

Towards a Sustainable City and Community: Examining the practices of Marikina City, Philippines

Karen Gail H. Javier, Nicole P. Macaranas, Jazztin Jairum P. Manalo
Department of Political Science, University of Santo Tomas, Manila,
Philippines
jpmanalo@ust.edu.ph

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Abstract –*In the face of modernization, countries are looking for ways to combat the issues that go hand in hand with rapid urbanization. The United Nations have exerted several efforts to respond to these issues and tried offering alternative ways to lessen the negative effects of modernization. This study focuses on the eleventh sustainable development goal of the United Nations, or making cities and human settlements inclusive, safe, resilient and sustainable. The researchers evaluated the performance of Marikina City in achieving this goal using the Vulnerability Theory by Zakour & Gillespie (2012). Sustainability, in this study, was measured by the indicators set by the United Nations and how the specific local government responds to disaster and risks in the area. The study was conducted from August 2017 to April 2018 and gathered data from key informant interviews, semi-structured interviews, and 272 residents of Marikina city as sampling size for survey respondents out of its population of 531,128 as of 2018. The researchers did an analysis and synthesis on quantitative data that were based on indicators that were formulated from the SDG 11 indicators and statistical measures. These indicators include settlements and urban planning, transport systems, natural heritage, disaster plan, disaster management, waste management, safety and non-discriminatory practices. Results of the study show that the City of Marikina was able to fulfill the indicators as set by the United Nations Development Programme (UNDP) for the achievement of a Sustainable City and Community. However, since the study was limited only within the local government of Marikina, it is further recommended that studying the influence of private sectors, non government organizations, and other institutions that may influence the practices of SDGs be conducted.*

Keywords –*disaster resiliency, sustainability, sustainable development goals*

INTRODUCTION

Natural disasters have always been a pressing issue in countries in Southeast Asia like the Philippines. Many disaster prevention, management, and response strategies are being performed in order to lessen the risks and damages of this inevitable phenomenon. However, efforts in attending to this do not seem to do so much in lessening the country's vulnerability to disasters. One of the existing reasons and concerns for conducting such a research, roots from fatalities in different forms of disasters occurring in the country. The 2016 World Risk Index shows the Philippines as the third country worldwide to have the highest risk of being vulnerable to disasters [1]. It also stems from the awareness that Southeast Asia is located in a region in the world where vulnerability to natural disasters is a prime given. And this is why generating sustainable cities and communities despite susceptibility is so much

more important in Southeast Asian countries than anywhere else in the world.

Counter-checking whether the programs, targets, and indicators, of these two broad entities and the sustainability plan and management of Marikina City in particular, are being localized is important for the assurance that proper actions in alleviating disaster are really being carried out down to the smallest of communities. As the study concerns environment, disaster and risk management, resiliency and sustainability in the broadest sense, multiple questions come into mind. The first thing that the researchers looked into is the environmental and geographical conditions of Marikina City that makes it prone to different natural catastrophes. Natural disasters may be predicted but stopping its occurrence is impossible. Especially with the presence of the city's DRRM office, one must think that the disaster and risk management in the city is secured and is readily available when the

need arises. That is what this study aims to accomplish, to examine the performance of the city in achieving sustainability through a reliable disaster and risk management and recovery plan.

According to the study conducted by the United Nations Office of Disaster Risk Reduction (UNDRR) [2] labeled – The Human Cost of Weather Disasters, the Philippines was ranked as fourth in the list of the most prone countries in the world as it experienced 274 calamities in the years of 1995 to 2015. Another notably concerning was that there were approximately 130 million Filipinos that were affected by the catastrophes. Natural disasters are unpredictable, and it is impossible to avoid these natural phenomena—this is the reason why organizations such as the UN promote disaster risk reduction, management, preparedness that aim to promote resiliency and eventually result to sustainability.

On November 8, 2013, one of the most destructive typhoons— Typhoon Yolanda, internationally Haiyan – in history has made landfall in the islands of the Philippines. According to the Nationwide Operational Assessment of Hazards, there were 28,626 injured people and a staggering 6,190 recorded deaths in the aftermath of Typhoon Yolanda. It was classified under Category 5 in the Saffir-Simpson hurricane scale which translates to its deadly capacity; winds that could damage a huge number of residential and public properties and rainfall that could flood the streets in just a few minutes. The primary concern was to relocate the people to an area where they are able to restart and rebuild from scratch, which would mean to need the aid from the government.

