



# Typhoon Hagupit (Ruby) Disaster Risk Reduction Situation Report<sup>1</sup>

DRR sitrep 2014-002 - updated December 4, 2014, 15:00 CET

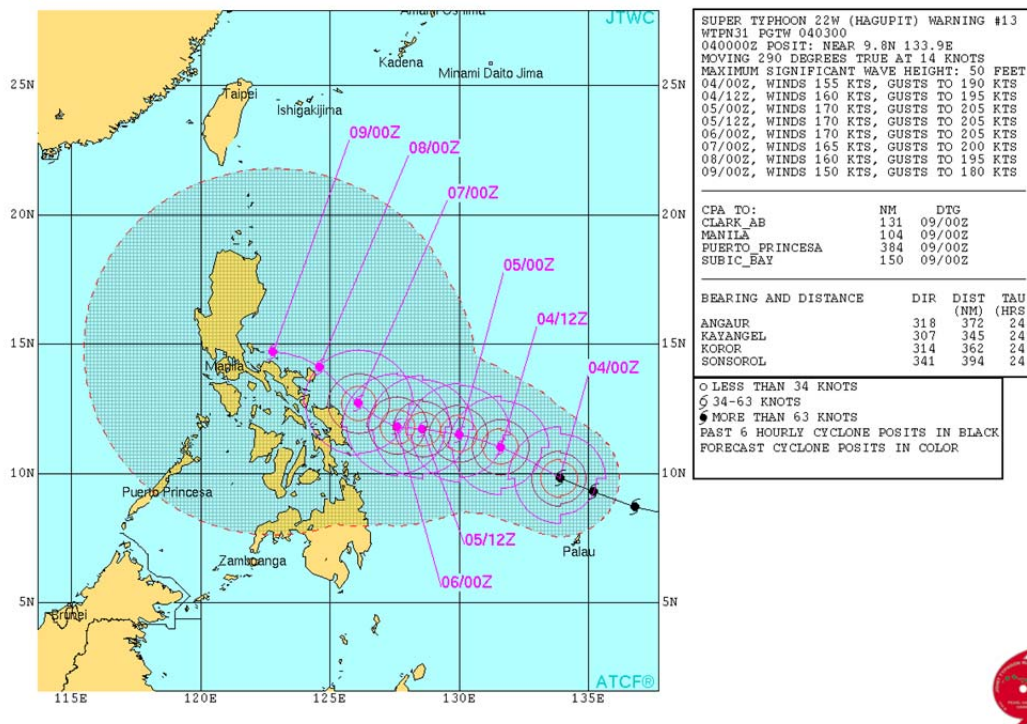
## Summary Report

### Ongoing typhoon situation

Typhoon Hagupit, locally named "Ruby", rapidly intensified into a super typhoon as it entered the Philippine Area of Responsibility (PAR) early this morning, increasing its threat to Eastern Philippines. According to the United Nations Office for the Coordination of Humanitarian Affairs, if Hagupit continues on its projected track, an estimated 4.5 million people will be within a 65-kilometer radius of damaging winds.

The Philippine Department of the Interior and Local Government (DILG) on Wednesday ordered local leaders in the Visayas and Mindanao to immediately evacuate residents leaving in coastal communities in preparation for Super Typhoon Hagupit. The order was contained in an alert bulletin issued by the department to local government units in Regions 5, 7, 8 and 13 (CARAGA Region) on Wednesday afternoon.

