Meeting “New Normal”- Magnitude 7 earthquake and DRM in the Philippines

APEC Workshop on Scientific Decision Supports
For Emergency Preparedness of Natural Hazards
28 July 2015

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Manila Observatory

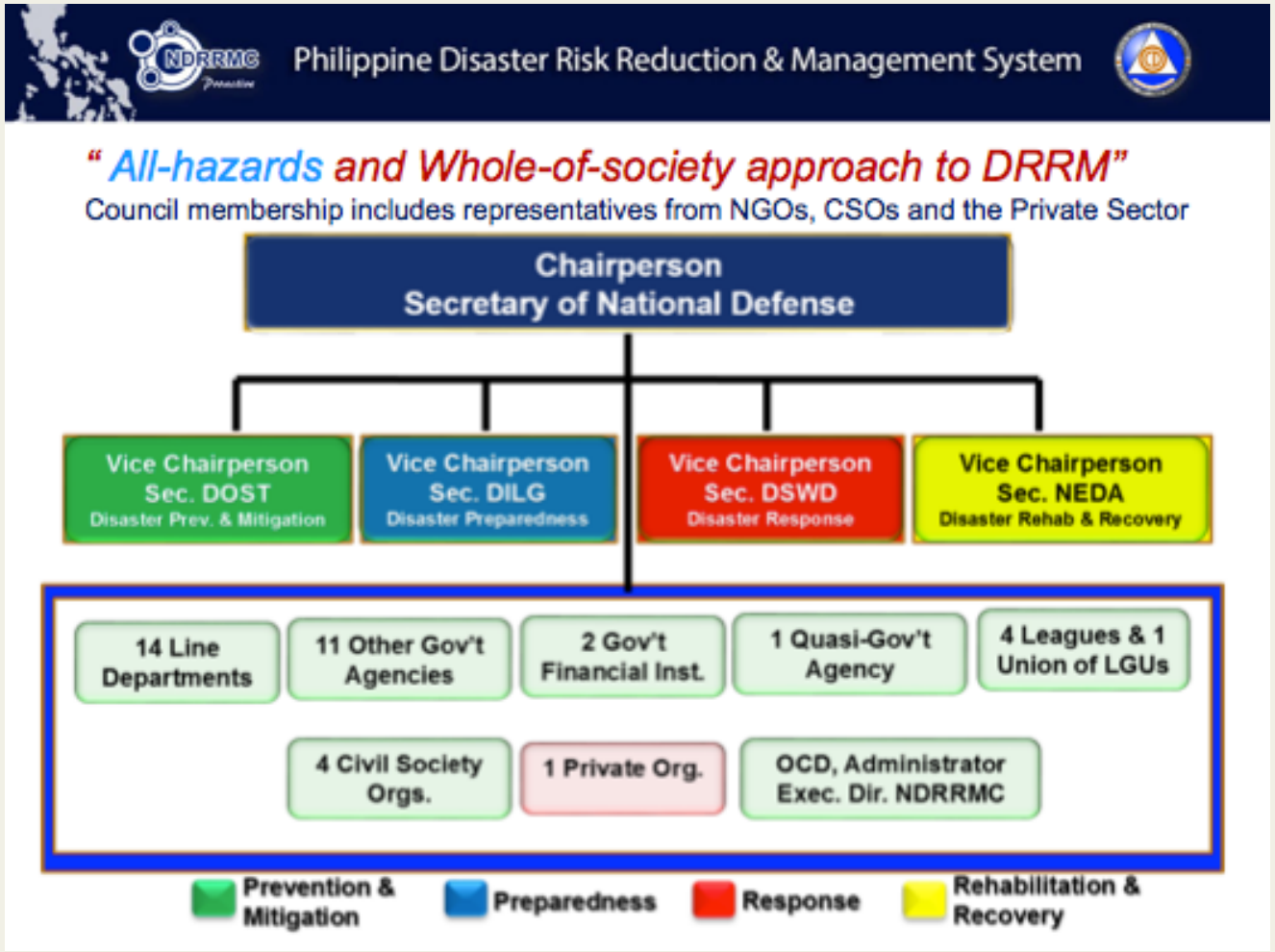
Outline

- Urban Risk and Social Vulnerability in MM: Implications for DSS
- Philippine DRM System
- Sendai Framework for Disaster Risk Reduction
- Vulnerability as the Root of Disasters
- Urban Profile of MM
- MMEIRS and RAP
- Intersecting Social and Physical Geographies
- DSS Challenges
- DSS and Lessons Learned from Recent Earthquake Disasters
- DSS for Resilience-based Leadership and Governance

Urban Risk and Social Vulnerability in MM: Implications for DSS

- Hazard preparedness and response need to match dimensions of vulnerability and capacity across different scales and sectors
- Comprehensive grasp of the dynamics of the hazard within the context of Metro Manila's urban profile is required
- Needs to reflect intersecting physical and social geographies that can impact complexity and dynamics of risk
- It must enhance inclusive preparedness and response for resilient pre-disaster recovery planning

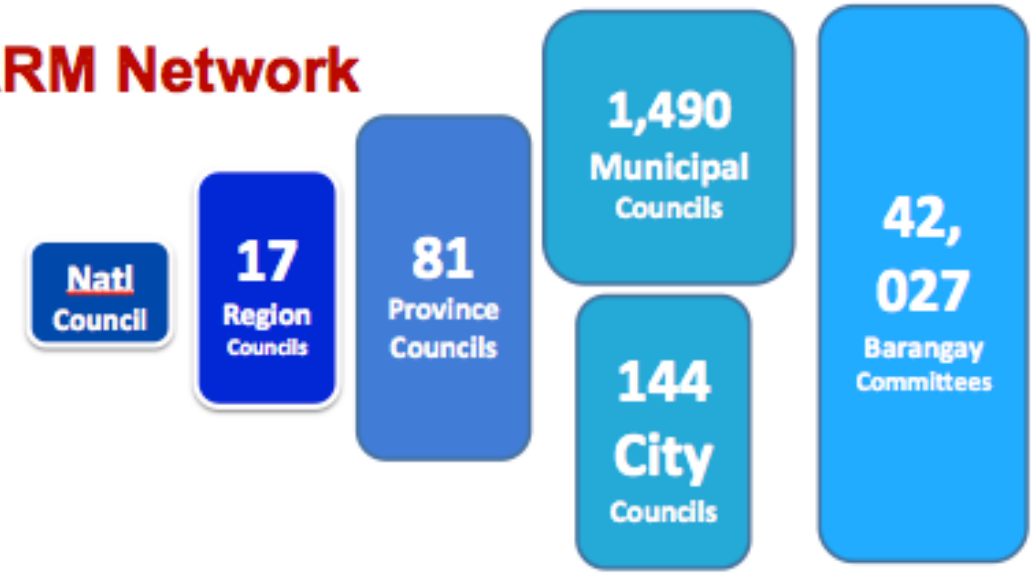
DRM in the Philippines



Source:Pama, 2015

Philippine Disaster Risk Reduction & Management System

DRRM Network



- **Sec. 12 of RA 101021** states that *" there shall be established Local Disaster Risk Reduction and Management Office (LDRRMO) in every province , city, municipality, and a BDRRMC in every barangay*

- **JMC NO. 2014-1, s. 2014** prescribed for the implementing guidelines in the establishment of LDRRMO and BDRRMC

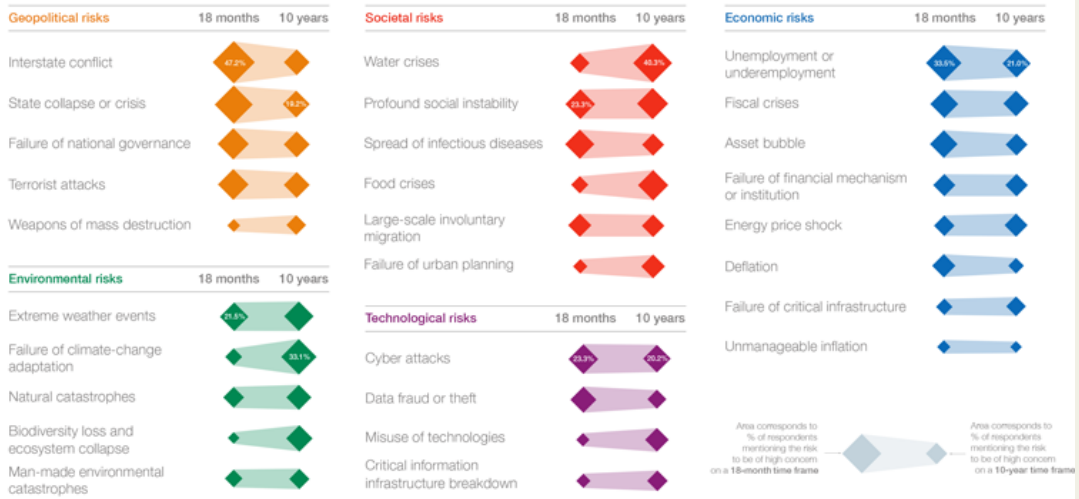
Philippine Disaster Risk Reduction & Management System

IV. Metro Manila Integrated Contingency

Sendai Framework for DRR:
4 Priority Actions

- Understanding disaster risk
- Strengthening disaster risk governance
- Investing in risk reduction
- Enhancing disaster preparedness for collective response, and to “build back better” in recovery, rehabilitation and reconstruction

Figure 1.1: Global Risks of Highest Concern - for the Next 18 Months and 10 Years



Source: Global Risks Perception Survey 2014, World Economic Forum.
Note: Survey respondents were asked to select up to five risks of highest concern for each time frame. The percentage indicates the share of respondents who selected the specific global risk among the five risks of highest concern for each time frame. In each category, the risks are sorted by the total sum of mentions. See Appendix B for more details. To ensure legibility, the names of the global risks are abbreviated. See Appendix A for the full name and description.

