



# DISASTER RISK REDUCTION AND MANAGEMENT IN THE PHILIPPINES

A desk study conducted by the Swiss NGO DRR Platform  
following Typhoon Haiyan, Luzerne, July 2014



Tacloban City Astrodome used as evacuation center during typhoon Haiyan, where several people reportedly drowned from the storm surge (AP Photo/Vincent Yu)

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## 1 Summary

On 8 November 2013 Typhoon Haiyan (or Yolanda by its local name), one of the strongest typhoons ever recorded, made landfall devastating parts of the central Philippines, affecting 14 million people overall and proving once more that the Philippines is one of the most disaster-prone countries in the world. The damage is immense and reconstruction will take several years. As most of the Swiss NGO DRR Platform members will be implementing recovery projects in the affected area partly with their own funds, partly funded by Swiss Solidarity, the Platform has decided to conduct a first step of a **comprehensive multi-risk assessment** (Multi Hazard Risk Assessment Annex 1), which provides an inventory of legal frameworks, institutional capacity, access to available hazard data and information, as well as important approaches used in the Philippines with a focus at national level.

The Philippine archipelago is one of the most disaster-prone areas of the world, with a wide span of different hazards like tropical cyclones, accompanied by strong winds, intense rainfall and flooding, storm surges, flash floods, droughts caused by El Nino, earthquakes and volcanic eruptions. Due to the location of the Philippines, there is an increasing risk from the impacts of more frequent and extreme climate-related events, such as severe storms, flooding or drought (Chapter 2 Hazards).

The Philippines as middle income country is characterized by a widening gap between rich and poor and has an actual poverty rate of 26.5 %. Weak institutional capacities and poor social protection have lead to demographic growth and rapid urbanization resulting in a large number of informal settlements highly vulnerable to natural disasters (Chapter 3 Vulnerability).

The Philippine Government has enforced a comprehensive legal framework on DRR and CC, however, in general the capacity for disaster risk reduction at the level of local governments units (LGUs) is still low (Chapter 4 Coping Capacities).

The focus of the 5<sup>th</sup> chapter is on the regions affected by Haiyan including some important lessons learned in the aftermath of the typhoon, while chapter 6 contains some general recommendation based on this risk assessment.

## 2 Relevant current and future natural hazards

<b>Hazard</b>	A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.
<b>Risk</b>	The combination of the probability of an event and its negative consequences.

UNISDR Terminology 2009

The Philippines is considered one of the most disaster-prone countries of the world. Its location on the western rim of the Pacific and along the circum-pacific seismic belt (Ring of Fire) makes it vulnerable to a variety of natural disasters. 60% of the total land area of the country is exposed to multiple hydro-meteorological and geo-physical hazards such as storms, typhoons, floods, droughts, further aggravated by the effects of climate change, as well as earthquakes and volcanic eruptions.

Intensive risk is associated with cyclones and earthquake, while extensive risk, accounting for 2/3 of all losses in the Philippines, is mainly associated with flash floods and droughts. Figure 1 shows a national map of major natural hazard risks the Philippines is facing, including a bar chart with the degree of exposure to natural hazards, and the percentage of areas affected. Disaster trends for the Philippines show that the impacts of disasters are increasing, not only by total people affected, but also by the impacts of disaster trends by estimated damage (cp. Annex 3).

### 2.1 Meteorological hazards

By their nature meteorological hazards will be aggravated by climate change. Using a mid-range emissions scenario, the climate projections done by the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) for 2020 and 2050 indicate that all areas of the country will get warmer and that there will be a change in precipitation pattern with a likely increase in rainfall during the monsoon months.

In the Climate Change Vulnerability Index (CCVI) 2014, released by the global risks advisory firm Maplecroft, that measures the economic impacts of climate change, the Philippines is ranked 9th in the world, while Manila is among the five cities most at risk at the global level (together with Dhaka, Mumbai, Kolkata and Bangkok).

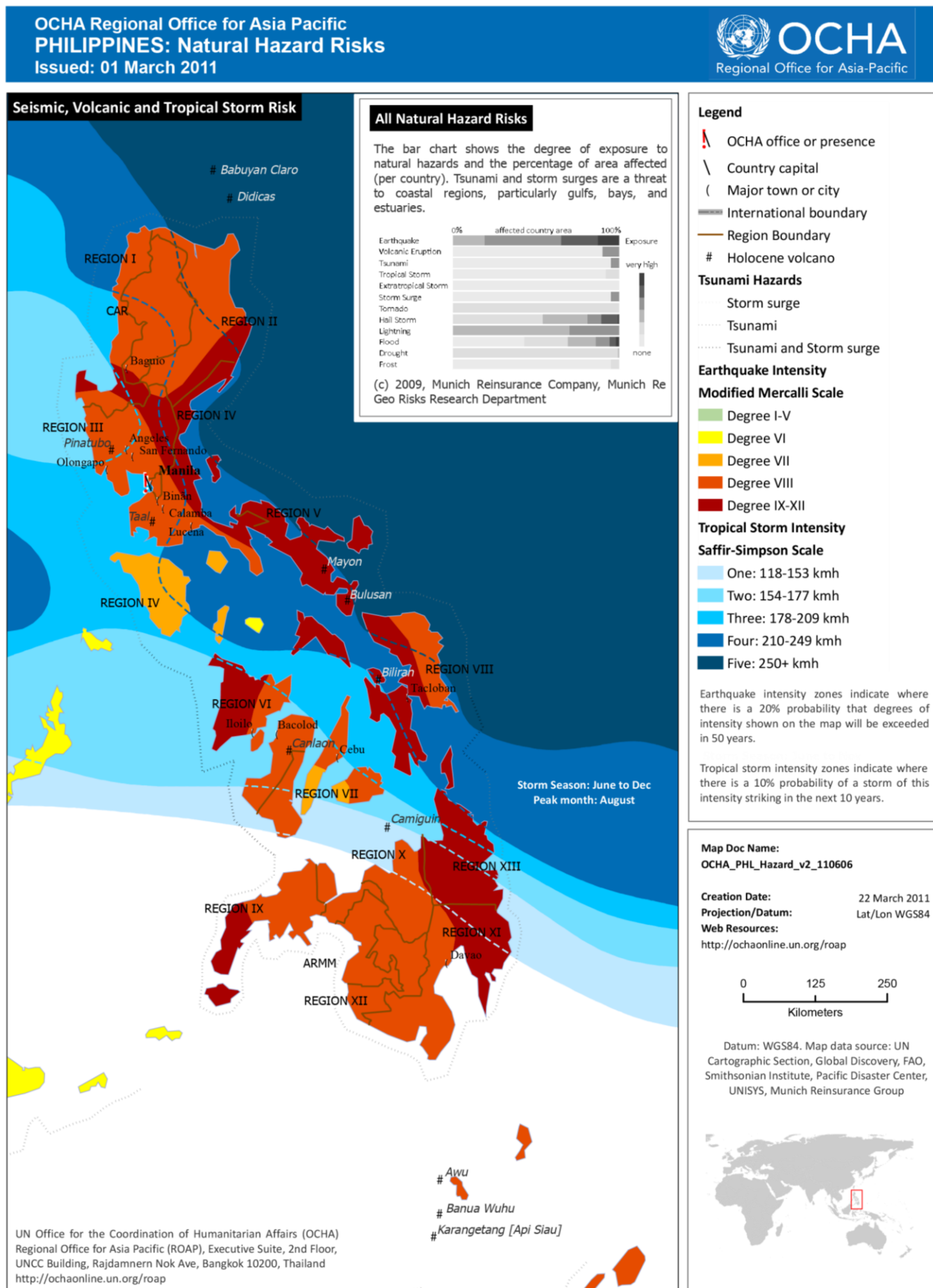
#### 2.1.1 Tropical Cyclones/Typhoons

Tropical cyclones accompanied by strong winds, intense rainfall and flooding represent the major hydro-meteorological hazards in the Philippines. The climate of the country is strongly affected by rain-bearing (monsoon) winds, which blow from the southwest from May to October and from the northeast from November to February. From June to December, **an average of twenty typhoons hit the country, out of which five to seven per year are expected to be destructive.** Most storms come from the southeast; with their frequency generally increasing from south to north (cp. Figure 1). In general, Luzon has significantly higher risk than the southern part of the country, where typhoons are heaviest in Samar, Leyte, eastern Quezon Province and the Batanes Islands. While the frequency of typhoons striking the country may have changed only slightly due to climate change, it has influenced their intensity and patterns: These climate trends coincide with the scientific evidence that rising sea surface temperatures enhance the destructiveness of tropical cyclones. The path of typhoons has changed; more intense rains, causing greater destruction and losses, now accompany even weaker tropical cyclones.

#### 2.1.2 Storm surge/ coastal flood/

Most of the casualties and damage from cyclones are caused by storm surges and not by high wind speeds or rainfall as is usually believed. Storm surges created by typhoons have struck the country many times in the past. The storm surge with an estimated height between 2.3 and 5 m that devastated Tacloban City and many parts of the Visayas on November 8 when typhoon Haiyan made landfall was not a unique phenomenon. According to historical records, for instance in 1897 a storm surge hammered Leyte and Tacloban City, killing as many as 7,000 people. The north-western part and some central areas also have a high risk to Tsunamis caused by seismic activities, but showing similar effects as storm surges.

Figure 1: Natural Hazard Map Philippines





### 2.1.3 Flooding/ Flash Floods/ Land Slides/ Erosion (Deforestation)

Floods are usually triggered by typhoons, tropical depression and continuing heavy rains. The annual monsoon season brings severe flooding to most areas of the country. For example in 2011, most of the disasters that claimed the lives of people and affected properties and livelihoods of the most vulnerable were of extensive nature, brought about by increased rainfall which caused massive flash flooding in areas that don't normally experience such conditions. **Between January and September 2011, more than 50 incidents of flash flooding and flooding and more than 30 landslides occurred, mostly caused by increased rainfall aggravated by illegal logging.**

### 2.1.4 Droughts, Wildfire, Forest fire

In 1997 and 1998, global warming and El Niño caused a major drought in South-East Asia. This cyclical climate pattern occurs **every two to seven years**. It is characterised by increases in temperatures of the usually cold waters of the eastern Pacific Ocean on the order of plus 0.5 C°- 1.5 C°. Changes in temperature modify normal ocean patterns, causing droughts in Asia and Africa, and heavy rains in South America. The El Nino phenomenon has brought drought to the island of Mindanao in the southern Philippines and has drastically reduced rainfall in many other parts of the country, thus causing huge losses in agriculture. **2.6 Mio people were affected and about 2.5 Mio metric tonnes of rice and corn were lost.** "El Niño" phenomenon can also trigger forest wildfires. Normally, the dry season starts from January up to June or six months every year. Close to 200 hectares of forest plantations and reforestation projects were scorched in 2012 by wildfires that spread from adjacent grasslands.

Due to climate change the Philippines are witnessing longer episodes of drought or El Niño, causing a large decrease of agricultural production and sharp declines in GDP.

### 2.1.5 Sea level rise

According to the World Meteorological Organization WMO the Philippines has seen three times the global average in sea level rise since the year 1901. (60 cm, against the global average of 19 cm) Although individual tropical cyclones cannot be directly attributed to climate change, analysis on tropical cyclone passage in the Philippines shows that there has been an increase in the number of cyclones in the over the last decades, and that higher sea levels are making coastal populations more vulnerable to storm surges.

## 2.2 Geo-physical hazards

The location of the Philippines in the southern portion of the **Pacific Ring of Fire** where two major tectonic plates (Philippine Sea and Eurasian) meet, makes it highly prone to earthquakes - and as a consequence, to tsunamis - and volcanic eruptions. The Ring of Fire is an area in a 40,000 km-long horseshoe shape where a large number of earthquakes and volcanic eruptions occur as a direct result of movements and collisions of tectonic plates. It is home to over 75% of the world's active and dormant volcanoes; approximately 81% of the world's largest earthquakes occur along the Ring of Fire.

