial costs.

Saltwater-intruded ground water. The extremely flat low-lying surface configuration of Dagupan sliced, as it were, into islets of varying sizes by meandering rivers makes every point in the city within easy reach of salt water during high tide. Again, due to the flat topography the intruding salt water is not effectively flushed out during low tide. Rather, salt water has every opportunity to linger inland and penetrate the aquifer in some areas or else it mixes up with rivers and makes them brackish. This renders the groundwater in some areas less potable. To the extent that water supply for domestic consumption is dependent on ground sources, the unreliable quality of groundwater in some areas is a constraint to urban development.

Flood-prone and storm surge areas. Again, on account of its flat terrain, Dagupan is highly vulnerable to flooding. The floods that hit Dagupan periodically emanate from two directions: from inland and from the sea.

Dagupan is the exit point of the two biggest river systems in Pangasinan: the Agno and the Toboy-Tolong. The smaller Toboy-Tolong river system originates in southern Benguet, flows down in Pangasinan through Binalonan then turns westward through Urdaneta where it is joined by the Miturac and Tagumisín tributaries and on reaching Sta. Barbara, becomes known as the Tolong River. At

Calasiao, the Tolong River is further swelled by the Sapang and Malabago rivers before it enters Dagupan at barangay Bacayao Sur. On entering Dagupan, it meanders through Lasip Grande, Lasip Chico, Pogo Grande, Pogo Chico, the eastern Poblacion at Perez and Quintos bridges, finally turns westward at Pantal and joins the Agno River at Calmay.

The Agno River mouth at Pantal is the second of two exit points of this mighty river. The parting occurs at Bugallon in the southwest of Dagupan. From Bugallon, one stream turns northwest to Labrador. The other runs directly north between San Carlos City and Binmaley and after passing the Manat bridge, the river splits further into fingers of rivulets thereby defining the island barangays of Carael, Calmay, Lomboy, Salapingao, and Pugaro-Suit, and finally, converging at Pantal to join the Tolong river. The combined Agno and Toloy rivers finally empty themselves into the Lingayen Gulf. Although the Agno River exits at two points, the volume of run-off that finds its way through either mouth is considerable due to the very extensive drainage area of this river. Before reaching its fork at Bugallon, the Agno will have collected the run-off from the Central Cordillera in Benguet wended through eastern and south central Pangasinan, northern Tarlac province, and the northeastern Zambales range.

Flooding in Dagupan is further aggravated by the onset of high tide. Tidal backflow has created secondary rivers that in turn made islets out of the eastern barangays of Mamalingling, Bolosan, Tambac, Manguin and Salisay. The worst floods occur during extraordinary heavy rains and high tides. Sometimes the barangays along the mouth of the Pantal River experience storm surges.

Flooding, though seasonal, is a constraint to development in that damage to public infrastructure, private property, agricultural crops, fishponds, and other economic activities are usually heavy.

### MAJOR FLOOD OCCURENCE

YEAR	DISASTER	EFFECTS
1935	The Biggest Flood in Pangasinan	Entire Dagupan was flooded, Colegio de San Alberto Magno and Franklin Bridge at Calmay were destroyed and sank at Calmay River.
1972	Flood	Agricultural crops, fishponds and other properties were damaged.

1990	Earthquake with flooding	<p>Out of 120 Commercial Building, 75 % out of use.  Out of 77 School Buildings, 39% out of use.  127 Other Buildings, 6 Hospitals and other social buildings were damaged and out of use.  7,448 houses were either totally or partially damaged.  About 4 kilometers of roads (main thoroughfare of the city) were heavily damaged.  Magsaysay Bridge in Perez Blvd. collapsed.  Electric Poles tilted and electric network was disrupted as well as Telegraph Poles tilted.  The water district likewise sustained heavy damages 6 out of 17 pumping stations were out of use and 12.5 km. of 150 &amp; 100 mm water transmission line were damaged. Supply of water especially potable water was a problem for so many weeks and epidemics due to sanitation problems threatened to break out.  Gasoline Storage Tanks and Septic Tanks behave buoyantly and exerted pressure upward resulting in ground upheaval and breaking of pavements. Consequently, the operation of most gasoline stations were disrupted.  Sewage system made of concrete pipes was filled with sand and experienced large deformation requiring replacement in the major sewage lines in Angel B. Fernandez Avenue.</p>
1998	Typhoon Gading and Iliang	<p>2.8 Million damages in Infrastructures.  36.01 Million damages in Agriculture.  <u>3.3 Million</u> damages in Infrastructures.  42.11 Million as total damages</p>
1999	Monsoon Rain	7.5 Million damages to Infrastructures.
2000	Typhoon Ditang/Eding	24.4 Million damages on Agriculture.
2001	Typhoon Feria	<p>8.5 Million damages on Infrastructures  <u>17.215 Million</u> damages on Agriculture.  25.715 Million Total Damages</p>
2002	Typhoon Gloria	16.32 Millions damages in Agriculture
2003	Typhoon Chedeng	<p>10.7 Million damages on Infrastructures  <u>30.57 Million</u> damages on Agriculture.  40.94 Million as Total Damages</p>
2004	Typhoon Marcy	<p>21 Barangays in the city were flooded.  17,139 households affected  87,409 population affected  5,505 Business Establishments affected</p>
2005	None	

