

## Basic Concepts and Terms

**Climate change** is defined by the Intergovernmental Panel on Climate Change as “any change in the climate over time, whether due to natural variability or [...] human activity.” However, the United Nations Framework Convention on Climate Change focuses specifically on climate change that is “attributed directly or indirectly to human activity” and is “in addition to natural climate variability.”

**Mitigation** refers to measures aimed at minimizing the extent of global warming by reducing emission levels and stabilizing greenhouse gas concentrations in the atmosphere.

**Adaptation** refers to adjustments in natural or human systems in response to actual or expected climate stimuli or their effects, which moderate harm or exploit beneficial opportunities. In other words, they are measures to reduce harm and strengthen the capacity of societies and ecosystems to cope with and adapt to climate change risks and impacts (as cited in Brookings Institution, 2014).

**Land tenure** is the relationship, whether legally or customarily defined, among people, as individuals or groups, with respect to land (and natural resources). Land tenure systems determine who can use what resources for how long, and under what conditions.

**Tenure security** is the certainty that a person’s rights to land will be recognized by others and protected in cases of specific challenges. People with **insecure tenure** face the risk that their rights to land will be threatened by competing claims, and even lost as a result of eviction (FAO, 2002).

## Philippine situation: natural disasters and internal displacement

The Philippines is an archipelago located on the western rim of the Pacific Ocean, which is the hotbed of tropical cyclones. Owing to its geographic structure and location, the country is frequented by weather disturbances and natural hazards, and is highly vulnerable to their devastating effects (SEPO, 2017; Whiteman, 2014). A study by the World Bank concluded that the Philippines is a natural disaster hotspot—50.3 percent of the country’s land area and 81.3 percent of its population are vulnerable to natural hazards (Rincón and Virtucio, 2008).

Over the past decade, the Philippines has consistently ranked among the top five most disaster-hit countries according to the Center for Research on the Epidemiology of Disasters (CRED) (Whiteman, 2014). With a climate risk index (CRI) score of 21.33, Germanwatch ranked the Philippines the fifth in terms of having the greatest long-term climate risk based on extreme weather events from 1996 to 2015 (Kreft, et al., 2016).

The country experienced 283 climate-related events in the past 20 years, which is the greatest in frequency relative to the other countries in the long-term CRI top 10. These events resulted to an average death toll of 862 individuals, or around one per 100,000 inhabitants. These climate

hazards also led to economic losses averaging to 2.76 billion USD, or 0.63 percent per unit of the country's GDP (Kreft, et al., 2016).

The Philippines is often plagued by droughts, forest fires, and typhoons. Around 20 tropical cyclones visit the country each year. Among these cyclones, 10 will be typhoons, half of which will potentially be destructive (SEPO, 2017; de la Cruz, 2016). These extreme weather events lead to other natural calamities such as landslides and storm surges.

The Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA) observed that the number and intensity of destructive typhoons which enter the country have been increasing. Hence, in 2015, PAGASA announced the inclusion of "super-typhoon" in its classifications of tropical cyclones (de la Cruz, 2016).

Natural disasters may cause injury, loss of lives, of property, and of livelihoods. Data from the Emergency Events Database (EM-DAT) of the Center for Research on the Epidemiology of Disasters (CRED) reveals that a total of 278 significant natural disasters occurred from 2000 to September 2017. These disasters have led to the death of more than 23,000 individuals, have affected<sup>8</sup> around 128 million individuals, and have caused damage roughly equivalent to 19.9 billion USD. The destructive effects of various natural disasters through the past 18 years broken down by type are summarized in Table 1 (CRED, 2017).

*Tropical cyclones* have accounted for the majority of the damage to people and property. Tropical cyclones have caused eighty one percent (81%) of the total deaths, have caused detriment to seventy eight percent (78%) of the affected individuals, and have accounted for eighty six percent (86%) of the total value of damage.

Another main cause of damage are floods (coastal floods, flashfloods, and riverine floods), which are often triggered by high-precipitation events. Some landslides may also be prompted by heavy rains. Although the impacts of other geologic hazards (earthquakes, ash fall, etc.) are significant, they are not as severe as those of climate-induced disasters.

**Table 1. Disaster profile of the Philippines, 2000-2017**

Usual origin of disaster	Type of disaster	Events count	Total deaths	Total affected	Total damage ('000 US\$)
Climate-induced	Drought	3	-	181,687	84,852
Geologic hazard	Earthquake	11	378	3,709,391	85,745
Biological hazard	Epidemic	1	1	664	-
Biological hazard	Bacterial disease	4	85	4,073	-
Biological hazard	Viral disease	3	772	130,729	-
Climate-induced	Flood	11	139	4,684,802	17,620
Climate-induced	Coastal flood	6	60	72,351	2,520
Climate-induced	Flash flood	28	310	4,024,954	281,364
Climate-induced	Riverine flood	47	651	14,308,330	2,383,695

Geologic hazard	Avalanche	1	6	1,200	-
Geologic hazard	Landslide	11	1,540	238,328	9,281
Geologic hazard	Subsidence	1	287	2,838	-
Geologic hazard	Dry mass movement (landslide)	1	11	-	-
Climate-induced	Storm	8	119	645,119	8,643
Climate-induced	Convective storm	2	7	4,604	5
Climate-induced	Tropical cyclone	130	18,981	99,732,480	17,062,422
Geologic hazard	Volcanic activity	1	-	60,545	-
Geologic hazard	Ash fall	9	-	304,761	4,794
<b>TOTAL</b>		<b>278</b>	<b>23,347</b>	<b>128,106,856</b>	<b>19,940,941</b>

Source: Emergency Events Database (EM-DAT), last updated 25 September 2017

Among the economic sectors, agriculture has been the most severely affected by natural disasters. From 2000 to 2012, agricultural damages reached approximately Php 106.85 billion, or 58 percent of the registered total damages (NDRRMC, as cited by SEPO, 2013).

Climate change and natural disasters are also expected to challenge existing tenure relationships to the disadvantage of vulnerable groups, and to result in extensive migration and displacement of populations. Communities may gradually be detached from former homes as a result of slow-onset environmental degradation, or may suddenly be uprooted by extreme weather events (Freudenberger and Miller, 2010).

People may move to other places in search of greater human security and improved economic opportunities. Yet displacement may also occur once again, when people move to urban areas that are already dense, or when relocation efforts turn out to be unsuccessful. Displacement may also be cyclical, as people move back to and fro communities of origin in search of better livelihood security (Brookings Institution, 2014).

The Internal Displacement Monitoring Centre (IDMC) estimated that more than 5.9 million out of 102 million Filipinos were displaced by natural disasters in 2016. Furthermore, around 740 thousand individuals were reported to be *newly displaced* by disasters from January to June 2017 (IDMC, 2017).

Since 2008, an average of 3.7 million Filipinos are being displaced by natural disasters annually. Eighty four percent (84%) of these yearly displacements are caused by typhoons, accompanied by storm surges, floods, and strong winds.