Figure 2: Pacific Ring of Fire

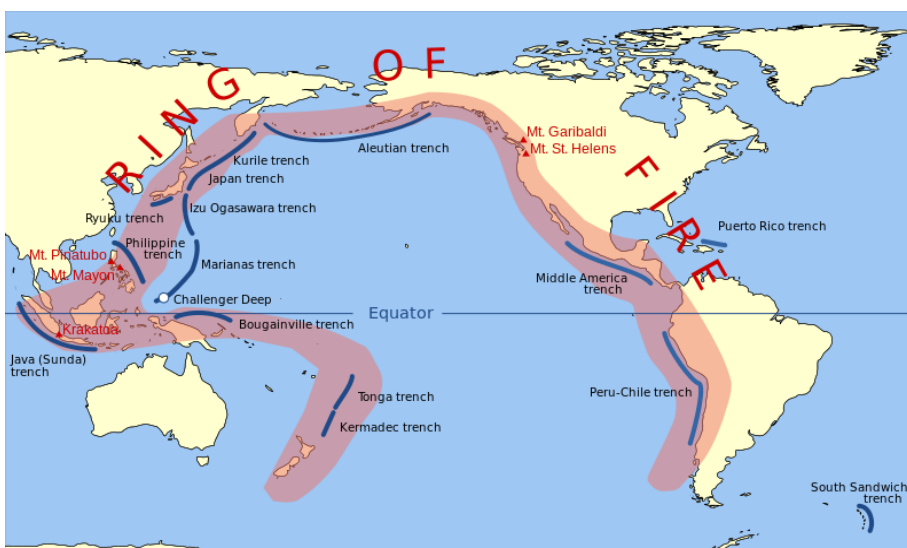


Figure 3: Active Volcanoes



## 2.2.1 Earthquakes

The Philippine Institute of Volcanology and Seismology PHIVOLCS has recorded **12 destructive earthquakes in the last 40 years**; the most damaging of which were the 1976 Mindanao Earthquake and Tsunami, which **killed approximately 6,000 people and caused about US \$400 Mio** (in present value) in damage, and the 1990 Central Luzon Earthquake, which killed over 2,400 people and caused damages of about US \$370 Mio. Recent studies show that exposure to earthquakes in the Metro Manila area is comparable to that in San Francisco, Tokyo and other high-seismic areas. Although earthquake disasters are not as frequent in the Philippines as the typhoons and flooding, the impact generated on affected communities is usually massive and devastating.

## 2.2.2 Tsunami

See under storm surge/coastal floods which are very intensive but considerably less frequent than coastal floods / storm surges.

## 2.2.3 Volcanic Eruptions

Situated along the Pacific Ring of Fire, the Philippines is also prone to volcanic eruptions. Out of 220 volcanoes in the archipelago, 22 are classified as active (cp. Figure 2 Distribution of Volcanoes in the Philippines). A review of the historic record indicates that central and southern Luzon are likely to experience a significant eruption about once every three years, with a major **eruption perhaps every few decades**. The most active volcanoes in the Philippines are Bulusan, Mayon, Canlaon, Taal and Mount Pinatubo. The most recent major eruption in the country and the world's second largest terrestrial eruption of the 20th century was the Mount Pinatubo eruption in June 1991. Successful forecast of the onset of the climactic eruption by PHIVOLCS led to **the evacuation of tens of thousands of people, saving at least 5,000 lives, but the surrounding areas were severely damaged by volcanic material and thousands of houses were destroyed**. Taal Volcano with 33 recorded eruptions since 1572 has been dormant since 1977; however it has shown signs of increasing seismic activity since 1991.

Canlaon Volcano situated in **Central Visayas, Negros Oriental** has erupted 25 times since 1866. Eruptions are typically of small-to-moderate size and produce minor ash falls near the volcano; in 1996, Canlaon erupted without warning.

Figure 4: Risk scenarios Philippines

Possible hazards	Potential Impact of selected hazard/risk	Districts likely to be severely affected
<b>Tropical Cyclones/Typhoons</b> Southwest monsoons: May to October/ Northeast monsoons: November to February <b>June to December on average twenty typhoons, five to seven of these destructive</b>	<ul style="list-style-type: none"> <li>high wind speeds, rainfall, storm surges, flooding, land slides</li> <li>loss of lives, economic losses</li> <li>damage to property, houses, livelihoods, infrastructure</li> <li>displacement and migration</li> </ul>	Luzon, Samar, Leyte, eastern Quezon Province and the Batanes Islands
<b>Storm surge/ coastal flood/ tsunami</b> (triggered by an offshore earthquake)/ rise of sea level	<ul style="list-style-type: none"> <li>wind, storm surges, flooding, land slides</li> <li>loss of lives, economic losses</li> <li>damage to property, houses, livelihoods, infrastructure</li> <li>displacement and migration, as a possible consequence human trafficking</li> </ul>	Up to 70 percent of the 1,500 municipalities located along the coast, mainly on gulfs, bays and estuaries; Metro area Manila
<b>Flooding/ Flash Floods/ Land Slides/ Erosion (Deforestation)</b>	<ul style="list-style-type: none"> <li>affected properties and livelihoods of the most vulnerable</li> <li>damage to infrastructure</li> <li>contamination of drinking water</li> <li>displacement and migration, as a possible consequence human trafficking</li> </ul>	Basins of principal river systems, such as Pasig/Marikina, Cagayan de Oro, Iligan, Agno, Pampanga, Bicol etc.

<b>Earthquakes/ Ring of Fire</b> 12 destructive earthquakes in the last 40 years	<ul style="list-style-type: none"> <li>injuries, loss of lives and property</li> <li>fire as a secondary effect of earthquakes can cause damage</li> <li>potential of tsunamis as secondary hazard</li> <li>damage to populated cities, with rapid urban growth</li> <li>time of day: higher casualties on weekdays between 9:00 AM and 4:00 PM as well as during the night when people are asleep</li> <li>destruction of roads, bridges and other infrastructure; roads can be blocked by debris</li> <li>damage to the communications infrastructure</li> </ul>	Most regions of the Philippines, mainly in the Eastern part
<b>Volcanic Eruptions</b> 220 volcanoes in the archipelago, 22 classified as active; the most active of these are Bulusan, Mayon, Canlaon, Taal and Mount Pinatubo. Significant eruption once every three years; major eruption every few decades	<ul style="list-style-type: none"> <li>damage to livelihoods and buildings</li> <li>evacuation of people out of the affected area, migration</li> </ul>	<i>Pinatubo and Taal:</i> central and southern Luzon, <i>Canlaon:</i> Central Visayas, Negros Oriental <i>Bulusan:</i> Luzon, Province of Sorsogon <i>Mayon:</i> Albay Province <i>Mount Ragang:</i> boundary of the provinces of Lanao del Sur and Cotabato, Mindanao
<b>Droughts/</b> reduced rainfall due to periodic El Nino phenomenon wildfire/ forest fire etc. fire season from January to June	<ul style="list-style-type: none"> <li>loss of lives and economic losses</li> <li>huge losses in agriculture, mainly crops of rice and corn</li> <li>displacement/migration of people</li> <li>outbreak of water-borne diseases</li> </ul>	Southern part of Philippines: Mindanao, Central and Western Visayas, Bicol region etc.

### 3 Determinants of Vulnerability to Natural Hazards in the Philippines

<b>Vulnerability</b>	The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard. (vs. exposure)
<b>Exposure</b>	People, property, systems, or other elements present in hazard zones that are thereby subject to potential losses

UNISDR Terminology 2009

#### 3.1 Exposure

Rapid **urbanization** in the country has led to a large number of unplanned, informal and overcrowded settlements, often in hazard-prone areas. Demographic growth and urbanization have also affected the provision of basic services, resulting in deteriorating solid waste management and aggravating flooding in urban areas for the past years. The urban poor are also often highly vulnerable to natural hazards, in part as rapid urban growth and lack of tenure have forced many to squat in marginal and hazard-prone areas such as flood-prone areas, riverbanks, along the coast and

on steep slopes. According to a report of DILG in 2011 2.7 Mio persons or 25% of the population of Metro Manila were informal settlers. Natural disasters increase their vulnerability and perpetuate deprivation and marginalization.

#### 3.2 Socio-economic factors

Mutual causal inter-linkages between poverty and vulnerability to natural hazards are broadly recognized. The Philippines reduced considerably poverty rate from 40% in 1994 to 26 % in 2009. Looking at rural poverty the picture is different: poverty rate could only be reduced from 53% to 50% (<http://mdgs.un.org/unsd/mdg/Data.aspx>). Two-thirds of the poor are located in rural areas and primarily dependent on agriculture, which in turn is highly

vulnerable to natural hazards According to ADB, the sector accounted for 63% of total reported disaster losses between 1990 and 2006. The average annual damage caused by disasters amounts to an average of 0.5 percent of GDP each year. Economic vulnerabilities manifest themselves, for instance, when poor households lack the assets or resources to repair, rebuild or replant their livelihoods or workers in informal employment with no access to social safety nets face immediate or on-going loss of incomes. Often these vulnerabilities are further aggravated by significant **social disruption**, arising from widowhood, single-parent households or orphans and elderly individuals with no immediate family to care for them. The resulting post-disaster large-scale **migration** (temporary and permanent) out of typhoon-affected regions places pressure on social services in other areas, such as Manila and Cebu, and also increases the vulnerability of affected populations to trafficking and other forms of abuse.

### 3.3 Physical infrastructure

The poor quality of infrastructural systems including roads, energy supply, water and irrigation that are not constructed to resist to extreme events with very high winds, very strong rain events is also contributing to the vulnerability of communities. An assessment of IOM after typhoon Haiyan revealed that for instance in Eastern Samar over 90 % of the buildings designated by the LGUs as evacuation centre were partly or completely destroyed and some of them even situated in flood-prone areas.

Poor quality of infrastructure is often as well associated with the lack of law enforcement going along with still widespread corruption.

#### 3.3.1 Environment

Environmental degradation has hugely contributed to increasing natural disaster occurrence in the Philippines. Demographic growth and poor land-use planning have led to the massive depletion of natural resources and destruction of the environment. Environmental factors such as denuded forests increase flood risks. Deforestation started in the 1930s, with a peak in the 1950s and 1960s. Although its pace fell slightly in the 1980s, the effects of loose soil and reduced forest cover from past forestry activities are still being felt in frequent landslides and floods.

Mangrove trees can for example play a vital role as nature's bio-shields against storm surges, coastal floods and or tsunamis as they absorb and dissipate much of the energy of the storm surge from a typhoon. However, in recent years the Philippines has lost over 50% of its mangrove stands mainly due to land development, pollution, deforestation for fuel and the establishing of fishponds for aquaculture.

The substantial **rise in sea levels**, the Philippines is expected to experience further on, based on the trend of the last hundred years, will further exacerbate the vulnerability of approximately 70 % of the 1,500 municipalities that are located along the coast.

### 3.4 Institutional capacity

A natural disaster with the dimension of typhoon Haiyan also discloses the varying levels of institutional capacity and relative strength of government systems across different affected regions. It is evident that there were big differences in the extent to which LGUs were able to respond to the typhoon warning and assist their communities to prepare for its impact. The level of the capacity of the LGU in coordinating the response, mobilizing resources and restoring services obviously also has a direct effect on the way in which affected communities are able to recover from the typhoon's impact. Identifying and addressing vulnerabilities in the governance and social delivery systems across the affected region should therefore also be a priority in developing an effective response. In the majority of LGUs the enforcement of land-use regulations and building codes is not yet put into practice and the integration of Disaster Risk concerns into local government development plans/ mainstreaming into sector strategies is still missing.

#### 3.4.1 Corruption

The Philippines still suffers from widespread corruption and nepotism, although the situation has slightly improved recently. According to a World Bank study in 2008, corruption in the Philippines was considered to be the worst among East Asia's leading economies, and in the 2012 *Corruption Perception Index* published by *Transparency International* the country is ranked 94/177. Corruption exists in all levels of the government, especially among high-level civil servants, police and in the judicial system. Bribes in return for licences and permits in the process of



compliance with guidelines or requirements are very common, thus making the construction sector in general and the implementation of land-use and environment regulations in particular potentially vulnerable to corruption.

Politics are still under the control of a few notable families (political dynasties), rather than organised around the voting for political parties.

## 4 Coping capacities/ main national and international stakeholders

### 4.1 Policy and legal frameworks

The Philippines is a signatory to disaster management treaties such as the Hyogo Framework for Action (HFA) and the ASEAN Agreement on Disaster Management and Emergency Response (AADMER). The **Philippine Strategic National Action Plan for Disaster Risk Reduction 2009-19 (SNAP)**, developed with the support of the United Nations, is a “road map” indicating the vision and strategic objectives of the Philippines in compliance with the strategic goals of the HFA. Based on the **SNAP 2009-2019**, the legal framework on Disaster Management includes the **Philippine Disaster Risk Reduction and Management (DRRM) Act (RA10121)** and its **Implementing Rules and Regulation of 2010**, as well as the **National Disaster Risk and Management Plan (NDRRMP) 2011 to 2028**.

As stated in the DRRM Act 10121, it will be the **policy of the State** to *uphold the people's constitutional rights to life and property by addressing the root causes of vulnerabilities to disasters, strengthening the country's institutional capacity for disaster risk reduction and management and building the resilience of local communities to disasters including climate change impacts*. In terms of decentralization, local governments and communities are mandated by the DRRM Act to enforce DRR measures to address their respective risks.

The **NDRRMP 2011 to 2028** serves as a national guide for sustainable development. It aims at building the adaptive capacities of communities, increasing the resilience of vulnerable sectors; and optimizing disaster mitigation opportunities. The plan includes 4 Priority Areas with Long Term Goals, 14 Objectives, 24 Outcomes, 56 Outputs and 93 Activities. It also maintains systematic links with the 2011-2016 Philippine Development Plan's Goals, the National Climate Change Plan and the HFA.

Furthermore the NDRRMP highlights, among other things, the importance of **mainstreaming DRRM and CCA in the development processes** such as policy formulation, socio-economic development planning, budgeting and governance particularly in the areas of environment, agriculture, water, energy, health, education, poverty reduction, land-use and urban planning and public infrastructure and housing. The NDRRMP also outlines activities aimed at **strengthening the capacity of the national government and the local government units (LGUs)** to build the disaster resilience of communities and to institutionalize arrangements and measures for reducing disaster risks, including projected climate risks and enhancing disaster preparedness and response capabilities at all levels.

