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Expansion of Green Spaces: Towards Resiliency against Pandemics

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ABSTRACT

The COVID-19 pandemic is a major public health concern which led countries like the Philippines to impose quarantine measures such as restrictions to contain the spread of the virus. In containing the spread of the virus, green spaces can play an important role. This study focused on the lack of green spaces in urban areas, particularly in the cities of Metro Manila. This research highlighted that keeping green spaces accessible to communities promote physical health and well-being which in turn, makes the cities and their overall population resilient. It emphasized that the lack of green spaces is not only an environmental problem but a crucial public health issue as well. However, the study revealed that physical health is not the only problem. It was also established that long-term home confinement comes with mental health consequences. The impact of green spaces is also now a necessity and a public concern. Urban planners and public health advocates think the pandemic may just be the highly and much needed push for the creation of more public parks and green spaces in Philippine cities, especially in the concrete and monotonous area of Metro Manila. With this, green policies alongside development should not be an afterthought by the government but rather, a matter where great attention must be paid to. In addition, improving the air quality of cities by promoting the expansion of green spaces per spatial area of the regions will generate wider societal benefits and help cities become resilient from future pandemics. In line with this, with more green spaces, social distancing is more likely to be conducive. More importantly, the study have also shed light that keeping green spaces accessible is safer for the reason that indoors are riskier than outdoors when it comes to transmission of the virus. As this study reviewed relevant policies, the study also showed the importance of coordination and data sharing among different levels of government, government institutions, and other sectors as highly essential to further strengthen existing policies and to ensure that measures are being followed and implemented, especially those who are mandated. Such is crucial in determining the future health of cities and its inhabitants. Furthermore, the study emphasized the significance of coordination when planning as this study also showed that no single actor possesses all the capabilities to address the environmental issue such as air pollution and its link to public health especially during this pandemic, whereby concerned and relevant institutions seek to address the weakness of a particular actor and to build upon the strength of the other.

Keywords: *Green Spaces, air quality, environment, public health, resiliency*

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INTRODUCTION

In August 2021, the national task force against COVID-19 has placed Metro Manila and few surrounding provinces under Enhanced Community Quarantine (ECQ) again as reported by Rappler (2021). The latest ECQ (the strictest quarantine restriction) is the third round of hard lockdowns in the Philippines since the country's first confirmed case of COVID-19 in March 2020. The total number of COVID-19 cases in the Philippines is now over the two-million mark (Magsambol, 2021). The government has already implemented measures to ease community quarantine policies in major urban areas. One thing that COVID-19 has revealed is that the country needs to improve the overall health and well-being of the cities (especially in urban areas) and its population. This is essential not just to enhance the physical health of the people but to improve the overall well-being of the nation. One way of doing this is the further development of green spaces in urban centers of the country because most of the epicenters of COVID-19 are mainly in the cities. This is an indication that there is an overall health crisis in many Philippine cities. The heavily congested urban areas and the general result of urban decay may have aided the spread of the virus. It is therefore important for the Philippines' future to improve urban health to combat future pandemics. One area which all the key stakeholders can focus on is the necessity to improve green spaces in Philippine cities. Like many developing economies the

country's urban landscape is suffering the regression of green areas. Urban forests, gardens, and parks have not increased in the past two decades, in fact, because of the demand for development, there is a rapid decrease in these urban environmental zones. There are already measures protecting the remaining urban forested lands, expansion of public parks, and the implementation of urban gardening policies but with the arrival of the pandemic, it has revealed the necessity to further strengthen these policies. This paper explored the need for the Philippine government to pay sustained attention to the enhancement of green spaces to improve overall public health resiliency against pandemics. Furthermore, this paper highlighted as well the discussion on the significance of green spaces as an essential factor in the country in combating COVID-19 and pandemics that will come in the future.

