

Summary: Initial Disaster Needs Assessment

1. **Overview.** The regions affected by Typhoon Yolanda account for 12.5% of the Philippine's GDP. Economic activity in the area is centered in agriculture and agro-based industry and services. The areas most affected by the Typhoon, including the almost half of the communities responding to the post-disaster Multi-Cluster/Sector Initial Rapid Assessment (MIRA) listed agriculture as their primary livelihood. One-third of respondents listed fishing as a primary source of income.

2. Initial estimates prepared by the government place damages at ₱24.5 billion (\$564 million), consisting of ₱13.2 billion (\$303 million) for infrastructure and ₱11.3 billion (\$261 million) for agriculture.¹ However, these estimates do not include provisions for lost economic activity or support for displaced persons. The government's draft Yolanda Recovery and Rehabilitation Plan (YRRP) estimated the immediate and medium-term costs for recovery and rehabilitation exceeding \$2.3 billion. External sources using disaster simulation models have estimated that the aggregate effect of the storm on the Philippine economy could be closer to \$14 billion.² The level of property damage is extensive with over 1 million homes totally or partially destroyed. Preliminary assessments indicate that 5.1 million workers have lost their livelihoods and approximately half of these individuals are engaged in vulnerable forms of employment living in some of the poorest areas of the Philippines. Virtually all of the population in the immediate path of the storm was affected with half of the affected population displaced. These factors have combined to produce a growing refugee problem as the displaced move to cities and towns which survived the initial brunt of the storm. These same cities and towns are now challenged by the growing need to provide shelter, food and basic necessities to the displaced. Large numbers of the displaced have also sought out temporary shelter in one of the government's 1,091 evacuation centers.

3. As a result, the strain on the government's finances will be large and immediate as officials address these two mutually reinforcing after effects of the storm. In addition, the government faces an immediate need to provide fiscal resources to support the reconstruction of critical infrastructure such as power and water over vast, rural areas. Access to communication is likewise extremely limited and serves to inhibit the efforts of communities to support one another and share resources. Government damage estimates are incomplete and preliminary. Therefore, this damage assessment will seek to identify the primary areas of exposure and to provide a broad discussion of the potential fiscal costs to the government.

4. **Immediate disaster relief.** The most immediate impact of the typhoon will be felt through the expenditures supporting relief and rescue efforts. For example, the government has requested an initial budget of ₱707 million (\$16 million) for transportation assets, air and marine assets, and shipping services to support the delivery and distribution of relief supplies. In addition, ₱2 billion (\$46 million) will be required to support the reconstruction of the Tacloban City airport, the repair of the Kalibo Airport, and the reconstruction and repair of municipal buildings and related airport equipment.

¹ NDRRMC Sitrep #46 dated 28 November 2013.

² 2013. Kinetic Analysis, Silver Spring, Maryland, USA.

5. **Destroyed homes and structures.** An initial post-typhoon damage assessment for Tacloban City performed by Copernicus Emergency Management Service (EMS)³ found that more than 700 residential buildings were completely destroyed and more than 1200 were damaged in Tacloban city alone.⁴ This analysis was carried out by comparing pre and post event satellite imagery and also shows that in Tacloban, one of the hardest hit areas, 5 industrial facilities and 7 educational buildings were destroyed while 18 roads are blocked.⁵ Over time, the Government's estimate of homes destroyed or damaged has exhibited an increasing bias towards the initial satellite sourced estimates as on-the-ground surveys are completed. For example, National Disaster Risk Reduction and Management Council (NDRRMC) Update #20, which was published on 15 November 2013, listed homes destroyed and damaged at 136,247 and 117,802, respectively. As of 28 November 2013, this total had increased to 1.2 million homes damaged and destroyed with initial assessments indicating that access to roofing materials is a key concern.

6. With a low penetration for non-life insurance, the burden of clearing debris and construction will fall largely to the government.⁶ Using the government's estimates, with an assumed replacement cost of \$5,000 per structure, 585,440 destroyed homes produces an initial funding need of \$2.9 billion.⁷ However, this represents a conservative, lower-end estimate. ADB's experience indicates that the cost of construction materials rises as the supply of materials will be initially very limited relative to demand.

7. **Displaced population.** Assessments indicate that 5.1 million workers in 36 provinces have lost their livelihoods. Of these, around 2.2 million are engaged in vulnerable forms of employment.⁸ The number of displaced is greater than that of Hurricane Katrina and the Indian Ocean tsunami combined.⁹ With no livelihood, and little savings, the displaced have migrated to other towns and evacuation centers most of which are located in the Eastern and Western Visayas regions. The government currently estimates that there are 1,091 official evacuation centers in operation supporting 387 thousand refugees. However, this estimate understates the scope of the displacement.

