

Safer Cities 16

Case studies on mitigating disasters in Asia and the Pacific

Cooperation between Local Authority and Communities Reducing Flood Disaster Risk in Dagupan City, Philippines

Dagupan is a typical growing Asian city. It is focused on economic development while dealing with the problems of a densely packed population. The city's residents are familiar with disasters, as they still have the memory of the devastating earthquake that happened on July 16, 1990 and how the city's commercial activity nearly died out. Flooding is a recurring hazard that heavily affected most of the city in many ways. However heavy the problem was, people accepted flooding as something that happens every year. Then things began to change, because the key stakeholders started listening to each other and working together.

Introduction: City Life with Seven Rivers

Seven river systems traverse Dagupan, and all drain into the Lingayen Gulf. In the past, Dagupan may have been a swamp where people settled to cultivate fish in fishponds. About 40 years ago, the flooding was an advantage because it cleaned the water in the floodplain area and therefore raised the productivity of the fishponds.

Flooding in Dagupan is now a common problem. One reason is because rivers presently have a high sediment load and do not drain easily into the sea. The situation is further

aggravated by the onset of high tide that can go as high as 2.2 m above the average sea level. Tidal back flow has created secondary rivers that in turn made the islets where the eastern barangays are found. Another reason is that more people are exposed to floods because Dagupan has grown into a major urban center for the region. The city has attracted a lot of migrants, students, daily commuters who work in its establishments, and a lot of traffic from commuters and goods on routes to the cities of Manila and Baguio.

Dagupan City is part of Pangasinan province, that in turn is part of Region 1. It had a total population of 130,328 during the 2000 census. Among all the cities and municipalities in Region I, Dagupan City registered the highest population density with around 3,501 persons per sq. km. As of 2002, 96.0 percent of the households in the city were served with potable water while 95.6 percent had electricity.

Dagupan City has a total land area of over 4,000 hectares and is a sub-regional center for trade and commerce, finance, high-level health and education services in Northern Luzon. In 2002, it yielded an income of PhP 268.7 million (about US\$ 5 million), mostly from income tax. In the same year, it spent most of its money on general public services. Its business establishments are predominantly the real estate, general merchandise and food houses. Dagupan City is considered the industrial hub for Pangasinan province. It is also a higher education hub for the province, with its 13 colleges, three universities, and 18 vocational schools and technical learning centers.

Although categorized as urban in its entirety, one-third of the city's total barangays are still devoted to agricultural production and nine remain as fishing communities. Built-up land comprises 42 per cent of the land use, and the remaining land is for crops and as open



Abstract

This case study of Dagupan City shows how integrating flooding risk reduction as a regular and joint activity of city governments with their communities has galvanized action, and fosters a growing sense of unity and pride in city.

What's inside

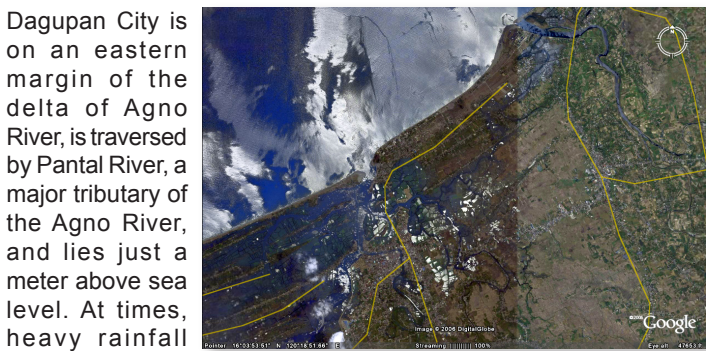
- 📁 City Life with Seven Rivers
- 📁 Form a Technical Working Group
- 📁 Work with other stakeholders
- 📁 Work with the communities
- 📁 Institutionalize change
- 📁 Hold an annual Disaster Preparedness Day
- 📁 Make a Risk Communications Plan

space. Fifteen per cent of the land is water way, and another 22 per cent is fishpond (Dagupan Facts and Figures, 2005). In 2003, for example, the fishponds were used for brackish water culturing production for milkfish, prawns, shrimps, crabs, and mussels.

Pangasinan province is the country's top producer of milkfish, popularly known as "bangus", cultured in marine fish cages and fish pens. In 2003, about 51.2 percent (379) of the province's fish pen/cage operators engaged in culturing milkfish were from Dagupan City. From 2001 to 2003, Dagupan's milkfish production totaled to 35,560.1 metric tons (MT), contributing 16.8 percent to the total provincial production.

About the Flooding Hazard

Dagupan City is located along the seacoast of Lingayen Gulf, at 16° latitude and 120° longitude. Its climate has two seasons: a dry season from November to May, and a wet season from June to October.



Satellite image of Dagupan City from Google Earth.

Dagupan City is on an eastern margin of the delta of Agno River, is traversed by Pantal River, a major tributary of the Agno River, and lies just a meter above sea level. At times, heavy rainfall occurs upstream of the river Agno, and two major dams located along the river (Binga Dam and San Roque Dam) release water that eventually reaches Dagupan.

