



## A. The Disaster

Tropical storm Ondoy (international name Ketsana) hit the Philippines on September 26, 2009, causing widespread flooding<sup>1</sup>. Ondoy, the equivalent of a Category I storm, brought an unusually high volume of rain which inundated the central part of Luzon. During the 12-hour period starting at 8:00 am on September 26, the rainfall was recorded as approximately 450 mm at the Manila Observatory, an extremely rare occurrence. In turn, these intense rains generated high flooding in the Marikina River that exceeded the river's carrying capacity. Ondoy caused extensive flooding in the Metro Manila area and the neighboring Rizal province, including the cities of Antipolo, Makati, Malabon, Marikina, Muntinlupa, Pasig, Quezon, San Juan, Taguig, and Valenzuela.

Tropical storm Ondoy was quickly followed by typhoon Pepeng (international name Parma). Typhoon Pepeng, a Category III storm, affected the Philippines during October 3-9, 2009, following an irregular path which crossed over Central and Northern Luzon three times. It initially brought powerful winds with gusts of up to 230 km/hr then an extended period of heavy rains, with cumulative rainfall amounts exceeding 1,000 mm in some areas. The resulting river floods have been estimated to have a return period of around 50 years, meaning that statistically speaking, such a rainfall event occurs on average once in every 50 years.

Ondoy and Pepeng resulted in large numbers of affected persons and casualties. As of November 23, 2009, the official death toll from the two natural disasters combined was 956 persons, with 84 persons still missing and 736 injured. While the majority of deaths caused by tropical storm Ondoy were due to drowning, reported deaths during typhoon Pepeng were also due to landslides. Assessment data show that over 9.3 million people were affected severely, out of an estimated population of 43.2 million living in the affected regions.

The Government declared a National State of Calamity on October 2<sup>nd</sup>. In the aftermath of the disaster, the Government and private sector staged a commendable relief effort, supported by development partners.



<sup>1</sup> Due to the short time frame for preparation of the PDNA, this report focuses on Luzon and Metro Manila, which were the regions most affected by Ondoy and Pepeng.

## Executive Summary

The Department of Finance requested development partners to undertake a Post-Disaster Needs Assessment (PDNA) jointly with the Government. In response, development partners organized a team of local and international experts to initiate the PDNA process for Ondoy and Pepeng with Government agencies.

### B. Economic and Social Impacts

Tropical storm Ondoy and typhoon Pepeng caused substantial damage and losses, equivalent to about 2.7 percent of GDP. The storms hit regions of the country that account for over 60 percent of GDP (including the National Capital Region, which accounts for about 38 percent of total GDP). The adverse impacts on the productive sectors were largely due to damaged or lost inventories, raw materials and crops. In addition, business operations were interrupted by power and water shortages, damaged machinery, and absent employees, which contributed to an overall reduction in production capacity. As a result, the disaster is expected to have a negative impact on GDP growth in the short term. However, once projected public and private recovery and reconstruction spending are included, the net impact of the disasters on economic activity is expected to result in real GDP growth of 1.0 percent in 2009 and 3.5 percent in 2010 which implies a decline of about 0.4 percentage points in 2009, followed by an increase of about 0.4 percentage points in 2010, over the pre-disaster growth estimates.

The Philippines is frequently affected by natural disasters, yet the recent disasters were significant in the overall magnitude of their effects. The scale of the disasters was magnified by the impacts of the disasters in highly populated economic centers. While extreme events, however, the damage and losses incurred during the disaster—estimated to be equivalent to about 2.7 percent of GDP—are comparable to other major recent disasters across the world. (Table 1)

Table 1: Damage, Losses, and Magnitude of Similar Recent Disasters

Disaster	Country	Year	Total Effects (US\$ million)	Magnitude (% of GDP)
Earthquake	Pakistan	2005	2,876	0.4
East Asia Tsunami (Aceh)	Indonesia	2005	4,452	1.6
Cyclone Sidr	Bangladesh	2007	1,640	2.8
Cyclone Season	Madagascar	2008	333	4.0
Cyclone Nargis	Myanmar	2008	4,060	19.7
Storm and Floods	Yemen	2008	1,638	6.0
TS Ketsana and Typhoon Parma	Philippines	2009	4,383	2.7

