

Housing Redevelopment Taking Into Consideration Disaster Risk Reduction in Urban Areas

Metro Manila as a Case Study



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The frequency and magnitude of natural disasters in the world seem to have increased in the last twenty years, causing much physical and economical damage and tremendous loss of lives. Many areas in the Philippines are known to be vulnerable to natural disasters such as typhoons, floods, landslides, volcanoes, earthquakes, and tsunamis. Although all precautions and protection have to be taken for all these natural calamities, earthquakes seem to be the most potentially dangerous because of the absence of any indication or warning as to their occurrence.

Most of the old cities in the Philippines developed without considering the geophysical hazards of the site and therefore were not able to avoid or mitigate the potential risks brought about by earthquakes. Advances in the study of the geology of the Philippines in recent years have provided more geophysical information such as the presence of fault lines (the causal location of earthquakes) in specific sites. In Metro Manila (also known as the National Capital Region), for example, there are

three geological fault lines that traverse Taguig City, Makati City, Pateros, Pasig City, Marikina City, and Quezon City.¹

In urban areas like Metro Manila, it is the marginalized sector that is often most severely affected by natural disasters largely because of the poor siting and lack of planning of their communities. It is imperative that cities make use of the latest geophysical data and identify areas that have to be redeveloped taking into consideration *disaster risk reduction*².

1 Shelter Situation Analysis

1.1 Basic General Data

Geography and Administration

The Philippines is an archipelagic nation of 7,100 islands located in Southeast Asia with a total land area of 30,000 square kilometres spread out into three main island groups – Luzon in the north, Visayas in the centre, and Mindanao in the south. There are also three metropolitan cities equitably distributed in the three island groups, namely: Metro Manila in Luzon, Cebu City in the Visayas and Davao City in Mindanao.

The Philippines has a constitution resembling that of the United States and therefore, has three main branches of government. The President heads the executive branch and is elected directly by the people to serve a term of six years. The legislative branch consists of a Senate (Upper House) with 24 senators and a House of Representatives (Lower House) with about 250 members. The Supreme Court is the judicial branch (third branch of government) which is the country's highest tribunal. The National Capital Region (NCR) or Metro Manila has a total land area of 636 square kilometres (0.2% of the total land area) and consists of seventeen Local Government Units (16 cities and one municipality), each governed by a Mayor as the local Chief Executive.

¹www.ncr.denr.gov.ph

² “Disaster risk reduction (DRR)” – is a term used for techniques that focus on preventing or minimising the effects of disasters. The term has been adopted by the United Nations, which has developed an international strategy on promoting disaster risk reduction. (Wikipedia)

Demography and Health

The 2000 Census recorded the population of the whole Philippines at 76.5 million. The population of Metro Manila, as the most urbanized area in the Philippines, was 9,932,560 in 2000.³ This was a 1.06 percent increase from the 9,454,040 population recorded in 1995. In 2006, the population of Metro Manila was estimated at 10,596,501. Metro Manila has a 14 percent share of the total national population and about a third of the national urban population. The annual growth rate of Metro Manila is about 2.25%. Population density was estimated at about 16,661 persons per square kilometre. The average household size in Metro Manila recorded in the 2000 Census was 4.63, which is lower than the national average household size of five (5).

Looking at key development indicators, the quality of life in Metro Manila is better off than the rest of the Philippines as it has the lowest regional poverty incidence level with only 4.8% of total number of families considered as poor.⁴ The per capita income in Metro Manila was estimated at 36,639 pesos in 2003. Metro Manila's unemployment rate is 13.5% (July 2006), while the poverty headcount ratio (% of families living below poverty line) is 4.8% (2003). Life expectancy in Metro Manila in 2003 was 70 years old.

Economy

The Gross National Product and the Gross Domestic Product of the Philippines have been on an upward trend since 1991. The momentum continued even during the Asian financial crisis of 2007 when GNP and GDP expanded by 5.30% and 5.20% respectively. From 1995 to 2000, Metro Manila accounted for about 31% of GDP.

