



2013 International Training Workshop on Earth Sciences

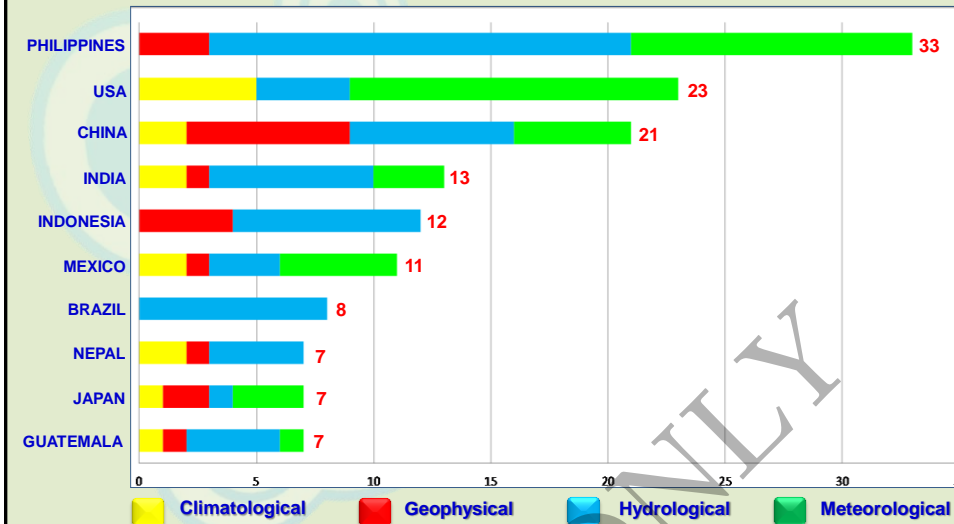
Presented by:
**National Disaster Risk Reduction and
Management Council - Office of Civil Defense**

**National Science and Technology Center for
Disaster Reduction, Taiwan, R.O.C.
31 October 2013**

Scope of Presentation

- I. Background
- II. Legal Bases: PD 1566 & RA 10121
- III. DRRM Efforts
- IV. National Disaster Emergency Operations Center
- V. The MMEIRS
- VI. 7.2 Magnitude Earthquake in Bohol

No. 1 in number of reported events in 2011



Annual Disaster Statistical Review 2011 (USAID/OFDA <http://reliefweb.int/sites/reliefweb.int/files.pdf>)

No. 2 in terms of disaster mortality in 2011

Country	Disaster distribution	No. of deaths	Country	Disaster distribution	Deaths per 100 000
Japan		19 975	Japan		15.7
Philippines		1 933	Namibia		4.7
Brazil		978	New Zealand		4.2
Thailand		896	Cambodia		2.2
India		852	Philippines		2.1
United States		809	Thailand		1.3
China P Rep		746	Lesotho		1.2
Turkey		655	Turkey		0.9
Pakistan		511	Lao P Dem Rep		0.8
Colombia		313	Angola		0.7

Legend: Climatological (Yellow), Geophysical (Red), Hydrological (Blue), Meteorological (Green)

Annual Disaster Statistical Review 2011 (USAID/OFDA <http://reliefweb.int/sites/reliefweb.int/files.pdf>)

No. 3 in terms of exposure to hazards, 2012



WorldRiskIndex

Rank	Country	Risk (%)
1.	Vanuatu	36.31
2.	Tonga	28.62
3.	Philippines	27.98
4.	Guatemala	20.75
5.	Bangladesh	20.22
6.	Solomon Islands	18.15
7.	Costa Rica	17.38
8.	Cambodia	17.17
9.	Timor-Leste	17.13
10.	El Salvador	16.89

World Risk Report 2012 (<http://www.ehs.unu.edu/file/get/10487.pdf>)