As is usually the case, the disaster affects fiscal balances due to higher spending and lower revenues. On the expenditure side, the direct impact includes infrastructure repair, emergency relief, and assistance to affected families. Total expenditures will depend on the policy decisions made to assist the most vulnerable citizens, for example through permanent relocation programs, slum upgrading, and water and flood management improvements. How the government chooses to prioritize spending for recovery and reconstruction will be critical, since this spending may need to be the centerpiece of the fiscal stimulus program for the next couple of years so as to remain within the fiscal envelope. Public revenues are also expected to be affected, both directly and indirectly resulting in revenue losses over the next year.

The poor and vulnerable were inordinately affected by Ondoy and Pepeng, and efforts to help restore their housing and their livelihoods are needed urgently. In urban areas, it is the poor who concentrate in informal settlements in at-risk areas such as floodplains. Similarly, in rural areas, it is the poorest who end up living in dangerous areas such as river embankments. For those living just above the poverty line, such disasters are likely to propel them back into poverty.

Indeed, this PDNA estimates that in the most affected areas of Luzon, the incidence of poverty in 2009 could increase by as much as 3 percentage points as a result of Ondoy and Pepeng, and by 0.5 percentage points nationwide. The number of poor people in the Philippines is expected to increase by 480,000 in 2009. The storms severely disrupted livelihoods in the affected areas, with about 170 million workdays—equivalent to about 664,000 one-year jobs—lost due to their impacts. Total income lost due to the disaster amounted to Php 50.3 billion, which particularly affected informal workers with family-based livelihoods.

### C. Damage, Losses, and Needs Assessment

This Post-Disaster Needs Assessment analysis covers damages, losses, and economic and social impacts. *Damage* (direct impact) refers to the impact on assets, stock (including final goods, goods in process, raw materials, materials and spare parts), and property. *Losses* (indirect impact) refer to flows that will be affected, such as production declines, reduced incomes, and increased expenditures, over a time period until the economy and assets are recovered. *Economic and social impacts* include macroeconomic impacts, poverty impacts, employment and livelihoods impacts, and social impacts.

The PDNA estimated that damage and losses from Ondoy and Pepeng amount to a total of US\$4.38 billion (Table 2). The PDNA found that damage to physical assets in the affected areas amounts to an estimated Php 68.2 billion, equivalent to US\$1.45 billion. Associated losses in production and other flows of the economy were estimated at nearly Php 137.8 billion or US\$2.93 billion, equivalent to two-thirds of the total disaster effects. While the destruction or damage to assets occurred at the time of the storms, the associated changes in economic flows will last beyond the present calendar year. In some sectors and cases, the effects will be felt in 2010 and 2011 depending on the speed and efficiency of the post-disaster recovery and reconstruction activities.

Table 2: Summary of Disaster Effects and Needs by Sector (in US\$ million)