The DRRM Act (RA 10121) is complimented by its twin law on Climate Change (RA 9729 or Climate Change Act of 2009).

### 4.2 Institutional set up

#### 4.2.1 Regional level

The Philippines is an active member of the ASEAN Committee on Disaster Management (ACDM). Under the AADMER Work Programme 2010-2015, regional systems for risk identification and assessment, early warning, and monitoring are in the process of being established by the ACDM. The intention is to connect national early warning and monitory systems with the regional so that regional hazards can be taken into account at the national level.

A conference on Disaster risk Reduction and Management of the Asia-Europe Meeting ASEM on 4- 6 June 2014 in Manila was aimed at bringing together the lessons learned from the typhoon Haiyan response and defining the relevant elements for sustainable reconstruction after typhoon (Post-Haiyan Tacloban Declaration)

#### 4.2.2 National level

The **National Disaster Risk Reduction and Management Council NDRRMC/ National Platform** under the Office of Civil Defence acts as the main coordinator for all disaster management and serves as the President's

adviser on disaster preparedness programmes, disaster operations and rehabilitation efforts undertaken by the government and the private sector. It has the overall responsibility for approving the NDRRMP. It also has primary responsibility of monitoring the development and enforcement of the various laws, guidelines, codes or technical standards used by agencies; managing and mobilizing resources for DRRM, including the National DRRM Fund (NDRRMF) and the monitoring of utilization of the Local DRRM Fund (LDRRMF). It is chaired by the Secretary of National Defence with the heads of 18 departments as members. The NDRRMC is a policy and coordinating agency and operates through member agencies and through its local networks (i.e., the regional and local disaster coordinating councils), which are responsible for planning, implementing, funding and carrying out specific activities related to DRM. A Memorandum of Understanding between the NDRRMC and Climate Change Commission (CCC) was signed with the objective of converging DRR and CCA. Given the common goals and objectives of increasing the resilience of communities and the country, it aims at promoting the collaboration and harmonization of efforts across these two themes, especially in formulating local plans and actions.

The **Office of Civil Defence (OCD)** ensures the implementation and monitoring of the NDRRMP. It conducts periodic assessments and performance monitoring of the member-agencies of the NDRRMC. The OCD is responsible for ensuring that the physical framework, social, economic and environmental plans of communities, cities, municipalities and provinces are consistent with the NDRRMP and that all DRR programmes, projects and activities requiring regional and international support are in accordance with national policies and aligned with international agreements. At the regional and local levels, the OCD reviews and evaluates the Local DRRM Plans (LDRRMPs) to facilitate the integration of disaster risk reduction measures into the local Comprehensive Development Plan (CDP) and Comprehensive Land Use Plan (CLUP).

The **Department of the Interior and Local Government (DILG)** is responsible for public safety and thus responsible for the Philippine National Police, as well as for strengthening local government capability to deliver basic services to the population.

The **Department of Environment and Natural Resources (DENR)** is responsible for governing and supervising the exploration, development, utilization, and conservation of the country's natural resources. The **National Mapping Resource and Information Authority (NAMRIA)**, is as the central mapping agency under the DENR, and provides the public with natural resources data in the form of maps, charts, texts, and statistics. The **Mines and Geosciences Bureau (MGB)** is the primary government agency under the DENR responsible for the conservation, management, development and proper use of the country's mineral resources and the maintenance of the **Geohazard Web Portal**.

The Philippine **Climate Change Commission (CCC)** is an independent and autonomous body that has the same status as a national agency and is attached to the Office of the President. The Climate Change Office works under DENR.

The **Department of Science and Technology (DOST)** is responsible for the coordination of science and technology-related projects. The **Philippine Atmospheric, Geophysical and Astronomical Services Administration PAGASA** is a national institution under the DOST dedicated to providing flood and typhoon warnings, public weather forecasts and advisories, meteorological, astronomical, climatological, and other specialized information and services primarily for the protection of life and property and in support of economic, productivity and sustainable development. The **Philippine Institute of Volcanology and Seismology (PHIVOLCS)** is a national institution dedicated to providing information on the activities of volcanoes, earthquakes, and tsunamis. It monitors volcano, earthquake, and tsunami activity, and issues warnings as necessary. It is mandated to mitigate disasters that may arise from such volcanic eruptions, earthquakes, tsunamis, and other related geotectonic phenomena.

The **Department of Education (DepED)** is active in awareness raising in schools and through the dissemination of information and communication materials on DRR and CC to schools in hazard prone provinces, as well as through the integration of DRR and CC into the curricula of Primary and Secondary schools.

Other departments and agencies involved in Disaster Management, response and recovery programmes include the **Department of Public Works and Highways (DPWH)**, which is responsible for the maintenance of road network

and irrigation system, the **Department of Social Welfare and Development (DSWD)**, responsible for the protection of the social welfare rights of Filipinos, including the population in the affected area, and the **National Economic and Development Authority (NEDA)**. NEDA is an independent cabinet-level agency of the Philippine government responsible for economic development and planning. It is headed by the President of the Philippines as chairman of the NEDA board, with the Secretary of Socio-Economic Planning, concurrently NEDA Director-General, as vice-chairman. A number of Cabinet members, the Governor of the Central Bank, the Chairman of the Metropolitan Manila Development Authority, the Governor of the Autonomous Region in Muslim Mindanao, the Chairman of the Commission on Information and Communications Technology, the Chairman of the Subic-Clark Area Development Corporation, and the National President of the Union of Local Authorities of the Philippines are members of the NEDA Board.

The **local government administrative system** of the Philippines is three-tiered, consisting of 1) provinces and highly urbanized cities (81), 2) cities (136) and municipalities (1,496) and 3) barangays (villages, 41,994) as the smallest administrative unit. The DRRM Act 10121 empowers **local governments and communities** to enforce DRR measures and to address their respective risks; it mandates them to establish a **Local Disaster Risk Management Office LDRMO** and to set aside not less than 5 % of their estimated revenue as the **Local Disaster Risk Reduction and Management Fund LDRMF**. Furthermore, it is the task of the LGUs, in particular at the province level, to adopt the official DRR Mainstreaming Guidelines and apply them in their planning activities, e.g. the Development Plan and the Land Use Plan. The **LDRMOs** at the provincial, city and municipal levels and the Barangay Development Councils are mandated to design, program and co-ordinate DRRM activities and to develop a **Local Disaster Risk Management Plan LDRMP** consistent with the National DRR Framework. (For more detailed information on the structures and mandates at LGU level cp. annex 6)

#### 4.2.3 Important external actors (UN, international donors, NGO)

**UNDP** started its operations in the Philippines in 1965 and has strongly supported the Government of the Philippines in establishing a comprehensive disaster risk management system. The inter-agency project READY, implemented together with other programmes with the technical assistance from UNDP, has laid important foundations for risk mapping and early warning systems in the country. The UNDP country programme document of UNDP for the phase 2012-16 includes as one of its five key areas, improving resilience against conflicts and disasters by supporting Early Recovery and Disaster Risk Reduction. UNDP has also supported, together with the EC the NEDA in the elaboration of the Guidelines Mainstreaming Disaster Risk Reduction in sub-national Development and Land Use/ Physical Planning in the Philippines launched in July 2009.

As stated in its mandate the **International Federation of Red Cross and Red Crescent Societies IFRC** is involved in disaster risk reduction by strengthening the preparedness and capacities at community level through its national partner organisation **Philippine Red Cross PRC**, which is among others responsible for a network of volunteers in the coastal zones who disseminate typhoon warnings

Since 1998 preparedness projects of international NGOs and governmental institutions in total amount of Euro 7.7 million have been funded under the **Disaster Preparedness Programme DIPECHO** of the European Commission.

**OXFAM** has been active in the field of Disaster Risk Reduction and Climate Change Adaptation in the Philippines for many years, mainly with the aim of strengthening the disaster-resilience at community level (Safer Communities Project) and the institutional capacities at local level, with a strong focus on the role of women. In 2009 OXFAM piloted the establishment of a permanent Disaster Risk Management Office in a local government unit. OXFAM has supported DILG in the implementation of a project that promotes innovative and indigenous coping mechanisms and practices to mitigate effects of disasters and climate changes. They are also working together with the Development Academy of the Philippines DAP and PDCC Albay.

The programme of **GIZ Deutsche Gesellschaft für Internationale Zusammenarbeit** in the Philippines has a strong focus on Climate Change, but in the past GIZ has also been involved in risk mapping and has published a revealing study on the efficiency of the Early warning efforts for Typhoon Haiyan in Leyte.

There are **various international NGOs** with a strong focus on Disaster Risk Reduction such as Care International, Christian Aid and Plan International. Their main **Philippine partners** include government agencies and municipalities.

The **Swiss Agency for Development and Cooperation SDC** is not involved in long-term projects on DRR in the Philippines, but has supported the country repeatedly with response and recovery activities after major disasters. Together with the European Union SDC has also co-funded the Asia-Europe Meeting ASEM Manila Conference on Disaster Risk Reduction and Management titled Post-Haiyan- A Way Forward which took place from 04 to 06 June 2014.

#### Gaps/ weaknesses:

The Philippines has a comprehensive regulative framework for Disaster Risk Management, however, at the local level structures and capacities are still weak. The results of a Disaster Preparedness Audit of DILG in 2011 considering 8 major factors such as functionality of LDCCs, availability of evacuation centres, appropriate equipment and quality of the Disaster Risk Management Plan revealed that of LGUs surveyed, 33 % of the provinces, 34 % of cities and 60% of municipalities were not prepared properly. Only 45 of 80 provinces had DRRM units/offices and no more than 23 of 80 provinces have permanent staff. Most LGUs, particularly third and fifth class municipalities and less capable cities do not have sufficient capacities to prepare a comprehensive land use plan that integrates risk factors as a basis for planning. Implementation of DRR activities is still highly influenced by local political agenda and interests. Lack of funds for DRR measures is another challenge.

### 4.3 Risk Financing

#### 4.3.1 Governmental budget

The National Disaster Risk Reduction and Management Council (NDRRMC) is responsible for the mobilizing of resources for DRRM, including for the National DRRM Fund (NDRRMF) as well as for the monitoring of utilization of the Local DRRM Fund (LDRRMF). RA 10121 mandates local government units (LUGs) to set aside 5% of the estimated revenue as the **Local Disaster Risk Reduction and Management Fund (LDRRMF)** to support disaster risk management activities such as preparedness programmes including training and purchase of rescue equipment, but also for response activities. The LDRRMF can also explicitly be used for the payment of premiums on calamity insurance. A 30 % of LDRRMF should be allocated to a Quick Response Fund.

#### 4.3.2 Private sector

In the past, humanitarian agencies such as OCHA have been cautious in engaging the private sector, because of the “culture clash” between the humanitarian and private sectors. However, some enabling factors such as the existence of Philippine Disaster Recovery Foundation and the presence of various foreign chambers of commerce, deep-rooted historical connections of some of the most well-known American companies such as Coca-Cola and Chevron make the Philippines an effective breeding ground for public-private partnerships.

In the wake of typhoon Haiyan there has been a significant shift in the role business is playing in humanitarian relief and disaster response. Under the leadership of Senator Panfilo Lacson, the focal point of the Philippine government for post-Haiyan rehabilitation, nine of the Philippines’ largest and most powerful local companies have pledged to lead reconstruction and rehabilitation in specified areas.

The **Philippine Disaster Recovery Foundation (PDRF)** composed mostly of executives from private corporations has been created out of the need to make use of the investment of the **private sector** for disaster management and in return to include it in decision-making and design processes. PDRF activities include preparedness, relief, recovery and reconstruction. Ongoing recovery programmes are focused primarily on the areas hardest-hit by typhoon Haiyan, by the earthquake in Bohol and Cebu, and by the unrest in Zamboanga.



### 4.3.3 Official Development Assistance (ODA)

In 2012 the net commitment from ODA amounted to **USD 8.83 billion/year**. With a share of over 30% **Japan** is the largest donor to the Philippines, followed by China, the World Bank Group, the Asian Development Bank, the United States, the Global Fund, Australia, the European Union, Canada and South Korea. Some of these donors have included Disaster Risk Management into the priorities of their aid programmes.

**Japan** has been the main donor for supporting investments and providing technical assistance for flood management developments in and around Metro Manila. The joint JICA-WB-ADB study, Climate Risks and Adaptation in Asian Coastal Mega-Cities, completed in 2010, includes the case of Manila, prepared by JICA, which constitutes an important document for the Master Plan study team. JICA is now channelling investments identified in the Master Plan study.

The involvement of the Global Facility for Disaster Reduction and Recovery GFDRR of the **World Bank** in the Philippines began in October 2009 with a Post Disaster Needs Assessment PDNA after typhoons Onday and Pepeng (see GFDRR-funded projects above), which has identified a number of priority investments. The World Bank has provided lending and technical assistance in the areas of risk financing, mitigation, preparedness, and emergency response. The ongoing GFDRR programme includes a project to support the Philippines in the areas of risk financing and local institutional capacity building.