Legal Bases

PD 1566
June 11, 1978

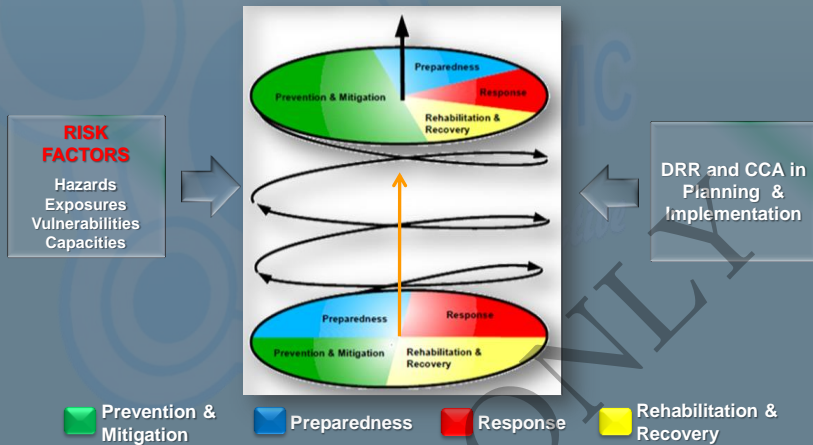
- **Strengthens the Philippine Disaster Control Capability**
- **Establishes the National Program on Community Disaster Preparedness**

RA 10121
May 27, 2010

- **Strengthens the PDRRM System**
- **Provides for the NDRRM Framework**
- **Institutionalizes the NDRRM Plan**
- **Appropriates Funds**

NDRRM Framework

Safer, adaptive and resilient Filipino communities toward sustainable development

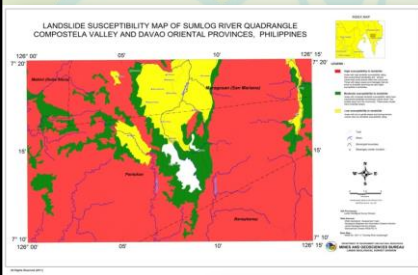


DRRM Efforts: Prevention & Mitigation

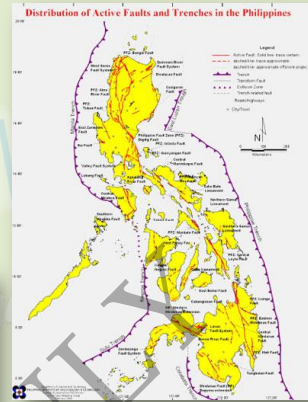


- Dev't of alarm & early warning systems
- Nationwide flood forecasting & monitoring
- Geo-hazard mappings
- Comprehensive land use planning, building & safety standards
- Engineering interventions
- Flood control structures

DRRM Efforts: Prevention & Mitigation

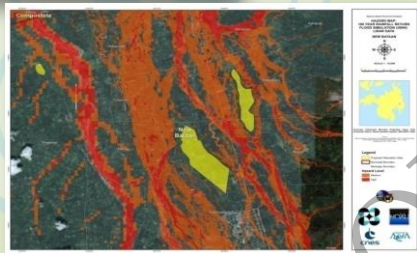


**Landslide
Susceptibility
Map
(MGB-DENR)**



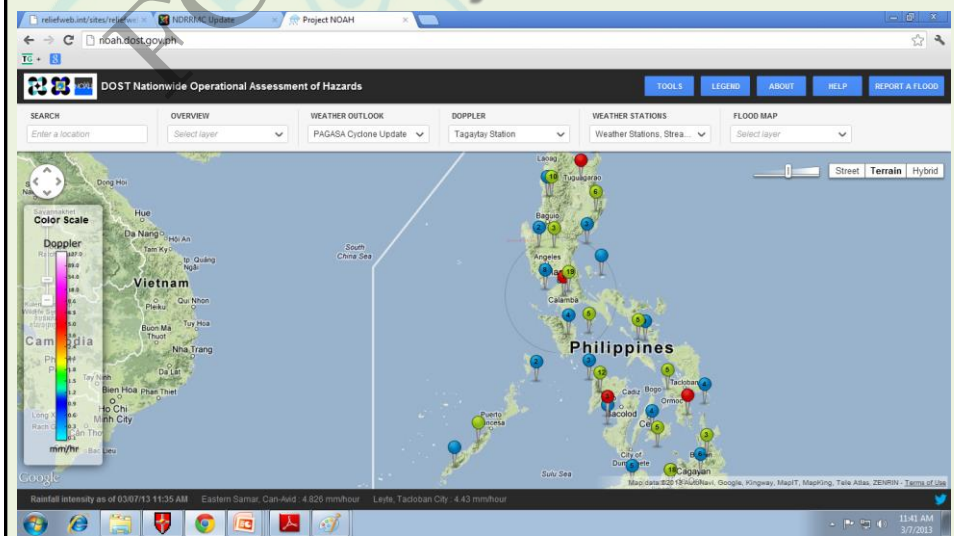
**Active Faults &
Trenches
(PHIVOLCS)**

**Rainfall
Return Flood
Simulation
(PAGASA)**



DRRM Efforts: Prevention & Mitigation

DOST Project NOAH



DRRM Efforts: Preparedness



- Contingency planning
- Prepositioning of equipment & supplies
- Enhancement of operation & coordination centers
- Organizing, training & equipping responders
- Organizing & mobilizing community volunteers
- Conduct of disaster trainings & drills