1.2 Shelter Related Fact and Figures

Access to Shelter

Housing stock

Reducing poverty has always been a priority of the National Government and was again explicitly stated in the Medium-Term Philippine Development Plan (MTPDP) for 2004 - 2010. The MTPDP enumerates five parts, which also address the United

³ <http://www.census.gov.ph>

⁴ <http://www.chdm.doh.gov.ph>

Nations' Millennium Development Goals. Housing is one of the key components of Part 1 - "Economic Growth and Job Generation."⁵

Housing deficit (quantitative and qualitative)

The demand for housing for the whole Philippines was estimated at 3.76 million up to the year 2010. More than half of this number will have to be provided in Metro Manila (a.k.a. National Capital Region) and the two regions adjacent to it, Southern Luzon, and Central Luzon. It should be noted that the provinces in the Southern Luzon Region and the Central Luzon Region that are adjacent to Metro Manila have become the expansion areas of the urban sprawl. One of the consequences of urbanization is the conversion of agricultural lands in the provinces adjacent to Metro Manila into housing and other urban land uses.

Occupancy

The Philippines is estimated to have 1.4 million informal settler families, of which Metro Manila has a large 51% share. This is one of the major challenges of urban areas, as they have to find solutions to this complex urban problem.

Tenure of households

Metro Manila has almost 2.1 million households with 48% (about 1,008,000 households) owning or amortizing their housing. More than 30% (about 690,000) rent their housing units while 11% occupy their units free with the owner's consent.

Access to and cost of Basic Services/Infrastructure

Practically all parts of Metro Manila are covered by the power supply system. About 92.67 percent of 2.1 million households in Metro Manila have access to electricity. About 1.51 percent use kerosene and 1.74 percent use liquefied petroleum gas (LPG) for their lighting needs.

The main sources of water supply for drinking and/or cooking were own use, faucet, community water system (50.78 percent); shared, faucet community water system (24.29 percent); and shared, tube/piped deep well (9.69 percent).

⁵ NEDA, Medium Term Philippine Development Program, 2004 - 2010

Access to and cost of Education

The proportion of household population 10 years old and over in the National Capital Region (NCR) who were able to read and write a simple message was 98.14 percent (with Males at 98.17 percent literacy rate and Females at 98.11 percent).

1.3 Housing Policy

In the 1970's, the national government was the main provider of socialized housing while the private sector took care of the housing needs of the middle to high-income sector. A joint venture scheme was conceptualized in the 1980's to entice the private sector to participate in socialized housing. In 1991, the Local Government Code empowered the Local Governments Units (LGUs) and in effect decentralized many of the functions of the National Government including housing. Local Government Units (LGUs) therefore approach their housing problems differently depending on the availability of land, their financial resources, and their technical capabilities. The other significant laws passed in the 1990's include:

- The Urban Development and Housing Act (Republic Act 7279) of 1992 which set the guidelines for shelter delivery and presented incentives for the private sector to participate in public housing;
- Comprehensive and Integrated Shelter Finance Act (1994) which allocated funds for the National Shelter Program through percentage of proceeds derived from the sale of the military bases; and
- The Community Mortgage Program (CMP) under the National Home Mortgage and Finance Corporation which allowed informal settlers (in a community) to apply for financing to purchase the private property they are illegally occupying provided that the owner of the property is willing to sell.

1.4 Actors in Shelter Delivery and their Roles

By virtue of Executive Order 90 (1986), shelter agencies were put under the Housing and Urban Development Coordinating Council (HUDCC) which became the over-all policy making agency. Under its supervision are:

- The Housing Guaranty Corporation for appraisals and bond flotation;

- National Home Mortgage Financing Corporation which provides for the Community Mortgage Program (CMP);
- Home Mutual Development Fund which manages Pag-ibig (the Home Financing Agency);
- Housing and Land Use Regulatory Board (HLURB) which provides guidelines for land use planning and issues development permits for condominiums; and
- The National Housing Authority (NHA), which addresses the housing, needs of the lowest 30% of the income groups.

The private sector is also involved in the housing sector as housing developers, contractors, suppliers of building materials, and professional organizations (e.g. United Architects of the Philippines, Philippine Institute of Environmental Planners).

Non-government Organizations (NGOs) are also involved in the housing sector with Gawad Kalinga (GK) and the Habitat Philippines as the two most effective NGOs involved in housing today. The two NGOs have reduced the cost of building construction by at least 15% through a “sweat equity program” and lower costs of materials made possible by substantial donations of both money and building materials.

1.5 Shelter Design

Physical Planning

Land Use

As mandated by the Local Government Code, all cities and municipalities are mandated to formulate a Comprehensive Land Use Plan (CLUP) that will serve as the Local Government Unit’s (LGU’s) Comprehensive Development Plan and Land Use Plan. The CLUP designates the type (e.g., residential, commercial) and intensity of land uses throughout the city or municipality. The Zoning Ordinance is the legal instrument that enforces the LGU’s Land Use Plan.