Sector	Damage and Losses			Needs		
	Damage	Losses	Total	Recovery	Reconstruction	Total
<b>Productive Sectors</b>	557.8	2,661.7	3,219.5	351.8	1,422.4	1,774.3
Agriculture	80.1	769.2	849.3	291.6	59.7	351.3
Industry	209.2	194.1	403.3	15.8	220.5	236.2
Commerce	256.2	1,644.4	1,900.6	33.7	1,126.8	1,160.4
Tourism	12.3	54.0	66.2	10.8	15.4	26.2
<b>Social Sectors</b>	706.5	212.5	919.0	197.0	1,606.3	1,803.3
Housing	541.6	188.8	730.3	166.4	1,444.9	1,611.4
Education	53.5	4.9	58.4	8.9	65.1	74.0
Cultural Heritage	6.0	0.5	6.5	0.6	6.8	7.5
Health	105.5	18.3	123.8	21.1	89.4	110.5
<b>Infrastructure</b>	181.1	56.2	237.3	42.3	397.2	439.5
Electricity	15.2	18.7	33.9	-	15.2	15.2
Water and Sanitation	7.9	16.4	24.3	0.7	2.8	3.4
Flood Control, Drainage and Dam Management	15.3	-	15.3	-	171.3	171.3
Transport	138.7	21.2	159.8	41.6	208.0	249.6
Telecommunication	4.1	-	4.1	-	-	-
<b>Cross-Sectoral</b>	6.3	0.9	7.1	351.8	54.1	405.9
Local Government	6.3	0.9	7.1	0.2	6.4	6.6
Social Protection	-	-	-	351.5	6.7	358.2
Financial Sector	-	-	-	0.1	2.9	3.0
Disaster Risk Reduction and Management	-	-	-	-	38.1	38.1
<b>Total</b>	<b>1,451.7</b>	<b>2,931.3</b>	<b>4,383.0</b>	<b>942.9</b>	<b>3,480.1</b>	<b>4,423.0</b>
Total in Php million (1 USD = 47 Php)	68,228.4	137,770.3	205,998.7	44,317.9	163,562.4	207,880.3



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**The private sector has borne most of the impact of the disasters.** The share of private sector damage and losses is equivalent to 90 per cent of the total, while that of the public sector constitutes the remaining 10 percent. It should be noted that in contrast to other disasters in which destruction of infrastructure is predominant, nearly 95 percent of total damage and losses were sustained by the productive and social sectors. Counting these losses is also the main difference between the estimate of the PDNA and that of the National Disaster Coordinating Council (NDCC), which only selectively counts losses (e.g., in agriculture) and does not take into account private sector impacts, therefore yielding a lower estimate of total damage and losses.

**The assessment of damage and losses provides a basis for determining recovery and reconstruction needs.** The assessment of damage provides a basis for estimating reconstruction requirements, while the estimation of losses provides an indication of the recovery needs to address the reduction or decline in economic activity and in personal and household income. The two estimates are then combined to establish overall needs to achieve full recovery of economic activities at the macro-economic level and at the individual or household level.

**A total of US\$ 942.9 million is required to meet recovery needs, and a total of US\$ 3.48 billion is required for the reconstruction efforts (Table 2) over the short term (2009-10) to medium term (2011-12).** Larger investments, particularly in flood control and housing, may need to be considered in the longer term. It



Nonie Reyes

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should be noted that the human and community-based early recovery needs identified by the IASC clusters and included in the Revised UN Flash Appeal are included in the amount of total needs. The share of the public sector in implementing the recovery and reconstruction program is estimated at 55 percent (US\$ 2.44 billion), whereas private sector execution amounts to 45 percent (US\$ 1.99 billion). The exact public sector need depends on the choices the government makes on the specific programs to implement, the timing and pacing of those programs, and the effectiveness with which these programs are implemented. Financing can come from a variety of sources, including the domestic budget, local government budgets, private sector contributions, and grants and concessional loans from development partners.

**The needs for financing are large, but the cost of doing nothing would be larger still.** This PDNA estimates the total cost of recovery and reconstruction at US\$ 4.42 billion. Given the very limited capacity of the flood management system in Metro Manila and the possibility of increased frequency and intensity of floods and typhoons, such costs can be expected to recur more frequently unless urgent efforts are made to mitigate the effects of future disasters. For example, Metro Manila's system of drainage was designed to withstand events of a 30-year return period. Given the siltation, the presence of massive amounts of trash, and chronic lack of maintenance, the actual capacity of the system is now much lower than it was when designed. Coupled with the likely impacts of climate change, the drainage system can be expected to be overwhelmed again within the lifetime of most Ondoy victims if these deficiencies are not addressed. Because of the rapid increase in economic activity and concentration of people in Metro Manila, the costs of disasters such as Ondoy warrant investments in much higher protection against floods and other disasters than currently in place.

