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CLIMATE CHANGE ADAPTATION

Gearing up towards Community-based Climate Change Programs

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One of the oldest towns in Quezon, Philippines is Infanta—a first class municipality[3] serving as home to a population of more than 60,000. Infanta is located on the eastern coast of the northern island of the Philippines. It directly faces the Pacific Ocean and the Sierra Madre mountain range, which makes it a site vulnerable to hydro-meteorological disasters and sea level rise. For their livelihood, residents of Infanta rely on its agricultural, fisheries, trade, and services sector.

On 29 November 2004, tropical depression "Winnie" hit Infanta and its neighboring towns, General Nakar and Real, with an abnormally heavy rainfall. Philippine Atmospheric, Geophysical, and Astronomical Services Administration (PAGASA) - Infanta Weather Station measured a rainfall amount of approximately 372 mm in less than 24 hours. The said heavy rainfall, which was statistically equivalent to 18 days worth of rain in a typically rainy November month, caused massive landslides in the upstream area of the Agos River and eventually, flashfloods that inundated the whole municipality. The disaster left 165 people dead, 11 injured, and more than 4, 000 houses damaged. Public infrastructures and utilities worth PHP 300 M were also ruined. In addition to this, the agricultural sector of Infanta was greatly affected. Damages to crops, livestock, and fisheries amounted to PHP 103.3 M.

Damages caused by tropical depression Winnie

Community-based, not top-down

The damages caused by typhoon Winnie prompted the local government, NGOs and residents to cooperate in devising strategies to adapt to the impacts of climate change—the key activity is disaster risk management (DRM). The various stakeholders realize that a top-down approach to disaster management is not effective; it is more costly and entails wasted resources. Moreover, local resources available in the barangays and other areas in the municipality are usually overlooked when using this approach.

Capacity-building activities for Municipal and Barangay Disaster Coordinating Councils

Thus, Infanta refocused its disaster risk management strategy from a top-down to a community-based approach. The people learned that in order to make DRM strategies successful, external donors who wish to help need to partner and cooperate with the affected communities. A community-based approach would integrate the resources offered by the local residents and the assistance to be given by the external donors in crafting the DRM strategy.

Early Warning System

An early warning system (EWS) in Infanta prepares the community for possible hazards like heavy rains and floods. The four core strategies of EWS are to predict the possible hazards, to plan and prepare the strategies that could be done to adapt to them, and to practice what they planned for the onset of these hazards.

Infanta's telemetric rain gauge station

Infanta's EWS involves activating and maintaining a flood watchpoint along Agos River which runs along the towns of Infanta and General Nakar in Quezon province. Designated watch persons and other residents near the river monitor the water level using line markers painted at the *"dapi"* (rock wall formation) of the river. As the water level rises, they notify the local Disaster Risk Reduction and Management (DRRM) Office of Infanta via two-way radio. This information then prompts local officials to send out warnings of possible flood hazards to other residents, especially to those living in the low-lying areas.

In the past, Infanta's residents and government officials used their personal cellular phones to communicate with each other. However, they found this method unreliable especially at the onset of typhoons when cellular sites are jammed or switched off by network service providers. Because of this situation, officials encourage everyone to use two-way radios. In fact, they are aiming to provide a repeater system for easier two-way radio access of all Municipal DRRM Council members and barangay officials.

Infanta has also installed a telemetric rain gauge along upper Kaliwa River, one of the two major tributaries of Agos River. This is an automated weather station (AWS) donated by the Philippine Department of Science and Technology to the municipal government. It measures not just the amount of rainfall but also wind speed and direction, air pressure and temperature, and other parameters.

Why Infanta was successful

The municipality of Infanta received the *Galing Pook Award* in 2007 for its community-based disaster preparedness and management program. The key to successful project implementation is the involvement of the community members in preparing for and actively participating in the projects. This, combined with the use of appropriate technological devices, helped make the projects sustainable.

Moreover, the local government units (LGUs) provided ample activities and training that raised the community members' awareness about natural hazards and risks such as typhoons, floods, and earthquakes. They also trained their residents in community hazard mapping. This encouraged the locals to create hazard maps specific to their own areas since LGUs acknowledge that the locals are more knowledgeable about their areas' vulnerabilities.

Development and disaster management

In addition to refocusing the approach in DRM, Infanta also looked at the relationship between disasters and development. Disasters can surely have an impact on the development of a community, since these can easily destroy years of development initiatives. Also, instead of resources being allotted for development, these have to be shifted toward disaster response and rehabilitation.

Furthermore, it was observed that urbanization could increase the area's vulnerability to disasters. Dense urban settlement, development of hazardous sites, environmental degradation, technological failures or imbalance of pre-existing natural or social systems are consequences of inappropriate development choices, that could lead to a higher disaster risk. Therefore, local communities should always include and consider disaster risk reduction and management in their participatory development planning endeavours.

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[2]This article was also written with reference to Fr. Francis Lucas' presentation, "Community-based Disaster Risk Management and Agriculture: The Infanta Experience", during the International Training Course on Responding to Climate Change held in SEARCA, Los Banos, Laguna on 8-12 September 2008.

[3]Municipalities in the Philippines are divided into income classes. First class municipalities are those that have an average annual income of PHP 50,000,000 (≈ USD 1,167,000) during the last three calendar years.

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