Shelter Quality

The design and building of all houses have to comply with the National Building Code of the Philippines (Presidential Decree 1096) and the other referral codes (i.e.

Structural, Electrical, Sanitary, and Fire Code). The LGUs (cities and municipalities) may also issue additional ordinances pertaining to design and construction of buildings.

In 1982, Batas Pambansa 220 (National Law 220) or the National Law on Socialized Housing relaxed the building standards in order to reduce development and construction costs and to make it more affordable to the lower-income group. Batas Pambansa 220 (BP 220) established a minimum lot size of 32 square meters and a minimum floor area of 18 to 24 square kilometres for socialized housing.

2 Organisation

The University of the Philippines (UP) is a state university founded in 1908. It consists of at least eight campuses distributed throughout the Philippines. The University's main campus is located in Diliman, Quezon City.

The UP College of Architecture in Diliman, Quezon City was established in 1956 and currently offers undergraduate courses in B.S. Architecture and B.S. Landscape Architecture. In addition, it offers masters courses in Architecture and Tropical Landscape Architecture. Many of the graduates of the College eventually become leaders and players in the building industry.

The UP College of Architecture also undertakes research and extension work in the fields of architecture, landscape architecture, urban design, and urban planning. However, research in the College has been constrained by limited resources (funds and manpower) and by a faculty often already overloaded by teaching and administrative duties. In addition, many of the faculty members have private practices and consultancies, which offer more challenging projects. Extension services have also been provided only when requests are made (by either local governments, government agencies, or by the University) and when some faculty members are available to undertake them.

Quite recently, the College organized various studio laboratories (e.g., Landscape Architecture Studio Laboratory; Design Studio Laboratory; Urban Design Studio Laboratory) to better manage research and extension initiatives. The Urban Design Studio Laboratory (which includes Site Planning, Urban Design, Urban Planning and Housing) has done research/ extension work in the form of assistance in the preparation of a new UP Campus Plan (2006), a study on Civic Spaces as a

Dimension of Livability in Quezon City (2007), and the hosting of the 13th Inter-University Seminar on Asian Mega-cities (IUSAM) at the UP Diliman Campus (2008). The UP College of Architecture is part of the IUSAM network that consists of several leading universities located in some of the mega-cities of Asia.

Disaster Risk Reduction is also a field of study that some of the universities in the IUSAM Network have been researching on. Last May 2008, the National Taiwan University (NTU) hosted a conference specifically on Disaster Risk Management in Taipei and was attended by one of the Professors of the UP College of Architecture. The UP College of Architecture can help increase the awareness of community planning and housing redevelopment taking into consideration disaster risk reduction through lectures and research papers.

3 Shelter Problem

The Philippines is vulnerable to several natural disasters including flash floods, typhoons (averaging 20/year), volcanoes and earthquakes. The Philippines is situated in the region known as the Ring of Fire and is therefore susceptible to volcanic activity and earthquakes. Very few residential areas in urban centres such as Metro Manila were planned taking into consideration disaster risk reduction. And since risk vulnerability to earthquakes and other disasters, disaster reduction is a new concept, only a few cities have started to re-examine their districts with regards to The poor and informal settlers are considered the most vulnerable to earthquakes and disasters as they have the least resources and are often given the least attention by local governments.⁶ Urban low-cost housing are often located in areas with narrow roads and congested conditions, while informal settlements are situated in the most hazardous locations close to where there are livelihood opportunities (e.g., along railroad tracks, along creeks and rivers, underneath bridges).

The Japan International Cooperation Agency (JICA), Philippine Institute of Volcanology and Seismology (PHIVOLCS) and the Metropolitan Manila magnitude 6.5 strike slip earthquake reminiscent of the 1863 earthquake in Manila Bay, and a magnitude 7.2 strike slip type earthquake occurring Development Authority