## 1.2.2 DISASTER RISK MANAGEMENT PRACTICES (Prior to Project PROMISE)

- **Legal Basis:**
  - R.A. 7160
  - P.D. 1566
  - Proclamation 296
  
- **Organizational Set-up**  
(to be provided by the City Information Office)
  
- **Disaster Management Activities/Practices**
  - **PRE-DISASTER PHASE**  
The pre-disaster activities undertaken are the following:
    1. *Planning for the Disasters*  
The City Disaster Coordinating Council review and evaluate the disaster preparedness plan as to compliance with pertinent instructions and /or guidelines.
  
    2. *Organizing*  
The City Disaster Coordinating Council is duly organized and its different service committees from the City down to the Barangay levels.
  
    3. *Training*  
The DILG conduct briefing/ orientation of local chief executives training of members of the local Disaster Coordinating Councils in coordination with the Office of the Civil Defense, the Department of Social Welfare and Development, the Philippine National Red Cross, and other appropriate agencies.  
The Philippine National Red Cross conduct disaster leadership training courses for volunteers and assist in the training of the Disaster Coordinating Councils
  
    4. *Drills*  
The City Disaster Coordinating Council has conducted drills for fire and earthquake. A fire drill was conducted at the City Hall Compound and an earthquake drill was conducted in all schools both public and private in the city.
  
    5. *Public Information Drive*  
The City Disaster Coordinating Council in coordination with other government agencies and private entities conduct public information campaign on disaster prevention, control and mitigation measures.
  
    6. *Stockpiling*  
Provisions for basic necessities such as food, clothing and medical supplies, was given priority in stockpiling activity.

The CSWDO and PNRC pre-determine the quantity of relief goods that might be required in particular areas and pre-position the same in disaster-prone areas.

The City Health Office stockpile medicines and medical supplies and other emergency requirements of the community and take appropriate measures in stockpiling of such supplies and materials.

The City Disaster Coordinating Council, especially in the disaster prone areas, pre-determine the food, clothing, shelter, medical supplies and other emergency requirements of the community and take appropriate measures for stockpiling of such supplies and materials.

*7. Communications and Warning Activities*

The Office of Civil Defense, National Disaster Coordinating Council, Regional Disaster Coordinating Council, City Disaster Coordinating Council, Barangay Disaster Coordinating Councils and other tasked agencies disseminate the warning information as well as precautionary measures to the public.

➤ EMERGENCY PHASE

1. Emergency services and intervention activities needed in the disaster area are: communications and warning, rescue and engineering, relief, evacuation, first-aid and medical, security and transportation services.
2. The City Disaster Coordinating Council supervises the rescue and engineering activities within their area of responsibility.
3. Provide health services to disaster victims.
4. Patients who require further medical attention or hospitalization and/or surgical intervention shall appropriately be evacuated.
5. Measures were undertaken to prevent the occurrence/outbreak of epidemics.
6. The CDCC undertake immediate survey of the disaster area and provide emergency feeding, emergency shelter, clothing and tracing services of missing persons if necessary.
7. The CDCC request/solicit government and private sectors the use of their transportation facilities.
8. The CDCC conduct immediate survey of the disaster area to determine: casualties, and damages to infrastructure, agriculture, fisheries and aquatic resources, animal life and other properties.