The **Asian Development Bank ADB** supports risk financing with a focus on private sector assets, thus complementing the World Bank programmes mainly directed at public assets. In this regard, ADB is developing a TCIP-like (Technologies for Critical Incident Preparedness) insurance scheme for households and small- and medium- level enterprises in the Philippines.

**Australia (AusAid)** supports hazard risk and vulnerability mapping mainly through the (i) collection of data and information on floods and risk exposure, and the preparation of a digital elevation model (DEM) using Light Detection and Ranging (LIDAR) technology; and (ii) the development of flood hazard maps for sections of Metro Manila through hydrological and hydraulic modelling, coupled with digital terrain data and geographic information systems (GIS)

The **European Commission EC** has been active in the field of DRM the Philippines since 1998 through its Disaster Preparedness Programme **DIPECHO**. It aims at building the **resilience of communities** regularly affected by natural disasters, but also supports the improvement of **preparedness and response capacities of the authorities and specialised institutions** such as PAGASA and PHILVOCS. Project partners of DIPECHO include UNDP, GIZ, CARE, OXFAM, Plan International and others more.

#### Gaps/ weaknesses:

The situation in the Philippines reflects broader trends in global development finance. Corporations see long-term business value in investing in disaster response and sustainable development. At the same time, public sector aid budgets are being squeezed by government austerity and global humanitarian organizations are being stretched by the range of crises across the world. According to OCHA, out of the total foreign aid donations to Haiyan private organizations and individuals account for about 25 percent or \$150 million of the total pledges, while, as means of comparison, the world's top five traditional public sector donors - the United States, European Union, United Kingdom, Australia and Japan — have committed about \$280 million.

However, there is the risk of a “culture clash” between the humanitarian and private sectors that has to be overcome to ensure that the basic rights of most vulnerable groups are respected.

### 4.4 Risk assessments

Research for multi-risk assessments is normally done by government research institutes such as **PHIVOLCS** and other agencies under the Department of Science and Technology (DOST) as well as by universities. In 2011 the first **Disaster Risk Reduction and Climate Change Academy** PDCC was established in **Albay**, a province that is facing significant challenges with regard to disaster risk reduction and climate change, as it is specially prone to natural hazards as it is home of the Philippines most active volcanoes and is exposed to frequent passages of tropical cyclones. There are additional other institutions in the country active in research or offering courses and/or professional education programmes on Climate Change Adaptation and Disaster Risk Reduction, such as the **Ateneo**



School of Government in Manila, the Development Academy of the Philippines DAP, the Mindanao State Universities and Colleges or the Cordillera Studies Centre UP Baguio.

#### 4.4.1 Hazard and risk maps

Risk maps including analysis of hazards and vulnerability mapping of a specific geographical location is the crucial input for the DRR measures, such as land use planning, technical risk mitigation measures, preparedness planning as well as for response and recovery measures. Reliable risk maps provide an important tool to get a comprehensive picture of the various risks a community is exposed to. The better the understanding of the multi risk exposure of communities is, the more efficient and effective risk management measure can be taken during the set up of new projects.

Detailed and specific maps are necessary for local prevention, intervention and recovery management. Hence, several DRRM actors in the Philippines are producing and using hazard and risk maps of global, national and local level.

The following governmental agencies are responsible for producing hazard and risk maps:

- Philippine Institute of Volcanology and Seismology – Dep. of Science and Technology (PHIVOLCS-DOST)
- Philippine Atmospheric, Geophysical, Astronomical and Services Administration - DOST (PAGASA-DOST)
- Mines and Geosciences Bureau – Department of Environment and Natural Resources (MGB-DENR)
- National Mapping Resource and Information Authority – DENR (NAMRIA-DENR)

Annex 2 provides an overview about the various risk map providers and maps that are available online. While there are several actors in the Philippines active in risk mapping activities, the website of the Mines and Geosciences Bureau (<http://gdis.denr.gov.ph/mgbviewer/>) provides a good repository to gather local level information of various risk maps that have been produced. In order to analyse potential risks of different locations within the Philippines, it is recommended to consult these websites for an overview of the various risks that the communities in these areas are exposed to.

An important contribution to the risk mapping in the Philippines has been provided in the framework of the **Hazards Mapping and Assessment for Effective Community-Based Disaster Risk Management READY Project** 2006-2011, funded by UNDP, AusAid and ADB implemented by OCD-NDCC. In collaboration with PHIVOLCS, PAGASA, MGB and NAMRIA multi-hazard maps for 27 target provinces (1:50,000 scale) and priority municipalities/ cities/ barangays (1:10,000 scale) have been produced and physical infrastructure, such as school, hospital and residential buildings, plotted against these hazard maps. More information is available online at: <http://drh.edm.bosai.go.jp/database/item/5317485453687b8abcca59e9e7c1178fc483c625>.

Unfortunately only part of the areas subsequently affected by Typhoon Haiyan is included in the project (cp. Figure 5: READY Project Target Areas)

The Reliefweb website [http://reliefweb.int/updates?f\[0\]=field\\_country%3A188&f\[1\]=field\\_content\\_format%3A12](http://reliefweb.int/updates?f[0]=field_country%3A188&f[1]=field_content_format%3A12), provides a good data source for risk maps that are produced during emergencies by different humanitarian actors.

#### 4.4.2 Awareness and Training materials

Various government agencies undertake their respective **disaster awareness and training programmes** nationwide. For instance, PHIVOLCS have developed and published information materials for the dissemination of disaster awareness and preparedness, e.g. a compilation of tsunami hazard information, tools and materials (i.e., assessment tools, public awareness tools, training material, and best practices) under the “Awareness and Preparedness Tools for Materials Assessment Project.”

#### Gaps/ weaknesses:

Hazard and risk maps vary in quality. The prevailing hazard-specific approach to increasing public awareness needs to be complemented by a comprehensive, nationwide public advocacy programme to increase the awareness of the general public on **how to reduce their vulnerability** and prepare for natural disasters needs.

## 4.5 Disaster Risk management

### 4.5.1 Prevention

In the Medium Term Philippine Development Plan MTPDP (2010-2016) Disaster Risk Management and Climate Change are considered cross cutting issues. Local government units, particularly at the provincial level, have been instructed to adopt the **Guidelines Mainstreaming Disaster Risk Reduction in sub-national Development and Land Use/ Physical Planning in the Philippines** (NEDA 2009) and use them in their planning activities.

A DILG programme (supported by WB and UN-Habitat) aims to mainstream DRRM/CCA in **Local Government Systems and Processes** into local Comprehensive Land Use Plans, Comprehensive Development Plans and investment programmes. This includes a community-based diagnosis of vulnerabilities and **enacting appropriate ordinances/policies/ instruments that reduce risks, e.g., settlement/housing, building standards**. For low risk LGUs, integration of DRM/ CCA into the Comprehensive Land Use Plan and the Comprehensive Development Plan is to be undertaken. For **high risk LGUs**, the preparation of a separate **Contingency Plans and Counter-Disaster Plan** is done. Moreover, DILG promotes the compliance and enforcement of policies impacting on DRR through safe building regulations, enforcement of national building code, review of design and construction practices, zoning ordinances etc.

The **national physical framework plan** also identifies areas that are considered environmentally critical and/or as prone to natural hazards (geologic hazards, floods, typhoons, volcanic activity, etc.) and areas with critical slopes. The government started in 2010 to invest more in **urban risk reduction** after a series of devastating typhoons. The *Earthquakes and Megacities Initiative* has also implemented a project on risk-sensitive urban redevelopment planning with Makati City as pilot city.

### 4.5.2 Preparedness

In terms of monitoring **hydro-meteorological hazards**, PAGASA currently has a widespread system of weather stations to perform its monitoring and early warning functions. Concerning a **flood early warning system (EWS)**, a community based flood EWS and Information Dissemination Network has been implemented. A related programme is the Enhancement of Flood Forecasting and Warning System (FFWS). Regarding **geophysical hazards, earthquake monitoring** is done by PHIVOLCS with the use of a 66 station digital seismic network. The institute also maintains a **volcano monitoring systems** with 6 volcano observatories using various techniques. For tsunamis a community-based EWS is being piloted by PHIVOLCS in several high-risk barangays all over the country.

The **Nationwide Operational Assessment of Hazards** programme **NOAH** was launched by DOST in 2012 with the aim to use advanced technology for timely and accurate hazard information through various media and communication platforms, thus improving the early warning system and the disaster management capacities of Local Governments. The project NOAH website [www.noah.dost.gov.ph](http://www.noah.dost.gov.ph) is one of the platforms designed by the Government to mitigate and prevent disasters by conveying critical, reliable, authoritative, understandable and timely information to communities and LGUs. The website includes hazard maps, weather forecasts, flood warnings and is closely linked with PAGASA and PHIVOLCS.

A Community-based Early Warning System (CBEWS) has also been included as second component in the READY project.

#### Gaps/ weaknesses:

**Experience during Typhoon Haiyan** has clearly demonstrated that the early warning information has to feed into appropriate evacuation measures. The big challenge is firstly to increase the awareness of people themselves so they understand the early warning system and take action based on early warning information, and secondly to widen the reach of early warning to get to the more vulnerable groups of society in a timely way.

### 4.5.3 Risk Transfer

In 2010 a **Micro insurance Regulatory Framework** to promote insurance for risk protection and relief against disasters (e.g. Crop and property insurance) was adopted, with the aim to encourage private sector participation, e.g.

to work in partnership with organizations that are currently serving the poor, such as microfinance organizations, rural banks and humanitarian organizations.

### Gaps/ weaknesses:

Risk transfer schemes such as insurance are not very common in the Philippines, mainly due to inadequate reinsurance facilities..

## 5 Lessons Learned/ Gaps identified after Typhoon Haiyan

The area affected by typhoon Haiyan was already one of the poorest regions in the Philippines, with weak infrastructure, struggling agricultural and fishing sectors and 40- 60 percent of families (approximately two million people) below the poverty line, earning less than US\$2 per day. Despite impressive economic growth in recent years in the Philippines at the national level, there has been little to no impact on poverty alleviation in these regions, thus indicating a high level of inequality and disparity in the society. A majority of farmers in the affected area have small plots of land, or they are tenants with low domestic saving rates. There are also a large number of landless agricultural workers. Together with the fishers and the forestry workers they represent the poorest sector of the society. According to UNDP the participation in education in the region is low, for every 100 children who start elementary school only 34 finish while high maternal mortality rates, a very high incidence of tuberculosis and poor quality and inaccessibility of public health services are among the health-related factors which increase vulnerability.

### 5.1 Lessons to be learned from incident / disaster analysis

In its comprehensive **Assessment of Early Warning Efforts in Leyte for Typhoon Haiyan/Yolanda**, published March 2014 **GIZ** calculates that approximately 94% of the casualties in Tacloban, Palo and Tanauan were caused by the storm surge with an estimated height of between 2.3 and 5 meters. The report also reveals that while the forecast of the storm path and its strength was made very accurately by many agencies days before the landfall, the official storm surge hazard map grossly underestimated the inundation area of the storm surge which was actually close to the inundation area of the official tsunami hazard map. Although there was a lot of information available, the responsible persons at LGU level were obviously unaware of the dimensions of the hazard and vulnerabilities and/or did not use the information appropriately. A safety check of evacuation centres in the region was either not done or did not result in appropriate actions.

In general there was enough time for preparations and evacuations as warnings from the government and media came several days before the typhoon made landfall. Government offices repeatedly asked residents near the coast to evacuate and, in a few cases, even used force to evacuate them. However, warnings by many institutions, including OCD and LGUs, were apparently not serious enough to make people understand that their lives were at risk if they do not evacuate. It turned out that many of them did not understand the term “storm surge”. GIZ concludes that serious warnings and more effective evacuations along the coastline could have saved many lives.

GIZ also highlights in its report the vulnerability of a number of **evacuation centres** that according to hazard maps of PAGASA and PHILVOLCS were located within storm surge or tsunami hazard areas and therefore flooded. As most of them were single floor buildings they were not designed to host people seeking protection from storm surges or tsunamis and many people reportedly died for this reason, e.g. also in the Astrodome in Tacloban, where people were also hosted in the ground floor and drowned.

An assessment of **Evacuation Shelters in Eastern Samar** conducted by the **International Organization for Migration IOM** in April 2014 revealed that of 634 buildings (municipal/barangay halls, day care centres, schools, health centres and churches) designated by the LGU as evacuation shelters 26 % were completely destroyed by typhoon Haiyan, 66 % are unusable due to substantial damage and only 8 % would be usable in case of typhoon. With the next typhoon season arriving in June 2014 this situation is worrying.

According to the recovery programme document of **UNDP** the disaster *highlights the varying levels of institutional capacity/ varying ways and extents to which local government systems were able to respond to the typhoon warning and assist their constituent communities to prepare for its impact. Differing levels of capacity in coordinating the*

*response, mobilizing resources and restoring services also directly affect the way in which affected communities are able to recover from the typhoon's impact.*

The **Tacloban Declaration** drafted by 280 government leaders, scientists and representatives of the civil society on the occasion of the **ASEM's Disaster Risk Reduction and Management Conference** in Manila, also includes some important lessons learned during Typhoon Haiyan response and early recovery phase. It recognizes the *central role that the national governments play in DRRM*, but also stresses *the important role of the local government as first responders and builders of local resilience*.