8. For example, the town of Catbalogan was shielded from the storm by geography and its structures were left largely intact. In an effort to find shelter, collect remittances or purchase supplies, approximately 100,000 people traverse through the city every day. On a permanent basis, the population of the city has swelled to 200,000, which is twice its pre-storm level. To maintain order, the national government has augmented the local police force with army soldiers. According to ABS-CBN news, more than 7,000 refugees have relocated to Cebu as of 19 November 2013, with another 6,000 arriving in Manila.¹⁰

³ The Copernicus emergency management service provides all actors involved in the management of natural disasters, man-made emergency situations, and humanitarian crises with timely and accurate geo-spatial information derived from satellite remote sensing and completed by available in situ or open data sources.

⁴ The study was coordinated by the European Commission's Joint Research Centre.

⁵ 2013. EU Commission Joint Research Centre (11 November). The imagery disclosed that 70% of the built-up area was affected, of which 58% was either destroyed or highly affected. Approximately 65% of the affected area is residential. Roads were blocked at 113 different locations.

⁶ The World Bank's financial sector data base for 30 April 2013 lists non-life insurance premiums represent just 0.48% of GDP in the Philippines as compared to 1.13% for Thailand and 1.37% for Malaysia.

⁷ Estimated cost of replacement is consistent with experience gained in the Indonesian Tsunami relief effort. Costs started \$4,000 per house but rapidly escalated due to a shortage of building supplies.

⁸ OCHA Situation Report No. 12 (as of 18 November 2013).

⁹ 2013. Asian Wall Street Journal, "Spared by Typhoon, Quiet Town Struggles With Refugees".

¹⁰ ADB staff onsite at Villamor Airbase report that 3,000 to 4,000 survivors are arriving every day.

9. As the population of these refugee centers continues to grow, it will increase pressure on the host cities. For example, displacement sites require a regular supply of food, water, medical facilities, emergency shelter, non-food items and security. As more people leave the affected areas, the logistical demands on host cities will increase necessitating government support. Assuming an all-in cost of subsistence at ₱437 per day, or an equivalent \$10.00, the current official level of refugee families will require expenditures of \$490,000 a day, \$14.7 million a month, and almost \$180 million for a full year. In addition, the government will need to provide temporary shelter to those who have been displaced by the storm. Proposals provide for a number of options from basic temporary structures to semi-permanent structures. Cost estimates range from ₱32.6 million (\$750,000) to ₱53.3 million (\$1.2 million) per 1,000 families, depending on the option selected. Total costs for providing shelter to all displaced families would range from ₱26 billion (\$600 million) to ₱43 billion (\$960 million).

Table 1

Humanitarian	Number of persons
Population affected	10.9 million / 2.3 million families
Population displaced	3.5 million / 0.8 million families
Inside evacuation centres	0.2 million / 49 thousand families
Outside evacuation centres	3.3 million / 0.7 thousand families
Number of confirmed deaths	5,560
Number of reported injuries	26,136
Number of reported missing persons	1,757
Damaged or destroyed property	Units
Houses destroyed	585,440
Houses damaged	587,973
Public schools (elementary and high school)	15 out of 57 Divisions reporting significant damage affecting 3,232 schools, 26,855 class rooms, 1,007,908 students and 34,104 personnel. ¹¹ Damage estimated at \$4.0 million ¹²
Health facilities	2,280 health facilities damaged including 61 hospitals. Damage estimated at \$94 million. ¹³
Damaged infrastructure	
Agriculture land, crops, livestock and fisheries	865,305 individuals and 202,410 households affected \$213 million ¹⁴
Irrigation systems and infrastructure	\$32 million
Roads and bridges	\$28 million ¹⁵
Power Network	566 transmission towers down 7 substations down
Water Supply	\$10 million ¹⁶

Source: Republic of Philippine, National Disaster Risk Reduction and Management Council (NDRRMC), United Nations Office for the Coordination of Humanitarian Affairs (OCHA), and ADB staff initial assessments.

10. **Other immediate infrastructure needs.**¹⁷ The government faces mounting expenses to restore basic infrastructure. While roads and bridges remain largely intact, other basic services

¹¹ Department of Education Situation Report #10 dated 20 November 2013. This represents 26% of total school divisions, 32% of all schools and 20% of classrooms in the affected area.