**ELEMENTS AT RISK**

LOCATION	INDICATORS	VULNERABILITY LEVEL
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		HIGH	MEDIUM	LOW
	a) Number of affected Households			
1. Bacayao Norte		349	-	-
2. Bacayao Sur		348	-	-
3. Barangay I		-	-	138
4. Barangay II & III		-	-	567
5. Barangay IV		-	-	271
6. Bolosan		-	673	-
7. Bonuan Binloc		-	1321	-
8. Bonuan Boquig		-	2231	-
9. Bonuan Gueset			3253	-
10. Calmay				1043
11. Carael				1083
12. Caranglaan			1502	
13. Herrero-Perez			543	
14. Lasip Grande		293		
15. Lasip Chico		208		
16. Lomboy				257
17. Lucao			1647	
18. Malued			1825	
19. Mamaling			234	
20. Mangin			641	
21. Mayombo			1350	
22. Pantal			3286	
23. Poblacion Oeste		800		
24. Pogo Chico			1062	
25. Pogo Grande		443		
26. Pugaro Suit				767
27. Salapingao				520
28. Salisay		376		
29. Tambac			419	
30. Tapuac			1018	
31. Tebeng		471		
	TOTAL	3288	21005	4648
	b) Vulnerable Popn.			
Citiwide		16,769	107,126	23,705
	c) Children (0-17 y/o)			
Citiwide		6,991	44,661	9,883

#### ELEMENTS AT RISK

LOCATION	INDICATORS	VULNERABILITY LEVEL		
		HIGH	MEDIUM	LOW
	d) Senior Citizens (65 y/o & over)			

Citiwide		694	4,435	981
	e) Affected Resources			
Citiwide	Fishponds	930 has.		
Citiwide	Fishpens	1,000 units		
Citiwide	Business Establishments	5,232		
Citiwide	Agriculture areas	594 has.		
Citiwide	Croplands	285 has.		

### 1.3 PROMISE Program

#### 1.3.1 How Project PROMISE Started

A team from the Center for Disaster Preparedness (CDP) went to Dagupan City on July 19, 2005 and announced that the city was one of the candidates for the USAID-funded project PROMISE. The city was recommended as one of the prospective recipients of the project by the National Economic Development Authority (NEDA), the Office of Civil Defense (OCD), and the League of Cities of the Philippines (LCP).

Because of the prompt response of the city executives in providing all necessary documents and its willingness to implement the project, the ADPC chose Dagupan City among the candidates to execute the project in the Philippines, along with other four Asian cities.

A meeting to discuss details for project implementation was held on October 10, 2005.

A new PROMISE team was created: Dagupan City Government as the local partner, Asian Disaster Preparedness Center (ADPC) as the integrating and coordinating agency of all PROMISE projects in Asia, USAID as the funding agency, Center for Disaster Preparedness (CDP) as the implementing partner.

#### 1.3.2 Project Launching and Technical Scoping

The Program was divided into two main parts, the formal Project Launching and the Orientation Workshop. For the formal Project Launching, the City Mayor Hon. Benjamin S. Lim, gave the Welcome Remarks. Messages of Support for the Project were given by Mr. Edgar Nigel Lontoc, the Regional Director of the Office of Civil Defense (OCD); Atty. Gil Fernando Cruz, Executive Director of the League of Cities of the Philippines (LCP); and, Ms. Laura Coughlin, Mission Disaster Relief Officer, USAID. To cap the formal launching, the Memorandum of Understanding (MOU) between Dagupan City and CDP was signed with the representatives from USAID, LCP and OCD as witnesses. The event was well covered by the local print and broadcast media.

On the other hand, the orientation workshop started with the presentation by Mr. Robert Erfe-Mejia, Chief of the Public Order and Safety Office (POSO) and Civil Defense Deputized Coordinator of the Dagupan City Disaster Coordinating Council on the City Situation and Current Efforts in Disaster Management. This was followed by the presentation of Ms. Lorna Victoria about the PROMISE Project. The presentations were followed by an Open Forum which was facilitated by the City Administrator, Mr. Rafael Baraan.

The body was later divided into workshop groups and each group was asked to identify the factors which they think would facilitate or hinder the smooth implementation of the Project and the roles of each stakeholder. After the workshop results presentation, each one was tasked to identify eight communities which they perceived as the most vulnerable to flooding.

### 1.3.3 Program Goal

Reduced vulnerability of urban communities through enhanced preparedness and mitigation of hydro-meteorological disasters in South and South East Asia.