#### **Gaps/ weaknesses:**

The performance assessments of the typhoon Haiyan response conducted by various organisations (UNDP, IOM, OXFAM, GIZ) all revealed **number of weaknesses and gaps of the DRM system at local level**. Despite of the fact that the Philippines has a comprehensive regulative framework for Disaster Risk Management on paper, in reality the capacities at the local level are still weak and must be strengthened in order to avoid a high number of unnecessary casualties in futures disaster events.

## **5.2 Challenges ahead**

One of the most pressing issues for Haiyan-affected communities and humanitarian partners has been the Government's proposed policy on implementing a **"No-Dwelling Zone" (NDZ) within 40 metres of the shoreline** as part of disaster risk reduction. "Safe Zones" and "Unsafe Zones" will be identified through risk mapping and ordinances on the use of the zones will be issued. However, this procedure requires a certain capacity to carry out accurate hazard mapping and to develop and implement adequate risk reduction measures. The implementation of the policy will require a large-scale resettlement of the affected communities, which will expose many poor coastal dwellers to further losses – particularly those who do not have formal land tenure or ownership. It is important, that LGUs respect fundamental human rights and follow agreed minimum standards of due progress. Issues such as the maintenance of social fabric in the resettlement locations and access to employment need to be taken into account to ensure that resettled people do not suffer further losses and deprivation.

## **5.3 Coordination and important areas of intervention of other actors**

In the areas affected by typhoon Haiyan hundreds of agencies and NGOs are implementing thousands of recovery and reconstruction projects amounting to millions of USD. Coordination among the different actors and the alignment of the various projects with the plans of the government and the UN system are of paramount importance in order to avoid duplication.

The most import response and recovery plans include:

**Typhoon Haiyan Strategic Response Plan SRP** (launched by UN in December 2013 and targeting 3 million people for humanitarian aid. Budget request USD 788 million, 56 % of which has been funded by the end of April 2014; duration 12 months November 2013- November 2014) including nutrition, protective and sustainable shelter solutions, restoration of livelihood, access to basic water, sanitation, hygiene, and health services, re-establishment of community and local government services.

The **Reconstruction Assistance on Yolanda (RAY)- Build-Back-Better**, December 2013, is the Government's strategic plan to guide the recovery and reconstruction of the economy, lives, and livelihoods in the affected areas based on a first synthesis of the overall economic impact of the typhoon Haiyan/Yolanda. The objective of the plan is to restore the economic and social conditions of these areas at the very least to their pre-typhoon levels and **to a higher level of disaster resilience**.

**Typhoon Haiyan (Yolanda)- Early Recovery, Livelihoods and Agriculture Plan March 2014- November 2014**, launched in February 2014 by the Philippine Humanitarian Country Team HCT. The strategy focuses on four key areas: actions as a **precondition to recovery** (debris clearance), restoration of livelihoods, support to local government disaster management and service delivery and activities smoothening the transition from early recovery to longer-term government recovery plans as well as the UNDAF.

**UNDP: Programme document Support to Typhoon Recovery and Resilience in the Visayas**, January 2014; has a three-year programme framework with the aim to support the country in transitioning from early recovery to



rehabilitation, (beyond SRP), budget request: USD 46.7 Mio (pledged by January 2014:13 Mio USD); *The proposed recovery programme focuses on the underlying systems, resources and human capacities needed to manage exposure to risks, increase the resilience of economic, social and infrastructural systems, and enhance opportunities for further sustainable development within the context of the region's exposure to climatic and natural hazards.* The programme includes: debris removal and solid waste management, support to the restoration of LGU structures and capacities, emergency employment generation and enterprise recovery, strengthening the transparency and accountability of the typhoon response at the local level.

In order to provide LGUs with technical expertise in the areas of human rights and DRR related to the no-dwelling zones/ resettlement plans of the Government, the *Early Recovery and Livelihoods Cluster* will support the creation of **five Area Disaster Risk Management hubs**. The regional resource hubs will be created to provide direct support to the LGUs in region VI (Iloilo, Capiz) and region VIII (Eastern Samar, Western Samar, Leyte) (cp. annex 9). Each of the five hubs will be staffed with a team leader and seven experts provided by UNDP, UN-HABITAT and the Human Rights Commission (addressing protection-related issues).

Following the Typhoon Haiyan, the **European Commission** in addition to Euro 30 million provided in relief assistance and early recovery to help most affected communities, made available Euro 10 million for infrastructure reconstruction. The assistance has been implemented mainly through the following organisations: IOM, FAO, WFP, the Spanish and German Red Red Cross, the ICRC and two NGO consortia led by Save the Children and Plan International.

**Figure 5:**  
**READY Project Target Areas**

**Figure 6: Projects funded by ECHO**

**TARGET AREAS:** 27 High Risk Provinces of the Philippines

Phase I	
<b>2006</b>	
1. Surigao del Sur	2. Surigao del Norte
Phase II	
<b>2007</b>	
1. Southern Leyte	2. Leyte
<b>2008</b>	
1. Bohol (GS only)	5. Zamboanga DS
2. Aurora	6. N. Samar
3. Cavite	7. E. Samar
4. Pampanga	
<b>2009</b>	
1. Zambales	5. Catanduanes
2. Laguna	6. Abra
3. Antique	7. Quirino
4. Ilocos Sur	
<b>2010</b>	
1. Agusan del Sur	5. Zamboanga Sibugay
2. Nueva Vizcaya	6. Rizal
3. Cagayan	7. Iloilo
4. Isabela	
<b>2011</b>	
1. Ilocos Norte	2. Benguet



## 5.4 Activities and geographical focus of Swiss NGOs

Several Swiss NGOs are working on DRR and DRM projects in the Philippines. These are namely CARITAS, HEKS (Hilfswerk der evangelischen Kirchen Schweiz), Swiss Red Cross (SRC), Solidar and Terres des Hommes (TDH). The focus of projects spans from prevention and livelihood (CARITAS, TDH); to emergency response and Water Sanitation and Hygiene (HEKS, SRC, Solidar, TDH); to transformative core shelter, reconstruction and recovery (Caritas, HEKS, SOLIDAR, TDH). The geographical focus of the projects is mainly in Visayas but also in Bicol and Southern Tagalog. The projects will be implemented partly with own funds, partly funded by Swiss Solidarity.

An interactive map providing an overview of the activities/projects of Swiss NGOs working within the Philippines including title, main focus, location and focal point with email address, can be found online at:

[https://mapsengine.google.com/map/viewer?mid=zhEVYSL6jZeo.kda7RLWI\\_U2E](https://mapsengine.google.com/map/viewer?mid=zhEVYSL6jZeo.kda7RLWI_U2E) . Feedback and updates on the dynamic map are highly appreciated. (Please contact [nstolz@caritas.ch](mailto:nstolz@caritas.ch) ).



## 6 Recommendations for implementation of recovery projects at local level

- **Align** the recovery/ reconstruction project with strategies, plan, policies of the Philippine Government/ UN
- **Co-ordinate** programmes, projects activities **with other actors and exchange information** with them on a regular basis, in particular with other Swiss NGOs working in the same area, in order to take advantage of possible synergies/ avoid duplication
- **Assess quality of local risk management capacity thoroughly/make reality check:** Local Disaster Risk Management Council LDRRMC, Local Disaster Risk Management Office LDRRMO, existence of technically sound multi-hazard risk maps, comprehensive vulnerability mapping etc. (Proposal for questionnaire LGU see Annex 5; for proposed next steps of risk assessment see Annex 1)
- **Strengthen institutional set up at local level:** although DRM measures unfortunately are not included in the activities eligible for funding by **Swiss Solidarity** according to the *Lignes Directrices on Typhoon Haiyan Reconstruction and Rehabilitation*, it is highly recommended to include a component to **strengthen Disaster Risk Management capacities of the LGU** into the recovery/reconstruction project, if weaknesses and gaps at the LGU level have been identified.
- Emergency shelters and emergency response centres should be re-assessed with regard to their location and their exposure to all potential hazards.
- **Integrate Build-Back-Better** approach into the projects, instead of solely re-establish the situation before the disaster.
- **Integrate DRR/ CCA** in a systematic way **into recovery/ reconstruction projects** and programmes, for example by following step by step the procedure as proposed by **CEDRIG**, the Climate, Environment and Disaster Risk Reduction Integration Guidance tool developed by SDC: (Rapid) **Risk Screening** including exposure and hazards, impacts and vulnerabilities (estimation of the overall risks for the activities and impact by the activity) or a detailed risk assessment if needed
- Move towards **prevention** activities as they are more cost effective DRR or mainstream DRR in livelihood projects: Ecosystem based DRR can provide win-win situations (e.g. Mangrove trees can play a vital role as nature's bio-shields as they absorb and dissipate much of the energy of the storm surge from a typhoon, by protecting the mangrove trees, livelihoods and biodiversity can be strengthened and the vulnerability to disasters can be reduced)
- **Increase the resilience of systems and communities** through the project activities: In the case of community resettlements of related to "**No-Dwelling Zone**" (NDZ) ensure directly or through advocacy at LGU level that fundamental human rights of dwellers are respected and pay attention to issues such as the maintenance of social fabric, social infrastructure in resettlement locations and access to employment. Otherwise, the exposure to hazards will be reduced on cost of increased vulnerability and the overall risk will remain unchanged, or the potential conflicts and social costs will even be increased.
- Feed **experience** and lessons learned **at the local level** back into **dialogue at the national level**.

Lucerne, 19.6.2014/updated 8.7.2014  
Barbara Rothenberger, consultant (main author),  
Marc Stal, Global Risk Forum Davos,  
Nicole Stolz, Caritas Switzerland

## Annexes

- Annex 1: Multi-Hazard Risk Assessment, adapted UNDP
- Annex 2: Hazard and risk maps repository
- Annex 3: Major natural disasters in the Philippines 1900-2014 and disaster trends by estimated damage
- Annex 4: Map of activities and geographical focus of Swiss NGOs
- Annex 5: Questionnaire on the stage of DRM implementation at local level
- Annex 6: Structure at local level
- Annex 7: Literature/ Reference Documents, Legal framework
- Annex 8: Abbreviations and acronyms
- Annex 9: Map UNDP Typhoon Haiyan Project Areas
- Annex 10: Recommendations GIZ Early Warning System

## Annex 1: Multi-Hazard Risk Assessment

### MULTI-HAZARD RISK ASSESSMENT

Step 1: Understanding of current situation, needs and gaps to assess what already exists, avoid duplication of efforts, and build on existing information and capacities. This is done through a systematic inventory and evaluation of existing risk assessment studies, available data and information, and current institutional framework and capabilities  
!

Step 2: Hazard assessment to identify the nature, location, intensity and likelihood of major hazards prevailing in a community  
!

Step 3: Exposure assessment to identify population and assets at risk and delineate disaster prone areas in a community  
!

Step 4: Vulnerability analysis to determine the capacity (or lack of it) of elements at risk to withstand the given hazard scenarios at a community  
!

Step 5: Loss/impact analysis to estimate potential losses of exposed population, property, services, livelihoods and environment, and assess their potential impacts on a community  
!

Step 6: Identify cost-effective risk reduction options (calculate potential result of a disaster risk measure against scenarios of possible losses) in order to enhance evidence based risk management.  
!

Step 7: Formulation or revision of DRR strategies and action plans that include setting priorities, allocating resources (financial or human) and initiating DRR programmes.

