# The Exacerbation of Human Suffering and Disaster Response Caused by Tropical Storm Ondoy and Typhoon Pepeng Disasters

## - Cases of NCR and Baguio City -

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**Abstract**

The paper clarifies the causes induced by Tropical Storm Ondoy and Typhoon Pepeng that worsened conditions for people by focusing on social background and disaster response. The angle and method of the analysis were based on an analysis of the experiences of the victims of Hurricane Katrina in 2005 that was conducted by a research team from the National Research Institute for Earth Science and Disaster Prevention. Through this analysis and field research, an outline on how harm to humans was exacerbated during and after Ondoy and Pepeng, the kinds of disaster response systems present in the Philippines, and how the disaster response systems worked during and after the storms was constructed.

**Key words**: Ondoy, Pepeng, NCR, Baguio City, Human Suffering, Social background, Disaster response

### 1. Introduction

The paper examines the factors that contributed to worsening conditions during the Tropical Storm Ondoy and Typhoon Pepeng disasters that occurred on September 26, 2009 and the following week. The paper is focused on social background and disaster response. First, the paper outlines the social background of the devastated areas and then examine the exacerbating factors and the disaster responses as they have come to light in this research, including in a field survey. To analyze the exacerbation of damage, the paper used the victim analysis method conducted by the National Research Institute for Earth Science and Disaster Prevention (NIED) research team for Hurricane Katrina. Second, the paper also analyzes the disaster response systems on the basis of field surveys conducted by the National Disaster Coordinating Councils (NDCC), the Regional Disaster Coordinating Councils (RDCC), the City Disaster Coordinating Councils (CDCC), which are shown in **Fig. 3**, and the Philippine National Red Cross (PNRC). Through these analyses, the paper tries to answer how damage was exacerbated, what kinds of disaster response systems there are in the Philippines, and how the disaster response systems worked.

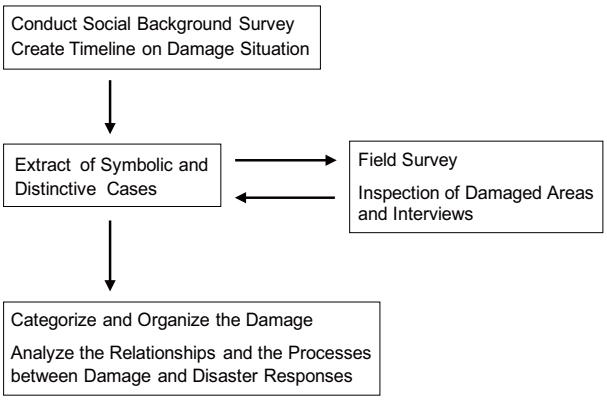


**Fig. 1** Methodology of Analysis.

### 2. Analysis and Method

This research analysis and method focused on how social background and disaster response impacted the worsening of damage caused by natural disasters. The method is shown as **Fig. 1**.

### 3. Damage Caused by TS Ondoy and TY Pepeng

#### 3.1 Risk of mortality due to typhoons

Between 5 and 7 out of every 20 typhoon disasters in the Philippines are critical. According to the United Nations

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ESCAP-ISDR, " In Japan, 22.5 million people are exposed annually to typhoons and cyclones, while in the Philippines, 16 million are exposed. However, the mortality risk in the Philippines is 17 times higher than in Japan " (ESCAP/ISDR 2009: 2). This shows that the Philippines is more vulnerable to typhoons.

**Table 1** Casualties caused by Typhoons.

| | Disaster | Date | No Killed | Storm |
|---|---|---|---|---|
| 1 | Earthquake (seismic activity) | 16/08/1976 | 6000 | |
| 2 | Storm | 5/11/1991 | 5956 | 1 |
| 3 | Earthquake (seismic activity) | 16/07/1990 | 2412 | |
| 4 | Storm | 29/11/2004 | 1619 | 2 |
| 5 | Storm | 13/10/1970 | 1551 | 3 |
| 6 | Storm | 1/09/1984 | 1399 | 4 |
| 7 | Storm | 30/11/2006 | 1399 | 5 |
| 8 | Volcano | 31/01/1911 | 1335 | |
| 9 | Mass movement wet | 17/02/2006 | 1126 | |
| 10 | Storm | 3/11/1984 | 1079 | 6 |
| 11 | Storm | 10/1995 | 936 | 7 |