DRRM Efforts: Response

- Search, rescue & retrieval operations
- Humanitarian aid, relief and health services
- Provision for temporary shelter, water, sanitation & hygiene
- Financial assistance to calamity victims
- Management of evacuation centers

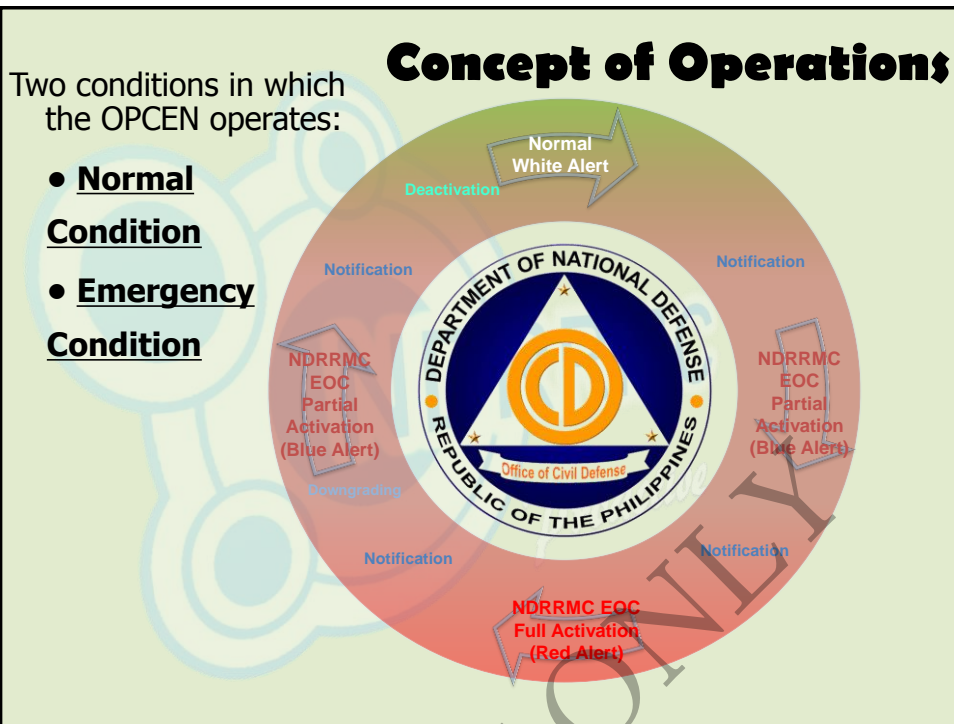


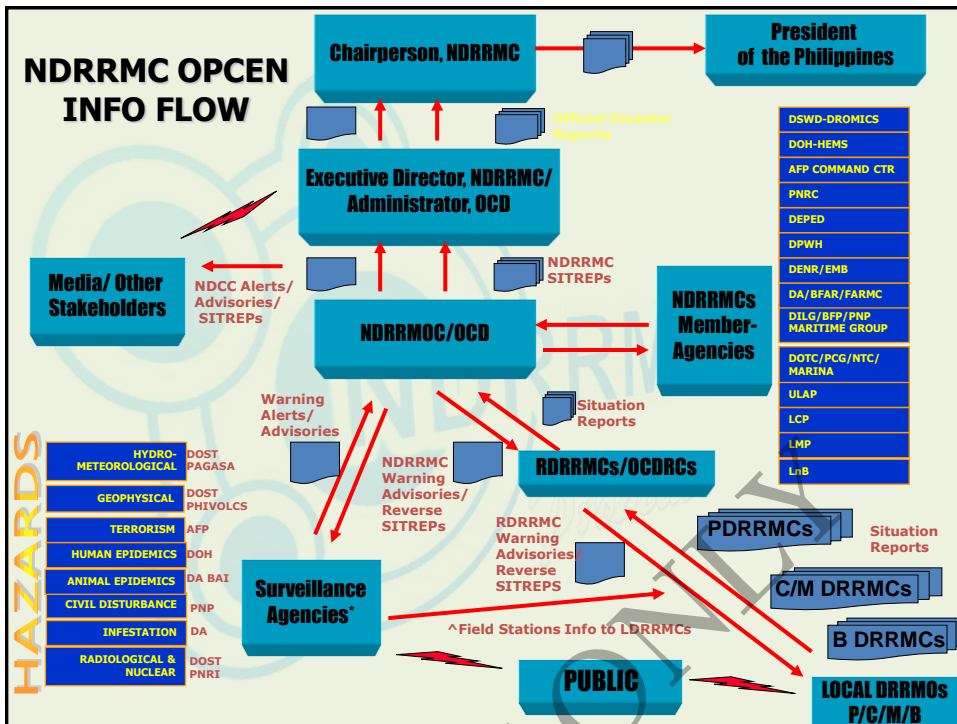
DRRM Efforts: Recovery & Rehabilitation



- Early recovery & rehabilitation
- Reconstruction of damaged houses & buildings
- Resettlement
- Provision for livelihood
- Restoration & improvement of destroyed facilities

**National Disaster
Emergency
Operations Center**





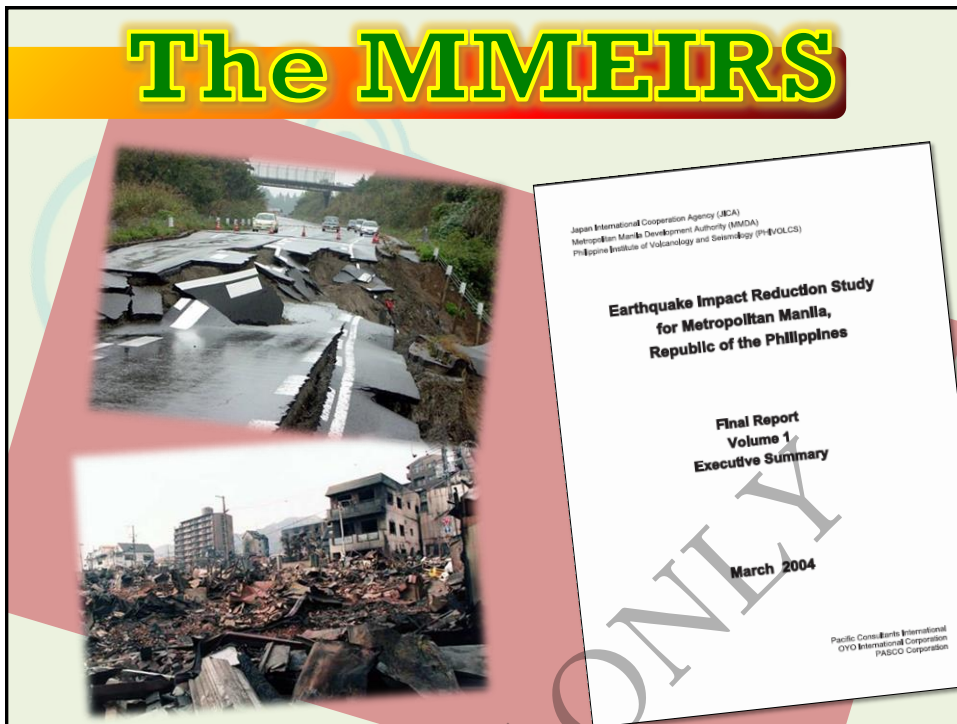
TOOLS that WE USE

OCD SMART INFOBOARD SYSTEM

SOCIAL MEDIA
FACEBOOK / TWITTER:
NDRRMC_Opcen

NDRRMC Website: www.ndrrmc.gov.ph

Emergency Communication Box



EARTHQUAKE IMPACT REDUCTION STUDY FOR METROPOLITAN MANILA (MMEIRS) 2002-2004

Conducted and implemented by:

Japan International Cooperation Agency (JICA)
Metropolitan Manila Development Authority (MMDA)
Philippine Institute of Volcanology and Seismology (PHIVOLCS)

Goals:

- 1) Evaluate seismic hazards, damages and vulnerability of Metro Manila
 - considered 18 earthquake scenarios
 - evaluated potential effects to buildings, lifeline, population
- 2) Prepare framework of master plan for earthquake disaster management