⁶ Christine Wamsler, *Managing Urban Disaster Risk*, Chapter 1, 2007

(MMDA) conducted the Metro Manila Impact Reduction Model 8 which is



Fig.1 Philippines

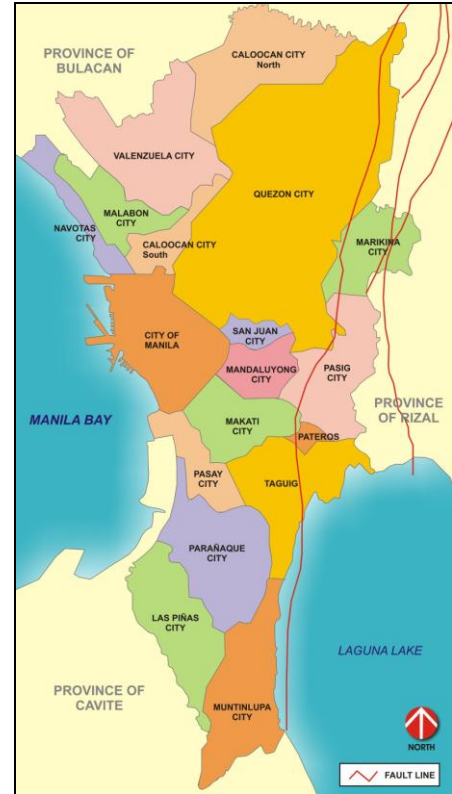


Fig. 2 Metro Manila and the Fault Lines

Study (MMEIRS) from August 2002 to March 2004 to formulate a master plan for earthquake impact reduction in Metro Manila. The MMEIRS Study (2004) identified 18 possible earthquake scenarios that may heavily affect Metro Manila. There were three scenarios considered for damage estimation. There was Model 13 which is a huge subduction type magnitude 7.9 earthquake along the Manila Trench that generates a tsunami, Model 18 is a along the 67 kilometre segment of West Valley Fault. Model 8 is expected to produce high ground shaking levels and a lot of damage and is considered the worst-case scenario for cities traversed by the West Valley Fault.⁷ The West Valley Fault System consists of two faults, the East and West Valley Fault Systems. The scenarios presented in the study illustrate the vulnerability of highly urbanized cities like Metro Manila to earthquakes.

All 16 cities and 1 municipality in Metro Manila are vulnerable to earthquakes but the areas traversed by the West Valley Fault are regarded as “high risk” for the Model 8 scenario. The West Valley Fault cuts across Marikina City, Quezon City,

⁷ Metro Manila Earthquake Impact Reduction Study (MMEIRS), 2002

Pasig City, Pateros, Makati City, and Taguig City.⁸ However, the higher density and more inadequately planned residential areas that the fault traverses are mostly located in the cities of Makati and Taguig.