Integrating Global

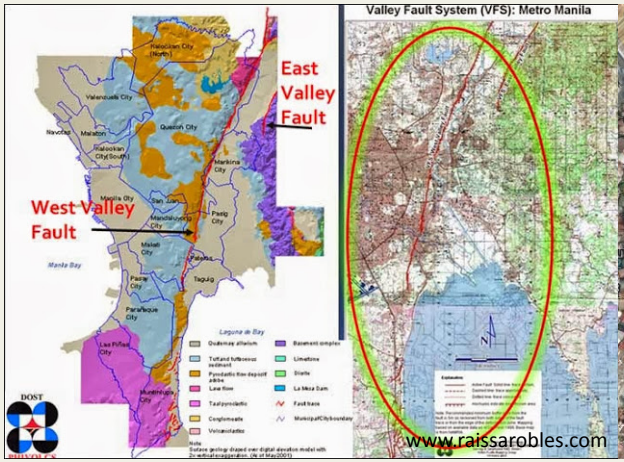
And Local Drivers and Factors

Vulnerability as the Root of Disaster

- **Resilience** is the ability of people, households, communities , countries and systems to mitigate, adapt and to recover from shocks and stresses in a manner that reduces chronic vulnerability and facilitates inclusive growth (USAID)
- **Risk** is the compounding effect of hazards, exposure and vulnerability, where vulnerability is defined as a combination of susceptibility, coping and adaptive capacity (adapted from UNISDR and World Risk Report)
- A **disaster** occurs when a hazard impacts vulnerable people (IFRC)

- **Social** vulnerability is the product of social inequalities. "It is defined as the susceptibility of social groups to the impacts of hazards, as well as their resiliency, or ability to recover from them" (Cutter and Emrich in Tapsell, McCarthy, et. al, 2010)

- The causes of vulnerability may be physical, socio-economic, or environmental



Urban Profile of MM

- 12 Million population
- 630 square kilometers
- Population density of 19,137 per sq km
- Youth and elderly are 30% of population
- Contributes over 36 % of national GDP
- Population growth rate of approximately 2% per year
- Over 4.5 Million informal settlers
- The Port Area of Manila has the highest population growth rate at 10% per year

MMEIRS Scenario 8

- JICA-Phivolcs-MMDA Partnership
- **7.2 Magnitude**
- **34,000** deaths from Earthquake
- **114,000** injured
- 4 out of 10 buildings collapsed or damaged
- Estimated **3.15 Million refugees**
- Water, Power and Telecommunication outage and loss
- MM physically separated into 4 sections due to damage to roads, bridges and flyovers
- Grid Cell size 25 has.

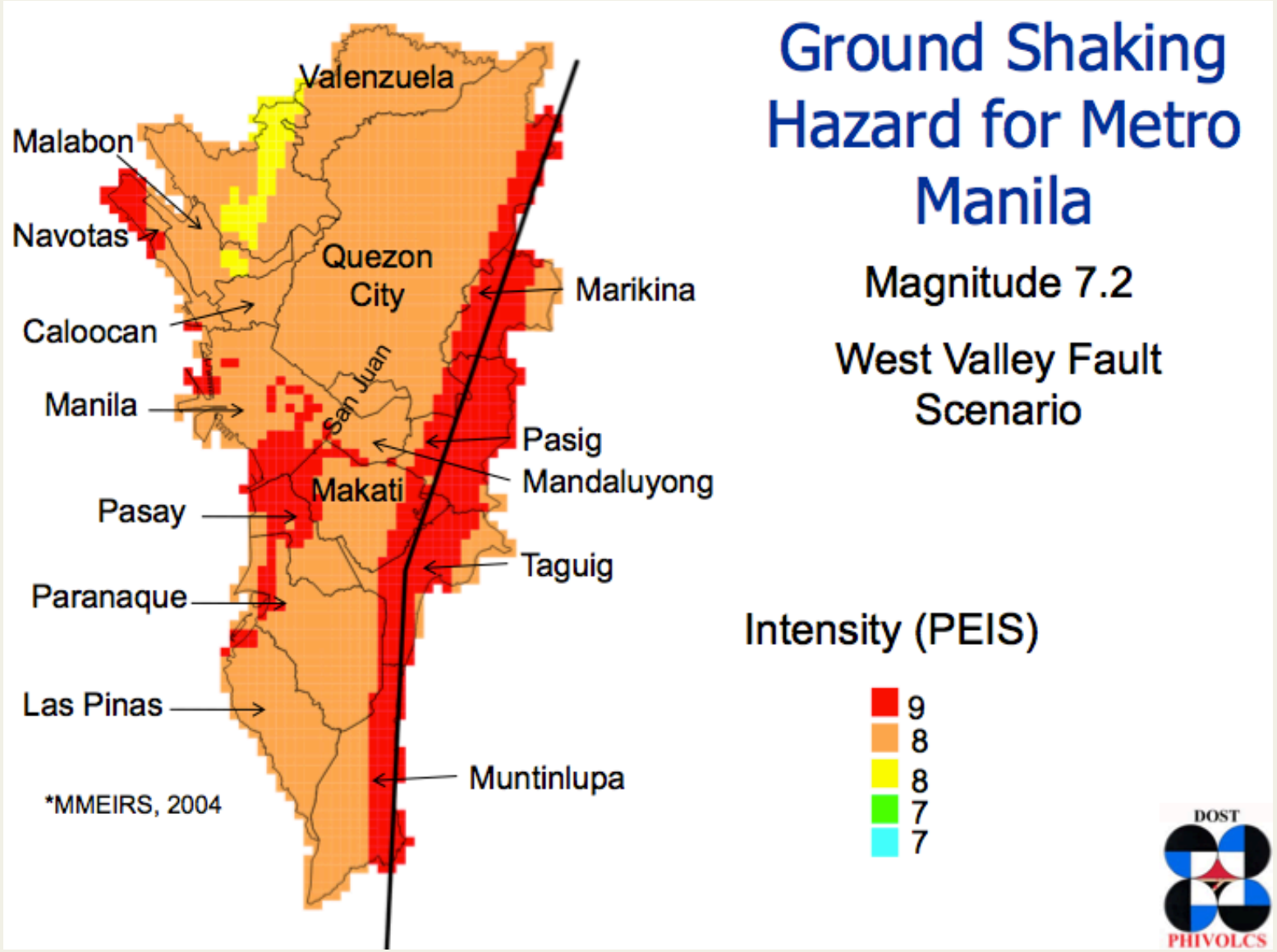
Source: Dr. Jane Punongbayan, Phivolcs, 2011

Risk Analysis Project (RAP)