**Table 2** Affected People caused by Typhoons.

| | Disaster | Date | No Total Affected | Storm |
|---|---|---|---|---|
| 1 | Storm | 12/11/1990 | 6159569 | 1 |
| 2 | Storm (TS Ondoy) | 28/09/2009 | 4901763 | **2** |
| 3 | Storm | 21/06/2008 | 4785460 | 3 |
| 4 | Storm (TY Pepeng) | 2/10/2009 | 4478491 | **4** |
| 5 | Storm | 21/10/1998 | 3902424 | 5 |
| 6 | Storm | 27/09/2006 | 3842406 | 6 |
| 7 | Storm | 20/11/1973 | 3400024 | 7 |
| 8 | Storm | 21/10/1988 | 3250208 | |
| 9 | Flood | 07/1972 | 2770647 | |
| 10 | Storm | 17/05/1976 | 2700000 | |

**Table 3** Economic Damage caused by Typhoons.

| | Disaster | Date | Damage (000 US$) | Storm |
|---|---|---|---|---|
| 1 | Flood | 4/09/1995 | 700300 | |
| 2 | Storm (TY Pepeng) | 2/10/2009 | 591996 | **1** |
| 3 | Storm | 12/11/1990 | 388500 | 2 |
| 4 | Earthquake (seismic activity) | 16/07/1990 | 369600 | |
| 5 | Storm | 21/06/2008 | 284694 | 3 |
| 6 | Storm | 3/11/1995 | 244000 | 4 |
| 7 | Storm | 21/10/1988 | 240500 | 5 |
| 8 | Storm (TS Ondoy) | 28/09/2009 | 237489 | **6** |
| 9 | Flood | 07/1972 | 220000 | |
| 10 | Storm | 1/09/1984 | 216700 | 7 |

### 3.2 Trends for Storm Disasters in the Philippines

**Tables 1**, **2**, and **3** contain a list of casualties, the people affected, and the economic costs from natural disasters in the Philippines from the Emergency Events Database (EM-DAT) of the University Catholique de Louvain.

Among all natural disasters in the Philippines, storm disasters are the most prevalent. However, casualties from earthquakes and volcano eruptions are also huge. In terms of the number victims and the economic damage, wind and water hazards especially have a lot of influence. Moreover, focusing on the storms mentioned in the tables such as typhoon disasters, the death tolls from Tropical Storm (TS) Ondoy and Typhoon (TY) Pepeng were not ranked in the top 7. However, the total number of people affected and the economic damage are both ranked within the top 7. If the effects of the two typhoons were considered as from one typhoon, the death toll would be ranked seventh, and both the total number of people affected and the economic damage would be ranked first. This indicates the characteristics and magnitudes of both disasters. Compared to the damage caused by hurricanes in the U.S., in which the trends for damage have changed largely from that to humans to the physical and economic, the Philippines shows only some of the same trends. The recent rapid increase in the number of people affected in the Philippines is worthy of special mention. It is estimated that the embedded social structure problems of the Philippines, such as squatters and rapid urbanization, are reflected in the locals who tend to come to the National Capital Region (NCR) to make a living.

### 3.3 Summary of TS Ondoy and TY Pepeng

**Table 4** shows the types of disasters caused by TS Ondoy and TY Pepeng as of November 20, 2009 as reported by the NDCC and the Japan International Cooperation Agency (JICA). Human loss caused by TS Ondoy was mainly due to floods, and 52 % of these casualties were in the National Capital Region (NCR), 35 % were in Calabarzon, and 12 % were in Central Luzon. The devastated area is broad around the NCR. The damage caused by TY Pepeng is due mainly to slope failure and landslides. Here, 75 % of human loss was in the Cordillera Administrative Region (CAR), and 20 % was in the Ilocos Region. The names of the locations are shown in **Fig. 2**. Comparing the two typhoons, the numbers for the people affected, affected families, and the injured from TS Ondoy are much higher than those for TS Pepeng. The numbers for the devastated areas and for costs from TY Pepeng are higher than those for TS Ondoy. This is due to the fact that TS Ondoy struck the NCR, and TY Pepeng instead affected broader areas for a longer period of time. Moreover,

