

**International Master's Program in
International Studies (IMPIS)
National Chengchi University
Master's Thesis**



**Urbanization's Effects on Typhoon
Disaster Management: The Case of the
Philippines**

Student: Chua, Therese Lorraine

Advisor: Ping, Szu-Ning

July 2014

ABSTRACT

Two milestones were reached in the 21st century – first, the world’s total population reached seven billion; and second, already half of the world’s total population was living in urban areas. Urbanization, or this process of populations migrating from rural to urban areas, has brought more negative than positive outcomes in developing countries. Coupled with the increase in frequency and intensity of natural disasters also in the 21st century, along with the increase in the number of people affected and the severity of socio-economic impacts mean that strong disaster management systems that are able to prepare for and respond to natural disasters are important in order to decrease impacts as well as respond to the needs of those affected. This research focuses on the urbanization process of the Philippines, a country that had the highest annual urban growth rate in the 2000s, and is also one of the most vulnerable countries in the world to typhoons. It analyzes the Philippines’ urbanization process, which is the critical factor that has weakened its disaster management. Solutions to address urbanization in order to mitigate its negative effects on disaster management are also provided.

Key Words: Asia, Disaster Management, Metropolitan Manila, Natural Disasters, Philippines, Typhoons, Urbanization

ACKNOWLEDGEMENTS

This thesis has taught me a lot not only about Asia and the Philippines, but also about time management and having a clear vision and the end goal in mind. I never thought that I would pursue my master's degree immediately after graduating from university, and especially not in a foreign country whose official language is a language I am not fluent in. Therefore, I am truly grateful that throughout this whole journey, my family has always been there to encourage and support me even when I started to doubt and question my decisions and myself. My family has been one of my main sources of inspiration to obtain this degree. I would also like to thank my classmates and friends (I will not be mentioning your names but you know who you are) who have in some way or another, helped and encouraged me to continue writing my thesis and fulfill the requirements of the program. Lastly, I would also like to take this opportunity to express my deepest gratitude to my advisor, Professor Szu-ning Ping, and my committee members Professor Wen-yang Chang and Professor Scott Lin, whose comments and suggestions have guided the direction of my thesis and have helped me improve and finish my thesis. I would not be able to accomplish all this without the aforementioned people. Once again, thank you and I hope that I have made you proud.

TABLE OF CONTENTS

1 – Introduction	5
1-1. Research Motivation	5
1-2. Asia and the Philippines as focal points	7
1-3. Research Methodology	12
1-4. Chapter organization	12
2 – Urbanization and Disaster Management	13
2-1. Natural disasters and disaster management	16
2-2. Urbanization as an explanatory factor	18
2-3. Linkages between urbanization and disaster management	26
3 – Case Study: Natural Disaster Vulnerability and Urbanization	29
3-1. What are natural disasters?	29
3-2. Philippines’ vulnerability to natural disasters	30
3-3. Philippine urbanization	33
3-4. Asia’s experiences and vulnerability to natural disasters	52
3-5. Urbanization trends in Asia	54
3-6. Synthesis	61
4 – Case Study: How Urbanization Causes Weak Disaster Management	62
4-1. Typhoon occurrences in the 21 st century	62
4-2. Disaster management	67
4-3. Synthesis	80
5 – Conclusion	83
5-1. Early solutions to address urbanization	84
5-2. Recent solutions to address urbanization	88
5-3. Application of solutions to the Philippines	90
Annex 1 – Goals and Objectives of the NDRRM Plan	93
Bibliography	94

CHAPTER 1

INTRODUCTION

1-1. Research Motivation

Two milestones were reached in the 21st century – first, the world’s total population reached seven billion; and second, already half of the world’s total population was living in urban areas. Urbanization, or this process of populations migrating from rural to urban areas, brings about positive and negative effects to both developed and developing countries. However, the manifestations of these outcomes have been very different for developed and developing countries, which will be discussed in subsequent chapters. The frequency and intensity of natural disasters also increased in the 21st century, with “the number of people affected and the socio-economic effects... increased significantly” (Djalante, Holley, Thomalla, & Carnegie, 2013, p. 2106), which means that disaster management systems that are able to prepare for and respond to natural disasters are important in order to decrease impacts as well as respond to the needs of those affected. Among the world’s continents, Asia has the highest urbanization rate as well as the number of people living in urban areas. It is also the most vulnerable from the impacts of natural disasters. Moreover, it contains more than half of the world’s total population and countries therein have significant forecasted growth and represent new economic powers in the world economy (Maplecroft, 2011); thus warranting more attention.

At its core, disaster management is a cycle composed of different phases in the pre-disaster and post-disaster periods. This research believes that urbanization is the critical factor that leads to weaker disaster management, due to the increased risks and vulnerabilities the population faces brought about by urbanization, as well as the

outcomes that urbanization brings in urban areas that affect pre-disaster and post-disaster phases. The immediate, observable outcome of urbanization is the greater number of people living in urban areas, which means a higher number of people that have to prepare for disasters. It also means a higher probability of human casualties after natural disaster occurrences. Additionally, the greater the population in urban areas, the more they influence the production of valuable assets and resources that become concentrated in these urban areas and lead to larger economic losses after natural disaster impacts. Finally, the concentration of resources in urban areas coupled with the large number of populations living in these areas increase consumption of resources leading to higher levels of pollution and greater amounts of solid waste that end up in rivers or block drainage systems and waterways, and result in health problems or disasters such as severe floods after typhoon occurrences. These will also be discussed further in the subsequent sections.

The main hypothesis that this research operates under is that urbanization has negative effects on disaster management in that higher levels of urbanization and higher urbanization rates lead to weaker disaster management. The main question the research aims to answer is if higher levels of urbanization do result in weaker disaster management not only in that urban area experiencing urbanization but more so in other areas within the country. Succeeding questions that the research also aims to answer include the following:

- What have been governments' responses to urbanization and the rise of natural disasters?
- How and why does over-urbanization of an area have an impact on disaster management in other parts of the country?

1-2. Asia and the Philippines as focal points

As previously mentioned, Asia has the highest urbanization rate and the highest number of people living in urban areas compared to other continents around the world. Furthermore, Asia is also extremely vulnerable, and is also the most vulnerable continent in the world, to natural disasters. On a country-level, the Philippines stands out because it had the highest annual urban growth rate in the 2000s (Constantino-David, 2004, p. 130), as well as having received “the highest number of natural disasters from 2008 to 2012” (Bacani, 2013). Therefore, the focus of this research is on Asia, and specifically on the Philippines, because of their urbanization processes and their extreme vulnerability to natural disasters. This section talks about the frequency and socio-economic impacts of natural disasters and the urbanization processes of Asia and the Philippines, which will emphasize why they serve as the foci of this research.

1-2.1. Frequency and costliness of natural disasters in Asia

Asia is the most vulnerable to natural disaster occurrence as well as the most socio-economically at risk and vulnerable to natural disasters. According to the 2011 World Disasters Report, “between 2001 and 2010, 85 percent of the total number of people impacted by disasters and 66 percent of all fatalities globally occurred in the region [Asia]” (Mghendi & Afrhill, 2011), with the most frequently occurring natural disaster being typhoons. Socially, the population of Asia is “four times as likely as those in Africa to be affected by natural disasters, and 25 times more likely than those in Europe or North America” (ADB, 2013, p. 5). Economically, the International Monetary Fund (IMF) states that Asia has accounted for half of the estimated global economic cost of disasters in the world over the past 20 years, and specifically for the

period 1980-2009, the region “accounted for 38 percent of global economic losses due to natural disasters” (ADB, 2013, p. 4). Data from the Emergency Events Database (EM-DAT), an international disaster database, shows that Asia accounted for 51 percent of global damages and losses due to natural disasters, and 85 percent of the total number of people affected by natural disasters from 2000-2014.

1-2.2. Frequency and costliness of natural disasters in the Philippines

Among Asian countries, the Philippines stands out because of its extreme vulnerability to natural disasters compared to other countries. The Global Risks Hotspots project revealed that in 2005, Bangladesh, the Philippines, and Vietnam were the three Asian countries that will receive the “highest risk of human losses and economic damage from two or more hazards”, with four out of five Filipinos living in areas of “high mortality risk” (ADB, 2013, p. 5). However, among these three, the Philippines received “the highest number of natural disasters from 2008 to 2012” (Bacani, 2013). This is the one of the main reasons why the Philippines has been chosen as a case study for this research.

80 percent of the Philippines’ population is annually exposed and is vulnerable to natural disasters (World Bank, 2009, p. 5) such as typhoons, landslides, volcanism, earthquakes, et cetera (CIA Factbook, 2013c; Huigen & Jens, 2006; World Bank, 2005a, 2005b) that result in losses for the country. From the 1970s until the 2000s, direct damages from natural disasters affected 0.7 percent of the Philippines’ national gross domestic product (GDP) annually, with indirect and secondary impacts increasing this cost. Because the Philippines is situated in a typhoon belt, it is prone to an average of 20 typhoons every year, which is equivalent to 25 percent of the global occurrence of typhoons (Huigen & Jens, 2006, p. 1). From the 1970s until the 2000s,

65 percent of lives lost and 76 percent of total damage caused by natural disasters in the Philippines were due to typhoons (World Bank, 2005a, p. 5). This means that typhoons are the natural disasters that occur the most in the Philippines, as well as the natural disasters that cause the greatest socio-economic damages.

1-2.3. Urbanization processes in Asia

As the previous section has pointed out, Asia and the Philippines are both extremely vulnerable to natural disasters, with typhoons being the most frequently occurring. In the 21st century, natural disasters and typhoons in particular have caused the greatest costs and damages to the economy and on society. As this research argues, the reason for this is because of the urbanization processes that have transpired in Asian countries and in the Philippines as well, which have resulted in issues of population dynamics, production, consumption, and resource distribution.

Asia had an urban population of only 17 percent in the 1950s (ADB, 2008, p. 4), but its urban population increased more than 7.5 times between 1950 and 2010 that its urban population reached 43 percent (754 million people) by 2010, which is already more than the combined population of the United States and the European Union (UNESCAP, 2013b, p. 1). Furthermore, from the years 1950-2000, Asia had the highest urbanization rate among all the world's continents (Zlotnik, 2004, p. 55), and in fact its urban population overshadows other continents in share and sheer number (Birch & Wachter, 2011, p. 4). Asia also houses more than half of the world's over 20 megacities (Brinkhoff, 2014), which are cities containing more than 10 million people. On the positive side, urbanization has driven Asia's growth in general with urban areas contributing almost 80 percent of the region's GDP despite only representing around 40 percent of the total population (ADB, 2004, p. 25). This has

translated to per capita income increases that subsequently led to poverty reduction especially in Southeast Asia. However, positive effects have been uneven and have instead produced more negative effects than positive. It has resulted in the widening of the rural-urban gap, the increase in urban poverty, the proliferation of informal settlements living in disaster-prone¹ areas, the growing depletion of urban resources, the additional stress on the government to provide basic services, and the degradation of the environment. Cities occupy only 2 percent of the world's land, but consume 75 percent of its resources and produce a similar percentage of its waste. Furthermore, one third of the total number of absolute poor² in Asia lives in urban areas, with majority of these being rural-to-urban migrants (ADB, 2008, p. 43).

1-2.4. Urbanization processes in the Philippines

Three of Asia's more rapidly urbanizing countries, which means that their urbanization growth rates are higher compared to other countries, can be found in Southeast Asia. These are Indonesia, the Philippines, and Thailand (Atkinson, 2004, p. 2). Out of the three, the Philippines is the country that has the densest population in an urban area, the highest economic and population growth rate in 2013 (CIA Factbook, 2013b, 2013c, 2013d; Demographia, 2013), and as mentioned in the previous section, is the most vulnerable to natural disasters. It is also the Asian country that had the highest annual urban growth rate in the 2000s at 5.1 percent (Constantino-David, 2004, p. 130). This is another reason why the Philippines has been chosen as a case study for this research.

¹ Informal settlements are often located in low-lying areas, along coasts or mountain slopes, near major roads or factories, beside dumpsites or waterways that increase their risks and vulnerabilities to natural disasters (See ADB, 2008)

² Defined by ADB in their report as people living on less than one US Dollar a day

Economic policies from the Philippine national government implemented since the 1970s have contributed to making Metropolitan Manila a primate city and a megacity, where aside from currently housing more than 30 percent of the total urban population and where the capital can be found, also concentrates most of the investments and infrastructure of the country (Paderanga Jr., 2010, p. 23). Furthermore, national policies such as the 1991 Local Government Code and the Internal Revenue Allotment that distribute a larger amount of the national budget to cities with a higher population has also led to the rapid urbanization of the country. These have resulted in over-urbanization, or rapid and unmanaged urbanization, wherein “cities grow more rapidly than the jobs and housing they can sustain” (Knox & McCarthy, 2012, p. 436) and also result in the “creation of megacities” (Knox & McCarthy, 2012, p. 135). This rapid urbanization process has also created and increased informal and overcrowded settlements often in disaster-prone areas, put additional stress on the provision of basic services by the government units, generated waste and pollution that clog rivers and waterways leading to flooding, degraded the environment, and as this research argues, weakened disaster management.

As has been discussed in the above sections, urbanization processes have resulted in positive and negative outcomes in urban areas. This research argues that one negative outcome of urbanization, especially of the rapid and unmanaged urbanization that have been manifested in Asia and in the Philippines, is to weaken disaster management. Therefore, it believes that rapid and unmanaged urbanization encouraged by national policies is a crucial factor that weakens disaster management. This research aims to find examples of this phenomenon through a case study of the Philippines, which has been selected because of its extreme vulnerability to natural disasters and its urbanization processes.

1-3. Research Methodology

This research will utilize qualitative research methods, with data gathering, textual analysis, and case study as the main approaches. Information from data banks, international organizations, and previously existing publications will be gathered and examined through textual analysis. Textual analysis is a research tool that observes texts having a recurring theme as an entire body of work or as individual works within the larger group, from which generalizations can be made (Mckee, 2003). Information that exists about Asian urbanization and disaster management would serve as a basis to know the possible general and regional situation of the topics in question. However, caution should be taken not to conclude with statements of fact (Silverman, 2005) that apply to each and every scenario and this is where the case study comes in. The use of the main case study would assess the accuracy and effectiveness of the information and address the research questions. Analysis of mini-cases from Bangladesh and Japan, two other Asian countries that have undergone different urbanization processes and are also vulnerable to natural disasters would demonstrate the similarities and differences of their experiences especially in relation to urbanization weakening typhoon disaster management.

1-4. Chapter organization

This research is divided into four parts – a discussion on urbanization and disaster management, a case study examination of frequent natural disasters and urbanization in the Philippines, a case study analysis of how urbanization causes weak disaster management in the Philippines, and a list of solutions addressing urbanization that could be applied to the Philippines in order to mitigate the negative impacts of urbanization on disaster management.

CHAPTER 2

URBANIZATION AND DISASTER MANAGEMENT

This chapter is divided in three sections – natural disasters and disaster management, urbanization, and the linkages between the two. The first section talks about the increase in frequency and intensity of natural disasters in the 21st century and the need to have strong disaster management systems in order to minimize risks and casualties exacerbated by urbanization. The second section talks about urbanization and the evolution of studies undertaken as well as the positive and negative outcomes brought about by urbanization, which will highlight the fact that negative outcomes have outweighed positive outcomes in Asia because of its urbanization processes that have been rapid and unmanaged. The third section talks about the linkages between urbanization and disaster management, highlighting the weakening effects urbanization has on disaster management.

The importance of strong and effective disaster management systems has been highlighted in the 21st century because of the increase in frequency and intensity of natural disasters that have the capability of causing massive destructions and impacts on people and assets such as infrastructures and systems. As stated in the previous chapter, Asia is the region most vulnerable to the impacts of natural disasters not only because it is more likely to be affected by natural disasters but also because of its urbanization processes. Asia houses more than half of the world's population, majority of which are living in poverty and in informal settlements due to its rapid urbanization. It should therefore have in place an effective and efficient disaster management system to prepare for and respond to natural disasters. However, in order

to achieve this and in line with this study's hypothesis, urbanization should be properly managed and addressed.

It is in the 21st century that more than half of the world's total population was already living in urban areas that has resulted in both positive and negative outcomes. Urbanization is a process that has been happening around the world since ancient times but trends over the past few decades point to the differences that developed and developing countries have experienced, and even experiences between developing countries have not been uniform. Developing countries typically face more challenges than developed countries. They have also only been urbanizing for the past four or five decades, and have only started to urbanize after seeing the economic growth it had brought to developed countries and as a means of "catching up with the west" (UN-HABITAT, 2012, p. 19). Therefore, proper management and planning have not been integrated into the process. As a result, rapid and unmanaged urbanization (or over-urbanization) has ensued, which has been defined as a process wherein "cities grow more rapidly than the jobs and housing they can sustain" (Knox & McCarthy, 2012, p. 436) that also result in the "creation of megacities" (Knox & McCarthy, 2012, p. 135) and the proliferation of informal settlements. Negative outcomes have been more prominent than positive outcomes in developing countries, which will be discussed in subsequent sections.

The basic assumption of this research is that due to urbanization, disaster management of countries is weakened. The point of departure is that due to rapid urbanization rates especially in developing regions such as Asia, wherein the "necessary infrastructure is not developed or when policies are not implemented to ensure that the benefits of the city life are equitably shared" (UNDESA, 2014, p. 3), governments (be it national, regional, or local depending on the structure) were not

fully prepared to respond to the challenges that came as a result (Yeung, 1998a, p. 100). Greater populations living in urban areas, which is the immediate observable outcome of urbanization, put a strain on the built environment (basic supplies, infrastructures, energy networks, et cetera); generate more waste; increase risks and vulnerabilities to disasters; and require and consume more resources. Furthermore, around one third of urban populations are mired in poverty, and often live in informal settlements that increase their risks and vulnerabilities. Since most of a country's assets (infrastructures, investments, et cetera) and most of its gross domestic product (hereafter GDP) are also located in urban areas, there is greater economic value from damages that natural disasters will cause, and will have far-reaching effects on social systems as well as on other less urban or rural areas. The Organization for Economic Cooperation and Development (hereafter OECD) refers to this as systemic risk, where “a single physical disaster can trigger a spread of secondary and tertiary effects on other social systems or organizations, resulting in the collapse of entire systems supporting our economy as well as our social welfare” (Ikeda, 2006, p. 1).

In a nutshell, this research argues that when managed, urbanization can bring about positive outcomes such as economic growth and increased productivity. However, when left unmanaged, not only will it strain the environment and society thereby raising the costs needed from governments, it will also increase disaster risks and vulnerabilities that extend to the entire disaster management system. Much of the literature on rapid and unmanaged urbanization links it to increased disaster risks (GFDRR, 2012, p. 7), which calls for disaster risk reduction management. However, this research believes that rapid and unmanaged urbanization not only affects disaster risk, which is just one phase in the disaster management cycle (in the pre-disaster phase); it could also affect the entire disaster management cycle (including the post-

disaster phases). This disaster cycle will be further discussed in the subsequent sections. This is why this research aims to expand the connection further to include not just disaster risk but disaster management as a whole, again reiterating that the belief is that increasingly rapid and unmanaged urbanization is a crucial factor that weakens disaster management and is a topic worth pursuing.

2-1. Natural disasters and disaster management

This section talks about the increase in frequency and intensity of natural disasters in the 21st century and the need to have strong disaster management systems in order to minimize risks and casualties exacerbated by urbanization. According to the Emergency Events Database (hereafter EM-DAT), which is an international database on disasters, occurrence of natural disasters increased 600 percent in the last 60 years (ADB, 2013, p. 2). Over that period of time, EM-DAT also states that “while the number of fatalities caused by natural disasters has decreased significantly, the number of people affected and the socio-economic effects have increased significantly” (Djalante et al., 2013, p. 2106), with Asia being affected the worst. Specifically from 2002-2011, there were around 750,000 people in Asia who were killed and around 2.2 billion people who were affected by natural disasters, which were 90 percent and 65 percent, respectively, of world totals (UNESCAP, 2013a, p. 207).³ Of a total population of four billion people (UNDESA, 2012)⁴, this meant that 55 percent of Asia’s population was affected by natural disasters. Furthermore, economically speaking, Asia suffered an average of 0.4 percent losses to its GDP in the same period compared to other regions that suffered 0.1 or 0.2 percent losses due to natural disasters (UNESCAP, 2013a, p. 214). Data from the Asian Development

³ United Nations Economic and Social Commission for Asia and the Pacific

⁴ United Nations Department of Economic and Social Affairs

Bank (hereafter ADB) also shows that Asia “accounted for 38 percent of global economic losses due to natural disasters” from 1980-2009 (ADB, 2013, p. 4), and 51 percent from 2010-2014.⁵

The Center for Research on the Epidemiology of Disasters defines a disaster as “a situation or event which overwhelms local capacity, necessitating a request to a national or international level for external assistance; an unforeseen and often sudden event that cause great damage, destruction and human suffering” (Albert, 2012).