Most of its seven rivers have a high sediment load caused by upstream riverbank erosion, and informal settlements are found along riverbanks. One river carries lahar (muddy volcanic ash flow) from Mt. Pinatubo. The process of sediment transportation and deposition in the flood plain has caused shallow and clogged river beds. This causes heavy flooding in the city due to reduced capacity of rivers to carry the flood water out to sea. Prolonged heavy rain from typhoons that frequently pass the upper river catchment can even result in flash floods.

During the earthquake of 16 July 1990, Dagupan suffered widespread damage and had a direct impact on the flooding situation. The dynamic lateral shifting of Pantal river caused by the earthquake made a meandering pattern, left numerous abandoned channels, and created a low-lying flood-prone terrain made up of levees and back-swamps. Many of these are inundated during floods and high tides.

The worst-case scenario is a combination of heavy rainfall in the region, release of dam water, and high tide.

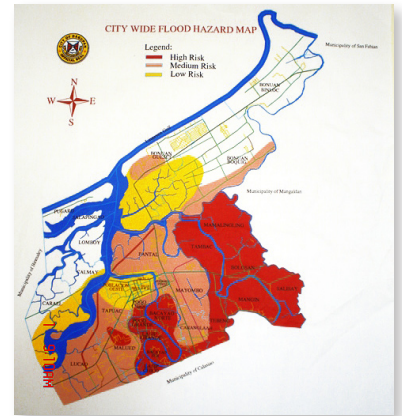
Other factors that contribute to flooding in the city are: (1) poor drainage system; (2) the continuing increase in built up area; and (3) conversion of fishponds and other "catch basins" into residential and commercial lots and subdivisions.

What was the original response to the flooding?

The flooding hazard of Dagupan City is well-understood by the local authority. The perception of the problem was that it was serious in

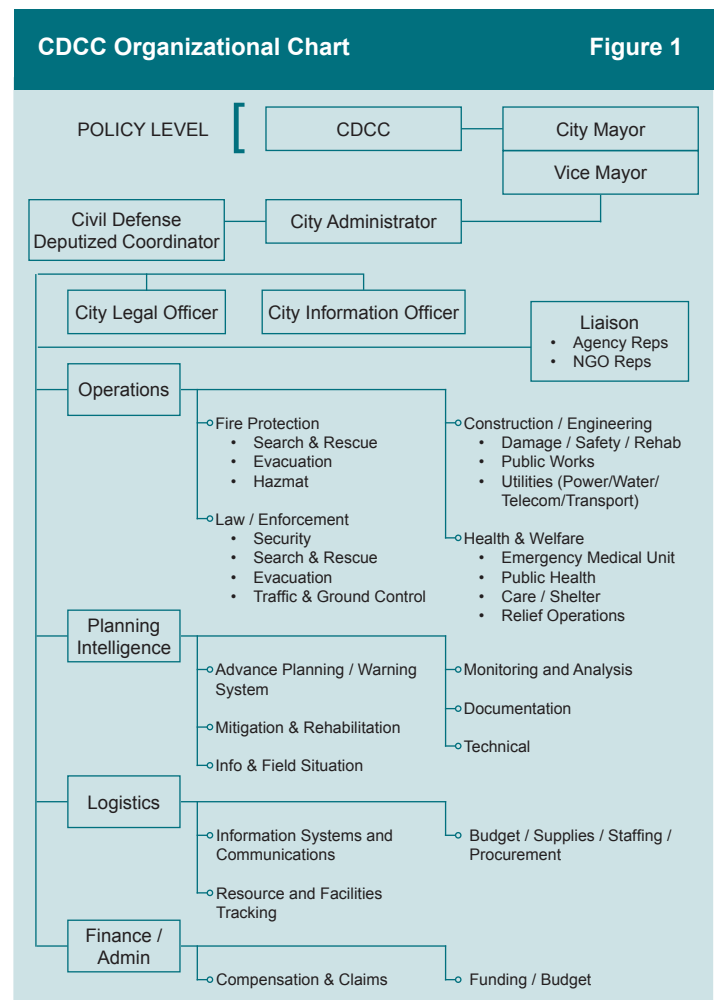
scope and effect. Dagupan City government had grouped the types of risk they face into four³:

- 1. HEALTH AND SANITATION.** This includes to improper human waste disposal during flooding, contamination of drinking water, gastroenteritis and dehydration, respiratory infection, skin diseases, and the onset of epidemic within the city.
- 2. LIFE AND PROPERTY.** This includes deaths and injuries sustained during floods, damage to public and private infrastructure (buildings, roads, bridges, transport facilities, installations, etc.), and damage to sources of livelihood (croplands, fishponds, livestock, etc.)
- 3. PEACE AND ORDER.** This includes crimes against property (theft, robbery) and crimes against persons (physical injuries, homicide.)
- 4. ENVIRONMENTAL DEGRADATION.** This includes soil erosion, river pollution, and vegetation degradation



Flood Risk Map from Dagupan City Gov.