In an attempt to lessen the recurrence of such disasters after Yolanda, the Philippine government, along with certain agencies, established the “no build policy” which meant that no residential houses are allowed to be constructed near and on coastlines. This policy, which was intended to safeguard the victims of the typhoon, instead became a problem in the effort to relocate and resettle the victims [3]. The “no build zone” policy made the relocation and resettlement process slower and thus was not able to contribute to the welfare of the victims of typhoon Yolanda; the policy was proven to be ineffective. This policy was one of the many proofs that showed how the Philippine government, including the agencies involved in disaster recovery, was not promoting sustainable cities and communities in the country.

Also, it is important in a post-disaster phase to collect the needed amount at the fastest time possible

for relief operations, recovery services, and rehabilitation Bowen [4] shows that during the post-Yolanda operations, liquidity of the funds was a problem because of the lengthy administrative processes of the NDRRMC. This was an indicator of the inability of the Philippine government to promote sustainability for the immediate actions or funds in the recovery phase are not readily available for the victims of disasters.

The reports that followed the calamity reflected damages not only to the infrastructures that were struck by the typhoon but also in the core of the disaster risk reduction management offices. In an interview, the then executive director of the NDRRMC, Undersecretary Eduardo Del Rosario, admitted that the agency assigned to manage the disaster-stricken area was having problems in its own organization [5]. Recommending certain policies to countries to ensure the capacity of their cities to become resilient and achieve sustainable development even after a catastrophe [6] is present in every after a disaster.

Sustainable Development Goals (SDGs) are considered to be a continuation of the goals and aspirations started by the Millennium Development Goals (MDGs). MDGs were the reflection of the global objective of included countries to promote development and sustainability, with a certain time-bound [7]. The plan was for the years of 2000 to 2015 and as 2012 approached, with only three years remaining for the said MDGs, the countries concluded that it needed a supporting plant to successfully achieve their aim of development for each state. As a response to the need of a new set of aspirations, the 2030 Agenda for Sustainable Development was created, highlighting the Sustainable Development Goals that aim to uncover the unfinished businesses of the MDGs [8].

In the Philippine context, its experience with MDGs helped with the application of the SDGs. According to Asuncion [9], the primary lesson that the Philippines gained with the MDGs is that good governance is key to achieving and promoting development goals. This is their mindset as the Philippines takes on the challenge of achieving the Sustainable Development Goals. Development in the Philippines is marked to being with through good governance [9].

In the Philippines, according to Israel & Bunao [10], resilience is officially defined by the National Disaster Coordinating Council as the ability of a system, community, or society exposed to hazards to resist, absorb, accommodate, and recover from the effects of a hazard in a timely and efficient manner, including

through the preservation and restoration of its essential basic structures and functions.

In addition to the role of national and local governments and the coherence of policies, Walsh [11] recommends additional training and hiring of city managers. This is to enhance the actions provided in the city level in times of disasters. Round-table discussions would help government officials in decision-making and policy creation in creating resilient communities [11]. The two areas which include Iloilo province and the city of San Fernando in La Union [12] have different natural vulnerabilities in times of disasters. The findings of the study presented the weaknesses of both cities in promoting sustainability and resiliency in their respective development plans. The initiative to promote resilience in these cities is still in the development [12].

Framework of the Study

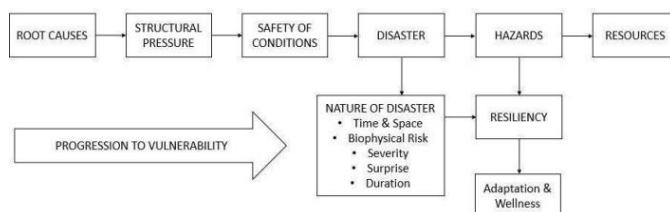


Figure 1
Model of Vulnerability Theory [13]

The Disaster Vulnerability Theory, written by Michael J. Zakour and David F. Gillespie, revolves around the premise that a community's vulnerability is correlated with the community's environment [13]. The number and condition of different hazards contribute to the vulnerability of an area, these hazards are the root cause of disasters experienced in that area. In this theory, it is emphasized that disaster disrupts the system in a community and thus has negative effects on its resources and also development [13]. The theory highlights the safety of the people and the importance of being prepared for hazards that may anytime trigger a disaster. Disasters, as defined by Zakour and Gillespie [13], may either be technological hazards that cause disasters such as chemical spills, explosions and other industrial accidents, or natural hazards that generate hurricanes, earthquakes, volcanic eruptions and other disasters alike.