Disaster management is therefore defined as the “fundamental belief that people can do something about avoiding disasters and lessening the potential for substantial loss of life and property, or destruction of the environment on which humans depend” (Pinkowski, 2008, p. xx). Dhameja defines it as a cycle that integrates five major phases – preparedness and mitigation, response, relief, rehabilitation and reconstruction, and recovery (Dhameja, 2008, p. 478). The definition by Coppola, on the other hand, integrates only four phases – mitigation, preparedness, response, and recovery (Coppola, 2011, p. 9). These definitions are already reflective of the paradigmatic shift that disaster management underwent, because whereas in the past it mainly focused on post-disaster relief, response, and recovery, it now includes and even emphasizes pre-disaster preparedness and mitigation.

One of the factors that resulted in the paradigm shift was brought upon by experiences in the past that have shown that disaster management focused on post-disaster relief is not able to “deal with the increasing disaster losses and risks in the context of urbanization”, which is why pre-disaster prevention and reduction of risks is becoming the “core and the most important work” of disaster management (Yin, Yin, & Xu, 2013, p. 1424). Pre-disaster measures are also less costly and less

⁵ Dataset generated from the Emergency Events Database (EM-DAT)

damaging on the economy and on society compared to post-disaster measures, in that “for every dollar spent on disaster prevention, it can save at least four dollars on disaster recovery expenses later” (ADB, 2013, p. 8). In the context of urbanization increasing disaster risks, this means that properly managing urbanization is crucial to prevent or reduce impacts and losses from natural disasters.

2-2. Urbanization as an explanatory factor

The section defines urbanization and discusses the evolution of studies undertaken and some of the theories produced on urbanization, and concludes with the positive and negative effects brought about by urbanization that further explains why this study believes that it is an important factor that has an effect on disaster management. As previous research has established, direct linkages between rapid and unmanaged urbanization and disaster risk exist (GFDRR, 2012, p. 7). These direct linkages have to do with population dynamics, production, and consumption. The greater number of people living in informal settlements that are located in disaster-prone and high-risk areas, of which one third of a country’s urban population currently resides, the higher the probability and higher human casualties as a result of natural disasters. For most of the urban population and specifically the urban poor, who are the ones often located in these areas, they lack the means to prepare and respond thus leaving them highly vulnerable in the face of disasters. Furthermore, the greater the population, the more they influence production and consumption.

Production refers to “investments, infrastructure, and other economic assets that will determine the value at risk”, while consumption refers to the “use of resources and the subsequent production of waste that increases risk... by removing natural barriers” (UNFPA, 2012, p. 10). Since a lot of assets and resources are poured

into cities, and even primate cities, this results in a concentration of assets and resources in these areas that result in greater risks and losses from natural disaster impacts. The concentration of resources in urban areas coupled with the large number of populations living in these areas increase consumption of resources and increase solid waste production. Solid waste that is not collected end up in rivers or block drainage systems and waterways that result in severe floods and heavily affect people living in informal settlements. Being that reducing disaster risk is but one part of a disaster management cycle, this research believes that rapid and unmanaged urbanization not only increases or affects disaster risk, it would also affect the entire disaster management system. Therefore, it is important for countries and governments to focus on managing its urbanization that would subsequently improve and strengthen their disaster management and diminish risks and vulnerabilities that would be experienced by their populations.

2-2.1. What is urbanization?

This study ascribes to the definition utilized by the United Nations Population Fund (hereafter, UNFPA) in which urbanization is a “process of transition that reflects an increasing proportion of the population living in settlements defined as urban, primarily through net migration” (UNFPA, 2012, p. 12). It is a process that occurs in three stages, as detailed by ADB’s report. First, the interaction between households and enterprises form settlements of villages in a town. Second, cultural and economic expansions of towns result in a provincial city. Finally, physical infrastructure such as roads, railways, waterways, power grids, et cetera and development policies work together to connect and enlarge cities to form urban cities or megacities with populations of over 10 million people. Urban development can

either occur naturally, as with high urban birth rates, or through rural-urban migration that increases the population in the urban area (ADB, 2008, p. 7).

Basically, this means that urbanization is a process that increases the number of people living in urban areas in a country through migration or through natural birth rates, which in turn decreases the number of people living in rural areas. Urban areas usually serve as the administrative, commercial, and industrial centers of a country because infrastructure and resources are concentrated therein. They also represent availability of and accessibility to various services and facilities (Shaw, Takeuchi, Fernandez, Walde, & Caro, 2010, p. 1) in that most service-providing institutions can be found in urban areas. There is also a widespread belief among people in developing countries that living in urban areas raises one's quality of life because of availability of and accessibility to more resources and services, and brings about more opportunities because of their recognition as industrial and commercial centers of a country. Therefore, rural-to-urban migration has been one of the driving factors of urbanization in developing countries, and in Asia in particular, that has increased the number of urban areas. Another factor is the reclassifications of previously rural areas due to the population increase in that area.

A second definition views urbanization as a process that brings about “economic, demographic, political, cultural, and technological changes” (Knox & McCarthy, 2012, pp. 11-13). This means that urbanization will affect and bring about changes to various structures and systems of a country. Undertaking a study on urbanization is not an easy feat since different countries have different definitions and terminologies of urbanization, of urban areas, and of other related concepts. This study mainly uses resources from different United Nations agencies such as the United Nations Population Fund (UNFPA), the United Nations Economic and Social

Commission for Asia and the Pacific (UNESCAP), the United Nations Department of Economic and Social Affairs (UNDESA) because “virtually all the information that is publicly available about urbanization at the global scale is taken directly from UN publications or is produced as a result of further analyses of data originating from the UN” (Champion, 2004, p. 26).

The Population Division of UNDESA publishes biennial “estimates and projections of the urban and rural populations of all countries in the world and of their major urban agglomerations” (UNDESA, 2011) called the World Urbanization Prospects, with the latest data being the 2011 Revision of World Urbanization Prospects. In 2004, urban areas were defined according to five different urban sizes – fewer than 500, 000 inhabitants as small cities; 500, 000 to under 1 million as medium-sized cities; 1 million to under 5 million as medium-sized cities; 5 million to under 10 million again as medium-sized cities, and 10 million or more inhabitants as megacities (Zlotnik, 2004, p. 55). Following this definition, there are currently more than 30 megacities around the world with over 80 percent found in developing countries, and of which almost 60 percent located in Asia (Brinkhoff, 2014).

2-2.2. Evolution of studies on urbanization

Reports and research done on urbanization often use the 1950s as the starting point because it was when there were “truly remarkable increases in the number of people living in urban areas and the consequent rise of the world’s overall level of urbanization” (Zlotnik, 2004, p. 3). It can be said that the process of urbanization started in Western countries especially since even as early as the 1950s, Europe,

North America, and Oceania already had urbanization levels surpassing 52 percent.⁶ In Asia, studies on urbanization began in the 1960s after urbanization took off in some Asian countries. They focused on “demographic, social, economic, political, and institutional factors” (Yeung, 1998b, p. 202) related to urbanization. Moreover, “urban form, structure, and pattern” (Yeung, 1998b, p. 202) were also topics of interest especially because urbanization was a new phenomenon within Asia that only started after Asian countries saw the economic growth that urbanizing Western countries experienced. Succeeding literature on urbanization produced from the 1960s to the 1970s clearly marked the differing views that developed and developing countries had, with the former being more positive and the latter being more negative.

The dominant view from developed countries was that urbanization was a “necessary precondition for modernization and development” (Ginsburg, 1998, p. 3) because of the belief that increased urbanization brings about economic benefits, in which there were “large concentrations of production, consumption, and specialized services” (Bazoglu, 2011, p. 32) in cities. It was also because urbanization in developed countries came as a result of economic growth brought about by industrialization. This meant that due to economic growths within developed countries, urban areas started to increase and multiply because people started migrating toward these industrialized areas.

Seeing this, developing countries encouraged urbanization, thinking that urbanization would bring about economic growth that would put them at par with developed countries. This meant that urbanization in developing countries was a result of demographic growth, and instead of the same outcomes as developed

⁶ According to Zlotnik (2004), Europe was 52.4 percent urbanized, North America was at 63.9 percent, and Oceania at 61.6 percent

countries, developing countries started to face different challenges that led to their “marked anti-urban bias” view along with the notion that “great cities were undesirable” (Ginsburg, 1998, p. 3) and that cities “exert enormous environmental impacts, far beyond their boundaries and face challenges in several areas” (Bazoglu, 2011, p. 32). Due to uneven economic growth and increased social inequalities brought about by rapid and unmanaged urbanization in Asian countries starting in the 1960s to the 1970s, governments started to think about controlling urban areas and urban growth in order to achieve efficiency and minimize the negative effects on the population (Ginsburg, 1998, p. 14). In the 1980s, Asian governments once again changed their stance toward urbanization, now leaning more toward urban diffusion and building the capacities of smaller urban areas nearby rather than total growth control of highly urban areas (Yeung, 1998b, p. 205).

One of the grand theories that were produced by studies on urbanization was the **urban bias and underdevelopment theory**. It was proposed by Lipton in the late 1970s, with the notion that “urban-based elite who hold power in some less developed countries tend to implement policies that allocate resources for the benefit of cities” (Knox & McCarthy, 2012, p. 125). This leads to a concentration of resources in the urban areas, which in turn accelerates urbanization rates from rural-urban migration. Subsequently, impairment of the economic development of other areas would ensue and would result in the intensification of the rural-urban inequality (Knox & McCarthy, 2012, p. 125). The theory points to urban-based elites and policies implemented as the main sources of inequality and underdevelopment between more urban and less urban or even rural areas, with resource allocation and usage as one of the ways used to propagate inequality and underdevelopment.

Urban practitioners such as Constantino-David criticize how developing

countries have “set sights on emulating the patterns of more developed countries, blindly importing and transplanting images of cities from more affluent parts of the globe into what were essentially underdeveloped nations” (Constantino-David, 2004, p. 128). This notion is also embodied in the book by Edensor and Jayne (2012), which puts forward the prominent view that says ‘**one size does not fit all**’ (Edensor & Jayne, 2012, p. 1) and says that experiences and practices from developed countries should be adapted to the local context where the diversity of countries’ capacities, wealth, size, et cetera are taken into consideration rather than just implementing or superimposing experiences and practices. The urbanization processes of developing countries have shown this, where instead of positive outcomes outweighing negative outcomes, the opposite has been the case because they occurred in different contexts.

2-2.3. Positive and negative effects of urbanization

It can be inferred from the previous sections that the two views surrounding urbanization is that it can bring either positive or negative effects to a country’s development. Positive effects include relative economic growth and relative poverty reduction while negative effects include ecological, economical, and social problems (ADB, 2008; International Finance Corporation, 2011; Knox & McCarthy, 2012; NEDA, 2011). Economic growth is expected from urbanization because of the concentration of businesses, industries, people, and resources in an urban area, which increases the productivity and the output of said urban area. Poverty reduction follows economic growth because of job creation or increased quality of living in urban areas. However, it is important that urbanization is managed so that economic growth and poverty reduction are equal, and to ensure that negative outcomes do not become pronounced. For example, results were unequal in Asia (and specifically Southeast Asia), with countries such as China, Indonesia, Malaysia, and Thailand experiencing a

2.9-3.5-percentage point reduction in their poverty incidence, whereas it was only 1.5-percentage point reduction for the Philippines, according to the National Economic and Development Authority of the Philippines (NEDA, 2011, pp. 20-21), and manifestations of negative outcomes over positive ones.

Negative outcomes come about because of increased population densities that end up in informal settlements located in high-risk areas because of rapid and unmanaged urbanization, that in turn result in the expansion of the informal sector, lack of proper housing, intensified income inequality, increased consumption and production, environmental degradation (dead rivers and seas, decreased capacity for soil absorption, poor quality of air), inadequacy of urban services (access to water supply, sanitation and sewage system, solid waste management), pervasive urban poverty, urban governance issues, and weaker disaster management systems. Some of the more relevant negative outcomes to this research will be discussed further in the next chapter, but if some of the abovementioned negative outcomes were to be quantified, then data would reveal how around one third of people living in urban areas are living in poverty and do not have the resources to protect themselves from natural disasters, how around 30-50 percent of people living in Asian urban areas reside in slums and squatter settlements (Yeung, 1998a, p. 100) that increase their risks and vulnerabilities to natural disasters, or how annual population growth rates exceeding 2.5 percent can “affect service delivery in cities, especially in the areas of infrastructure, telecommunications, and education, all of which affect health, life expectancy, and quality of life for urban inhabitants” (Bazoglu, 2011, p. 34). This means that if urbanization is left unmanaged, more and more people will be living in poverty and in disaster-prone areas, and lacking access to services for a better quality of life.

In the same way that urbanization processes in different regions and countries have taken various paths, positive and negative effects associated with urbanization have also been manifested in diverse ways. Generally, as evidenced by the previous sections, developed countries have benefited from the positive effects of urbanization and have led to their more positive view, while negative effects have been more pronounced in developing countries that have led to their more negative view. Based on how studies on urbanization have evolved over the years, and how different developed and developing countries view urbanization, it is clear that they have not had the same experiences. Urbanization in itself is not wholly detrimental, and seeing as how urban areas have continued to grow and to multiply, it is therefore an inevitable process that countries and regions will go through. It cannot be said, however, that the experiences of one (especially of developed countries), will be the experiences of another (here referring to developing countries). While it is true that urbanization does bring about positive outcomes such as economic growth, it also brings with it a host of negative outcomes that have been more pronounced in urbanization processes of developing countries. A cause for concern is the rapid and unmanaged urbanization of developing countries (ADB, 2008, p. 3) that have led to negative outcomes, which means that local capacities and structures should be taken into consideration before haphazardly transporting concepts from other regions.

2-3. Linkages between urbanization and disaster management

This last section talks about the linkages between urbanization and disaster management, and highlights the effects that the former has on the latter that could lead to its weakening. To reiterate, the main hypothesis under which this research operates is that rapid and unmanaged urbanization leads to weaker disaster management. The study aims to discover whether the urbanization of urban areas

(here referring to cities) or even the transformation of some cities into megacities negatively influence the effectiveness of a country's overall disaster management system. This could happen in two ways, both of which have also been touched upon briefly in the previous section.

First are the increased disaster risks from higher population densities that lead to the manifestation of the negative outcomes on urban areas. These disaster risks refer to extensive and systemic risks. Extensive risks, according to the Global Assessment Report on Disaster Risk Reduction, are “localized, mainly weather-related hazards with short return periods” (UNISDR, 2013, p. 68) that range from anywhere between “ten to about 100 years” (UNISDR, 2013, p. 133). On the other hand, systemic risks are defined by the OECD as those wherein a “single physical disaster can trigger a spread of secondary and tertiary effects on other social systems or organizations, resulting in the collapse of entire systems” (Ikeda, 2006, p. 1). Reports from the World Bank and the United Nations concur that “increasing population and urbanization lead to more people living in high-risk areas, while increasing economic development has increased economic exposure to disasters” (Djalante et al., 2013, p. 2106). Since one of the phases of the disaster management cycle is preparedness to and mitigation of disaster risks, then increased risks brought about by unmanaged urbanization may have a straining effect on disaster management. Not only would it aggravate pre-disaster measures of preparedness and mitigation, it would also put a stress on post-disaster measures of response and recovery once secondary or tertiary effects result in damages and collapse of systems.

Second is in line with the theories discussed in the previous sections, where the allocation and distribution of resources are concentrated in urban areas and especially those with higher centralities. Since businesses, industries, people, and

resources are concentrated in these urban areas meaning that assets and values are concentrated therein, national plans (development, disaster, emergency, et cetera) would tend to be focused on these urban areas with higher centralities. This would result in the negligence of other less urban, less central, or even rural areas that in turn would affect their own development or disaster management. This would happen because in the pre-disaster phases, local governments and people within the less urban areas are then less prepared for disaster risks and would not sufficiently know what to do once disaster strikes; and in the post-disaster phases, they would also not have the proper capacity, resources, or training to respond to or to recover from disasters. Moreover, as one research has pointed out, “where there is a higher concentration of individuals, there is a higher likelihood that the emergency response [or disaster management] system could be overwhelmed” (Pinkowski, 2008, p. 26). This refers to the post-disaster phases of response, recovery and rehabilitation. Disaster management systems here are overwhelmed and thus weakened because there would be so many people that need to be responded to or to be rehabilitated.

As discussed in the previous sections, existing literature on urbanization talks about the positive and negative effects it has on society, the trends that have characterized its process in different regions, and the increase in disaster risks and population densities that it brings. However, studies have not explicitly linked, or extended the link of urbanization to the whole disaster management cycle. This study believes that since rapid and unmanaged urbanization increases population densities, disaster risks, and asset and resource concentration, it could follow that continuous unmanaged urbanization would affect and weaken the entire disaster management system from the pre-disaster to the post-disaster phases.

CHAPTER 3

CASE STUDY: NATURAL DISASTER VULNERABILITY AND URBANIZATION IN THE PHILIPPINES

The previous chapters discussed the increase in frequency and intensity of natural disasters in the 21st century, urbanization processes in developing countries that have been rapid and unmanaged, and the reasons why the Philippines has been chosen as a case study. This chapter begins with a definition of natural disasters, and looks at the vulnerability of the Philippines to natural disasters as well as the socio-economic impacts that it suffers due to natural disasters in order to further establish the need for a strong disaster management system. It proceeds with a discussion of the urbanization process in the Philippines to better understand how its urbanization came to be, and to demonstrate the similarities and differences with other Asian countries specifically Bangladesh and Japan.

3-1. What are natural disasters?

The International Federation of Red Cross and Red Crescent Societies (hereafter IFRC) define natural disasters as “naturally occurring physical phenomena caused by either rapid or slow onset events, and which can be geophysical, hydrological, climatological, meteorological, or biological” (IFRC, 2011). While these phenomena are generally referred to as natural disasters, Bankoff says they should in fact be called natural hazards. The former term, according to him, talks about “natural events, occurring more or less frequently and of greater or lesser magnitude” while the latter term “require[s] the presence of human settlement and endeavor” (HDN, 2013, p. 16). This means that a natural hazard only becomes a natural disaster once human activity is involved, and once it affects human beings.

This research is going to use the term natural disasters to talk both about the naturally occurring phenomena as well as the ways human beings affect and are being affected by said phenomena. However, it must be noted that the definition shows how people and human settlements are capable of transforming a hazard into a disaster. The table below (Table 3.1) tabulates these different types of natural disasters.

Table 3.1: Types of natural disasters

Geophysical	Hydrological	Climatological	Meteorological	Biological
Earthquakes	Avalanches	Extreme temperatures	Cyclones	Disease epidemics
Landslides	Floods	Drought	Storms	Insect/animal plagues
Tsunamis		Wildfires	Storm/wave surges	
Volcanic activity				

Note. Reprinted from “Types of disasters: Definition of hazard,” by IFRC, 2011.

3-2. Philippines’ vulnerability to natural disasters

The Philippines’ extreme vulnerability to natural disasters stands out compared to other Asian countries. In 2005, the World Bank launched a project in collaboration with Columbia University titled Global Risk Hotspots where they measured countries’ mortality risks from two or more hazards. The project revealed that Asian countries, and specifically Bangladesh, the Philippines, and Vietnam will receive the “highest risk of human losses and economic damage from two or more hazards”, with four out of five Filipinos living in areas of “high mortality risk” (ADB, 2013, p. 5). Out of these three countries, the Philippines is the country “with the highest number of natural disasters from 2008 to 2012” (Bacani, 2013). The entire

country and 80 percent of its population is vulnerable to natural disasters such as typhoons, landslides, volcanoes, earthquakes, et cetera (World Bank, 2009, p. 5).

