



Natural Disasters At A Glance



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Over the past decades, millions of Filipinos have been adversely affected by natural disasters¹ such as typhoons, earthquakes, volcanic eruptions and their resultant effects like floods, flash floods, landslides and tsunamis due to the Philippines' geographical location and physical environment. As an archipelago situated in the Pacific ring of fire, with more than 7,000 islands and 36,000 kilometers coastline, the Philippines is highly vulnerable to the impacts of natural disasters, including the global phenomenon of climate change. With global warming, environmental degradation, high population density and poverty conditions, impacts of natural disasters are exacerbated.

Natural Disasters in the Philippines

The Philippines is known as one of the most hazard-prone countries in the world. In a study conducted by World Bank in 2008, the country was identified as a natural disaster hot-spot with approximately 50.3 percent of its total area and 81.3 percent of its population vulnerable to natural disasters. Based on the 2012 World Risk Report published by the United Nations University Institute of Environment and Human Security (UNU-EHS), the Philippines is the third most disaster risk country worldwide with a Risk Index² of 27.98 percent (Table 1).³ Vanuatu and Tonga, which are both located in the Southern Pacific Ocean, were the most disastrous countries in the world with Risk Indices of 36.31 and 28.62 percent, respectively.

Table 1. 2012 World Risk Index

Rank	Country	Risk (%)
1	Vanuatu	36.31
2	Tonga	28.62
3	Philippines	27.98
4	Guatemala	20.75
5	Bangladesh	20.22
6	Solomon Islands	18.15
7	Costa Rica	17.38
8	Cambodia	17.17
9	Timor-Leste	17.13
10	El Salvador	16.89

Source: UNU-EHS

The Centre for Research on the Epidemiology of Disasters (CRED)⁴ recorded 207 significant damaging natural disasters in the Philippines from 2000-2012 (Table 2). Tropical storms and floods were the principal disasters with 102 and 72 occurrences, respectively. The most disastrous year was observed in 2011 with 33 disaster events mostly attributed to tropical storms and floods.

Table 2. Number of Natural Disasters in the Philippines, 2000-2012

Year	Drought	Earthquake (seismic activity)	Epidemic	Flood	Mass movement dry	Mass movement wet	Storm	Volcano	Total
2000	0	0	1	3	1	1	6	1	13
2001	0	0	0	3	0	0	6	2	11
2002	1	1	0	4	0	0	6	0	12
2003	0	0	1	1	0	1	8	0	11
2004	0	0	1	3	0	1	8	0	13
2005	0	0	0	2	0	0	2	0	4
2006	0	0	0	6	0	3	10	1	20
2007	1	0	0	5	0	0	9	1	16
2008	0	0	0	8	0	0	11	0	19
2009	0	1	0	8	0	0	14	1	24
2010	0	0	1	9	0	0	3	1	14
2011	0	1	3	15	0	0	12	2	33
2012	0	3	1	5	0	1	7	0	17
Total	2	6	8	72	1	7	102	9	207

Source: Emergency Events Database (EM-DAT): The Office of U.S. Foreign Disaster Assistance (OFDA)/CRED International Disaster Database.

Impact of Natural Disasters

Natural disasters can cause considerable loss of lives, homes, livelihood and services. They also result in injuries, health problems, property damage, and social and economic disruption. From 2000 to 2012, natural disasters in the Philippines caused the death of 12,899 people and injury to 138,116 persons. These disasters also affected more than 71 million individuals and rendered almost 375,000 persons homeless. The socio-economic damages are estimated at US\$3.37 billion with average annual damages of US\$251.58 million (Table 3).

¹ Natural disasters are major adverse events resulting from natural processes of the Earth that are beyond the acts of human beings which cause widespread destruction on lives and properties.

² The Risk Index measures the country exposure to natural disasters like storms, floods, earthquakes, droughts and sea level rise.

