

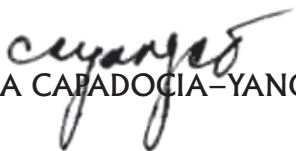
# Message of the Editor Emeritus

Our country's location astride a typhoon belt and the Pacific ring of fire, and its natural attributes make it prone to hazards caused by volcanic eruptions, tropical cyclones, landslides, earthquakes, etc. In addition to these, we also experience man-made disasters such as trashslides, fires and oil spills. The problem of internally displaced persons and armed conflicts, particularly in Mindanao, also continue to plague the countryside.

As a leader in the disaster risk reduction and management system of the country, and as chair of the Emergency Response Sub-Committee of the National Disaster Coordinating Council (NDCC), the Department of Social Welfare and Development (DSWD) continues to fulfill its mandate of providing social protection and promoting the rights and welfare of the poor, vulnerable and disadvantaged individuals, families and communities, including disaster victims. The DSWD is always one of the first to be present in areas affected by disasters and calamities, and one of the last to leave until after the implementation of such programs and services that will put a family or community on track to recovery. Given this, the DSWD has a rich experience along disaster management – from risk reduction, prevention, mitigation, to relief and rehabilitation, and recovery, which we would like to share with our dear readers and publics.

Thus, for the first issue of the Social Welfare and Development Journal for CY 2010, we have decided to put together articles that document our experiences along disaster management, specially along emergency response and rehabilitation. These articles detail the various mechanisms that have been institutionalized to better respond to disaster situations, and some sound and feasible recommendations that may be adopted by local government units (LGUs) and other stakeholders in restoring social institutions and improving quality of lives. This Journal also contains several guidelines related to disaster management for reference in policy making and program planning.

Whether one is a development worker or officer, an experienced disaster manager or someone still learning the ropes, we hope that the advances that we have already made, and the steps that we still have to take to improve the disaster risk reduction and management system in the country would be appreciated through this Journal.

  
CELIA CAPADOCIA-YANGCO

# Towards Ensuring the Welfare of Victims in Disaster Situations

Assistant Secretary Parisya Hashim-Taradji

## ABSTRACT

The Department of Social Welfare and Development is mandated to lead in providing social protection, especially to the disadvantaged and marginalized sectors. This article gives an overview of DSWD's disaster management initiatives which ensures that the basic and immediate needs of the disaster victims are responded to.

## INTRODUCTION

Our country is often plagued by typhoons, earthquakes, landslides, floods and dry spell or El Niño phenomenon. The last two decades recorded some of the massive disasters experienced by Filipinos from the intensity eight (8) earthquakes in 1990, Mt. Pinatubo eruption in 1991 to the recent destructive floods caused by 2009's last quarter typhoons Ondoy, Pepeng and Santi. Moreover, the Philippines also encounter numerous man-made disasters such as armed conflict, bombing situations and conflagration.

Disasters cause the loss of lives, massive damages to properties, and the disruption of the Filipinos way of life. These affect Filipinos of all color, religion and status as disasters do not choose the victims. In massive disasters, the rich and the poor are affected the same way, as evident during the onslaught of typhoons Ondoy and Pepeng. However, its effects on the poor and disadvantaged Filipinos are always greater in magnitude since these sectors are often incapable of independently responding to their vulnerabilities before, during and after a disaster.

As a government agency mandated to provide social protection to the Filipinos, especially, the poor and the disadvantaged, the DSWD plays a significant role in national disaster management. The Department is responsible in conducting activities and providing services, which will safeguard the welfare and the rights of the poor, vulnerable and disadvantaged during and after the occurrence of calamities.

Towards this, the DSWD implements programs and services to mitigate the impact of disasters. These programs and services consist of interventions including policy development, disaster program conceptualization, relief operations and rehabilitation activities in partnership with the LGUs, other government agencies, non-government organizations (NGOs) and other partners.

## DISASTER RESPONSIVE PROGRAMS AND SERVICES

The initial response in the occurrence of disaster should come from Local Government Units (LGUs) of affected areas as provided for in the Local Government Code of 1991. However, DSWD ensures that its has available funds and relief goods in case the Local Chief Executives (LCEs) request for assistance.

When a disaster is of national magnitude, the national government spearheads the disaster relief operations. When this happens, the government agencies, through the leadership of the National Disaster Coordinating Council (NDCC), immediately formulate plans to assess the damage, needs and appropriate response to undertake. The DSWD takes on a focal role in disaster response. Disaster

responses, during these times, is the provision of emergency services and public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the victims. The disaster response aspect of disaster operations is predominantly focused on responding to immediate and short-term needs and is sometimes called “disaster relief.”

The DSWD has programs and services during disaster situations aimed at protecting the welfare of the disaster victims. These programs and services focus on the provision of food and non-food basic needs, shelter, access to livelihood opportunities and psychosocial interventions.

The following programs and services comprise the core intervention of DSWD on Disaster Response:

## 1. Provision of Technical Assistance and Resource Augmentation

The Department is mandated under Executive Order No. 221 series of 2003, to provide assistance to local government units (LGUs) and other stakeholders to provide technical assistance and resource augmentation in the delivery of social welfare and development services as part of its steering role and consistent with the devolution of basic services.

Technical assistance pertains to activities through which DSWD imparts technical and organization skills and know-how on disaster management to LGUs.

Also, DSWD augments the resources of the LGUs based on their needs as mandated by the same Executive Order. During disasters, DSWD immediately provides relief goods or relief commodities to LGUs once the report shows that the LGUs’ resources are insufficient to respond to the needs of the disaster victims.

## 2. Provision of assistance to affected families

In times of disasters, the welfare of the affected populace becomes the primary concern of the national and local government, non-government organizations (NGOs) and other sectors involved in disaster management. DSWD seeks to ensure that relief and rehabilitation assistance provided to the disaster victims are responsive to their needs. The assistance provided by DSWD can be categorized into two: Relief Assistance and Restoration and Rehabilitation Assistance.

### A. Relief Assistance

Relief assistance pertains to the immediate provision of essential services to meet the basic needs which have become unavailable to the people because of calamities and other distressful situations. Under relief assistance, we have the food, non-food and assistance to individuals in crisis situation (AICS) which are provided based on assessed needs.

Food Assistance is the provision of timely and appropriate food commodities to victims of natural or man-made disasters/calamities to help prevent starvation and/or nutritional decline. The provision of hot meals, food ration and supplemental feeding are among these.

Non-food assistance refers to the provision of limited commodities other than food to respond to the needs of the victims like clothing, blankets, sleeping mats, tarpaulin, cooking utensils, etc.

Assistance to Individuals in Crisis Situation refers to the provision of needed interventions to enable distressed individuals/families cope with the situation like transportation assistance, burial assistance, medical or hospitalization assistance.

## B. Rehabilitation and Restoration Assistance

After the disaster, the DSWD provides rehabilitation and restoration assistance to disaster victims. The rehabilitation and restoration assistance refers to action taken in the weeks or months following a disaster to restore basic services to enable the population to return to pre-disaster condition. Rehabilitation activities also aim to uplift the morale of affected individuals or families.

Restoration and Restoration Assistance include: Emergency Shelter Assistance (ESA) for partially and totally damaged houses, Modified Shelter Assistance (MSA) and Core Shelter Assistance Program; the provision of Food/Cash for Work program; Livelihood Assistance; Balik Probinsiya Program and Toilet and Water Project.

### B.1 Shelter Assistance

There are three types of shelter assistance: Emergency Shelter Assistance (ESA) for partially and totally damaged houses, Modified Shelter Assistance (MSA) and Core Shelter Assistance Program (CSAP).

#### **Emergency Shelter Assistance (ESA)**

Emergency Shelter Assistance is the provision of emergency self-build shelter assistance through limited materials or financial assistance to augment resources of families in constructing or repairing damaged houses which were partially damaged or those which were totally destroyed as a result of natural or man-made disasters/calamities.

- **ESA for Totally Damaged Houses**  
This is the provision of limited housing materials or financial assistance to families with totally damaged houses but not qualified for core shelter or

modified shelter assistance due to the absence of a relocation site. The family who is either unwilling to be resettled or without lot ownership property, constructs their houses on site.

- **ESA for Partially Damaged Houses**  
This is the provision of limited housing materials or financial assistance to families with partially damaged houses who construct their houses on site.

#### **Modified Shelter Assistance (MSA)**

This is the provision of limited financial or material assistance to augment resources of families in constructing houses in relocation sites provided for the purpose and using locally available materials.

#### **Core Shelter Assistance Program (CSAP)**

This is the provision of environment-friendly, structurally strong shelter units that can withstand up to 220 kph wind velocity, earthquakes of up to intensity four (4) in the Richter scale and other similar natural hazards in relocation sites provided by the national or local government units and using locally available materials to revitalize local economy. This may be provided to family-victims of disasters.

### B.2 Food/Cash-for-Work

In helping victims rebuild their homes and communities, DSWD implements the food/cash-for-work program. Family members are given the opportunity to participate in the development of their communities and eventually receive compensation in the form of food packs or cash. Beneficiaries in this project engage in disaster development activities and are provided with food packs.

Cash-for-work program is a short-term intervention to provide temporary employment to disaster victims by participating in preparedness, mitigation, relief, and rehabilitation activities in their communities or in evacuation centers like repair of roads, declogging of canals, communal vegetable gardening, and construction of houses, among others.

In exchange for the work rendered, program recipients are provided with cash to meet their requirements for food and other basic necessities equivalent to seventy five percent (75%) of the prevailing daily wage in the area set by the National Wage and Productivity Commission (NWPC).

### **B.3 Livelihood Assistance**

Victims of disasters are often left with no or little livelihood option. To address this problem, the Self-Employment Assistance Kaunlaran (SEA-K) became part of the rehabilitative intervention of the Department. SEA-K is a capability-building program in coordination with the Local Government Units (LGUs), designed to enhance the socio-economic skills of poor families to establish and self-manage a sustainable community-based micro-credit organization for entrepreneurial development. Qualified disaster victims are organized into associations where each association has 25 or 30 members and are provided training on micro-enterprise development and entrepreneurship. SEA-K association members may avail of 0% interest in collateral free loan with the maximum amount of P5,000 each (member) payable in one (1) year.

### **B. 4 Balik Probinsiya**

The Department is implementing the “Balik Probinsiya” program which provides

transportation assistance to families seeking to return to their respective provinces or places of origin. Respective LGUs will monitor the beneficiaries and access them to other social services.

## **3. Provision/Conduct of Psychosocial Intervention**

The impact of natural and man-made disasters can also undermine the acute and long-term mental health and psychosocial well-being of these populations. Some studies disclosed that more than half of disaster survivors might have mild to moderate psychological impairment while around 39% may report severe to very severe impairment. This suggests that a very substantial proportion of disaster survivors could benefit from mental health services and psychosocial interventions.

As part of its intervention, DSWD conducts critical incidence stress debriefing (CISD) with disaster victims. The agency deploys trained stress debriefers in affected areas and in evacuation centers to address the psychosocial needs of the victims as assessed. The agency also coordinates with the Department of Health (DOH) for this endeavor.

Children are most affected by disasters. DSWD provides psycho-social services to children who are victims of armed conflict and other calamities. The children will be provided with developmental and social activities like the Supervised Neighborhood Play (SNP) or Play Therapy.

These psycho-social activities aim to help the children recover from the trauma brought by disasters and bring them back to their normal psychosocial functioning.

To institutionalize this intervention for

children, DSWD issued an Administrative Order in 2004 entitled “Guidelines on the Provision of Psycho-social and Basic Social Services to Displaced Children in Disaster Situation.”

## Conclusion

Acknowledging that more disasters of greater magnitude could hit the country because of the global warming, the DSWD continues to strengthen its program on disaster management to adequately respond to the needs of the time. Immediate response to provide the appropriate and most basic needs of affected families like food, shelter, and clothing is key to the agency’s response to the massive destruction brought by natural and man-made disasters.

The DSWD recognized that it cannot do it alone, thus it shares the goal of the National Government to provide a comprehensive disaster management program undertaken with stakeholders to lessen the impact of any disaster.

## Sources

Department of Social Welfare and Development, “Administrative Order No. 171 series of 2001, Minimum Standard Rates of Assistance to Victims of Disasters, Distressed and Displaced Individuals and Families in Crisis Situation”

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National Disaster Coordinating Council, “Memorandum Order No. 05 series of 2007: Constitution of the National Committee on Disaster Response (NCDR)”

National Disaster Coordinating Council, “Memorandum Order No. 11 series of 2008: “National Guidelines on Mental Health and Psychosocial Support in Emergency Settings (MHPHSS)”

# Comprehensive Disaster Recovery Program for Cagayan Valley Region<sup>1</sup>

Director Arnel B. Garcia, DSWD Field Office II

## ABSTRACT

This article discusses Disaster Recovery as a concept which seeks to bring the affected families, communities and infrastructure from its original vulnerable situation to an upgraded version to prevent or minimize impact of another disaster. The concept does not intend to replace the current Philippine Disaster Management System but it intends to supplement the operations, systems, programs and services attuned to Post Disaster Restoration/ Rehabilitation to a level of Post Disaster Recovery.

Since the government's recovery and rehabilitation plan is guided by a development principle that rehabilitation and reconstruction should not be limited to restoration of destroyed or damaged areas, facilities and systems to their original conditions, thus, the introduction of this innovation in response to a naturally occurring disaster which is called Disaster Recovery.

This innovation clearly addresses the vulnerabilities and deficiencies of previously existing conditions (upgraded functioning) and mitigates any future disaster impact. It is a complex and long-term process that involves a range of activities and many participants. It also involves short-term restoration of essential community functions as well as long-term rebuilding. It incorporates mitigation of hazards as the restoration and rebuilding take place.

The paper was presented and was adopted unanimously as a Regional policy paper during the joint Region II Regional Development Council (RDC), Regional Disaster Coordinating Council (RDCC) and Regional Peace and Order Council (RPOC) Meeting last 10 September 2009.

Disaster occurrence as an effect of global warming and its subsequent economic meltdown puts a strain for any developing country to work double time to augment its resources for its needs. It also provides additional pressure by temporarily setting back the timetables for the country's development efforts.

The Philippines encounters an average of eight (8) to 11 cyclones annually. The country is often hit by most of the occurring natural disasters, more than any other country in the world. In 2008, there were 22 tropical cyclones which entered the Philippine Area of Responsibility (PAR) and eight (8) out of the 22 tropical cyclones that entered the PAR brought flashfloods, landslides, floods and heavy rains in the different areas in the country.

Last year's typhoons Ramil and Pepeng have affected thousands of families in the region. The consecutive typhoons affected almost the same families particularly those situated in downstream municipalities and low lying areas and communities near the Cagayan River. Their situation is aggravated by drought or the El Niño phenomenon. To date, El Niño has affected some 164,526 families with 687,440 persons with estimate damage to crops at P 4,079,321,005.

The impact of these disasters still marked considerable loss of lives and properties, if left unattended. The number of disaster incidents could have been higher, considering the climate change and the susceptibility of our country to calamities. The initiatives of the concerned agencies prevented further damages. The current Philippine Disaster Programs and the collaborative efforts of the agencies and civil society for mitigation and preparedness before the onset of disaster reduced the destruction.

<sup>1</sup> A Strategy Paper Presented by Director Arnel B. Garcia, DSWD FO II (adopted unanimously as a regional policy paper during the joint Region II Regional Development Council (RDC), Regional Disaster Coordinating Council (RDCC) and Regional Peace and Order Council (RPOC) Meeting held on 10 September 2009)

The Philippines has a disaster management structure and systems installed at various levels from the national, provincial, municipal and barangay or village levels. Local Disaster Plans are usually focused on awareness and mitigation and post disaster restoration.

The Disaster Recovery as a concept seeks to bring the affected families, communities and infrastructure from its original vulnerable situation to an upgraded version to prevent or minimize impact of another disaster. The concept does not intend to replace the current Philippine Disaster Management System but it intends to supplement the operations, systems, programs and services attuned to Post Disaster Restoration or Rehabilitation to a level of Post Disaster Recovery.

The Disaster Recovery targets communities in a municipality or city regularly hit by the disaster projecting preparedness for an incoming cyclone that might cause large damage to the area. Initially, the target shall be a municipality in Cagayan Valley as laboratory for innovation. However, given that, the concept repackages and refocuses existing structures, responses and services of the national agencies and local government units.

**The concept was accepted with widespread approval by the national, local government units, media and academe which led to the adoption as a regional policy during the joint Region II Regional Development Council (RDC), Regional Disaster Coordinating Council (RDCC) and Regional Peace and Order Council (RPOC) held on 10 September 2009.**

## REGION II - THE CAGAYAN VALLEY REGION

### Geographic location



The Philippines has 16 regions and Region II or Cagayan Valley Region is the third largest region in the country. It is located on the northeastern part of mainland Luzon, covering an area of about 26,858.79 square kilometers and has rugged terrain along its boundaries, with the Pacific Ocean

bounding it on the East, the provinces of Nueva Ecija on the South, Quezon on the South East and protective mountain ranges of Caraballo and Cordillera ranges on the West.

Between the ranges is the valley where most of the population live and is crisscrossed by the mighty Cagayan River, the longest and the largest river in the country, is the main waterway, flowing towards the north from the Southern end of the valley and emptying into the Babuyan Channel in Aparri. It has a drainage area of about 27,300 sq. kms. and a groundwater reserve of 47,895 mcm. Its main tributaries are the Chico, Magat and Ilagan Rivers. The region's groundwater storage capacity is estimated at 11,850 mcm. The mountain ranges make access to villages difficult. The frequent typhoons (at least 12 typhoons per year) it incurs, challenges the development of its agri-industrial potential as the river is flooded during heavy rains inundating low lying Municipalities and Cities.

The mainland is also skirted by the Pacific Ocean on the east coast and the Bashi Channel on the north. The Batanes group of Islands is located at the northernmost tip of the Philippine Archipelago





between the China Sea and the Pacific Ocean. The coastline which is more than 890 kilometers is a rich fishing ground, particularly with the Babuyan and Balintang Channels on the north and the Palanan and Divilacan Bays on the east including its territorial seas within the 200 km Exclusive Economic Zone (EEZ).

Cagayan Valley Region is composed of five (5) provinces namely: Cagayan, Quirino, Batanes, Nueva Vizcaya and Isabela and ten (10) congressional districts. The three (3) component Cities are Cauayan City, Santiago City, and Tuguegarao City and 2,311 barangays or villages. The Regional Center is Tuguegarao City, Cagayan while the industrial center is Cauayan City, Isabela.

In 2000, it had a total population of 2,813,159. In 1995, Isabela had the largest population at 45.8%, Cagayan at 35.29%, Nueva Vizcaya at 13.24%, Quirino at 5.17% and Batanes with the least, at .559% of the total population. In 1990, the population was predominantly rural, 76.5% compared to an urban population of 23.5%.