Prior to the start of PROMISE-Philippines, the local authority had already identified ways to manage their flooding problem through a combination of mitigation activities, emergency preparedness and disaster response, and recovery activities.



Regular mitigation activities included declogging of drainage systems, the reconstruction and repair of drainage systems, dredging of rivers and tributaries, raising the height of roads and bridges, conducting vulnerability assessments of houses and other infrastructure in hazard areas, and budget planning and allocation for disaster mitigation and preparedness.

The identified emergency preparedness activities included the reactivation of City Disaster Coordinating Council and Barangay Disaster Coordinating Councils of the city's 31 barangays, the training of target personnel for emergency response activities, conducting an inventory and purchase of needed emergency equipment, stockpiling of relief (food, medicines etc.), planning the deployment of emergency personnel and equipment, and conducting a public information campaign.

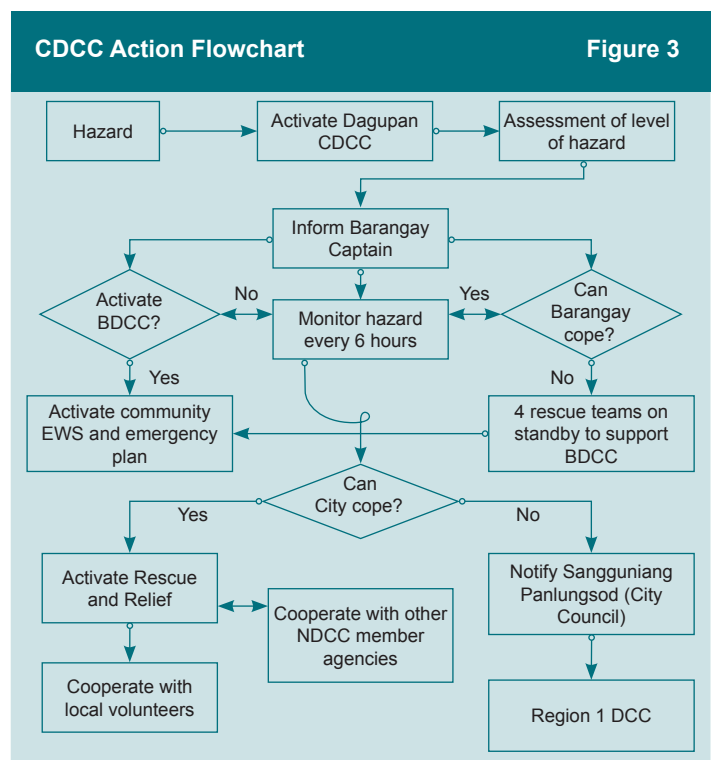
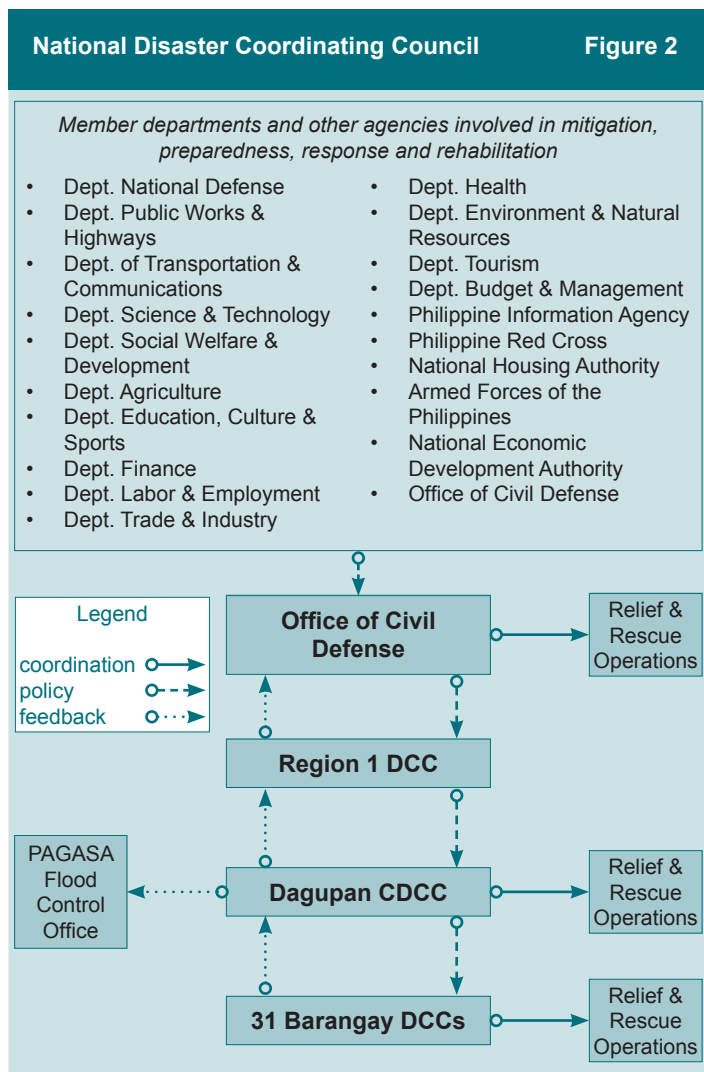
The disaster response activities identified included search and rescue operations, evacuation, relief, emergency medical treatment, and security and other police action. The identified post-disaster recovery activities included damage assessment, clearing operations, rebuilding or repairing, and psychological rehabilitation.