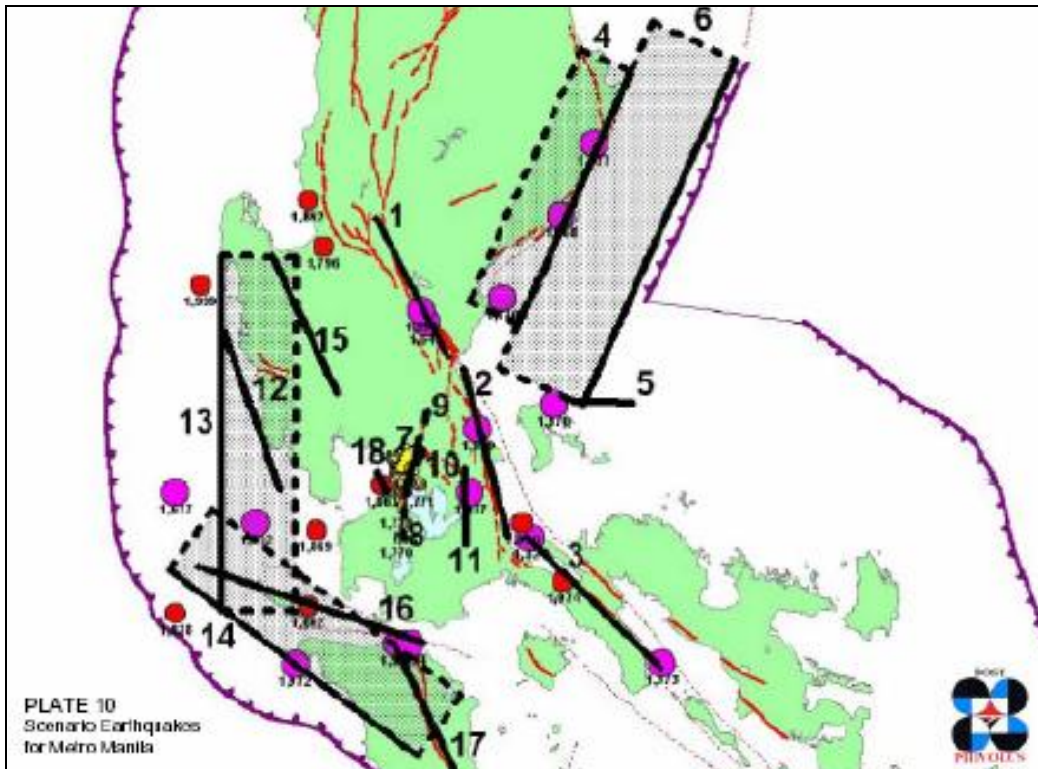


Fig.3 Earthquake Scenarios for Metro Manila

Although Metro Manila's Central Business District and many of the wealthy residential enclaves are located in Makati City, it still has several areas where urban housing is a problem and disaster risk is high. The City of Makati has a land area of 26 square kilometres or 4.09% of Metro Manila's total land area of 636 square kilometres. In spite of its affluence, Makati City also has to contend with some of its slum and blighted areas. Because of its expensive real estate values, Makati City's housing program for its informal settlers in the last few years has relied mostly on relocation to resettlement sites that the city had procured outside of Metro Manila (i.e., nearby provinces in Laguna and Bulacan).

⁸ Aubrey Sta Cruz Makilan, "Big One" is Possible But Metro's Unprepared, *Bulatlat*, Vol. IV, No. 27 August 2004

Taguig City, on the other hand, consists of about 48 square kilometres or 7.54 % of Metro Manila's total land area. It was for the most part of the 20th century best



Fig.4 Fort Bonifacio across congested Taguig

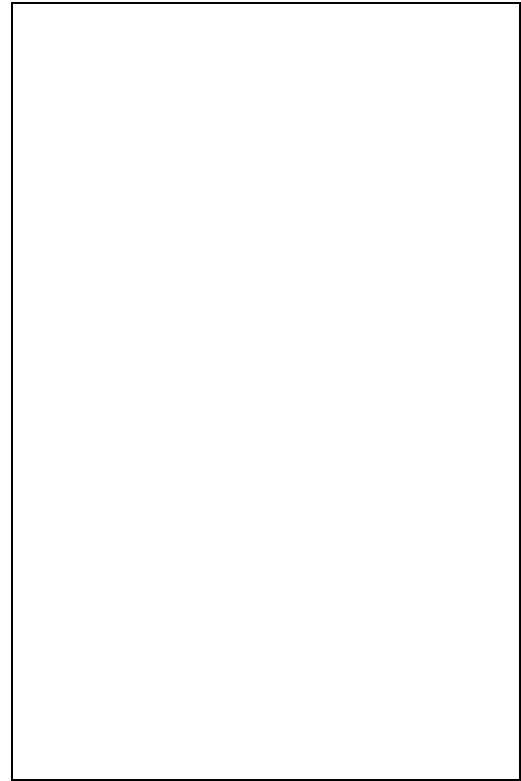


Fig. 5 Pasay City slums and the Makati skyline

known for a 25.78 square-kilometre military camp established during the American Colonial period known as Fort McKinley, and later renamed Fort Bonifacio when it was turned over to the Philippine Army.⁹ Many of the settlements outside of the military camp were first established as housing for the families of the enlisted men. Taguig outside of Fort Bonifacio grew mostly unplanned as a housing and industrial area in the 1970's and 1980's when the core of Metro Manila was rapidly urbanizing. The privatization of Fort Bonifacio in 1995 gradually transformed about half of Taguig's land area into a high-priced master planned development. It is now developing into a residential and office enclave that contrasts with the old congested residential areas.

The MMEIRS Report provided only quite recently geophysical information that should be considered in the planning of sections of Metro Manila. The layout of development would have been very different in areas where fault lines cut across had

⁹ Fort Bonifacio, Wikipedia

the information been available in the beginning. To reduce loss of life, injuries, and more serious infrastructure damage brought about by earthquakes, areas that have been identified as “high-risk” must be planned for redevelopment based on geophysical data that is available today.

4 Proposal for Change and Improvement

Almost all cities in Metro Manila deal with the improvement of their blighted districts. These redevelopment projects often involve the upgrading of areas occupied by either lower income families or informal settlers. For informal settlements, “redevelopment” may mean relocation of the urban poor families to an identified relocation site or rehabilitation on site. On-site rehabilitation of informal settlements will involve consolidation of the property that the community is occupying and reblocking to provide for all household beneficiaries. As land is always maximized for on-site rehabilitation, very little is left for amenities and provisions that will reduce disaster risk.