3-2.1. Natural disasters in the Philippines

While the Philippines is prone to a number of geophysical disasters, the most frequent types of natural disasters that affect the country are hydro-meteorological – specifically typhoons. A World Bank study that compares typhoon and earthquake occurrences in the Philippines states that devastating typhoons occur “at least once every 10 years” while devastating earthquakes occur “once every 60 years” (World Bank, 2005b, pp. 2-3 - 2-4). The reason for this is because of its geographical location along the Pacific Ring of Fire, which according to meteorologists is “right in the path of world’s number one typhoon generator” (Associated Press, 2013). This means that the Philippines receives an average of 20 typhoons annually, which is equivalent to 25 percent of the global occurrence of typhoons (Huigen & Jens, 2006, p. 1). Of this, about six to seven make landfall and cause massive destruction (HDN, 2013, p. 16) with around three being super typhoons having maximum sustained winds of more than 240 kilometers per hour (hereafter km/h) (Tisdall, 2013).

In fact, according to the National Oceanic and Atmospheric Administration (hereafter NOAA) of the United States, the Philippines is among the top three countries that has received the most “tropical cyclone⁷ hits” in the world since 1970 (Landsea, Goldenberg, & Dorst, 2004) and it is one of, if not the “most-exposed large

⁷ According to the information found in the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) website, these hydro-meteorological occurrences are called by different names, depending on where they originate. They are called “hurricanes” in the North Atlantic, Eastern North Pacific and South Pacific Ocean. They are called “cyclones” in the Bay of Bengal, Arabian Sea and Western South Indian Ocean, “willy-willy” in the eastern part of the Southern Indian Ocean, and “typhoons” in the Western North Pacific Ocean.

country in the world to tropical cyclones” (Dyer, 2013). Moreover, from the period 1980-2003, typhoons and its related effects of “floods, flashfloods, and sediments” caused 60 percent of all casualties from natural disasters in the Philippines.

Earthquakes came in second at causing 27 percent, and volcanic eruptions came in third at 16 percent (World Bank, 2005b, pp. 2-2).

3-2.2. Socio-economic impacts of natural disasters in the Philippines

As previously mentioned, the Philippines is vulnerable to a number of natural disasters, of which typhoons are the most socio-economically damaging. In terms of social impacts, the HDN’s report notes that natural disasters affected almost 158 million people from the period 1985-2011 (HDN, 2013, p. 16). A World Bank report shows that from 1970-2000, 65 percent of deaths and 76 percent of total damages were due to typhoons (World Bank, 2005a, p. 5). The table below (Table 3.2) also shows that from 2000-2014, more than 100 million of the country’s population has been affected by typhoons. With a current estimated population of 98 million, this means that there were people affected more than once.

Table 3.2: Typhoon Impacts in the Philippines, 2000-2014

Deaths	Injured	Affected	Homeless	Total affected	Total damage ('000 \$)
22, 174	45, 395	100, 034, 238	410, 660	100, 490, 293	16, 643, 501

Note. Reprinted from EM-DAT database.

In terms of economic impacts, damages and losses from natural disasters represented a loss of “0.54 percent of GDP [Gross Domestic Product] on average”, while recovery and reconstruction expenses due to natural disasters made up “2.92 percent of national government expenditures” from 1985-2010 (HDN, 2013, p. 16). The highest recorded percentages were those in 1990, when natural disasters required

“12.02 percent of national government expenditures” and represented a loss of “2.49 percent of GDP” (HDN, 2013, p. 16). The World Bank also shows that from 1970-2000, the Philippines lost an average of 0.7 percent of its GDP every year to natural disasters. In fact, costs from typhoons in 2009 alone, when the Philippines experienced its most costly typhoon at that time, represented 2.9 percent of the country’s GDP, and costs from Super Typhoon Yolanda in 2013 represented five percent of the country’s GDP (Tisdall, 2013). The information above shows how the Philippines is not only vulnerable to natural disasters, it is also at most risk from typhoons, and is also more socio-economically impacted by typhoons.

3-3. Philippine urbanization

This research believes that urbanization processes, specifically rapid and unmanaged, have weakened disaster management. This section talks about the Philippines’ urbanization, which will demonstrate how it has further increased those at risk and vulnerable to the already vulnerable population due to natural disasters. The rate and number of urban areas in the Philippines have exceeded those of other Southeast Asian countries because of national policies that have encouraged so, which will be also seen in this section. Furthermore, this section discusses the country’s geography, provides the definitions used to classify its administrative units and urban areas, examines the government structure, its urbanization process over the years, and the effects that urbanization has had on the Philippines. It then proceeds to Asia’s experiences and vulnerability to natural disasters, as well as the urbanization trends in Asia where examples from two other Asian countries with the same vulnerability but different urbanization processes will be discussed. The chapter will conclude with a synthesis of different outcomes based on different urbanization processes.

3-3.1. Demography and geography

The Philippines is an archipelago consisting of more than 7, 000 islands, with the three largest islands being Luzon in the North, Visayas in Central Philippines, and Mindanao in the South. In the late 1990s, it was the 9th most populous country in Asia and 14th in the world (IACCC, 1999, p. 15). It also had an annual population growth rate of three percent, which decreased to 2.3 percent in the 2000s (World Bank, 2005b, pp. 4-2). By 2014, it was considered the 7th most populous country in Asia and 12th in the world, with an annual population growth rate of 1.89 percent (World Population Review, 2014). According to latest official statistics carried out through the national census, the Philippines had a total population of 92.34 million in 2010 (NSO, 2012, p. 1).

3-3.2. Administrative unit classifications

As discussed in the second chapter, one of the difficulties in undertaking urbanization studies on a global scale is the lack of uniformity of definitions across regions and countries. While international organizations⁸ have formulated their own definitions, they agree that each country should still have its own definition according to its needs (Champion, 2004, p. 26). These next two sections will provide the classifications and definitions of administrative units and urban areas used by the Philippines, with the information coming from the Philippines' National Statistical Coordination Board (hereafter NSCB), which is the governmental agency responsible for providing periodically updated lists of the number of units belonging under each administrative unit. The national government is the largest administrative unit in the

⁸ Such as the United Nations Population Fund (UNFPA), United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), and United Nations Department of Economic and Social Affairs (UNDESA)

Philippines. Beneath that, administrative units are divided into five categories – region, province, city, municipality, and barangay. Barangays are the smallest local government unit.

Region	<ul style="list-style-type: none"> • Sub-national administrative unit comprising of several provinces having homogenous characteristics, such as ethnic origin, dialect spoken, or agricultural produce
Province	<ul style="list-style-type: none"> • Consists of municipalities and component cities whose general functions are coordinative and supervisory
City	<ul style="list-style-type: none"> • Classified as the highly urbanized, the independent component cities, and the component cities
Municipality	<ul style="list-style-type: none"> • Subsidiary of the province that consists of a number of barangays within its territorial boundaries
Barangay	<ul style="list-style-type: none"> • Smallest political and basic unit that consists of less than 1, 000 inhabitants residing within the territorial limit of a city or municipality and administered by a set of elective officials, headed by a barangay chairman

Figure 3.1: Classifications of administrative units in the Philippines (NSCB, 1997-2014b)

The figure below (Figure 3.2) provides a picture of the Philippines’ general governmental structure (del Rosario, 2005, p. 6) as explained in the figure (Figure 3.1) above.

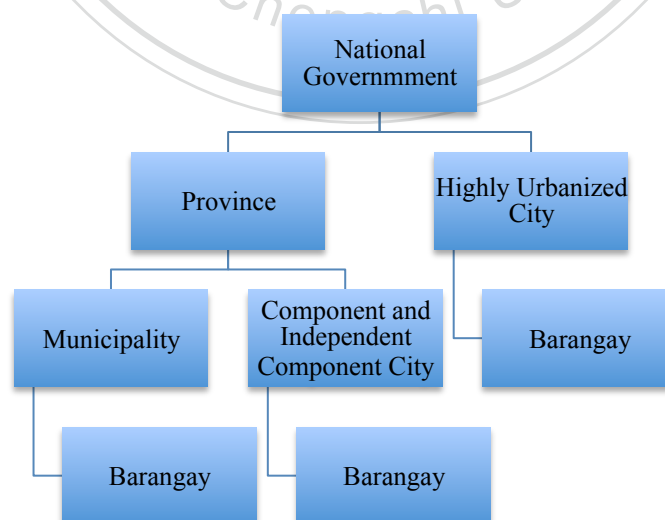


Figure 3.2: Philippines' General Governmental Structure (Rosario, 2005, p. 6)

In terms of conversions or reclassifications of these administrative units, the main basis is income and population, with the exception of component to independent component cities. The table below (Table 3.3) shows these criteria.

Table 3.3: Reclassification criteria for local government units

Local government unit	Conversion or reclassification criteria
Barangay → Municipality	Municipalities are classified into six classes – with the sixth having an average annual income of 15 million and the first having an average annual income of more than or equal to 55 million but less than 100 million
Municipality → Component city	Has an average annual income of at least 100 million pesos in the last two consecutive years based on 2000 constant prices, and either a population of at least 150, 000 inhabitants or a contiguous territory of 100 square kilometers
Component city → Independent component city	Change in the charter prohibiting voters from voting in provincial elections
Component/Independent component city → Highly urbanized city	Has a minimum population of 200, 000 inhabitants, and an average locally-generated annual income for the last two years of at least not less than 250 million pesos based on 2000 constant prices

Note. Adapted from *House Bill No. 2954* (p. 2-3), by E.M. Cojuangco and S. A. Yap, 2013, Philippines: Philippine Congress. Copyright 2013 by the Philippine Congress. Also adapted from *Cities in the Philippines* (p. 1), by SEPO, 2013, Philippines: Senate of the Philippines. Copyright 2013 by the Senate of the Philippines.

3-3.3. Definition of urban areas

The NSCB also provides the definitions for urban areas, in which there are four ways: first is if municipal jurisdictions have a population density of 1, 000 persons per square kilometer. Second is if central districts of municipalities and cities have a population density of at least 500 persons per square kilometer. Third is regardless of population and is instead based on street pattern, establishments (contains at least six – which are a mix of commercial, manufacturing, recreational and/or personal services), and facilities (having at least three of the following – town hall, church or chapel with religious service at least once a month; public plaza, park

or cemetery; market place or building where trading activities are carried on at least once a week; and a public building like a school, hospital, health center or library). Fourth is if barangays have at least 1, 000 inhabitants and meet the conditions under the third category, and where the occupation of the inhabitants is predominantly non-farming or fishing (NSCB, 1997-2014b). It can be observed from the ways in which an area will be considered urban that the threshold is very low, meaning that it would be easy for an area to be classified as urban. This is why in 2010, the conditions for a barangay to be considered an urban area was modified, now requiring at least 5, 000 inhabitants instead of 1, 000. It also included two alternative criteria, which are to have “at least one establishment with a minimum of 100 employees or five or more establishments with 10 to 99 employees, and five or more facilities within the two-kilometer radius from the barangay hall” (HDN, 2013, p. 48).

While there are different urban areas for the Philippines, the typical urban areas are still cities. As shown in Figure 4.1, there are three classifications for cities – the **component cities (hereafter CC)** that are part of the provinces where they are located and are subject to the administrative supervision of their mother province, the **independent component cities (hereafter ICC)** that are independent of the province and whose voters do not participate in the provincial elections, and the **highly urbanized cities (hereafter HUC)** that have a “minimum population of 200, 000... with the latest annual income of at least 50, 000, 000 Philippine Pesos” (NSCB, 1997-2014a). The highest classification for a city is an HUC, and a city will receive a wide range of benefits once it achieves this status. A report published by the Human Development Network (hereafter HDN) states that an HUC is granted “legal and fiscal independence from the province where it is geographically situated, not required to share tax revenues with its former mother province, no longer participate

in provincial elections, and is not required to cooperate with the other [province]” (HDN, 2013, p. 29). Furthermore, it also becomes “directly supervised only by the President” (HDN, 2013, p. 29) and its share of the national budget increases owing to the 1991 Local Government Code, as will be discussed in the subsequent section. Based on these benefits that HUCs can take advantage of, municipalities and cities in the Philippines are motivated to rapidly increase their population and revenues in order to become an HUC.

3-3.4. 1991 Local Government Code and Internal Revenue Allotment

The Philippines currently has 17 administrative regions. Within this, NSCB data shows that there are 81 provinces, 144 cities, 1,490 municipalities, and 42,028 barangays (NSCB, 2014). At least 30 of the current provinces were created after 1960 (Manalo, 2013, p. 2), after the Philippines started to rapidly urbanize.⁹ According to Medalla, the Philippines has a “divide-by-N syndrome,” which is a result of the 1991 Local Government Code that redistributes the revenues collected nationally to local governments “in the form of Internal Revenue Allotment (IRA) and rigid formulas” (HDN, 2013, p. 24).

1991 Local Government Code

Republic Act No. 7160, or the 1991 Local Government Code (hereafter LGC) was enacted in order to decentralize power from the national government to local governments. Governance was decentralized in order to spread the power to other authoritative bodies and increase their autonomy in managing their constituents.

⁹ A paper published by Manalo in 2013 shows how within Southeast Asia, the Philippines has the most divisions in terms of provinces. Indonesia, which is bigger and has a higher population than the Philippines, only has 22 provinces and 11 special divisions. Vietnam has 63 sub-national divisions, and Thailand has 75 provinces.

However, decentralization has also “placed the responsibility for infrastructure provision upon local authorities, which have neither the resources nor always the capacity to deliver at the scale required by growing urban centers” (Jack, 2006, p. 16). Local governments have to provide infrastructure and services that include education, access to electricity, employment, food, shelter, transportation, telecommunications, water supply, and waste management (Shaw et al., 2010, p. 1). They also have “to impose and collect taxes, preserve peace and order, and to operate similar to a business corporation” (del Rosario, 2005, p. 2). Support from the national government come in the form of national budget appropriations that local governments receive to add to their local revenues.

Internal Revenue Allotment

What Medalla’s “divide-by-N syndrome” is referring to is the fact that higher classified administrative units receive more finances, which means that cities receive a bigger proportion from the national budget than municipalities, and HUCs receive more than ICCs or CCs, all because of the Internal Revenue Allotment. The Internal Revenue Allotment (hereafter IRA) is the method under the LGC that the national government uses to distribute part of the national budget to LGUs, and is apportioned as 23 percent to provinces, 23 percent to cities, 34 percent to municipalities, and 20 percent to barangays (Abad, 2013, p. 22). At first glance, it can be noted that a larger percentage goes to municipalities. However, there are more than 1400 municipalities and only 144 cities, which means that cities receive relatively larger shares than municipalities. Furthermore, cities and especially HUCs could also receive more than provinces in terms of IRA shares, which would make it more challenging and difficult for LGUs receiving fewer revenues from the national budget because they would have to raise more money by themselves either through taxes or

through other income-generating projects and partnerships. This is seen in a sample calculation below provided by the Department of Budget and Management of a province and an HUC based on 2013 data (Abad, 2013) wherein the HUC received higher funds despite having a lower population compared to the province, and together with the advantage of imposing higher tax rates and not having to share its tax revenues with its former mother province, this means that the HUC can have a higher total revenue.

Table 3.4: Sample IRA Calculation for 2014

LGUs	Total Population	Total Land Area (square kilometers)	Total IRA 2014
Province of Camarines Sur	1, 647, 440	5, 380.78	1, 485, 181, 450
Puerto Princesa City	222, 673	2, 381.02	1, 547, 961, 109

Note. Reprinted from “Local Budget Memorandum: FY 2014 IRA Level and Other Local Budget Preparation Matters,” by F. Abad, 2013, Department of Budget and Management. Copyright 2013 by the Department of Budget and Management

It can also be observed that the calculations are based on total population and land area, and not on the actual capability, need, or vulnerability of the LGU. In terms of urbanization and disaster management, lower classified LGUs would have a harder time preparing for or responding to disasters in terms of building community cohesion, constructing or upgrading infrastructure, creating community building and public awareness programs, undertaking vulnerability studies in order to create disaster risk maps, and modernizing technologies. HUCs also have the power to impose both municipal and provincial taxes, and to exceed tax rates of municipalities or provinces, which essentially means that they can earn more compared to other lower classified LGUs. Moreover, as was stated in the previous sections, an HUC does not have to share its income and revenues with its former mother province. This is seen as penalizing the province because “it is precisely the agglomeration

economies embodied in a city that drives growth; without assurance of coordination in land-use or the delivery of basic services (e.g., from drainage and waste disposal to security, transportation management, and disaster risk reduction) across localities, the longer-term growth of the province and of the urban system itself could be crippled” (HDN, 2013, p. 29). Once the driving force or the greatest source of income of a province is taken out, in this case an HUC, it will be harder for the province to continue along its path because it would then have to look for other sources of growth. This would affect its infrastructure and service provision because it now has to contend with fewer income sources and would have to redraw development or disaster plans now excluding the HUC.

Despite being more decentralized and having LGUs take the lead role in delivering different functions, there still exist inefficiencies created by the LGC. This is because there are still programs and services that remain with the national government, and therefore results in a “two-track delivery mechanism” (HDN, 2013, p. 36) that in essence is an overlapping of functions. This “divide-by-N syndrome” or the method being undertaken as a result of the LGC has been the “main driver for the rush to cityhood” (SEPO, 2013, p. 1) and in the rapid and unmanaged Philippine urbanization process. It is perceived as “encouraging politicians to create new jurisdictions” (HDN, 2013, p. 25) because of the advantages and benefits attached to higher-level administrative units such as cities. In fact, the number of cities in the Philippines increased 134 percent between 1977 and 2012 from 61 to 143 cities (SEPO, 2013, p. 1), and 144 as of writing. The LGC and the IRA demonstrate how national policies have further encouraged the Philippines’ rapid and unmanaged urbanization.

3-3.5. Urbanization process over the years

It was in the 1960s that the Philippines really started to urbanize. Philippine urbanization occurred primarily due to rural-to-urban migration of people wanting to find better jobs and to build better lives for themselves, and subsequently because of natural births in urban areas. Another factor for urbanization is the increase in population densities that led to the reclassification of rural areas as urban areas (Constantino-David, 2004, p. 130). Development policies from the 1960s to the 1980s also rapidly increased urbanization rates especially of Metropolitan Manila, which is considered to be the Philippines' only megacity or sometimes considered an extended metropolitan region.

Table 3.5 Percentage of the Population Living in Urban Areas

	1960	1970	1980	1990	2000	2010
Urban population percentage	30.3	33.0	37.5	48.6	48.0	45.3

Note. Adapted from “World Urbanization Prospects: the 2014 Revision,” by UNDESA Population Division, 2014. Copyright 2014 by UNDESA

The table above (Table 3.5) shows the Philippines' urban population percentage since 1960, according to most recent data from UNDESA's World Urbanization Prospects. From an urban population percentage of 30.3 percent in the 1960s, this increased to 48.6 percent by the 1990s (UNDESA, 2014). These figures show how rapid and unmanaged urbanization in the Philippines had been, specifically seen as how from the 1980s to the 1990s, the urbanization rate was growing at an annual average rate of 5.1 percent (UNDESA, 2014). However, with the rise of the concept of sustainable development in the 1990s and with the increasing negative impacts that the country's rapid and unmanaged urbanization brought, the government started to ponder on the need to “reduce and eventually reverse migration into cities and uplands and thereby check the congestion in... major urban centers and

environmental degradation in...uplands” (Ramos, 1993, p. 11). The government’s efforts decreased the urbanization rate by more than half to around 2.1 percent (UNDESA, 2014). As of 2010, the official overall level of urbanization in the country was 45.3 percent and estimates for 2015 put it at 44.4 percent (UNDESA, 2014). This shows a decrease from when rapid urbanization first started to occur in the Philippines, which can be explained either because of increased mortality rates, decreased fertility rates, or because the urbanization rate has plateaued and is now growing at a slower speed compared to when it first started.