OBJECTIVES OF THE STUDY

The study aims to see how the City of Marikina was able to achieve a sustainable status. Through the use

different indicators from Sustainable Goal # 11 of the UNDP, it empowers them through making their own versions of sustainable communities. Having a sustainable city would be able to contribute to holistic development in the Philippines, not only in the local level but also in the national level. These indicators include but are not limited to safe spaces, transportation, policy implementations, emergency responses, and disaster recovery & preparedness. It intends to test the efficiency of sustainability plan and management of the City in promoting and becoming a model for Sustainable City. This study determined whether the Philippines as a whole and its cities in particular, as a member-state of the United Nations, complies to the targets of the eleventh sustainable goal which is to achieve sustainable cities and communities through the sustainability plan and management of the city government of Marikina. Questions such as those in line with post-disaster recovery, disaster preparedness, emergency preparedness, safe spaces, transportation, access to healthcare, and sustainable policies of the LGU were discussed.

MATERIALS AND METHODS

The study was conducted through the use of formal and informal interviews, survey, as well as utilization of data coming from reports and documents from several institutions from both the government and private sector. The study was conducted from August 2017 to April 2018. The researchers did an analysis and synthesis on quantitative data that will be based on indicators and proper statistical measures.

Research Design

Researchers of quantitative data tend to use standardization of tools, which they use to measure the reliability of their research [15]. Also, the results in quantitative research are derived from the measured variables through the use of statistical treatment [14]. In other words, the information that a quantitative data provides is limited to questions that are answerable with the amount that was obtained through the analysis of numbers and figures. All the answers that will come from the survey, through the method of random sampling, will serve as quantitative data and thus will be treated as such.

Participants of the Study

Participants/Respondents include supervisory government officials from the city and those with expertise within the knowledge of sustainability like

heads of planning offices, department directors, and executive board of offices. Respondents from survey will be comprised of residents from the City itself using random sampling and distributed within the 16 barangays of the City. Respondents were chosen in accordance to the following criteria: at least 18 years of age and resident of Marikina City. The total population of Marikina last 2018 was 531,128. By utilizing Slovin's Formula with a 90% confidence level, a total of 272 respondents came out.

Research Instruments

Questionnaire- The set of questions that would be prepared for the survey would emphasize the different practices in the barangay- level and if it promotes sustainability, this would be in line with the indicators set by Sustainable Development Goal No. 11.

The researchers gathered information from reliable and relevant institutions such as the National Disaster Risk Reduction Management Council of the Philippines (NDRRMC), Marikina City Disaster Risk Reduction and Management Office (MCDRRMO), Philippine Statistics Authority (PSA), United Nations Development Programme (UNDP) in the Philippines, and the United Nations Human Settlements Programme (UN-Habitat) in the Philippines.

Locale of the Study



Figure 2
Map of Marikina City

The study was conducted in the Local Government of Marikina which is located within the National Capital Region. It intends to test the efficiency of sustainability plan and management of the City in promoting and becoming a model for Sustainable City.

Data Gathering Procedure

The researchers gathered answers of 272 respondents for the survey. The data gathered from the questionnaires would analyze resilience of an area through the experiences of the survivors in post-disaster management. Next data to be observed is the percentage of the programs, guidelines and policies in the Philippines that are proven to be effective in promoting sustainability. The data that will be gathered, after using descriptive statistics, would be presented through charts and pies that would summarize the answers of the participants.

For additional information, the researchers would utilize primary and secondary sources, other statistics and reports, regarding the sustainability of the Philippines through the analysis of the National Disaster Risk Reduction Management (NDRRMC) Guidelines, if it coincides with the standards and practices established by the United Nations and The Sustainable Development Goals.

RESULTS AND DISCUSSION

Sustainable cities and communities would have numerous requirements for it to be able to achieve its long-term goals, and one of the necessary features of these areas is to develop disaster resiliency. Several scholars [16] presented cities, from developing and developed countries, which created their own framework that promotes and uphold sustainability, namely: Melbourne, Hong Kong, Iskandar, Barcelona, Mexico City, and Taipei. The City Council of Melbourne created a *City Plan for sustainable development* in 2010 to guide its long-term vision for its city. This is similar with Hong Kong's *Sustainability Assessment* that guided the actions of the government to provide what is the necessary resources for development. In Malaysia, the *Iskander Development Region* was established to ensure a sustainable economy that would attract local and foreign investors. The city of Barcelona highlights the participation of its citizens in attaining sustainability through the *Sustainable Barcelona Civic Forum*, it is able to formulate its own indicators. While in Mexico City, *Plan Verde* relays the plans and actions of the government to its people in achieving environmental

sustainability. Taipei is considered to be a sustainable city because it responds to urbanization with research on how it would improve the life-support system in the city.