### Joint Typhoon Warning Center (JTWC) Warning Graphic:

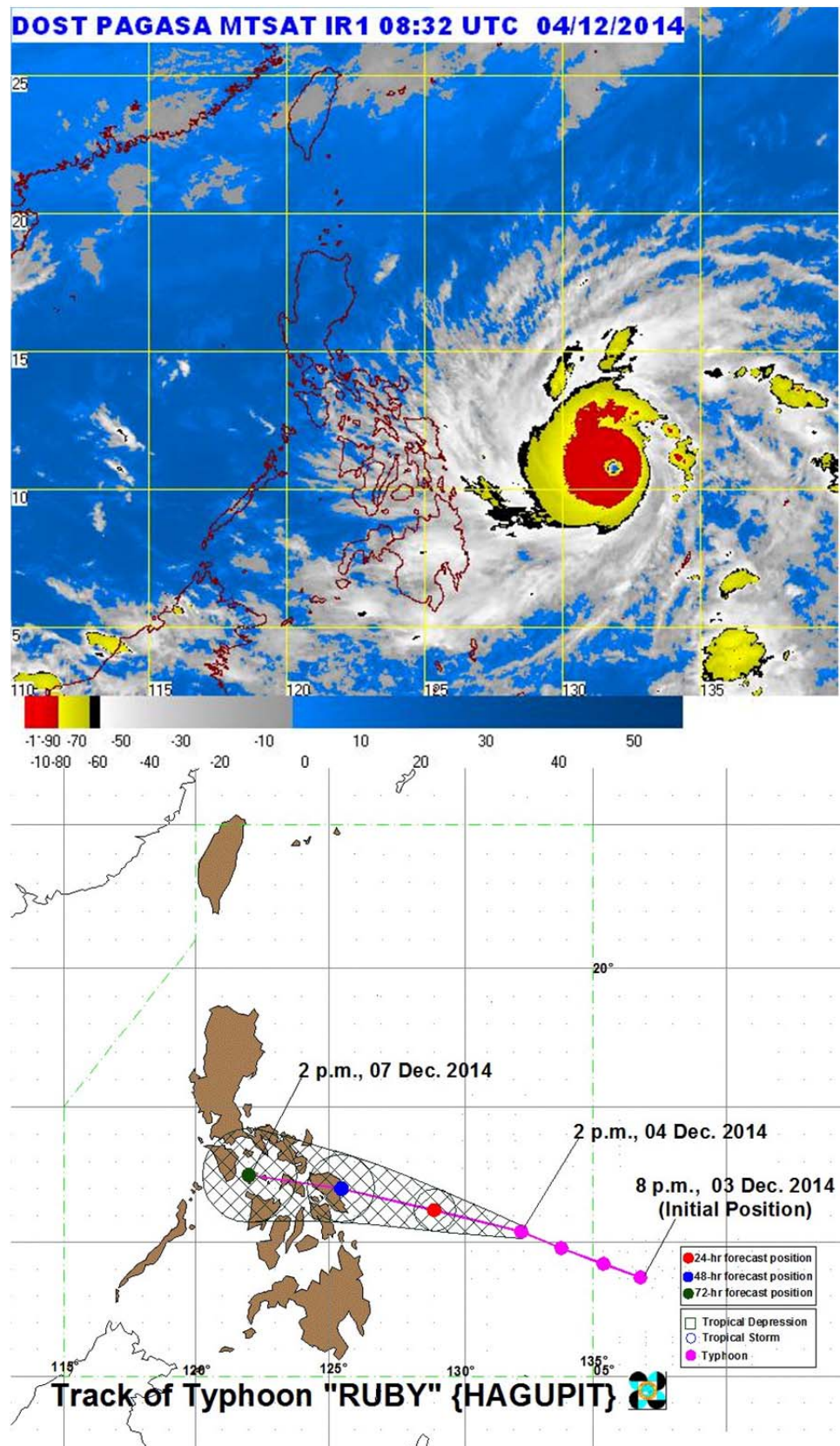


<sup>1</sup> This situation report introduces Super Typhoon Hagupit's intensity and track, the regions to be affected in the Philippines and the potential damages of Super Typhoon Hagupit. It then presents historical background and details on the current situation in the Philippines, previous typhoons in the Philippines, the casualties and damages associated with them, as well as facts and figures related to other hydro-meteorological disasters in the Philippines. It additionally provides some background information about the Philippines, including the main indicators and governance system for disaster risk reduction. Finally, it offers some disaster preparedness recommendations in relation to this specific event.

<sup>2</sup> <http://www.usno.navy.mil/NOOC/nmfc-ph/RSS/jtwc/warnings/wp2214.gif>



Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA):



<sup>3</sup> <http://www.gov.ph/2014/12/04/weather-bulletin-no-3-tropical-cyclone-warning-typhoon-ruby-issued-at-500-p-m-december-4-2014/>

**What are the most devastating cyclones to hit the Philippines in recent memory?**

Super Typhoon Hagupit is expected to broadly follow the path of Haiyan, the super typhoon that last year claimed more than 6,300 lives and cost the economy around \$12 billion in damages.