### 1.3.4 Program Strategy

ADPC proposes the following strategy for the proposed program: "Increased adoption of private and public sector mechanisms for community preparedness and mitigation of hydrometeorological disaster risk in urban areas of South and South East Asia which will measurably alleviate human suffering, prevent loss of life, and reduce the potential for physical and economic damage".

### 1.3.5 Program Objectives

The proposed project will build on the activities undertaken and strategies developed under the AUDMP for achieving the above goal through:

- Adoption of specific hydro-meteorological disaster preparedness and mitigation measures to manage hydro-meteorological disaster risk by stakeholders in targeted cities;
- Increased stakeholder involvement and further enhancement of strategies, tools and methodologies related to community preparedness and mitigation of hydro-meteorological disasters in urban communities;
- Enhanced coordination with USAID Missions to promote sustainability and ensure program activities accord with USAID country and regional strategies;
- Strengthen networks and regional links among relevant risk management institutions/organizations for improving potential and capacity for application and dissemination of lessons learned.

### 1.3.6 Components

Component 1: Hazard Vulnerability and Risk Assessment;

Component 2: Mitigation and Preparedness

Component 3: Training and Public Awareness

Component 4: Advocacy for Mainstreaming risk management in urban governance

## **2. Progress Report on Component 1: Hazard, Vulnerability and Risk Assessment**

### **2.1 Activities**

This component consists of the following activities:

#### **A. TRAINORS' TRAINING (PART I)**

A technical working group (TWG) from the core of the City Disaster Coordinating Council (CDCC) was organized. The TWG, together with some representatives from the 8 pilot barangays, underwent training on Community-Based Disaster Risk Management and Participatory Risk Assessment from March 27 to 31, 2006.

The training aimed to equip them with skills in preparing a data base for disaster risk management planning having the community based disaster risk management approach.

#### **B. JOB TASKING**

To facilitate the CBDRM and PRA activities to be conducted in the 8 pilot barangays, the task was distributed among team facilitators of the TWG.

Before deployment, the TWG and barangay leaders staged one final meeting. A common terms of reference to conduct activity was adopted. The TWG divided the group into two teams. Each team was composed of: resource speakers, facilitators and members of the documentation team.

#### **C. TRAINING BARANGAY SECTORAL LEADERS ( PART I )**

A simultaneous barangay disaster risk management training in Lasip Chico and Bacayao Norte was staged on May 10-12 with Participatory Risk Assessment.

The enthusiastic participants represented various sectors: children and youth, women, men, and barangay council members.

#### **D. FACILITATORS TRAINING ( PART II )**

An assessment of the 1st batch gave an idea to the TWG on how to improve the conduct of the CBDRM / PRA. In order to further equip the facilitators and resource persons with adequate knowledge and skills, another facilitators' training was conducted.

They decided to come up with a common content and template of the module which will be used in the barangay.

Another team was created in order to facilitate and fast track the conduct of the CBDRM / PRA before the onset of the rainy season which starts in the month of June.

#### **E. TRAINING BARANGAY SECTORAL LEADERS ( PART II )**

Right after, the three teams staged the simultaneous barangay disaster risk management training, one team for every barangay.

May 22-24 – Barangays Lasip Grande, Mangin and Salisay

May 29-31 – Bacayao Sur, Pogo Grande and Tebeng

The participants gave positive feedbacks on the training as shown in the results of the evaluation. Majority of the participants said that they gained more knowledge on disaster preparedness.

## F. VALIDATION OF ACTION PLANS

In the next three weeks, the TWG teams went back to the barangays for the validation and finalization of their respective action plans.