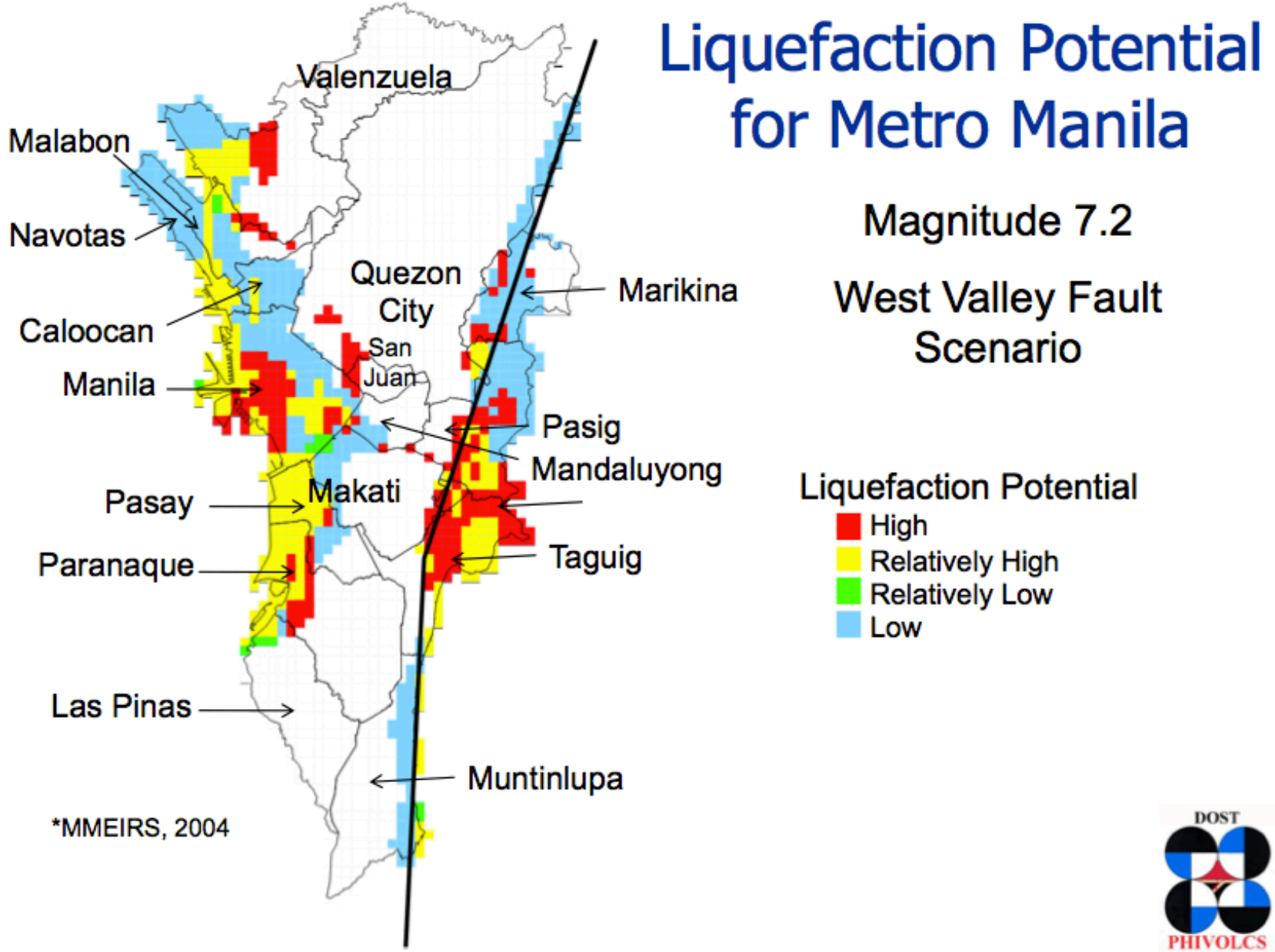
- Geoscience Australia, Phivolcs,MGB, NAMRIA PAGASA,UP, OCD
- Risk Analysis Project – includes Rodriguez, San Mateo, Antipolo, Cainta, Taytay in Rizal
- 6.5 Magnitude and 7.2 Magnitude
- Estimated economic losses from **Php 1.9-2.4 Trillion**
- **27,000** to **37,000** deaths
- **100,000** to **140,000** seriously injured
- **8 – 11 M Sqm** severely damaged

Source: Dr. Rene Solidum, Phivolcs, 2013

MMEIRS Scenario 8



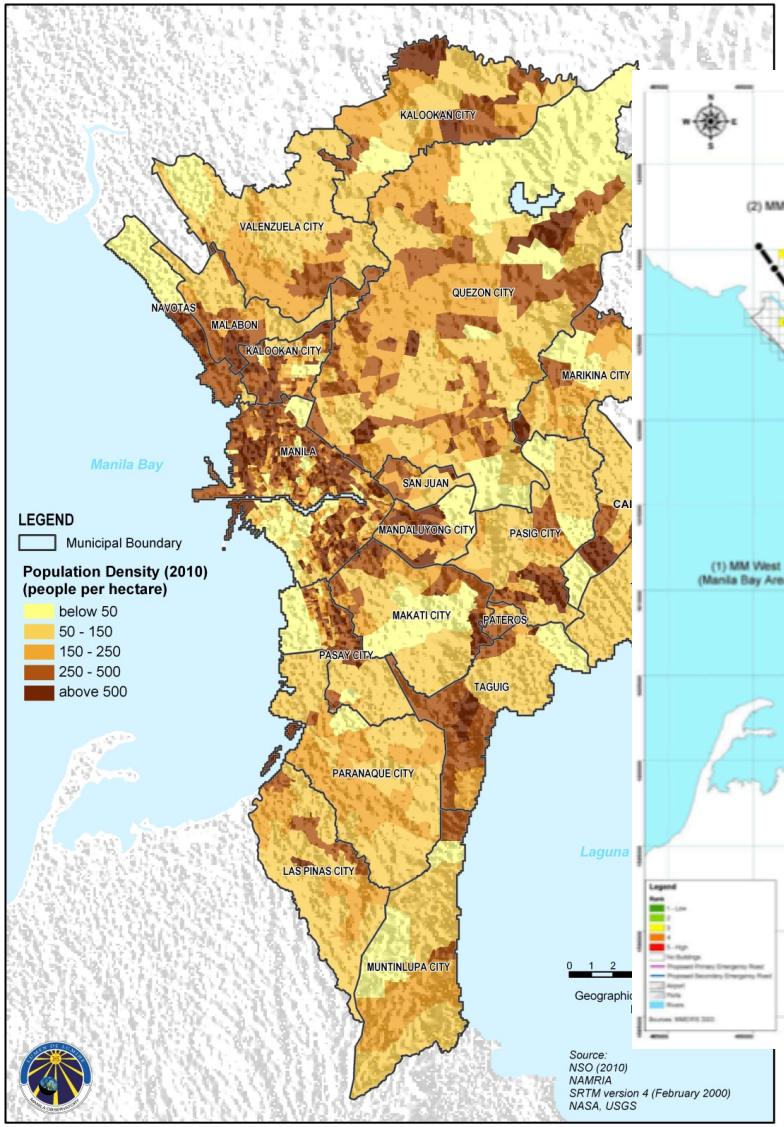
Source: *Overview of Earthquake Risk in Metro Manila and Developing Earthquake Preparedness*, Dr. Renato Solidum, Jr., Phivolcs, 28 May 2013

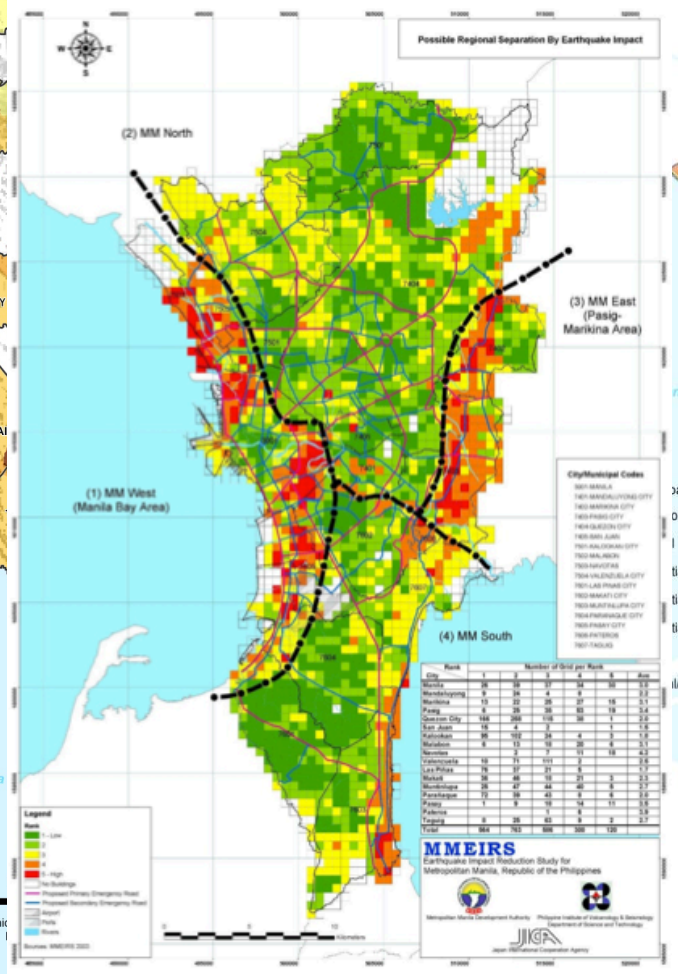


Source: *Overview of Earthquake Risk in Metro Manila and Developing Earthquake Preparedness*, Dr. Renato Solidum, Jr., Phivolcs, 28 May 2013