¹² As of 15 November, 628 schools were confirmed as damaged in four regions, and 893 schools were being used as evacuation centres. Rappler later reported that the number was increased to 3,171 by the Department of Education (21 November 2013). A spokesman noted that 90% of schools and offices were damaged in Tacloban City alone. In other areas, the damage is either minimal or will not reach 50%.

¹³ Department of Health estimates as of 19 November 2013.

¹⁴ USAID Factsheet #9 20 November 2013.

¹⁵ Department of Public Works and Highways Situation Report 20 November 2013.

¹⁶ Initial estimates provided to Department of Public Works and Highways dated 20 November 2013.

¹⁷ NDRRMC Update, SitRep #30, 20 November 2013.

have yet to be restored. 124 barangays in 10 provinces remain without power with the majority in the Western and Eastern Visayas. Officials from the Department of Energy have stated that a major geothermal power plant in Leyte, which provides around a third of the power requirement in the region, sustained heavy damage as a result of the storm.¹⁸ Repairs are required to reconstruct the cooling towers, cooling system and control systems.¹⁹ In addition, Unified Leyte's small optimization plants, including the 15-MW Tongonan Topping Cycle and the 16-MW Malitbog Bottoming Cycle, are being assessed. While the steam field is operable, almost all of the company's buildings in the geothermal complex have sustained damage. Exacerbating the situation, damage to transmission lines, steel towers, power lines and poles, and substations has effectively isolated working power plants within the Visayas from the grid.²⁰ The Department of Energy has requested a supplemental budget allocation totaling ₱1.2 billion (\$27 million) split between the Department of Energy, the National Power Corporation, and the National Electrification Administration.

11. Access to drinking water remains a serious concern in eastern Samar, Cebu, Iloilo and Capiz provinces. The Government's early assessment indicates that half to 80% of those in the affected areas have no access to safe drinking water. The UN Disaster Assessment and Coordination (UNDAC) team has reported that three of the five water pumps that serve Guiuan municipality in Eastern Samar Province are not functioning.²¹ Government assessment teams confirm a severe shortage of water outside Tacloban, with people drinking potentially contaminated water from damaged wells.

12. **Agriculture.** According to the Department of Agriculture, the typhoon damaged or destroyed 153,500 hectares of crops, including rice, corn, cassava, coconut, vegetables, banana, and mango, among others. For corn, the loss is 17,881 metric tons or a total cost of ₱226 million (\$5.2 million) while damage to cassava, coconut, vegetables, bananas and other crops is ₱600 million (\$13.8 million). Livestock reported a ₱2.1 billion (\$48 million) loss while damage to fisheries infrastructure reached ₱333 million (\$7.6 million).²² Before the disaster, estimates indicate that there were about 1,500 commercial fishing vessels in the Visayas and 150,000 small vessels. Reportedly, in some of the worst hit islands, nearly all boats have been destroyed. These boats provided essential services to the population including transporting supplies, food and water. Their destruction, along with fishing gear, fish ponds and related equipment, have left many with no means of livelihood.

13. At the time of the typhoon, harvesting of the 2013 main season paddy crop, representing 55 percent of the annual production, was well advanced, while planting of the mostly irrigated 2013/14 secondary season crop had started. The affected central regions of the country account for 35 percent of the total paddy area and 32 percent of annual production. However, the aggregate impact of the typhoon masks the extent of crop losses at the subnational level. According to the NDRRMC, main season paddy and maize losses have occurred in the Eastern Visayas, Western Visayas, Mimaropa, Bicol, and the Central Visayas. Furthermore, over 80 percent of the damaged paddy area and 70 percent of the value of paddy and maize losses are concentrated in the region of Eastern Visayas.²³

¹⁸ GMA News Online, 18 November 2013, Yolanda-hit Leyte geothermal plant key to restoring power in Visayas.

¹⁹ The Energy Development Corporation has disclosed to the Philippine Stock Exchange that the main power plants supplied by the 650 MW facility, the 232 MW Malitbog, the 112.5 MW Tongonan, the 180 MW Mahanagdong, and the 130 MW Upper Mahiao, are out because of significant damage in the cooling towers.

²⁰ InterAksyon.com, November 19, 2013.

²¹ OCHA Situation Report #14, November 20, 2013.

²² Manila Bulletin November 19, 2013

²³ GIEWS Update, The Philippines: Strong Typhoon Haiyan Severely Affected the Agriculture Sector in Central Regions, 19 November 2013.