**What are the underlying drivers of cyclone disaster risks in the Philippines?**

- In its briefing paper “In the shadow of the storm”, Oxfam highlighted that while national legislation is in place in the Philippines, the absence of fully functional disaster management structures and plans at local levels reflects a broader weakness in the capacity of local government units (LGUs) to translate laws into a more resilient reality for those affected by typhoon Haiyan. Capacity building at the local level, including with local authorities, civil society organizations and communities themselves, is a necessary foundation for a more operational and inclusive disaster management system in the Philippines.<sup>4</sup>
- According to HSBC Global Research released in 2013, while Typhoon Haiyan (called Yolanda in the Philippines) caused great devastation in Leyte province and the surrounding area, where the storm destroyed homes and crops, and cut power and communication lines, with an estimated death toll of around 10,000 and 20,000 homes destroyed, the economic impact has been less severe on a national scale. Natural disasters cost the country between USD1.6bn and USD2.7bn a year, according to some estimates. In the next three years, the government aims to raise infrastructure spending to 5% of GDP from 3%. HSBC expected the Philippines to remain resilient.<sup>5</sup>
- In the 2014 Post-Haiyan Tacloban Declaration adopted at the ASEM Manila Conference on DRR (Manila, 4-6 June 2014), stakeholders in DRRM, including senior national and local government officials, experts, international and regional organizations, international humanitarian assistance organizations, NGOs, private sector, civil society and media, called to:
  - Identify local governments as first responders and builders of local resilience in times of disasters;
  - Improve governance within all disaster risk reduction and management (DRRM) stakeholders;
  - Introduce a DRRM perspective in development planning and efforts, including in economic and financial decisions and strategies;
  - Ensure affordable and accessible science, innovation and engineering methods to the needs of disaster-prone situations;
  - Protect and empower vulnerable groups including indigenous people, women, children, displaced and the elderly; support a people-centered approach to DRRM;
  - Scale up education and develop systematic actions on DRRM and climate change;
  - Ensure availability of reliable and real-time information in every emergency response situation;
  - Acknowledge the power of national government to consider “possible contribution” of the military in early response in case of mega disasters;
  - Recognize the role of the media in raising awareness, distributing early warning and disseminating best practices on DRRM.<sup>6</sup>

<sup>4</sup> <http://www.preventionweb.net/english/professional/publications/v.php?id=40265>

<sup>5</sup> <http://www.preventionweb.net/english/professional/publications/v.php?id=35516>

<sup>6</sup> <http://www.preventionweb.net/english/policies/v.php?id=37805&cid=135>



## What can you do to prepare?

Philippine National Police (PNP) chief Director General Alan Purisima has ordered regional directors of areas where Super Typhoon Hagupit (Ruby) is expected to make landfall to prepare for the “Yolanda-like” (Typhoon Haiyan) weather disturbance.<sup>7</sup>

On 3 December, the Government’s emergency response clusters were convened in preparation for the typhoon. Government line agencies continue to pre-position goods and personnel in possible affected areas in central Philippines. A Humanitarian Civil-Military Coordination Centre will also be established and co-located in the National Disaster Risk Reduction and Management Council's (NDRRMC) operation centre to support logistics operations. Pre-emptive evacuation of people along coastal areas is a priority according to government officials. In Region VIII (areas affected by Typhoon Haiyan), humanitarian partners are supporting local authorities in mapping evacuation centres and movement of Typhoon Haiyan-affected people still living in tents.

The Humanitarian Country Team’s (HCT) Emergency Response Preparedness Working Group also met for initial response planning including the potential conduct of joint rapid needs assessment with the Government. A meeting between the NDRRMC, the HCT and private sector representatives will be held in the afternoon to discuss the National Disaster Response Plan and preparedness measures for Typhoon Hagupit.<sup>8</sup>

### Related:

- [View Typhoon Haiyan 2013 DRR related publications](#)
- [View Typhoon Haiyan 2013 DRR related news](#)