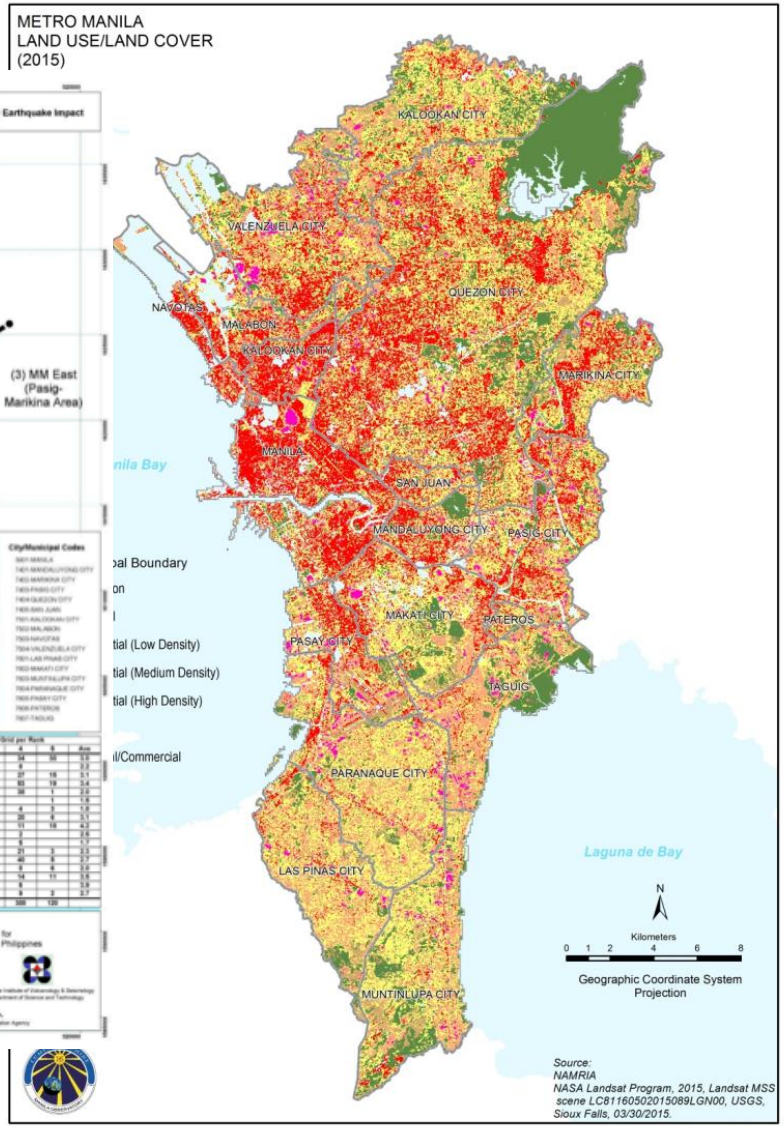
Intersecting Physical and Social Geographies