Counter-checking whether the programs, targets, and indicators, of these two broad entities and the sustainability plan and management of Marikina City in particular, are being localized is important for the assurance that proper actions in alleviating disaster are really being carried out down to the smallest of communities.

Table 1. Marikina City Respondents' Barangay Profile

Barangay	f	%
Barangka	2	0.74
Calumpang	6	2.21
Concepcion Uno	24	8.82
Concepcion Dos	36	13.24
Fortune	8	2.94
Industrial Valley Complex	0	0
Jesus Dela Peña	4	1.47
Malanday	12	4.41
Marikina Heights	68	25
Nangka	26	10
Parang	39	14.34
San Roque	13	4.78
Santa Elena	6	2.21
Santo Niñ	12	4.41
Tañong	7	2.57
Tumana	5	1.84
No Answer	4	1.47
TOTAL	272	100

In line with the indicators of SDG 11 as a sustainable city, samples of residents from each barangay were able to answer the survey questions regarding the fulfilment of the indicators for SDG 11. These indicators revolved around the following themes: settlements and urban planning, transport systems, natural heritage, disaster plan, disaster management, waste management, safety and non-discriminatory practices. Table 1 shows the respondents and frequency rate of the City of Marikina, it was also shown that there is an inconsistency with the number of respondents per barangay as this was based on the sampling computation for the entirety of the City.

Urban Planning and Habitation Design

The local government unit of Marikina City ensures that the processes of urbanization and settlement are not careless and destructive enough so as to compromise

the environment. Figure 3 shows a positive outcome, specifying that from the 272 respondents, 204 (75%) are satisfied with the services offered by the local government unit of Marikina while 68 (25%) think otherwise. The development in human settlement in the city of Marikina was a very successful one. But every successful project comes with imperfections, and the human settlement planning of the city of Marikina is no exception.

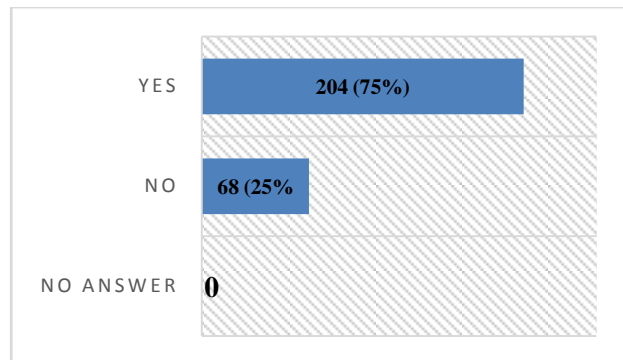


Figure 3. *Commendable urbanization and adequate provision of public services in human settlements*

When they moved to a new community, they also get to be part of an association—the homeowner’s association. They also get to establish their own organization of leaders. The city government of Marikina established its own settlement office which assists and gives technical assistance to the communities that want to enter into the City Environmental Management Office (CEMO) program. These are socialized housing projects of the government that gives these communities the chance to avail a lot that the wish to have.

One of the United Nations organizations in the Philippines—UN Habitat—claims that they work directly with the local governments because they capacitate them. They immediately deal with cities in land use planning, settlement, in recovery and in rehabilitation after a disaster. The Disaster Risk Management Office of Marikina City explains that they are not alone in accepting projects and programs like this from the national government. Rather, they work with a handful of other departments and offices such as the city’s engineering department, environment department, and management disposal. Each of these offices specializes in one area and when put together, their work becomes a huge factor in making the city urban planning and settlement comprehensive and all-

inclusive—which is, in fact, a very important element in the city’s sustainable plan.

Transport system and road management

Transportation is one of the aspects that are involved in the day-to-day lives of the citizens. Students, professionals, workers—everyone relates to the subject on transportation in one way or another. Having safe and affordable access to transport systems enjoyed by the citizens is one manifestation that a community practices sustainability efforts. Not only because the people pay very high taxes on public goods is there a need for this kind of transport system, but also because it is what good local governments do—give the best kind of public services at the best kind of price.

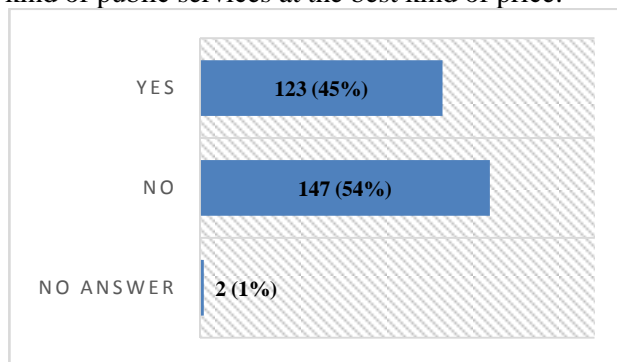


Figure 4. Satisfaction on improvement of road practices

The majority of respondents, 54.04%, are not satisfied with the road practices in Marikina City, while 45.22% are content with the performance of the Marikina LGU in road management.