*The starting point for reducing disaster risk ... lies in the knowledge of the hazards and the physical, social, economic and environmental vulnerabilities ... and of the ways in which hazards and vulnerabilities are changing in the short and long term, followed by action taken on the basis of that knowledge.”*  
– Hyogo Framework for Action 2005-2015

## Annex 2: Hazard & Risk Map Repository

Map provider	Hazard/Risk	Scale/Location	Disaster Phase	Weblink / Source:
GlücksKette . (Choose Philippines from the filter function)	Overview of Aid Projects in the Philippines.	National	Response / Recovery	<a href="http://www.swiss-solidarity.org/en/projects/map.html">http://www.swiss-solidarity.org/en/projects/map.html</a>
International Panel for Climate Change	Climate Change	Global	Prevention	<a href="http://ipcc-wg2.gov/AR5/">http://ipcc-wg2.gov/AR5/</a>
Department of Science and Technology (DOST) Philippines Project NOAH	Typhoon, Storm Surge, Flood	National	Preparedness/Early Warning/Response	<a href="http://noah.dost.gov.ph/">http://noah.dost.gov.ph/</a>
Manila Observatory	Typhoon, Socio economic factors	National	Intervention/Response	<a href="http://www.observatory.ph/Publications/maps?page=1">http://www.observatory.ph/Publications/maps?page=1</a>
Mines and Geosciences Bureau	Multi Hazard	National	Prevention / Recovery	<a href="http://gdis.denr.gov.ph/mgbviewer/">http://gdis.denr.gov.ph/mgbviewer/</a>
Munich Re		Global	Prevention	<a href="http://www.munichre.com/site/corporate/get/documents/mr/assetpool.shared/Documents/0_Corporate%20Website/_Publications/302-05972_en.pdf">http://www.munichre.com/site/corporate/get/documents/mr/assetpool.shared/Documents/0_Corporate%20Website/_Publications/302-05972_en.pdf</a>
Philippine Institute of Volcanology and Seismology	Seismological	National	Prevention / Recovery	<a href="http://www.phivolcs.dost.gov.ph">www.phivolcs.dost.gov.ph</a>
Philippine Maps	Multi Hazard	National, Local	Prevention	<a href="http://www.maps.nfo.ph">http://www.maps.nfo.ph</a>
Preventionweb	Tsunami, Multi Hazard	National, Manila	Prevention / Recovery	<a href="http://www.preventionweb.net/english/professional/maps/?cid=135">http://www.preventionweb.net/english/professional/maps/?cid=135</a>
READY Project	Volcanic, Tsunami, Storm Surge/Typhoon, Rain induced Landslide, Liquefaction, Ground Shaking, Ground Rupture, Flood, Earthquake, Earthquake induced landslide	Leyte, Souther Leyte, Surigao del Norte, Bohol, Eastern Samar	Prevention / Recovery	<a href="http://ndcc.gov.ph/index.php?view=category&amp;catid=1&amp;option=com_joomgallery">http://ndcc.gov.ph/index.php?view=category&amp;catid=1&amp;option=com_joomgallery</a>
Reliefweb	Multi Hazard	National, Regional	Intervention / Response	<a href="http://reliefweb.int/updates?f[0]=field_country%3A188&amp;f[1]=field_content_format%3A12">http://reliefweb.int/updates?f[0]=field_country%3A188&amp;f[1]=field_content_format%3A12</a>
Swiss NGO's	Overview of ongoing DRR Projects of Swiss NGOs working in the Philippines	National	Response / Recovery	<a href="https://mapsengine.google.com/map/edit?mid=zhEVYSL6jZeo.kda7RLWI_U2E">https://mapsengine.google.com/map/edit?mid=zhEVYSL6jZeo.kda7RLWI_U2E</a>
The Philippine Geoportal	Multi Hazard	National	Prevention / Recovery	<a href="http://www.geoportal.gov.ph/">http://www.geoportal.gov.ph/</a>

## Annex 3: Disaster Trends for the Philippines

Disaster trends for the Philippines show that the impacts of disasters are increasing, not only by total people affected (cp. Table 2, Table 3, Figure 1), but also by the impacts of disaster trends by estimated damage (cp. Table 1, Figure 3). The disaster trends also highlight that hydro-meteorological disasters and climatological disasters, all of which could be linked as impacts of climate change, are significantly increasing the number of people affected as well as the estimated damage.

**Table 1: Top 10 Natural Disasters in Philippines for the period 1900 to 2014 sorted by economic damage costs:**

Disaster	Date	Damage (000 US\$)
Storm	11/8/2013	10'000'000
Flood	8/13/2013	2'190'000
Storm	12/4/2012	898'352
Flood	9/4/1995	700'300
Storm	9/29/2009	585'379
Storm	11/12/1990	388'500
Earthquake (seismic activity)	7/16/1990	369'600
Storm	9/24/2011	344'173
Storm	6/21/2008	284'694
Storm	10/18/2010	275'745

Source: "EM-DAT: The OFDA/CRED International Disaster Database  
www.em-dat.net - Université Catholique de Louvain - Brussels - Belgium"

**Table 2: Top 10 Natural Disasters in Philippines for the period 1900 to 2014 sorted by numbers of total affected people:**

Disaster	Date	No Total Affected
Storm	11/8/2013	16'106'807
Storm	12/4/2012	6'246'664
Storm	11/12/1990	6'159'569
Storm	9/24/2009	4'901'763
Storm	6/21/2008	4'785'460
Storm	9/29/2009	4'478'491
Flood	8/6/2012	4'451'725
Storm	10/21/1998	3'902'424
Storm	9/27/2006	3'842'406
Storm	11/20/1973	3'400'024

Source: "EM-DAT: The OFDA/CRED International Disaster Database  
www.em-dat.net - Université Catholique de Louvain - Brussels - Belgium"

**Table 3: Top 10 Natural Disasters in Philippines for the period 1900 to 2014 sorted by numbers of killed:**

Disaster	Date	No Killed
Storm	11/8/2013	7'986
Earthquake (seismic activity)	8/16/1976	6'000
Storm	11/5/1991	5'956
Earthquake (seismic activity)	7/16/1990	2'412
Storm	12/4/2012	1'901
Storm	11/29/2004	1'619
Storm	10/13/1970	1'551
Storm	12/15/2011	1'439
Storm	9/1/1984	1'399
Storm	11/30/2006	1'399

Source: "EM-DAT: The OFDA/CRED International Disaster Database  
www.em-dat.net - Université Catholique de Louvain - Brussels - Belgium"

# Philippines Natural Disaster Trends

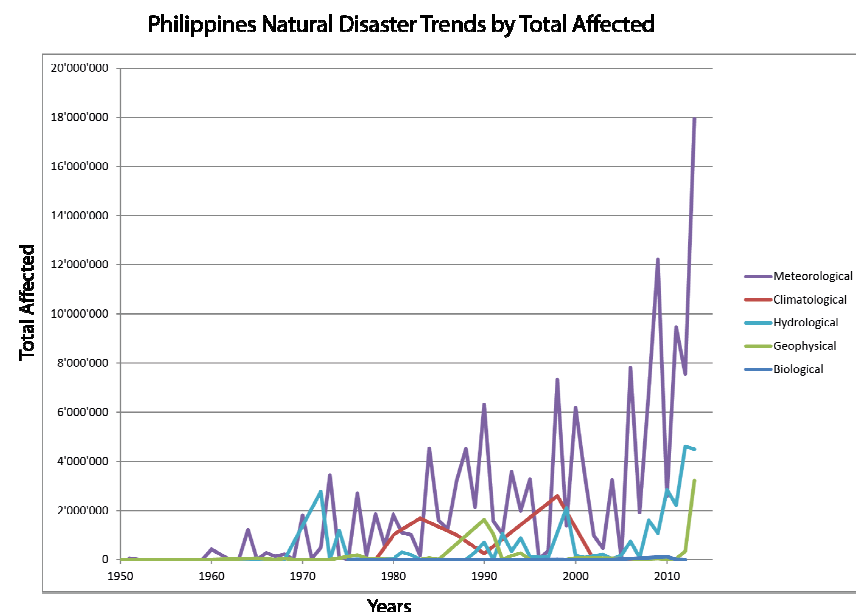


Figure 1<sup>1</sup>: Philippines Natural Disaster Trends by Total Affected

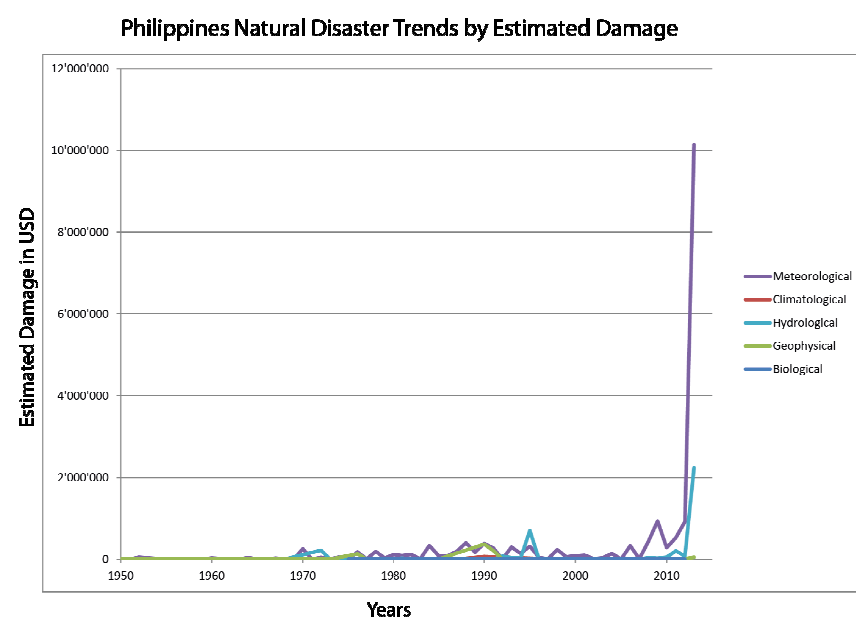


Figure 2<sup>1</sup>: Philippines Natural Disaster Trends by Estimated Damage

<sup>1</sup> **Classifications:** **Geophysical:** Events originating from solid earth (e.g. Earthquake, Volcano, Mass Movement (dry)); **Meteorological:** Events caused by short-lived/small to meso scale atmospheric processes (in the spectrum from minutes to days), (e.g. Storm); **Hydrological:** Events caused by deviations in the normal water cycle and/or overflow of bodies of water caused by wind set-up (e.g. Flood, Mass Movement (wet)); **Climatological:** Events caused by long-lived/meso to macro scale processes (in the spectrum from intra-seasonal to multi-decadal climate variability) (e.g. Extreme Temperature, Drought, Wildfire); **Biological:** Disaster caused by the exposure of living organisms to germs and toxic substances (e.g. Epidemic, Insect infestation, Animal Stampede)  
 More information online at: EM – Dat Classification: <http://www.emdat.be/classification>  
**Total affected:** Sum of killed, injured, homeless, and affected.  
 More information online at: EM – Dat Classification: <http://www.emdat.be/criteria-and-definition>  
**Estimated Damage:** Several institutions have developed methodologies to quantify these losses in their specific domain. However, there is no standard procedure to determine a global figure for economic impact. Estimated damage are given (000') US\$.  
 More information online at: EM – Dat Classification: <http://www.emdat.be/criteria-and-definition>



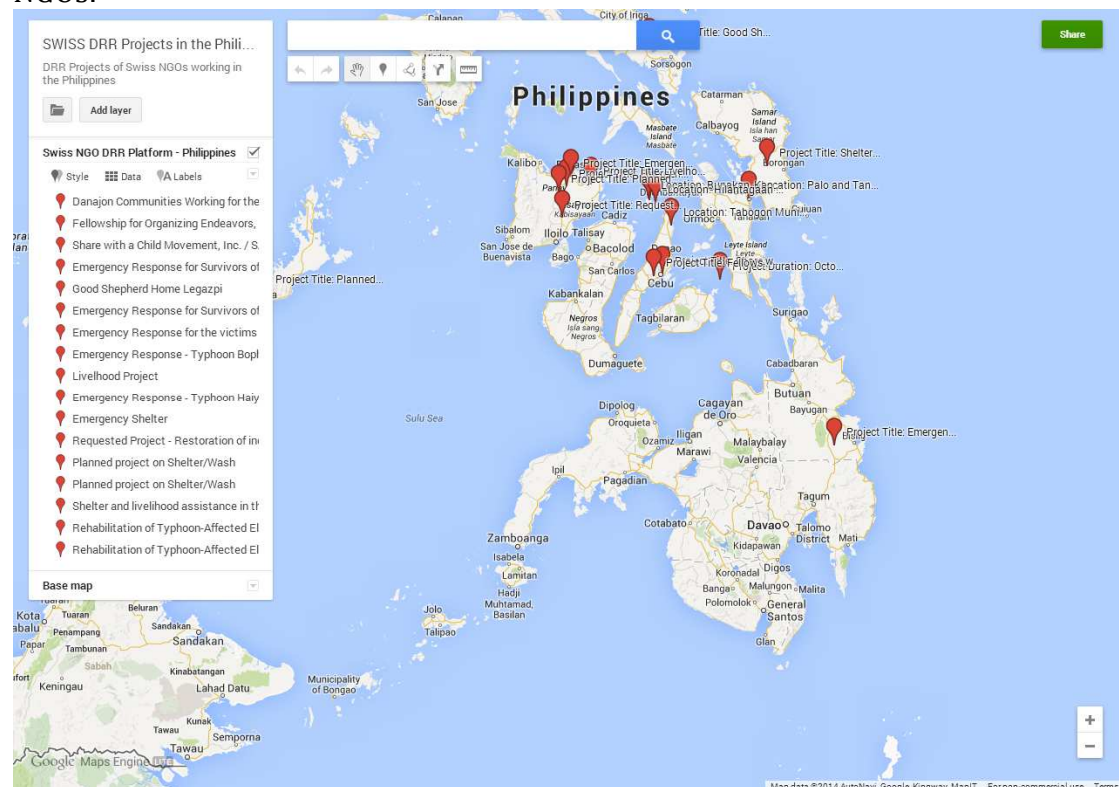
## Annex 4: Map of activities and geographical focus of Swiss NGOs

An interactive map providing an overview of the activities/projects of Swiss NGOs working within the Philippines including title, main focus, location and focal point with email address, can be found online at:

[https://mapsengine.google.com/map/edit?mid=zhEVYSL6jZeo.kda7RLWI\\_U2E](https://mapsengine.google.com/map/edit?mid=zhEVYSL6jZeo.kda7RLWI_U2E)

