Implications of Nepal Earthquake on the Preparedness of Metro Manila and other Megacities

Land Use Planning and Management

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Outline

- Implications of Tragic Nepal Earthquake
- Disaster, and Land Use and Development Planning in the Philippines’ Context
- The West Valley Fault and the Impending Impacts
- Mainstreaming DRR and the Frameworks in Relation to the Local Planning System
- Some Lessons
Implications of Nepal’s Earthquake

• April 25, 2015 Nepal earthquake is tragic reminder to ensure good infrastructure, risk sensitive land use planning, effective land use management, and competent functional institutions for disaster management.

• Nepal’s Dept. of Urban Dev’t and Building Construction noted that construction often proceeds without zoning approval, and that urban plans are rarely implemented.

• 95% of Nepal’s own government offices violate national construction codes.

• High density and substandard building stock are the ingredients of a devastating disaster.

Thus, given poor building conditions and high urban density, Nepal’s earthquakes are likely to cause significant economic and property losses and loss of lives.

(Source: The Diplomat, 2015)
High Density and Substandard Building Stock are the Ingredients of a Devastating Disaster.

Source: www.usatoday.com

Source: www.ibtimes.com

Source: www.wired.com

Source: www.indiegogo.com

5/15/2015

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The Nepal Tragedy

- In Nepal, municipalities are responsible for land use planning, construction permits, and the enforcement of compliance with national building codes.
- The local planning system in the Philippines and Nepal are found to be similar – government organizations establish and operate the regulations.
- In the Philippines, city enact the Ordinance to regulate the use of land along the fault lines, and it is incorporated into Zoning Ordinance (ZO). The City further set the requirements of geotechnical investigation to new developments in building permit procedure.
Disaster, and Land Use & Development Planning in the Philippines Context
### Disaster, and Land Use & Development Planning in the Philippines Context

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<th>International Frameworks on Development, DRR and CCA</th>
<th>National Frameworks on Development, DRR and CCA</th>
<th>Accompanying National Plans</th>
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<td>National Disaster Risk Reduction and Management Framework (2011)</td>
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<td>Local CC Action Plan (LCCAP)</td>
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<td>Local Disaster Risk Reduction Management Plan (LDRMP)</td>
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**Summary of Philippines Plan Related to DRR and CCA**

HIERARCHY AND LINKAGES OF PLANS

NOTES:
(1) PFP = (N/R/P) Physical Framework Plan
(2) CLUP = (P/C/M) Comprehensive Land Use Plan
(3) MTP = Medium Term Philippine (DP and IP)
(4) CDP = (P/C/M) Comprehensive Development Plan

Source: HLURB, 2006
Philippines’ Land Use and Development Planning System

Source: NEDA-ADB, 2007
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The 12-Step Process to Comprehensive Land Use Planning

Step 1: Getting Organized
Step 2: Identifying Stakeholders
Step 3: Setting the Vision
Step 4: Analyzing the Situation
Step 5: Setting the Goals and Objectives
Step 6: Establishing Development Thrusts and Spatial Strategies

Step 7: Preparing the Land Use Plan
Step 8: Drafting the Zoning Ordinance (ZO)
Step 9: Conducting Public Hearing on the Draft CLUP and ZO
Step 10: Reviewing, Adopting and Approving the CLUP and ZO
Step 11: Implementing the CLUP and ZO
Step 12: Monitoring, Reviewing and Evaluating the CLUP and ZO

Source: HLURB, 2006
Simplified Comprehensive Development Planning Cycle

Source: DILG, 2009
The West Valley Fault and the Impending Impacts
West Valley Fault and Impending Impacts

• Last time the West Valley Fault generated a major earthquake was in 1658.

• The fault has a tendency to erupt every 400 to 600 years. 2015 is the 357th year since the last earthquake, making the next big one possible in 50 years at the soonest (PHVOLCS, 2014).