In the city of Marikina, safe road policies and affordable public transport are being enjoyed by some people but are not entirely being experienced by many. As for the senior citizens and persons with disability, they are giving discounts on the fare. In the city of Marikina, safe road policies and affordable public transport are being enjoyed by some people but are not entirely being experienced by many. As for the senior citizens and persons with disability, they are giving discounts on the fare prices. Marikina is said to be the only city which has PWD-friendly tricycles as transportation means. In one barangay, 1% of income is being granted to senior citizens. Still another barangay makes it to a point that any time of the day; its public vehicles are available to senior citizens going to hospitals for check-ups. It makes the travel easier for the elderly people as they will no longer be tired as if they had commuted. The same borrowed vehicle will pick them up from the hospital as well. Such policies

are being served at the ease of those in the vulnerable conditions such as senior citizens and persons with disability. Despite the efforts made by the barangays, Marikina City as a whole still has a lot to improve on its transport systems and road management.

Creation and implementation of disaster plan policies

In an interview with the National Disaster Risk Reduction Management Council, the office stated that one of their mandates is to capacitate local disaster risk reduction management councils to create their own DRRM plans and contingency plans. These local plans are, of course, still in consonance with the standard format of contingency plans according to the national guidelines. The NDRRMC provides technical assistance to local governments in formulating their own plans, the processes to be done, and the steps to be undertaken. Accordingly, local governments really need to have a local DRRM plan because this will be the basis of utilization of fund from the national government. For instance, the Department of Budget and Management can issue a memo to any local government who happens to spend a certain amount on a certain disaster training when it was not included in the plan. The council also monitors the local DRRM plans through the regional offices, which are required to submit reports containing the number of provinces, cities, or municipalities that have already successfully formulated their own local DRRM plans. Monitoring also comes in the form of checking of disaster equipment, content of the training, even the capabilities of the volunteers. Things like these are included in the contingency plan.

The national DRRM plan, even the Sendai Framework, is currently aligned with international frameworks such as the National Climate Change action plan and the Hyogo Framework for Action. The sustainable development goals of the United Nations are incorporated in these frameworks, and therefore, are incorporated as well in the current Philippine DRRM plan. All the sustainable development goals are considered in the creation of national and local plans. According to NDRRMC, the guidelines, plans and programs of the council are now aligned with both the national and international frameworks.

Local disaster risk reduction management plans are being endowed to local government units in order for them to have freedom and authority on how to respond to disaster within their respective communities. The barangay, because it is the unit at the grassroots level, serves as the first responders to its constituents in

sudden times of any kind of disaster. They have their own disaster risk reduction plans as they are mandated to establish their own disaster risk reduction management council. They create their own efforts and make their own decisions when it comes to further improving their planning strategy and management proficiency.

Figure 5 shows that out of the 272 respondents, 72.43% or at least 197 of them answered that their barangay has its own rules and regulations specifically in times of emergency while 28% or 74 were not aware of these ordinances in times of emergency.

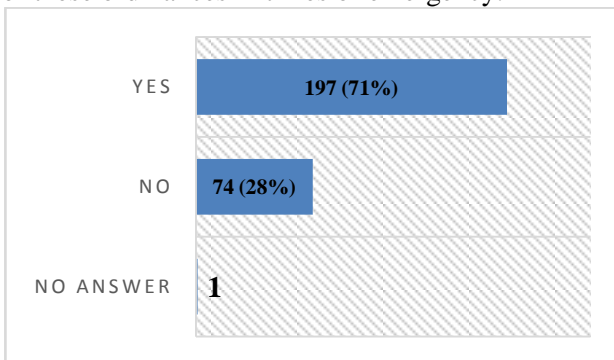


Figure 5. *Implementation of specific policies or rules and regulations in times of emergency*

Each barangay differs in geographical structure from the others. It goes without saying that hazards as well as needs in response to those hazards vary from barangay to barangay. Each barangay is currently able to conduct their own disaster trainings, recruit their own volunteers, facilitate their own red-cross team, and have their own basic response materials. They facilitate their own barangay-wide coordination on drills and seminars. They may share the same laws and policies coming from the city government, but they differ in terms of approach and application of these laws and policies.