3-3.6. Growth of a megacity: Metropolitan Manila’s urbanization

As the previous section has touched upon, Metropolitan Manila has grown to be the most important urban area of the Philippines. This section talks about its urbanization process. Metropolitan Manila (hereafter MM), officially called the National Capital Region (hereafter NCR), is the only megacity of the Philippines. It is also referred to as an extended metropolitan region in that it is an agglomeration of cities composed of 16 cities and one municipality. According to the 2010 Census of Population¹⁰ by the National Statistics Office, which is the latest official population census available, MM occupies a total of approximately 639 square kilometers, which is only 0.21 percent of the Philippines (Shaw et al., 2010, p. 3). Despite it being the smallest in terms of land area among the 17 administrative regions of the country, it officially houses 11.86 million people (NNC Web Team Secretariat, 2013), but with an “informal estimated [population] count of 16 million” (Shahani, 2012). This represents 13 percent of the country’s total population. Furthermore, it is the most densely populated region with a density of more than 18, 000 per square kilometer (NNC Web Team Secretariat, 2013). It is also responsible for contributing more than

¹⁰ Census in the Philippines is carried out every five years.

one third of the country's GDP (Yap, 2014), and is considered the “political, economic, social, and cultural center of the Philippines” (Shaw et al., 2010, p. 3).



Figure 3.3: Map of Metropolitan Manila (DTI, 2014)

The map provided above (Figure 3.3) shows the administrative units, 16 cities and one municipality that make up MM – Caloocan, Las Piñas, Makati, Mandaluyong, Manila, Malabon, Marikina, Muntinlupa, Navotas, Parañaque, Pasay, Pasig, Quezon, San Juan, Taguig, Valenzuela, and the municipality of Pateros (ADB, 2008, p. 9).

1960s-1970s

MM's primacy can be traced back as far as the colonial periods of the Spanish and the Americans in the Philippines that designated Manila to be the capital of the country (Paderanga Jr., 2010, pp. 13-14). However, policies during the 1960s and 1970s were the ones that further spurred its primacy, with urbanization really taking

off in the 1960s. The 1970s saw the formulation of development plans and economic policies that had the “aim of making Metropolitan Manila a national and international center in the world map” (Paderanga Jr., 2010, p. 19) and spur economic growth. These included having majority of corporations and investments located in or near the capital of Manila. Not only did this lead to Manila’s expansion beyond its borders resulting in MM, this also developed adjacent regions of Central Luzon (Region III) and Southern Tagalog (Region IVA).

Presidential Decree No. 824 promulgated in 1975 created MM “as a public corporation... with the powers and attributes of a corporation including the power to make contracts, sue and be sued, acquire, purchase, expropriate, hold, transfer and dispose of property and such other powers as are necessary to carry out its purposes” (PDC, 2005, pp. 8-9). Because of these policies and plans, this spurred rural-urban migration to Manila. As more and more people resided in Manila, other people started moving to nearby peripheral areas such as Quezon City, Caloocan, San Juan, Makati, Parañaque, et cetera, that eventually expanded Manila’s territory and resulted in the creation of MM, officially called NCR (HDN, 2013, p. 35). During that time, as many as 33.5 percent of the country’s urban population was living in MM (Paderanga Jr., 2010, p. 9). Furthermore, it had an annual growth rate of 4.1 percent while the national average was only at 2.7 percent (Jimenez & Velasquez, 1989, p. 52), which is evidence not only of high urban growth rate but also of its rapid urbanization. This resulted in congestion wherein population density was at 7, 814 persons per square kilometer, and other urban problems that will be further discussed in the subsequent section. As a response and as a way to decongest Metropolitan Manila, the government created “economic processing zones and industrialized the adjacent regions of Central Luzon and Southern Tagalog” (Paderanga Jr., 2010, p. 5) in the

hopes that people would then migrate to these places and decrease the number of people migrating to MM.

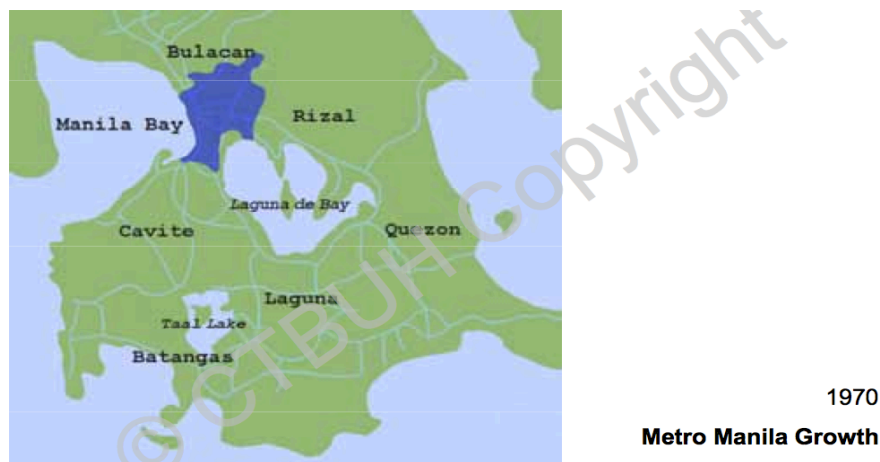


Figure 3.4: Map of Metropolitan Manila in the 1970s. (Palafox, 2010, p. 12).

1980s-1990s

By the 1990s, MM was already composed of Manila, three cities, and thirteen municipalities (Jimenez & Velasquez, 1989, p. 51). It had a population of approximately 8 million out of an overall country population of approximately 61 million (NNC Web Team Secretariat, 2013), which is around 13 percent of the total population. Furthermore, around this time 33.5 percent of the country's total urban population was already residing in MM (UNDESA, 2014). It also "accounted for 32 percent of the country's GDP and local governments there receive one-third of all local government revenues" (Jimenez & Velasquez, 1989, pp. 55-56). This was still alongside policies that strove to convert MM into a primate city and region, and to develop its international competitiveness. Republic Act No. 7924 enacted in 1995 transformed MM into a "special development and administrative region...under the direct supervision of the President of the Philippines" (MMDA, 1996).

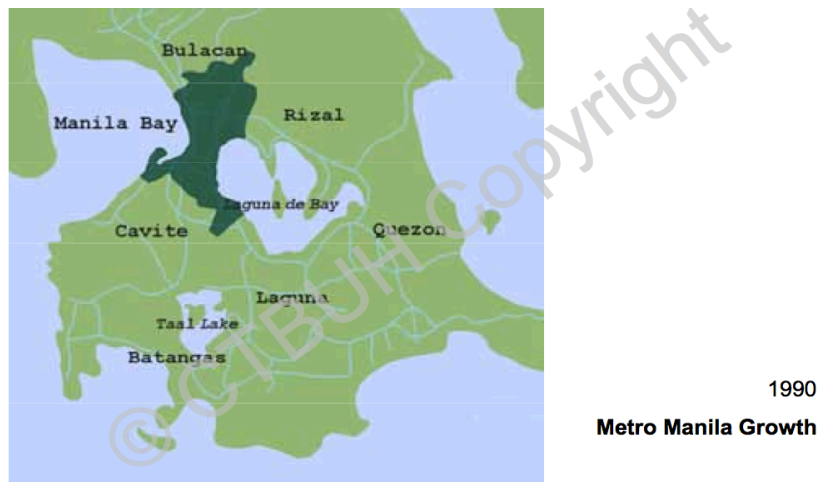


Figure 3.5: Map of Metropolitan Manila in the 1990s. (Palafox, 2010, p. 13).

One of the major problems that the rapid urbanization of MM and its congestion brought was the increase in the number of people living in poverty. Despite the region accounting for more than 30 percent of the country's GDP, around one-third were considered urban poor and were living in poverty" (Constantino-David, 2004, p. 130; Jimenez & Velasquez, 1989, p. 52). As a means to consolidate the LGUs of MM, the Republic Act No. 7924 of 1995 mentioned above also created the Metropolitan Manila Development Authority (hereafter MMDA). The main responsibility of MMDA is the "effective delivery of metro-wide services in Metropolitan Manila" (MMDA, 1996). One of its tasks was to "prepare comprehensive development plans" for MM that have to do with land use planning, solid waste management, flood control and sewerage management, pollution control, and public safety, among others. However, LGUs in MM do not adopt or follow these development plans, and instead "issue zoning codes and regulations that are not coordinated with metro-wide plans" (ADB, 2008, p. 9). A reason for this is because the Act maintains that LGUs can adopt plans or programs depending on their needs and means, "taking into consideration the adequacy of their facilities, resources and capabilities" (MMDA, 1996). Therefore, there is a disconnect between the supposedly

overarching authority and the individual LGUs, which is further evidence of how fragmented or uncoordinated local governance in MM is.

2000s

By 2000, the Census showed a total population of approximately 10 million people in MM, with an annual growth rate of 2.25 percent (Morada, 2005, p. 1). The total Philippine population was approximately 77 million. After undergoing years of rapid urbanization, its urbanization in recent years has already slowed down. What were once four cities and 13 municipalities in the 1990s have become 13 cities and four municipalities in 2005 (Morada, 2005, p. 1).

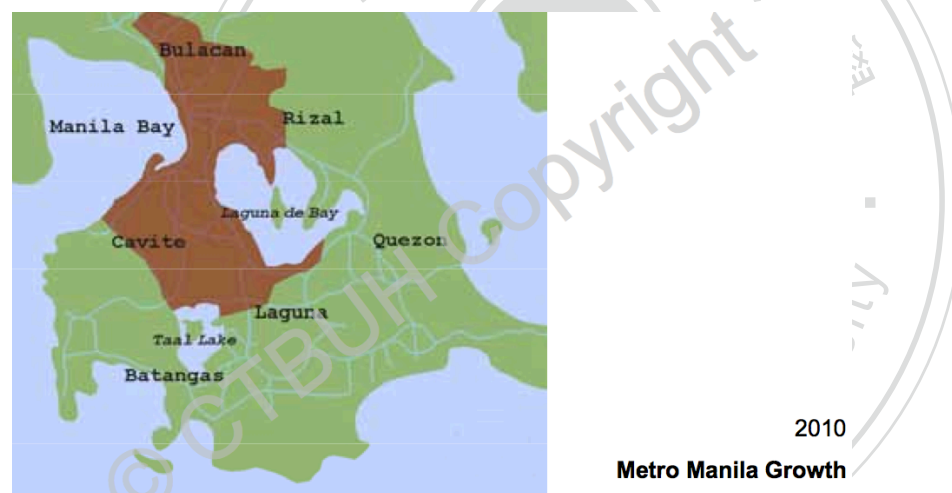


Figure 3.6: Map of Metropolitan Manila in the 1990s. (Palafox, 2010, p. 14)

By 2010, MM's annual growth rate was 2.02 percent, and its official population was 11.86 million (NNC Web Team Secretariat, 2013) but an informal estimated population of 16 million (Shahani, 2012). At present, MM is composed of 16 cities and one municipality, and houses 28.1 percent of the Philippines' total urban population (UNDESA, 2014). Over the years of unmanaged or poorly managed urbanization, negative impacts are already pronounced in the Philippines' urban areas – with the most severe manifested in MM because of how it was envisioned and

engineered to be the primate region. A 2010 ADB report revealed that “about 35 percent of Metro Manila’s households are informal settlers” (Shahani, 2012) and a 2013 World Bank report asserts that this has already risen to 45 percent (Crepin, 2013, p. 10). These informal settlers live in dangerous and disaster-prone areas such as waterways, along coastlines, or in low-lying areas that are more at risk from disasters, particularly typhoons and “...floods due to less secure infrastructure, reduced access to clean water, and lack of health insurance” (Crepin, 2013, p. 10). The 2011-2016 Philippine Development Plan (hereafter PDP) also highlighted the fact that “households in informal settlements in Metro Manila increased by more than 81 percent between 2000 and 2006” (NEDA, 2011, p. 243).

3-3.7. Effects of urbanization in the Philippines

Similar to effects of urbanization in other developing countries, urbanization processes in the Philippines also brought about both positive and negative outcomes. The only downside is that it brought more negative than positive. The Philippine Development Plan 2011-2016 reports that poverty incidence in the Philippines decreased by 1.5 percentage points because of economic growth related to urbanization. This is far behind neighboring countries such as China, Indonesia, and Thailand, with a 2.9 to 3.5-percentage point drop in poverty incidence (NEDA, 2011, pp. 20-21). As discussed in the previous sections, the Philippines’ urbanization has largely been rapid and unmanaged. Specifically for MM where most, if not all, of the negative effects of urbanization are prominent, Philippine urban planner Alcazaren believes that the way MM has expanded and the way that it is currently developing is not sustainable and has not been properly managed. According to him, there had been “11 urban master plans” that were drawn up to have a “holistic, metro-wide urban plan” since the Spanish era up to the present but no plan had ever been fully

implemented by the government (Kritz, 2014). Alongside master plans for MM were also plans for other highly populated urban areas around the country that likewise were not implemented.

An earlier report by the HDN echoes the same sentiments, saying that MM is not sustainable because it is “entirely dependent on areas outside its political boundaries” and because of urbanization, access or provision of services such as energy and water supply, infrastructure, roads, and mass transportation systems are poor (HDN, 2013, p. 32). This rapid and unmanaged urbanization (especially because of the LGC and the IRA that led areas to rush to urbanization) together with its devolved government structure have resulted in urban challenges that aggravate the incapability of local governments – of other HUCs and especially of those administrative units that have lower classifications. Manifestations of the negative outcomes mainly because of poor planning and foresight, poor management, lack of political will, and policies or lack thereof created by government bodies. Negative outcomes of Philippine urbanization exhibited at a more significant level such as flooding, informal settlements, pollution, poverty, and waste management will be discussed below. As mentioned in the first chapter, urbanization is directly linked to increased population dynamics, production, and consumption. For population dynamics, the observable negative outcomes of urbanization are informal settlements; for production it is the creation of primate cities or regions, and for consumption it is waste generation.

Due to the rapid increase of rural-urban migration, and because of the higher standards of living in urban areas compared to rural areas, rural migrants do not have the means to access secure housing and end up living in **informal settlements** such as along coastlines, slopes, or waterways, coastlines that are more prone to disasters such

as typhoons and flooding. This was seen from the casualties and fatalities of the worst typhoons in the 21st century that hit the Philippines. Informal settlements should not even be built, because the LGC supposedly calls for local governments to prohibit populations from doing so (Macaraig, 2013). However, local government officials in some areas do not abide by this and instead allows structures to be built and populations to live in these high-risk areas with one of the reasons being to increase their total population in order for them to be reclassified. The previous section points to the **creation of primate cities or primate regions** because of urbanization. In the case of the Philippines, MM contributes one third of the country's GDP despite only occupying 0.21 percent of the country's total land area. Additionally, most of the country's assets such as businesses, infrastructure, government agencies, investments, and technologies are concentrated in MM. For example, "46 percent of employment in the industry and services sector" (Public Reconstruction Commission Philippines, World Bank Group, ADB, & UN, 2009, p. 110) is located in MM. Lastly, the consumption of resources has led to **waste generation**. Garbage that is not properly collected end up in waterways or drainage systems that causes blockages and results in floods after typhoons. The PDP reveals that in recent years, MM has been producing a daily amount of around 8, 000 tons of solid waste with only around 70 percent being collected. As a whole, the Philippines produces a daily amount of 30, 000 tons, of which half is collected (NEDA, 2011, p. 305).

Latest data from the Commission on Audit (hereafter COA) states that garbage and sanitation expenditures of MM LGUs in 2012 was 4.1 billion Philippine pesos (Rosario, 2014). This amount is two percent of the country's GDP in 2012, which meant that MM LGUs were spending an equivalent of two percent of the country's GDP to deal with increasing amounts of solid waste produced by its ever-increasing

populations. The rest of the waste that is not collected end up in drainage systems or waterways that clog them (NEDA, 2011, p. 305) and lead to **flooding**. This is one of the greatest contributors to casualties and fatalities from the Philippines' worst typhoons of the 21st century. The PDP also admits that “existing flood control structures in identified high-risk areas nationwide have proved inadequate... which often results in massive flooding both in HUCs and rural areas” (NEDA, 2011, p. 146). Flooding also occurs in rural areas that lie at the peripheries of HUCs or urban areas, because they receive the overflow of floodwater. Moreover, the PDP adds that there are some LGUs especially in high-risk areas that “lack funds for regular O&M [operations and maintenance] of existing flood control programs” (NEDA, 2011, p. 146) that result in the improper maintenance and eventual inadequacy of flood and drainage structures.

3-4. Asia's experiences and vulnerability to natural disasters

As the previous sections have pointed out, the Philippines is extremely vulnerable to natural disasters. In the same way, Asia is also the most vulnerable region in the world to the increasing frequency and intensity of natural disasters. According to the Emergency Events Database (hereafter EM-DAT)¹¹, “occurrence of natural disasters has risen 600 [percent] in the last 60 years” (ADB, 2013, p. 2), with hydrological and meteorological (hereafter hydro-meteorological) disasters rising in frequency compared to geophysical disasters that have remained the same (ADB, 2013, p. 3). The report published by the Global Facility for Disaster Reduction and Recovery (hereafter GFDRR) likewise provides data in 2008 of increased death tolls

¹¹ EM-DAT, established in 1988, is one of the most used disaster databases internationally. It is managed by the Center for Research on the Epidemiology of Disasters (CRED) and overseen by the World Health Organization together with the Belgian Government. It contains data on over 18, 000 mass disasters in the world from 1900 to the present.

and economic losses, cited by the Asian Disaster Preparedness Center (hereafter ADPC) saying that the “death toll from natural disasters tripled to 235, 000 from an annual average of 66, 000 over the period 2000-2007. Economic losses totaled \$181 billion, more than double the annual average of \$82 billion over the same period” (ADPC, 2010, p. 3). The International Monetary Fund (hereafter IMF) also states that compared to the 1950s, natural disasters in the 21st century bring about damages that cost 18 times higher (ADB, 2013, p. 4). These show that the increase in the socio-economic impacts felt due to natural disasters.

Natural disasters are more likely to occur in urban areas such as cities. According to the 2012 World Development Report, “cities... are the locus of both large and small-scale disasters” (IFRC, 2010, p. 34) especially because major disasters that have occurred in the past decade “have an urban component to them... great majority of damages are concentrated in city centres” (IFRC, 2010, p. 34). Despite urban centers receiving the most impacts from natural disasters, there is a lack of information and specific data about these impacts (IFRC, 2010, p. 48). However, suffice to say that urban areas have been more affected and impacted by natural disasters, and are more vulnerable to natural disasters mainly because of increased populations and concentration of assets and resources in these urban areas. The region most vulnerable to the effects of natural disasters is Asia, with its population 4 times as likely as those in Africa to be affected, and 25 times more likely than those in Europe or North America (ADB, 2013, p. 5). Asia is also the most socially and economically affected by natural disasters. According to the 2011 World Disasters Report, “between 2001 and 2010, 85 percent of the total number of people impacted by disasters and 66 percent of all fatalities globally occurred in the region [Asia]” (Mghendi & Afrhill, 2011). Furthermore, Asia has accounted for half of the

estimated global economic cost of natural disasters in the world over the past 20 years, and specifically for the period 1980-2009, bore 38 percent of global economic losses (ADB, 2013, p. 4) and 51 percent for the period 2010-2014.¹²

3-5. Urbanization trends in Asia

Aside from being the most vulnerable in the world to natural disasters, Asia is the continent with the highest urbanization rate and number of people living in urban areas, as will be shown in the table below. Furthermore, countries in Asia have also had varying experiences in their urbanization processes. The table provided below (Table 3.6) from Zlotnik’s article shows how the rate of urbanization in Asia has been increasing since the 1950s. The table begins with data from the 1950s because it was when urbanization rates significantly increased worldwide (Bazoglu, 2011, p. 34).

Table 3.6: Level and rate of urbanization worldwide (1950-2030)

Year/period	Africa	Asia	Latin America & Caribbean	North America	Europe	Oceania
Level of urbanization (percent)						
1950	14.7	17.4	41.9	63.9	52.4	61.6
1975	25.2	24.7	61.4	73.8	67.3	72.2
2000	37.2	37.5	75.4	77.4	73.4	74.1
2030	52.9	54.1	84.0	84.5	80.5	77.3
Rate of urbanization (percent)						
1950-1975	2.17	1.39	1.53	0.58	1.00	0.64
1975-2000	1.55	1.67	0.82	0.19	0.35	0.10
2000-2030	1.17	1.23	0.36	0.30	0.31	0.14

Note. Reprinted from “World Urbanization: Trends and Prospects,” by H. Zlotnik, 2004, *New Forms of Urbanization: Beyond the Urban-Rural Dichotomy*, p. 55. Copyright 2004 by Ashgate Publishing Limited.