**Table 4** Disaster Situation.

| | | Typhoon Ondoy 2009.9.26 | Typhoon Pepeng 2009.10.3- |
|---|---|---|---|
| Affected Population | | 993,227 families | 954,087 families |
| | | 4,901,234 persons | 4,478,284 persons |
| | | 2,018 barangays | 5,486 barangays |
| | | 172 municipalities | 364 municipalities |
| | | 16 cities | 36 cities |
| | | 26 provinces | 27 provinces |
| Casualties | Dead | 464 | 492 |
| | Missing | 37 | 47 |
| | Injured | 529 | 207 |
| Evacuation (as of Nov./05/2009) | | 252 evacuation center | 54 evacuation center |
| | | 16,173 families | 3,258 families |
| | | 72,305 persons | 14,892 persons |
| Damages houses | Totally | 30,082 houses | 6,253 houses |
| | Partially | 154,922 houses | 48,120 houses |
| | Total | 185,004 houses | 54,373 houses |
| Total number of schools damaged | | 1,383 schools | 1,531 schools |
| | | 1,131 elementary schools | 1,280 elementary schools |
| | | 252 high school | 251 high school |
| | | 239 day care centers | 69 evacuation families per 3 schools |
| Institutional materials + School equipment (Php) | | | 767.45 million |

the number of casualties and of missing people from TY Pepeng is higher than that for TS Ondoy. Many of the causes of death from TY Pepeng exhibit characteristics of sediment disaster, such as the washing away of houses, which often results in death.

## 4. Social Background in NCR and Baguio City: Geophysical and Social Status

The Philippines is prone to many natural disasters, such as earthquakes, volcanic eruptions, tropical cyclones and typhoons, and floods. These are closely related to the country's geographical and social situation. In geophysical terms, the Philippines is located on a part of the Pacific Belt zone that is easily affected by tropical cyclones. In terms of social factors, some experts have identified a relationship between poverty and vulnerability to natural disasters. It is possible that the Ondoy and Pepeng disasters are closely linked to the urbanization of low-lying areas in the NCR and in the mountainside areas of Baguio City that are prone to landslides.

Currently, the Philippines is experiencing a high level of population growth. For example, the annual growth rate was 2.36 % from 1995 to 2000 and 2.04 % from 2000 to 2007, as shown in **Table 5**. **Tables 5**, **6**, and **7** show the population growth of each area (the NCR, CAR, etc.). As factors, the 3.86 % growth of Taguig City in the NCR and the 2.50 % growth of Baguio city from 2000 to 2007 should be taken into consideration when analyzing disaster effects and recovery processes.

**Table 5** Population and Population Growth in the Philippines, NCR, and Cordelia Admin.

| Region/Province | Total Population | Annual Population Growth Rate | |
|---|---|---|---|
| | 1-Aug-2007 | 2000-2007 | 1995-2000 |
| | **88,574,614** | **2.04** | **2.36** |
| National Capital Region | 11,553,427 | 2.11 | 1.06 |
| Cordillera Administrative Region | 1,520,743 | 1.50 | 1.82 |

**Table 6** Population and Population Growth in the Cordelia Admin., Benguet Prov., and Baguio city.

| Region/Province/ Highly Urbanized City | Total Population | Annual Population Growth Rate | |
|---|---|---|---|
| | 1-Aug-2007 | 2000-2007 | 1995-2000 |
| **Cordillera Administrative Region** | **1,520,743** | **1.50** | **1.82** |
| Benguet | 372,533 | 1.68 | 1.09 |
| Baguio City | 301,926 | 2.50 | 2.31 |

**Table 7** Population and Population Growth in the NCR.

| Region/Province/ Highly Urbanized City | Total Population | Annual Population Growth Rate | |
|---|---|---|---|
| | 1-Aug-2007 | 2000-2007 | 1995-2000 |
| **National Capital Region** | **11,553,427** | **2.11** | **1.06** |
| City of Manila | 1,660,714 | 0.68 | -0.97 |
| City of Marikina | 424,610 | 1.14 | 1.96 |
| City of Pasig | 617,301 | 2.80 | 1.50 |
| Quezon City | 2,679,450 | 2.92 | 1.92 |
| City of Makati | 510,383 | 1.91 | -1.80 |
| Pasay City | 403,064 | 1.77 | -2.97 |
| Taguig City | 613,343 | 3.82 | 4.45 |