Feedback and updates on the dynamic map are highly appreciated. (Please contact [nstolz@caritas.ch](mailto:nstolz@caritas.ch) )

Screenshot of the interactive map of activities and geographical focus of Swiss NGOs:



**Annex 5: Questionnaire on the stage of implementation of Disaster Risk Reduction at Local Level in the area affected by typhoon Haiyan in the Philippines**

**Municipality/ Barangay:**

Existing DRR/DRM structure	Stage	Comment
Short <b>description</b> of the municipality (number of inhabitants, surface, number and names of barangays etc.)		
Does a <b>Local DRRM Council</b> exist in your area? <ul style="list-style-type: none"> <li>Background of the members of the LDRRMC? (representatives of local authorities, focal points ministries, Civil society, private sector)</li> </ul>		
Is there a <b>Local DRRM Office</b> LDRRMO? <ul style="list-style-type: none"> <li>Number and background of staff/ pre-existing LGU-officer(s)?</li> <li>Activities?</li> </ul>		
Does a comprehensive and integrated LDRRMP <b>Local DRRM Plan</b> exist? <ul style="list-style-type: none"> <li>Who has the lead in the implementing the LDRRMP?</li> <li>Who was involved in the elaboration of the LDRRMP?</li> </ul>		
<ul style="list-style-type: none"> <li>How has DRM been integrated into the comprehensive development plan <b>CDP</b>?</li> <li>What DRR measures are included in the local budget for the fiscal year?</li> </ul>		
When has the <b>local CLUP Comprehensive land-use plan</b> been enforced? <ul style="list-style-type: none"> <li>How has DRM been integrated into the CLUP?</li> <li>When has the CLUP been updated for the last time?</li> </ul>		
<b>What kind of local hazard maps do exist?</b> (Type of hazards/ multi-hazard/ scale?)		
Did the community participate in the <b>READY project of UNDP</b> (with focus on hazard maps and community-based early warning systems) or any other DRM-projects?		
For which- <b>types of hazards</b> are there <b>early warning systems</b> in place?		

How has the <b>underlying vulnerability</b> of the communities been assessed and integrated into the <b>risk maps</b> ?		
Is there a <b>local Haiyan/Yolanda Recovery Plan</b> ? Financial mechanism/ contingency planning: How many extra funds does the LGU receive for Recovery and Reconstruction, e.g. Local Calamity Fund from the central government? Quick impact grants? Own recourses (revenue, taxes)?		
Has a declared “ <b>No-Dwelling Zone</b> ” ( <b>NDZ</b> ) within 40 meters of the shoreline been designated? What is the humanitarian impact for those affected? What kind of resettlement plan does exist, support in preparation for the upcoming typhoon season. Assistance to people living in the NDZ?		
What kind of <b>technical support</b> does the community/LGU receive from the five <b>UNDP-resource hubs</b> / advisory/technical assistance from <b>OCD</b> ?		
How has the community <b>prepared for the next rain and typhoon season</b> beginning in June? How many % of individual houses have been reconstructed? Are the designated evacuation centers usable and situated in safe areas?		
In which area of Disaster Risk Reduction do you (LGU/ LDRRMO) need <b>support</b> ?		

### 1) DRM Set-up at local level (city, municipal and Barangay level)

*At the local government level, it is the primary duty of the **Local DRRM Council** to ensure that DRRM is mainstreamed into their respective **CDP** and **CLUP** and other local plans, programs and budgets as a strategy in sustainable development and poverty reduction. By doing so, the LGUs will be sure that their respective DRRM-programs will be included in their local budgets for each fiscal year. ...*

#### **Local Disaster Risk Reduction and Management Offices (LDRRMOs)**

*The Local DRRM Offices (LDRRMOs) at the provincial, city and municipal levels and the Baranagay Development Councils shall design, program and coordinate DRRM activities consistent with the NDRRMP and develop the Local DRRM Plan of their respective LGUs. The LDRRMPs shall be consistent and aligned with the targets set by the NDRRMP. Likewise, this office shall take the lead in implementing the LDRRMP.*

### 2) **READY- project “Hazards Mapping and Assessment for Effective Community-Based Disaster Risk Management Project”**

*Multi-hazard mapping and assessment project with technical assistance from UNDP and in partnership with key government agencies such as, PHI VOLCS, PAG-ASA, MGB, NAMRIA, and others government agencies, implemented in 27 provinces mostly located along the eastern part of the Philippines. (Budget: US \$1.9 million/ grant from the AusAID) The project has helped established hazard maps and community-based early warning systems. Under the project, PHIVOLCS has also introduced the use of hazard and risk assessment software called Rapid Earthquake Damage Assessment System (REDAS). The software includes dynamic evaluation of earthquake hazards and information of at risk elements at the community.*

### 3) **Hubs of Early Recovery and Livelihood Cluster:**

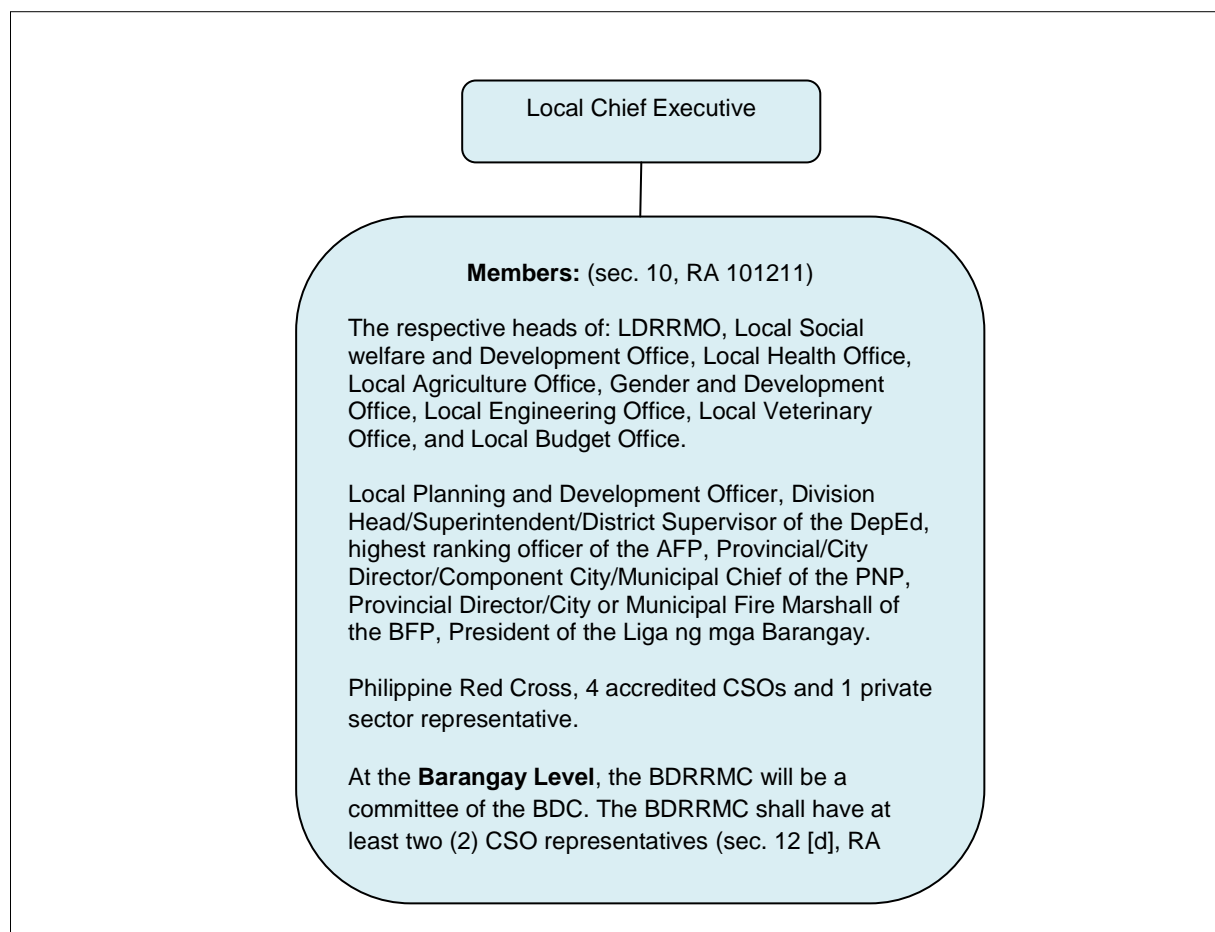
*Five regional, well-equipped resource hubs will be created to provide direct support to the LGUs in region VI (Iloilo, Capiiz) and region VIII (Eastern Samar, Western Samar, Leyte). Each of the five hubs will be staffed with a team leader and seven experts provided by UNDP, UN-HABITAT, and the Human Rights Commission (vulnerability assessment; land planning and management; resettlement planning; urban planning; disaster management; community mobilization).*

## Annex 6 Structure at LGU level

### Provincial, City, Municipal Disaster Risk Reduction and Management Councils (P/C/MDRRMCs or LDRRMCs)

At the local government level, it is the primary duty of the LDRRMC to ensure that DRRM is mainstreamed into their respective *Comprehensive Development Plan CDP* and *Comprehensive Land Use Plan CLUP* and other local plans, programs and budgets as a strategy in sustainable development and poverty reduction. Thus the DRRM-programmes will be included in their local budgets for each fiscal year. As a first step, the local DRRM Plan has to be developed by the LDRRMO using the National DRRM Plan as an overall guide.

#### Structure of LDRRMC:

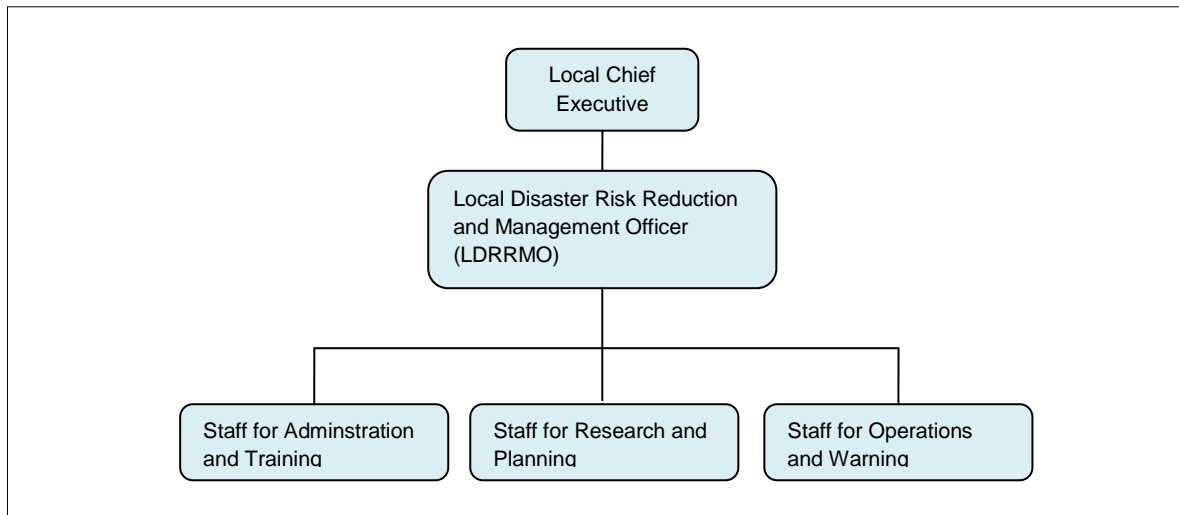


#### Functions of the LDRRMCs:

- Approve, monitor and evaluate the implementation of the LDRRMPs and regularly review and test the plan consistent with other national and local planning programs;
- Ensure the integration of disaster risk reduction and climate change adaptation into local development plans, programs and budgets as a strategy in sustainable development and poverty reduction;
- Recommend the implementation of forced or preemptive evacuation of local residents, if necessary; and
- Convene the local council once every three (3) months or as necessary.

To ensure the implementation of RA 10121 at the local level, the law created the **Local Disaster Risk Reduction and Management Office LDRRMO**:

### Structure of LDRRMO



- The DRRM Officer must have the following qualifications:
  - a. Civil Service eligible
  - b. Civil Defense/DRM experience
- For the purpose of implementing RA10121 at the local level, the Local Calamity Fund will be called the Local Disaster Risk Reduction and Management Fund (LDRRMF).
- Not less than 5% of the estimated revenue from regular sources shall be set aside as the LDRRMF. 30% of which should be allocated as Quick Response Fund.

### **Local Disaster Risk Reduction and Management Offices (LDRRMOs)**

The Local DRRM Offices (LDRRMOs) at the provincial, city and municipal levels and the Baranagay Development Councils shall design, program and coordinate DRRM activities consistent with the NDRRMP and develop the Local DRRM Plan of their respective LGUs. The LDRRMPs shall be consistent and aligned with the targets set by the NDRRMP. Likewise, this office shall take the lead in implementing the LDRRMP.