## 1. Super Typhoon Hagupit intensity and track

### 1.1. Locations to be affected

According to JTWC’s update issued at 5:00 AM Thursday (Manila time), Hagupit (known locally as Ruby) was maintaining a “west-northwestward trajectory under the steering influence of the subtropical ridge.” The JTWC clarified further that the super typhoon Hagupit forecasts to pack as much as 296 kph (160 knots) winds by December 7, Sunday, at around 2:00 PM when its nearer the Philippines. JTWC noted that the super typhoon Hagupit is seen heading slightly north and towards Luzon, avoiding the Yolanda-hit region of Visayas.<sup>9</sup>

The super typhoon entered the Philippine Area of Responsibility around 3:30 a.m. (Manila time) on 4 December according to the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA). As of 10:00 a.m., Hagupit was 860 km east of Surigao City in Surigao del Norte province. Hagupit is projected to be 30 km northeast of Borongan City in Eastern Samar province (Region VIII, Eastern Visayas) in the morning of 6 December and make landfall on Samar Island by noon. Other forecast models, however, indicate that the typhoon’s track remains unpredictable.<sup>10</sup>

<sup>7</sup> <http://newsinfo.inquirer.net/654447/police-told-to-prepare-for-hagupit#ixzz3KvVZ1a3t>

<sup>8</sup> <http://reliefweb.int/report/philippines/ocha-flash-update-philippines-typhoon-hagupit-4-december-2014>

<sup>9</sup> <http://www.tropicalstormrisk.com/tracker/dynamic/201422W.html>

<sup>10</sup> <http://reliefweb.int/report/philippines/ocha-flash-update-philippines-typhoon-hagupit-4-december-2014>



## 1.2. Potential damages of Super Typhoon Hagupit

Hagupit isn't expected to be as strong as Haiyan, which whipped over 300-kilometer-per-hour winds that stoked 6-meter high storm surges, but will still be capable of uprooting trees, blowing roofs off houses and whipping up storm surges.<sup>11</sup>

Category	Sustained Winds	Types of Damage Due to Hurricane Winds
1	74-95 mph 64-82 kt 119-153 km/h	<b>Very dangerous winds will produce some damage:</b> Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
2	96-110 mph 83-95 kt 154-177 km/h	<b>Extremely dangerous winds will cause extensive damage:</b> Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.
3 (major)	111-129 mph 96-112 kt 178-208 km/h	<b>Devastating damage will occur:</b> Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
4 (major)	130-156 mph 113-136 kt 209-251 km/h	<b>Catastrophic damage will occur:</b> Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5 (major)	157 mph or higher 137 kt or higher 252 km/h or higher	<b>Catastrophic damage will occur:</b> A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

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## 1.3. Potential damages per region

Visayas: Northern Samar, Eastern Samar, Samar, Biliran, Leyte and Southern Leyte.

Mindanao: Dinagat Island and Siargao Island.

### Impacts:

- Moderate damage to agriculture
- Rice and corn adversely affected
- Few large trees uprooted
- Large number of nipa and cogon houses partially or totally unroofed
- Some old galvanized iron roofing may roll off
- Travel by all types of sea vessels is risky

Luzon: Catanduanes, Albay, Sorsogon, Masbate including Ticao Island.

Visayas: Northern Cebu including Bantayan Island & Camotes Island and Bohol.

Mindanao: Surigao del Norte, Surigao del Sur, Camiguin Island and Agusan del Norte

### Impacts:

- Twigs and branches of trees may be broken
- Banana plants may tilt or land flat on the ground

<sup>11</sup> <http://online.wsj.com/articles/millions-at-risk-from-typhoon-hagupit-in-the-philippines-1417661964>

<sup>12</sup> <http://www.nhc.noaa.gov/aboutsshws.php>



- Rice in flowering stage may suffer significant damage
- Some nipa and cogon houses may be partially unroofed
- Sea travel of small seacraft and fishing boats is risky
- Estimated rainfall amount is from 7.5 – 20 mm per hour (heavy – intense) within the 700 km diameter of the typhoon.
- Moderate to heavy rains within 24 to 36 hours are expected over the areas with Public Storm Warning Signals Numbers 2 and 1. Residents in low lying and mountainous areas are advised to be alert against possible flashfloods and landslides. Moreover, those living near coastal areas are alerted against possible storm surges.
- “Ruby” and the Northeast Monsoon will bring rough to very rough sea conditions over the seaboard of Northern Luzon, eastern seaboard of Central and Southern Luzon, over the seaboard of Visayas and over the northern and eastern seaboard of Mindanao. Fisherfolks and those using small seacraft are advised not to venture out over the said seaboard
- The public and the disaster risk reduction and management council concerned are advised to take appropriate actions and watch for the next bulletin to be issued at:  
<http://www.gov.ph/section/briefing-room/departement-of-science-and-technology/philippine-atmospheric-geophysical-and-astronomical-services-administration/><sup>13</sup>