Population Density 2010

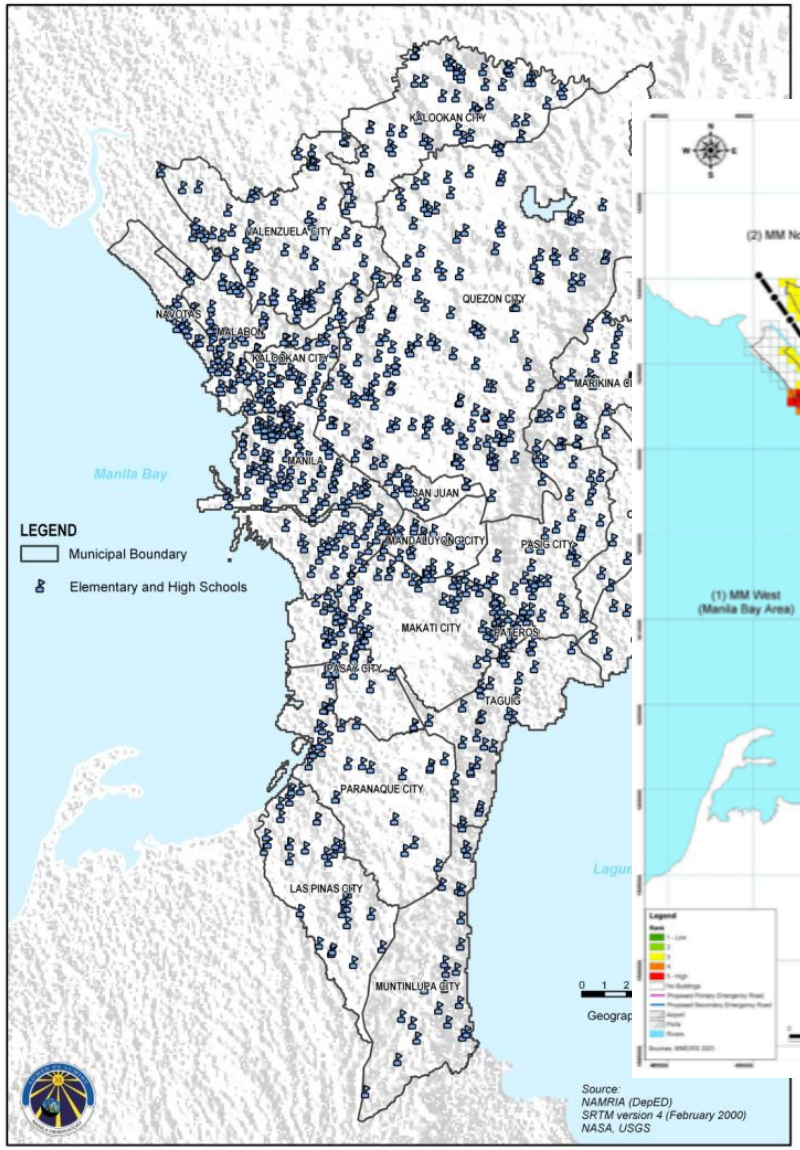


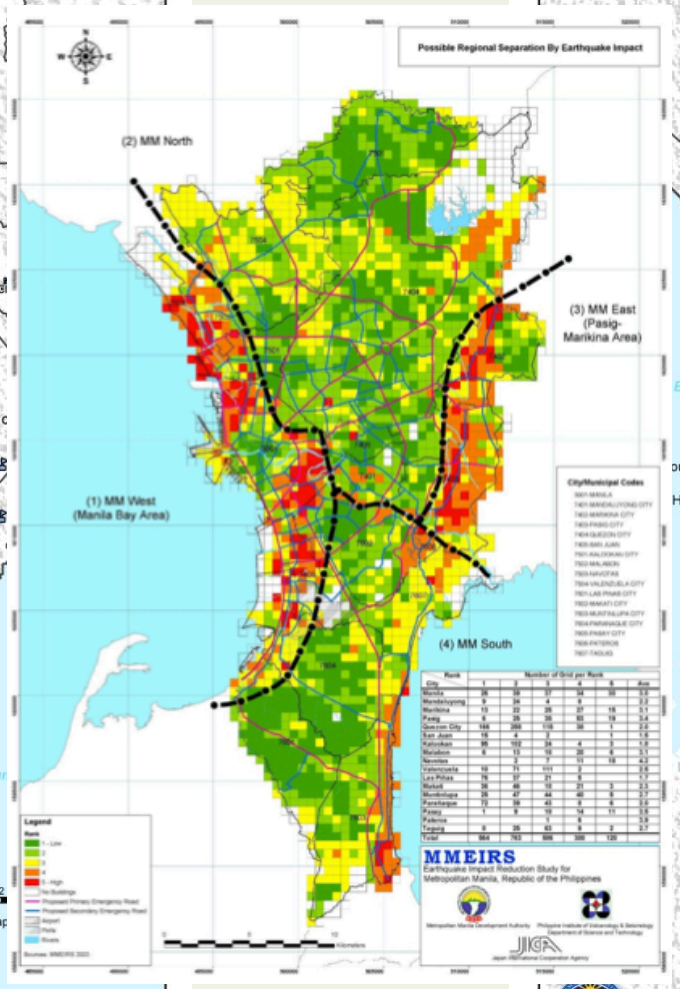


Land Use and Land Cover 2015

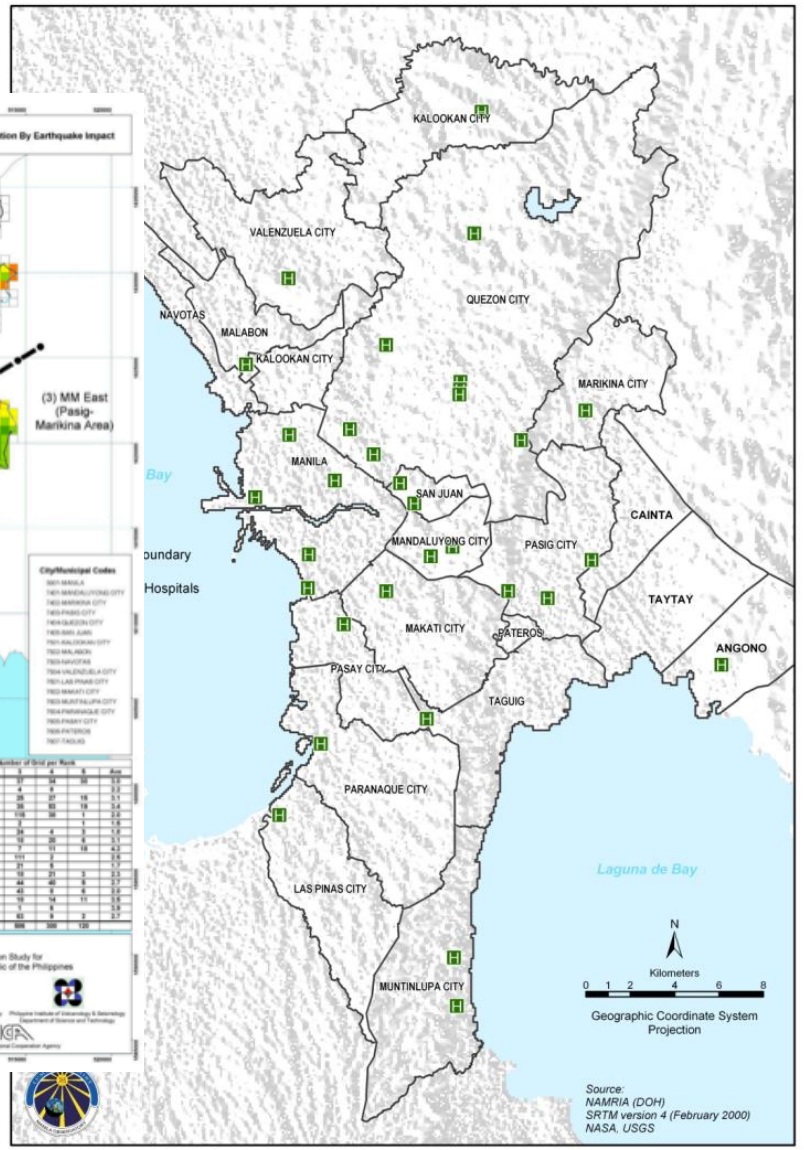


Elementary and High Schools

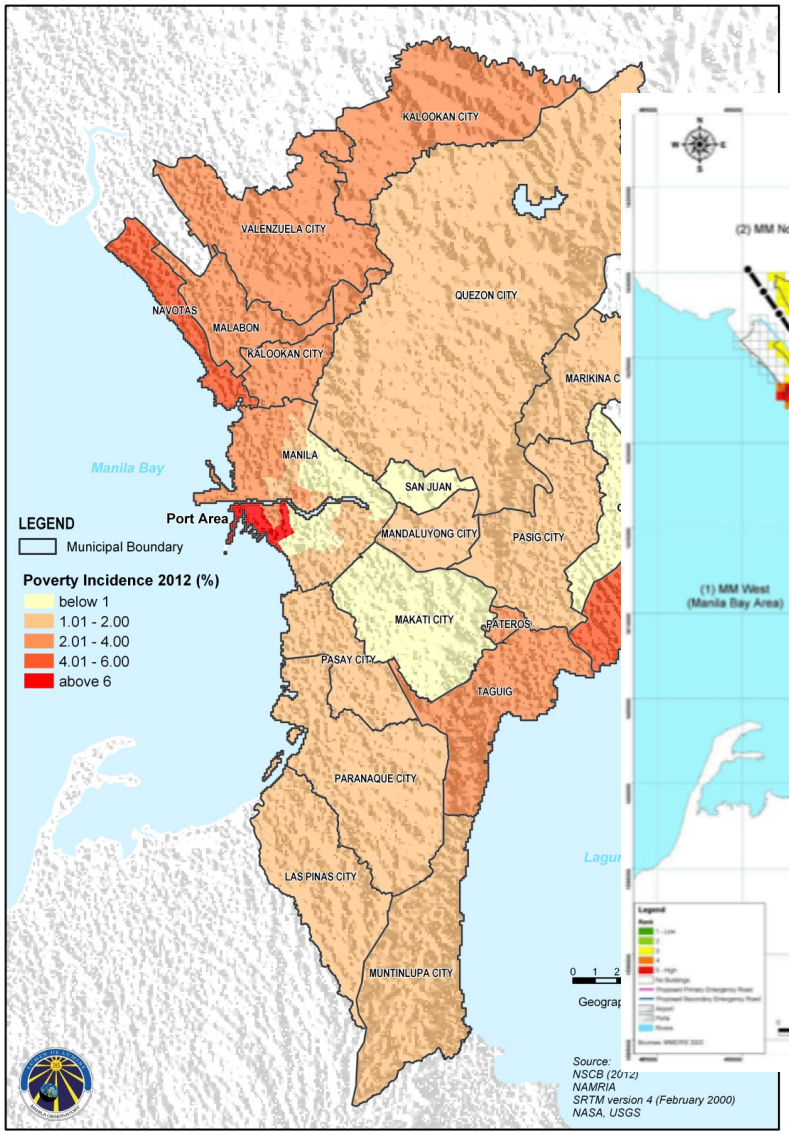


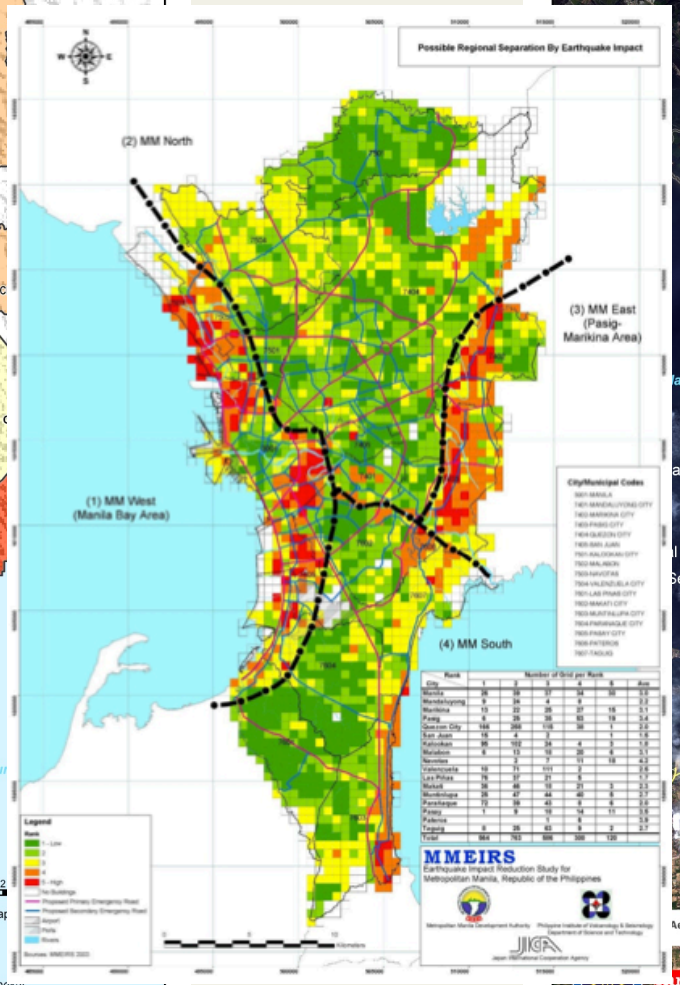


Government Hospitals

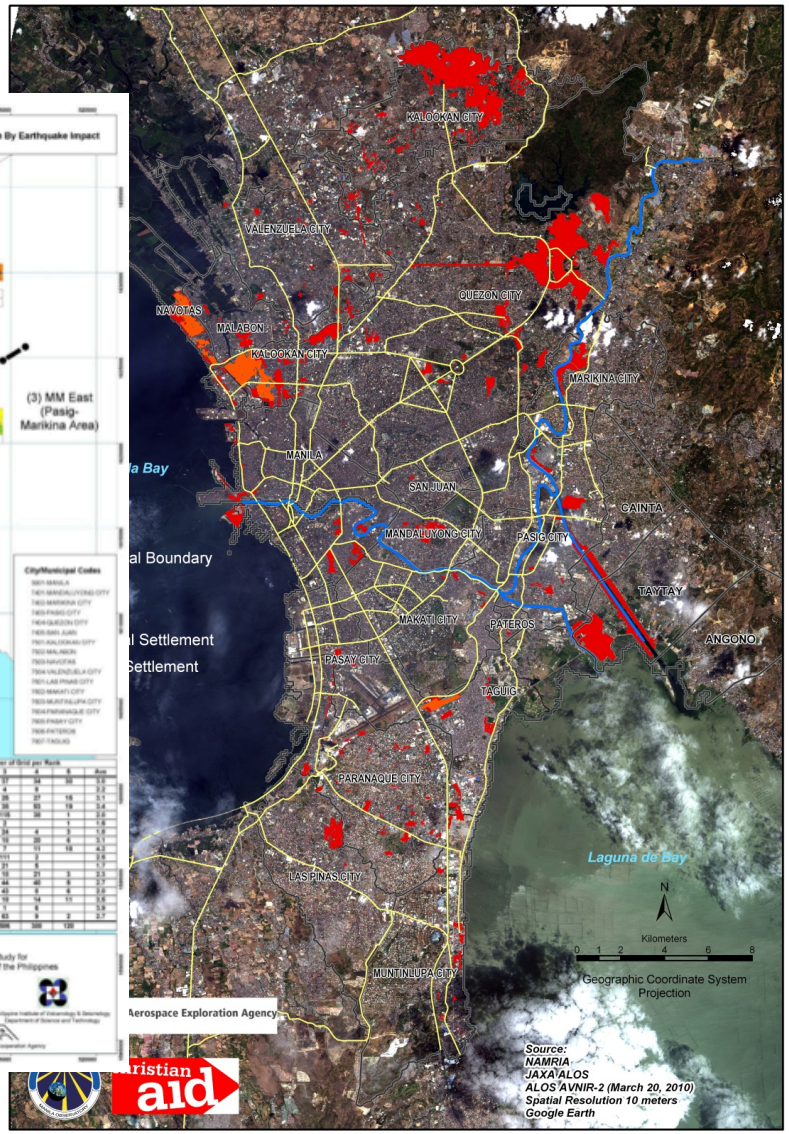


Poverty Incidence 2012





Informal Settlements 2010



Bagong Silang, Caloocan

- Population: 1,000,000
- 578 hectares

Source: PATAMABA-Inclusive Urban Planning Project

Batasan Hills, Quezon City

- Estimated Population: 400,000
- 444 hectares

Source: Pinoy Media Center (2013) based on data from Alyansa Kontra Demolisyon and Task Force Urban Conscientization