COVID-19

According to the World Health Organization – Europe (2020), on the 31st of December 2019 the organization was alerted with a mass of pneumonia patients in Wuhan City, the Hubei Province of China. A week later on the 7th of January 2020, Chinese authorities confirmed that they had identified coronavirus, also known as COVID-19 as the cause of the said pneumonia. The Coronavirus / COVID-19 is an infectious disease caused by the SARS-CoV-2 virus (John Hopkins Medicine, 2021). By the end of January 2020, twenty countries, territories, and other areas had reported cases of COVID-19

and the Philippines is one of them. It was further discussed that the spread of the virus is evident on how the number quickly rose to 54 countries, territories, and areas by the end of February, and to 202 by the end of March. By the 30th of April 2020, 212 countries, territories, and areas had reported COVID-19 cases (CCSA 2020)

Most people infected with the virus experienced mild to moderate respiratory illness and recover without requiring special treatment. However, some became seriously ill and required medical attention. The virus can spread from an infected person's mouth or nose in small liquid particles when they cough, sneeze, speak, or breathe. These particles range from larger respiratory droplets to smaller aerosols (WHO 2020).

The first ever confirmed case in the Philippines arrived from Wuhan, China via Hong Kong last January 21, 2020 (DOH, 2020). Sense of urgency on a case investigation and contact tracing was conducted. DOH reported that the companion, a 44-year-old, male, Chinese national, later also tested positive for COVID-19 and passed away on the 1st of February 2020. The third confirmed case was reported on the 5th of February 2020, just four days after. The third case was a 60-year-old female, Chinese national. All confirmed cases had travel history to Wuhan City of China. The first and third case both recovered and returned to China as well. Meanwhile, the fourth case which was confirmed on the 6th of March had a travel history to Japan, where, as of March 7, there were 420 confirmed cases of COVID-19

reported. The fifth and the sixth case were established as local transmission because both cases did not have any travel history outside of the Philippines. Cases seven to nine had travel history to countries with confirmed cases, while the tenth case is another local transmission.

For further elaboration and worthy to discuss is the evolution of variants as the different types of community quarantine are implemented due to sudden surge of cases. Mahase (2021) discussed the notable variants of SARS-CoV-2 since September 2020. The first ever variant known as the Alpha, was around 70% more transmissible than the original and wild-type SARS-CoV-2 coronavirus, but data now suggest that it is now only 30-40% more transmissible than the original one. On the other hand, the US Centers for Disease Control and Prevention has linked the Beta variant with a 50% increase in transmission but what is worrisome is the emerging evidence of its ability to evade some of the existing vaccines. Following this is the Gamma variant which is, according to research, 1.7-2.4 times more transmissible than the wild-type SARS-CoV-2. And lastly, the Delta variant, which is the most transmissible form of SARS-CoV-2 detected so far. This variant is as much as 60% more than the Alpha variant. Researchers have described it as a more improved version of the first ever Alpha variant as caused by a mutation that makes it more infective in the airways. This conveys an increased amount of virus in the infected person in such a way that it may expel more virus into

the air. One study cited by Mahase (2021) concluded that individuals infected had viral loads as high as 1260x higher than people infected with the aforementioned wild-type SARS-CoV-2. Another concern is that if the Delta variant is worse at infecting the airway cells of people, they may become infected even after lower exposure. According to DOH, the highly contagious Delta variant is detected in every region of the Philippines (Tomazcruz, 2021). Furthermore, at the time of writing, the Delta variant cases have been raised to 2,068 not to mention that experts believe there are still undetected cases. This is the reason why the Philippines is on their third round of hard lockdown since March as the overall total of cases in the Philippines have reached the 2 Million mark.

Pandemic Restrictions as Containment Measures in the PH

	Phase 1: ECQ	Phase 2: Modified ECQ	Phase 3: GCQ
 Population	100% stay at home	100% stay at home	Vulnerable (e.g., elderly) Transmitters (e.g., youth)
 Exercise	Not allowed	Limited outdoor exercise allowed (e.g., outdoor walk, jog/run, bike) with safety protocols (i.e., masks and 2m distancing)	Limited contact sports (e.g., golf, tennis)

In response to the growing spread of the novel coronavirus outbreak and to prepare for the eventuality of additional cases being reported in the country, including local and community transmission, the directives were several containment measures such as the strictest lockdown, the Enhanced Community Quarantine,

social distancing rules, and limited outdoor activities.