¹² Dataset generated from EM-DAT

Comparing the rate of urbanization from the period 1950-1975 to the period 1975-2000, Asia was the only one with continued increasing rates. Asia had the highest urbanization rate, as well as the highest number of urban dwellers worldwide (Yeung, 1998b, p. 192; Zlotnik, 2004, p. 48). One reason could be that other continents had already attained high levels of urbanization and were starting to slow down whereas in Asia, they still had a long way to go. By 2000, Asia's population was only 37.5 percent urbanized, which means that Asian countries will still continue to urbanize in the next decades with the possibility of reaching 54.1 percent if projection models are reliable. One of the key similarities for Asia in general, according to the Asian Development Bank (hereafter ADB), is that the systems and structures of governance of all the countries within the region have been "inherited from colonial powers or based on... western models" (ADB, 2008, p. 8). Another similarity is of the phenomenon of "excessive concentration of population in the largest city, otherwise known as the primate city" (Yeung, 1998b, p. 200).

These are two reasons why developing countries in Asia were emulating the urbanization process of developed countries thinking that it would ensure economic growth, because urban forms and structures as well as governance systems and structures of Asia have been heavily influenced by developed colonial powers. Because of the rapid urbanization of Asia that started in the 1960s, currently more than half of the world's megacities¹³ are already located in the region. With regard to the positive outcomes of urbanization – higher productivity rates leading to economic growth, data has shown that cities are responsible for producing 70 percent of the world's gross domestic product (hereafter GDP) (Birch & Wachter, 2011, p. 8). In

¹³ According to Brinkhoff (2014), there are 30 megacities around the world. Of this, 18 are located in Asia

Asia, while only around 40 percent of its population was living in urban areas in 2008, data from ADB and the United Nations Economic and Social Commission for Asia and the Pacific (hereafter UNESCAP) show that cities were responsible for 80 percent of the region's GDP even until 2013 (ADB, 2008, p. 3; UNESCAP, 2013b, p. 2). While rapid urbanization also resulted in some Asian countries such as China, Indonesia, Malaysia, and Thailand decreasing their poverty incidence rates by an average of 2.9-3.5-percentage points, the Philippines only decreased its poverty incidence rates by 1.5-percentage points (NEDA, 2011, pp. 20-21)¹⁴, which is indicative of the inconsistency of urbanization's positive outcomes.

Moreover, distinct from the outcomes experienced by developed countries, urbanization outcomes in Asia have been more negative than positive. This is due to the fact that urbanization in developed countries came about as a result of economic growth, which meant that the process had been largely managed or controlled, whereas demographic growth from rural-to-urban migration prior to economic growth was the main cause of urbanization in Asian countries. Urbanization was rapid and unmanaged because governments perceived higher levels of urbanization as equating to economic growth and as a means of "catching up with the west" (UN-HABITAT, 2012, p. 19). Aside from the unevenness of positive effects, urbanization in Asia also resulted in around one third of its urban populations living in poverty, around the same number living in informal settlements located in disaster-prone areas – along coasts or shorelines; beside major river basins; on low-lying areas; on top of fault lines; et cetera, roughly the same percentage not having access to clean water or sanitation, and lesser urban areas in relation to primate cities not having the resources or the capabilities to properly prepare for and respond to disasters (UNESCAP,

¹⁴ National Economic and Development Authority, a Philippine governmental agency

2013b, p. 3). There are even authors who go as far as saying that urbanization and its negative economic, environmental, and social effects are “*the* critical issue that Asia and Africa are facing in the 21st century” (Birch & Wachter, 2011, p. 22).

The main difference Southeast Asian urbanization has with other parts of Asia is the haphazard formation of its extended metropolitan regions “through the extension of megacities beyond their boundaries” (Yeung, 1998b, p. 200). The extended metropolitan regions of Southeast Asia have “occurred at an unprecedented rate... characterized by chaotic polycentric structures, and population decline in former city districts” (Firman, 2012, p. 2), which has been evident in megacities such as Manila that has expanded beyond its original borders and has resulted in Metropolitan Manila, as discussed in the previous sections. Along with the formation of extended metropolitan regions has been the increasing decentralization of authority that has led to “confusing territorial jurisdictions” and resulted in each city having its “own administrative machinery, laws, and regulations... that no single authority is responsible for overall planning or management” (Knox & McCarthy, 2012, p. 158). Therefore, it can be said that urbanization processes in Asian countries have been different, which have resulted in the uneven manifestations of positive and negative outcomes brought about by urbanization.

Bangladesh and Japan are two such Asian countries (the former belonging to South Asia, and the latter in East Asia) that have differing urbanization rates, with one having a low level while the other having a high level of urbanization, respectively. The Philippines’ (belonging to Southeast Asia) urbanization rate falls in the middle of the other two. These three countries are different in terms of their geographical sizes and economic capacities (with Bangladesh and the Philippines being classified as developing countries, and Japan as a developed country), but they are all extremely

vulnerable to natural disasters. They represent different geographical areas within Asia, varying levels of urbanization, and varying degrees of vulnerability to natural disasters.

3-5.1. Bangladesh's natural disaster vulnerability and urbanization process

Bangladesh is at risk from disasters such as droughts, earthquakes, floods, landslides, tornadoes, tsunamis, and typhoons. However, it is the most vulnerable to typhoons, which have occurred the most from 1990-2014. Furthermore, since the country is on a low-lying floodplain meaning that bodies of water surround it, flooding occurs even without strong typhoons. Regular floods caused by river overflows affect 20 percent of the country, and increases to 68 percent during the typhoon season (Kumar, 2010, p. 23). As of 2013, it had a total population of approximately 156 million people, with an urban population of 28.6 percent and with Dhaka having an annual urbanization rate of 2.96 percent (CIA Factbook, 2013a). Comparatively, national population growth rate was only at 1.1 percent annually from 2005-2010 (UNESCAP, 2012, p. 6) and at 1.6 percent according to 2014 estimates (CIA Factbook, 2013a). Half of the urban population is settled in just four major cities – Dhaka, Chittagong, Khulna, and Rajshahi (Kumar, 2010, p. 16), which are the major cities because “business services, particularly finance and real estate services is considerably higher” (Development Frontiers, 2013, p. 2) in these cities compared to the rest of the country.

Dhaka is the capital city of Bangladesh and according to 2011 estimates, it had a total population of 15.391 million, followed by Chittagong at 5.239 million, Khulna at 1.781 million, and Rajshahi at 932, 000 (CIA Factbook, 2013a). These figures show how the total population residing in Dhaka is three times more than the second

major city of Bangladesh. Furthermore, it shows that not only is Dhaka a megacity but is also the primate city of Bangladesh, enjoying “distinct primacy in the national urban hierarchy” (PDC, 2006a, p. 11). It houses 32 percent of Bangladesh’s total urban population (Development Frontiers, 2013, p. 1) and more than 80 percent of national enterprises, business and commercial centers, as well as a large concentration of administrative units are located therein (Rahman, Islam, & Ahmed, 2012, p. 60). Bangladesh has no national urban land use policy in place, meaning that each city and each municipality should be responsible for preparing its own plans. In the event that a local government unit does draw up a plan, it is not required to implement it, which has largely led to rapid and unmanaged urbanization mainly comprised of rural-to-urban migrants (PDC, 2006a, p. 17). The urbanization process of Bangladesh has been rapid and unmanaged because infrastructure its cities, especially Dhaka, has grown faster than the number of housing available, and because of the inequalities that ensued because of urbanization. The lack of plans or uneven implementation of plans is similar to the situation in the Philippines. Due to the rapid urbanization of Dhaka that brought about mostly the same negative outcomes as those in the Philippines and Metropolitan Manila, more than one third of the urban population of Dhaka is currently living in informal settlements (Development Frontiers, 2013, p. 6).

3-5.2. Japan’s natural disaster vulnerability and urbanization process

Despite its status as a developed country, Japan is exposed to different natural disasters such as earthquakes, landslides, tsunamis, typhoons, and volcanic eruptions (Toyoda, 2012, p. 237). Typhoons are the most frequently occurring natural disaster in the country, while earthquakes have caused more deaths and economic damages. In fact, 22.5 million of Japan’s population is exposed to typhoons whereas only 16 million of the Philippines’ population is exposed (UNISDR, 2009, p. 7). However, the

Philippines' mortality risk is "17 times greater than that of Japan" (UNISDR, 2009, p. 7) because of the economic capabilities of the two countries as well as their urbanization processes and disaster management. As of 2010, 86 percent of the population was urban (Knox & McCarthy, 2012, p. 107). Japan's economic growth in the 1960s through the 1980s gave rise to its industrialization and modernization that drove rural-to-urban migration and resulted in greater urbanization. Congestion of urban areas ensued, which made urban dwellers develop health issues caused by increased pollution levels and increased waste production (Toyoda, 2012, p. 236). Following the environmental and health issues that arose after Japan's urbanization, the government took strict measures to "tackle environmental pollution, urban issues and social security problems" (Statistics Japan, 2013, p. 26). Over the years, while Japan has continued to urbanize, and despite the creation of urban agglomerations, Japan's urbanization has been managed. Currently, the five biggest prefectures are Tokyo, Kanagawa, Osaka, Aichi, and Saitama. According to the latest available data provided by the Statistics Bureau of Japan, Tokyo had a population of 13.16 million in 2010 making it the prefecture with the largest population among the 47 prefectures of Japan. Furthermore, Tokyo had a population density of 6,016 persons per square kilometer, which is 18 times the national average (Statistics Japan, 2013, p. 21).

Similar to Dhaka and to Metropolitan Manila, this shows that Tokyo is not only a megacity but also the primate city of Japan. Similar to the Philippines' highly urbanized cities, municipalities in Japan that cross a population threshold (in this case 500,000) will become Cabinet-Order designated cities with "administrative and fiscal authority equal to those of prefectures" (Statistics Japan, 2013, p. 194). Moreover, a law that allows for the merging of municipalities "in order to strengthen the administrative and fiscal foundation" (Statistics Japan, 2013, p. 194) has also been

promulgated that has led to the decrease of the total number of municipalities over the years. However, there was no mention of a law or a code similar to that of the Internal Revenue Allotment. In any case, the government of Japan is economically more capable compared to the Philippines, and has managed its urbanization over the years.

3-6. Synthesis

The entire chapter has discussed in detail the Philippines' vulnerability to natural disasters, the socio-economic impacts natural disasters bring to the country, and its urbanization process. This includes the growth of its primate city-turned-region Metropolitan Manila, and the more pronounced manifestations of negative over positive outcomes of urbanization on the country's urban areas. Analyses of vulnerability and urbanization processes in Bangladesh and Japan have pointed out that Bangladesh, Japan, and the Philippines are all vulnerable to natural disasters of differing severities. Moreover, Dhaka, Tokyo, and Metropolitan Manila are all megacities and primate cities that produce a large share of their country's GDP, with a large share of their country's assets, national government agencies, investments, resources located therein. This means that if they were to be severely hit by natural disasters, they would affect entire systems of the whole country. Bangladesh's urbanization process has been rapid and unmanaged, which has resulted in negative outcomes being more pronounced than positive outcomes. On the other hand, Japan has focused on managing its urbanization because of the early manifestations of the negative outcomes that the government did not want to continue happening.

CHAPTER 4

CASE STUDY: HOW URBANIZATION CAUSES WEAK DISASTER MANAGEMENT IN THE PHILIPPINES

The chapter provides a list of some of the worst typhoon occurrences the Philippines has experienced in the 21st century, and highlights the recent case of Super Typhoon Yolanda (Haiyan) that remains to be the most devastating typhoon in the country's history as an example of how much socio-economic impact even just one severe typhoon can bring. It will be followed by a historical overview of international disaster management and a discussion of the evolution of the Philippines' disaster management in response to the rise of natural disasters and in relation to its urbanization process. Analyses of disaster management in Bangladesh and Japan will also be provided to compare and contrast the three countries, which as the previous chapter has shown, have had different urbanization processes.

4-1. Typhoon occurrences in the Philippines in the 21st century

The Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA), which is the principal meteorological and hydro-meteorological agency of the Philippines under the Department of Science and Technology (hereafter DOST), is responsible for classifying, identifying, monitoring, and sending out bulletins and reports about hydro-meteorological occurrences that enter the Philippine Area of Responsibility (hereafter PAR). The table below (Table 4.1) provides the definitions used by PAGASA, which as can be observed is dependent on the maximum wind speeds attained upon entrance into PAR.

Table 4.1: PAGASA typhoon classifications

Classification	Definition
Tropical Depression	Maximum wind speed of up to 63 km/h
Tropical Storm	Maximum wind speed of 64 to 118 km/h
Typhoon	Maximum wind speed exceeding 118 km/h
Super Typhoon	Maximum wind speed exceeding 240 km/h

Note. Adapted from “Tropical Cyclone,” by PAGASA, 2014. Copyright 2014 by PAGASA-DOST

Six or seven typhoons annually make landfall in the Philippines. In the 21st century, the top five typhoons that have affected the country all have typhoon or super typhoon classifications under PAGASA, as shown in Table 4.2.¹⁵

Table 4.2: Worst typhoon occurrences in the Philippines in the 21st century

Typhoon	Time Period	Max. Sustained Winds (km/h)	Casualties and Fatalities	Cost of damages (1PHP= ~43.4USD)	Area most affected¹⁶
Super Typhoon Reming (Durian)	Nov 26- Dec 1, 2006	190	Affected: 3.2 M Deaths: 720	5.09 B	Legazpi City
Typhoon Frank (Fengshen)	June 18-23, 2008	195	Affected: 4 M Deaths: 540	13.5 B	Iloilo City

¹⁵ The typhoons have been included based on their socio-economic impacts on the country (the number of fatalities caused and the costs incurred as a result of damages to agriculture, infrastructure, and property), and are arranged by year of incidence. The names in the parenthesis are the typhoons’ international codenames.

¹⁶ With the exception of the Legazpi City and the provinces of Compostela Valley and Davao Oriental, the areas most affected by the worst typhoon occurrences in the 21st century are all highly urbanized cities, which is a city classification in the Philippines. However, populations of each affected area exceed at least 100, 000.

Typhoon Pepeng (Parma)	Sept 30-Oct 10, 2009	120	Affected: 4.5 M Deaths: 465	27.3 B	Baguio City
Typhoon Pablo (Bopha)	Dec 2-9, 2012	160	Affected: 6.2 M Deaths: 1, 067	36.95 B	Compostela Valley and Davao Oriental Provinces
Super typhoon Yolanda (Haiyan)	Nov 6-9, 2013	315	Affected: 16.1 M Deaths: 6, 300	89.60 B	Tacloban City

Note. Adapted from “Deadliest, most destructive cyclones of the Philippines,” by Louis Bacani, 2013. Copyright 2013 by Philstar.com and “Bagyo na naman,” by J. R. G. Albert, 2012. Copyright 2012 by the National Statistical Coordination Board

A general analysis shows how the cost of damages have been increasing over the years and how the areas with the most casualties or fatalities are urban areas and cities with high populations, ranging from more than 100, 000 to more than 600, 000. As discussed in the previous chapter, cities and urban areas are the most frequently hit and damaged by disasters. Highly populated urban areas have developed due to the rapid and unmanaged urbanization in the Philippines. The casualties, fatalities, and damages happened because of a host of factors that can be divided in the pre-disaster and post-disaster phases. For pre-disaster phases, the populations did not have access to information regarding the possible strength of the typhoon occurrences and their local governments were also not capable and were less prepared to deal with the typhoons both in terms of infrastructures, know-how, and financial resources. Informal settlers were also allowed or were not actively forbidden to build settlements in disaster prone areas, hence their increased vulnerability. The greatest cause of casualties fatalities in these cities were the increased number of people that were living in disaster-prone areas such as along the slopes of the volcano and the mountain, along riverbanks, and in the vicinity of dams that were affected and killed

by floods, landslides, and mudslides. Drainage problems in these urban areas because of “illegal structures and garbage disposal in the drainage channels” (World Bank, 2005b, pp. 3-14) also contributed.

For post-disaster phases, local capacities in all of the included typhoon occurrences were overwhelmed to the point of needing assistance from provincial and national disaster agencies. Response and recovery were delayed because local government officials had to wait for the official assistance from the national government. As discussed in the previous chapter, the Philippines’ urbanization has led to the concentration of assets, businesses, national governmental agencies, and people in Metropolitan Manila, which is the Philippines’ only megacity and primate region. As a result, most of the resources of the national government and even a bigger share of the national budget are being used in Metropolitan Manila, leading to the neglect of other urban areas. Furthermore, promulgation of decentralization laws that were a response to urbanization has also been responsible for the weakness of the Philippines’ disaster management. As the most severe typhoon that hit the Philippines in the 21st century as of writing, a more detailed explanation of super typhoon Yolanda will be discussed below.

4-1.1. In focus: Super typhoon Yolanda (Haiyan)

Super typhoon Yolanda (international codename: Haiyan) was the last typhoon that hit the Philippines in 2013, and was at that moment the strongest to ever hit the country. It caused the most casualties and fatalities, and also caused the most damages. The total cost of damages represented 5 percent of the country’s GDP (McElroy, 2013). The area that was hardest hit was Tacloban City, representing 50

percent of total deaths and affected populations, and with 70 to 80 percent of the city's infrastructures destroyed (Subramanian, 2013).

Tacloban City was formally recognized as a highly urbanized city (HUC) in 2008 (NSCB, 2013, p. 1) after having achieved the population and revenue requirement that the national government set out for HUCs. It is the first city in eastern Visayas, the Philippines' second largest island, which became an HUC. According to the 2010 official Population Census, the city had a total population of 221, 174, with an annual growth rate of 2.16 percent from 2000 to 2010 (NSCB, 2013, p. 2). One of the main reasons why Tacloban suffered severe damages and fatalities is because of its population that were living along coastlines and in low-lying areas; evacuation centers and shelters that were still in the vicinity of the coastline and thus destroyed by the storm surge; and because its weather monitoring station was not as advanced as that of Metropolitan Manila's. Similar to the discussion above, Tacloban's residents did not have access or complete information regarding the possible strength of the typhoon, nor the possible consequences of the typhoon such as storm surges. The local government officials were also not capable and were less prepared to deal with super typhoon Yolanda in terms of infrastructures, know-how, and financial resources. Informal settlements were also built on supposedly "no-build" and disaster-prone areas along the coastline or near dumpsites, which increased their vulnerability to super typhoon Yolanda.

Moreover, PAGASA, with its main station located in Metropolitan Manila, had "newly-installed Doppler radar stations", which were able to predict the possibility of a storm surge (Chen, Areddy, & Hookway, 2013). Despite informing Tacloban government officials about the possibility of a storm surge, local government officials did not understand what that meant and so did not warn the

people about it (Chen et al., 2013). For post-disaster recovery and response, Tacloban government officials and local systems were overwhelmed by the number of affected people to the point of asking for assistance from the national government. However, response and recovery were delayed because the local government had to go through protocols set up by the national government in times of disasters. They had to wait for rescue personnel and other equipment such as body bags, airlifts, trucks, et cetera. International aid also went through agencies in Metropolitan Manila, which meant that its distribution was also delayed due to the inefficiencies and lack of transparency in the distribution system.

4-2. Disaster management

The previous section discussed the five worst typhoon occurrences in the 21st century, with the focus on super typhoon Yolanda aimed at providing a clearer picture on how highly populated cities are especially at risk from typhoons because of urbanization processes that have resulted in overwhelmed local disaster management. Aside from enumerating some definitions of disasters and disaster management that this research utilizes, this section provides a historical overview of disaster management in the international arena. This section also discusses the evolution of disaster management in the Philippines and a brief look at Bangladesh and Japan, and concludes with a further discussion of why this research believes that urbanization negatively affects disaster management.

The Centre for Research on the Epidemiology of Disasters defines a disaster as “a situation or event which overwhelms local capacity, necessitating a request to a national or international level for external assistance; an unforeseen and often sudden event that causes great damage, destruction and human suffering” (Albert, 2012),

while the Emergency Events Database defines it as an “event that causes at least ten deaths and/or affects 100 people and/or leads to a call for international assistance”. Another definition by Medury is that disasters “pose a serious threat to nations, disrupt economic activities, destroy the social structure, and endanger the communities” (Medury, 2008, p. 338). From these definitions, it can be inferred that disasters are seen as something inevitable, that have severe consequences once they occur, and that local governments are the first governmental responders.