The Cagayan Valley Region's means of livelihood are agriculture and fishing. The major agricultural industries are rice and corn, the region's main crops. People are fishing on the coast of Cagayan, Isabela and Batanes and Magat Dam in Isabela. This region is also involved in livestock production of cattle, hog, carabaos and poultry. Some of the region's livelihood projects are furniture making from rattan and other indigenous materials which are for export. The Region also exports fruits, fruit preserves and vegetables.

People of the Cagayan Valley Region can speak and understand English. The major dialects being used are Ilocano, Ybanag, Ytawes and Filipino. In Batanes, the people speak Ivatan. The climate in this Region is good and there are two pronounced weathers, dry season which generally occurs beginning December to May and wet, from June to November. Hot months are from March to May and extend until August.

Going in and out of this main Region is not a problem because there are transportation facilities available at all times. Its road network links the provinces and transportation companies that travel by land ply the Tuguegarao-Manila route and vice-versa. The Region has seaports and airports. Four (4) domestic airports service the region and these are Tuguegarao City Domestic Airport, Cauayan City Domestic Airport, Basco Domestic Airport in Batanes while Bagabag Airport in Nueva Vizcaya services chartered planes. However, smaller airports/airstrips served by chartered services are in Palanan and Maconacon, both are coastal towns of Isabela. These municipalities which are in on the other side of the Sierra Madre mountain ranges and the Pacific Coast is inaccessible by land from the Region.

The lack of transportation facilities hinders the development of the Region in the mountainous areas. Trading is confined to the urban areas of the five (5) provinces. Communication facilities and electricity are available in the five provinces. Majority of the buildings and housing facilities are not retrofitted for an earthquake of sizeable magnitude. Some communities are in low lying areas and in lower portions of the river basins. In the rural areas, majority of the houses are made of light materials such as wooden or nipa houses which are left vulnerable to typhoons and other natural calamities.

## DESCRIPTION OF THE HAZARD

### CYCLONE

The Philippines encounters an average of eight (8) to 11 cyclones annually and is often hit by cyclones more than any other country in the world. In 2008, there were 22 tropical cyclones which entered the Philippine Area of Responsibility (PAR). Eight (8) out of the 22 tropical cyclones that entered brought flashfloods, landslide, floods and heavy rains in the different areas in the country.

Tropical cyclones, typhoons or storms are intense weather disturbances composed of swirling mass of wind and rains similar to whirlwinds, tornado or waterspout but having immense dimensions. It has violent winds that flow around and towards the center and is associated with torrential rains often accompanied by thunderstorms. It moves around along tracks pushed by trade winds known locally as “typhoons.” The country is hit by the disaster occasionally during the months of June to November, worsened by heavy monsoon rains usually in July, August and September.

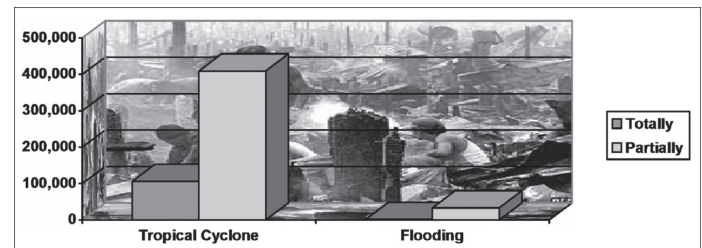
### ADVERSE EFFECTS OF CYCLONE

When cyclone strikes the land with strong wind-exceptional rainfall results to storm which surges from the sea, flashfloods along river courses, outpouring lowlands causing untold damages to human lives and properties. Cyclone has adverse effects on crops and food supplies, public health lifeline, utilities and logistics.

Typhoon Frank in 2008 brought greater havoc and put the whole country in state of calamity. Fifteen regions were directly affected, causing the displacement of some 904,516 families composed of 4,498,773 persons. There were 1,689 evacuation centers which were opened to shelter 410,736 families. The weather disturbance also was strongly felt when the ill-fated M/V Princess of the Stars sailed during

the storm along Sibuyan Island in Romblon. Eighty-eight persons survived, 56 dead bodies were recovered and approximately 700 persons still missing. This incident alone amassed P50,067,973.61 of the total cost of assistance to the disaster-affected population.

A total of 559,470 houses were damaged, of which, 115,947 or 21% were totally destroyed and 443,523 or 79% were partially damaged. Strong winds brought by the tropical cyclones caused the most number of damaged houses with 516 or 92% (106,548 totally and 409,464 partially damaged houses. Flooding is the second most damaging disaster in 2008 with 35,371 or 6% (1,863 totally and 33,508 partially) damaged.



On assistance, tropical cyclone is second with P77.7 million (32%) while flooding is third with P29.23 million (12%) worth of assistance.

Region II was affected by four (4) out of eight (8) cyclones in 2008 leaving behind millions in damages to properties. The typhoons affected 679 barangays with 56,016 families or 249,790 individuals. Totally damaged houses were reportedly at 1,981 and partially damaged houses at 11,029.

The affected Municipalities caused by the cyclone suffers vulnerabilities in the following aspects:

- Lack of preparedness of the community
- Isolation of outlying communities particularly in the mountain areas
- Absence of alternative livelihood
- Poorly built housing or shelter
- Communities in low lying or coastal areas

- Weak or non-cyclone resistant infrastructure facilities
- General poverty in the area
- Environmental degradation
- Vulnerable sectors, women, children and persons with disabilities

## El Niño

El Niño was originally recognized by fisherman of the coast of South America as the appearance of unusually warm water in the Pacific Ocean, occurring near the beginning of the year. El Niño means “The Little Boy or Christ Child” in Spanish. This name was used for the tendency of the phenomenon to arrive around Christmas. El Niño is characterized by unusually warm ocean temperatures in the Equatorial Pacific, as opposed to La Niña, which is characterized by unusually cold ocean temperatures in the Equatorial Pacific. El Niño is an oscillation of the ocean-atmosphere system in the tropical Pacific having important consequences for weather around the globe.

The phenomenon has now shortened its frequency of occurrence from every nine (9) to 10 years to two (2) to three (3) years. At present, El Niño phenomenon is affecting Northern and Southern parts of the country. In Cagayan Region, it has currently affected 164,526 families or 687,440 persons with estimated damage to crops at P 4,079,321,005. A state of calamity has been declared in Cagayan and Isabela Provinces.

## Disaster Rehabilitation

Prior to adoption of Disaster Recovery in the Region, Disaster Rehabilitation intends to bring back the affected families, communities and their infrastructures into the original situation before the occurrence of the disaster.

Disaster rehabilitation refers to action taken in the aftermath of a natural disaster to enable basic

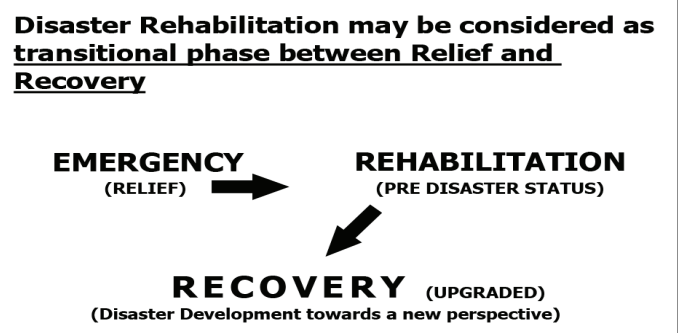
services to resume functioning, assist victims’ self-help efforts to repair physical damage, restore economic activities and provide support for the psychological and social well being of the survivors. The Local Disaster plans are usually focused on awareness and mitigation and post disaster restoration.

Since cyclones are naturally occurring, restoration to pre-disaster (Disaster Rehabilitation) state may not be feasible since there is a repeated cycle of victims and damages to infrastructure, utilities, lifelines and properties. Since this is not cost effective, and there is limitation in terms of the participation of the community, disaster rehabilitation was found to be not sustainable. Thus, rehabilitation projects are essentially meant to re-establish disrupted services.

## Disaster Recovery

Since the government’s recovery and rehabilitation plan is guided by a development principle that rehabilitation and reconstruction should not be limited to restoration of destroyed or damaged areas, facilities and systems to their original conditions, thus, the introduction of this innovation in response to a naturally occurring disaster which is called Disaster Recovery.

This initiative addresses the vulnerabilities and deficiencies of previously existing conditions (upgraded functioning) and mitigates any future disaster impact. It is a complex and long-term process that involves a range of activities and many participants. It also involves short-term restoration of essential community functions



as well as long-term re-building process. It incorporates mitigation of hazards as the restoration and rebuilding take place.

Thus, as the illustration implies, disaster recovery analyzes post-disaster conditions and opportunities for restoring the community to a state far better than the pre-disaster condition. Includes hazard abatement (short term) to mitigation (long term) ---recovery, rehabilitation.

### Distinction Between Disaster Rehabilitation and Disaster Recovery

Disaster Rehabilitation	Disaster Recovery
Returned to pre-Disaster Condition (functioning)	Upgrade functioning
Emergency Shelter Assistance	Core Shelter Assistance Project
On Site Development	Relocation Site
Restoration of Public Infra	Upgrade infrastructure
Provision of Existing livelihood	Alternative Livelihood
Rehabilitation of Basic Utilities	Upgrade Basic Utilities
Food/Cash For Work	Organization of Disaster Teams/Volunteers

The Disaster Recovery Plan does not intend to replace the current Philippine Disaster Management Structure (Disaster Rehabilitation) but it seeks to supplement the operations, systems, programs and services attuned to Post Disaster Restoration to a level of Post Disaster Recovery for a safe and secure environment.

## LEGAL BASES

### Hyogo Framework of Action (HFA): Five Priorities for Action

- Disaster risk reduction as a priority with strong institutional basis for action
- Identify, assess and monitor disaster risks and enhance early warning
- Knowledge, innovation, education for culture of safety and resilience
- Reduce the underlying risk factors

- Strengthen disaster preparedness for effective response

### PD No. 1566, “Strengthening the Philippine Disaster Control, Capability and Establishing the National Program on Community Disaster”

#### Section 1: Declaration of Principles

- Responsibility for leadership rests on local chief executives
- Self-reliance, self-help and mutual assistance (each political and administrative subdivision of the country shall utilize all available resources in the area before asking for assistance from neighboring entities or higher authority.
- Primary responsibility rests on the government agencies in the affected areas in coordination with the people themselves.
- All government Departments, bureaus, agencies and instrumentalities must have documented Disaster Management plans
- National government exists to support the local government units

## BASIC PRINCIPLES

### SOCIAL CAPITAL

- Building on strengths of Barangays and enhancing social ties while addressing vulnerabilities shall be observed in all phases of planning and execution of the recovery plans. Collaborative platforms shall be established.
- People’s Participation - the barangay shall be directly involved in the identification of their needs, formulation of the recovery plan and in all phases of decision-making.
- Self-determination - The need for change must come from within, from people’s awareness of the adverse effects of disaster and their willingness to act

- Experiential Learning Through Plan, Do, Check, Act (PDCA) - The Barangay through the PDCA shall be involved in all phases of implementation, evaluation and monitoring
- Self-Reliance - the communities shall be organized and provided assistance to assume self-managed mode through maximum use of local human and material resources and capabilities
- Inculcation of the Bayanihan Concept in Disaster Recovery-Building on the value of bayanihan to get barangay full support and participation
- Leadership Formation and building of second line leaders.

## FINANCIAL ASPECTS

- Co -sharing of funds - National Government Agencies, Provincial Government, Municipal, City Governments and Barangays shall provide counterpart funds in the program planning, execution, monitoring and program completion stage. Co-sharing shall be determined during the formulation of Disaster Recovery plans.
- Funding for Technical Support and Capability building - This ensures the availability of technical experts and priority funds for the training and orientation of workers, stakeholders and community in the formulation and execution of the DR plans of technical assistance from experts required from the National and Provincial Agencies.
- Maximum use of indigenous materials and resources for typhoon resistant housing - Encourage engineers and academe to explore use of indigenous materials for building infrastructure and shelters.
- External Funds support to be provided by identified NGOs, and For Profit Organizations (FPO), and other business establishments.
- Transparency and Social Accountability - Financial transactions and documents can be made public and shall be discussed as part of the regular financial meetings. Purchases and negotiations must be made public.

## MONITORING AND EVALUATION

The community, through the PDCA cycle shall be involved in all phases of evaluation and monitoring of the status of implementation of Recovery Plans. The PCDA shall include reflections of their experiences in collective decision-making and mobilizations

### • Monitoring

- o Expanded councils for Stakeholders Participation - The Local Disaster Coordinating Councils will expand its membership to include representatives from the Barangay or Community. The vulnerable sector (should include women, children and elderly and participating NGOs or FPOs as the case may be; and as stipulated in the Tripartite Agreement.
- o Institutionalization of Grievance Mechanism and Grievance Box - The Barangay Lupong Tagapamayapa also called the Barangay peacekeepers shall be involved in the monitoring of complaints and clarifications at the community level. A Grievance box is installed at the community and municipal levels to answer queries and complaints at the barangay.
- o Regular meeting - Status of Implementation of the Recovery Plan shall form part of the regular monthly meeting of the local councils. The venue shall form part of the technical assistance and identification of actions for problems identified in the implementation.
- o Multi-level Monitoring - Monitoring shall be conducted at various levels, namely: National, Provincial, Municipal, Barangay and Community levels through their

respective Disaster Coordinating Councils. Regular monitoring report shall be prepared for the purpose

- o Joint monitoring shall be conducted by the community in collaboration with the Municipal Inter-agency Committee and other stakeholders and shall be indicated in the Memorandum of Agreement (MOA).
- o External Monitoring and Evaluation - Independent NGOs and members of the Academe shall be organized for validation and transparency.

### **Evaluation**

- o Mid-year and Yearend Evaluation - Regular evaluation of status of accomplishments shall be conducted twice a year (mid-year & yearend) at the Community and Municipal levels. Evaluation at the community level shall be conducted prior to the Municipal Level (inter Barangay Forum).
- o Interim and terminal evaluation - shall be attended by representatives of the Community and line agencies and NGOs and other stakeholders.

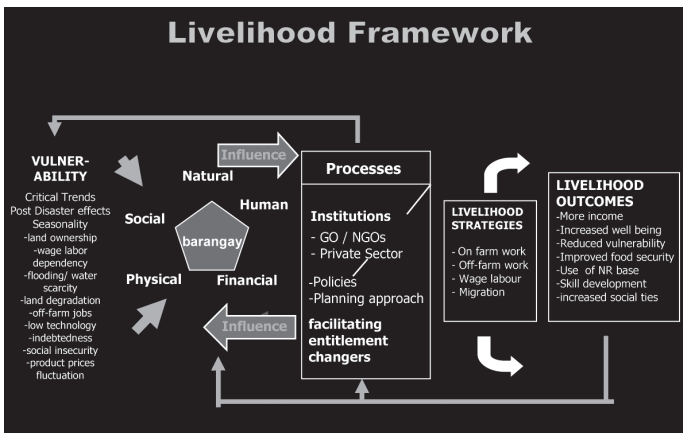
### **RECOVERY OF LIFELINES**

- Repair and upgrading of infrastructure, facilities and buildings shall be covered by the National, Provincial, Municipal and Barangay. Considerations shall now be made to upgrade the infrastructure facilities as typhoon resistant facilities.
- Consultation and Planning with Lifeline Service Providers - A joint Municipal/ City/ Local Government and Community Representatives shall meet with the service providers of local telecommunications, electric and water facilities to determine their readiness for emergency restoration of facilities in case of disaster, and upgrading which shall constitute recovery plan. The Lifeline Utility Service providers shall be part of the Recovery Plan formulation.

- Setting up of Technical Group. A Technical Group from the Municipality will be created to handle the coordination with the lifeline service providers.

### **ECONOMIC RECOVERY**

- Consultation with local Industries and Business for Job Generation and Employment Opportunities - The local government unit will conduct a regular consultation meeting with local Industries and Business in coordination with the Department of Trade and Industry (DTI) and Department of Labor and Employment (DOLE) for possible job creation and employment opportunities.
- Strategies - A job fair shall be organized by the local government unit in coordination with and technical assistance from the concerned line agencies.
- Support to Small and Medium Scale Enterprises shall be conducted in coordination with the program of the DTI.
- Community Consultations - The provision of technical assistance and consultation with the community shall follow the sustainable livelihood framework. Strategic interventions and alternative livelihood to be provided shall be decided by the community, after a study of their vulnerabilities to disaster, their strengths and weaknesses to include studies of their natural and social capitals. The strategies and interventions shall be further enhanced through regular consultation with the community and documentation of their outcomes (see framework).
- Provision of Alternative Livelihood Opportunities - In consultation with the communities, alternative livelihood shall be provided to eligible families in coordination with the Municipal local government and line agencies through the following:



- Practical Skills or Vocational Trainings
- Livelihood and entrepreneurial skills training for self employment

The Department of Social Welfare and Development with the assistance of Local Government Units, shall provide:

- o The Self-Employment Assistance - Kaunlaran (SEA-K) program. It is the provision of capital assistance and training in entrepreneurial skills to poor families to establish and self manage a sustainable community-based micro-credit organization for entrepreneurial development. It shall be specifically implemented in low-income communities or barangays in depressed municipalities and/or cities where the potential resources for entrepreneurial activities are available.
- o Support from Cooperatives - In case there are existing cooperatives, those cooperatives shall be directly tapped to maximize assistance to the community members.

## TYPHOON RESISTANT HOUSING / SHELTERS

- CORE SHELTER ASSISTANCE Project (CSAP) - Provision of environment-friendly, structurally-strong shelter units that can withstand various forces of hazards such as typhoons, earthquakes and flooding, using locally purchased construction materials.

- CSAP encourages the LGUs to provide housing in a resettlement site that will ensure safety of the families from the disaster. The provision is appropriate in downstream and/ or low lying communities where resettlement is greatly encouraged. The local site development can be through the LGUs or the National Housing Authority (NHA).
- Organize the beneficiaries of CSAP into a Neighborhood Association for Shelter Assistance (NASA) with a maximum of 30 members. The NASA shall elect their President and Treasurer.
- In case the NASA is in one cluster of 20 members, a small social hall is necessary for social communications.

ALTERNATIVE TYPHOON RESISTANT HOUSING USING INDIGENOUS MATERIALS - Coordination with engineers and experts for development of typhoon resistant housing or house retrofitting using indigenous materials in the community.

INTEGRATION OF DISASTER MANAGEMENT STRATEGY IN SCHOOL CURRICULA - Coordination shall be done with the Department of Education (DepEd) and Commission on Higher Education (CHED) for possible integration of the Disaster Management Program in schools or adult literacy classes or college courses.

## PLANNING FOR DISASTER RECOVERY

- Preparation of the Draft Municipal Action Plans - The Municipal Government shall conduct a review of the existing Disaster Management Master Plans taking into consideration the Disaster Recovery mode rather than Restoration.
- The Expanded Municipal Disaster Coordinating Team (includes NGOs and members from the Barangay Disaster Coordinating Council) shall lead the review of the master plan and enhance this plan based on existing situation and recovery phase.