A redevelopment plan, whether it is for low-income community or the rehabilitation of an informal settlement is a plan that reconfigures the present layout of existing structures in a community. It can be expected that any redevelopment plan that considers disaster risk reduction will recommend adjustments in road rights-of-way, demolition of structurally unsafe buildings, and relocation of informal settlers. The redevelopment plan will likely include recommendations in land use and zoning, housing, finance, urban design and management.

Conditions for Redevelopment that Considers Disaster Risk Reduction

Although a process for formulating redevelopment plans for areas that are highly vulnerable to disasters has never been developed for Metro Manila, three primary conditions have to be established for the process to even begin. These are:

- 1. An area has been assessed to be “high risk” to earthquakes**

The MMEIRS report identified the location of fault lines that could impact on Metro Manila and formulated several earthquake scenarios to determine “high risk” areas and even estimated the loss of life, injury, and damage to

lifelines¹⁰ should they occur. This study should be utilized by every city/municipality in Metro Manila to determine which areas are highly vulnerable to earthquakes. The Philippine Institute of Volcanology and Seismology (PHIVOLCS) is a national agency, which is considered the foremost authority on earthquakes. The PHIVOLCS has been known to provide technical assistance and community awareness on the risks of earthquakes. This agency will be instrumental in providing expertise in any effort to redevelop areas that are vulnerable to earthquakes.

2. The Local Government is willing to plan for redevelopment

Redevelopment has always been done by local governments in Metro Manila to revitalize areas that have become underutilized and blighted. Never has it been done for districts or neighbourhoods simply to reduce risks during disasters. Local governments have to allocate some of their resources for the redevelopment of their “high risk” areas. Makati City, Taguig City, Pasig City, and Quezon City are four of the more affluent cities in Metro Manila and can very well fund redevelopment of their high-risk areas.

3. The local community is willing to participate in the planning

The formulation of a redevelopment plan that considers disaster risk reduction must be highly participatory for it to be successful. Communities for which redevelopment plans are to be prepared must first be unified for them to actively and effectively participate in the planning process. This is particularly difficult for informal settlements as the community is formed by circumstance rather than by choice.

Principles That Will Guide the Formulation of the Redevelopment Plan

1. Rehabilitation of High-Risk Sections of the Redevelopment Area

To reduce risks related to earthquakes, buildings that are condemned or were found to be structurally unsafe have to be demolished or removed.

2. Provide Access and Facilities for Emergencies and Rescues

Areas that are highly vulnerable to disasters have to improve on its capability to respond to emergencies and disasters (e.g., provision of fire hydrants, efficient routes

¹⁰ “Lifelines” refer to water pipes, electricity, and bridges.

for emergency response vehicles, sufficient open spaces as evacuation space).

Schools are already often used as evacuation centres during disasters. Perhaps, they should be retrofitted to officially assume this role during emergencies.

3. Adherence to Existing National Building Laws and Local Ordinances

Proposals for new buildings and facilities will have to comply with existing national laws (i.e. PD 1096 or the National Building Code) or city ordinances with regards to safety standards.

4. Sustainable Planning and Design

In the context of planning and design, “sustainability” is a broad set of principles that address economic, social and environmental development at all scales (i.e., local, city, national, global).¹¹ It endeavours to preserve biological diversity and environmental integrity; contribute to the health of air, water, and soils; incorporate designs that reflect bioregional climatic conditions; and reduce or eliminate the degrading impacts of human use.

5. Participatory Planning and Design

Redevelopment planning at the community level (e.g., neighbourhood, barangay, residential villages) has to be a consultative process involving community residents or representatives. Although disaster risk reduction will be the primary concern, other community concerns will likely be taken up.

6. Minimal Displacement

While the main goals are disaster risk reduction, improve the living conditions, and provide more livelihood and employment opportunities, some households especially in condemned or high-risk structures will inevitably be relocated. The redevelopment master plan, however, must keep displacement of residents to a minimum.

In the absence of any system of formulating a redevelopment plan for marginalized communities that considers risk reduction, the author and the University of the Philippines College of Architecture in partnership with other institutions will try to develop a process of assessing disaster risks in specific areas and recommending mitigation measures. A redevelopment plan that considers disaster risk reduction should not be just about transforming a potentially vulnerable quarter into a more

¹¹ Donald Watson, Alan Plattus, Robert Shibley, *Time Saver Standards for Urban Design*, p. 4.9-1

disaster-responsive community. The redeveloped community should improve the quality of life of the residents through improved amenities, better access from disaster response teams, improved economic activity, increase in real estate values, and a more vibrant community. It is hoped that the planning process itself will become a model for inner city redevelopment initiatives in Metro Manila.

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