## 5. Worsening of Conditions for Humans During TS Ondoy and TY Pepeng

**Table 8** contains damage and loss data presented by a Post-Disaster Needs Assessment report (ADB *et al*., 2009). The main sector affected was the commercial sector. Small businesses in the NCR were affected by TS Ondoy, and agriculture in Luzon was affected by TY Pepeng. Furthermore, housing damage was caused by both. For this paper, the paper analyzed the extent of suffering caused to humans and the disaster response. With this analysis, the extent of the suffering can be categorized by warning and evacuation, loss of lifeline, social disorder, worsening of living conditions, social adjustment. Moreover, disaster responses by category are extracted. Analyses were conducted mainly on the basis of local Japanese newspapers in the Philippines, reports, government documents, and field

**Table 8** Damage and Loss by Sector.

| Sector | Damages and Losses | | |
|---|---|---|---|
| | Damages | Losses | Total |
| Productive Sectors | 557.8 | 2,661.7 | 3,219.5 |
| Agriculture | 80.1 | 769.2 | 849.3 |
| Industry | 209.2 | 194.1 | 403.3 |
| Commerce | 256.2 | 1,644.4 | 1,900.6 |
| Tourism | 12.3 | 54.0 | 66.2 |
| Social Sectors | 706.5 | 212.5 | 919.0 |
| Housing | 541.6 | 188.8 | 730.3 |
| Education | 53.5 | 4.9 | 58.4 |
| Cultural Heritage | 6.0 | 0.5 | 6.5 |
| Health | 105.5 | 18.3 | 123.8 |
| Infrastructure | 181.1 | 56.2 | 237.3 |
| Electricity | 15.2 | 18.7 | 33.9 |
| Water and Sanitation | 7.9 | 16.4 | 24.3 |
| Flood Control, Drainage and Dam Management | 15.3 | 0.0 | 15.3 |
| Transport | 138.7 | 21.2 | 159.8 |
| Telecommunication | 4.1 | 0.0 | 4.1 |
| Cross-Sectoral | 6.3 | 0.9 | 7.1 |
| Local Government | 6.3 | 0.9 | 7.1 |
| Social Protection | 0.0 | 0.0 | 0.0 |
| Financial Sector | 0.0 | 0.0 | 0.0 |
| Disaster Risk Management & Reduction | 0.0 | 0.0 | 0.0 |
| Total | 1,451.7 | 2,931.3 | 4,383.0 |
| Total in Php million (1 USD = 47 Php) | 68,2228.4 | 137,770.3 | 205,998.7 |

research. This analysis shows that the trend of extent process of human suffering from TS Ondoy and TY Pepeng is the same as that from Hurricane Katrina that occurred in the U.S. in 2005. However, the contents of the extent process of human suffering caused by TS Ondoy and TY Pepeng are different. In addition, sources of information on Ondoy and Pepeng are limited. The following is an analysis of the extent process of the suffering caused by TS Ondoy and TY Pepeng in the Philippines.

### 5.1 Warning and Evacuation

Evacuation is one of the most common ways to mitigate suffering to humans during typhoon disasters. The evacuation activities of local people can be divided into the following three groups: evacuation, no evacuation, and inability to evacuate. Many resources are required to evacuate, so the reliability of the forecasts and warnings as well as personal situations affect whether the local people decide to evacuate. Also, aged, disabled, hospitalized, and underprivileged people who do not have enough resources to evacuate need to be considered. A community-based disaster response is more important than a national disaster response in the first stage. In terms of pre-disaster activities, it is reported that the Philippine National Red Cross (PNRC) and the Asian Disaster Preparedness Center (ADPC), both acting as NGOs, helped to mitigate the spread of the disasters caused by TS Ondoy and TY Pepeng.