- Participatory Workshop using Affinity Diagrams and Cause and Effect Diagrams method shall be applied to facilitate enhancement of the master plan.
- Preparation of Community Action Plan - the Barangay Disaster Coordinating Councils and the community members shall review the disaster management plan and shall draft the Community Recovery Plan. A workshop using the cause and effect diagram and affinity diagrams can be applied to facilitate preparation. NGOs, business enterprises and other stakeholders shall participate in the preparation of the plan.
- Approval of the Community Plan - The representative from the Barangay Disaster Coordinating Council (BDCC) shall present the draft community plan during the barangay assembly for comments and approval. The community shall ratify the community Disaster Recovery Plan through the General Barangay Assembly.
- Conduct of Municipal Inter-Barangay Forum - The Municipal Government shall initiate a conduct of inter- barangay forum for the integration of the community plan to the Disaster Recovery Master Plan.
- Integration of the Community Plans and the Municipal/City Master Plan - The integration will entail negotiations and agreements at the community level with the Municipal Government. The community specific negotiations may entail series of meetings.
- Approval of the Master Plan - The master plan shall be approved at the Sanggunian Bayan and at the Municipal Council levels.
- Implementation of Plans - Conduct of reflection session is recommended with community people after every major implementation. Reflection is sharing of experiences, feelings and perceptions after a major implementation.
- Monitoring - Documentation of monitoring activities is necessary. Community should

be oriented on proper documentation or administration of monitoring tool.

- Evaluation - Documentation of best practices gathered during the evaluation shall be conducted.
- Provision of Services - Comprehensive and integrated delivery of services by the line agencies shall be based on the approved local recovery plan.

### **Institutionalization and Sustainability**

- The Community Recovery Plan shall be integrated into the Barangay Development Plan which shall then be integrated to the over-all Development Plan of the Municipality. This ensures continuous funding support for the projects and activities of the community.
- The Municipal Recovery Master plan shall be integrated to the Municipal Development Plan for institutionalization - The Post Disaster Recovery has been redefined as Development plan for the Municipality or City for Building Community Resilience and ensuring a Safe and Secure Environment for the people in the community.

### **CONCLUSION**

- Direct People's participation in shared decision making, consultation, monitoring and evaluation makes the Disaster Recovery plan sustainable since the people themselves claim ownership of the development and assume social accountability for it.
- Services and strategies to be provided should ensure enhancement of social ties while addressing the vulnerabilities.
- Post Disaster Recovery Plan should be gradually integrated in the local Development Master Plan and mainstreamed in the local planning and budgeting process. Recovery Plan is the Development Plan as this should be the vision of the Municipality in building communities for a safe and secure environment.



# The DENR-MGB Geohazard Mapping and Assessment Program

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## ABSTRACT

This paper describes the Department of Environment and Natural Resources-Mines and Geosciences Bureau Geohazard Mapping and Assessment Program. It discusses the rationale, objective, components, status and accomplishment and future activities under the Program. The components of the Project, namely: capacity-building, data acquisition, generation and integration; conduct of field survey, generation of geohazard map; and Information, Education and Communication (IEC) campaign are discussed in detail to give the readers an understanding of how the project is being implemented, and appreciation of how the outputs of the Project are disseminated to community leaders and other stakeholders for use in disaster preparedness measures and land-use plans.

## INTRODUCTION

Geohazards or geologic hazards are geologic phenomena that pose danger to people's lives, properties, infrastructures and the environment. Being naturally occurring events related to geological features and processes, geohazards cannot be prevented, but their adverse effects may be mitigated.

Examples of geohazards are landslides, flood, coastal erosion, volcanic eruption-related hazards including pyroclastic and lava flows, ashfall, lahars, and earthquake-related hazards such as ground shaking, ground rupture, landslides, tsunamis and liquefaction. Other natural hazards

which are meteorological in nature include tropical cyclones and storm surge.

The Philippines has experienced a significant number of disasters caused by geologic and other natural hazards. These have resulted in loss of lives and damages to properties and infrastructures. Cost of damages and relief and rehabilitation works following the disasters have cost billions of pesos, which could have been used for development projects. Our country has been variably referred to as a supermarket of natural hazards, a natural laboratory for floods, typhoons, monsoon rains, earthquakes, volcanic eruptions and landslides<sup>1</sup>, and the country that has experienced the most natural hazards in the 20<sup>th</sup> century, among all the nations in the world<sup>2</sup>.

This has been illustrated in 1990, when Northern Luzon was rocked by a devastating earthquake of magnitude Ms 7.8. The following year, Mt. Pinatubo in Zambales erupted, although not previously considered as active, erupted. This catastrophic event was recorded as the world's greatest volcanic eruption of the 20<sup>th</sup> century. In 1999, the Cherry Hills Subdivision landslide in Antipolo, Rizal resulted to more than 50 people dead and over a hundred houses destroyed. With the turn into the 21<sup>st</sup> century, there has been no let-up in the occurrence of disasters in the country. Extreme weather events triggered disasters that were enormous in magnitude<sup>3</sup>. Notable landslides resulting to loss of lives and properties occurred in Panaon, Southern Leyte in 2003; Real, Infanta, and General Nakar (REINA) in Quezon Province in 2004; St. Bernard in Southern Leyte in 2006; Masara, Compostela Valley in 2008; and La Trinidad, Benguet in

<sup>1</sup> "Philippine Disasters", <http://www.txtmania.com/trivia/disasters> (last accessed: February 18, 2010).

<sup>2</sup> R. L. Kovach, *An Introduction to Natural Hazards and Disasters* (New Jersey: Prentice Hall, Inc., 1995).

<sup>3</sup> Graciano P. Yumul, Jr. et. al., "The Last Five Years (2004-2008) of Extreme Weather Events in the Philippines: a Foreboding of What Climate Change Will Bring?", *Disasters: Journal of Disaster Studies, Policy and Management*, in press.

2009. The landslide in Southern Leyte was the most tragic with the burial of schoolchildren and teachers while having classes in a school, and the complete devastation of Barangay Guinsaunon. The landslide in REINA was actually a debris flow with associated flashfloods caused by artificial damming of rivers which eventually breached. This was also the cause of the flooding of Iloilo in 2008, brought about by typhoon Frank. The most recent disasters experienced by the country were the extensive flooding and landslides in Metro Manila as well as parts of Northern and Central Luzon in 2009 brought about by the three successive tropical cyclones Ondoy, Pepeng and Santi, which are now referred to as the Last Quarter Storms of 2009<sup>4</sup>.

Such disasters caused by natural hazards are expected to occur in our country in the years to come. To understand why the Philippines is naturally hazard-prone, it is important to learn its geological and meteorological setting.

The Philippines is in a tectonically active region, with three major tectonic plates, namely: the Pacific, Eurasian and Indo-Australian Plates which interact with each other<sup>5</sup> (Fig. 1). The movements of these plates have given rise to the presence of trenches and active faults which are earthquake generators<sup>6</sup> (Fig. 2), as well as to the presence of volcanoes<sup>7</sup> (Fig. 3). It is, therefore, not surprising that in the Philippines, according to the Philippine Institute of Volcanology and Seismology (PHIVOLCS), there are approximately 20 recorded earthquakes per day, 90 damaging earthquakes for the past 400 years, and 300 volcanoes, of which 23 are considered active and 26 are potentially active<sup>7</sup>. The active tectonism in the region where the Philippines is located has also given rise to its extremely diverse geology, consisting of an island arc system with volcanic, oceanic and micro-continental blocks that have been sutured together through time<sup>3</sup>. Because of the tropical climate in the Philippines,

the various rock types are weathered easily, producing weakened rocks and thick soil covers. Hydrothermal alteration associated with ancient and current geothermal systems in volcanic areas also contributes to the weakening of rocks and production of water-retaining and expanding clay minerals<sup>8</sup>. Another cause of weakening of rocks are geological structures, such as faults, joints or fractures, and bedding planes. The weakened rocks, soils produced by weathering, and hydrothermal alteration products are all easily transported by landslide processes, especially when triggered by earthquakes or rainfall. Our complex geological evolution has also given rise to varying topography, such as mountainous terranes with steep slopes which are prone to landslides, vast plains which are prone to flooding, and coastal areas which are prone to storm surge and coastal erosion.

The Philippines is located along the typhoon belt in the Western North Pacific Basin in the Pacific where 66 % of tropical cyclones originate. Thus, the country experiences plenty of tropical cyclones, an average of 20 per year, of which five (5) to seven (7) may be devastating<sup>9</sup>. Rains brought about by the tropical cyclones as well as by monsoon rains, coupled with unstable slopes in mountainous areas lead to the occurrence of rain-induced landslides. Extreme weather events which are perceived to be manifestations of climate change have even exacerbated landslide and flood occurrences.

Since the Philippines is indeed continuously exposed to natural hazards, it is imperative to address the issue of disaster risk reduction, preferably utilizing a proactive rather than a reactive approach. This means that before disasters occur, measures will be undertaken to reduce the conditions leading to the disaster incidents. Such measures could include systematic identification and mapping of the geohazards and utilization of hazard maps for

<sup>4</sup> Glenn L. Rabonza, "The Last Quarter Storms of 2009, Philippine Experience", Powerpoint Presentation in 8th Meeting of the Regional Consultative Committee (RCC) on Disaster Management, Crown Plaza, Manila Philippines, February 22-24, 2010.

<sup>5</sup> Philippines, Mines and Geosciences Bureau, *Geology and Mineral Resources of the Philippines*, Volume 1 (Quezon City: MGB, in press)

<sup>6</sup> Enrico A. Mangao, "Earthquake and Earthquake Hazards" Powerpoint Presentation in Seminar-Workshop on Natural Hazard Awareness and Preparedness for Teachers of Pampanga, September 6, 2008, READY Project.

land-use planning and disaster preparedness. On this, the Mines and Geosciences Bureau (MGB) of the Department of Environment and Natural Resources (DENR) has embarked on the DENR-MGB Geohazard Mapping and Assessment Program.

The program is one of the major undertakings under the 10-point agenda of former President Gloria Macapagal-Arroyo, and is a critical component of the national government's disaster management program. It aims to identify areas in the country that are susceptible or prone to various geologic hazards, and provide the vital information to stakeholders in order to mitigate the damages of these events.

The ongoing program formally started in 2006 and is expected to finish in 2010. However, even before 2006, geohazard mapping has been a priority concern of the MGB, starting as early as the 1960s (Fig. 4). It was after the Cherry Hills landslide in 1999 that MGB started the conduct of geohazard at a relatively accelerated rate, especially with the approval of DENR Department Administrative Order (DAO) 2000-28 requiring an Engineering Geological and Geohazard Assessment Report (EGGAR) for all land development and infrastructure projects, as an additional requirement for the issuance of an Environmental Compliance Certificate (ECC).

However, with the spate of fairly recent catastrophic incidents caused by natural hazards, such as the massive landslides and flooding brought about by the series of typhoons in Quezon, Aurora, Leyte and Samar, among others, there was a realization for the need to hasten the geohazard mapping program of MGB, especially in critical areas.

Geohazard mapping and assessment under the current program mainly involve landslide and flood hazards. However, coastal hazards

mapping and assessment undertaken by MGB's Marine Geological Survey Division, as well as the inter-agency multihazard mapping and assessment under the Hazards Mapping and Assessment for Effective Community-based Disaster Management (READY) Project are also incorporated as parallel activities.

During the initial stage of the program, prioritization of areas for the conduct of nationwide landslide and flood mapping and assessment was done to manage budget limitations and other requirements. High priority areas were those determined as densely populated, highly developed, rapidly growing or programmed for development, and historically, have experienced high incidence of geohazards. Based on this prioritization exercise which is essentially a GIS-facilitated desktop mapping activity, the top ten landslide and flood-prone areas in the Philippines have been identified (Fig. 5).

## COMPONENTS OF THE PROGRAM

The project as envisioned, consists of five major components: 1. capacity building; 2. data acquisition, generation and integration; 3. conduct of field survey; 4. generation of geohazard map; and 5. information, education and communication (IEC) campaign.

### *Capacity-building*

The first step towards capacity-building under the Geohazard Mapping and Assessment Program was the development of a Manual of Standardized Methodologies and Procedures in Field Surveys and Map Preparation. The methodologies were expert-driven, drawing upon MGB's long experience in field geologic mapping, as well as in its multidisciplinary expertise in the fields of structural geology, engineering geology, geomorphology, hydrogeology, remote sensing and aerial photography, and GIS processing

<sup>7</sup> Renato U. Solidum, "Volcanoes and Volcanic Hazards" Powerpoint Presentation in Seminar-Workshop on Natural Hazard Awareness and Preparedness for Teachers of Zambales, December 5, 2009, READY Project.

<sup>8</sup> Hiroto Ueno, et. al., "Geology and Clay Mineralogy of the Landslide Area in Guinsaun, Southern Leyte Island, Philippines" <http://koueki.net/library/cis/k01-ronbun15.pdf> (last accessed: March 22, 2010).

techniques. Models from the academe and other research institutions were also utilized in drawing up the methodologies.

The developed standardized methodologies were then disseminated to technical personnel of MGB central and Regional offices through the conduct of training. This enabled the technical personnel to acquire the skills needed for geohazard assessment and production of geohazard maps. As part of capacity building, MGB's support facilities were also upgraded through the acquisition of field and laboratory equipment, in addition to computer software and hardware, as well as accessories for map preparation and production.

### ***Data acquisition, generation and integration***

This component essentially corresponds to desktop mapping and involves the following activities: 1. acquisition of topographic base maps, air photographs, and radar/satellite images; 2. digitization of 1:50,000 scale topographic base maps; 3. conduct of remote sensing studies such as interpretation of air photographs and analysis of radar/satellite images to produce thematic maps such as geological, land-use, geomorphological and hydrological maps; and 4. data processing and integration using GIS technology.

### ***Conduct of field survey***

Field surveys were conducted to identify geologic features and geohazards associated with these features, verify gathered and compiled data, and collect rock or soil samples, if necessary, for subsequent laboratory analysis. Field verification is important for expert-driven methodologies such as in the case of MGB's 1:50,000 scale geohazard mapping.

The conduct of field survey was a rapid field assessment, utilizing a field data sheet developed by MGB to serve as a checklist for technical personnel doing the fieldwork (Fig. 6).

To accomplish the data sheet, one has to use his/her geological as well as communication skills. For example, the geological skills needed to fill-out the data sheet for landslide hazard mapping include the ability to determine the presence and extent of such geologic features as active and/or recent landslides, steep slopes, weak rocks and/or other slope materials, tension cracks which could affect a community, rock joints/fractures or beds dipping towards the slope face, and proximity to faults. On the other hand, communication skills are also important to extract information from barangay residents on historical geohazards in the area.

If an area is considered critical in terms of landslide hazard, a landslide threat advisory is issued to the Barangay Chairman (Fig 7). At the end of field surveys, geohazard assessment reports that summarize the landslide and flood susceptibility of the barangays are prepared, and given to the Office of the Municipal/City Mayor (Fig 8).

### ***Generation of geohazard map***

Under MGB's Geohazard Mapping and Assessment Program, landslide and flood hazard maps on a scale of 1:50,000 are the targeted outputs (Figs. 9 and 10). However, maps of larger scales have also been produced when needed, such as in the case of flood hazard maps of Metro Manila (Figs 11 & 12). Landslide hazard maps in 1:10,000 scale are also produced by MGB under the READY project for critical areas (Fig. 13). For coastal geohazards, maps at a scale of 1:50,000 and larger are generated by MGB's Marine Geological Survey Division.

The generation of the geohazard maps requires processing and final integration of all data gathered during the acquisition, generation and integration phase as well as in the field survey phase. Geographic Information Systems (GIS) technology is employed in this stage as a data processing tool.

<sup>9</sup> Glenn L. Rabonza, "Philippine Disaster Management System: NDCC's Policies, Plans and Programs" Powerpoint Presentation in 8th Meeting of the Regional Consultative Committee (RCC) on Disaster Management, Crown Plaza, Manila Philippines, February 22-24, 2010.

Landslide susceptibility in landslide hazard maps is rated as High, Moderate or Low. The ratings are based on the presence of such geologic features, as follows: active and/or recent landslides, drainage patterns that are prone to landslide damming, steep slopes, weak rocks and/or other slope materials, tension cracks which could affect a community, rock joints/fractures or beds dipping towards the slope face, and proximity to faults. Likewise, indicated in the landslide hazard map are the possible accumulation zones of debris brought about by landslides (Fig. 9).

Flood susceptibility is also indicated in the hazard maps as High, Moderate or Low. The basis for this rating is the level of historical flood inundation and frequency of occurrence in the case of sheet flooding, and flood regularity and turbidity for flashfloods. In the case of flashfloods, exit points are indicated on the hazard map to pinpoint areas where flood waters emanate (Fig. 10).

### ***Information, Education and Communication (IEC) campaign***

The Geohazard Mapping program does not end in the production of maps. To serve its goal of preventing tragedies, the program involves providing information on the vulnerability of certain areas to various types of geohazards.

The IEC campaigns under the program are focused on geohazard awareness and specific threats in particular communities. The conduct of IEC campaigns happen right in the community assessed at the end of the field survey through the conduct of on-site briefing for local government officials, particularly the barangay and municipal officials. Known as exit conference, the briefing pinpoints geohazard-prone areas in the community, and critical areas, the briefing carries by written advisories on geohazard threats and is given to the Barangay Chairman, and endorsed to the Municipal/City Mayor (Fig. 7).

Upon the completion of geohazard maps, province-wide IEC campaigns are conducted

with the Barangay, Municipal/City and Provincial officials, as well as school teachers coming from all the Districts in the Province as target participants. These IEC campaigns consist of series of seminar-workshops where the participants are introduced to the general characteristics of the various geohazards and the results of geohazard mapping and assessment done in the area, taught the basics of hazard map reading, and encouraged to participate in the workshop activities aimed to empower the participants, particularly the Barangay officials. In the workshop portion, Barangay officials are asked to locate their respective barangays in the hazard maps on which barangay centers are plotted. They are also given the chance to know the hazards affecting their communities through the filling-out of a table indicating the actual hazards present in their respective barangays, based on the hazard maps. The table, together with the concluding statements based on group discussions on disaster preparedness and mitigation plans serves as the workshop outputs of the participants (Fig. 14).

Localized IEC campaigns in the form of lecture presentations were likewise conducted in areas where 1:10,000 landslide hazard maps were produced by MGB under the READY Project, synchronized with the installation of landslide hazard warning signages (Fig. 15).

During all the IEC campaigns, IEC materials are distributed to various stakeholders. These materials are in the form of the geohazard maps either in printed form or in compact discs (CDs), as well as general geohazard information in the form of video compact discs (VCDs), CDs, posters, brochures, pamphlets, and even comics, written in English and in Filipino (Fig 16).

Geohazard maps which have been completed by MGB have been distributed to Provincial Governors, Congressmen, City/Municipal Mayors, and Regional offices of the Office of Civil Defense during provincewide and localized IEC campaigns. The maps are also available for

sale in CD to other interested parties such as construction and development firms.