#### D. Recovery and Reconstruction Strategy

**Building back better is necessary, but it is not enough.** While Ondoy's flooding could not have been prevented, its extensive impact was preventable. Similarly, the damage wrought by Pepeng could have been mitigated. Preventing such impacts in the future requires attention to the governance of Filipino development in areas such as land use planning, housing, water management, environmental protection, and disaster risk mitigation. Indeed, the factors that resulted in the impacts from Ondoy and Pepeng are among the same factors that lie behind a number of major development challenges, including the congestion of Metro Manila, the proliferation of slums, and the heavily polluted environment in urban areas; and the weak performance of agribusiness in rural areas.



## Executive Summary

*"I wish we could have access to capital so that we could stop thinking about the disaster and start thinking about recovery."*  
—Housewife from Rosales, Pangasinan



Evangelina Pe

In implementing recovery and reconstruction, and looking beyond the recent disasters to the future, *five* areas stand out as meriting particular attention.

- 1. Rural Production:** Immediate restoration of rural livelihoods before the end of the year is necessary to avoid loss of production during the dry season. First, rapid action is needed to repair irrigation systems and to clear fields of accumulated gravel, silt, and sand. Second, farmers need inputs such as seed and fertilizer. Third, farmers need finance to cover their needs for consumption and investment until the next harvest. To this end, a system of vouchers or direct cash transfers to the poor who have been directly affected (instead of the usual input subsidy programs that benefit the non-poor more) is warranted as an efficient, transparent, non-distorting, and flexible mechanism.
- 2. Flood Management:** Given its vulnerability to flooding, protecting Metro Manila requires institutional changes, comprehensive planning, and investment in both restoration and new infrastructure. The imperative policy choice is to determine the acceptable level of risk and protection, as this will determine subsequent engineering and financing decisions. In the medium term, the existing flood management and drainage system should be restored to fully operational condition, accompanied by funding for regular maintenance and the establishment of real-time monitoring and early warning systems. A new institutional structure, building on the existing framework—with responsibility for managing floods and drainage in the entire catchment area of Metro Manila including Laguna de Bay, and with the authority and means to enforce agreed policies and plans—would greatly facilitate future flood management. A risk assessment study for the entire basin is needed to update the existing master plan and to develop a comprehensive development program. In the longer term, as part of the development program, additional investment will be needed to retain water upstream, facilitate the flow of water through the system, and maintain Laguna de Bay at a pre-determined level as informed by the risk assessment.
- 3. Housing:** The vast majority of damage to the housing stock was concentrated in the informal sector which serves mainly low-income families, so building back better means providing better alternatives for informal settlers. The issue of informal housing goes well beyond the impacts of Ondoy and Pepeng: about half the population of Metro Manila lives in informal settlements, and prior to the calamities, there was an estimated backlog of 3.7 million households in need of formal housing nationwide. Although addressing the needs of families living in the estimated 220,000 houses damaged and destroyed by the storms would still only meet a small part of the overall housing needs, it would provide an important way forward to addressing the much broader needs of informal settlers. The resettlement process will need to be based on consultation with



affected communities and take into account the need to restore their livelihoods. It would not be feasible to resettle all of these victims in the short run. Those people who have lost their homes must be urgently provided with short-term or transitional housing options near their sources of livelihood. Resettlement of urban dwellers in peri-urban (or rural) areas that does not take proximity to livelihoods into account has been less than successful worldwide.

**Resettlement of flood victims in Metro Manila offers an opportunity to develop new, more appropriate ways of developing the area.** Cities such as Singapore and São Paulo that have successfully addressed the issue of slum upgrading have done so through more intensive use of urban land. Given the cost of land in Metro Manila and the need to keep people close to their sources of livelihoods, spreading upward (verticalization) in more compact settlements (densification) is a logical solution. The private sector could be tapped to promote such development, thereby providing “win-win” solutions where the poor pay less and eventually get title to their housing; developers make a profit; and, the quality of urban life is improved for all. Making this feasible requires the support of the National Housing Authority, national government agencies, and LGUs to facilitate greater access to land and services, as well as subsidization of start-up capital for the poor.