As previously mentioned, the country is on their third round of the strictest community quarantine. The different types of community quarantine as explained by Gotinga (2020) are worth discussing to have a better grasp and understanding.

Enhanced Community Quarantine (ECQ).

During ECQ, movement is limited to accessing only essential goods and services and only selected work in offices or industries are permitted to operate. Individuals ages 21 years old and below and those who are 60 years old and above, those with immunodeficiency, comorbidity, or other health risks, and pregnant women are strictly to remain inside their homes at all times, unless otherwise necessary for obtaining essential goods or for work that are permitted. Transportation by persons allowed to and from establishments with fully operational or half operational capacity, or with skeletal workforce anywhere within the area under ECQ is allowed. Public transportation is suspended but does not include shuttle services for employees of permitted establishments, as well as point-to-point services provided by the government. The movement of cargo vehicles will remain in operation.

Modified Enhanced Community Quarantine (MECQ).

During MECQ, movement is limited to accessing essential goods and services and for work in offices or industries allowed to operate. Individuals ages 21 years old and below and those who are 60 years old and above, those with immunodeficiency, comorbidity, or other health risks, and pregnant women are still required to remain inside their homes at all times, unless otherwise necessary for obtaining essential goods or for work that are permitted. The same applies to their household members. Public transportation is still suspended. This does not include commissioned shuttle services for employees of permitted establishments as well as point-to-point transport services provided by the government. Public transportation, like company shuttles and personal vehicles used by people authorized to leave their homes, are subject to the guidelines of the Department of Transportation (DOTr). The use of bikes and non-motorized transportation is strongly encouraged. Individual outdoor exercise is allowed, provided that individuals wear masks and practice social distancing.

General Community Quarantine (GCQ).

During GCQ, movement will be limited to accessing essential goods and services as well as for work in offices or industries permitted to operate. Individuals ages 21 years old and below and those who are 60 years old and above, those with immunodeficiency,

comorbidity, or other health risks, and pregnant women are still required to remain inside their homes at all times, unless otherwise necessary for obtaining essential goods or for work that are permitted. The same applies to their household members. Other sectors of public transportation such as road, rail, maritime, and aviation shall be allowed to operate but with reduced vehicle capacity in accordance with the guidelines issued by the DOTr and provided that there is a one-meter distance between passengers.

Modified General Community Quarantine (MGCQ).

During MGCQ, all persons shall be allowed to go outside their residences. Indoor and outdoor non-contact sports and other forms of exercise are allowed. Other sectors of public transportation such as road, rail, maritime, and aviation shall be allowed to operate in accordance with guidelines from the DOTr provided there is a one-meter distance between passengers. Private transportation is allowed but in line with the guidelines of the DOTr.

Granular Lockdown Alert Level 4.

At the time of writing, the National Capital Region (NCR) of the Philippines, also known as the country's economic center, is placed under Granular or Localized Lockdown Alert Level 4. This type of Lockdown is a *"micro-level quarantine for areas identified as critical zones by local governments regardless of alert level that will last for not less than 14 days."* Under this alert status, restrictions are imposed on closed and

crowded spaces and on activities where there is close contact. However, some activities are allowed for those who have been fully vaccinated. Thirty per cent of al fresco dine-in, regardless of vaccination status, is allowed. For indoor dine-in, only fully vaccinated customers will be allowed and only 10% of the venue's capacity should be utilized. The same capacity limits and vaccination status apply to personal care establishments. Meanwhile, workers of food establishments and personal care services must be fully vaccinated. Persons below 18 years old and over 65 years of age are not allowed outside their residences. Individual outdoor exercises are allowed for all ages regardless of comorbidities or vaccination status but it will be limited within the general area of their residence or within the barangay, purok, subdivision, and/or village provided that MPHS and precautions such as the wearing of face masks, and the maintenance of social distancing protocols are observed. Lastly, all or most indoor activities that are classified as high-risk for transmission such as social gatherings, amusement parks, MICE, libraries, casinos, contact sports, and the like are still prohibited.