To do this, the office shall

- 1) Facilitate and support risk assessments and contingency planning activities at the local level; Consolidate local disaster risk information which includes natural hazards, vulnerabilities and climate change risks and maintain a local risk map;
- 2) Formulate and implement a comprehensive and integrated LDRRMP in accordance with the national, regional and provincial framework and policies on DRR in close coordination with the local development councils (LDCs)
- 3) Prepare and submit to the local sanggunian through the LDRRMC and the LDC the annual LDRRMO Plan and budget, the proposed programming of the LDRRMF, other dedicated DRRM resources and other regular funding source/s and budgetary support of the LDRRMO/BDRRMC.
- 4) Conduct continuous disaster monitoring
- 5) Identify, assess and manage the hazards, vulnerabilities and risks that may occur in their locality
- 6) Disseminate information and raise public awareness
- 7) Identify and implement cost-effective risk reduction measures/strategies
- 8) Maintain a database of human resource, equipment, directories and local of critical infrastructures and their capacities such as hospitals and evacuation centers
- 9) Develop, strengthen and operationalize mechanisms for partnership or networking with the private sector, CSOs, and volunteer groups



## Annex 7: Literature/ Reference documents, WebSites

### International DRR framework

- UN/ISDR 2005: *Hyogo Framework for Action 2005–2015: Building the Resilience of Nations and Communities to Disasters*. World Conference on Disaster Reduction, 18–22 January 2005, Kobe, Hyogo, Japan. Geneva: United Nations, Inter-Agency Secretariat of the International Strategy for Disaster Reduction.

### Legal Framework, policies Philippines

#### DRR

- Gov.Ph. 2009: Strategic National Action Plan on Disaster Risk Reduction SNAP 2009-2019,
- Gov.Ph. 2010: Philippine Disaster Risk Reduction and Management Act of 2010 (RA10121)
- Gov.Ph. / NDRRMC 2010: Implementing Rules and Regulation of RA10121, September 2010
- Gov.Ph. 2011: The National Disaster Risk Reduction and Management Plan, NDRRMP 2011 to 2028, December 2011

#### CC

- Gov.Ph. 2009: CCA (RA 9729 or Climate Change Act of 2009)
- Gov.Ph. 2009: National Climate Change Action Plan 2011--2028
- Gov.Ph. 2009: Memorandum of Understanding MoU between the National Disaster Risk Reduction and Management Council NDRRMC and Climate Change Commission CCC, 2011

### Mainstreaming

- Benson, Charlotte 2009: Mainstreaming Disaster Risk Reduction into Development: Challenges and Experience in the Philippines, Provention Consortium
- Gov.Ph. NEDA, UNDP and DipECHO 2008: *Guidelines on Mainstreaming Disaster Risk Management in Regional and Provincial Development and Physical Framework Plans*. Manila: National Economic and Development Authority, United Nations Development Programme and Disaster Preparedness European Commission Humanitarian Aid Department.
- SDC 2012: CEDRIG- Climate, Environment and Disaster Risk Reduction Integration Guidance, Bern 2012

### Resilience

- Twigg, John 2009: Characteristics of a disaster resilient community- a guidance note, London November 2009

### DRR Progress Reports

- GFDRR 2009: Disaster Risk Management Programs for Priority Countries, East Asia and Pacific, Philippines (Country Note, 2009)
- GFDRR 2012: Philippines Country Update, October 2012
- Gov.Ph. OCD& NDRRMC 2011: Philippines: National Progress Report on the Implementation of the Hyogo Framework for Action (HFA) in the Philippines, 2009-2011 – interim, March 2011

### Typhoon Haiyan/Yolanda reports/ assessments/ lessons learned

- GIZ, EC-DIPECHO 2014: Assessment of Early Warning Efforts in Leyte for Typhoon Haiyan/Yolanda, Manila, March 2014
- IOM 2014: Damage assessment of designated evacuation centers in typhoon-affected areas, Eastern Samar, Philippines, April 2014
- OXFAM: Typhoon Haiyan- The response so far and vital lessons for the Philippine recovery, Dec. 2013
- ASEM: Tacloban Declaration, Manila, June 2014
- OCHA 2014: Humanitarian Bulletin Philippines, Issue 25/1-30 June 2014; Snapshot 07.07.2014

### Typhoon Haiyan/Yolanda recovery plans

- Philippine Humanitarian Country Team HCT 2014: Typhoon Haiyan (Yolanda)- Early Recovery, Livelihoods and Agriculture Plan March 2014- November 2014, February 2014
- UNDP 2014: Support to Typhoon Recovery and Resilience in the Visayas- Programme Document, January 2014
- Gov.Ph. 2013: Reconstruction Assistance on Yolanda RAY- Build-Back-Better, December 2013
- UN 2013: Typhoon Haiyan Strategic Response Plan SRP, December 2013

### Web-sites

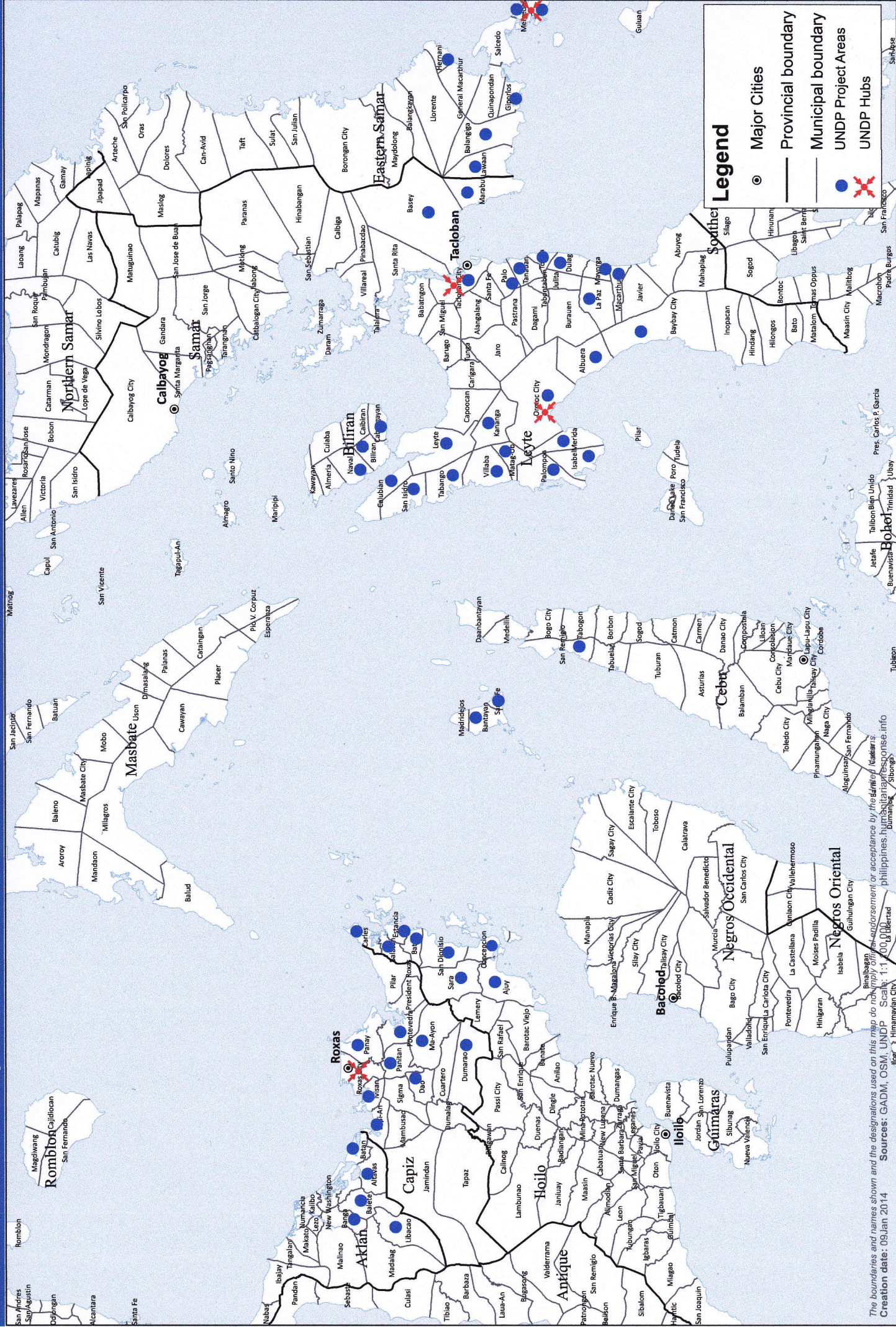
- ReliefWeb: [www.reliefweb.int](http://www.reliefweb.int)
- UNOCHA: [www.unocha.org/crisis/typhoonhaiyan](http://www.unocha.org/crisis/typhoonhaiyan)
- UNISDR: [www.unisdr.org](http://www.unisdr.org)
- PreventionWeb: [www.preventionweb.net](http://www.preventionweb.net)
- UNDP: [www.ph.undp.org](http://www.ph.undp.org)
- National Disaster Risk Reduction and Management Council NDRRMC: [www.ndrrmc.gov.ph](http://www.ndrrmc.gov.ph)
- Department of Interior and Local Government DILG: [www.dilg.gov.ph](http://www.dilg.gov.ph)
- Philippine Disaster Recovery Foundation pdf: <http://www.pdrf.org>
- DRR Knowledge Web Site: <http://drknowledge.net/project-overview>
- Asian Development Bank ADB: <http://www.adb.org>

## **Annex 8: Acronyms and Abbreviations**

CCA	Climate Change Adaptation
CCC	Climate Change Commission
CDRRMC	City Disaster Risk Reduction and Management Council
DENR	Department of Environment and Natural Resources
DepED	Department of Education
DILG	Department of the Interior and Local Government
DOH	Department of Health
DOST	Department of Science and Technology
DPWH	Department of Public Works and Highways
DRR	Disaster Risk Reduction
DRRM	Disaster Risk Reduction and Management
DSWD	Department of Social Welfare and Development
GDP	Gross Domestic Product
GIS	Geographic Information System
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
HFA	Hyogo Framework for Action
HUDCC	Housing and Urban Development Coordinating Council
IEC	Information, Education and Communication
JRC	Joint Research Centre
LDRRMF	Local Disaster Risk Reduction and Management Fund
LDRRMO	Local Disaster Risk Reduction and Management Office
LGUs	Local Government Units
LWUA	Local Water Utilities Administration
MDG	Millennium Development Goals
MDRRMC	Municipal Disaster Risk Reduction and Management Council
MGB	Mines and Geosciences' Bureau
NAMRIA	National Mapping Resource and Information Authority, DENR
NCCAP	National Climate Change Action Plan
NDRRMC	National Disaster Risk Reduction and Management Council
NDRRMF	National Disaster Risk Reduction and Management Fund
NEDA	National Economic and Development Authority
NOAH	National Organizational Assessment of Hazards
OCD	Office of Civil Defence
PAGASA	Philippine Atmospheric, Geophysical and Astronomical Services Administration
PAR	Philippine Area of Responsibility
PDP	Philippine Development Plan
PDRRMC	Provincial Disaster Risk Reduction and Management Council
PHIVOLCS	Philippine Institute of Volcanology and Seismology
PPP	Public-Private Partnership
READY	Hazards Mapping and Assessment for Effective Community-Based Disaster Risk Management
RDRRMC	Regional Disaster Risk Reduction and Management Council
SNAP	Strategic National Action Plan
UNISDR	United Nations International Strategy for Disaster Reduction



# Post-disaster Recovery and Resilience in Typhoon Yolanda Affected Areas



The boundaries and names shown on this map do not constitute an endorsement or acceptance by the United Nations. Sources: GADM, OSM, UNDP. Scale: 1:1,000,000. Creation date: 09 Jan 2014. [philippines.humanitarianresponse.info](http://philippines.humanitarianresponse.info)



## Recommendations

Below are summaries of the most pertinent recommendations for each stakeholder (group). More detailed explanations are given in the main report.

### For Scientific Institutions

- PAGASA's technical capacity should be improved to provide more accurate information for storm surge warnings and hazard maps.
- NOAH sensors should switch to HF radio or satellite phones for uninterrupted transmission of data.
- Storm surge hazard maps should be adjusted taking the recent experiences into consideration.

### For OCD and DOST

- Warnings should use layman's language and clearly emphasise the seriousness of a particular hazard.
- A colour coded harmonized multi-hazard early warning system should be introduced.
- Storm surge should be included in the official warning system (similar to tsunami).

### For Disaster Risk Reduction Offices/Committees

- Officials tasked with disaster management (e.g. OCD, rescuers, mayors) should not stay in high risk areas when an extreme hazard event is imminent. They may become victims themselves.
- Delineate identified danger zones (tsunami, storm surge) clearly with sign posts.
- Mark evacuation routes and evacuation centers with sign posts.
- Survey existing evacuation centers and identify those within danger zones.
- Assign evacuation centres depending on hazard.
- Reinforce evacuation centres depending on hazard.
- Consider strict enforcement of forced evacuation (example Albay).

### For land use planners

- Assign new evacuation centres outside danger zones and clearly indicate which evacuation centers are off-limit for which particular hazards.
- Consider locally customized no-build zones in high risk areas.
- Consider conditional build zones (e.g. only buildings with special reinforcements; only business, but no residence, etc.)