EARTHQUAKE SCENARIO

Some Scenario Earthquakes

Model	Model 08	Model 13	Model 18
Magnitude	7.2	7.9	6.5
Generator	West Valley Fault	Subduction along Manila Trench	Offshore Fault in Manila Bay
Seismic Intensity (PEIS)	VIII - for most of MetroManila, IX - alongside Marikina River and Manila Bay	VIII - West of Metromanila VII - other areas	Almost VIII, VII in Quezon City
Tsunami possibility	NONE	Maximum 4m average 2m alongside Manila Bay	Small effect

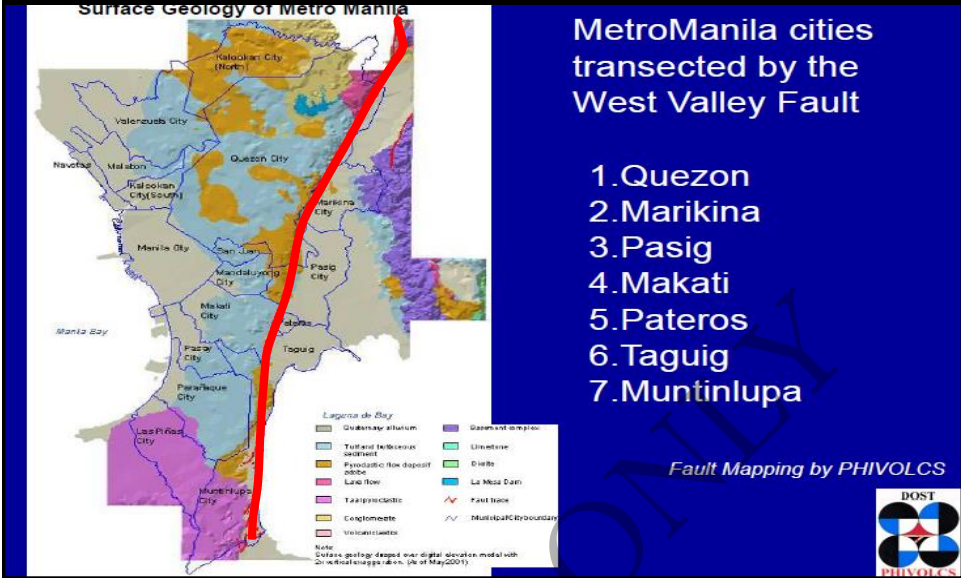


HOW STRONG IS SCENARIO 8?

- A magnitude 7.2 is similar to 50 Megatons of TNT; equivalent to that of [Tsar Bomba](#) (50 megatons), the largest thermonuclear weapon ever tested
- Haiti case: epicenter some 10km from Port-au-Prince
- Scenario 08: Epicenter WITHIN MetroManila.

The West Valley Fault is right in our backyard. NDRRMC Operations Center is about 1.8km away from fault; PHIVOLCS only 3kms away

WEST VALLEY FAULT



DAMAGE SCENARIO

Residential Building Damage and Human Casualties

Scenario Earthquake	Model		Model 08	Model 13	Model 18
	Magnitude		7.2	7.9	6.5
Residential Building 1,325,896	Damage	Heavily	168,300 (12.7%)	1,900 (0.1%)	14,200 (1.1%)
		Partly	339,800 (25.6%)	6,600 (0.5%)	52,700 (4.0%)
Population 9,932,560	Casualty	Dead	33,500 (0.3%)	100 (0.0%)	3,100 (0.0%)
		Injured	113,600 (1.1%)	300 (0.0%)	9,500 (0.1%)

Fire Damage

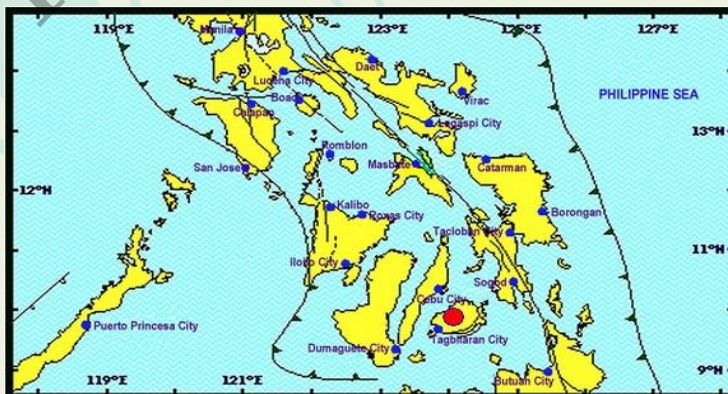
Scenario Earthquake	Model		Model 08	Model 13	Model 18
	Magnitude		7.2	7.9	6.5
Fire	Outbreak		500	-	-
	Burnt area and building	Wind Speed 3m/s	798 ha 42,100 buildings	-	-
		Wind Speed 8m/s	1,710 ha 97,800 buildings		
	Casualty	Wind Speed 3m/s	7,900 (0.1%)		
		Wind Speed 8m/s	18,300 (0.2%)	-	-