However, the city authority and the city's residents had been concentrating on responding to the flooding (evacuation, search and rescue operations, emergency medical treatment, providing security) and on being prepared for emergencies (stockpiling and maintaining emergency equipment) with little mitigation (drainage system maintenance and river dredging). It would seem that there is extensive flood mitigation work that needs to be done.

Every political and administrative subdivision, such as Dagupan City Government, is responsible for responding to emergencies and disasters within its area of responsibility. This is required by law, and is implemented through a Disaster Coordinating Council (DCC). For example, a DCC at the city level (CDCC) is responsible for: setting up a disaster operations center, coordinating disaster operations, implementing guidelines set by the province DCC (the political subdivision greater than a city), and advising the barangay DCCs within the city.

The membership of the Dagupan's CDCC is comprised of the Mayor, Vice-Mayor, City Administrator, and other key officials of the city government. Figure 1 shows how they organized themselves.

Disaster response coordination is best seen as part of a network that stretches vertically (until the National DCC) and horizontally (to include the province-level and/or city-level offices of the various departments and agencies that are members of the NDCC). Figure 2 emphasizes the vertical network. Figure 3 emphasizes the horizontal network of the Dagupan CDCC already embedded in its tasks when it is active.



Source: ADPC

While this organizational structure eventually worked to systematize disaster response, it did not automatically translate into disaster mitigation efforts. The CDCC was only active when there was an emergency, and it was not operational in between emergencies. The CDCC concept could not address other important issues such as economic security, safe construction, and the continuous provision of public services like education and health. Also, given the city's geographic and economic characteristics, it seems unlikely that the city government could act to reduce either flooding or the population size to significantly lower the risk of disaster.

What was clear at the outset was the city government already had recognized the importance of addressing the issue of flooding and was active in the different phases of disaster management. When they expressed a willingness to try reducing disaster risk by addressing issues of vulnerability, they were selected to become the Philippines' demonstration city for the Program for Hydro-Meteorological Disaster Mitigation in Secondary Cities in Asia (PROMISE).

The objective of PROMISE was to increase the adoption by the private and public sectors of mechanisms for community preparedness and mitigation. The program promotes the adoption of specific disaster mitigation measures at the city and community level. It also tried to increase the participation by needed stakeholders from community to national levels. PROMISE Philippines was implemented through the Center for Disaster Preparedness (CDP), a non-governmental organization devoted to promoting Community Based Disaster Risk Management (CBDRM) in the Philippines. CDP employed different means to show and tell that CBDRM works through the partnership of the community, support organizations and the different levels of government.

The PROMISE-Philippines project focused the CDCC upon the idea of disaster mitigation through risk reduction. They recognized that it is a continuing set of activities, and that they need to be active even when there are no emergencies.

How to be Proactive to Reduce Disaster Risk



- Form a Technical Working Group out of the city's disaster response network
- Work with other stakeholders
- Work with the communities
- Institutionalize change by advocating for local legislation on disaster preparedness
- Raise awareness by holding a Disaster Preparedness Day
- Make a risk communications plan

Form a Technical Working Group out of the City's Disaster Response Network



The CDCC decided to form a Technical Working Group (TWG) that will focus on disaster mitigation and risk reduction. The membership of the TWG was drawn from the existing members of the CDCC. The TWG created tasks related to disaster risk reduction and disaster mitigation: planning, documentation, training (design, planning and implementation), water quality monitoring, barangay-level waste management, flood canal maintenance, and tree pruning. In addition, the barangays in Dagupan were grouped into three "teams", and some members of the TWG were the Team Facilitators. In this role, they had to lead their team towards managing their disaster risk at the community level.

Sample Barangay Vulnerability Monitoring Form



- Hazard/vulnerability maps
- Identified population, infrastructure, economic assets and essential services
- Estimates of possible socio-economic effects
- Current/planned measures to reduce impacts
- Updated maps?
- Disaster Operation Center (DOC)?
- Standard Operating Procedures of the DOC?
- BDCC Chair and contact information

Sample Questions for Evacuation Center Capacity Assessment



- Projected vulnerable population
- Existing management plan?
- Number of trained personnel
- Number of volunteers
- Floor area of evacuation center
- Single or multi-storey?
- Located in flood-prone area?
- Number of evacuees it can contain
- Standby water supply?
- Standby power supply?
- Two-way radios?
- Latrines and baths?
- Kitchen, service and storage areas?