Addition Hills, Mandaluyong City

- Estimated Population: 125,000
- 118 hectares

Source: Mandaluyong City Govt. (2010)

Lupang Arenda

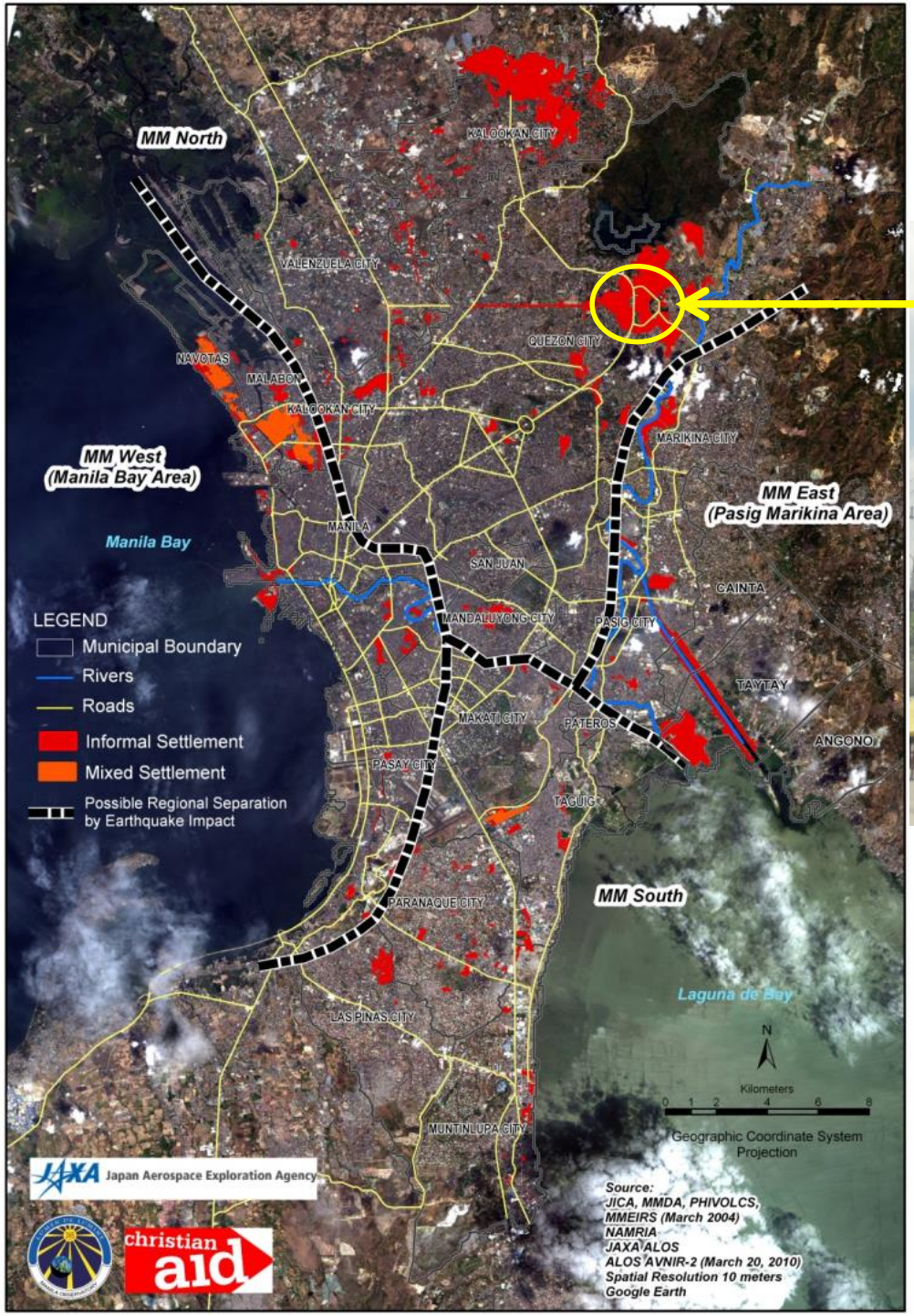
- Estimated Population: 300,000
- 171 hectares

Source: Laguna Lake Development Authority (2009)

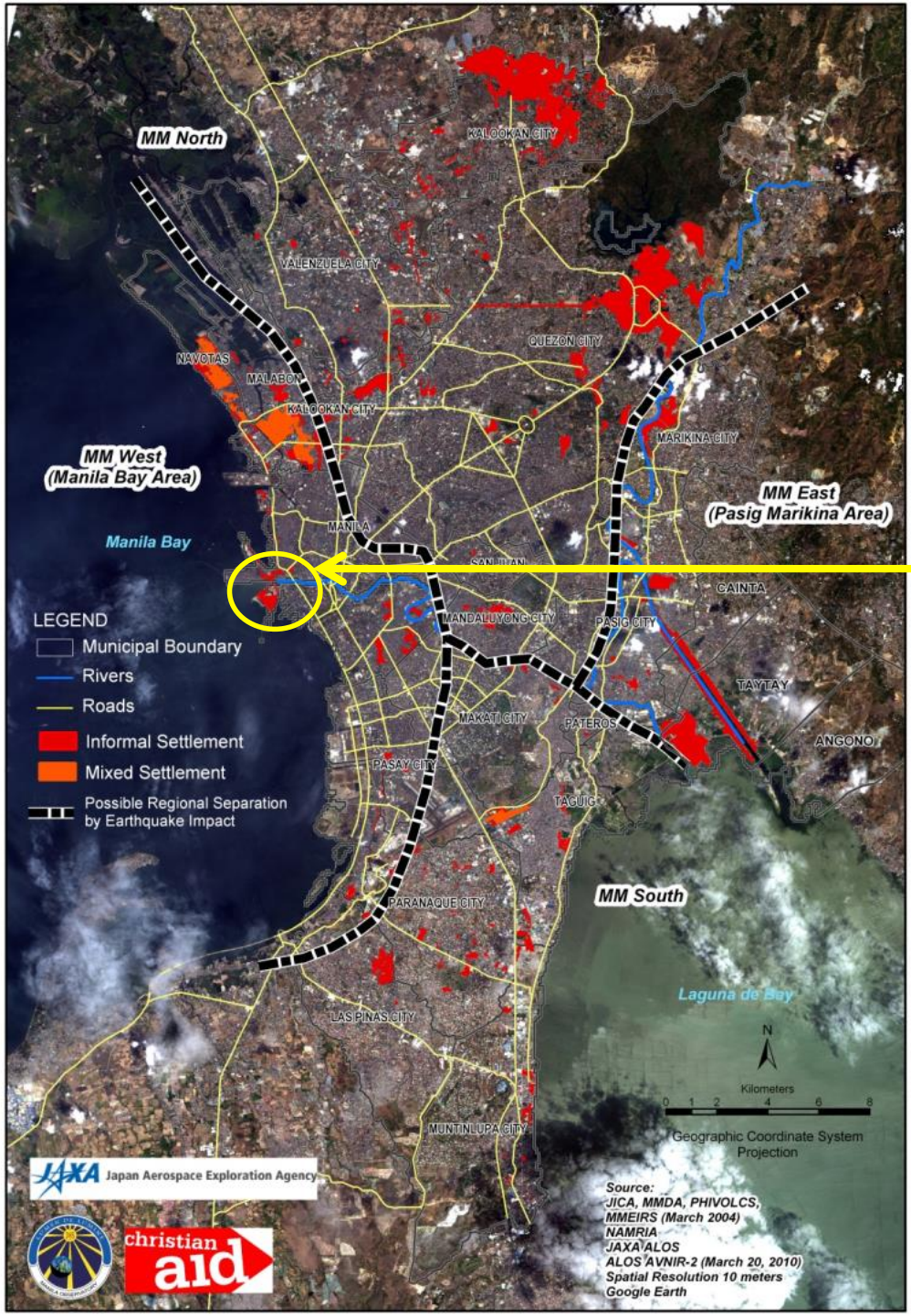
Baseco, Manila

- Estimated Population: 100,000
- 56 hectares

Source: Urban Poor Associates (2009)