• 40% residential buildings in Metro Manila will be damaged
The Worst Case Scenario Earthquakes

### Model M Characteristics

<table>
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<th>Model</th>
<th>M</th>
<th>Characteristics</th>
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<td>08 – West Valley Fault</td>
<td>7.2</td>
<td>Severe Damage</td>
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<tr>
<td>13 – Manila Trench</td>
<td>7.9</td>
<td>Tsunami</td>
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MMEIRS (MMDA-PHIVOLCS-JICA, 2002)
Tsunami - Preliminary Estimation -

- **Model 13** (Manila Trench)
  - Average 2 m
  - Maximum 4 m
  - Arrival time ~ 1 hour

- **Model 08** (West Valley Fault)
  - Tsunami would not be generated

MMEIRS (MMDA-PHIVOLCS-JICA, 2002)
Magnitude 7.2 Earthquake from the West Valley Fault will cause:

– Could damage approximately 38% of the residential buildings (total 1.3 M), 38% of the 10-30 story buildings (total 981), 14% of the 30-60 story buildings (total 119), 30-35% of public buildings

– Estimated 33,500 deaths and 114,000 injuries

– Additional 18,000 deaths from fire

– 9 bridges might be affected; 4,000 water pipes or joints will break, 30km electrical cables will be cut & 95km communication cables will be cut

MMEIRS (MMDA-PHIVOLCS-JICA, 2002)
Availability of scientific knowledge and lessons from the April 25, 2015 Nepal earthquake exist.

Land Use Planning and Management need to be explored as gateway to create resilient societies.

ARE WE READY?
Resilient Land Use Management: Mainstreaming DRR and CCA in Physical and Development Planning

• Various efforts have been made by government, the academe, NGOs, and private sector towards mainstreaming DRR in the local planning system (i.e., physical and development planning, annual investment planning and budgeting at national, sub-national and local levels) from national to local level.

• Some major laws, regulations, and ordinances that provide the legal framework for land use management and earthquake disaster reduction are as follows:
  
  • Local Government Code (Republic Act 7160) • Philippine Disaster Risk Reduction and Management Law 2010, RA 10121.
  • City Ordinances • Zoning Ordinances • National Building Code
  • National Structural Code of the Philippines, etc.
Framework, Mainstreaming DRR in Sub-national Development and Physical Planning

Source: NEDA, 2008
Guidelines on Mainstreaming DRR in Physical and Development Planning Processes
Kathmandu Metropolitan City (KMC) Risk Sensitive Land Use Planning Framework

Mainstreaming Disaster Risk Reduction in Megacities: A Pilot Application in Metro Manila and Kathmandu

Risk-Sensitive Land Use Plan
Kathmandu Metropolitan City, Nepal

February 28, 2010

Source: DKKV and EMI, 2010
Some Lessons

• In the Philippines and Nepal enactment and operation of the regulations or ordinances are conducted at local government level. Similarly, the City Engineer is in charge of providing building permits by monitoring zoning ordinance and structural design in one window. Thus, National Building Code and Structural Codes are regulated by the local government.

• Majority of deaths from earthquakes are caused by the collapse of buildings and other infrastructures.

• The Nepal National Building Code has been applicable for at least two decades, but urgently need updating to incorporate new knowledge about earthquake-resistant design and materials.
Some Lessons

- The political instability in Nepal weakened the effectiveness of Nepal’s national and local governments, including institutions responsible for earthquake preparedness and related issues like infrastructure and urban planning.

- A well thought out decision will positively affect future development opportunities and reduce risks and a good plan will consider locating future communities to safe areas.

- However, without Institutional and personnel coping and adaptive capacities and good governance towards DRR, even a good plan may not work as expected.
Some Lessons

• There should be strict compliance in the issuance of the following:
  • Land Use/Zoning Ordinances
  • Locational clearances
  • Building Permits
  • Occupancy Permits
  • Development Permits for Subdivision Development
  • Environmental Compliance Certificate (ECC)
  • License to Sell (HLURB)
  • Engineering and Geological Assessment Report (EGGAR)

• There is a need to expand the institutional and personnel coping and adaptive capacities to become a resilient society.

• It is highly recommended to gear future researches in integrating Good Urban Governance towards Disaster Risk Reduction and Management.
Thank you

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