**1) Process of Victimization**

There were no reports of evacuation activities in the case of TS Ondoy, but there were some reports of evacuation activities in the case of TY Pepeng. This is because of Ondoy's influence. For example, there were evacuations from people deciding themselves to evacuate and from government orders in the case of TY Pepeng. The reasons there were no reports of evacuations in the case of TS Ondoy are the reported those are due to lack of the reliability of weather forecasting, a shortage of vehicles for evacuation, the lack of places to evacuate to, etc..

**2) Disaster Responses**

Concerning disaster responses, there were reports of insufficient and inadequate equipment, such as inoperable sirens and alarm systems. From the aspect of resources, reports state that each community's resources, such as financial resources, influenced the disaster response and that there was a lack of training for disaster response in some communities.

Despite this, there were some efficient community-based disaster responses reported. In an interview, a PNRC Rizal-chapter member indicated that there were already volunteer works occurring at 7 am, one hour before the arrival of TS Ondoy, in some areas. Information on the floods was reported by community volunteers, and that information was mainly from text messages from mobile phones. Moreover, the PNRC tried to prepare 44 volunteer workers in each barangay, the smallest administrative division in the Philippines, and provided training and other efforts.

Concerning the other community-based responses, an Asian Disaster Preparedness Center project in Dagupan City has showed successful outcomes. Flooding in the city is a common problem, and the situation is further aggravated by the onset of high tide. The PROMISE-Philippines Project (2006 - 2009) gave an opportunity for the city to advance a culture of safety and disaster resilience by promoting the significance of community participation.

Compared to other neighboring cities and municipalities that were badly affected by floods came from a combination of rain from TY Pepeng and emergency dam water releases, Dagupan city was well-prepared even before the storm entered the country and had no casualties because of its Community based Disaster Risk Management (CBDRM) work, in spite of being entirely covered in flood water.

CBDRM puts community participation at the heart of the process so that the main stakeholders and those most vulnerable to disaster will have a greater role over decisions and mitigation activities, enabling a greater sharing of information between city governments and communities so that both sets of actors can make their respective decisions

and implement mitigation activities.

Therefore, the Barangay Disaster Coordinating Councils (BDCCs) were able to prevent death and major damage while waiting for other rescuers to reach their areas during the crucial hours (Gabrielle, 2010).

**5.2 Loss of Lifeline**

Loss of lifeline is a stage of warning and evacuation. This is due to direct damage caused by strong wind and heavy rain. Housing damage, power outages, failure of basic utilities, communication services failures such as the inability to use telephones and mobile phones, etc., occur at this stage. Ondoy and Pepeng caused damage to small businesses in the NRC and to agriculture and livestock, respectively. Moreover, main roads leading to Manila were shut down due to landslides, making the transport of vegetables difficult. In addition, traffic congestion, the unavailability of airplanes for both domestic and international flights, water stoppages, and damage to educational facilities were reported as being caused by both storms.

**1) Process of Victimization**

The damage caused by both TS Ondoy and TY Pepeng mainly comes from the heavy rain that caused floods, landslides, and debris flows. In terms of direct damage, floods were caused by TS Ondoy, and floods, landslides, and debris flows were caused by TY Pepeng. In Ondoy's case, there were power outages and the loss of mobile phone services. In addition, the worsening of harm to humans in areas containing squatters was reported. Underprivileged people coming from rural areas live in the NCR as squatters.

The number of households being home to squatters was 432,450 in the NCR. Of this number, 23 % of the occupants lived in a public space, 22 % lived in private areas, 15 % lived at riversides and railroad tracks, and 40 % lived in pre-public construction areas (JICA, 2002). Moreover, TS Ondoy affected not only the underprivileged population, such as the above squatters, but also the privileged population. The Provident Village and Bay Breeze areas, where field research was conducted, are considered areas for rich people. However, there are reports that a lack of mutual help in Provident Village and problematic development planning in the Bay Breeze area caused huge damage.

**2) Disaster Response**

A lack of communication equipment, a shortage of ambulance vehicles, and the early escape of government officers were problematic issues during the disaster response stage. Moreover, there was a shortage of rubber boats, life vests, and life saving equipment such as rope. On top of that, there was the lack of a disaster response for shut roads, the inability to access devastated areas due to high water levels, insufficient resources in the barangays, and a lack of equipment and trained people (JICA *et al*., 2010). The PNRC did act efficiently during the disaster, for example, by collecting text messages from mobile phones that contained important information and by processing this information effectively through call centers staff.