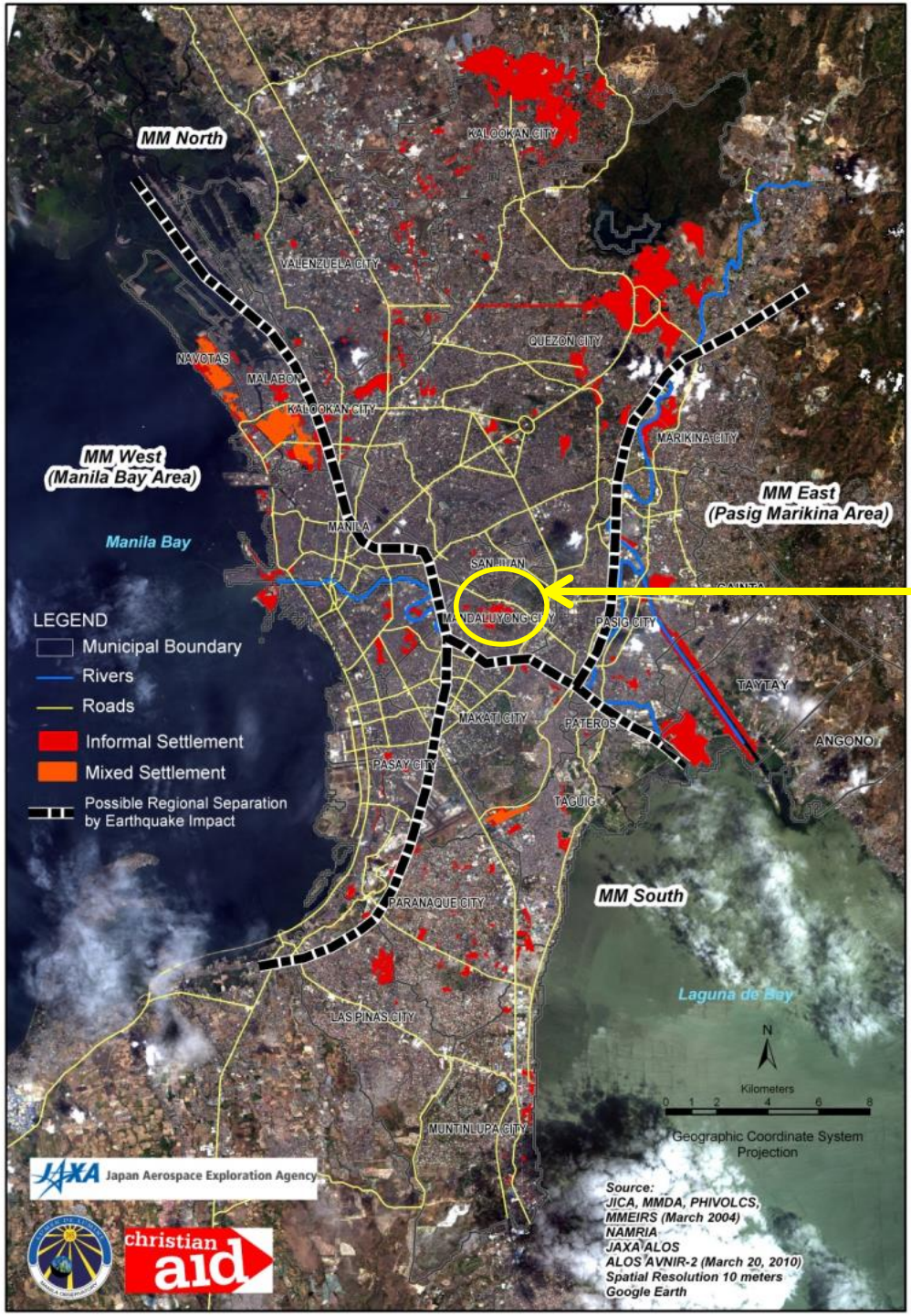


Batasan Hills, Quezon City
Source: Manila Observatory, 2012



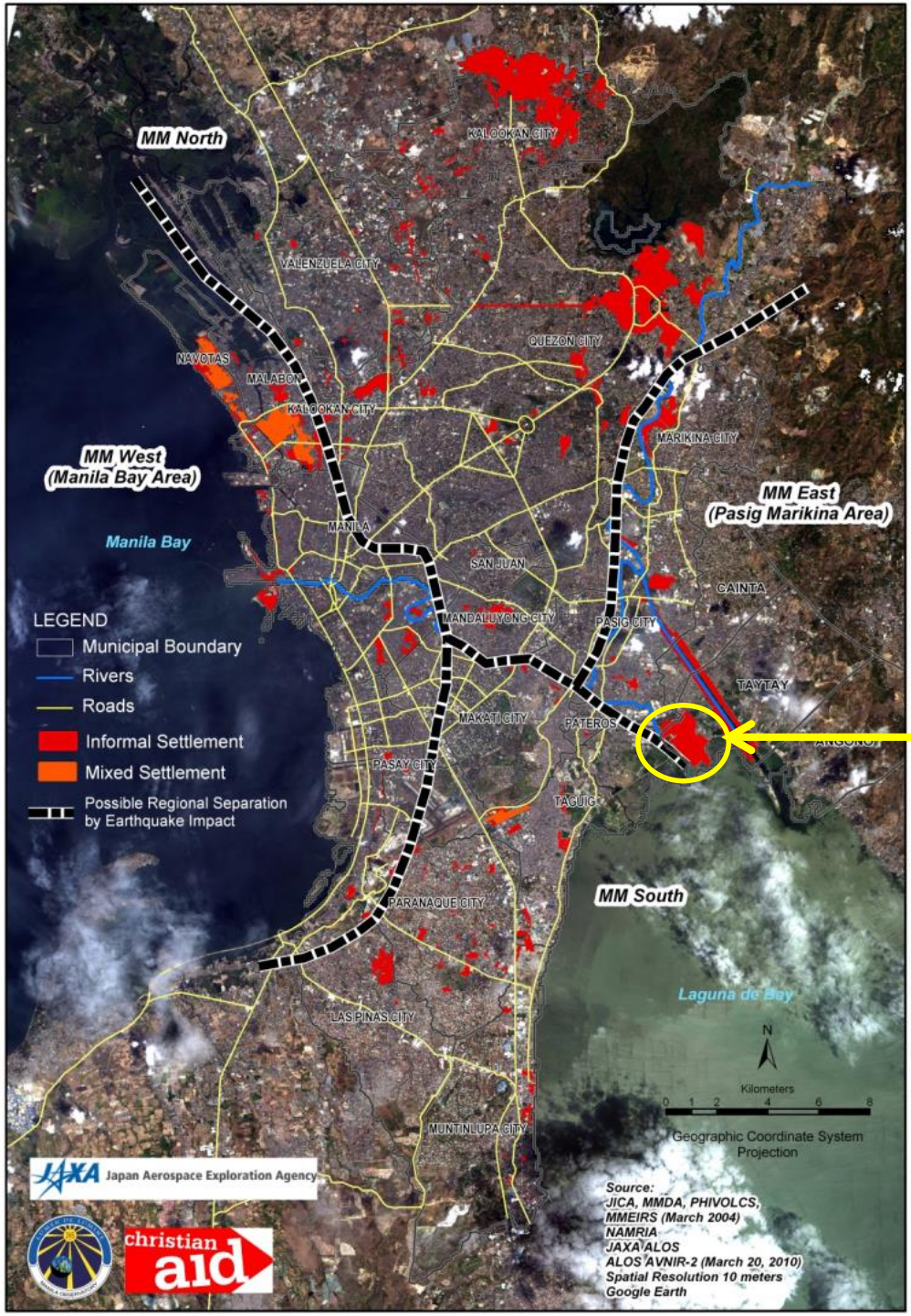
Baseco, Manila

Photo courtesy of: *Dr. Anna Marie A. Karaos, John J. Carroll Institute on Church and Social Issues*



Addition Hills, Mandaluyong City

Photo courtesy of: *Hands of Mercy Phils.*



Lupang Arenda

Photo courtesy of: *Jonathan Cellona, ABS-CBN News*

DSS Challenges and Opportunities

- Government and private sector action is mostly top-down, hazard-focused and response-based

  - Dynamically visualize risk and vulnerability on a shared platform

OPLAN METRO YAKAL

- ***STRATEGY OF IMPLEMENTATION***
  - **Allocate resources** to MMDA operating units
  - **Complement the efforts of LGUs**
  - **Creation of TASK FORCE "RAINBOW"** to prepare for and carry out humanitarian assistance mission related to earthquake disasters
  - Priority given to **life-saving tasks and prevention of injuries**
  - Installation of **Incident Command System (ICS)**
  - TF Rainbow to closely **coordinate and inter-operate** with units and resources of MMRRDMC member organizations

Sub-Task Forces and Color Assignment

NORTH	
Caloocan Valenzuela Quezon City San Juan Mandaluyong	*Staging Area:* **Veterans Memorial Golf Course**
WEST	
Navotas Malabon Manila Pasay	*Staging Area:* **Intramuros Golf Course**

EAST	
Marikina Pasig	*Staging Area:* **LRT SANTOLAN STATION DEPOT**
SOUTH	
Makati Pateros Taguig Parañaque Las Piñas Muntinlupa	*Staging Area:* **Villamor Airbase Golf Course**

Source: MMDA

- By law, the Department of Social Welfare and Development is in charge of response but it can deliver mainly relief and pre-disaster recovery planning is not being discussed
  - Support area-based business continuity planning, e.g. JICA-MMDA project, Private sector DOC
  - Capture community-based self-help capabilities
  - Facilitate use of core capabilities of Armed Forces, e.g.TEWT

Source: Santiago CGSC,2015

DSS and Lessons Learned from Recent Earthquake Disasters

- Culture, Social Capital and Trust Matters
- Evidence-based Decision-making is critical in Preparedness and over-all Risk Governance
- Children are especially Exposed and Vulnerable
- Pre-disaster Recovery Planning is essential to survival and this should include Business Continuity Planning and a vision for Creative Reconstruction

Time.Inc.