The TWG conducted an assessment of each barangay's capacity to respond to a disaster. They collected data on the number of evacuation centers, their location, and the facilities available per center. They also conducted an assessment of each barangay's vulnerability to flooding.

With the creation of the TWG, the city was able to continually address disaster risk and mitigation. The plans and activities it formulated were implemented through its members' own roles as officials of the City Government: (1) monitor their evacuation centers' readiness for disasters, (2) survey each barangay for information on vulnerability to floods, (3) promote capacity building in disaster risk reduction, and (4) coordinate its disaster risk reduction activities with other interested parties.

One of the key developments was the continuous capacity building with each undertaking of the TWG. Within a few months, the TWG had several study trips and training workshops:

Study visit to the PAGASA Flood Control Office

- To brief the TWG on how the Flood Control Office monitors the flood situation within the Agno River Basin
- To get a briefing on the PAGASA system for communicating the information to affected cities and municipalities
- To get full support for the initiatives from Dagupan City

Early Warning and Evacuation Workshop

- To brief Department Heads and Staff of the City Disaster Coordinating Council (CDCC), including the TWG, on city-level planning for early warning and evacuation
- To develop the outline of the early warning and evacuation plan, and assign the creation of the components to the different offices of the city government
- To review and clarify the CDCC's functions and structure, and the roles and responsibilities of the members of CDCC

Workshop for finalization of Early Warning and Evacuation Plan

- For the CDCC to discuss, agree upon, and finalize the Early Warning and Evacuation Plan
- To develop the first draft of the Early Warning and Evacuation Plan
- To plan for a public consultation with the eight pilot communities on the draft



Work with other Stakeholders

The TWG knew that the city cannot act alone and hope to reduce disaster risk significantly, so they actively invited the participation of other government agencies and civic society from within the disaster coordination network. The key stakeholders whose participation was sought by the TWG are PAGASA, PHIVOLCS, DECS, and Bantay Dagupan.

The Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA) has the task to watch over environmental conditions, prepare daily weather forecasts, typhoon watches, and flood outlooks. The PAGASA regional Flood Control Office was tapped to provide resource persons for activities related to setting up the Flood Early Warning System. Their technical inputs were especially helpful when the TWG was conceptualizing the system, and again during the training workshops on the system that the city conducted at the barangay level.

The Philippine Institute of Volcanology & Seismology (PHIVOLCS) issues advisories on earthquakes, volcanic activity and tsunamis; it identifies appropriate evacuation sites and organizes disaster control groups and reaction teams. PHIVOLCS participated in the TWG's capacity building workshops; it sent representatives to present on topics that included the PHIVOLCS early warning system and public awareness program. PHIVOLCS also provided technical

inputs during planning workshops on early warning systems and on risk mapping.

The Department of Education, Culture and Sports (DECS) provides assistance in public education and campaigns regarding disaster preparedness, prevention and mitigation; makes school buildings available as evacuation centers; and trains education staff in disaster preparedness. The Region 1 Office of DECS was asked to allow schools in Dagupan City and Pangasinan province to participate in the activities for Dagupan's Disaster Preparedness Week, including the simultaneous earthquake drill.

Bantay Dagupan is an association of about 17 Dagupan-based NGOs, service groups, special groups, businesses who may be tapped as volunteers to help during various emergencies. Originally created to assist the police force in the overall maintenance of peace and order in Dagupan, its responsibilities were expanded in 2006 by executive order 309-2006 to provide assistance to the City Disaster Coordinating Council during emergency response and special events. Examples of assistance include traffic control, crowd control, rescue and relief operations. They eventually signed a Memorandum of Understanding with the city government to formalize their cooperation during emergencies and special events.



Work with the Communities towards their Own Disaster Risk Management

The communities of the eight pilot barangays were involved in their disaster risk management from the very beginning. They also undertook several activities to build community awareness of the risks around them, to create ownership over solutions that they can implement by themselves, and to promote the spirit of cooperation between them, the city government, and civic organizations.

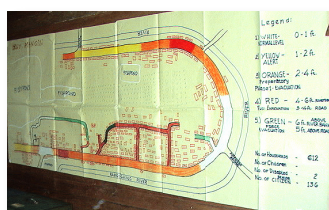
Barangay Disaster Risk Management Workshop

- For residents of each pilot barangay and officials from the city government
- To get briefings on five significant components disaster and disaster risk management: understanding disaster and disaster risk management, disaster risk management and good governance, barangay hazard vulnerability-capacity assessment, risk reduction measures, and disaster risk management planning.
- To assess the vulnerability and capacity of each barangay in terms of disaster management
- To learn about community-based disaster risk assessment tools: hazard timelines, hazard mapping, behavior and hazard assessment, and problem tree analysis.



Barangay Disaster Risk Reduction Planning

- To do a walk around in the respective neighborhoods
- To assess their capacities and vulnerabilities to hazards



- To develop barangay risk reduction plans, including elements of hazard monitoring, using indigenous and appropriate technologies, and early warning systems.