**5.3 Social Disorder**

After the loss of lifeline, an increase in the stress of affected people and an appearance of social disorder were revealed as social instability occurred. Surprisingly, there were very few reports of social disorders and instability. In the cases of TS Ondoy and TY Pepeng's, many consider this a reflection of the Filipino people's character.

**1) Process of Victimization**

There were relatively few reports on the increase of stress. "Even during the disaster, there were many people who laugh and sang songs. I think this shows the character of the Filipinos." These words are from an interview and show the psychological aspects of nationality and coping capacity. Murders and other instabilities were not reported.

**2) Disaster Response**

The government worked to restore social stability after robberies were reported. To be specific, the general officer of the NRC police ordered five police headquarters in the area to assist to avoid robberies of aid supplies.

**5.4 Worsening of Living Conditions**

After the extended damage caused by flooding, the sanitary conditions became worse, and along with that, physically and socially vulnerable people were affected. In response, not only domestic organizations but also the World Health Organization (WHO) conducted a large scale measurement. An increase of Leptospirosis disease reflected the sanitary conditions in the NCR. The number of infected people was over 2,500, including a death toll of 150. There are few reports of sanitary problems caused by landslide or debris flow.

**1) Process of Victimization**

The extent of the spread of Leptospirosis disease reflected the sanitary issues in the NCR. Other sanitary problems include those dealing with garbage. In an interview with the Manila Metropolitan Development Association (MMDA), many cleanup activities were conducted to deal with floods along with garbage issues. Moreover, these kinds of problems came from the disposal of garbage, mainly in urban areas. The flood in Baguio City was caused by the stopping of drainage water by the local garbage that had piled up on the mouth of a discharge pipe. This was confirmed by field research.

**2) Disaster Response**

International organizations also worked to reduce the spread of Leptospirosis. WHO declared 26 million Philippine Peso (PHP) would be provided to fight the spread of the infections caused by TS Ondoy. Funds from the United Nations Central Emergency Response Fund (CERF) provided research on the occurrence of infection and on the nutrition situation in devastated areas, vaccinations, preventive and

response measures for epidemics, vitamins and purified water, and education on public health and infectious diseases. Moreover, WHO conducted research for making policy decisions.

**5.5 Social Adjustment**

There are many social problems that make it difficult for victims to recover from disasters. Returning evacuees, mental disorders, unemployment, insurance, loss of assets, donation fraud, and education are major issues that affect people. There were problems reported on people who relocated to other places and returned to the places they used to live who had difficulty adjusting. There were serious problems for indigenous people as well, which reflects the social characteristics of Philippines.

**1) Process of Victimization**

Other problems reported as problematic are schools having to be used for evacuation, the mismatching of relocation places, unfavorable influence on educational practices in the relocated areas, resistance to resettlement by the people who lived near the river or by indigenous people, evacuees who stayed for a long time at evacuation centers, people who experienced trauma from the disasters, and so on.

**2) Disaster Response**

The problems related to the disaster response were the need for prompt funding for reconstruction and recovery, a lack of resources for reconstruction and recovery, a shortage of storage for resource stock, a breakdown in the network between NGOs and the government, the practicability of basic utility projects after the disaster, and the lack of technical expertise needed for reducing future disasters.

Moreover, in terms of the actual disaster response, countermeasures against the price gauging of drugs and medicines, which tend to be in short supply, and the misappropriation of donations were a problem, and President Arroyo warned that there would be a crack down on these types of activities. In addition, government- and private-sector special recovery commissions for the recovery of devastated areas prioritized the following four projects: the elimination of the gregarious water lily in the Laguna de Bay and the Pasig river, a system adjustment for early warning by adding a precipitation gauge, support for flood victims and the prevention of the spread of infectious disease, and maintenance and repairs for affected school buildings.

Counseling activities are provided for people affected mentally by the disaster.