Haiti Earthquake

12 January 2010
7.0 Magnitude
Officially 316,000 killed
300,000 injured
1.5 Million displaced

Tohoku Earthquake

11 March 2011
9.0 Magnitude
15,853 killed
3,282 Missing
6,023 Injured


Reuters

Nepal Earthquake

25 April 2015

-7.8 Magnitude
-Over 8000 dead and missing
-Widespread destruction of buildings and world heritage sites
-Challenging humanitarian logistics

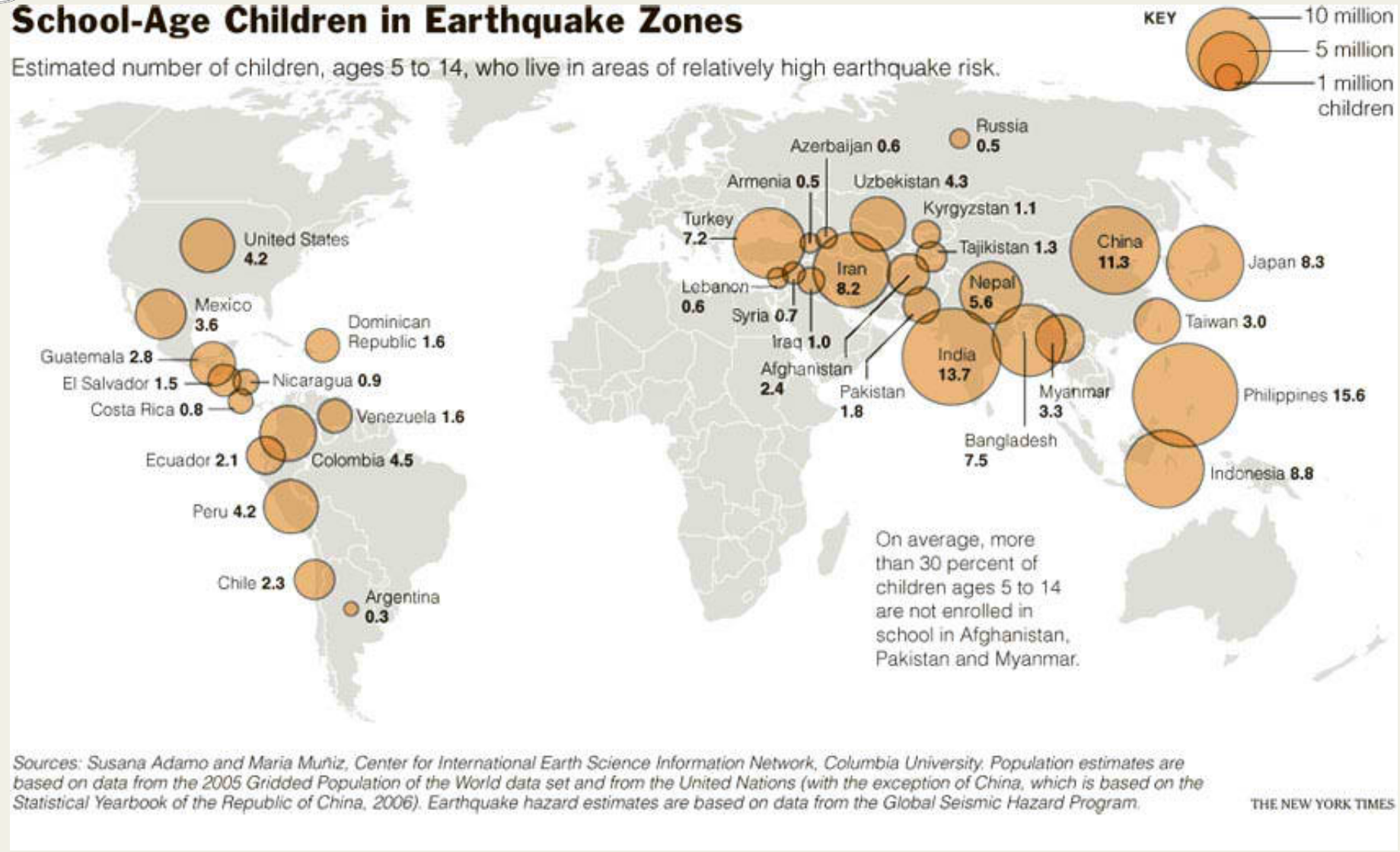
NYTimes 2009/05/12

Sichuan Earthquake

12 May 2008

The Epoch Times 2009/05/05

-7.9 Magnitude
-4,800,000 left homeless
-87,150 killed and Missing
-Over 5000 students killed



Metro Manila has over 1.5 Million Elementary and High School students.

Great Hanshin Earthquake

17 January 1995

Reuters


IBITimes

-7.3 Magnitude
-6,434 killed
-Over 43,000 injured
-More than120,000 total and -partially damaged buildings
-7,000 structures burned

“Creative Reconstruction”

Basic Targets and Policies of Reconstruction Plan (July 1995)

1. Community Planning focused on Welfare
   -Hi-quality Public Housing for Refugees
   -Medical Care System for Disaster Response

2. Multicultural Society

3. Improving Existing Industry and Incubating New Industry

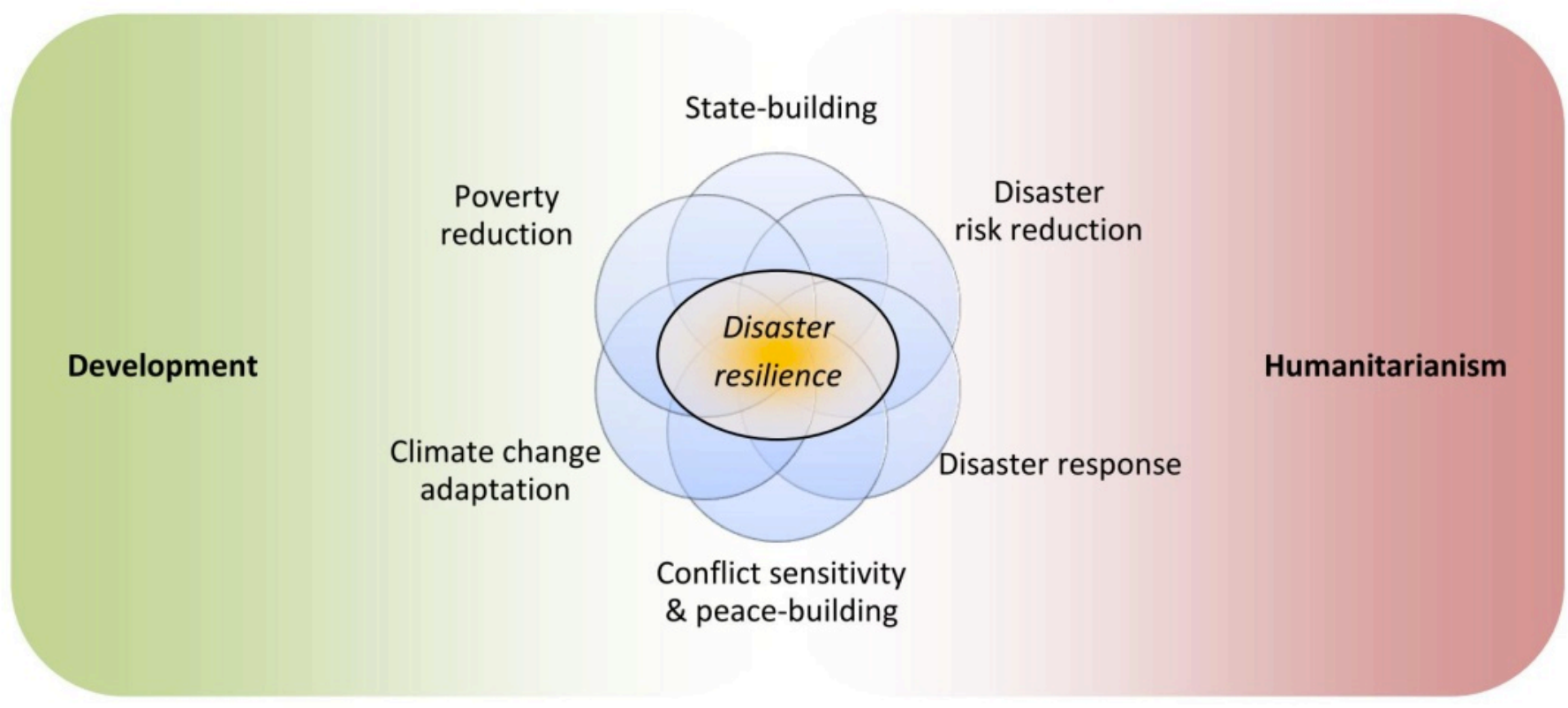
4. Investment in Disaster Risk Reduction
   - Improving Facilities for Disaster Risk Reduction

-Establishment of Comprehensive Disaster Management
-Community Based Disaster Risk Reduction

5. Establishment of Resilient Metropolitan System
-Redundant Transportation System

Source: ADRC, Natori 2014

DSS must support resilience-based leadership and governance



Source: DFID,GSDRC

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