Early Warning and Evacuation Workshop

- To brief residents of the eight (8) pilot on developing an early warning system and evacuation plan
- To give explanations on the role of PAGASA in the country's disaster management system, the work of the Flood Control Office, and their flood early warning system
- To link the City's and the communities' warning system for hydro-meteorological hazards with the PAGASA system that is the source of needed telemetry data.



Early Warning System and Evacuation Plan Workshop Series

- Both workshops were for residents of each pilot barangay and for City officials
- To develop a draft of a barangay-specific early warning and evacuation plan
- To finalize the early warning and evacuation plans
- To communicate the plans to all members of their respective communities





Institutionalize Change

The Technical Working Group worked with the legislators of the Sangguniang Panlungsod (city council) and developed Resolution No. 5469-2006, July 16 of every year as Dagupan City Disaster Preparedness Day. This is a significant development because the resolution has made disaster safety day part of the city's culture. The creation of the local law also means that the observance of disaster preparedness must be continued by succeeding city officials. This is an important point because the continuity of disaster preparedness must not be vulnerable to electoral cycles.

The main text of the resolution reads:

... WHEREAS, the paradigm shift from emergency management of disasters to disaster risk management involves not only emergency response to disaster, but more importantly, undertake activities and measures to reduce our vulnerability and strengthen our capacities to cope with disasters;

WHEREAS, one of the pillars of disaster management is for vulnerable groups and the population to understand the nature and behavior of hazards, the potential loss of lives, damage to properties and environment, and to undertake precautionary and protective action and measures;

WHEREFORE, on joint motion of Councilors Alex P. de Venecia, Jose Netu M. Tamayo, and Farah Marie G. Decano, duly and jointly seconded by Councilors Ma. Librada Fe M. Reyna and Charise C. Perez, be it RESOLVED, as it is hereby, to declare July 16 of every year as "DAGUPAN CITY DISASTER PREPAREDNESS DAY";

RESOLVED, FURTHER, to furnish copies of this resolution to the Officer-in-Charge, City Information Office, this city, for proper dissemination.

ADOPTED UNANIMOUSLY.

Councilor Alex P. de Venecia

Hold an Annual Disaster Preparedness Day

"... it pays to be fully prepared, for the worst disasters do not choose victims... As citizens, we must be completely aware of our surroundings and the circumstances that go with it."

Kristine Joelle L. Pantig, student

Gains, Prepare for Disasters." The city intended to emphasize disaster awareness and disaster preparedness. In all of the activities, the TWG was active in coordinating and hosting.

To build public support for the event, the City Information Officer spoke at the news and current affairs programs of all radio stations within the city. This campaign began on July 5 and lasted until the observance of the week.

In addition, the City Government forged ties with various civic organizations for the city-wide campaign for disaster preparedness. The list included the expanded task force Bantay Dagupan, the Dagupan Bangus Jaycees, the Dagupan City chapter of the Philippine National Red Cross, all the media outfits in the City, and privately-owned schools within Dagupan City.

A forum on disaster management and safety measures started the week-long observance, with the participants coming from teachers, security chiefs of various schools, members of the TWG, and officials from the Department of Education, Culture and Sports (DECS).

July 18, Day 2 of the observance, had a citywide parade of disaster preparedness slogans. The City Parade was led by the City Mayor, members of the City Council, and other City Government Officials. More than 15,000 people joined, drawing not just

The city government held various activities from 17-21 July 2006 as part of the observance of Dagupan City Disaster Preparedness Day that July 16. The Disaster Consciousness Week observance had the theme "Itaguyod Ang Kaunlaran, Kalamidad ay Paghandaan" roughly translated as "Maintain Development

young school children but also their teachers, parents, civic groups, and representatives from the private sector. A short awarding ceremony for the winning slogans followed the parade, featuring as guest of honor the Undersecretary of the Department of Environment and Natural Resources.

The paraded slogans were entries to a disaster slogan competition. The contestants came from primary- and secondary-level schools in Dagupan City and other municipalities of Pangasinan province. The contest had separate categories for the three major languages used in that city: English, Filipino, and Pangasinan. The good entries would be featured in a 2007 disaster preparedness theme calendar that will be published by the TWG. The winning entries in each category are used by the city in its disaster awareness campaigns.

The city had a River Clean Up and Mangrove Revegetation Day, organized by the City Agriculturist, the City Tourism Officer, and the chief of the Waste Management Division. It was held with the cooperation of the universities and colleges in the city who mobilized their students participating in the National Service Training Program (NSTP). The students helped plant mangroves along the river.

Day 3 was devoted to the Academic Olympics, a series of competitions for high school students, college students and professionals from Dagupan City and the entire Pangasinan province. The events included extemporaneous oration, essay writing and poster-making, all with disaster preparedness as their theme. The activity was in partnership with the JCI-Dagupan Bangus Jaycees and the DECS.