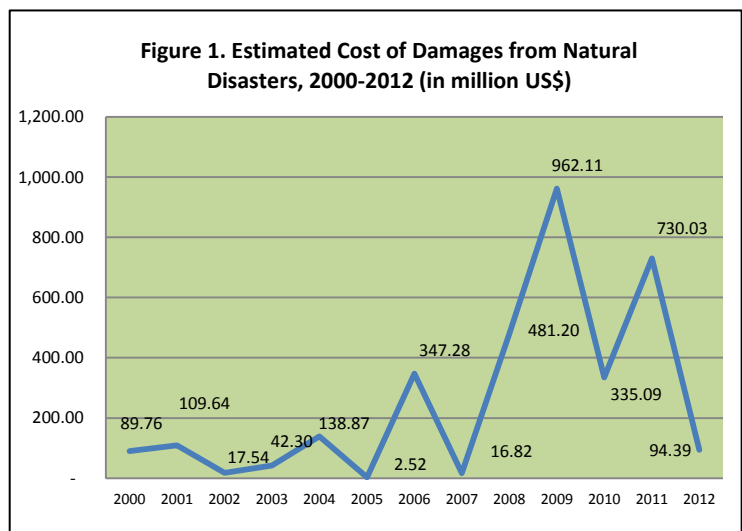
³ The four components of risk (exposure, susceptibility, coping and adaptive capacities) were considered in determining the index.

⁴ The CRED is a research unit in Brussels, Belgium that promotes research, training and technical expertise on humanitarian emergencies, international disasters and conflict health studies.

Table 3. Selected Natural Disaster Statistics in the Philippines, 2000-2012

Year	Death Tolls	Homeless	Injured	Affected	Cost of Damage (US\$ Million)
2000	748	125,250	393	6,425,002	89.76
2001	630	100,000	480	3,624,958	109.64
2002	320	3,000	233	1,211,212	17.54
2003	352	83,203	75	687,761	42.30
2004	1,950	8,700	1,321	3,263,076	138.87
2005	39	-	-	213,057	2.52
2006	2,984	-	2,703	8,612,817	347.28
2007	129	-	24	2,023,092	16.82
2008	959	54,645	1,015	8,459,896	481.20
2009	1,307	110	900	13,352,484	962.11
2010	1,113	-	124,096	5,581,507	335.09
2011	1,989	-	6,703	11,729,947	730.03
2012	379	-	173	5,889,176	94.39
Total	12,899	374,908	138,116	71,073,985	3,367.53

Source : EM-DAT: The OFDA/CRED International Disaster Database.



Source: EM-DAT: The OFDA/CRED International Disaster Database.

In terms of cost, the most disastrous year was 2009, when two deadly storms Ondoy and Pepeng hit the country. Total socio-economic damages for the year reached US\$962.11 million (Figure 1). Based on the figures consolidated by the National Statistical Coordination Board (NSCB), Ondoy and Pepeng alone killed 929 people and affected 9.41 million Filipinos with a combined cost of damages of PhP38 billion, equivalent to 2.7 percent loss of the gross domestic product (GDP) that year—a significant setback to the development prospects of the country.

By economic sector (Table 4), agriculture was the most affected by natural disasters with estimated collective damages of PhP106.85 billion, or 58 percent of the registered total damages. The crops subsector, in particular, had the largest economic damages due to the combined impacts of tropical storms, floods and droughts, followed by fisheries and livestock subsectors. The Infrastructure and Private/Commercial sectors, on the other hand, registered total damages of PhP76.56 and PhP2.67 billion, respectively. The country's development efforts and achievement of the Millennium Development Goals (MDGs) particularly on poverty reduction, health, water, environmental sustainability and human settlements may have also been hampered by the occurrence of natural disasters as funds are often reallocated from government's development programs to relief and reconstruction assistance.

Table 4. Estimated Damages to Properties of Natural Disasters in the Philippines, by sector, 2000-2012 (in million PhP)

Year	Infrastructure	Agriculture	Private/Commercial	Total
2000	5,647.79	3,071.00	580.00	9,298.79
2001	3,802.36	4,218.82	397.20	8,418.82
2002	743.69	1,145.65	89.84	1,979.18
2003	1,596.88	3,016.01	249.94	4,862.83
2004	4,133.95	8,685.00	41.00	12,859.95
2005	402.00	2,134.00	95.00	2,631.00
2006	9,487.45	11,661.65	87.66	21,236.76
2007	3,325.86	2,893.17	76.57	4,284.60
2008	8,246.74	14,710.07	7.87	22,964.67
2009	30,711.28	13,354.47	1,017.94	45,083.69
2010	660.08	24,412.56	3.48	25,076.12
2011	7,473.02	17,366.72	21.05	24,860.79
2012	327.97	181.18	-	509.15
Total	76,559.05	106,850.31	2,667.55	184,066.35

Source: National Disaster Risk Reduction and Management Council (NDRRMC)

Note: In this table, weather and climate-related natural disasters include typhoons, storm surges, droughts/dry spells, monsoon rains, continuous rains, floodings, landslides/soil erosions, tornadoes, and strong winds.