## 2.2 Methodology

### TOOLS USED for PARTICIPATORY RISK ASSESSMENT

- A. HAZARD MAP—an illustration of the barangay indicating the specific level of risks in its specific areas. The level of risks is identified based on a color coding. This tool is used in hazard and vulnerability assessment.
- B. NATURE HAZARD ASSESSMENT—an identification of the dangerous and safe places in the barangay in case of a particular hazard such as flood, fire and earthquake.
- C. BEHAVIOR and HAZARD ASSESSMENT—determines the practices of the community, barangay officials and the local government before, during and after a disaster.
- D. KKK—a tool to identify the capacity and vulnerability of the barangay by identifying the difference of the status of barangay before, during and after a calamity in terms of *kalusugan* (health), *kabuhayan* (livelihood) and *kaugalian* (attitude).
- E. SOCIAL VENN DIAGRAM—This method helps in identifying the organizations closest to the people of the community. The various organizations, be it government or private, are ranked according to the proximity and accessibility of their services to the community people when there is an emergency.
- F. TIMELINE--The method is used to recall the previous disasters that hit the community and their effects.
- G. PROBLEM TREE--The method highlights the root cause and the effect of a problem. This is used to assess vulnerability and capacity of the community
- H. BARANGAY WATCHING/VULNERABILITY - CAPACITY ASSESSMENT—an actual monitoring of the capacities and vulnerabilities of the barangay. Interviews with the residents are also conducted to determine the actual disaster experience of the residents.

I. EXISTING SECONDARY DATA-refers to data collected through surveys and census conducted in the city. One vital piece of information derived from this is the identification of evacuation centers and the existing capacities of individuals who may act as contact people.

J. INvento

### **2.3 Project Area: Dagupan City**

The PROMISE project is being implemented in 8 barangays:

- a. Bacayao Norte
- b. Lasip Chico
- c. Lasip Grande
- d. Mangin
- e. Salisay
- f. Bacayao Sur
- g. Pogo Grande
- h. Tebeng

### **2.4 Participatory Vulnerability and Capacity Assessment**

#### A. BACAYAO NORTE

- Its land area of 76.49 hectares cradles 344 households.
- It has a population density of 22.55.
- It has a 1,725 number of residents.
- No evacuation centers available.

#### HAZARD ASSESSMENT

The barangay is vulnerable to flood, fire and earthquake. Almost every year, the barangay experiences major flooding induced by typhoon or high tide. Most of the areas of the barangay are high risk in terms of flooding.

The barangay is also vulnerable to fire since some factories of firecrackers are located in the area.

The 1990 earthquake brought destruction to properties and livelihood of the Bacayao Norte residents.

#### VULNERABILITY ASSESSMENT

Because the area is low, the floodwater reaches up to more than 4 feet. The floodwater remains stagnant until three weeks. Most of the houses are made of light materials which made the residents more vulnerable to fire and flooding and other hydro-meteorological hazards. Moreover, majority of the sources of livelihood of residents in the area is affected, and residents do not have alternative livelihood means.

The flooding in the area is aggravated by the heavily silted river adjacent to the barangay.

#### CAPACITY ASSESSMENT

Residents of the area have been anticipatory of the effects of the frequent flooding that is why the level of newly-constructed structures are raised especially the toilet facilities.

Bacayao Norte has a responsive Barangay Disaster Coordinating Council, which assigns a monitoring team to regularly check the situation of the residents.

It is also notable that residents of the barangay display cooperation and goodwill to one another during a course of a disaster.

#### B. LASIP CHICO

- It has a land area of 28.52 hectares with 206 households.
- Its population is 1,030.
- It has a population density of 36.12.

#### HAZARD ASSESSMENT

Six major typhoons hit the barangay which affected the livelihood of the residents and made the streets of the barangay impassable to vehicles.

A major fire incident transpired in the barangay which burned down 1 house and partially blistered 2 houses.

Ninety-percent of houses and 85% of the barangay roads of Lasip Chico were damaged during the 1990 earthquake.

#### VULNERABILITY ASSESSMENT

Lasip Chico is one of the first barangays to be flooded in the city when a typhoon or monsoon rain comes. The barangay is adjacent to a river where the floodwaters from Sta. Barbara and Calasiao, neighboring municipalities of Dagupan, pass through.

The barangay is a low lying area and oftentimes records the deepest level of flood. Normal depth of floodwater is 3ft and reaches 6ft at times. It usually recedes after 3 weeks.

## CAPACITY ASSESSMENT

The barangay receives a lot of support from various government and non-governmental agencies whenever a disaster hits the barangay.

The barangay manages to create an alternative transportation during flood made of indigenous materials. This is called "balsa." The operation of balsa is also an alternative livelihood for the barangay during flooding.

## C. LASIP GRANDE

- It has a land area of 43.96 hectares with a population density of 33.01.
- 290 households comprise its population of 1,451.
- The barangay is surrounded by rivers.
- No evacuation centers available.