Disaster management is defined as the “fundamental belief that people can do something about avoiding disasters and lessening the potential for substantial loss of life and property, or destruction of the environment on which human beings depend” (Pinkowski, 2008, p. xx). This reflects the paradigmatic shift that disaster management underwent, from the view that disasters were “beyond human control” to the view that they “can be prevented or the impact of which can be significantly reduced” (Medury, 2008, p. 338). Furthermore, with the increasing technological advancements, disasters can now be predicted or foreseen, hence the ability for preparedness or mitigation. Another definition views disaster management as a cycle that integrates four phases – mitigation, preparedness, response, and recovery (Coppola, 2011, p. 9), or five major phases – preparedness and mitigation, response, relief, rehabilitation and reconstruction, and recovery (Dhameja, 2008, p. 478). However, both of these cycles share the similar phases of preparedness, mitigation, response, and recovery.

4-2.1. Brief historical overview of international disaster management

Before the 1990s, approach to disaster management focused on reactive post-disaster response rather than proactive pre-disaster planning and preparation. In the

early 1990s, suggestions for a new approach to disaster management, from a reactive to a more proactive approach, arose after the International Decade for Natural Disaster Risk Reduction. The Yokohama Strategy that was produced during the first World Conference on Natural Disaster Reduction in 1994 became an important document that contributed to the paradigm shift from a reactive to a more proactive approach. It emphasized disaster prevention, mitigation, and preparedness as more effective in reducing vulnerability rather than post-disaster response and relief (Medury, 2008, p. 339).

In 2000, the United Nations established a unified body in the form of the United Nations International Strategy for Disaster Reduction (hereafter UNISDR) that would oversee disaster management policies and programs of states, making sure that resilience and reduction of vulnerability are underscored. This was done in the hopes that proper disaster management would increase the population's resilience and would "reduce human, economic, and social losses" (Medury, 2008, p. 340). It was also later renamed as the United Nations Office for Disaster Risk Reduction. In 2005, the second World Conference on Disaster Reduction was held in Hyogo, Japan. This conference produced the Hyogo Framework for Action 2005-2015, and called for the integration of disaster risk reduction into development policies in order to "build the resilience of nations and communities" (Medury, 2008, p. 340). The third conference is set for 2015 to be held in Sendai, Japan, with the major objectives of reviewing the Hyogo Framework for Action and producing a post-2015 framework based on experiences and lessons learned over the years.

As previously mentioned, the dominant paradigm or the way disaster management is approached has evolved over time, from a reactive to a more proactive approach. Another shift has been from a centralized governmental approach to a

decentralized one. This highlights the importance of communities and of local governments in dealing with disaster management. Communities have the capacity to collectively build resilience against disasters, and are also the first responders after a disaster. Local governments are the first governmental responders that are supposed to have more financial resources compared to communities. The table below (Table 4.3) shows this paradigm shift in the international view of disaster management. It goes from a top-down approach where the government is responsible for response and relief (also showing a reactive approach) to a bottom-up approach where individuals and communities can also contribute to preparedness and mitigation (also showing a proactive approach).

Table 4.3: Disaster Management: A Paradigmatic Shift

<i>From</i>	<i>To</i>
Helplessness of the victims	Awareness of the ability to cope
International response	National reliance
Outside response	Community self-reliance
Emergency agency responsibility	Everyone's responsibility
Individual aid	Restoration of social system
Victims as receivers	Victims as actors
Good dole out	Training and institution building
Donor focused	Victim focused

Note. Retrieved from “Toward Disaster Resilient Communities: A New Approach for South Asia and Africa,” by U. Medury, 2008, *Disaster Management Handbook*, p. 339. Copyright 2008 by Taylor & Francis Group, LLC.

4-2.2. Philippine disaster management

After taking a look at how international disaster management has evolved, this section discusses the evolution in the Philippines, and the similar paradigm shifts that the national government undertook in its approach to disaster management. For a

country that is extremely vulnerable to natural disasters, it should be expected for the Philippines to have a strong disaster management. However, this has not been the case, with one of the main reasons as this research argues, being its rapid and unmanaged urbanization. This section is divided into two parts, the Philippines' disaster management before and after the 2000s, because these were the two time periods that the country's disaster management underwent changes both in approach and through government policies. In a nutshell, the evolution of the Philippines' disaster management has been in parallel with the international arena and with some Asian countries in that there has been a shift from a reactive to a proactive approach, and a central to a more decentralized structure. However, disaster management in the Philippines is not strictly implemented meaning that there are some local government units that do not have disaster plans in place. Furthermore, it is still heavily reliant on both the national and local governments so it is still a top-down approach.

Before the 2000s

In 1968, Executive Order (E.O.) 159 called for the establishment of disaster control centers within government offices, to be overseen by the National Civil Defense Administration. Two years later in 1970, a Disaster and Calamities Plan was approved after the country experienced various natural disasters that had negative impacts on the country (World Bank, 2005a, p. 24). The first enabling law enacted by the government on disaster management was the Presidential Decree (P.D.) number 1566, formally known as Strengthening the Philippine Disaster Control Capability and Establishing the National Program on Community Disaster Preparedness, back in 1978. The National Disaster Coordinating Council (NDCC) replaced the National Disaster Control Center after the enactment of P.D. 1566, and Regional Disaster Coordinating Councils (RDCC) and Local Disaster Coordinating Councils (LDCC)

were also established. Provincial (PDCC), City (CDCC), Municipal (MDCC), and Barangay-level (BDCC) Disaster Coordinating Councils (DCC) were also created as part of the LDCCs.

The way these DCCs work is that the BDCC would be the first responders to a disaster. If it were to be overwhelmed, then the MDCC would assist, and so on and so forth until it reaches the NDCC (Nakasu, 2011, p. 102). As the name suggests, the NDCC was established to be the agency in charge of coordinating disaster management along with being the main advising agency to the President regarding the country's disaster management. Its main function was to "issue policy guidelines on emergency preparedness and disaster operations" (PDC, 2005, p. 3) along with coordinating with RDCCs and LDCCs regarding their disaster management plans. P.D. 1566 also required RDCCs and LDCCs to submit disaster situation reports containing deaths, casualties, cost of damages, et cetera to NDCC. Furthermore, it created a Local Calamity Fund that required local governments to allot two percent of their annual revenues to be used for post-disaster measures such as recovery and response. This early evolution of the Philippines' disaster management shows how the national government decentralized governmental structures on paper as early as the 1970s. However, this was largely only in terms of disaster recovery and response, and lacked monitoring or implementing mechanisms that led to their ineffectiveness. It also showed how the focus was on post-disaster measures.

In the early 1990s, the national government started to integrate disaster management and sustainable development issues into the Medium Term Philippine Development Plan 1992-1998 (PDC, 2005, p. 5) in accordance with the Rio Declaration and Agenda 21 that were international agreements. In 1996, Republic Act No. 8185 raised the required budget allocation for the Local Calamity Fund from two

percent to five percent (PDC, 2005, p. 4). This meant that local governments now needed to allocate more of its annual budget and revenue to a fund that would be used for post-disaster recovery and response expenses.

After the 2000s

Despite having had an enabling law and a central agency to coordinate disaster management in the country for the past 30 years, there were still gaps and issues in the Philippines' approach and implementation of its disaster management. One of the functions of NDCC as mentioned in the previous section was to collate disaster situation reports from RDCCs and LDCCs in order to release a comprehensive report on the socio-economic and disaster impacts on the country. However, according to a World Bank Study done in 2005 on the disaster management system of the Philippines, at least three issues have arisen from this – first is the lack of guidelines on preparing damage assessments, second is the use of different methodologies by each governmental agency, and third is the appearance of contradictory information due to the aforementioned issues (World Bank, 2005a, pp. 11-12). The bottom line is the lack of coordination and communication between agencies.

The same World Bank report also highlighted the reactive approach of the government when it comes to disaster management, as evidenced by fund allocation of the Local Calamity Fund. First two priorities are for relief operations, rehabilitation, and reconstruction; and last priority is for pre-disaster operations such as capital expenditures (World Bank, 2005a, p. 28). Therefore, it will be seen in one of the report's recommendations that the national government take a more proactive approach by putting equal or more emphasis on pre-disaster preparedness and mitigation, and by strengthening inter-agency coordination. In 2008, the *Preliminary*

Assessment on the State of Disaster Risk Management in the Philippines was released, wherein the Philippines' disaster risk management received a “low to very low [rating] in the ladder of accomplishments and progress in implementing disaster risk management” (NDRRMC, 2011b, pp. Background, para. 7). This meant that there was still so much left to improve on and address. Hence, *Strengthening Disaster Risk Reduction in the Philippines: Strategic National Action Plan (SNAP) 2009-2019* was released as a result of the preliminary assessment. The SNAP serves as the “road map for disaster risk reduction” that incorporates gaps and issues raised by the preliminary assessment document as well as disaster risk reduction activities as proposed by the Hyogo Framework for Action (NDRRMC, 2011b, pp. Background, para. 9).

After the occurrences of typhoons Ondoy¹⁷ and Pepeng, disaster management took center stage again and this time together with the acknowledgement that rapid and unmanaged urbanization has increased disaster risks in the now highly populated urban areas. As a result, Republic Act No. 10121 (Philippine Disaster Risk Reduction and Management Act of 2010) was enacted in order to provide official legal frameworks and a more recent enabling law for the Philippines. The enactment of R.A. 10121 effectively repealed P.D. 1566, and was meant to improve the country's disaster management especially since it had been around 32 years since P.D. 1566. It should be noted that both P.D. 1566 and R.A. 10121 were responses to a series of major disasters that affected the country, reflective of the reactive approach to disaster management.

¹⁷ Tropical Storm Ondoy (international codename: Ketsana) occurred less than a week before Pepeng, and severely affected Metropolitan Manila and adjacent regions III and IV-A. Total damages brought by Ondoy amounted to 2.7 percent of national GDP.



Figure 4.1: Disaster Management Structure of the Philippines

With the promulgation of R.A. 10121, the NDCC was renamed as the National Disaster Risk Reduction and Management Council (hereafter NDRRMC). RDCCs and LDCCs were also renamed to Regional Disaster Risk Reduction and Management Councils (hereafter RDRRMCs) and Local Disaster Risk Reduction and Management Councils (hereafter LDRRMCs), respectively. The Provincial, City, and Municipal Disaster Coordinating Councils were also renamed to become Disaster Risk Reduction and Management Councils. Furthermore, the Barangay Disaster Coordinating Council was dissolved after transferring its powers to the Barangay Development Councils, which shows how disaster reduction is being linked to development and how at least in the lowest administrative unit, disaster reduction is trying to be mainstreamed together with development. This new structure is seen in Figure 4.1. The name change also signified the paradigm shift that the national government was trying to achieve – from a disaster coordinating council that gave the impression of a focus on post-disaster measures, to a disaster risk reduction and management council that considers and emphasizes pre-disaster measures.

The definition of disaster risk reduction and management that NDRRMC adheres to is that it is the “systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster” (Congress of the Philippines, 2010, p. 7). This definition shows the importance of coordination and cooperation among agencies and institutions. However, it sees disaster risk reduction and management as something that governmental bodies should do, which is still a top-down approach. The NDRRMC also views disaster risk reduction and management as a cycle containing four priority areas – disaster prevention and mitigation, disaster preparedness, disaster response, and disaster recovery and rehabilitation, with the main goal of reducing the population’s vulnerability while increasing their capacity. This approach is in line with current international approaches or views of disaster management.

The NDRRMC’s main functions are “policy-making, coordination, integration, supervision, monitoring and evaluation” of all plans and programs related to the Philippines’ disaster management (Congress of the Philippines, 2010, p. 15). Along with the NDRRMC, R. A. 10121 also called for the development of a National Disaster Risk Reduction and Management Framework (hereafter NDRRM Framework) under the National Disaster Risk Reduction and Management Plan (hereafter NDRRM Plan) that would provide a “comprehensive, all-hazards, multi-sector, inter-agency and community-based approach to disaster risk reduction and management” (Congress of the Philippines, 2010, pp. 8-9) in the Philippines. In short, the Framework was meant to serve as a benchmark and general guide while the Plan was to serve as a roadmap enumerating concrete actions “on how disaster risk reduction and management shall contribute to gender-responsive and rights-based

sustainable development” (NDRRMC, 2011a, p. 14). The call for the creation of these documents show the government’s commitment to abiding by international standards, its recognition of the need to integrate disaster management across sectors and agencies, and its explicit recognition of the need for proactive approaches that harness the power of local communities.

The NDRRM Framework was released in 2011, one year after the enactment of R.A. 10121, with the overarching goal of creating “safer, adaptive and disaster-resilient Filipino communities toward sustainable development” (NDRRMC, 2011b, pp. The National DRRM Framework, para. 3). The main ideas embodied in the NDRRM Framework are fourfold – first is reducing the population’s vulnerability while increasing their capacity to properly respond to disasters; second is integrating disaster risk reduction management in national and local development plans; third is leveraging multi-stakeholder partnerships; and fourth is recognizing as well the role of climate change adaptation (NDRRMC, 2011b, pp. Need for a DRRM Framework, para. 2). On the other hand, the NDRRM Plan builds up on the Framework’s four priority areas and is more detailed in that it provides a total of four long-term goals, 14 objectives, 24 outcomes, 56 outputs, and 93 activities that the national government together with other stakeholders should accomplish according to a definitive timeline – short-term (2011-2013), medium-term (2014-2016), and long-term (2017-2028) (NDRRMC, 2011a). Lastly, R.A. 10121 also resulted in an increase in budget allocation for disaster management under the national and local calamity funds.

The National Calamity Fund was renamed the National Disaster Risk Reduction and Management Fund (NDRRM Fund), with the annual budget allocation appropriated by the Congress and approved by the President. 30 percent of the fund “shall be allocated as Quick Response Fund (QRF) or stand-by fund for relief and

recovery programs” (Congress of the Philippines, 2010, p. 32). The Local Calamity Fund was also renamed, with the required budget allocation for disaster management still at five percent of the LGUs’ revenue. Similar to the NDRRM Fund, the LDRRM Fund was also required to allocate 30 percent as the Quick Response Fund (QRF). This meant that up to 70 percent of the funds were to be used for pre-disaster measures such as capital expenditure, early warning systems, and other preparation and mitigation actions, but there were no mention of implementation or monitoring mechanisms. Ultimately, the use of the remaining portion of the funds will be to the discretion of the local government units.

According to the Secretary of the Climate Change Commission who is one of the core members making up the NDRRMC, “typhoon portion of national budget spent on disasters increased by almost 26 percent annually from 2008 to 2012” (Serings, 2013). However, the focus has been on post-disaster recovery and rehabilitation and almost 90 percent of costs are spent toward flood control programs (Serings, 2013) despite floods still happening during each typhoon occurrence. This shows that while the Philippine government has promulgated laws, established institutions, and created frameworks and plans, it suffers from the “paper plan syndrome” (Misomali & McEntire, 2008, p. 28) in that there are still a lot of gaps in the actual implementation and practice. Its entire disaster management system looks good on paper but because relevant stakeholders “[do] not take the time to ensure operability... as a result, disastrous consequences occur” (Misomali & McEntire, 2008, p. 28). For example, as pointed out by the Post-disaster Needs Assessment Report on Ondoy and Pepeng, there were some municipalities and barangays whose disaster and emergency preparedness plans “were not systematically or consistently

implemented”, or worse, “no plan was in place” (Public Reconstruction Commission Philippines et al., 2009, p. 125), which is indicative of inconsistent implementations.

4-2.3. Disaster management of Bangladesh and Japan

Before the paradigm shift in international disaster management, Bangladesh’s approach to disaster management was also reactive, centralized, and top-down (Development Frontiers, 2013, p. 20). The national government spent its resources on post-disaster relief, rehabilitation, and reconstruction efforts (Development Frontiers, 2013, p. 44). After the paradigm shift, Bangladesh slowly started to have a more proactive approach and to decentralize its governmental structure both because of urbanization and because of disaster management. In the early 2000s, the National Disaster Management Council (hereafter NDMC) was established to be a central coordinating and policy-making body for the country’s disaster management in partnership with local government units and civil society organizations. Each local government unit was required to have their own committee in charge of drawing up disaster management plans for their constituents, but there were no strict implementations and monitoring of this requirement.

In 2012, the Disaster Management Act of Bangladesh was also promulgated as an enabling law for the disaster management efforts of the national government, and Bangladesh’s Sixth Five Year Plan (2011-2015) has recognized that the “urbanization strategy needs to be changed substantially to meet the challenges of future urbanization in Bangladesh” (Development Frontiers, 2013, p. 30), one of which is its effects on disaster management. In the same way, much of Japan’s laws and policies related to disaster management were enacted after the occurrence of a natural disaster, which also showed how reactive the approach was, and how it was focused on post-

disaster relief and recovery. However, as early as the 1960s, the Disaster Management Basic Law was created to “systematize disaster prevention and response” (Toyoda, 2012, p. 239), which saw the beginnings of a shift toward pre-disaster preparedness and prevention approaches. Around the same time, the Disaster Countermeasures Basic Act was also promulgated, which called for a Disaster Management Planning System that is “periodically revised and updated” and required the creation of a Basic Disaster Management Plan, a Disaster Management Operation Plan, and Local Disaster Management Plans (PDC, 2006b, pp. 7-8). Disaster Management Councils at every level of the government were also created.

Aside from this paradigm shift, the Japanese government also made sure to strengthen capacities of local governments and communities. This meant that despite high urbanization rates in Japan, as mentioned in the previous chapter, its urbanization was managed. The government also made sure that despite the continuous rise of urbanization, urban environments were still livable. This meant the enforcement of strict building standards, creation of green zones, enhancement of waste management and pollution control measures, and regeneration and revival of rivers and seas and of the natural environments (PDC, 2006b, p. 11). Furthermore, the government also focused on structural as well as non-structural measures, with the former pointing to infrastructure and the latter pointing to public awareness and community-based management (PDC, 2006b, p. 8).

4-4. Synthesis

Going back to the goals and objectives embodied in the NDRRM Plan (see Annex 1)¹⁸, it can be observed that more than half can be directly linked to

¹⁸ They have been underlined for emphasis

urbanization. Manifestations of the negative outcomes of unmanaged urbanization on urban areas aggravate the disaster management system in four ways – all having to do with the phases of the cycle. First are the increases in population and the subsequent increases in population densities, be it through rural-to-urban migration or through natural birth rates. Higher population densities mean people crowding in an area, thus resulting in greater casualties or even fatalities if that area were to be hit by a natural disaster. The increasing number of people living in informal settlements who are immediately at risk would further exacerbate this. Furthermore, communities or “long-standing residents” in urban areas demonstrate stronger community cohesion in that they help each other out to prepare for disasters, to monitor situations, to take care of each other’s children in evacuation centers, et cetera (Public Reconstruction Commission Philippines et al., 2009, p. 123). New migrants to an urban community would not know the vulnerability or the disaster management of that community “because they do not share the same disaster history” (Misomali & McEntire, 2008, p. 29), which could decrease their preparedness or hinder them from responding properly.

A higher number of affected or killed people after a natural disaster would “overwhelm” the capacities of local governments that would negatively impact the response and recovery systems, as was seen in Tacloban City during super typhoon Yolanda. Moreover, local governments would have to use more of their LDRRM Fund for the rehabilitation process, to achieve the bottom three objectives set out by the NDRRM Plan, and to provide burial and compensation fees to the families of the deceased. If the originally allocated five percent were not enough to cover all the post-disaster costs, then LGUs would either have to tap into supposedly pre-disaster measure funds, to go through the process of requesting financial support from the

national government, or to wait for foreign aid. Furthermore, due to the 1991 Local Government Code and the Internal Revenue Allotment, national budget allocations are based on population and land area, with higher classified administrative units receiving more. These are the reasons why this research believes that urbanization does not only increase disaster risks, as has already been established by previous research, but also negatively affects disaster management as a whole.

Situations from Bangladesh and Japan provided a wide panorama of the different urbanization processes, wherein a rapid and unmanaged process coupled with national policies similar to the experiences of Bangladesh and the Philippines lead to weaker disaster management, whereas managed urbanization and national policies similar to the experience of Japan would result in better disaster management that is able to prepare for and respond to the needs of the vulnerable and affected populations and distribute resources accordingly. With the increase in frequency and intensity of natural disasters, this research believes that targeting urbanization would be beneficial to strengthening disaster management – and addressing all the phases of the cycle. The following chapter will provide some recommendations to address rapid and unmanaged urbanization and will provide a conclusion for this research.