## 6. Disaster Response in the Philippines

Since there is a very high risk of natural disasters in the Philippines, many disaster response organizations, such as the UN, and governmental, international, and national NGOs have been working there as a result of previous natural disasters. This section explains the activities of disaster-related national organizations.

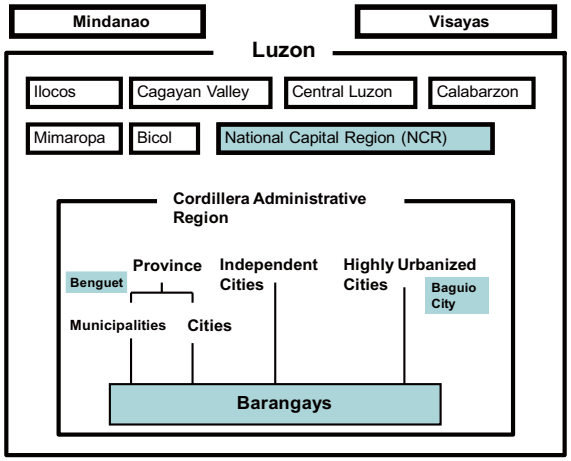


**Fig. 2** Administrative Unit in the Philippines.

**6.1 Administrative Units in the Philippines**

The notion of administrative units in the Philippines is crucial for gaining a clear overview of the disaster response situation in the Philippines. The present administrative units date back to a 1991 government act, in which various administrative functions, such as public works, education, the pricing of agricultural goods, and social welfare were transferred from central to local government. The administrative hierarchy of the Philippines is now as follows.

The land of the Philippines is divided into three blocks — Luzon, Visayas, and Mindanao. These are subdivided into seventeen regions. Each region consists of a number of provinces, and the provinces include cities and municipalities. The cities and municipalities consist of barangays, which are the smallest administrative divisions. Several cities have become highly urbanized and are classified as independent provincial administrative units. For example, Luzon has six regions, one administrative region, and one national capital regions (NCR) as shown in **Fig. 2**. These are the Ilocos Region (Region I), the Cagayan Valley (Region II), Central Luzon (Region III), Calabarzon (Region IV-A), Mimaropa (Region IV-B), the Bicol Region (Region V), the Cordillera Administrative Region (CAR), and the National Capital Region (NCR). Baguio is a highly urbanized city in the Cordillera administrative region, to which Benguet Province also belongs.

**6.2 Basic Disaster Response System in the Philippines**

Disaster response consists of several stages as shown in **Fig. 3**. First, there are emergency management systems at the barangay level. If this level is overwhelmed, the municipal level, such as the Municipal Disaster Coordinating Council (MDCC), would respond. If this level becomes overwhelmed, the City Disaster Coordinating Council (CDCC) or Provincial Disaster Coordinating Council (PDCC) would react. If the disaster is too large to handle at this level, the National

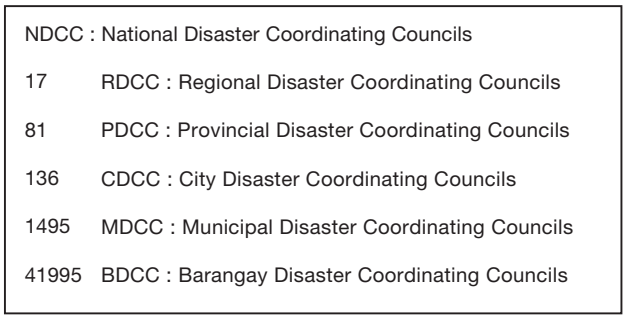


**Fig. 3** DCC Network.

Disaster Coordinating Council (NDCC) would respond. The NDCC conducts disaster response work by collaborating with every level of DCCs and coordinating with every related national organization under the direct supervision of the President of the Philippines.

**6.3 Legal Aspect**

**6.3.1 Basic Law for Disaster Prevention**

Presidential Decree No. 1566 (PD No. 1566, June 11, 1978) provided for the strengthening of the Philippines' disaster control capabilities and the establishment of a nationwide community disaster preparedness program as a legal basis for disaster management systems in the Philippines.