Policy Challenges

Various efforts have been made to reduce the country's risk and vulnerability to natural disasters through laws, statutes and government issuances. Numerous projects and programs have also been undertaken by various Philippine stakeholders and agencies to enhance people's capacities to reduce and manage disaster risks, and increase their resilience to devastation and damages wrought by natural disasters and climate change. The passage of the Philippine Disaster Risk Reduction and Management Act of 2010 (RA 10121) is a commendable achievement in environmental management. The law highlights a paradigm shift from an emphasis on disaster response to actively reducing disaster risks, within the context of adapting to the challenges of climate change. It recognizes that action is

warranted to address the underlying man-made issues, which aggravate destructions caused by natural disasters such as poor urban planning, poor solid waste management, encroachment of natural waterways by construction, insufficient water channels and floodways, and informal settlers on riverbanks and other hazard-prone areas.

While disaster management efforts have been in place, sustaining the positive results and scaling them up to effect heaving positive changes in the lives of the people has been a constant challenge. During the 2013 Philippines Development Forum (PDF),⁵ the Working Group on Climate Change identified the following pertinent climate-related disaster policy issues and challenges with recommended actions, which Congress may consider in future legislations:

Issues/Challenges	Recommendations
1. Incomplete scientifically based vulnerability profiles.	Fast track assessment of national scientifically-based vulnerability.
2. Lack of comprehensive monitoring of changes in impact parameters and timely adjustment of disaster risk reduction and management and climate change adaptation responses.	Establish comprehensive physical and socio-economic monitoring systems to track set indicators for vulnerability reduction and resilience development.
3. Lack of a working knowledge management system on disaster risk management and climate change.	Generate and cultivate knowledge on disaster risk management along with climate change in a systematic way. Protocols on data sharing and knowledge management must be established among relevant users and producers of information.

There is also a need to address the existing limitations in the current system of disaster risk financing. At present, the country has the following disaster risk financing windows: (1) National Calamity Fund; (2) Local Calamity Funds; (3) Government Service Insurance System (GSIS)—a government-owned insurer providing catastrophe insurance coverage for government-owned assets; and (4) People’s Survival Fund (PSF). Funds also come from private, donations, endowments, grants and contributions. However, these budgetary resources, as reflected in the Philippine Development Plan (2011-2016), usually do not represent proactive efforts to mitigate the expected damages and risks from natural disasters. They merely reflect post disaster relief and rehabilitation expenditures. As provided in RA 10121, budget should also reflect disaster reduction strategies.

Government budget allocations should likewise be clearly delineated so that assistance from financial institutions can be appropriated to where it is actually needed. Sustaining mechanisms such as making disaster risk reduction a regular budget item for government budgets, creating incentives for disaster-risk reducing behavior, recognizing and replicating disaster risk reduction practices, and instilling risk awareness at all government sectors should form part of a general strategic plan. Further, there is a need to fast track the disbursement of disaster funds to disaster victims which in certain instances, takes up 9-12 months from the moment of application of local government units (LGUs). Funds should be made more accessible to LGUs by establishing mechanisms to expedite releases especially during emergencies. Information on possible funding sources and how they can be accessed should be provided as well.

With respect to disaster mitigation efforts, it is worthy to note that the Department of Science and Technology (DOST) in collaboration with 21 other government and private institutions implemented Project NOAH (Nationwide Operational Assessment of Hazards)⁶ in June 2012. But while these efforts have been helpful, it is proposed that national including local capacities for monitoring, forecasting, hazard identification, early warning, and risk evaluation should be strengthened specially of the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA), the frontline government agency for meteorological observations. In the Senate of the 15th Congress, five legislative measures (Senate Bill Nos. 73, 572, 1039, 1406 and 2489) on the modernization of PAGASA have been reported out under Committee Report No. 743 awaiting plenary deliberations. The bills seek to enhance the capability of PAGASA in providing services to protect the people and environment and to ensure economic security against natural hazards. The proposed modernization will also help PAGASA to convey precise weather information as it is vital in determining the level of preparedness of the country in handling natural disasters.

⁵ The PDF is the primary mechanism of the Government for facilitating substantive policy dialogue, developing consensus and generating commitments among different stakeholders on the country’s development agenda.

⁶ Project NOAH is the DOST’s response to the call of President Benigno S. Aquino III for a more accurate, integrated, and responsive disaster prevention and mitigation system, especially in high-risk areas throughout the Philippines. Its mission is to undertake disaster science research and development, advance the use of cutting edge technologies and recommend innovative information services in government’s disaster prevention and mitigation efforts.