- 4. Disaster Risk Reduction and Management (DRRM): The existing DRRM system needs to become more proactive, coherent, and effective.** The quality of and access to scientific data for predicting and forecasting disasters requires urgent improvement. Once adequate information is available, the mainstreaming of DRRM into local planning needs to be significantly expanded, and critical service infrastructure (e.g., water, power, hospitals) should be upgraded to withstand an acceptable level of risk. These measures need to be coupled with better access to disaster risk financing.

**A strategy on disaster risk financing needs to shift from risk retention to risk transfer, hence limiting the public share of funding with higher involvement of private sources.** From the whole spectrum of financing options already analyzed under previous activities, contingency financing has been selected as the most appropriate to manage moderate risks. Two complementary mechanisms are warranted. The first is a standby credit to be drawn upon if the national government were to declare a calamity, providing close to immediate liquidity. The second is catastrophe pooling, as proposed by the League of Cities of the Philippines. Under this arrangement, LGUs would pool their calamity funds so that when disaster strikes, more resources would be available to the LGU to address urgent needs. At the same time, the role of private sector insurance provision should be increased.

- 5. Local Governance: LGUs should have a key role in implementing the recovery and reconstruction program and future measures to mitigate disaster risk.** A two-pronged post-disaster strategy could be followed. First, targeted financial assistance is needed to support the rapid restoration of LGU operations and services to pre-disaster levels. In the context of disaster, the normal national government/LGU cost sharing rules are likely to create problems for LGUs that are less well-endowed and should therefore be relaxed temporarily. Second, technical assistance should be provided to LGUs in disaster-prone areas to implement disaster mitigation measures to protect their assets and operations in the future.

**Correcting the failures that amplified the impacts of Ondoy and Pepeng will require a new level of commitment and collaboration but is achievable.** The LGUs of Metro Manila will need to cooperate. The national government will need to support LGUs by devolving resources as well as responsibility, putting into practice the principle of subsidiarity. At the same time, government, the private sector, and civil society will need to work together, adopting participatory approaches that bring stakeholders together.

## E. Guiding Principles for Recovery and Reconstruction

A set of guiding principles will govern implementation of the recovery and reconstruction program. The purpose of these principles is to enhance the effectiveness of recovery and reconstruction efforts, increase transparency and accountability, and ensure that resources are translated into results on the ground.

### *A transparent, accountable, and results-based recovery and reconstruction program*

- Comprehensive and straightforward systems for monitoring activities, tracking funds, and evaluating projects and programs will be implemented by all stakeholders (including the provision of regular and transparent reporting against all funding sources).
- Results and progress will be tracked and reported to the public and development partners through regular meetings, the media, and a dedicated recovery and reconstruction website.
- All agencies involved in the recovery and reconstruction program will undertake appropriate audits of their activities and funds.
- Independent complaints handling mechanisms should be integrated into major projects to enable greater accountability.

### *Community-based, people-centered, and equitable approaches*

- Community-based, participatory approaches that engage local communities in decision-making, implementation, and monitoring of activities will be adopted to increase the quality and speed of reconstruction, align projects with real needs, and lower the risk of misuse of funds.
- Projects should maximize the use of local initiative, resources, and capacities. Planning and execution will be based on local knowledge, skills, materials, and methods, taking into account the need for affordable solutions.
- Although disasters increase the vulnerability of all, groups who are already disadvantaged may need special assistance and protection. Particular priority will be given to the poor, marginalized female-headed households, children (including orphans), elderly, and people with disabilities.
- The capacity of local communities will be built at every stage of the recovery and reconstruction effort, with a focus on reducing vulnerability to future disasters.

### *Reduction of future risks*

- With typhoons being a regular occurrence in the Philippines, integrated disaster risk management plans that take into consideration all likely significant hazards are needed to reduce the impact of future disasters.

For more information, please visit [www.pdf.ph/pdna](http://www.pdf.ph/pdna).