CHAPTER 5

CONCLUSION

This chapter provides a discussion on some of the solutions or ways to manage urbanization in order to minimize their negative effects and harness their positive effects not only on society and on development, but also on strengthening disaster management. It also examines the application of the solutions to the Philippines, bearing in mind that the solutions could also be applied to other urban areas in other countries. The previous chapters have discussed in great detail the increase in frequency and intensity of natural disasters and the disaster management of the Philippines, as well as how this research views urbanization to have caused or to be causing weak disaster management in the Philippines. The previous chapters have also provided a general overview of the urbanization processes and disaster management systems of Bangladesh and Japan, and shown how managed urbanization can strengthen different phases of the disaster management cycle or how unmanaged urbanization and over-reliance on technologies can have an impact on the disaster management cycle.

The cases presented in the previous chapter have also shown how urbanization brings a plethora of negative effects, one of which is a weaker disaster management system, if left unmanaged. Being that the hypothesis of the research pinpoints unmanaged or poorly managed urbanization as weakening disaster management systems, the expected solutions would therefore be those that plan or manage urbanization. With the increase in both intensity and frequency of natural disasters in the 21st century, the most common response from governments and international institutions is to call for the mainstreaming and strengthening of disaster risk

reduction measures with an emphasis on structural responses such as early warning systems, flood and drainage structures, land use building codes, and public warning systems, among others. However, no matter how advanced disaster management systems are (as in the case of Japan), if urbanization as the main driver of disaster risk and subsequently of the whole disaster management system is not targeted or addressed, then casualties and fatalities would still continue to occur. Moreover, negative effects of unmanaged urbanization would continue to be exhibited in urban areas, which would not only continue increasing disaster risks and vulnerabilities but also influence development.

This section looks at the responses that countries and international institutions have made to address urbanization over the years, especially in the context of its effects on disaster management. It then provides a discussion on the more recent solutions and how the Philippines could also address urbanization in order to mitigate its effects on disaster management. It must be emphasized that urbanization is a process that encompasses a host of outcomes and this study will broadly focus on urbanization but will highlight and will focus on outcomes in relation to disaster management.

5-1. Early solutions to address urbanization

Urbanization as a process had been occurring as early as the 1600s, and maybe even earlier (Knox & McCarthy, 2012, p. 48). However, starting in the 1950s and over the years, it has occurred at such a fast and unmanaged pace especially in Africa and Asia that it has led to more than half of the world's population living in urban areas by the 21st century. Experiences in terms of urbanization outcomes in Africa and Asia have also been very different from the experiences of Europe, Latin America, or

North America. What was supposedly a process that brought about positive effects such as economic growth and increased productivity has instead led to a host of negative effects such as breakdown of traditional local communities, environmental degradation, increased disaster risks and vulnerabilities, pollution, and poverty, among others. **Sustainable urbanization** was seen as one response because it recognized urban areas to be at risk from urbanization outcomes that have also been mentioned in previous chapters, such as environmental degradation, high-density populations, improper solid waste management, informal settlement housings that do not conform to building standards or land use regulations, informal settlers living in coastal, low-lying, or flood-prone areas, natural disaster occurrence, severe pollution rates, and urban poverty. The late 1980s saw the rise of the concept of sustainable development and of sustainability. This concept was then applied to urbanization, hence the conception of sustainable urbanization. Furthermore, given that unmanaged urbanization brings with it more negative than positive effects, as evidenced by consequences being faced by developing countries such as the Philippines, the concept of sustainable urbanization came after international institutions realized that “poorly managed urbanization can be detrimental to development” (Kacyira, 2012).

The main idea behind sustainable urbanization is that the previously mentioned issues and negative effects brought about by unmanaged urbanization could be addressed by integrating green growth, smart cities, and urban resilience, and in so doing will ensure future generations of cities that are livable, safe, and self-sufficient. One definition of sustainable urbanization is that it is a “process which promotes an integrated, gender-sensitive and pro-poor approach to the social, economic and environmental pillars of development, to meet not only the needs of the present but also safeguard the future” (UN-HABITAT, 2012, p. 23). Since

urbanization processes result in urban areas, which typically refer to cities, sustainable urbanization calls for sustainable cities. The definition that World Bank's Urban and Resilience Management Unit uses is that sustainable cities are "urban communities committed to improving the well-being of their current and future residents, while integrating economic, environmental, and social considerations" (Hoornweg & Freire, 2013, p. 10) and that they have a "strong capacity for resilience, disaster preparedness, and proactive disaster risk reduction" (Hoornweg & Freire, 2013, p. 12). This is consistent with the paradigm shift that international disaster management underwent, from a reactive approach to a proactive approach. The definitions also show how sustainable urbanization and sustainable cities, and the populations living within, are resilient and prepared for disasters.

Green urbanization, or green growth, basically focuses on the environment. This means creating policies that address issues having to do with the environment – constructing energy-efficient and disaster resilient buildings and infrastructure (that goes together with smart urbanization), improving solid waste management, providing mass transport systems, reducing pollution, regenerating rivers and seas, et cetera. The notion is that green urbanization will lead to green growth, which is defined as "growth processes [being] resource-efficient, cleaner, and more resilient without necessarily slowing them" (Hoornweg & Freire, 2013, p. 19), and that cities would be prone to disasters without green urbanization (Deboonme, 2012). Some of the more specific programs under green urbanization are the eco-city and eco-towns frameworks. These are defined as cities or towns that "provide an acceptable standard of living for its human occupants without depleting the ecosystems and biochemical cycles on which it depends" (Lindfield & Steinberg, 2012, p. 42).

With the advent of technological innovations and the increasing reliance of people on these technological innovations, **smart urbanization** or **smart cities** are mainly the use of information and communication technologies (ICT) to easily relay and have access to information and knowledge of and about the city. It is also the use of ICTs to efficiently use the city's resources (Hoornweg & Freire, 2013, p. 38) as well as improve transparency and accountability of governments. More than the use of ICTs, smart urbanization emphasizes the combination of technology with infrastructures and communities in order to “generate economic growth” (Lindfield & Steinberg, 2012, p. 374) and to bridge the gap between governments and its people. This means that despite aiming for smart urbanization and smart cities, it must be remembered that it is a component of sustainable urbanization together with green growth, which means that there should be a balance between the use of technologies, structural measures, and building the capacity of the people.

Urban resilience as a component of sustainable urbanization refers to engineering, ecological, and social resilience. Engineering and ecological resilience focus on structural approaches to disaster risk reduction, emphasizing the importance of infrastructures able to resist and recover from disasters and on regenerating the urban environment. Social resilience focuses on urban governance – decentralization to allow local governments to have greater control and power, flexible and strong institutions, and increased citizen participation through responsive local governments (Béné, Cannon, Gupte, Mehta, & Tanner, 2014, p. 21). Social resilience is also defined as the “capacity of a community or society to cope with and adapt to disturbances and changes” (World Bank, 2013, p. 22). Urban resilience in this case was highly focused on post-disaster recovery measures, evidenced by definitions employed such as a “measure of robustness and buffering capacity of the system to

changing conditions... capacity to bounce back to the predisaster state” (Béné et al., 2014, p. 17) and “to enable total recovery, familial, social, and religious networks of survivors and evacuees must be reconnected” (Béné et al., 2014, p. 18). Although social urban resilience was included, the focus was still on post-disaster recovery with the help of better infrastructures, strong networks, and local governments. However, as this research has pointed out, urbanization will have an effect not only on increasing disaster risks, but also on the whole disaster management cycle. This means that unmanaged urbanization has a negative impact on pre-disaster preparedness, prevention, and mitigation as well as on post-disaster recovery, rehabilitation, and response.

5-2. Recent solutions to address urbanization

Over the years, the abovementioned concepts have undergone definitional and terminological changes to now also include non-structural measures such as participation and inclusiveness as important factors, with sustainable urbanization still existing as an underlying concept. **Inclusive urbanization** puts more emphasis on building and strengthening social resilience in that it calls for “multisector and multilevel partnerships with government and civil society, including community-based organizations, the private sector, and academia” (World Bank, 2013, p. 91). In essence, it incorporates ideas from sustainable, green, and smart urbanization as well as urban resilience, also reminiscent of the definitions of sustainable urbanization. However, it calls for a balance between structural (infrastructure and physical investments) and non-structural (awareness, community, education, governance, participation) measures. Furthermore, in the context of disaster management, the focus of inclusive urbanization is on inclusion and partnerships of and between all relevant stakeholders to urbanization and disaster management, with the most

important being those who are affected the worst – the urban poor, disabled, old people, women, and children. This also refers to those populations living in informal settlements who are the most vulnerable to natural disasters, who have little to no resources to prepare and respond, and who are the least aware of disaster management systems. Moreover, it refers to urban areas with high population densities whose new residents could be unaware of local disaster management systems, lack the sense of community, or local communities overly reliant on technology.

Recently, international institutions such as the World Bank have been promoting another terminological and ideological shift, and have taken the concept of inclusive urbanization coupled with sustainable urbanization and termed it **new urbanization**. This signals another shift from not only focusing on structural measures or only on non-structural measures but on finding a balance between the two and at the same time being inclusive of all stakeholders along the way. The idea is that planned and managed urbanization decreases waste generation, minimizes disaster risks, preserves land and natural resources, and saves energy, among others. New urbanization emphasizes people to be at “the center of the strategy” while still being “about bricks and mortar”. This shows the balance between structural and non-structural measures while still integrating all stakeholders. It also takes into consideration financial and governance capabilities, hence, new urbanization is not only affordable (investing today but reaping its benefits in the future that will in the long run prove to be more cost-efficient), it also aims to improve governance and strengthen accountability (Indrawati, 2014). The main difference between inclusive and new urbanization is the role that governments should play, which is “support rather than supplant” (Indrawati, 2014). China’s urban areas were used as the pilot areas for the implementation of new urbanization, but it is hoped that it can also be

applied to other urban areas that have grown rapidly and haphazardly, one of which is Metropolitan Manila or other urban areas of the Philippines.

5-3. Application of solutions to the Philippines

Since sustainable, green, and smart urbanization give more emphasis to structural measures (while of course still highlighting the need to have non-structural measures in place), they are more costly especially for a developing country such as the Philippines. Therefore, while the long-term goal will still be towards structural measures, non-structural measures should be emphasized especially because of the haphazard growth of the Philippines' urban areas, with more than one third of the urban population living in poverty, and more than 40 percent living in informal settlements that increase their disaster risks and vulnerabilities.

A report by the Human Development Network also provides recommendations for the Philippines based on its areas of differing urbanization levels. However, the overall concept is that of inclusive urbanization as well. It says that for areas where the urbanization rate is low, national and local governments should provide basic services and infrastructures to everyone, even those in more secluded or faraway places. Measures to prevent informal settlements by holding public dialogues and including these settlers into discussions should also be undertaken. For areas where the urbanization rate is medium or intermediate, the urban poor should also be included in management plans such as that of transport or land management. Urbanization should also be managed in that high-risk areas should be clearly demarcated and local governments should strictly forbid settlements to be built around these areas. Finally, for areas where the urbanization rate is high, policies for slum upgrading or addressing problems faced by informal settlers, again including

them in policies and integrating them into society are important. They should also be incorporated into local communities, trained on the disaster management systems, and provided information on how to prepare for and respond to disasters (HDN, 2013, p. 32). These are measures that address urbanization while also taking disaster management into consideration.

In sum, this research points to rapid and unmanaged urbanization coupled with national policies (or lack thereof) that have resulted in issues of population dynamics, resource allocation, production, and consumption and have also weakened disaster systems. As the third chapter has pointed out, rapid and unmanaged urbanization impacts on pre-disaster prevention, mitigation, and preparedness by increasing populations living in informal settlements and disaster-prone areas, by increasing production and concentration of assets and resources on primate cities, and by increasing consumption and waste generation that enhance disaster risks and aggravate the capacity of local governments to provide information and services. On the other hand, rapid and unmanaged urbanization impacts on post-disaster response, rehabilitation, and recovery by overwhelming local capacities and again by concentrating governmental agencies, foreign aid, and better resources on the primate city that hamper local governments' disaster management.

Furthermore, as the discussions on the Local Government Code and the Internal Revenue Allotment have pointed out, local government units in the Philippines rush to urbanization and to increase their populations in order to get a bigger share of the national budget without taking into consideration the responsibilities and the increased risks that come with higher, and especially unmanaged population densities. The Internal Revenue Allotment does not take into

account the vulnerability of the area, and instead mainly calculates allocation based on population and land area. This undermines the objective of decentralization of government structures, which is for local government officials to have more power and authority to independently manage their constituents, and to improve their capacities and build their self-reliance. This means that disaster management systems of local governments would be easily overwhelmed due to the increased populations especially at risk from natural disasters such as typhoons. Subsequently, this would still result in their incapacity to properly respond to disasters of great magnitudes, and would require assistance from the national government, which was also shown in the case of Tacloban and super typhoon Yolanda.

Lastly, the cases have shown that if natural disasters were to hit primate cities, entire systems would be severely affected because central agencies, economic assets, and a larger share of the population are concentrated in these primate cities. Nevertheless, it can also be observed that the severe typhoon occurrences in the 21st century rarely took place in primate cities and instead hit other highly populated urban areas wherein preparation, mitigation, recovery, and response measures were not up to par as those of the primate cities. Local governments and communities are more unaware, and infrastructures and technologies are less developed. Therefore, and in line with new urbanization, there should be support from the national government. Highly urbanized cities should not only be based on population and annual revenue but should also be based on the true capability and vulnerability of the local government units. The Internal Revenue Allotment should also be reviewed and improved. National governments and stakeholders such as the media, the private sector, and urban residents from more central urban areas should assist in the capacity building of less urban areas, and in their sustainable and inclusive urbanization.

Annex 1 – Goals and Objectives of the NDRRM Plan

Goal 1: Avoid hazards and mitigate their potential impacts by reducing vulnerabilities and exposure and enhancing capacities of communities (Disaster Prevention and Mitigation)

Goal 2: Establish and strengthen capacities of communities to anticipate, cope and recover from the negative impacts of emergency occurrences and disasters (Disaster Preparedness)

Goal 3: Provide life preservation and meet the basic subsistence needs of affected population based on acceptable standards during or immediately after a disaster (Disaster Response)

Goal 4: Restore and improve facilities, livelihood and living conditions and organizational capacities of affected communities, and reduced disaster risks in accordance with the “building back better” principle (Disaster Rehabilitation and Recovery)

Objective 1: Reduce vulnerability and exposure of communities to all hazards (Disaster Prevention and Mitigation)

Objective 2: Enhance capacities of communities to reduce their own risks and cope with the impacts of all hazards (Disaster Prevention and Mitigation)

Objective 3: Increase the level of awareness of the community to the threats and impacts of all hazards, risks and vulnerabilities (Disaster Preparedness)

Objective 4: Equip the community with the necessary skills to cope with the negative impacts of a disaster (Disaster Preparedness)

Objective 5: Increase the capacity of institutions (Disaster Preparedness)

Objective 6: Develop and implement comprehensive national and local disaster preparedness policies, plans and systems (Disaster Preparedness)

Objective 7: Strengthen partnership among all key players and stakeholders (Disaster Preparedness)

Objective 8: To decrease the number of preventable deaths and injuries (Disaster Response)

Objective 9: To provide basic subsistence needs of affected population (Disaster Response)

Objective 10: To immediately restore basic social services (Disaster Response)

Objective 11: To restore people’s means of livelihood and continuity of economic activities and business (Disaster Rehabilitation and Recovery)

Objective 12: To restore shelter and other buildings/installation (Disaster Rehabilitation and Recovery)

Objective 13: To reconstruct infrastructure and other public utilities (Disaster Rehabilitation and Recovery)

Objective 14: To assist in the physical and psychological rehabilitation of persons who suffered from the effects of disaster (Disaster Rehabilitation and Recovery)

Bibliography

- Abad, F. B. (2013). *Local Budget Memorandum: FY 2014 IRA Level and Other Local Budget Preparation Matters*. (67). Malacañang, Manila: Department of Budget and Management Retrieved from [http://www.dbm.gov.ph/wp-content/uploads/Issuances/2013/Local Budget Memorandum/LBM67.pdf](http://www.dbm.gov.ph/wp-content/uploads/Issuances/2013/Local_Budget_Memorandum/LBM67.pdf).
- ADB. (2004). *City Development Strategies to Reduce Poverty*. Manila: Asian Development Bank.
- ADB. (2008). *Managing Asian Cities: Sustainable and Inclusive Urban Solutions*. Manila, Philippines: Asian Development Bank.
- ADB. (2013). *The Rise of Natural Disasters in Asia and the Pacific: Learning from ADB's Experience*. Philippines: Asian Development Bank.
- ADPC. (2010). *Disaster Proofing the Millennium Development Goals (MDGs): Enhancing Resilience and Accelerating Achievement of MDGs and HFA Implementation in Asia and the Pacific Region by 2015*. In A. D. P. Center (Ed.). Incheon, Korea: Asian Disaster Preparedness Center.
- Albert, J. R. G. (2012). BAGYO NA NAMAN, O KAY HIRAP NG BUHAY, BAGYO! BAGYO! BAGYO! Na naman muli. *Beyond the Numbers*. Retrieved from National Statistical Coordination Board website: http://www.nscb.gov.ph/beyondthenumbers/2012/12142012_jrga_calamity.asp-f3
- Associated Press. (2013). Toll in Philippines typhoon could hit 10,000. *The Japan Times*. Retrieved from The Japan Times website: <http://www.japantimes.co.jp/news/2013/11/11/asia-pacific/philippine-typhoon-death-toll-could-top-10000/-U7tjEI2Sxy8>
- Atkinson, A. (2004). Promoting Environmentalism, Participation and Sustainable Human Development in Cities of Southeast Asia. In D. Westendorff (Ed.), *From Unsustainable to Inclusive Cities*. Geneva: UNRISD.
- Bacani, L. (2013). Deadliest, most destructive cyclones of the Philippines. *The Philippine Star*. Retrieved from philSTAR.com website: <http://www.philstar.com/headlines/2013/11/11/1255490/deadliest-most-destructive-cyclones-philippines>
- Bazoglu, N. (2011). Measuring and Coping with Urban Growth in Developing Countries. In E. L. Birch & S. M. Wachter (Eds.), *Global Urbanization* (pp. 32-47). Philadelphia, Pennsylvania: University of Pennsylvania Press.
- Béné, C., Cannon, T., Gupte, J., Mehta, L., & Tanner, T. (2014). Exploring the Potential and Limits of the Resilience Agenda in Rapidly Urbanising Contexts (pp. 61). United Kingdom: Institute of Development Studies.
- Birch, E. L., & Wachter, S. M. (2011). World Urbanization: The Critical Issue of the Twenty-First Century. In E. L. Birch & S. M. Wachter (Eds.), *Global Urbanization* (pp. 3-23). Philadelphia, Pennsylvania: University of Pennsylvania Press.
- Brinkhoff, T. (2014, April 1, 2014). Major Agglomerations of the World. Retrieved May 8, 2014, from <http://www.citypopulation.de/world/Agglomerations.html>
- Champion, T. (2004). Lest We Re-invent the Wheel: Lessons from Previous Experience. In T. Champion & G. Hugo (Eds.), *New Forms of Urbanization: Beyond the Urban-Rural Dichotomy* (pp. 25-42). England: Ashgate Publishing Limited.
- Chen, T.-P., Areddy, J. T., & Hookway, J. (2013). Typhoon Haiyan: How a Catastrophe Unfolded. *The Wall Street Journal*. Retrieved from The Wall