## HAZARD ASSESSMENT

The barangay experienced flood six times in the year 2003 which caused damage to properties aside from the destructions caused by major typhoons in year 1998 and 2004.

The 1990 earthquake brought heavy damage to houses, plants and infrastructures in the barangay. Two people were also killed during the earthquake.

## VULNERABILITY ASSESSMENT

Majority of houses in the barangay are made of light materials making it not only vulnerable to hydro-met hazards but also to fire. The houses are also adjacent to one another.

The floodwater level ranges from 3 to 6 ft deep and usually recedes after around 10 days.

## CAPACITY ASSESSMENT

Residents at Lasip Grande are naturally resourceful people. They use indigenous materials as means of transportation during flood. They are known to display generosity with one another in times of need.

Despite flooding, the residents find ways to have an alternative means of livelihood.

The officials of the barangay tap various non-governmental organizations to help the residents of the barangay in many ways.

The barangay also practices the cutting of protruding branches of trees in order to avoid accident during a disaster.



#### D. BACAYAO SUR

- It has a land area of 37.09 hectares.
- It has a population density of 46.37,
- It cradles 1,720 residents, and 343 households.

#### HAZARD ASSESSMENT

The earthquake on July 16, 1990 caused destruction to the roads of the barangay and caused liquefaction in the area, made buildings and houses collapsed, and cut off water and power supplies.

The major flood incident which had hit Bacayao Sur was recorded on October 1990. The flood closed the roads of the barangay for all types of vehicles, resulted in food shortage, occurrence of various illnesses and suspension of classes.

Another flood incident occurred in August, 1998 wherein the guava plantation in the barangay was devastated and ninety percent of the houses were inundated.

#### VULNERABILITY ASSESSMENT

Being adjacent to a river, the barangay inevitably experiences flooding during heavy downpour spawned by typhoon. The floodwaters in the barangay measure from two (2) ft up to more than four (4) ft. The floodwaters subside after 1 week.

Most of the structures are made of light materials which make them more vulnerable to typhoon and other hydro-met hazards.

#### CAPACITY ASSESSMENT

The barangay maintains good rapport with various non-governmental organizations. It also has active barangay officials and barangay health workers who are ready to render help and service during a disaster.

The barangay officials pursue a program in regularly cleaning the drainage and planting trees in order to lessen the flooding situation in the barangay. Seminars and training are also staged in order to prepare the residents for disasters.

The sense of community is evident in the barangay as residents help one another in times of need.

#### E. POGO GRANDE

- Has a land area of 39.62 hectares with 437 households.
- It has a population density of 55.22.
- It has a population of 2,188.

### HAZARD ASSESSMENT

Pogo Grande oftentimes experiences flood induced by typhoon or high tide. Typhoon Gading in 1988 and earthquake in 1990 brought destruction to livelihood and properties in Pogo Grande.

The barangay is also vulnerable to fire and earthquake.

### VULNERABILITY ASSESSMENT

The improper disposal of garbage aggravates flooding in the area. It takes more than a week for the floodwater to subside because of the rapid conversion of lands into commercial spaces in the area. The floodwater escalates from 1 ft up to 5.5ft.

### CAPACITY ASSESSMENT

Households have been accustomed to prepare even before a typhoon hits. They store food, water, and medicines for any eventuality. Being anticipatory of the effects of flooding, residence owners elevated the structures of their houses. These traits underscore the awareness of the residents in the significance of disaster preparedness.

The BDCC also stays active in rendering services and monitoring affected families.

### F. MANGIN

- It has a land area of 126.80 hectares with a population density of 24.97.
- Its population is 3,166 composed of 632 households.

### HAZARD ASSESSMENT

Typhoons hit the area almost every year resulting in the damage of houses, crops, fish ponds and water facilities. The 1990 earthquake brought heavy damage to properties and livelihood of Mangin residents. The barangay is also vulnerable to fire because some electric wires are left hanging after the disaster.

The barangay also experienced heavy rains in 2004. The residents said that the water pipes are always affected during floods making it unsafe for drinking.

### VULNERABILITY ASSESSMENT

The area is surrounded by river tributaries which makes it vulnerable to frequent flooding during high tide. Some houses are situated in low-lying areas that limit the accessibility of the evacuation team to bring the families to a safer place.

It is anticipated that children are the most affected during disasters since they comprised 50% of the total population of the barangay.