## 2. Historical context

### 2.1. Typhoons in the Philippines

#### Ten costliest storm events in Philippines from 1900 to 2014:

Year	# of Events	Deaths	Affected	Injured	Homeless	Total Affected	Total Damage (000 US\$)
2013	8	8047	17915713	28795	0	17944508	10136563
2009	14	1242	12220696	867	100	12221663	932703
2012	9	2039	7557756	2724	0	7560480	918137
2011	12	1782	9462385	6291	0	9468676	527238
2008	11	819	6846388	946	4645	6851979	441625
1988	6	788	4450946	238	66321	4517505	403016
1990	5	737	5208275	1288	1110020	6319583	388500
1984	4	2679	3210815	2865	1321526	4535206	336490
2006	10	1805	7819149	2659	0	7821808	330921
1995	7	1249	3168372	2440	106000	3276812	317494

<sup>13</sup> <http://www.gov.ph/2014/12/04/weather-bulletin-no-3-tropical-cyclone-warning-typhoon-ruby-issued-at-500-p-m-december-4-2014/>

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2013	8	8047	17915713	28795	0	17944508	10136563
1991	6	6083	1494506	3109	74250	1571865	275000
1970	8	3802	1740370	4977	67200	1812547	258399
1984	4	2679	3210815	2865	1321526	4535206	336490
2012	9	2039	7557756	2724	0	7560480	918137
2004	8	1861	3232763	1315	7200	3241278	138867
2006	10	1805	7819149	2659	0	7821808	330921
2011	12	1782	9462385	6291	0	9468676	527238
1995	7	1249	3168372	2440	106000	3276812	317494
2009	14	1242	12220696	867	100	12221663	932703

Source: EM-DAT: The OFDA/CRED International Disaster Database, [www.emdat.be](http://www.emdat.be) - Université catholique de Louvain - Brussels - Belgium

## 2.2. World's most destructive cyclones

### The world's 10 costliest typhoons ordered by overall losses

Date	Event	Affected area	Overall losses in US\$ m original values	Fatalities
2013	Typhoon Haiyan (Yolanda)	Philippines, Vietnam, China, Taiwan	10,500	6,235
1991	Typhoon Mireille	Japan	10,000	62
2004	Typhoon Songda	Japan, South Korea	9,250	41
2000	Typhoon Saomai	Japan, South Korea, Russia	6,270	25
1999	Typhoon Bart	Japan, South Korea	5,000	29
2013	Typhoon Fitow (Quedan)	China, Japan	5,000	12
2009	Typhoon Morakot (Kiko)	China, Philippines, Taiwan	4,600	732
2002	Typhoon Rusa	South Korea, North Korea	4,550	150
2003	Typhoon Maemi	South Korea, Japan	4,200	120
1990	Typhoon Flo	Japan	4,000	43

Source: Munich Re, NatCatSERVICE, 2014

### 3. Underlying risk drivers for the Philippines

#### 3.1. Disaster risk driver indicators

##### World Development Indicators 2014:

- Income level: Lower middle income
- Surface area (thousand sq. km): 300.0
- Population: 98,393,574
- GNI per capita, PPP (current international \$): 7,820
- GDP (current US\$): 272,017,377,292
- GDP growth (annual %): 7

Source: World Bank (numbers from 2013)

##### Human Development Report 2014:

- Philippines rank: 117
- Human Development Index Value: 0.660

Source: UNDP (numbers from 2013)

##### UN Global Assessment Reports:

According to the UN Global Assessment Report on Disaster Risk Reduction (GAR) 2013, roughly 80 percent of cyclonic wind risk is concentrated in Asia.<sup>14</sup>

The GAR 2009 found that developing countries concentrate a huge and disproportionate share of risks to disasters. For example, the GAR 2009 found that in Japan, approximately 22.5 million people are exposed annually to typhoons, compared to 16 million people in the Philippines. However, the estimated death toll from Typhoons in the Philippines is 17 times greater than that of Japan.