In an effort to make the geohazard maps and geohazard assessment reports widely disseminated as possible, these have been uploaded in the website of MGB central office, as well as MGB's regional offices, and recently turned over to National Disaster Coordinating Council. Other IEC materials on geohazards especially posters and brochures are given free to interested individuals, schools and other institutions.

### **Interface with the READY Project**

Parallel to MGB's Geohazard Mapping and Assessment Program is the Hazards Mapping and Assessment for Effective Community-based Disaster Management Project, also known as the READY Project. This is a Project executed by the Office of Civil Defense (OCD) involving the member-agencies of the Collective Strengthening of Community Awareness of Natural Disasters (CSCAND), a sub-committee under the Preparedness Committee of the NDCC. In addition to MGB, the CSCAND member agencies are PHIVOLCS, Philippine Atmospheric Geophysical Astronomical Services Administration (PAGASA), and National Mapping and Resource Information Authority (NAMRIA).

The main objective of the READY Project is to address the problem of disaster risk management at the local government unit level. MGB is actively involved in the project's two components: multihazard identification and assessment; and community-based disaster preparedness.

Under the multihazard identification and assessment, the 1:50,000 landslide and flood hazard maps produced by MGB as part of its Geohazard Mapping and Assessment Program serve as an input to the READY Project. In addition, MGB conducts the more detailed 1:10,000 landslide hazard mapping of previously identified critical areas, with funding support from

READY Project.

For the community-based disaster preparedness component, MGB participates in the development of IEC materials, such as posters and flyers on landslides, and in the conduct of provincewide IEC campaigns for LGUs and teachers to disseminate the results of the hazards mapping and assessment. Another activity conducted by MGB under the READY Project is the installation of landslide warning signages in areas identified as critical in terms of landslide susceptibility, following the 1:10,000 landslide hazard mapping activity. This serves as an initial phase for the development of an early warning system for the community. Enhancement of this early warning system through the determination of rainfall threshold values which will trigger landslides, installation of rain gauges, and training of community rain gauge observers are among the planned activities of MGB, in close partnership with PAGASA under the READY Project.

## **STATUS AND ACCOMPLISHMENT OF THE PROGRAM**

### ***Municipalities assessed and mapped***

As of December 2009, under the DENR-MGB Geohazard Mapping and Assessment Program, 1,497 Municipalities/Cities have been mapped and assessed for landslide and flood susceptibility. The remaining Municipalities/Cities will be assessed in 2010. Further, coastal hazard mapping of 2,385 line kilometers were completed (Fig. 17). The number of Municipalities/Cities mapped and assessed under the DENR-MGB Geohazard Mapping and Assessment Program per year are given on Table I.

The priority provinces of the eastern seaboard and other critical areas covered by mapping and assessment include Surigao del Norte, Surigao del Sur, Aurora, Leyte, Southern Leyte, Northern Samar, Eastern Samar, Rizal, Laguna, Cavite, Quezon, Ilocos Norte, Ilocos Sur, Isabela, Cagayan, Davao del Sur, Compostela Valley, and

the Bicol Provinces. In terms of geohazard map production, 835 out of 970 (86%) map sheets in 1:50,000 scale have been prepared (Fig 18). For the year 2010, 135 map sheets will be completed.

### ***Relocation sites assessed***

On top of these accomplishments, MGB has also extended assistance to local government units (LGUs) as well as non-government organizations (NGOs) in resettlement works, particularly in the assessment of the suitability of relocation sites for housing projects for people displaced by recent landslides and floods. Some of the relocation sites assessed were in Benguet, Zambales, Pangasinan and Laguna after the onslaught of typhoons Ondoy, Pepeng and Santi.

### ***IEC campaigns conducted***

Under the DENR-MGB Geohazard Mapping and Assessment Program, IEC campaigns in the conduct of provincewide seminar-workshops were completed in Ilocos Norte and Ilocos Sur. Twelve other provincewide IEC campaigns were jointly conducted by MGB with other READY Project agencies. Of these, three (3) were conducted by MGB as lead organizing agency. These are tabulated on Table II.

Localized IEC campaigns using lecture presentations were likewise conducted in areas where 1:10,000 landslide hazard maps were produced by MGB under the READY Project, in conjunction with the installation of landslide hazard warning signages. The cities/municipalities so far covered by MGB are Baguio City; La Trinidad, Benguet; Olongapo City; Los Baños, Laguna; San Mateo, Rizal; Rodriguez, Rizal; and Ormoc City.

Direct information or written advisories on geohazard threats were issued to 1,250 cities/municipalities and 14,613 barangays, right after the conduct of geohazard field mapping and assessment.

In all the aforementioned IEC activities, geohazard IEC materials were distributed as follows: 12,450 posters; 6,200 VCDs; 8,230 pamphlets; and 7,235 geohazard maps.

## **LOOKING FORWARD**

The current year will see the completion of the landslide and flood hazards mapping in a medium scale of 1:50,000 and geohazard assessment of targeted Provinces in the country. The timely dissemination of the useful information generated from the results of hazards mapping and assessment needs to be done immediately. In this context, MGB plans to pursue an intensified and enhanced nationwide IEC campaign, reinforcing the personnel from both Central Office and 15 Regional Offices. This will be done through the conduct of provincewide seminar-workshops with barangay, municipal and provincial officials as well as teachers as target participants. Making the information readily and easily available to as many people as possible (especially disaster managers, land-use planners and the like), is also planned through enhancing and updating of MGB's geohazard database and uploading it in a user-friendly website.

Having identified critical areas as a result of 1:50,000 scale geohazard mapping and assessment, more detailed landslide hazard mapping and assessment on a scale of 1:10,000 will be pursued by MGB in the next phase of the Project. This activity actually contributes to the sustainability of detailed mapping started by MGB as part of the READY Project. Information generated by this activity will be made available to communities concerned. The installation of landslide warning signages in areas where detailed mapping has been done will also be conducted, and advocated as a community-based early warning system for landslides. The LGUs will be encouraged to replicate the installation of signages as a community-based disaster preparedness activity.

Other activities related to the geohazard mapping

and assessment program planned by MGB are the following: re-issuance of direct advisories/maps to the LGUs in view of the concerns brought about the recent Haiti earthquake; intensified assessment of possible relocation sites for prospective victims of natural disasters; and strengthened activities in support to the reconstruction works for Metro Manila which was damaged by the recent typhoons.

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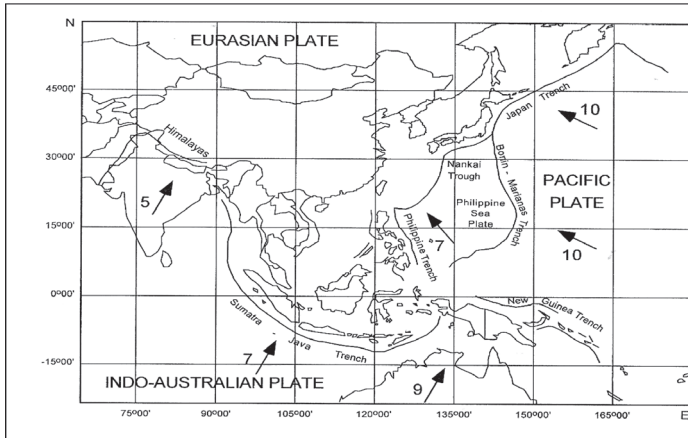


Fig. 1 Geodynamic setting of the Southeast Asia –West Pacific Domain. Numbers beside arrows indicate rates of plate motion in cm/yr relative to Eurasia.<sup>5</sup>

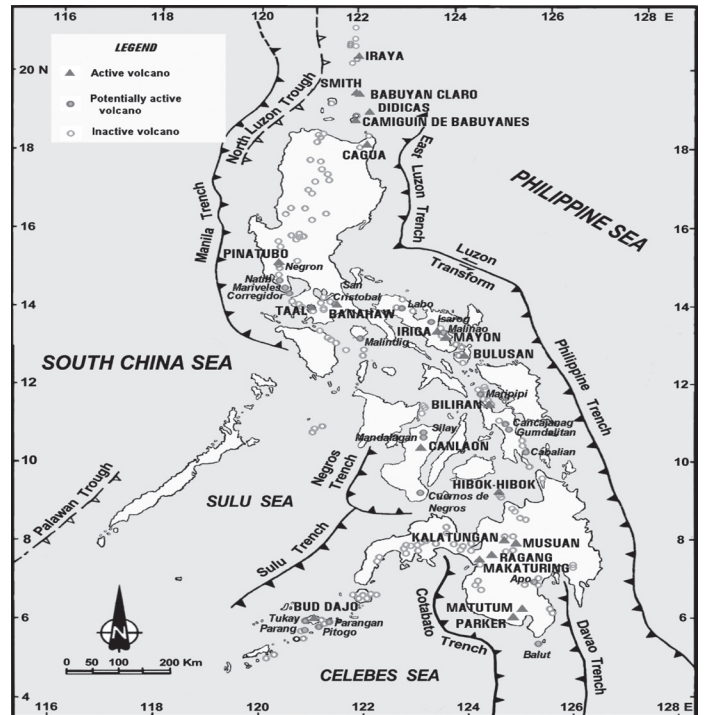


Fig. 3. Distribution of volcanoes in the Philippines. There are approximately 300 volcanoes in the Philippines, out of which 23 are considered active and 26 potentially active.<sup>7</sup>

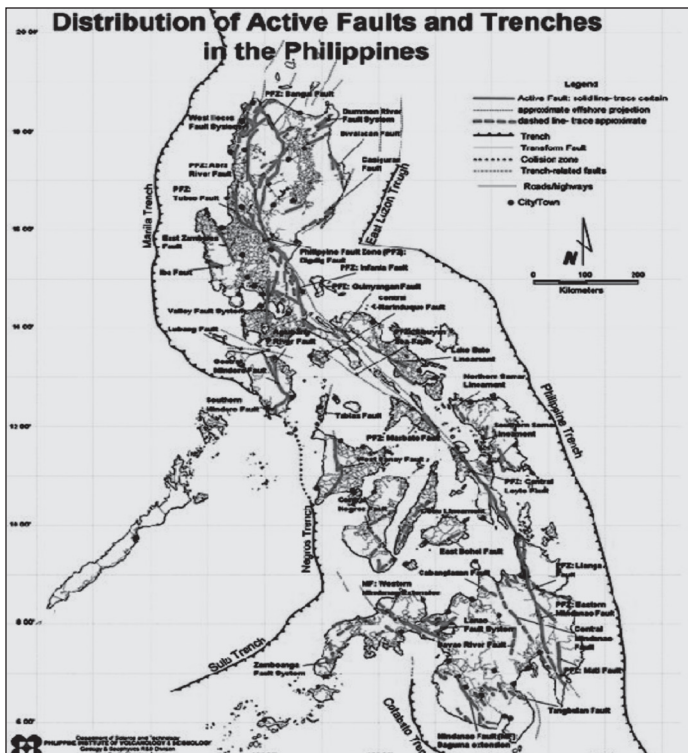


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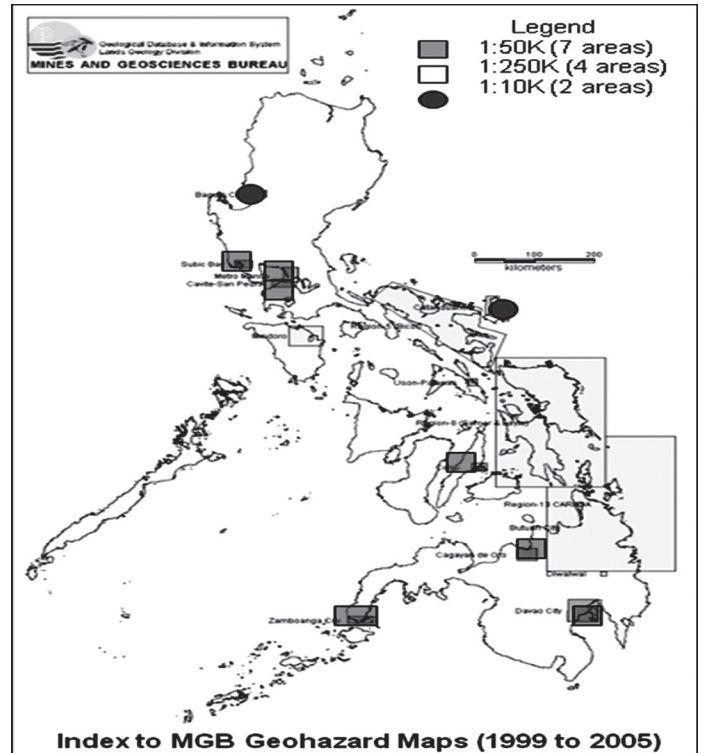


Fig. 4. Map showing the coverage of geohazard mapping by MGB prior to 2006.

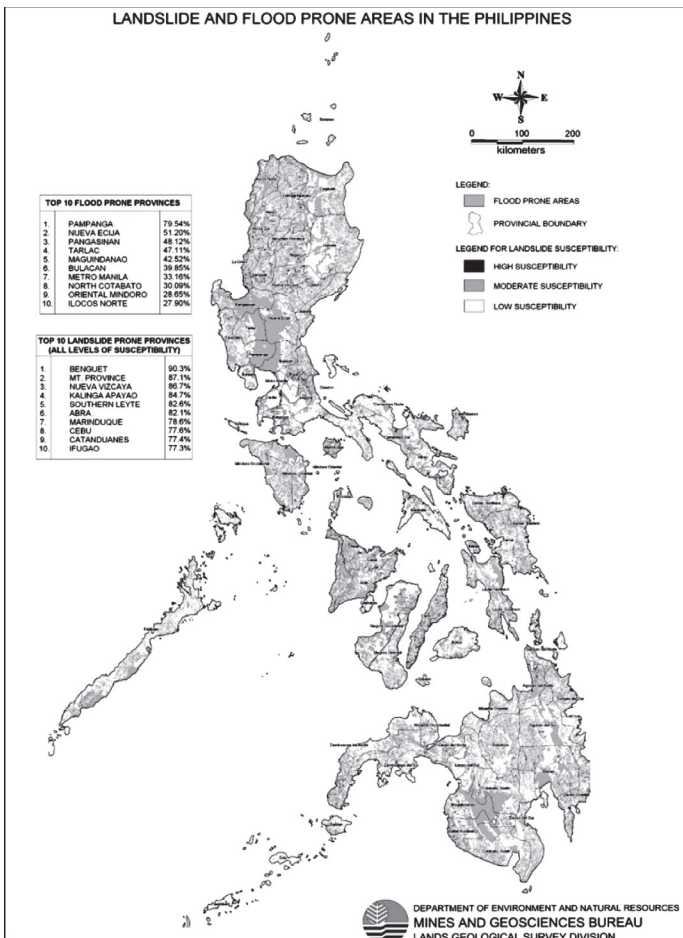


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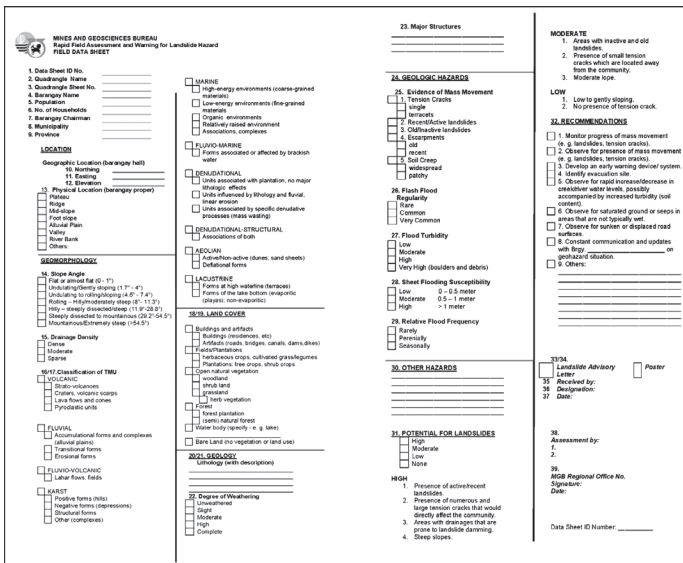


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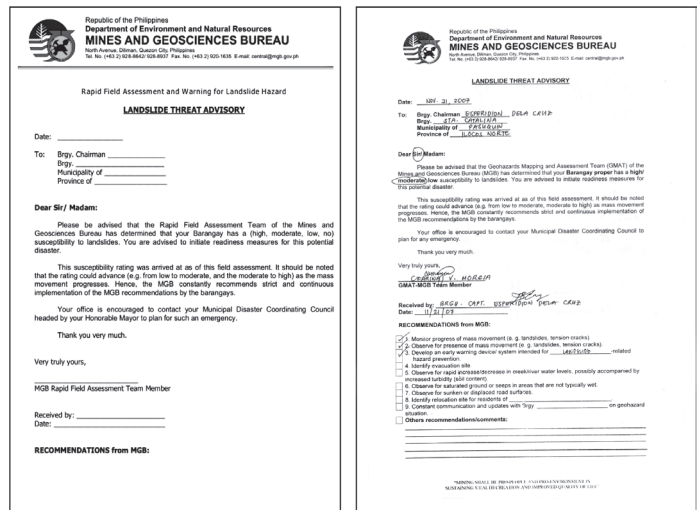


Fig. 7. Landslide threat advisory given out to Barangay chairmen through the municipal/city officials (Picture A is the blank form, picture B is a sample of an accomplished form received by a Barangay Chairman and endorsed to the Municipal Mayor).

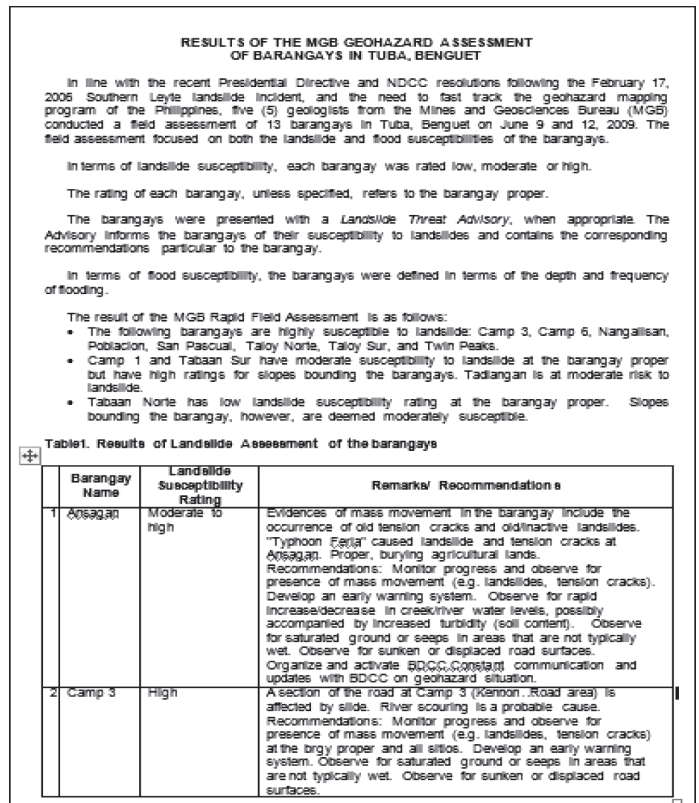


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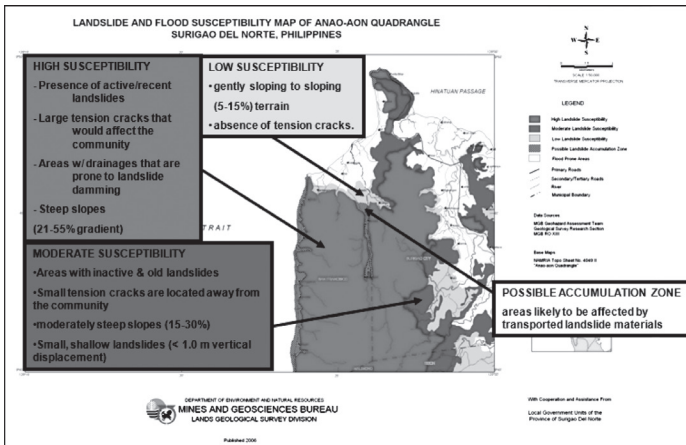


Fig. 9. Example of landslide and flood susceptibility map produced by MGB and disseminated to various stakeholders. Basis for High, Moderate and Low ratings for landslide susceptibility is explained. Possible areas of landslide debris accumulation are also indicated.