WHEN WILL IT HAPPEN?

- NO one knows
- What science knows is, the return period of this earthquake is estimated at about 200 - 400 years and that no large earthquake has happened in the West Valley Fault since the 1700s. The last significant event was in 1658 (350+ years ago)



The 7.2 Magnitude Earthquake in Bohol



AFFECTED POPULATION:

TOTAL	CITY	MUN	BGRYS	FAMILIES	PERSONS
	6	60	1,527	671,103	3,221,248

DAMAGED HOUSES:

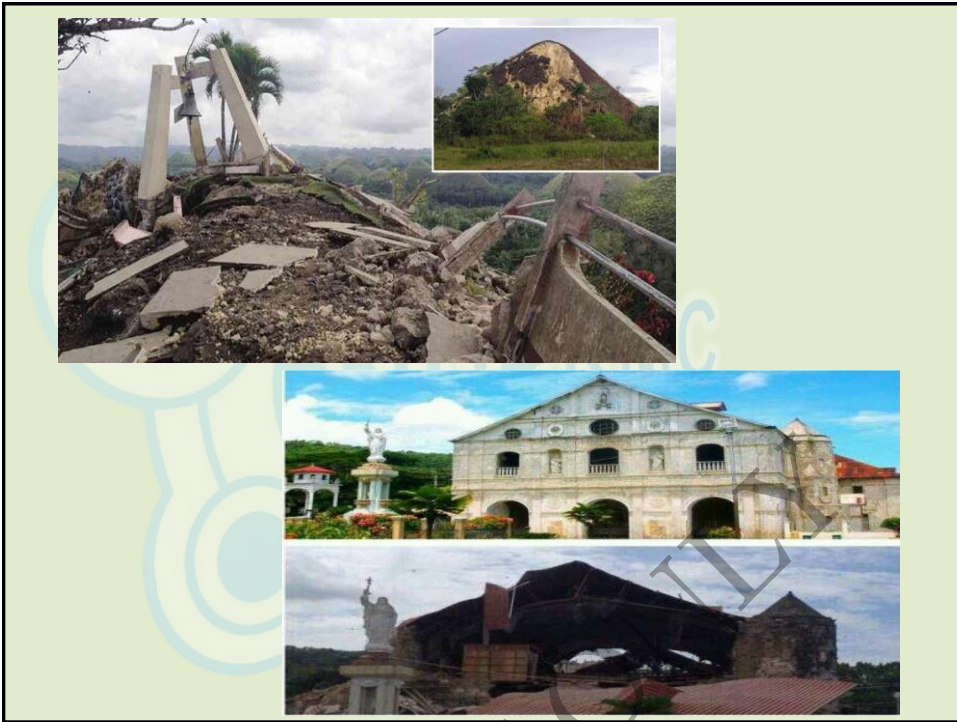
TOTAL	TOTALLY	PARTIALLY	TOTAL
	13,249	53,683	66,932

COST OF DAMAGE:

TOTAL	Roads / Bridges	Flood Control	Schools/ Hospitals	TOTAL
	820,583,182.90	18,154,000.00	1,418,600,000	2,257,337,182.90

CASUALTIES:

PROVINCE	NO. OF PERSONS		
	DEAD	INJURED	MISSING
CEBU	13	101	
BOHOL	208	692	8
SIQUIJOR	1	1	
NEGROS ORIENTAL		1	
ILOILO		1	
TOTAL	218	768	8





USec. Eduardo Del Rosario giving relief goods to the affected families in the province of Bohol



Filipino coastguard personnel load sacks of relief goods at a port in Manila

SOURCE: EPA

PHOTOS *(Actions Taken)*

Transport of water purifier intended for Sagbayan & Calape, Bohol

Salamat & Mabuhay!!!
(Thank you!)