Disaster preparedness and response guidelines

A catastrophic typhoon named Ondoy washed out so many houses, businesses, livelihoods, and most especially, lives. It left almost more than half of the Philippines in deep waters. However, it preceded a lot of improvements in the entire city of Marikina.

After Ondoy, the local government unit started allocating enough funds to disaster management especially on important basic needs such as life jackets, gas, flashlight, ropes, rice cooker, medicines. They have also installed pumping stations in different barangays so the level of flood in the recent typhoons is a lot lower since Ondoy. They have learned the hard way and are

now more prepared than they were a few years back. They now have help workers, ambulance, provided medicines, and enough budget to spend on coffee, noodles, and other food to be given at the evacuation centers. They are now able to predict and prepare for when the flood is going to be at its highest, when the gates of the dam are going to open, how much water is going to fill in the roads, how strong the current is going to be, and how quick (or long) is all this going to take.

Management in evacuation centers has improved as well. There is a systemized mechanism wherein every barangay kagawad has his or her own committee to lead to ensure certain responsibilities for a certain set of people. There are officers who are assigned to security. Others are assigned to lead in the radio operation. Others are for the provision of medicines, and the others, for giving away of foods. The supervision in the evacuation centers now is more orderly, so there is no need to worry about the overlapping of goods, provision or service stipulation because there is a specificity of tasks and responsibilities for every set of officers or volunteers. Looking at Figure 6, there were 60.29% or 164 out of 272 respondents have received technical and/or financial assistance from the Marikina local government as a form of help after a disaster while 107 or at least 40% were not able to receive these assistance.

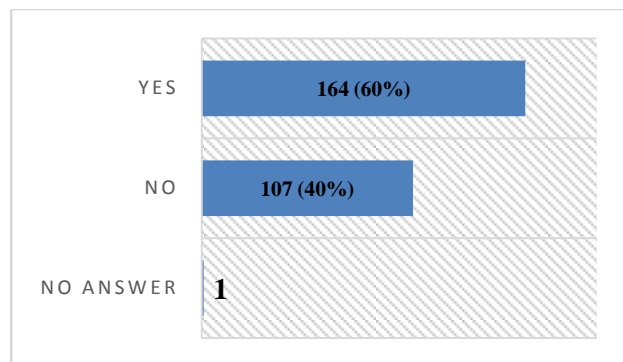


Figure 6. *Delivery of financial and/or technical assistance after the occurrence of a disaster*

In other words, people are now more educated and have the initiative to look for ways to help themselves in times of disasters instead of entirely depending on the help from the local government units. People are also encouraged to coordinate with the management of the local government in complying to the warning system and recovery activities alike. In the evacuation centers, they are encouraged to bring their own food stock, if

they have any, to prevent the sole dependence on relief goods provided by the local government. This practice makes the recovery phase all the more quickly and efficient.

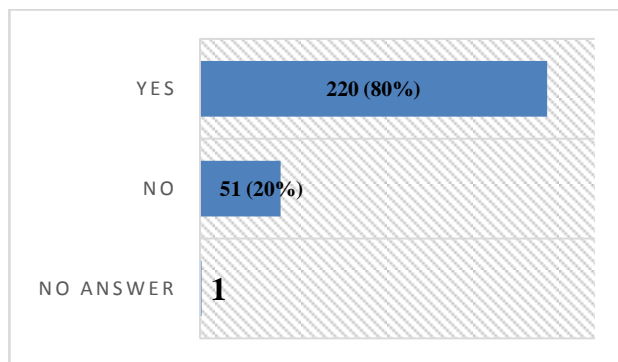


Figure 7. Effectiveness of the strategies in the preparation and recovery for and from a disaster

Another big factor of improvement is that of the level of casualties and fatalities during disasters. No fatalities have been recorded in most barangays of Marikina City because even before any disaster arrives, the warning systems and the different siren levels that come with it are already turned on, and ambulances are already prepared. Preparation and pre-emptive measures have been given priority. The strengthening of pre-emptive measures is in line with the city’s vision-mission of achieving zero casualties in any disasters that will affect them. One barangay claimed that it is a lot better to exercise pre-emptive measures so there is a lot less to worry about after the disaster. Figure 7 shows that 80.88% or 220 out of 272 respondents believe that the disaster strategies of their barangay are effective in helping them prepare for a disaster and recover from losses while 51 respondents or at least 20% see it as ineffective.

Waste management and environmental development

Waste Management is an important factor in the sustainability of a city for the simple reason that the environment of an area affects the health and well-being of the people. Marikina City is one of the cleanest cities in Metro Manila, according to one of our key informants, it is because they have studied and understood how a reliable waste management is a key to sustainability.