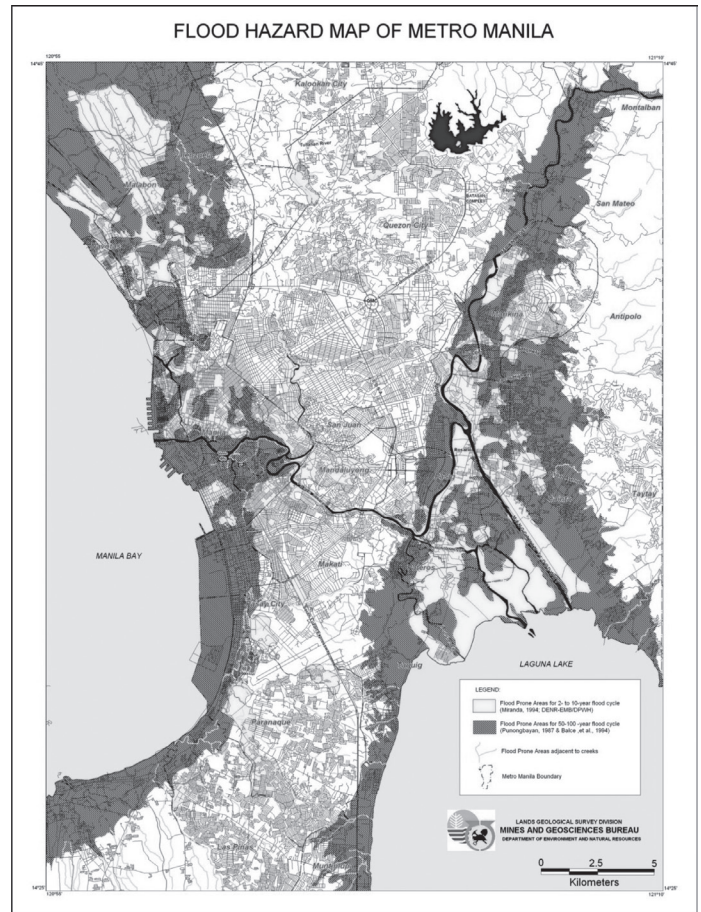


Fig. 11. Flood susceptibility map of Metro Manila at a scale of 1:40,000 produced by MGB.

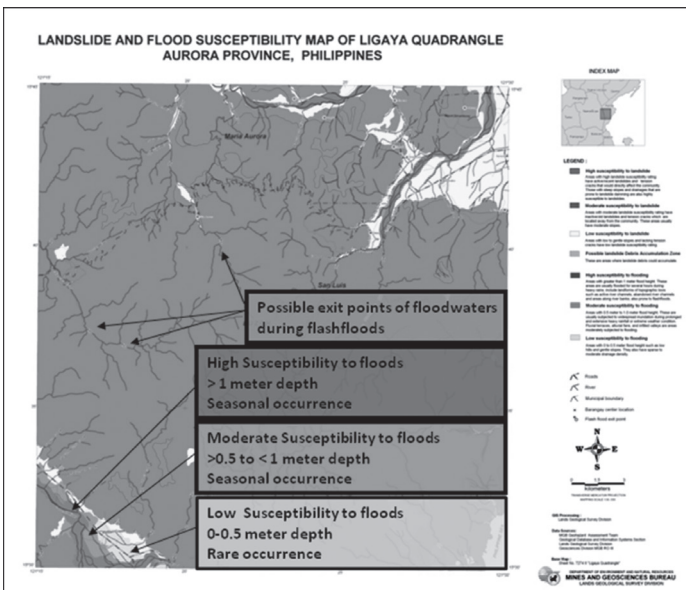


Fig. 10. Example of landslide and flood susceptibility map produced by MGB and disseminated to various stakeholders. Basis for High, Moderate and Low ratings for flood susceptibility is explained. Possible exit points of floodwaters during flashfloods are also indicated.

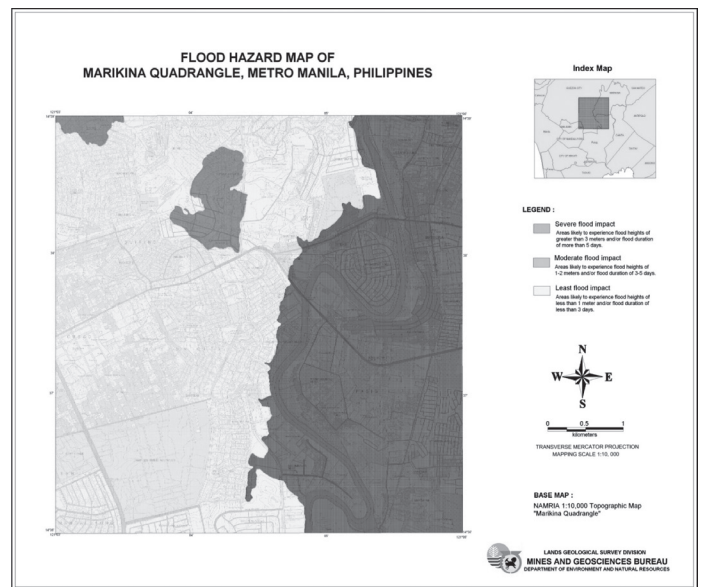


Fig. 12. Flood susceptibility map of Marikina Quadrangle, Metro Manila at a scale of 1:10,000 produced by MGB.

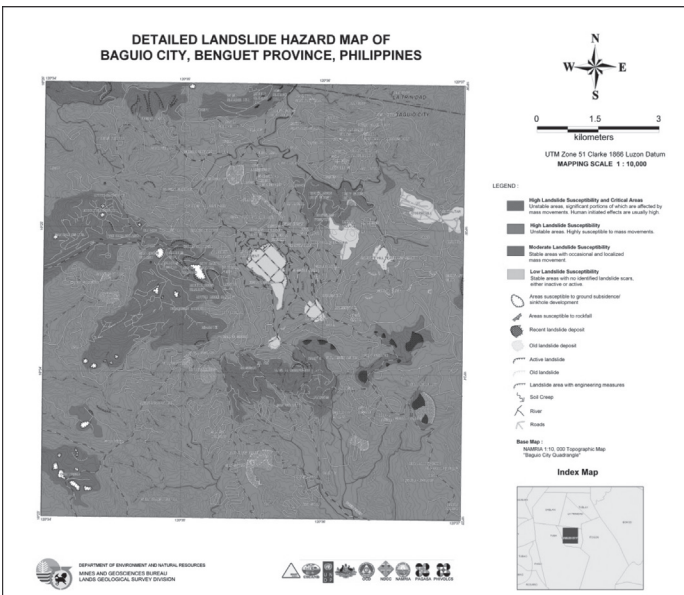


Fig. 13. Example of landslide hazard map at a scale of 1:10,000 produced by MGB under the READY Project.

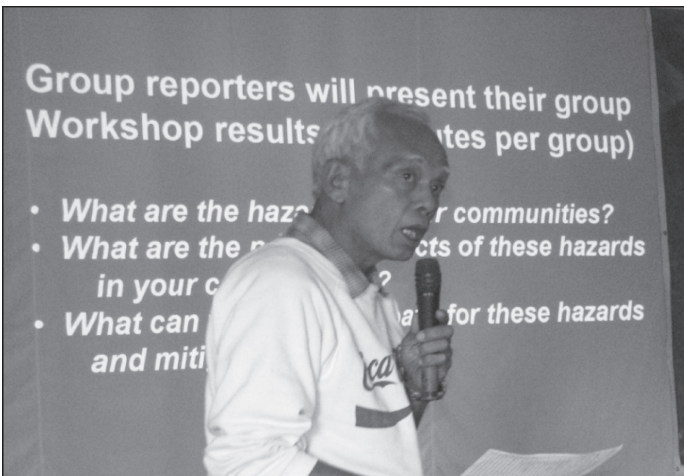


Fig. 14. Photo of a Barangay official presenting his workshop group's report as output during a provincewide geohazard seminar-workshop conducted by MGB.



(a) (b)

Fig. 15. Photo (a) showing conduct of IEC campaign in Baguio City and (b) installation of landslide warning signage in La Trinidad, Benguet (b) where detailed landslide hazard mapping was done by MGB under the READY Project.



Fig. 16. Examples of geohazard IEC materials produced by MGB and disseminated to various stakeholders.

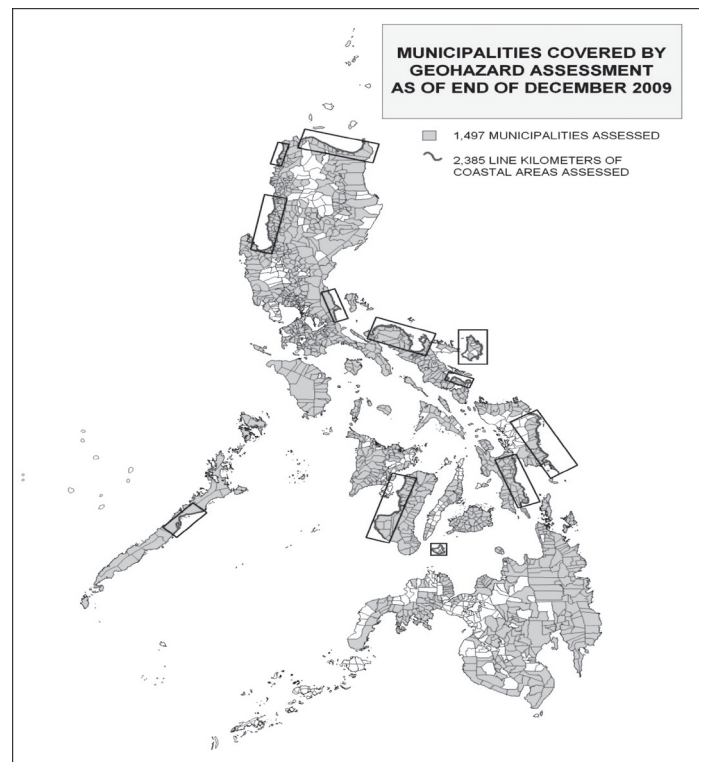


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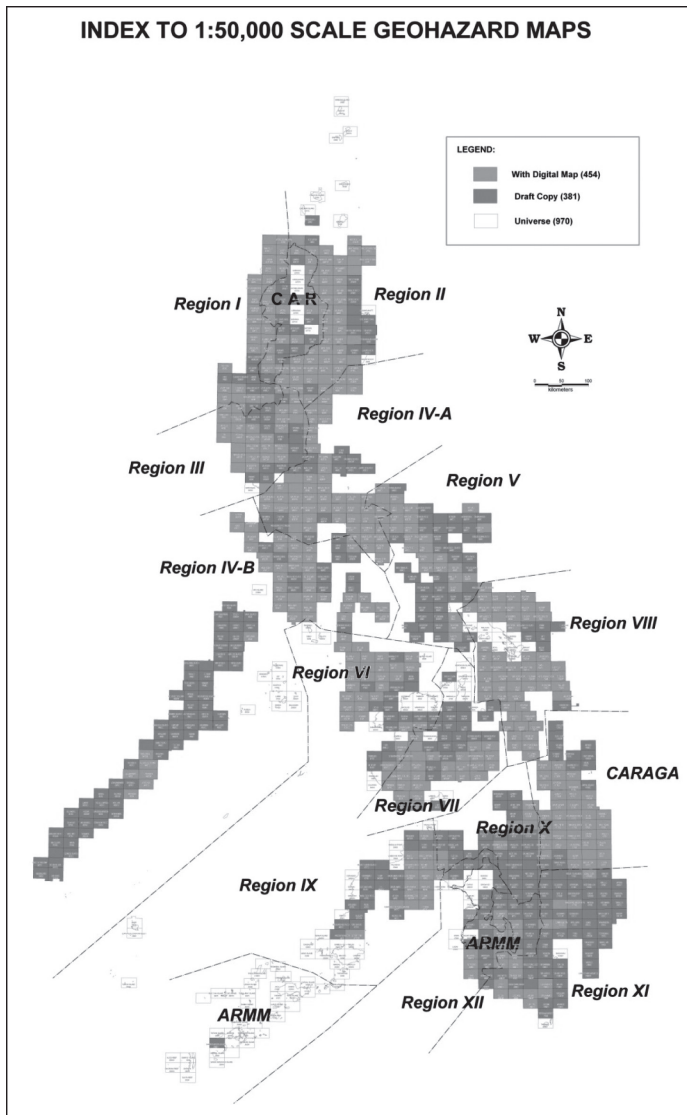


Fig. 18. Map showing status of geohazard map production by MGB as of December 2009.

Table I. Number of cities/municipalities assessed per year

**ABOUT THE AUTHORS**

Year	Number of cities/ municipalities assessed
Before 2006	210
2006	486
2007	291
2008	249
2009	261
Total	1,497

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Table II. List of provincewide IEC campaigns

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conducted by MGB under the DENR-MGB Geohazard Mapping and Assessment Program and READY Project

No	Province	IEC Campaign Date	No of Days	Project	Lead Agency
1	Surigao del Norte	Nov 8-11, 2006	4	READY	MGB
2	Surigao del Sur	Nov 20-24, 2006	4	READY	PHIVOLCS
3	Leyte	Aug 21-25; Aug 28-Sept 1; Sept 3-4, 2007	12	READY	MGB
4	Southern Leyte	Dec 11-15, 2007	5	READY	PHIVOLCS
5	Bohol	Feb 4-13, 2008	9	READY	PHIVOLCS
6	Aurora	May 12, 14-15, 2008	3	READY	PAGASA
7	Cavite	June 30-July 3; July 4-5, 7-8, 2008	8	READY	OCD
8	Ilocos Norte	July 21-26, 2008	6	DENR-MGB Geohazard	MGB
9	Pampanga	Sep 1-6, 2008	6	READY	NAMRIA
10	Laguna	Nov 24-29, 2008	6	READY	MGB
11	Northern Samar	March 9-14, 2009	6	READY	PHIVOLCS
12	Eastern Samar	July 6-11, 2009	6	READY	PAGASA
13	Ilocos Sur	Sep 2-9, 2009	7	DENR-MGB Geohazard	MGB
14	Zambales	December 2-5, 2009	4	READY	NAMRIA

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<sup>4</sup> *Bachelor of Science in Geology (University of the Philippines, 1975);  
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Masters in Public Management (Development Academy of the Philippines, 1995)*

# Typhoons Ondoy and Pepeng: Post-Disaster Needs Assessment<sup>1</sup>

## A. The Disaster

**Tropical storm Ondoy (international name Ketsana) hit the Philippines on September 26, 2009, causing widespread flooding<sup>2</sup>.** Ondoy, the equivalent of a Category I storm, brought an unusually high volume of rain which inundated the central part of Luzon. During the 12-hour period starting at 8:00am in September 26, the rainfall was recorded as approximately 450 mm at the Manila Observatory, an extremely rare occurrence. In turn, these intense rains generated high flooding in the Marikina River that exceeded the river's carrying capacity. Ondoy caused extensive flooding in the Metro Manila area and the neighboring Rizal province, including the cities of Antipolo, Makati, Malabon, Marikina, Muntinlupa, Pasig, Quezon, San Juan, Taguig, and Valenzuela.

**Tropical storm Ondoy was quickly followed by typhoon Pepeng (international name Parma).** Typhoon Pepeng, a Category III storm, affected the Philippines on October 3-9, 2009, following an irregular path which crossed over Central and Northern Luzon three times. It initially brought powerful winds with gusts of up to 230 km/hr then an extended period of heavy rains, with cumulative rainfall amounts exceeding 1,000 mm in some areas. The resulting river floods have been estimated to have a return period of around 50 years, meaning that statistically speaking, such a rainfall event occurs on average once in every 50 years.

**Ondoy and Pepeng resulted in large numbers of affected persons and casualties.** As of November 23, 2009, the official death toll from the two natural disasters combined was 956 persons, with 84 persons still missing and 736 injured.

While the majority of deaths caused by tropical storm Ondoy were due to drowning, reported deaths during typhoon Pepeng were also due to landslides. Assessment data show that over 9.3 million people were affected severely, out of an estimated population of 43.2 million living in the affected regions.

**The Government declared a National State of Calamity in October 2.** In the aftermath of the disaster, the Government and private sector staged a commendable relief effort, supported by development partners.

The Department of Finance requested development partners to undertake a Post-Disaster Needs Assessment (PDNA) jointly with the Government. In response, development partners organized a team of local and international experts to initiate the PDNA process for Ondoy and Pepeng with Government agencies.

## B. Economic and Social Impacts

**Tropical storm Ondoy and typhoon Pepeng caused substantial damage and losses, equivalent to about 2.7 percent of GDP.** The storms hit regions of the country that account for over 60 percent of GDP (including the National Capital Region, which accounts for about 38 percent of total GDP). The adverse impacts on the productive sectors were largely due to damaged or lost inventories, raw materials and crops. In addition, business operations were interrupted by power and water shortages, damaged machinery, and absent employees, which contributed to an overall reduction in production capacity. As a result, the disaster is expected to have a negative impact on GDP growth in the short term. However,

<sup>1</sup> This article is reprinted from: Government of the Philippines. World Bank, Asian Development Bank, United Nations and other Global Fund for Disaster Risk Reduction Partners. 2009. Typhoons Ondoy and Pepeng: Post-Disaster Needs Assessment, Main Report. Manila

<sup>2</sup> Due to the short time frame for preparation of the PDNA, this report focuses on Luzon and Metro Manila, which were the regions most affected by Ondoy and Pepeng.

once projected public and private recovery and reconstruction spending are included, the net impact of the disasters on economic activity is expected to result in real GDP growth of 1.0 percent in 2009 and 3.5 percent in 2010 which implies a decline of about 0.4 percentage points in 2009, followed by an increase of about 0.4 percentage points in 2010, over the pre-disaster growth estimates.