The salient provisions of PD 1566 are the following (NDCC 2010):

- State policy on self-reliance among local officials and their constituents in responding to disasters or emergencies
- Organization of disaster coordinating councils from the national down to the municipal level.
- Statement of duties and responsibilities of the NDCC, Regional Disaster Coordinating Council (RDCC), and Local Disaster Coordinating Council (LDCC).
- Preparation of a National Calamities and Disaster Preparedness Plan (NCDPP) by Office of Civil Defense (OCD) and implementation of plans by NDCC-member agencies.
- Periodic drills and exercises.
- Authority for government units to program their funds for disaster preparedness activities in addition to the 2 % calamity fund as provided for in PD 474 (amended by RA 8185).

PD 1566 also assists the coordinating and supervising works of DCCs as disaster response functions at each level.

**6.3.2 Policy Declaration and Legal Authority of NDCC**

The PD No.1566 (June 11, 1978), Section 1, Declaration of Policies consists of the following:

- The responsibility for leadership rests on local chief executives. The local governments are responsible for 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.

The national government exists to support the local governments. In addition, PD1566 defines the legal authority of the National Disaster Coordinating Council (NDCC) as strengthening the Philippine disaster control capability and establishing a national program of community disaster preparedness.

**6.4 Role, Organization, and Members of the NDCC**

The establishment of the NDCC is based on PD1566, Section 2. The NDCC shall play key roles in disaster response such as:

- Making high-level policy, coordinating, and supervising at the national level for disaster management in the country.
- Advising the president on the status of national disaster preparedness and management plans as well as recommending that the president declare a state of calamity and release national calamity funds as needed.

Concerning the organization and members of the NDCC, a secretary of national defense works as the chairman, and secretaries of 18 other governmental agencies are involved as members, such as the chief of staff of the Armed Forces of the Philippines (AFP), the secretary general of the Philippine National Red Cross (PNRC), and the director of Philippine Information Agency. An administrator from the office of civil defense serves for the NDCC as a member and an executive officer.

Basically, each level of the Disaster Coordinating Council (DCC) consists of the same structure as the NDCC at the local level and has the same responsibilities for each level of administrative unit.

## 7. Conclusion

This paper encompasses the following points. First, the social vulnerabilities of the NCR and Baguio City in the Philippines are increasing because of rapid population growth and urbanization. Second, the disaster response system in the Philippines is relatively well organized. Local communities especially have improved in terms of organization. Third, the personal and social aspects of the Filipinos capabilities for coping in the face of disaster are relatively high.

With regards to rapid population growth and urbanization, the TS Ondoy disaster exposed the problems of population increase, squatters, garbage and sanitation along with urbanization in the NRC, and the TY Pepeng disaster exposed problems with geological vulnerabilities such landslides and disordered housing development in Baguio city, a city that has been dealing with rapid population growth.

In regards to the disaster response, there were critics of

the government. However, the disaster response system was relatively well organized and functional. The NDCC-based DCC network seems to operate well. Disaster information related activity also seems to be well practiced. Another excellent point is that the disaster response is a community-based process. However, the storms exposed the gap in the disaster response among communities.

In addition, people in urban areas have the tendency to help neighbors than those in rural areas. The reasons for this tendency could be that urban people need to help each other on a daily basis. The activities of the PNRC and ADPC are examples of outstanding works.

In regards to the personal and social aspects, the Filipino character is reflected. As was stated in an interview with a PNRC staff member, psychological damage was relatively small, and victims tended to overcome the disaster with positive feelings. Reports of crime are difficult to be found. This also seems to represent the character of the Filipinos. It can be assumed that this is related to high social capital. The above mentioned personal and social aspects of the Filipinos were revealed by the disaster.

TS Ondoy exposed the urbanization problems in the NRC, and TY Pepeng exposed the urbanization and increasing vulnerability in Baguio City, 90 % of which is located in landslide prone areas, and the surrounding areas. It is no exaggeration to say that these cases are the result of development activities. For that reason, these storms and disasters taught us important lessons, and utilizing these lessons is a requirement and challenge for our future.

This paper can only outline a part of the worsening damage to humans, the social background, and the disaster response due to a shortage of reliable information, in spite of the proceeding field research. This paper is the first stage in helping research progress, improving weak areas, and building a stronger information base.

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