The waste management system of the city is centered on the city government, but the barangays have also their own strategies in approaching the problem of solid waste management. In Marikina, the City

Environmental Management Office has encouraged that an MRF or Materials Recovery Facility be set-up on every barangay. Although not of all the barangays complied, most of them constructed their own MRF. What they do in this facility is that they sort the recyclable materials and check if it is reusable, they then repurpose the recyclable materials. An example of which was shown by one barangay is the floating device made up of plastic bottles that can be used in times of flooding. The good thing about the garbage disposal system in Marikina is that it is a policy to separate the recyclables from the biodegradable, so it is easier for them.

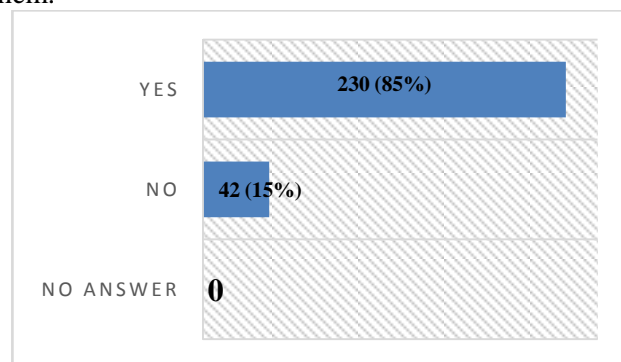


Figure 8. Waste management in every barangay

The practice such as these translates to the participation of the people to the sustainable development of the city. The efforts of the city government in promoting sustainability through waste management can be observed through the different ordinances they enact. The success of the policy, however, depends on the compliance of the citizens because the aims of policies are not attainable if the citizens are not complying. It shows how the cooperation of the citizens, though through small acts and complying with ordinances, can contribute much to the sustainability of the city.

This was evident as shown in Figure 8 wherein 85% or 230 out of the 272 respondents answered that they are aware of the waste management scheme of their city and that they do comply with the said policy and only 42 or 15% are not. An important element of Marikina City’s waste management and its effect on sustainability, is their garbage collecting mechanism. There are specific days for garbage collecting, and different days for the biodegradable and non-biodegradable. They strictly penalize residents that take out their garbage too early, this is because garbage on the streets can attract diseases and that it may be scattered.

Convenient Public and Safe spaces

Sustainable Development Goal No. 11 does not only promote resiliency but also the safety and inclusivity of every person in the city. This is an important feature of sustainability because it tackles the social aspect of progress. Urbanization has caused the rapid growth of population in the cities, which the problem of safeguarding the people arises. Sustainability requires protection of the dignity of every person in the city, especially those who require more consideration – Senior Citizens, Women and Children, and Persons with Disabilities.

One of the main problems of Persons with Disabilities is their commute from one place to another. The city government of Marikina addressed this problem by recreating a usual and everyday means of transportation in the city. According to one of the barangay interviewees, Marikina was one of the first cities to remodel the “tricycle” for the PWDs, this was spearheaded by the Vice Mayor. It was an on-call service wherein the person would be transported to any part of the city without having to go through different obstacles of commuting. Also, in the Philippines, PWDs receive a 20% discount in fares and other expenses, which is strictly followed by the establishments in Marikina City.

The Senior Citizens are also provided, by Philippine law, with special privileges when it comes to payments, as to help them with their daily expenses. In Marikina, senior citizens receive a “birthday gift” of one-thousand pesos every year. In a particular barangay, they allot a specific amount of their budget for the celebrations of the senior citizens in the area. In another barangay, senior citizens are given medicines free of charge; they are also given a supply of rice. In some barangays in Marikina, barangay halls employ senior citizens as a way of helping the elderly financially and also giving them the feeling of having a purpose in the community. One specific barangay gives utmost priority to the senior citizens by answering their needs, even the simplest requests such as providing a service to transport the seniors.

The survey shows the awareness of the citizens on the programs tailored specifically for the senior citizens, women and children, and persons with disabilities in Figure 9. In the 272 respondents 236 (87%) agreed about the inclusivity of senior citizens, women, and PWDs in their communities while the remaining 36 or 13% disagreed and stated that there were no specialized programs for the vulnerable sector.