**The Philippines is frequently affected by natural disasters, yet the recent disasters were significant in the overall magnitude of their effects.** The scale of the disasters was magnified by the impacts of the disasters in highly populated economic centers. While extreme events, however, the damage and losses incurred during the disaster—estimated to be equivalent to about 2.7 percent of GDP—are comparable to other major recent disasters across the world. (Table 1)

**Table 1: Damage, Losses, and Magnitude of Similar Recent Disasters**

Disaster	Country	Year	Total Effects	Magnitude
Earthquake	Pakistan	2005	2,876	0.4
East Asia Tsunami (Aceh)	Indonesia	2005	4,452	1.6
Cyclone Sidr	Bangladesh	2007	1,640	2.8
Cyclone Season	Madagascar	2008	333	4.0
Cyclone Nargis	Myanmar	2008	4,060	19.7
Storm and Floods	Yemen	2008	1,638	6.0
TS Ketsana and Typhoon	Philippines	2009	4,383	2.7

**As is usually the case, the disaster affects fiscal balances due to higher spending and lower revenues.** On the expenditure side, the direct impact includes infrastructure repair, emergency relief, and assistance to affected families. Total expenditures will depend on the policy decisions made to assist the most vulnerable citizens, for example through permanent relocation programs, slum upgrading, and water and flood management improvements. How the government chooses to prioritize spending for recovery and reconstruction will be critical, since this spending may need to be the centerpiece of the fiscal stimulus program for the next couple of years so as to remain within the fiscal envelope. Public revenues are also expected to be affected, both directly and indirectly resulting in revenue losses over the next year.

**The poor and vulnerable were inordinately affected by Ondoy and Pepeng, and efforts**

**to help restore their housing and their livelihoods are needed urgently.** In urban areas, it is the poor who concentrate in informal settlements in at-risk areas such as floodplains. Similarly, in rural areas, it is the poorest who end up living in dangerous areas such as river embankments. For those living just above the poverty line, such disasters are likely to propel them back into poverty.

Indeed, this PDNA estimates that in the most affected areas of Luzon, the incidence of poverty in 2009 could increase by as much as three percentage points as a result of Ondoy and Pepeng, and by 0.5 percentage points nationwide. The number of poor people in the Philippines is expected to increase by 480,000 in 2009. The storms severely disrupted livelihoods in the affected areas, with about 170 million workdays—equivalent to about 664,000 one-year jobs—lost due to their impacts. Total income lost



due to the disaster amounted to Php 50.3 billion, which particularly affected informal workers with family-based livelihoods.

### C. Damages, Losses, and Needs Assessment

**This Post-Disaster Needs Assessment analysis covers damages, losses, and economic and social impacts.** Damage (direct impact) refers to the impact on assets, stock (including final goods, goods in process, raw materials, materials and spare parts), and property. Losses (indirect impact) refer to flows that will be affected, such as production declines, reduced incomes, and increased expenditures, over a time period until the economy and assets are recovered. Economic and social impacts include macroeconomic impacts, poverty impacts, employment and livelihoods impacts, and social impacts.

**The PDNA estimated that damage and losses from Ondoy and Pepeng amount to a total of US\$4.38 billion (Table 2).** The PDNA found that damage to physical assets in the affected areas amounts to an estimated Php 68.2 billion, equivalent to US\$1.45 billion. Associated losses in production and other flows of the economy were estimated at nearly Php137.8 billion or US\$2.93 billion, equivalent to two-thirds of the total disaster effects.

While the destruction or damage to assets occurred at the time of the storms, the associated changes in economic flows will last beyond the present calendar year. In some sectors and cases, the effects will be felt in 2010 and 2011 depending on the speed and efficiency of the post-disaster recovery and reconstruction activities.

**Table 2: Summary of Disaster Effects and Needs by Sector (in US\$ million)**

Sector	Damage and Losses			Needs		
	Damage	Losses	Total	Recovery	Reconstruction	Total
<b>Productive Sectors</b>	557.8	2,661.7	3,219.5	351.8	1,422.4	1,774.3
Agriculture	80.1	769.2	849.3	291.6	59.7	351.3
Industry	209.2	194.1	403.3	15.8	220.5	236.2
Commerce	256.2	1,644.4	1,900.6	33.7	1,126.8	1,160.4
Tourism	12.3	54.0	66.2	10.8	15.4	26.2
<b>Social Sectors</b>	706.5	212.5	919.0	197.0	1,606.3	1,803.3
Housing	541.6	188.8	730.3	166.4	1,444.9	1,611.4
Education	53.5	4.9	58.4	8.9	65.1	74.0
Cultural Heritage	6.0	0.5	6.5	0.6	6.8	7.5
Health	105.5	18.3	123.8	21.1	89.4	110.5
<b>Infrastructure</b>	181.1	56.2	237.3	42.3	397.2	439.5
Electricity	15.2	18.7	33.9	-	15.2	15.2
Water and Sanitation	7.9	16.4	24.3	0.7	2.8	3.4
Flood Control, Drainage and Dam Management						
Transport	138.7	21.2	159.8	41.6	208.0	249.6
Telecommunication	4.1	-	4.1	-	-	-
<b>Cross-Sectoral</b>	6.3	0.9	7.1	351.8	54.1	405.9
Local Government	6.3	0.9	7.1	0.2	6.4	6.6
Social Protection	-	-	-	351.5	6.7	358.2
Financial Sector	-	-	-	0.1	2.9	3.0
Disaster Risk Reduction and Management						
<b>Total</b>	<b>1,451.7</b>	<b>2,931.3</b>	<b>4,383.0</b>	<b>942.9</b>	<b>3,480.1</b>	<b>4,423.0</b>
<b>Total in Php million (1 USD = 47 Php)</b>	<b>68,228.4</b>	<b>137,770.3</b>	<b>205,998.7</b>	<b>44,317.9</b>	<b>163,562.4</b>	<b>207,880.3</b>

**The private sector has borne most of the impact of the disasters.** The share of private sector damage and losses is equivalent to 90 percent of the total, while that of the public sector constitutes the remaining 10 percent. It should be noted that in contrast to other disasters in which destruction of infrastructure is predominant, nearly 95 percent of total damage and losses were sustained by the productive and social sectors. Counting these losses is also the main difference between the estimate of the PDNA and that of the National Disaster Coordinating Council (NDCC), which only selectively counts losses (e.g., in agriculture) and does not take into account private sector impacts, therefore yielding a lower estimate of total damage and losses.

**The assessment of damage and losses provides a basis for determining recovery and reconstruction needs.** The assessment of damage provides a basis for estimating reconstruction requirements, while the estimation of losses provides an indication of the recovery needs to address the reduction or decline in economic activity and in personal and household income. The two estimates are then combined to establish overall needs to achieve full recovery of economic activities at the macro-economic level and at the individual or household level.

**A total of US\$ 942.9 million is required to meet recovery needs, and a total of US\$ 3.48 billion is required for the reconstruction efforts (Table 2) over the short term (2009-10) to medium term (2011-12).** Larger investments, particularly in flood control and housing, may need to be considered in the longer term. It should be noted that the human and community-based early recovery needs identified by the IASC clusters and included in the Revised UN Flash Appeal are included in the amount of total needs. The share of the public sector in implementing the recovery and reconstruction program is estimated at 55 percent (US\$ 2.44 billion), whereas private sector execution amounts to 45 percent (US\$ 1.99 billion). The exact public sector need depends on the choices

the government makes on the specific programs to implement, the timing and pacing of those programs, and the effectiveness with which these programs are implemented. Financing can come from a variety of sources, including the domestic budget, local government budgets, private sector contributions, and grants and concessional loans from development partners.

**The needs for financing are large, but the cost of doing nothing would be larger still.** This PDNA estimates the total cost of recovery and reconstruction at US\$ 4.42 billion. Given the very limited capacity of the flood management system in Metro Manila and the possibility of increased frequency and intensity of floods and typhoons, such costs can be expected to recur more frequently unless urgent efforts are made to mitigate the effects of future disasters. For example, Metro Manila's system of drainage was designed to withstand events of a 30-year return period.

Given the siltation, the presence of massive amounts of trash, and chronic lack of maintenance, the actual capacity of the system is now much lower than it was when designed. Coupled with the likely impacts of climate change, the drainage system can be expected to be o deficiencies are not addressed. Because of the rapid increase in economic activity and concentration of people in Metro Manila, the costs of disasters such as Ondoy warrant investments in much higher protection against floods and other disasters than currently in place.

## **D. Recovery and Reconstruction Strategy**

**Building back better is necessary, but it is not enough.** While Ondoy's flooding could not have been prevented, its extensive impact was preventable. Similarly, the damage wrought by Pepeng could have been mitigated. Preventing such impacts in the future requires attention to the governance of Filipino development in

areas such as land use planning, housing, water management, environmental protection, and disaster risk mitigation. Indeed, the factors that resulted in the impacts from Ondoy and Pepeng are among the same factors that lie behind a number of major development challenges, including the congestion of Metro Manila, the proliferation of slums, and the heavily polluted environment in urban areas; and the weak performance of agribusiness in rural areas.

**In implementing recovery and reconstruction, and looking beyond the recent disasters to the future, five areas stand out as meriting particular attention.**

1. **Rural Production: Immediate restoration of rural livelihoods before the end of the year is necessary to avoid loss of production during the dry season.** First, rapid action is needed to repair irrigation systems and to clear fields of accumulated gravel, silt, and sand. Second, farmers need inputs such as seed and fertilizer. Third, farmers need finance to cover their needs for consumption and investment until the next harvest. To this end, a system of vouchers or direct cash transfers to the poor who have been directly affected (instead of the usual input subsidy programs that benefit the non-poor more) is warranted as an efficient, transparent, non-distorting, and flexible mechanism.
2. **Flood Management: Given its vulnerability to flooding, protecting Metro Manila requires institutional changes, comprehensive planning, and investment in both restoration and new infrastructure.** The imperative policy choice is to determine the acceptable level of risk and protection, as this will determine subsequent engineering and financing decisions. In the medium term, the existing flood management and drainage system should be restored to fully operational condition, accompanied by funding for regular maintenance and the establishment of real-time monitoring and early warning systems. A new institutional structure, building on the existing framework—with responsibility for managing floods and drainage in the entire catchment area of Metro Manila including Laguna de Bay, and with the authority and means to enforce agreed policies and plans—would greatly facilitate future flood management. A risk assessment study for the entire basin is needed to update the existing master plan and to develop a comprehensive development program. In the longer term, as part of the development program, additional investment will be needed to retain water upstream, facilitate the flow of water through the system, and maintain Laguna de Bay at a pre-determined level as informed by the risk assessment.
3. **Housing: The vast majority of damage to the housing stock was concentrated in the informal sector which serves mainly low-income families, so building back better means providing better alternatives for informal settlers.** The issue of informal housing goes well beyond the impacts of Ondoy and Pepeng: about half the population of Metro Manila lives in informal settlements, and prior to the calamities, there was an estimated backlog of 3.7 million households in need of formal housing nationwide. Although addressing the needs of families living in the estimated 220,000 houses damaged and destroyed by the storms would still only meet a small part of the overall housing needs, it would provide an important way forward to addressing the much broader needs of informal settlers. The resettlement process will need to be based on consultation with affected communities and take into account the need to restore their livelihoods. It would not be feasible to resettle all of these victims in the short run. Those people who have lost their homes must be urgently provided with short-term or transitional housing options near their sources of livelihood. Resettlement of urban dwellers in peri-urban (or rural) areas

that does not take proximity to livelihoods into account has been less than successful worldwide.

**Resettlement of flood victims in Metro Manila offers an opportunity to develop new, more appropriate ways of developing the area.** Cities such as Singapore and São Paulo that have successfully addressed the issue of slum upgrading have done so through more intensive use of urban land. Given the cost of land in Metro Manila and the need to keep people close to their sources of livelihoods, spreading upward (verticalization) in more compact settlements (densification) is a logical solution. The private sector could be tapped to promote such development, thereby providing “win-win” solutions where the poor pay less and eventually get title to their housing; developers make a profit; and, the quality of urban life is improved for all. Making this feasible requires the support of the National Housing Authority, national government agencies, and LGUs to facilitate greater access to land and services, as well as subsidization of start-up capital for the poor.

4. **Disaster Risk Reduction and Management (DRRM):** The existing DRRM system needs to become more proactive, coherent, and effective. The quality of and access to scientific data for predicting and forecasting disasters requires urgent improvement. Once adequate information is available, the mainstreaming of DRRM into local planning needs to be significantly expanded, and critical service infrastructure (e.g., water, power, hospitals) should be upgraded to withstand an acceptable level of risk. These measures need to be coupled with better access to disaster risk financing.

A strategy on disaster risk financing needs to shift from risk retention to risk transfer, hence limiting the public share of funding with higher involvement of private sources.

From the whole spectrum of financing options already analyzed under previous activities, contingency financing has been selected as the most appropriate to manage moderate risks. Two complementary mechanisms are warranted. The first is a standby credit to be drawn upon if the national government were to declare a calamity, providing close to immediate liquidity. The second is catastrophe pooling, as proposed by the League of Cities of the Philippines. Under this arrangement, LGUs would pool their calamity funds so that when disaster strikes, more resources would be available to the LGU to address urgent needs. At the same time, the role of private sector insurance provision should be increased.

5. **Local Governance:** LGUs should have a key role in implementing the recovery and reconstruction program and future measures to mitigate disaster risk. A two-pronged post-disaster strategy could be followed. First, targeted financial assistance is needed to support the rapid restoration of LGU operations and services to pre-disaster levels. In the context of disaster, the normal national government/LGU cost sharing rules are likely to create problems for LGUs that are less well-endowed and should therefore be relaxed temporarily. Second, technical assistance should be provided to LGUs in disaster-prone areas to implement disaster mitigation measures to protect their assets and operations in the future.

**Correcting the failures that amplified the impacts of Ondoy and Pepeng will require a new level of commitment and collaboration but is achievable.** The LGUs of Metro Manila will need to cooperate. The national government will need to support LGUs by devolving resources as well as responsibility, putting into practice the principle of subsidiarity. At the same time, government, the private sector, and civil society will need to work together, adopting participatory

approaches that bring stakeholders together.

## **E. Guiding Principles for Recovery and Reconstruction**

**A set of guiding principles will govern implementation of the recovery and reconstruction program.** The purpose of these principles is to enhance the effectiveness of recovery and reconstruction efforts, increase transparency and accountability, and ensure that resources are translated into results on the ground.

### ***A transparent, accountable, and results based recovery and reconstruction program***

- Comprehensive and straightforward systems for monitoring activities, tracking funds, and evaluating projects and programs will be implemented by all stakeholders (including the provision of regular and transparent reporting against all funding sources).
- Results and progress will be tracked and reported to the public and development partners through regular meetings, the media, and a dedicated recovery and reconstruction website.
- All agencies involved in the recovery and reconstruction program will undertake appropriate audits of their activities and funds.
- Independent complaints handling mechanisms should be integrated into major projects to enable greater accountability.

### ***Community-based, people-centered, and equitable approaches***

- Community-based, participatory approaches that engage local communities in decision-making, implementation, and monitoring of activities will be adopted to increase the quality and speed of reconstruction, align

projects with real needs, and lower the risk of misuse of funds.

- Projects should maximize the use of local initiative, resources, and capacities. Planning and execution will be based on local knowledge, skills, materials, and methods, taking into account the need for affordable solutions.
- Although disasters increase the vulnerability of all, groups who are already disadvantaged may need special assistance and protection. Particular priority will be given to the poor, marginalized female-headed households, children (including orphans), elderly, and people with disabilities.
- The capacity of local communities will be built at every stage of the recovery and reconstruction effort, with a focus on reducing vulnerability to future disasters.

### ***Reduction of future risks***

- With typhoons being a regular occurrence in the Philippines, integrated disaster risk management plans that take into consideration all likely significant hazards are needed to reduce the impact of future disasters.

**ADMINISTRATIVE ORDER NO. 101**  
**Series of 1989**

**SUBJECT: AMENDMENTS TO ADMINISTRATIVE  
ORDER NO. 76 SERIES OF 1988**

**IMPLEMENTING GUIDELINES FOR CORE  
SHELTER PILOT PROJECT**

After a year of implementation of the Core Shelter Project, there is a need to streamline the project. Feedback and findings as a result of consultations, visits, orientation and evaluations indicated the need to amend the project policies, standards and strategies to make them attuned and relevant to the needs of the beneficiaries. This also includes strengthening of project management and strategies to generate more participation and involvement of the community especially local officials.

Administrative Order No. 76 series of 1988 is therefore hereby amended, with focus on the following areas:

**I. Target Beneficiaries and Regions:**

Target beneficiaries of the Core Shelter shall be disaster victims whose houses are totally destroyed. The assistance shall be available to all Regions where there are families rendered homeless as a result of disaster, either natural or man-made.

**II. Objectives:**

1. To reduce the number of families rendered homeless every year by providing a structurally strong indigenous shelter which can withstand approximately 180 kph wind velocity, earthquake with moderate intensity and other similar natural hazards;
2. To maximize the participation and draw the commitment of the beneficiaries and the neighborhood to make the core shelter

livable and maintain its structurally strong standards.

3. To develop and promote the value of self-reliance among the beneficiaries and the community.

**III. Eligibility Requirements of Project Beneficiaries**

1. Monthly income of a family of six (6) should be below the food threshold, that is Php1,400.00 in urban areas and Php1,200.00 in rural areas.
2. Houses should have been totally destroyed by either man-made or natural disasters; and limited resources prevent them from reconstructing their shelter units i.e. they continue to live with relatives, in evacuation centers or in another makeshift hastily set up by the families.
3. No previous shelter assistance from any other agency.
4. Possession of a guarantee of ownership or permanent or long term occupancy of at least 10 years of tenure over the lot on which to build the house or provision by Local Government Unit (LGU).
5. Chosen area where the house will be built should not be prone to hazards and shall have access to transportation and available supply of construction materials.

Priority will thus be given to beneficiaries who meet the geographical clustering requirement in a specific barangay for purposes of monitoring, technical assistance

by the foremen, use of carpentry tools, delivery of materials and collaborative labor.