The GAR 2013 found that the Philippines ranks first in terms of annual average losses for both earthquakes and for cyclonic winds compared with gross fixed capital formation (GFCF) - more than 10% of GFCF could be lost to earthquakes, and more than 1% of GFCF could be lost due to cyclonic winds. This means that a large portion of what is economically gained could be constantly lost due to disasters annually.

In addition, for a probable maximum loss earthquake with a 250 year return period compared with national revenue, the Philippines is also ranked first - more than 20% of its national revenue could be lost to this possible catastrophic disaster type. This means that disaster losses have the potential to exceed revenue, resulting in increased debt. Since 2000, the Philippines has continuously financed its fiscal deficit from disasters through domestic and foreign borrowing, and the use of cash balances. The potential macroeconomic effects in terms of GDP growth for the Philippines due to disasters is also dramatic - with growth being potentially slowed down for up to 15 years after a disaster.

The GAR 13 also found that middle-income countries, such as the Philippines, have high levels of risk because their exposed produced capital is more vulnerable than in high-income countries due to weaker building structure and material. However, reviews of budget allocations also show that in the Philippines, for example, disaster risk reduction investments are trending upward, for example, from 1.4 percent to 2.1 percent of the country's national budget between 2009 and 2011.

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<sup>14</sup> [http://www.preventionweb.net/english/hyogo/gar/2013/en/home/GAR\\_2013/GAR\\_2013\\_53.html](http://www.preventionweb.net/english/hyogo/gar/2013/en/home/GAR_2013/GAR_2013_53.html)



Indicator	Value
Cyclone winds Annual average loss (AAL) is the estimated average loss per year over a long time period considering the range of loss scenarios relating to different return periods <i>M US\$</i>	45,933.3
Cyclone winds Annual average loss (AAL) <i>R : ranking of the country</i>	1
Cyclone winds probable maximum loss (PML) is the maximum loss that could be expected for a given return period <i>M US\$</i>	547,819.58
Cyclone winds probable maximum loss (PML) <i>R : ranking of the country</i>	1
Cyclone winds ratio: Cyclone winds probable maximum loss (PML) / urban produced capital	3.74
Percentage of exposed population to Cyclone winds in urban areas with more than 2,000 inhabitants	100

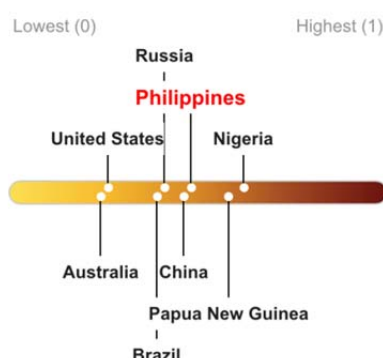
Source: UNISDR

### Pacific Disaster Center (PDC):

#### Lack of Resilience Index:

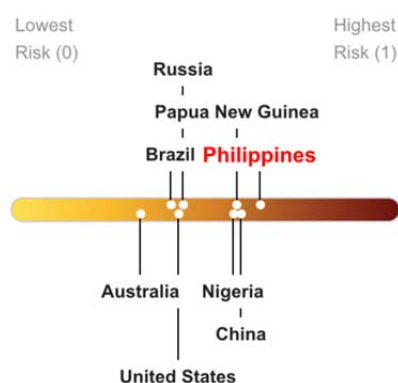
Lack of Resilience represents the combination of susceptibility to impact and the relative inability to absorb, respond to, and recover from negative impacts that do occur over the short term.

Philippines ranks 71 out of 165 on the Lack of Resilience Index. Based on the sub-component scores related to Vulnerability and Coping Capacity, the three thematic areas with the weakest relative scores are Recent Disaster Impacts, Governance and Infrastructure.



#### Multi Hazard Risk Index:

Philippines ranks 8 out of 165 on the Multi-Hazard Risk Index with a score of 0.64. Philippines is estimated to have relatively very high overall exposure, medium vulnerability, and medium coping capacity.



These figures are available from the Pacific Disaster Center (PDC) App available from iTunes at:  
<https://itunes.apple.com/us/app/disaster-alert-pacific-disaster/id381289235?mt=8>