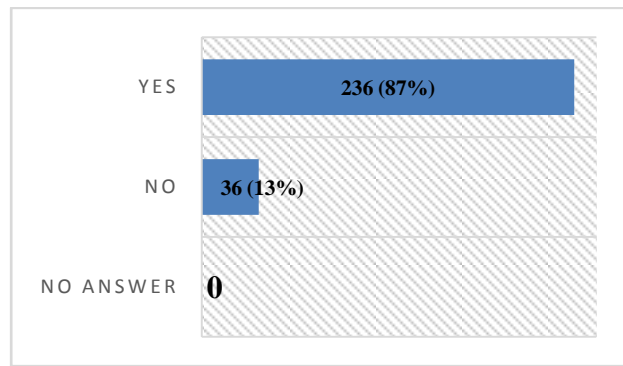


Figure 9. Specialized programs for senior citizens, women and children, and PWDs

Each barangay has a committee on Peace and Order specifically. Though the city government provides police that would patrol around the city, barangays also have their own ‘barangay tanods’ that make their rounds every day and every night to assure the safety within their areas. The barangays in Marikina also have a 24/7 on-call office that a victim can contact and request for protection from their offenders.

Also, in Marikina city, each citizen is given the chance to report any case they think needs to be addressed. The barangay is the first place the people would go to complain. Barangays are aware of their responsibility and tries to handle the problem without going out of their jurisdiction. A key informant noted that in Marikina City, the peace and order is not only maintained by police and alike but the citizens play an important role in informing the police and also checking their fellow citizens if they abide by the laws and rules of their city. 80.88% of 272 respondents believe that the disaster strategies of their barangay are effective in helping them prepare for a disaster and recover from losses.

CONCLUSION AND RECOMMENDATION

The United Nations, and its efforts in creating a unified system of undertakings between and among its member-states, has set an effective archetype of what countries should embark on and strive for in order to attain growth and development in all aspects of their societies. The targets and indicators of the Sustainable Development Goals of the United Nations are valid and sound gauges for the competence of countries in effectively maintaining their continuous progress. For the reason that they are parts of an international organization, member-states feel the need to and are encouraged to perform accordingly towards the achievement of these goals and its indicators.

With the results and analysis that were done and

produced by the study, the local government unit of Marikina City generates sustainable communities so as to fulfill the indicators of the eleventh sustainable development goal of the United Nations. The sustainable development goals of the United Nations are being significantly taken into account in the formulation of national DRRM plans and it transcends down to the DRRM plans of all levels of local government, particularly the city of Marikina. The city of Marikina is notably resilient enough, as its planning and management are very commendable, especially in times of disasters. The impacts of disasters in the city of Marikina have become less adverse and the improvements on both the planning and management have become more exemplary than at any time in its history. The city's strategies are even being replicated in other parts of the country.

The Philippines, reflective of the events in its local areas, is achieving sustainable cities and communities in accordance with the targets and indicators of the eleventh sustainable development goal of the United Nations. As a member-state of the United Nations, the Philippines is satisfactorily accomplishing a global framework and is contributory to the achievement of an international agenda that is essential for the attainment of a cohesive and harmonized international system.

Based on the presented findings of the study, the following conclusions are drawn. First, the families in the areas that were once slums have been relocated in a safer and more affordable housing and open space with public services and where they can build their own sustainable communities. Second, the civil society, as the most important stakeholders, is being included in the process of human settlement planning and management. Third, this participation of the civil society is being considered an important factor in the maintenance of sustainable urbanization wherein the rate of land consumption is directly proportionate to the population growth rate. Fourth, the national government is able to provide technical and financial assistance to the local government units in the construction and preservation of sustainable urbanization. Fifth, well-situated access to public transport and commendable road facilitation are being enjoyed by the citizens. Sixth, disaster risk reduction policies are being implemented in convergence at all levels of government. Strategies and initiatives are also being contributed by the national government, local government, and different agencies and institutions alike. Seventh, the number of fatalities and casualties has greatly decreased and the economic losses have

been considerably dealt with, especially in the vulnerable areas. Lastly, the management of solid waste from different processes of urbanization has been substantially and regularly facilitated. Overall, the constituents of Marikina are satisfied with the efforts of their local government in making their city sustainable.

The study however was limited only to the plan and management for sustainability of Marikina City because the city itself is prone to natural disasters, moreso other offices of the local government that are not within the jurisdiction of the guidelines for disaster responses are not included. It is recommended that further studies can be made in other perspectives particularly focusing on other sustainable development goals that may have been achieved by the city. Specific recommendations may include the collaboration between local private sectors and non-government organization for the promotion and attainment of sustainability. Furthermore, the study suggests that the general public should be more active in engaging themselves in the efforts of their local government unit in terms of planning and management of local affairs such as disaster preparations and responses. Moreover, the national government should use the indicators of the Sustainable Development Goals as the standard measurement of the performance of its local government units.

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