The floodwater usually reaches two (2) feet to more than four (4) feet and typically flows away after one (1) week.

### CAPACITY ASSESSMENT

The series of trainings and seminars on disaster mitigation encouraged Mangin residents to be reactive in every disaster. The residents became aware of the precautionary measures during and after a disaster.

Mangin also has a responsive Barangay Disaster Coordinating Council which gives signals and warnings before a disaster strikes.

The presence of some city government employees related to the City Disaster Coordinating Council is an advantage for Mangin residents.

### G. SALISAY

- It has a land area of 125.80 hectares.
- Its land area is composed of 371 households.
- It has a population density of 14.77 and a population of 1,858.

### HAZARD ASSESSMENT

The barangay is vulnerable to flood, earthquake and fish kill. Every year the barangay experiences flooding induced by typhoon or high tide.

The 1990 earthquake brought destruction to properties and livelihood of the Salisay residents.

The barangay experienced a fish kill in 1997 was attributed to the presence of fish pens in the area.

### VULNERABILITY ASSESSMENT

The area is surrounded by river tributaries. Flooding due to typhoon or high tide caused fish pens and fish ponds to overflow, resulting in damage of the residents' main livelihood – fishpond and fishpen culture of bangus (milkfish). When typhoon Gading hit the area in 1998, 20% of the houses were destroyed.

During floods, the residents worry about water-borne diseases because the water facilities are unsafe for drinking. The floodwater reaches over 3 ft. and recedes after 3 days.

### CAPACITY ASSESSMENT

Salisay residents are anticipatory of the possible effects of typhoon in their area. They stock food and water supply enough to last for several days.

Salisay has a responsive Barangay Disaster Coordinating Council, which assigns a monitoring team to regularly check the situation of the residents.

It is also notable that residents of the barangay display a sense of community during disasters.

#### H. TEBENG

- Its population density of 22.57 is composed of 2,329 residents.
- It has a land area of 103.20 hectares.
- Its land area cradles 465 households.

#### HAZARD ASSESSMENT

Tebeng is vulnerable to flood, fish kill and earthquake. When typhoon Gading hit the area in 1998, flash flood destroyed crops, fishponds and other properties.

The typhoon also destroyed roads, infrastructure and fishponds in the area which caused the residents to suffer from food shortage considering that the barangay became inaccessible to vehicles.

The barangay experienced a fish kill incident which affected the fish pond and fish pen operators. During the incident, floodwaters were stagnant for several days.

The 1990 earthquake caused one house to be totally damaged while the remaining 20% were partially affected.

#### VULNERABILITY ASSESSMENT

Flood, and in some cases flashflood, strikes barangay Tebeng being a low-lying area. Some residents are considered at risk since their houses, which are made up of light materials, are situated near the river.

Lack of drainage system is another factor which contributes to flooding in the area. The floodwaters in the area reached 2 feet up to 5.5 feet and the longest period before floodwaters subsides is 1 week.

#### CAPACITY ASSESSMENT

Residents in the area display a bayanihan spirit or sense of community during disasters. The Barangay Disaster Coordinating Council (BDCC) continues to conduct disaster preparedness activities and information dissemination to Tebeng residents. As a result, the people of Tebeng became more resourceful during and after disasters.

The BDCC has already designated an evacuation center in case of an unexpected calamity.

### 3. Conclusion

The above mentioned activities conducted in Dagupan City in response to one of the program's component which is the Participatory Risk Assessment (where elements of hazard and capacity are crucial) became a vital venue to advance safe, sustainable and livable communities . The implementation of the Component 1 like is a good step in promoting disaster risk management. People in the community were capacitated to become able agents when it comes to preparedness and mitigation by knowing their capacities and vulnerabilities, analyzing the gaps and making disaster risk reduction plan. Through awareness raising and administration of trainings/workshops, their vulnerability particularly those living below the poverty threshold was reduced. A people centered development approach was also evident. This kind of accost is indeed fundamental in achieving holistic and sustainable development that considers equality and transparency.

The Community Based Disaster Risk Management and Participatory Risk Assessment Training of Trainers gave the City Disaster Coordinating Council (TWG) skills and experience in community based risk assessment. Not only are the results of the assessment vital in disaster risk reduction but the process (TWG going to the communities, interacting with the people, consulting with them and assessing with them) of the CBRM and PRA proved to be equally vital in risk reduction and in the success of the project.