On July 21, the last day of the week, the city with the partnership



of DECS held an earthquake and evacuation drill day in the different primary- and secondary-level schools. The Dagupan City government estimated that around 55,000 students and teachers

from both public and private schools participated in the drill. The drill was designed to inform the students of safety precautions during an earthquake.



Make a Risk Communications Plan

A key element to success was the orientation of the city towards raising public awareness of concepts of risk and risk reduction. At the start of the PROMISE Philippines project, Dagupan City developed its own communications plan for the project, called “Capturing the Hearts and Minds of All.” Its objectives were:

- Increase the level of understanding of natural disasters among the people of Dagupan (in particular), and the people in the whole country (in general).
- Create awareness among the target public on the need to plan and adopt disaster preparedness and risk management.
- Mobilize people to save lives and to protect the community through disaster risk management.

The team behind the implementation of the plan was the City Information Officer, the City Tourism Officer, the City Agriculturist, and the City Administrator Rafael Baraan. The team would mobilize the city’s other departments, schools, civic organizations, and other government agencies to help implement various activities under the plan.

With this plan to guide the City, they were able to maximize all activities under the project as media-worthy events:

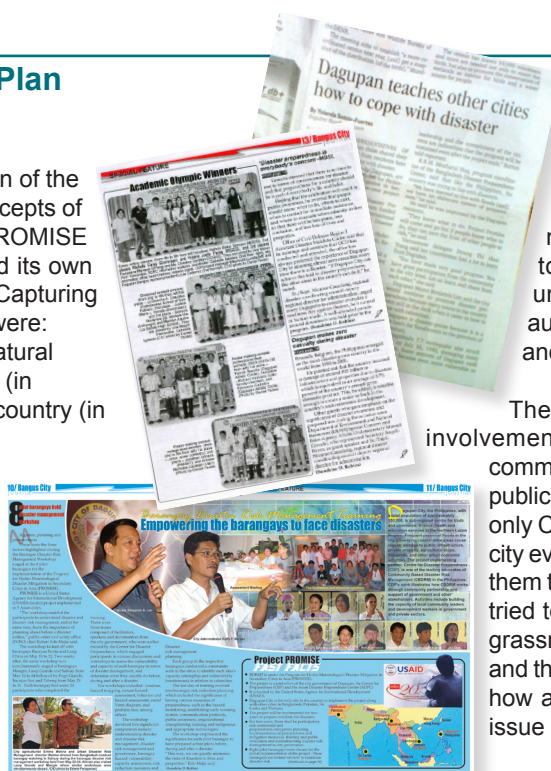
- The local and national media were always kept well-informed of upcoming PROMISE events.
- Articles were submitted and eventually published on the different study trips, official visits from the national government, public consultations with the pilot barangays, and even visits by representatives from USAID and ADPC.
- The biggest media event was the Disaster Preparedness day.
- The second biggest event was the study tour by PROMISE Coordinators from Bangladesh, Pakistan, and Viet Nam.
- The media that was utilized included print (local and national newspapers), local TV, local cable TV, and the Internet (online newspapers and blogs).

Three Key Strategies in a Risk Communication Plan



- Network with various school administrations to integrate disaster preparedness programs in school curriculum and school activities.
- Maximize support of the tri-media (TV, radio, print) organizations for massive public awareness campaign. Utilize proper timing to maximize the power of any of the communication medium.
- Use creative approaches to educate while entertaining your target publics.

Through the implementation of their plan, the city learned that the media are supportive of disaster preparedness program because they usually cover the frequent typhoons and flash floods visiting the city. Future plans include the development of informative and



creative disaster preparedness campaign materials including radio “plugs” (concise messages sent over the radio, designed to effectively transfer information and understanding to the target audience), audio visual presentations, flyers, posters and calendars.

The success of the project relies on the involvement of every individual, thus the City’s communication campaign targets the general public. Highlighting the fact that Dagupan is the only City in the country chosen as a PROMISE city even brought pride to the people and rallied them to support the project. The plan therefore tried to embed disaster risk awareness at the grassroots level by targeting the communities and the children, and it showed simultaneously how active the city officials were on a critical issue as disaster mitigation.

Lessons Learned



- *Disaster preparedness is not enough.* While it is critical to plan for emergencies and mitigate impending disasters, at some point the loss of life is already reduced to zero, and it is the quality of life that needs to be preserved.
- *Start with what is available and integrate disaster risk reduction within it.* Creating a TWG within the CDCC ensures continuity of the focus on disaster management, and involves the key stakeholders who are concerned with lowering the need for disaster response. Continuous capacity building, continuous risk monitoring, and close cooperation with key stakeholders are possible through this approach.
- *Aim for vertical and horizontal integration of disaster management.* For disaster management to be effective key players that have to be involved are found from national to village (barangay) level, from government offices to the private sector and civil society.
- *Try to create a culture of safety.* The community must be completely involved in disaster management. Their participation can translate to a more comprehensive monitoring of hazards with more data collection points that can be inputted into the city’s monitoring system. The community can also monitor their own vulnerabilities and capacities. Developing a local law to create an attitude of disaster preparedness can keep the community on its toes.
- *Have a risk communications plan to increase the transparency of disaster management activities.* The city found that talking about disaster risk did not create panic or unrest among people. Instead, it created a stronger feeling of community and ownership over disaster risk reduction activities.