#### **IV. Components of Core Shelter Assistance Project**

**The Core Shelter Assistance Project shall have the following components:**

##### **1. Social Preparation of the Community Beneficiaries**

The Social Preparation for Core Shelter Assistance Project which shall be implemented by the Supervising Social Welfare Officer shall include the following:

###### **1.1 Area Selection**

1.1.1 Accessible to transportation/ construction materials

1.1.2 Low hazard/disaster risk areas which are not:

- a. river basin or low areas frequented by flood
- b. coastal areas/shorelines/along creeks
- c. near dams
- d. highly congested

1.1.3 With available lot

- a. private ownership
- b. with provision for tenure at least 10 years
- c. for those in risk areas with available lot for resettlement

###### **1.2 Entry into the Community**

1.2.1 Conduct of dialogue/meeting with Rehabilitation Service Committee of the Municipal Disaster Coordinating Council (MDCC) members (mayors, DPWH, DTI, DA, DOH, PNRC, Parish Priest, other municipal officials and NGOs) to discuss the Core Shelter Assistance to get their sanction,

support and participation. If Rehabilitation Service Committee of the MDCC is not organized or functional DSWD should call an organizational meeting of the Rehabilitation Committee or dialogue could be undertaken with the Municipal council, the NGOs on a group or individual basis, whichever is feasible at the moment. Topics for discussion are:

- a. rationale of the project
- b. mechanics of the project
- c. roles of concerned agencies/groups
  - c.1 Local Government Unit (LGU)
  - c.2 members of the Rehabilitation Committee
  - c.3 NGOs
  - c.4 community
  - c.5 DSWD

1.2.2 Validation, confirmation and/or negotiation with Rehabilitation Committee of MDCC on targeted barangays for Core Shelter Assistance.

1.2.3 Conduct of ocular survey/area visit of targeted barangays to determine/validate need and applicability of Core Shelter Assistance.

1.2.4 Undertake dialogue with barangay officials, indigenous leaders, other concerned groups of target barangays to:

- a. Discuss the following:
  - a.1 rationale and objectives of the project
  - a.2 mechanics of the project
  - a.3 roles of concerned agencies/groups

- b. Get their sanction/support/participation in project planning and implementation
  - c. Get specific commitments on their participation
  - d. Discuss/validate listing of potential participants to ensure that those listed really have totally damaged houses
- 1.2.5 Conduct of home visit to potential participants to establish rapport and to assess their actual situation/needs and to get their reaction to the Core Shelter Assistance Project
- 1.2.6 Coordinate with local officials for the conduct of community assembly to discuss the Core Shelter Assistance Project
- 1.2.7 Conduct of Community Assembly
- a. Discuss Core Shelter Assistance Project
    - a.1 rationale/objectives
    - a.2 mechanics of implementation
    - a.3 eligibility requirements terms and conditions
    - a.4 roles/functions of concerned agencies/groups
    - a.5 responsibilities/commitments
  - b. Identify volunteers from among the potential participants (those whose houses were totally damaged by the disaster)
- 1.3 Mobilization of Volunteers for Needs Assessment Survey  
(Needs Assessment Survey shall be done to potential participants in the community whose houses were totally damaged. This will be used as basis to establish need and priority for core assistance as well as other needs which could be responded to by DSWD).
- 1.3.1 Meeting with identified volunteers
- a. Discussion of their participation in the project and get their reaction
  - b. Discussion of the needs assessment survey
    - b.1 rationale/objectives to establish needs for core shelter and to set priorities for said assistance as well as to determine other needs which could be responded to.
    - b.2 role of volunteers/SSWO
    - b.3 needs assessment survey form-involve volunteers in preparing final form based on their participation on what information should be included in the form
    - b.4 strategies/approaches in conduct of survey to get factual data/information
- 1.3.2 Demonstration to volunteers on conduct of needs assessment survey – this would be undertaken in a number of families as pretest of the questionnaire as to its applicability/feasibility.
- 1.3.3 Supervision of volunteers in:
- a. modifying questionnaire as a result of the pretest
  - b. conducting the survey
  - c. collating/consolidating data as agreed in earlier meeting
- 1.3.4 Analyzing consolidated data with the volunteers to get implications
- 1.3.5 Planning out with volunteers the presentation of data during community assembly
- 1.3.6 Coordinating with barangay officials/volunteers for conduct of community assembly
- 1.3.7 Conduct of Community Assembly



- a. Assisting volunteers in presentation of Needs Assessment Survey results.
- b. Eliciting community participation in determining target participants for Core Shelter Assistance based on community established eligibility requirements set during the initial community assembly and on data presented by volunteers resulting from Needs Assessment Survey.
- c. Discussing mechanics of project implementation and need for a foreman to come from the community if there are qualified ones.
- d. Eliciting community participation in identifying foreman for the project from the community.

#### 1.4 Preparation of Foreman for the Project Implementation

- 1.4.1 Discussing with potential foreman the terms/conditions/expectations of the job to get their reaction and commitment
- 1.4.2 Recommending identified qualified foremen for the position
- 1.4.3 Facilitating contract between foremen and DSWD on working agreements relative to the project
- 1.4.4 Planning/recommending schedule for orientation of Foremen/SSWO and participant's representative in project implementation
- 1.4.5 Preparing with foremen a monthly schedule for supervision and monitoring of project

#### 1.5 Assessment

- 1.5.1 Supervising the welfare aides

and foremen in helping the identified participants prepare their individual housing plans using Annex A-1 (Housing Plan) which involves the following:

- a. determining the specific materials and the exact quantity that could be contributed by the participants themselves as well as the materials that could be generated from the NGOs and LGUs
- b. determining the land and manpower resources the beneficiaries can provide
- c. determining the cost standards of the materials and verifying whether these materials meet building standards

#### 1.5.2 Meeting and discussing with identified participants the following:

- a. terms and conditions for Core Shelter Assistance to get their reaction and commitment which will result in an accomplished memo of agreement (MOA) between the participant and the DSWD
- b. the need to appropriate amount in the form of contributions as maintenance fund for repair and upgrading of their houses
- c. the goal of the helping process so they will agree to mutually do their share towards the achievement of these goals

#### 1.6 Organization Building

- 1.6.1 Enabling identified participants to form themselves into a Neighborhood Association for Shelter Assistance (NASA) with at least 10 members living

in proximity with each other to promote collective action in realizing the goals of the project. Situational leaders maybe chosen to perform specific tasks.

#### 1.6.2 Assistance to NASA:

- a. setting up goals towards shelter needs as well as other physical and social needs
- b. formulating rules and regulations based on set goals
- c. assessing their needs on housing and available resources such as building tools, recycled materials, manpower, etc., starting on their own, those of the DSWD and other GOs/NGOs
- d. making loan to effectively use available resources for housing needs to include:
  - d.1 steps to be performed
  - d.2 division of tasks
  - d.3 schedules and time frame
  - d.4 funds and resources needed
- e. conducting regular meetings to prepare them socially and psychologically for the building activities

### 1.7 NASA Mobilization

- #### 1.7.1 Assisting NASA members execute their housing plans utilizing their resources in coordination with the foremen. NASA shall be responsible for the following:
- a. procurement, management and control of resources to be used
  - b. safekeeping of tools
  - c. maintaining an inventory over construction materials and monitor its use in the project

d. construction and repair of houses

- #### 1.7.2 Enabling NASA members to divide themselves into work groups of five (5) members each. Each work group will set up their system for safekeeping and replacement of lost or broken tools.
- #### 1.7.3 Encouraging NASA to hold regular meeting to identify/discuss programs/difficulties connected with core shelter assistance and work out solutions for these on their level.
- #### 1.7.4 Encouraging the NASA to put up a Shelter Maintenance Fund to come from contributions agreed upon by each member. This Maintenance Fund paid to their chosen/selected member (treasurer) shall be deposited in an agreed upon depository and shall be utilized only in repair/construction of a member's house damaged by subsequent disaster or in upgrading an existing core shelter. This will be in the form of loan wherein the duration, interest and mode of payment will be determined by the group (NASA).
- #### 1.7.5 Motivating NASA to undertake resource generation activities to supplement members contribution to the Maintenance Fund.
- #### 1.7.6 Motivating the NASA to tackle other perceived needs and facilitate discussion on prioritized problem/needs, available resources and possible course of action with maximum involvement of each member.
- #### 1.7.7 Encouraging NASA to support other family / community

endeavors from their Maintenance Fund when there is enough for maintenance and upgrading of their members' houses.

- 1.7.8 Encouraging the different NASA in the barangay to establish a barangay level NASA Maintenance Fund Association comprising of chosen representatives and treasurers of each NASA.
- 1.7.9 Encouraging/motivating Barangay NASA to pool their resources and purchase building materials at lower cost in the event a disaster occurs causing damage to members' houses.
- 1.7.10 Enabling and assisting NASA in conducting an evaluation for every major course of action and whenever necessary, as basis for planning and implementation of further actions. These evaluation sessions shall be used as means of strengthening confidence in personal initiative, social responsibility and collective action.
- 1.7.11 Complementing the housing assistance with a livelihood project whenever feasible, for a more comprehensive and effective assistance toward economic recovery and self-reliance of identified core shelter participants.

## 1.8 NASA Maintenance

- 1.8.1 As NASA solidifies and positive changes are achieved in members' physical condition, values and attitudes, gearing the NASA to become agents of change in their wider and local barangay/community.

1.8.2 Developing NASA members as community volunteers/leaders. Relative to this, community resource development sessions could be conducted when needed.

1.8.3 Facilitating NASA members initiation and/or support of barangay-wide projects and endeavors such as immunization campaign feeding program, disaster preparedness, etc.

1.8.4 Utilizing the services of NASA to organize the wider community to participate in dealing with their problems.

## 2. Food For Work Assistance

Food assistance to support the needs of the beneficiaries and their families through Food-for-Work scheme shall be given to the beneficiaries at the rate of Php20.00/ worth of food per man day for the period of 50 man days.

## 3. Technical Assistance in the House Construction

The delivery of technical assistance is done through Core Shelter Assistance (CSA) foremen who will orient, demonstrate, assist and supervise the beneficiaries in the construction of their shelters. The CSA foremen shall be directly supervised, monitored, and advised by a Provincial/City Core Shelter Technician who shall in turn be supervised, monitored, and be guided by the Regional Core Shelter Technician.

### 3.1 CSA Foremen

- 3.1.1 Must not be a college graduate but must possess basic knowledge of carpentry and masonry and has experience in house construction for at least two (2) years.

- 3.1.2 Must be capable to train, demonstrate, assist and supervise over the construction of 40 CSA units for a period of three (3) months
- 3.1.3 Shall be a cash assistance worker with a monthly grant of Php1,800.00
- 3.1.4 Shall coordinate with the direct service workers to verify whether the materials contributed by the beneficiaries met building standards.
- 3.1.5 Shall be under the direct supervision of the SSWO but gets technical advice from core shelter (CS) technician.
- 3.1.6 Shall have as his primary responsibility the development of the beneficiaries awareness of the CS special features and their acquisition of skills to put this in place so that adherence to the standard design is ensured. During the construction proper, weekly status reports should be submitted to his immediate supervisor highlighting concerns/problems on implementation.

### 3.2 Provincial/City CS Technician

There shall be one Provincial/City Core Shelter Technician in each province/city which has more than 200 CS units.

- 3.2.1 He must be a civil engineer with at least one (1) year experience in construction.
- 3.2.2 He shall receive a monthly gratuity of Php2,000.00 and traveling expenses of Php300.
- 3.2.3 He shall have functional supervisory and monitoring functions over the implementation of the project and provides technical assistance to the CSA

foremen. He shall submit a report twice a month to the P/CSWOs/Provincial/City Project Coordinators on the progress of CSA construction highlighting concerns relative to adherence to the standard design and other matters encountered in the implementation of the project.

### 3.3 Regional Core Shelter Technician

There shall be one Regional CS Technician in the Region with 1,000 or more core shelter units in three or more branch offices being implemented simultaneously.

- 3.3.1 He must be a civil engineer with at least three (3) years experience in construction.
- 3.3.2 He shall receive a monthly gratuity of Php3,000.00 and traveling expenses of Php500.00.
- 3.3.3 He shall have functional supervisory and monitoring function over the construction of CSA units and provide technical assistance to the Provincial/City CS Technicians.
- 3.3.4 At the start of a Core Shelter project in every municipality, he shall conduct actual demonstrations where the SSWOs, foremen and beneficiaries are participants and should stay in the area until the Model Core Shelter is completed.
- 3.3.5 He shall re-orient, supervise, and monitor the foremen as to their:
  - a. Attendance on the job
  - b. Construction of the Core Shelter units according to the CORE design
  - c. Designs and specifications
  - d. Quantity and quality of construction materials based on the bill of materials

- 3.3.6 He shall give immediate feedback to the SSWOs and foremen about his findings on project implementation especially on deviations and provide on-the-spot technical assistance
- 3.3.7 He shall submit reports to the Regional office after every consultation visit to different municipalities copy furnished the P/CSWOs/SSWOs /Provincial/ City CS Technician concerned.
- 3.3.8 He shall submit monthly schedule of activities a week before the succeeding month, to the Regional Director furnishing copies to all concerned branch in-charge.
- 3.3.9 He shall continuously conduct inventory of the completed core shelter to ensure that special features are followed and recommends issuance of certificates of completion for core shelter which meet the standard specification in coordination with the Municipal Shelter Committee.

#### 3.4 National Technical Consultant:

There shall be one National Technical Consultant for the project.

- 3.4.1 He shall be responsible for the development of the design of a structurally strong indigenous shelter which can withstand a wind velocity of 180 kph. as well as floods and earthquake.
- 3.4.2 He shall provide technical consultation relative to the special features and standards of the CSA to the concerned Regional staff.
- 3.4.3 He shall supervise the regional training of the CSA foremen/ technicians.

3.4.4 He shall submit reports to the Bureau of Emergency Assistance on his training/orientation conducted to the concerned Regional staff.

3.4.5 He shall conduct follow-up visits and highlight suggestions for the modification/revision of the design to improve strengths of shelter, substitute materials for lumber to bring down the cost of the Core Shelter, etc. for the attention and immediate action of the Secretary.

### V. Financial Assistance

The DSWD core grant per beneficiary is hereby increased to Php8,000.00 to provide for the inflation rate in the cost of construction materials. The grant shall be adjusted from time to time depending on the prevailing cost of construction materials. The amount will cover the cost of the bill of materials for Module A.

### VI. Delivery Scheme of Financial Assistance

The NASA through its Supply Committee shall canvass and purchase the construction materials in coordination with the SSWO who shall accredit all construction dealers who can provide materials at the lowest cost and give the standard 30 days credit to the CSA beneficiaries.

Upon receipt of the financial grant, beneficiaries shall sign the check and with the assistance of the SSWO, shall endorse the check to accredited construction dealers as payment of the construction materials advanced or to be delivered as the case maybe.

Prior to the delivery of construction materials to the job site, the Supply Committee in coordination with the foremen shall check

all construction materials to be delivered in accordance with project specifications. All delivered construction materials shall be received by the beneficiaries, attested by the foreman and members of the Supply Committee as to its standard specifications and noted by the SSWO. Beneficiaries shall maintain a copy of the Official Receipts of construction materials delivered and received for record purposes.

## VII. Project Management

Project Management of CSA Project from the CO under BEA and BFCW remain as is, as stipulated in Administrative Order No. 76. Additional project management scheme from the Regional down to the Municipal levels shall be as follows:

### 1. Regional Office

There shall be one designated Regional Project Coordinator in Regions with 500 CS units or more on a full time basis to handle and monitor the day to day operations of the project. Under the direct supervision of the Assistant Regional Director for Programs the CSAP Regional Project Coordinator shall oversee the effective implementation of the CSA project in the Region.

- 1.1 Monitor the implementation of CSAP at the Regional level
- 1.2 Coordinate with the Regional Project Engineer and 2 Regional Social Welfare Specialists (BEA-BFCW)
- 1.3 Coordinate with the Regional Administrative and Financial Division to ensure the timely release of logistics support, manpower, fund, supplies, transport, etc.
- 1.4 Conduct monthly consultation conferences with P/CSWOs and Provincial/City Project Coordinator.
- 1.5 Plan and prepare schedule of activities including training, orientation, audit,

etc. in consultation with other project coordinators for the Regional Director.

- 1.6 Review field reports and prepare monthly consolidated report of CSAP.
- 1.7 Perform other related tasks.

### 2. Provincial/City Branch Office

There shall be one designated Provincial/City Project Coordinator (P/CPC) in Provinces/Cities with more than 200 CSA units who shall function on a full time basis to monitor the day to day operations of the project from its effective implementation.

Under the direct supervision of the Provincial/City Welfare Officers the P/CPC shall:

- 2.1 Monitor the implementation of CSAP at the Provincial/City level
- 2.2 Coordinate with the Provincial/City CS Technician and SSWOs
- 2.3 Conduct monthly consultation conference with SSWOs implementing the project
- 2.4 Plan and prepare schedule of activities including training, orientation, audit, etc. in consultation with the P/CSWOs
- 2.5 Review field reports and prepare monthly consolidated report for the P/CSWO.

### 3. Municipal Level

In addition to the activities undertaken by the Unit Offices as stipulated in AO 76, a Municipal Core Shelter Committee shall be organized. It shall be composed of the local NGOs, GOs and LGUs to determine that all units constructed have adhered to the standard design of the project. The Municipal Core Shelter Committee shall have the following functions:

1. To determine that the relocation/resettlement area for the identified

- project is not prone to hazards.
2. To assist in the supervision and monitoring of CSA implementation – activities are according to time schedule, quality and quantity of materials adhere to project policies and standard designs, and submit feedback report and recommendation to the SSWO.
  3. To administer the quality control checklist with the assistance of the beneficiaries and foremen to ensure that all special features which contribute to the strength of the core shelter are properly installed.
  4. To assist in the information dissemination about the CSA project to gain support from GOs, NGOs and beneficiaries.
  5. To determine that all CSA units reported have completed, followed and adhered to the basic design of the project.
  6. Together with the SSWO, to submit recommendation to the P/CSWO for the issuance of a Certificate of Occupancy on all units reported completed which have passed the quality control standards set for the project.

#### **VIII. Additional Strategies to Counteract Difficulties in Project Implementation**

1. Immediate compliance with the lot requirement. The Municipal/Barangay Coordinating Council that can comply with such requirement shall have priority in getting that assistance.
2. Introduction of a CSA Quality Control Checklist. This checklist shall be accompanied with corresponding fill-in instructions including sketches to make it understandable to the workers and beneficiaries.
3. Reorientation of the Regional CS Project Engineer, Regional staff, P/CSWOs, SSWOs and foremen on the construction of the house by the external consultant through actual demonstration.
4. Strengthening the advocacy component of

- the project by increasing awareness on the features which make the shelter structurally strong among the victims, NGOs, GOs and the community to any impending hazards.
5. Organization of a municipal shelter committee composed of NGOs, GOs and LGUs to liaison with and monitor the beneficiaries to ensure adherence to standard design.
  6. Issuance of Certificate of Occupancy to beneficiaries who have completed their units and pass the review of the Municipal Shelter Committee. The house will be properly identified as DSWD-CSU.
  7. Assigning of Provincial Project Coordinator to areas who have more than 200 CS units.

#### **IX. Quality Control**

Quality control of every CSA units shall be strictly monitored by the Welfare Assistants to ensure that all special features of a structurally strong house are properly installed, joints are properly connected and no deviation on the basic design of the project shall be made.

Certificate of Occupancy shall be issued only to beneficiaries who have completed their units and passed the review of the Municipal Shelter Committee.