- Street Journal website:
<http://online.wsj.com/news/articles/SB10001424052702304465604579217671422015220>
- CIA Factbook. (2013a). The World Factbook - Bangladesh.
<https://http://www.cia.gov/library/publications/the-world-factbook/geos/bg.html>
- CIA Factbook. (2013b). The World Factbook - Indonesia.
<https://http://www.cia.gov/library/publications/the-world-factbook/geos/id.html>
- CIA Factbook. (2013c). The World Factbook - Philippines.
<https://http://www.cia.gov/library/publications/the-world-factbook/geos/rp.html>
- CIA Factbook. (2013d). The World Factbook - Thailand.
<https://http://www.cia.gov/library/publications/the-world-factbook/geos/th.html>
- Cojuangco, E. M., & Yap, S. A. (2013). *House Bill No. 2954*. Philippines: Philippine Congress.
- Congress of the Philippines. (2010). *Republic Act No. 10121* Philippines: Congress of the Philippines Retrieved from
http://www.ndrrmc.gov.ph/attachments/045_RA_10121.pdf.
- Constantino-David, K. (2004). Unsustainable Development: The Philippine Experience. In D. Westendorff (Ed.), *From Unsustainable to Inclusive Cities* (pp. 127-144). Geneva: UNRISD.
- Coppola, D. P. (2011). *Introduction to International Disaster Management* P. Chester & G. Chalson (Eds.), (pp. 684).
- Crepin, C. (2013). Getting a grip on climate change in the Philippines: executive report. Washington, D.C.
- Deboonme, A. (2012). Asia's mega-cities urged to think green. *The Jakarta Post*. Retrieved from The Jakarta Post website:
<http://www.thejakartapost.com/news/2012/09/02/asias-mega-cities-urged-think-green.html>
- del Rosario, A. C. (2005). *Entrepreneurial Approaches of Lgus in Governance: The Philippine Experience*. Paper presented at the Network of Asia-Pacific Schools and Institutes of Public Administration and Governance (NAPSIPAG) Annual Conference 2005, Beijing, PRC.
- Demographia. (2013). Demographia World Urban Areas (World Agglomerations) (9th Annual Edition ed.).
- Development Frontiers. (2013). Mainstreaming Disaster Risk Reduction in Urbanization in Bangladesh: A Scoping Study (pp. 112). Dhaka, Bangladesh: Oxfam GB Bangladesh Programme.
- Dhameja, A. (2008). Disaster Rehabilitation: Towards a New Perspective. In J. Pinkowski (Ed.), *Disaster Management Handbook* (pp. 477-491). USA: Taylor & Francis Group, LLC.
- Djalante, R., Holley, C., Thomalla, F., & Carnegie, M. (2013). Pathways for adaptive and integrated disaster resilience. *Natural Hazards*, 69, 2105-2135.
- Dyer, G. (2013). View Typhoon Haiyan as an early warning system. *The Japan Times*. Retrieved from The Japan Times website:
<http://www.japantimes.co.jp/opinion/2013/11/19/commentary/view-typhoon-haiyan-as-an-early-warning-system/> - .U7thjo2Sxy8

- Edensor, T., & Jayne, M. (2012). *Urban Theory Beyond the West*. New York: Routledge.
- Firman, T. (2012). *Change and Continuity in the Development of Jakarta Metropolitan Area (Jabodetabek): Towards a Post-Suburbanisation*. Paper presented at the 2012 Annual Meeting Program, San Francisco, California. <http://paa2012.princeton.edu/papers/120118>
- GFDRR. (2012). *Managing Disaster Risks for a Resilient Future: A Strategy for the Global Facility for Disaster Reduction and Recovery 2013-2015*: Global Facility for Disaster Reduction and Recovery.
- Ginsburg, N. (1998). Planning the Future of the Asian City: A Twenty-five Year Retrospective. In Y.-m. Yeung (Ed.), *Urban Development in Asia: Retrospect and Prospect* (pp. 3-24). Hong Kong: The Chinese University of Hong Kong.
- HDN. (2013). 2012/2013 Philippine Human Development Report. Philippines: Human Development Network (HDN) and United Nations Development Programme (UNDP).
- Hornweg, D., & Freire, M. (2013). Building Sustainability in an Urbanizing World: A Partnership Report. In Urban Development and Resilience Unit (Ed.), *Urban Development Series* (pp. 216). Washington, DC: World Bank.
- Huigen, M. G. A., & Jens, I. C. (2006). Socio-Economic Impact of Super Typhoon Harurot in San Mariano, Isabela, the Philippines. *World Development*, 34(12), 2116-2136.
- IACCC. (1999). *The Philippines' Initial National Communication on Climate Change*. Philippines: Inter-Agency Committee on Climate Change (IACCC).
- IFRC. (2010). World Disaster Report 2010: Focus on urban risk. In D. McClean (Ed.), *World Disaster Report* (pp. 220). Geneva, Switzerland: International Federation of Red Cross and Red Crescent Societies.
- IFRC. (2011). Types of disasters: Definition of hazard. Retrieved December 5, 2013, from <http://www.ifrc.org/en/what-we-do/disaster-management/about-disasters/definition-of-hazard/>
- Ikeda, S. (2006). An Integrated Risk Analysis Framework for Emerging Disaster Risks: Toward a better risk management of flood disaster in urban communities. In S. Ikeda & T. Fukuzono (Eds.), *A better integrated management of disaster risks: Toward resilient society to emerging disaster risks in mega-cities* (pp. 1-21): TERRAPUB and NIED.
- Indrawati, S. M. (2014). Opening Remarks at the International Conference on Urban China: Toward Efficient, Inclusive and Sustainable Urbanization. Retrieved from The World Bank website: http://www.worldbank.org/en/news/speech/2014/03/25/opening-remarks-at-the-international-conference-on-urban-china-toward-efficient-inclusive-and-sustainable-urbanization?cid=EXT_TWBN_D_EXT
- International Finance Corporation. (2011). Climate Change PPPs. *Handshake*(2).
- Jack, M. (2006). *Urbanisation, Sustainable Growth and Poverty Reduction in Asia*. Paper presented at the Asia 2015: Promoting Growth, Ending Poverty, London.
- Jimenez, R. D., & Velasquez, A. (1989). Metropolitan Manila: a framework for its sustained development. *Environment and Urbanization*, 1(1), 51-58. doi: 10.1177/095624788900100107
- Kacyira, A. K. (2012). Addressing the Sustainable Urbanization Challenge. *UN Chronicle: The Magazine of the United Nations*, XLIX(1-2).

- <http://unchronicle.un.org/article/addressing-sustainable-urbanization-challenge/>
- Knox, P. L., & McCarthy, L. (2012). *Urbanization: An Introduction to Urban Geography*. Boston, Massachusetts: Pearson.
- Kritz, B. D. (2014). Disorder is the rule. *The Manila Times*. Retrieved from The Manila Times website: <http://www.manilatimes.net/disorder-is-the-rule/97861/>
- Kumar, A. (2010). *Urban Risk Assessment: A Facilitator's Guidebook*. Bangladesh: Asian Disaster Preparedness Centre.
- Landsea, C., Goldenberg, S., & Dorst, N. (2004, July 15, 2011). Basic Definitions. *Frequently Asked Questions*. Retrieved April 13, 2014, from <http://www.aoml.noaa.gov/hrd/tcfaq/tcfaqHED.html>
- Lindfield, M., & Steinberg, F. (2012). Green Cities. In Asian Development Bank (Ed.), *Urban Development Series* (pp. 428). Mandaluyong City, Philippines: Asian Development Bank.
- Macaraig, A. (2013). Aquino flood plan: Move 20, 000 families this year. *Rappler*. <http://www.rappler.com/nation/31660-aquino-flood-plan-move-20000-families-this-year>
- Manalo, V. M. (2013). Philippine Provinces: Division as Accommodation. In I. Human Development Network Foundation (Ed.), *Philippine Human Development Report 2012/2013* (pp. 14). Philippines: Human Development Network (HDN) and United Nations Development Programme (UNDP).
- Maplecroft. (2011). Big Economies of the Future - Bangladesh, India, Philippines, Vietnam and Pakistan - Most at Risk from Climate Change. Retrieved from Maplecroft Global Risk Analytics website: <http://maplecroft.com/about/news/ccvi.html>
- McElroy, A. (2013). Philippines poor bear brunt of disasters. <http://www.unisdr.org/archive/35505>
- Mckee, A. (2003). *Textual Analysis: A Beginner's Guide*. London: Sage Publications.
- Medury, U. (2008). Toward Disaster Resilient Communities: A New Approach for South Asia and Africa. In J. Pinkowski (Ed.), *Disaster Management Handbook* (pp. 338-354). USA: Taylor & Francis Group, LLC.
- Mghendi, N., & Afrhill, R. (2011). Collaborating to Tackle Humanitarian Consequences of Climate-induced Migration. *International Federation of Red Cross and Red Crescent Societies*. Retrieved from International Federation of Red Cross and Red Crescent Societies website: <https://http://www.ifrc.org/en/news-and-media/news-stories/asia-pacific/philippines/collaborating-to-tackle-humanitarian-consequences-of-climate-induced-migration/>
- Misomali, R., & McEntire, D. (2008). Rising Disasters and Their Reversal: An Identification of Vulnerability and Ways to Reduce It. In J. Pinkowski (Ed.), *Disaster Management Handbook* (pp. 20-35). USA: Taylor & Francis Group, LLC.
- MMDA. (1996). Rules and Regulations Implementing R.A. 7924, the Law Creating the Metropolitan Manila Development Authority. Retrieved April 15, 2014, from <http://www.mmda.gov.ph/Legal-Matters/IRR-of-RA7924.html>
- Morada, N. (2005). Philippine Human Development Report 2005: Metro Manila-Rizal Case Study. In I. Human Development Network Foundation (Ed.), *Philippine Human Development Report 2005*. Philippines: Human

- Development Network (HDN) and United Nations Development Programme (UNDP).
- Nakasu, T. (2011). The Exacerbation of Human Suffering and Disaster Response Caused by Tropical Storm Ondoy and Typhoon Pepeng Disasters: Cases of NCR and Baguio City. In N. R. I. f. E. S. a. D. Prevention (Ed.), *Natural Disaster Research Report* (pp. 97-104). Japan: National Research Institute for Earth Science and Disaster Prevention.
- NDRRMC. (2011a). *National Disaster Risk Reduction and Management Plan (NDRRMP) 2011-2028*. Philippines: National Disaster Risk Reduction and Management Council Retrieved from http://www.ndrrmc.gov.ph/attachments/article/567/Signed_NDRRMP.pdf.
- NDRRMC. (2011b). *Signing Ceremony for the Approval of the National Disaster Risk Reduction and Management Framework*. Quezon City, Philippines: National Disaster Risk Reduction and Management Council.
- NEDA. (2011). *Philippine Development Plan 2011-2016* (pp. 409). Pasig City, Philippines: National Economic and Development Authority.
- NNC Web Team Secretariat. (2013, March 5, 2013). National Capital Region Profile. Retrieved April 15, 2014, from <http://www.nnc.gov.ph/component/k2/item/1020-national-capital-region-profile>
- NSCB. (1997-2014a). City Classification. *Concepts and Definitions*. Retrieved April 15, 2014, from http://www.nscb.gov.ph/activestats/psgc/articles/con_cityclass.asp
- NSCB. (1997-2014b). Urban/Rural Classification. *Concepts and Definitions*. Retrieved April 15, 2014, from http://www.nscb.gov.ph/activestats/psgc/articles/con_urbanrural.asp
- NSCB. (2013). Tacloban: A Fast Rising Highly Urbanized City. In NSCB (Ed.), *City Profile*. Philippines: National Statistical Coordination Board Regional Division VIII (Eastern Visayas).
- NSCB. (2014, March 31). Provincial Summary: Number of Provinces, Cities, Municipalities and Barangays, By Region. Retrieved April 15, 2014, from http://www.nscb.gov.ph/activestats/psgc/NSCB_PSGC_SUMMARY_March2014.pdf
- NSO. (2012, April 4, 2012). Population and Annual Growth Rates for The Philippines and Its Regions, Provinces, and Highly Urbanized Cities Based on 1990, 2000, and 2010 Censuses. *2010 Census and Housing Population*. Retrieved May 9, 2014, from http://www.census.gov.ph/sites/default/files/attachments/hsd/pressrelease/Population_and_Annual_Growth_Rates_for_The_Philippines_and_Its_Regions%2C_Provinces%2C_and_Highly_Urbanized_Cities_Based_on_1990%2C_2000%2C_and_2010_Censuses.pdf
- Paderanga Jr., C. (2010). Philippine urbanization in the medium term. Manila: University of the Philippines School of Economics.
- Palafox, F. (2010). *Best and Worst Practices in Urbanization in the Philippines*. Paper presented at the Remaking Sustainable Cities in the Vertical Age, Mumbai, India. <http://www.ctbuh.org/LinkClick.aspx?fileticket=Dew%2fSoo5234%3d&tabid=1458&language=en-US>

- PDC. (2005). Metropolitan Manila, The Philippines: Disaster Risk Management Profile. In P. D. C. (PDC) (Ed.), *3CD City Profiles Series*. Hawaii: University of Hawaii.
- PDC. (2006a). Dhaka, Bangladesh: Disaster Risk Management Profile. In P. D. C. (PDC) (Ed.), *3CD City Profiles Series*. Hawaii: University of Hawaii.
- PDC. (2006b). Kobe, Japan: Disaster Risk Management Profile. In P. D. C. (PDC) (Ed.), *3CD City Profiles Series*. Hawaii: University of Hawaii.
- Pinkowski, J. (2008). Disaster Management Handbook. In J. Pinkowski (Ed.). USA: Taylor & Francis Group, LLC.
- Public Reconstruction Commission Philippines, World Bank Group, ADB, & UN. (2009). Typhoons Ondoy and Pepeng: Post-Disaster Needs Assessment.
- Rahman, S., Islam, B., & Ahmed, B. (2012). An Overview on Rapid Urbanization and Induced Disaster Risk Factors in Bangladesh. In Bangladesh Institute of Planners and UNDP Bangladesh (Ed.), *World Town Planning Day 2012 (Planned Town: Balanced Development)*. Bangladesh: Bangladesh Institute of Planners.
- Ramos, F. V. (1993). Second State of the Nation Address: Let's Seize the Moment. *Philippine Daily Inquirer*. http://www.inquirer.net/wp-content/themes/Homepage_2012/Sona/sona-past/docs/1993.doc
- Rosario, B. (2014). COA: Metro Manila spent P4.1-B for garbage in 2012. *Manila Bulletin*. Retrieved from Manila Bulletin website: <http://devsite.mb.com.ph/index.php/coa-metro-manila-spent-p4-1-b-for-garbage-in-2012/>
- SEPO. (2013). Cities in the Philippines. In S. E. P. O. (SEPO) (Ed.), *At a Glance*. Philippines: Senate of the Philippines.
- Sering, L. L. (2013). Ondoy 4 years after: Managing the unavoidable. *Rappler*. Retrieved from Rappler website: <http://www.rappler.com/thought-leaders/39751-managing-the-unavoidable>
- Shahani, L. R. (2012). Manila's biggest challenge. *Rappler*. Retrieved from Rappler website: <http://www.rappler.com/thought-leaders/3305-manila-s-biggest-challenge>
- Shaw, R., Takeuchi, Y., Fernandez, G., Walde, A. X., & Caro, A. R. (2010). Metro Manila City Profile: Climate and Disaster Resilience *Climate and Disaster Resilience Initiative*. Japan: Kyoto University Graduate School of Global Environmental Studies and Metroplanado.
- Silverman, D. (2005). *Doing Qualitative Research: A Practical Handbook*. London: Sage Publications.
- Statistics Japan. (2013). *Statistical Handbook of Japan 2013*. Tokyo, Japan: Statistics Bureau, Ministry of Internal Affairs and Communications Retrieved from <http://www.stat.go.jp/english/data/handbook/index.htm>.
- Subramanian, C. (2013). Deadly Typhoon Haiyan Devastates the Philippines, Heads for Vietnam. *Time*. Retrieved from Time website: <http://world.time.com/2013/11/10/deadly-typhoon-haiyan-devastates-the-philippines-heads-for-vietnam/>
- Tisdall, S. (2013). Filipino super-typhoon an ominous warning of climate change impact. *The Guardian*. Retrieved from The Guardian website: <http://www.theguardian.com/world/2013/feb/17/filipino-super-typhoon-climate-change>

- Toyoda, T. (2012). Disaster Management and Policy. In T. Toyoda, J. Nishikawa & H. K. Sato (Eds.), *Economic and Policy Lessons from Japan to Developing Countries* (pp. 236-254). London: Palgrave Macmillan.
- UN-HABITAT. (2012). *Sustainable Urbanization in Asia: A Sourcebook for Local Governments* (Vol. 978-92-1-132457-0, pp. 57). Nairobi, Kenya: United Nations Human Settlements Program.
- UNDESA. (2011, October 7, 2013). World Urbanization Prospects, the 2011 Revision. *World Urbanization Prospects*. Retrieved April 15, 2014
- UNDESA. (2012). World Population Prospects: The 2012 Revision. In Department of Economic and Social Affairs of the United Nations Secretariat (Ed.), *World Population Prospects*.
- UNDESA. (2014). World Urbanization Prospects, the 2014 Revision. *World Urbanization Prospects*. Retrieved July 24, 2014, from <http://esa.un.org/unpd/wup/>
- UNESCAP. (2012). Statistical Yearbook for Asia and the Pacific 2012. In UNESCAP (Ed.), *Statistical Yearbook for Asia and the Pacific* (pp. 163). Bangkok, Thailand: United Nations Economic and Social Commission for Asia and the Pacific.
- UNESCAP. (2013a). Statistical Yearbook for Asia and the Pacific 2013. In UNESCAP (Ed.), *Statistical Yearbook for Asia and the Pacific* (pp. 324). Bangkok, Thailand: United Nations Economic and Social Commission for Asia and the Pacific.
- UNESCAP. (2013b). Urbanization trends in Asia and the Pacific.
- UNFPA, U., and UN HABITAT. (2012). Linkages Between Population Dynamics, Urbanization Processes and Disaster Risks: A Regional Vision of Latin America.
- UNISDR. (2009). Risk and poverty in a changing climate: Invest today for a safer tomorrow. In U. N. O. f. D. R. Reduction (Ed.), *Global Assessment Report on Disaster Risk Reduction*. Geneva, Switzerland: United Nations Office for Disaster Risk Reduction (UNISDR).
- UNISDR. (2013). From Shared Risk to Shared Value: The Business Case for Disaster Risk Reduction. In United Nations Office for Disaster Risk Reduction (Ed.), *Global Assessment Report on Disaster Risk Reduction* (pp. 288). Geneva, Switzerland: United Nations Office for Disaster Risk Reduction (UNISDR).
- World Bank. (2005a). *Natural Disaster Risk Management in the Philippines: Enhancing Poverty Alleviation Through Disaster Reduction*. Washington, DC: World Bank.
- World Bank. (2005b). *Natural Disaster Risk Management in the Philippines: Reducing Vulnerability*. Washington, DC: World Bank.
- World Bank. (2009). *The Philippines: Country Environmental Analysis*. Washington, D.C.: World Bank.
- World Bank. (2013). Building Urban Resilience: Principles, Tools, and Practice. In A. K. Jha, T. W. Miner & Z. Stanton-Geddes (Eds.), *Environment and Sustainable Development* (pp. 209). Washington, DC: World Bank.
- World Population Review. (2014, April 2, 2014). The Philippines Population 2014. Retrieved April 15, 2014, from <http://worldpopulationreview.com/countries/the-philippines-population/>
- Yap, K. L. M. (2014). Epic Gridlock Reigns Over Manila's 23 Million. *Bloomberg News*. Retrieved from Bloomberg website:

<http://www.bloomberg.com/news/2014-04-09/manila-becoming-world-s-third-biggest-city-risks-gridlock.html>

- Yeung, Y.-m. (1998a). The Urban Poor and Urban Basic Infrastructure Services in Asia: A Substantive Review of Past Approaches. In Y.-m. Yeung (Ed.), *Urban Development in Asia: Retrospect and Prospect* (pp. 95-142). Hong Kong: The Chinese University of Hong Kong.
- Yeung, Y.-m. (1998b). Urban Research in Asia: Problems, Priorities, and Prospects. In Y.-m. Yeung (Ed.), *Urban Development in Asia: Retrospect and Prospect* (pp. 191-217). Hong Kong: The Chinese University of Hong Kong.
- Yin, J., Yin, Z., & Xu, S. (2013). Composite risk assessment of typhoon-induced disaster for China's coastal area. *Natural Hazards*(69), 1423-1434.
- Zlotnik, H. (2004). World Urbanization: Trends and Prospects. In T. Champion & G. Hugo (Eds.), *New Forms of Urbanization: Beyond the Urban-Rural Dichotomy* (pp. 43-64). England: Ashgate Publishing Limited.