References

- 1 http://www.nscb.gov.ph/RU1/dagupan_feature.htm
- 2 Lahar is “a rapidly flowing mixture of volcanic rock debris and water, typically with 40-90 percent sediment by weight, and thus having a consistency ranging from muddy water to a dense slurry.” (Janda et al., “Assessment and Response to Lahar Hazard around Mount Pinatubo, 1991 to 1993,” FIRE and MUD: Eruptions and Lahars of Mount Pinatubo, Philippines, <http://pubs.usgs.gov/pinatubo/>, 1996)
- 3 Robert Erfe-Mejia, presentation “Urban Disaster Mitigation of Flooding in Dagupan City: A Proposal”.

About the Partner

CDP is a center committed to disaster risk reduction and protection of life, property and the environment, CDP assists both service providers and vulnerable groups in developing their capacities in community-based development-oriented disaster risk management (disaster preparedness, mitigation, emergency response and recovery) through training, research, advocacy, program design and evaluation and facilitation of interactive learning on disaster risk management.

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About the Project

PROMISE-Philippines was a two-year project whose goal is the reduced vulnerability of urban communities in the Philippines through enhanced preparedness and mitigation of hydro-meteorological disasters. The activities planned for PROMISE-Philippines include:

- *Barangay level disaster preparedness and mitigation planning to reduce vulnerability.*
- *Implementation of CBDRM projects at Barangay level and documentation of case studies.*
- *Development of community level livelihood options for individuals and small enterprises.*
- *Organization of functional Barangay disaster coordinating councils.*
- *Pilot testing of community based flood forecasting and warning system in coordination with PAGASA.*
- *The development of preparedness and mitigation plans using improved hazard data and information available at the municipality.*
- *Development of a city level disaster management information system.*
- *Policy workshops to discuss policy changes and directions, improvements to city ordinances, etc.*
- *Training/capacity building programs, public awareness and advocacy campaigns.*

PROMISE-Philippines has the following partners:
Center for Disaster Preparedness (CDP)
Dagupan City Government
US Agency for International Development / Office of Foreign Disaster Assistance (USAID/OFDA)

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The City Disaster Coordinating Council
Participating Barangays: Bacayao Norte, Bacayao Sur, Lasip Chico, Lasip Grande, Mangin, Pogo Grande, Salisay and Tebeng

Other Relevant Safer Cities Studies

SC 2. *Coping with Flood in Cambodian communities*
SC 3. *Mitigating Flood Risk in Cambodian communities*
SC 7. *Can Small be Beautiful?*
SC 8. *Channels of Communication-A Challenge*
SC 13. *What is the Appropriate Mitigation Mix?*

Safer Cities is a series of case studies that illustrate how people, communities, cities, governments and businesses have been able to make cities safer before disasters strike. The series presents strategies and approaches to urban disaster mitigation derived from analyses of real-life experiences, good practices and lessons learned in Asia and the Pacific. This user-friendly resource is designed to provide decision-makers, planners, city and community leaders and trainers with an array of proven ideas, tools, policy options and strategies for urban disaster mitigation. The key principles emphasized throughout Safer Cities are broad-based participation, partnerships, sustainability and replication of success stories.

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PROMISE

During the implementation of the Asian Urban Disaster Mitigation Program (AUDMP), ADPC recognized the importance of interventions in urban areas and accordingly identified Urban Disaster Risk Management as one of its core thematic areas of work, experiences from which have also guided the selection of the target secondary cities. ADPC has developed ‘Strategy 2020 for Urban Disaster Risk Mitigation in Asia’ which aims to reach 200 cities by the year 2020.

The need to minimize the destructive impacts of these hydro-meteorological events on the vulnerable communities, particularly the urban communities and the economic infrastructure through enhanced preparedness and Mitigation is therefore the main thrust of the present intervention in implementation of the Program for Hydro-Meteorological Disaster Mitigation in Secondary Cities in Asia (PROMISE).

ADPC considers PROMISE program as an opportunity to associate with many communities living in Asian cities vulnerable to hydro-meteorological hazards with the aim of reducing the impacts of such events and demonstrate innovative applications for community preparedness and mitigation.

This case study documents the efforts under a specific program objective to *increase stakeholder involvement and further enhancement of strategies, tools and methodologies related to community preparedness and mitigation of hydro-meteorological disasters in urban communities.*



The Asian Disaster Preparedness Center (ADPC) is a regional resource center dedicated to safer communities and sustainable development through disaster risk reduction in Asia and the Pacific. Established in 1986 in Bangkok, Thailand, ADPC is recognized as an important focal point for promoting disaster awareness and developing capabilities to foster institutionalized disaster management and mitigation policies.

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