#### **X. General Policies**

1. SSWO shall guide and facilitate the conduct of social preparation to the beneficiaries/ community, local government and NGOs;
2. Beneficiaries of the CSA project shall organize themselves into a NASA with at least 10 members per barangay;
3. NASA shall be in-charge in the canvass and purchase of construction materials;
4. Priority shall be given to clustered beneficiaries to promote mutual assistance and collaborative labor and transfer of technology of structurally strong features of Core Shelter;

5. Foremen shall determine the quality of construction materials based on the project standards;
6. Lot requirement shall be a minimum of 8 x 10 sq. meters;
7. Areas should not be risk prone such as those near river banks, creeks, dams, shorelines, low lying areas which are always flooded, and areas vulnerable to landslide;
  - a. 6-10 meters away from the slope
  - b. 5-10 meters away from the trees
  - c. 10-15 meters away from the side of the road
8. There shall be a contract between the beneficiaries and the lot owner for the use of the said lot for 10-year period;
9. There shall be a contract between the beneficiaries and DSWD that the former shall not sell, rent out or mortgage the house and shall provide labor and other counterpart to complete the house.
10. All units completed shall be called as DSWD-CSU and a Certificate of Completion signed by the Secretary shall be awarded to the beneficiary.
11. There should be no alteration/deviation in the standard design of the project without approval of the DSWD Secretary.

(SGD.) **MITA PARDO DE TAVERA, M.D.**  
Secretary



**DEPARTMENT ORDER NO. 36**  
**Series of 1994**

**SUBJECT: GUIDELINES FOR THE MANAGEMENT  
 OF EVACUATION CENTERS**

**I. Rationale**

In view of the implementation of Republic Act 7160 otherwise known as the Local Government Code of 1991, the LGUs are mandated to provide immediate basic assistance such as food, clothing, emotional support, and temporary shelter as well as the rehabilitation needs of disaster victims. Evacuation usually takes place because of threats or the actual occurrence of flooding, volcanic eruption, fire and other calamities causing serious damage to lives and properties.

Evacuation of disaster-affected communities is one of the most difficult tasks to undertake, mainly because of the unwillingness of communities or families to leave their homes or the tendency to try to return to these areas too soon. Sometimes, means of appropriate transportation is lacking, if not unavailable. Security of homes and properties left at evacuated areas are not assured. Orderly movement of families to evacuation centers is difficult to ensure. The decision to evacuate either as a precautionary measure or post-impact necessity is based on a number of factors which oftentimes are conflicting. The nature, severity, frequency, speed of the onset threat and its impact based on past experience are critical factors that need to be considered both by service providers and the victims.

The aforementioned statements highlight the difficulties encountered in pursuing evacuation. Difficult as it may seem, evacuation centers need to be set up by LGUs in close coordination or with the support of national government agencies and the private sector such as non-government organizations, people's organizations and the church and with the involvement and participation of the evacuees themselves. The evacuation

centers are usually the school buildings, multipurpose centers, health centers, barangay halls, chapels, churches, government buildings, tents and bunkhouses, among others. It is a venue where evacuees are provided with basic assistance and are being helped to overcome their anxieties and are being organized to participate in various center activities such as cleanliness and sanitation, masterlisting of victims or food distribution.

In line with the new mandate of the DSWD to provide technical assistance to the LGUs in the provision of immediate assistance to disaster victims, not only after the immediate impact of disaster but even before the occurrence of the threat, the following standards, rules and guidelines are formulated for guidance of LGUs and ensure systematic and orderly management of evacuation centers.

**II. Objectives**

**General Objective:** To save lives and properties, minimize sufferings, and deal with the immediate damage caused by the disaster.

**Specific Objectives:**

1. To handle with reasonable effectiveness the pre, during and post evacuation processes;
2. To provide temporary refuge to families who are potentially at-risk or in actual danger because of the hazard;
3. To ensure that displaced disaster victims are immediately attended to and provided temporary shelter, food, clothing, domestic items and comfort giving;

4. To provide opportunities, in case of prolonged evacuation, for recovery, rehabilitation and developmental activities through work group/team/room organizing activities, skills development and engaging in income generating projects which facilitate recovery of the evacuees to normal family life.

### III. Pre-Evacuation Process

#### A. Planning

Prior to disaster months, preparatory activities should be planned out such as:

1. Identification of hazards that are likely to pose threats to the community and the families who are potentially at-risk.
2. Inventory of resources in the community which includes, among others, human, physical, and infrastructure resources.
3. Inventory of needs and requirements.
4. Ensure availability of viable communication and information facilities for accurate, timely and clear dissemination of information and warning.
5. Set up system for immediate dissemination of warning with special consideration on type, methods, warning and procedures of dissemination.
6. Determine system of control and coordination of evacuation movement considering the:
  - number of people involved
  - types of transport used
  - number of vehicles available
  - designation of pick-up points
  - identification of staff coordination movements
  - flow of communications, decisions and feedback
7. Identification of evacuation centers considering the following:
  - a. number of families/persons who are in actual danger needing immediate movement or transfer to safer areas
  - b. number of families/persons who are potentially at-risk in the neighboring areas likewise needing evacuation.
  - c. transport facilities to be prepositioned to ferry the families/ evacuees.
8. Preposition stockpile of foodstuff, clothing, domestic items and medicines to immediately meet the needs of disaster victims to include reporting forms.
9. Set-up latrines (one latrine for every 20 people) in areas accessible from any part of the camp to encourage its use.
10. Conduct drills and exercises in evacuation centers to ensure order in the movement of disaster victims.
11. Preparation of spot maps indicating the danger zones to ensure order and avoid panic and chaos during the actual evacuation.
12. Installation/posting of directional signs in conspicuous places to direct people to the location of the evacuation centers.
13. Conduct training/orientation of workers including volunteers involved in the management of evacuation centers.
14. Carefully plan out reception requirements at evacuation centers which shall cover the following:
  - general care, welfare and accommodation
  - registration
  - inquiries
  - feeding
  - medical and health arrangements
  - communication with the evacuation authority regarding assurance of security for homes and properties of evacuees

#### B. Organization

1. As provided for in PD 1566, also known as Strengthening the Philippine Disaster Control, Capability and Establishing the National Program on Community Disaster Preparedness, a Disaster Coordinating Council (DCC) shall be organized at the Provincial down to

the barangay level. These should be sustained and functional as a planning body in the identification/designation/setting up of permanent and alternate evacuation centers.

2. The various teams of the DCC should be organized during the pre-disaster months.
3. The DCC especially the Relief and Rehabilitation service teams/committees should be mobilized to undertake the preparatory activities.

#### C. Staff Complement

1. The number of support staff for the evacuation center shall depend on the number of evacuees. There should be at least one (1) worker and four (4) volunteers to attend to every 100 families.
2. The number of support staff for every 500 families and above in prolonged evacuation are as follows: (Please refer to annex the functions of the workers).

### IV. Evacuation Process

#### A. Conduct inspection of available facilities and amenities required in evacuation centers:

1. Water facilities such as the following:
  - 1.1 water pumps, artesian wells or water tanks
  - 1.2 water containers
  - 1.3 potable water for drinking
2. Lighting facility or installation of electricity. If not possible, gas lamps, flashlights, candles, matches and other indigenous lighting system in the area should be made available.
3. Adequate comfort room or toilets. Latrines shall be put up, at least one (1) toilet for every 20 families.
4. Spaces, materials and supplies for sleeping purposes such as mats or cartons for sleeping areas, blankets and mosquitos nets.

5. Stockpile for one week of relief supplies and other domestic items and materials
6. Storage space for stockpile commodities
7. Work area which can accommodate at least a table, few chairs and sleeping space for use of workers dealing with the evacuees.
8. Comfort pits, empty tins, cans, drums and large plastic bags for garbage disposal.

- B. Activate the evacuation center. Conduct a short briefing for all the staff who will be involved in the disaster operations, stressing that round-the-clock service will be provided for the victims. Briefly make a summary of agreements along:

#### Standard Operating Procedures

- Visibility though the use of identification cards, name plates, blazers, jackets, shirts with markings for easy identification.
- Decision-making, flow chart on information dissemination and feedback

- C. Activate the Disaster Welfare Inquiry Desk and Non-Government Organization (NGO) Desk. Designate the focal persons and review the main functions and responsibilities

1. An NGO Desk shall:
  - serve an advisory, information desk for NGOs regarding the areas and centers needing assistance
  - organize and systematize distribution of relief assistance by government agencies, NGOs, and POs to disaster victims in order to maximize use of resources by avoiding duplication of services and assistance thus, covering more areas and reaching more beneficiaries and effected population.
  - enhance the complementation and supplementation of the services between GOs and NGOs during disaster operations and the

implementation of developmental activities that may be pursued after the disaster operations as part of rehabilitation phase.

2. A Disaster Welfare Inquiry Desk shall:
  - respond to inquiries of people residing within the country or abroad on the status and/or conditions of their relatives, friends, acquaintances who are victims of disasters, especially those in evacuation centers or those in communities adversely affected by disasters.
  - serve as the source of advice or information for media persons and other concerned units or individuals.
- D. Streamers and signboards shall be displayed at Evacuation Centers for identification and visibility, designate and appropriately level specific locations of Disaster Operation Center, emergency clinics, health stations, police and security warehouse, Disaster Welfare Inquiry Desk, NGO Desk and rooms for occupancy by victims classified by places of origin.
- E. Register names and places of origin of incoming evacuees and assign them to their designated rooms. Special attention is given to unaccompanied children, sick, elderly, disabled and pregnant women.
- F. Provide evacuees with basic requirements of food and non-food items.
  1. Identify and immediately extend comfort giving to victims manifesting anxiety, pain, fears and trauma.
  2. Ensure availability of adequate supply of water for drinking, washing and laundry, at all times.
  3. Immediately provide mass feeding or Ready To Eat Food (RTEF) during the first two (2) days of emergency operations.
  4. Give priority attention to 0-6 years old children, sick persons and the elderly evacuated the children at the center.
5. Evacuees shall sign in the relief distribution sheets for each kind of assistance received
- G. Conduct of masterlisting of families and persons evacuated. Information to be gathered shall be limited to the following:
  - name, age and sex of family head
  - name, age and sex of family members
- H. Post master list of occupants in their respective rooms.
- I. Assist the evacuees in the identification and selection of their respective room leaders.
- J. Consolidate master list and come up with profile of evacuees.
- K. Organize evacuees into work brigadiers/committees/sub-committees, to get them involved in the activities at the evacuation centers. Committees to be organized shall include but not limited to the following:
  1. Committee on cleanliness and sanitation
  2. Committee on survey and master listing
  3. Committee on relief (tasks are to undertake food distribution and preparation of relief distribution sheets for ready use)
  4. Committee on community kitchen/mass feeding and food preparation
  5. Committee on drills and exercise
  6. Committee on sports and recreation
- L. Conduct orientation on duties and responsibilities of Committee members.
- M. Assess other needs of evacuees and determine their eligibility for other social welfare services. However, such assessment should not interfere with the immediate provision of food assistance during the first three (3) days of disaster operations.
- N. Undertake/implement the following activities and services at Evacuation Centers:

1. Set up community kitchen and undertake mass feeding immediately, or as necessary.
  2. Mobilize working groups among the evacuees.
  3. Undertake updating of mater list of evacuees as basis for allocation and distribution of relief goods and for the preparation of rehabilitation activities for victims.
  4. Receive, allocate and distribute relief goods either purchased or donated.
  5. Set up rules and guidelines for all entities operating in evacuation centers.
  6. Maintain and update disaster bulletin boards indicating number of evacuees by families, persons, places of origin, services extended, source, cost of assistance, workers manning the evacuation center including NGOs and GOs including policies and procedures in the allocation and distribution of relief goods to avoid confusion or complaints among evacuees, and guidance to entities operating in the center.
  7. Post spot maps indicating location of families and danger zones.
  8. Plan out drills and exercise for evacuees to undertake while in evacuation center to be prepared at all times for impending danger.
  9. Conduct periodic group meetings and general assemblies to discuss policies, concerns, problems, plans and options of evacuees.
  10. Prepare updates and submit disaster monitoring reports regularly or as often as needed. Reports and documents to be prepared shall include but not limited to the following:
    - Master list, profile of evacuees
    - Forum 200/Family Intake Sheets
    - RIVs/acknowledgement: letter and receipts of relief goods received, whether purchased or donated
    - Weekly updates, and consolidation or relief goods received and released
    - Index cards for supplies/materials/ equipment
    - Stock cards to be posted at warehouse
    - Relief distribution sheet
    - NGOs/NGAs volunteers directory
    - Minutes of meetings of staff, NGOs, NGAs and evacuees
    - Narrative and statistical disaster monitoring report
    - Stock inventory and request for replenishment of stocks
- O. Ensure proper management of resources including donations received.
1. The evacuees shall sign in the relief distribution sheets for every assistance received.
  2. All donations received at centers should be properly receipted, acknowledged and recorded.
  3. Relief goods should be stored properly to ensure protection from rodents and other elements.
  4. For easy accounting and monitoring, goods received, allocated, consumed and balances should be prepared daily and consolidated on a weekly basis.
- P. Special attention should be given to long term problems caused by disasters. These are:
1. extended need for medical care
  2. identification of communicable diseases
  3. care for orphans or unaccompanied children and minors
- Q. Conduct consultation sessions with evacuees to discuss, among others, the following areas:
- updates on disaster situation, relief efforts, existing and prospective rehabilitation efforts
  - needs and problems
  - Plans and options
  - Inventory of skills and identification of skills required
- R. Assist families in preparing their rehabilitation plan.

- S. Initiate regular consultation with other service providers, NGOs and Pos and present to them the results of consultation dialogue with evacuees and areas of support.

## V. Post-Evacuation Process

- A. Conduct assessment to cover the following areas:

1. Management of pre-evacuation and evacuation activities at the evacuation centers with other service providers and leaders of evacuees.
2. Assessment of families served to determine who should be sent home and who needs further assistance.
3. Assessment on the strengths and weaknesses of systems and strategies employed during the emergency operations.

- B. Documentations of post-evacuation assessment. This shall be a component of the terminal report for submission to higher authorities. The narrative terminal report shall contain, among others, the following information:

1. Situationer: nature and date of disaster occurrence, areas and population affected including casualties and extent of damage to properties, livelihood activities, and others.
2. Disaster Response
  - Emergency services extended including Critical Incident Stress Debriefing (CISD)
  - Strategies used/adapted
    - \* Stock piling
  - Deployment of manpower pool, regular personnel and volunteers
  - Setting up or Disaster Welfare Inquiry Desk and NGO Desk
  - Trainings/Capability Building Activities
  - Activation of Disaster Relief and Rehabilitation Service teams.

- GO and NGO linkages

3. Learning Points
  - Strengthen/innovations
  - Master list of dead, injured and missing victims
  - Action taken
  - Recommendations for future action

4. Highlights of Rehabilitation Plan
  - Summary and Budget Requirements

5. Annexes:
  - Statistical Report
  - Master list of dead, injured and missing victims
  - Detailed Rehabilitation Plan which contains specific activities and proposed projects to be undertaken. Among the projects, activities which could be considered are: emergency shelter assistance, cash-for-work, food-for-work, shelter assistance (core shelter or emergency work shelter), day care service, supplemental feeding, disaster management and capability building activities, replenishment of stockpile, etc.

- C. Discuss with evacuees the arrangement for their return to their homes or relocation to other areas.

- D. If Evacuation Center is already deactivated, conduct a general cleaning and fumigation of all rooms.

- E. Undertake inventory of all supplies and equipment and store these to safe rooms.

Issued in Quezon City, this 9th day of September 1994.

(SGD) **CORAZON ALMA G. DE LEON**  
Secretary

# GUIDELINES FOR CONTRIBUTORS

## ORIGINAL COMMUNICATIONS

The Social Welfare and Development (SWD) Journal accepts original and preferably unpublished articles on SWD-related programs, such as an assessment of DSWD's community and center-based programs, DSWD Projects, and other SWD-related initiatives from NGOs and other development agencies. The copyright of published articles shall be owned by the Journal.

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Clear manuscripts, tables and illustrations must be encoded in Times New Roman font size 12 double-spaced on A4-sized bond paper with one (1) inch margin on all sides. Articles should be a maximum of 50 pages long including tables, charts, annexes, and title page.

The title page should contain the manuscript's complete title as well as the author's full name, degrees obtained, organization, academic affiliations, address and contact numbers. Page numbering should begin with the title page, followed by the disclosure of conflicts of interest as page 2, abstract as page 3, etc. Abbreviations must be spelled-out or defined at first appearance in the text, tables, figures, or summary. American spelling, as indicated in the Webster's International Dictionary, is preferred. Mathematical equations/formula, if any, should

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For example:

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Abstracts with a maximum of 500 words should accompany all submitted articles. They should contain the salient points of the paper and follow the format prescribed for manuscripts.

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The Modern Language Association (MLA) Style should be used for text format, endnotes and bibliography.

1. Book and journal titles should be italicized (i.e. *People's Journal*). Title of journal articles, working papers, and other reference documents, however, should not be italicized nor set in quotation marks but written in ALL CAPS (i.e. AN ANALYSIS OF DSWD PROGRAMS AND PROJECTS).
2. Endnotes are indicated in superscript after the quotation, paraphrased sentence, or summarized material from books, journals and other sources.

Endnotes should be numbered consecutively. Note that there should be no space between the punctuation and the endnotes. Also, only Arabic Numbers (1, 2, 3...) are used for endnotes and not Roman Numeral Numbers (I, II, III...).

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For books with three or more authors, use "et al."  
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<sup>3</sup>"Philippines," Encyclopedia Britannica, 2007 ed.

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For example:

<sup>6</sup>Philippines, Department of Social Welfare and Development, Annual Report 2006 (Philippines: DSWD, 2006), 10-15.



## REFERENCES AUTHORED BY COMPANIES/ORGANIZATIONS:

<sup>n</sup>Name of Country, Name of Organization, Title of the Article (Place of Publication: Publisher, Year of Publication), Page Number/s.

For example:

<sup>7</sup>Philippines, Philippine Development Organization, Development Report 2006 (Philippines: PDO, 2006), 15-20.

## JOURNALS:

<sup>n</sup>Name of author, "Title of the Article," Title of the Journal, Magazine or Newspaper Volume Number, Issue Number (Date): Page/s.

For example:

<sup>8</sup>Wilbur M. Mason, "Rice Farming in the Philippines," The Agriculture Review vol. 6, issue no. 2 (June 2007): 25.

## ONLINE SOURCES:

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For example:

<sup>9</sup>Hanna G. Folger, "What is Color Therapy?" [http://www.colortherapy.com/hannah\\_g\\_folger.htm](http://www.colortherapy.com/hannah_g_folger.htm) (last accessed: June 20, 2007)

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For example:

<sup>10</sup>Kingsley and Brown, "Madame Curie," 62.

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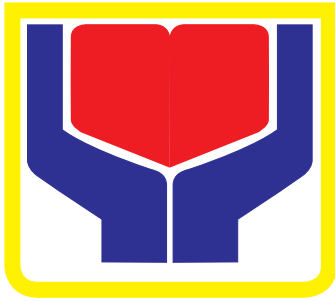
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