Overall, one of the key policy measures that have been implemented to reduce the transmission of the variants and to protect public health is the restrictions on the use of public space and social distancing. But several studies have established the negative impacts from a long-term home confinement. Upon easing of restrictions, people will likely opt to

utilize public spaces. More importantly, there is growing consensus in the scientific community that indoor spaces are riskier than outdoor spaces because poor ventilation fails to dilute the viruses in the air and because the limited space makes physical distancing difficult to do (Ranada, 2020).

Furthermore, the outbreak is taking a toll at every corner of the lives of the people. Being physically ill due to the virus is now not the only problem to deal with. The sudden disruption to social life thus the absence of human and nature interaction, the loss of loved ones, unemployment, increasing poverty rate, loss of livelihood and source of income, all such come with the very apparent "pandemic fatigue" nowadays and other mental health consequences. With this, the government's response to this pandemic should not only focus solely on the physical health but to have programs and policies as well that will also address the overall health and well-being of cities and the whole population.

Green Spaces, Urban Health, Well-being, and Pandemics

As previously discussed, quarantine restrictions make people stay at home and make exercise outdoors limited. In addition to this, one of the key effective measures taken to contain the spread of the virus as well are social distancing rules and this have put the use of public spaces in densely populated places under strain, and this is especially important as some of the most virulent outbreaks of the COVID-

19 pandemic have been in compact cities (Noabajas et al, 2021).

For cities, the importance of parks, gardens, or city forests is based on how these spaces provide contrast with the concrete nature of modern urban centers. It alleviates the monotony of urban life and allows the resemblance of nature in an artificial community. However, the most important role of green spaces is the contribution of these areas in the improvement of the health of the city and its population. Parks, gardens, and the remaining urban forests improve air quality and lessen pollution that negatively affects the health of the population.

Pollution in the Metropolis.

The Harvard study (2021) is one of the several research studies that suggest that air pollution is affecting COVID-19 mortality. Dr. Bernstein (2021) was cited in the Harvard study stating that *'in places where air pollution is a chronic problem, we have to pay particular attention to individuals who may be more exposed or vulnerable than others to polluted air.'* Take the case of EDSA, the major highway and artery of Metro Manila. Santiago (2019) stated that recently, the traffic issue in the major highway was reported as not only a transportation problem but a health problem as well. Enano and Subingsubing (2019) quoted from the traffic operations officer of MMDA, Dennis Marcos, that the worst place to be assigned as a traffic enforcer is in EDSA for it is the most polluted. In OECD (2021), it was stated that health

damages resulting from long-term exposure to air pollution can diminish the body's ability to fend off respiratory infections. A scientist from the University of the Philippines' National Institutes of Health claimed that *"Diesel engines are the worst polluters"* (Sengupta & Popovich 2019) and motor vehicles are the main reason which accounts more than half of the poisonous emissions since 2002 (Enano & Subingsubing, 2002). With that being said, the air pollution is giving ill effects to those who are constantly exposed in the area, as well as the health of the workers and other people working and living in the high-pollution areas. In relation to this, a study had showed that traffic enforcers on EDSA were *"vulnerable to high blood pressure, edema, and respiratory problems due to exposure to black carbon and heavy metals"* (Sengupta & Popovich 2019) which are high-risk factors to COVID-19.

Physical Health.

Access to green space promotes continuous physical activity in communities that have increasingly become sedentary. The only places available for physical activity outside of the home environment are parks and open green spaces as schools, fitness establishments, and other places for leisure are closed (Slater et al., 2020). The authors also stressed the importance of staying physically active regularly for it is protective against risk factors for COVID-19 like poor cardiovascular health, obesity, hypertension, and diabetes to name a few. These risk factors can be regulated

by physical activity. Older people and those with underlying medical conditions like cardiovascular disease, diabetes, chronic respiratory disease, or cancer are more likely to develop serious illness. Any person can be infected with COVID-19 and become seriously ill or even be dead at any age according to WHO (2020). Sallis & Pratt (2020) said that every session of physical activity done stimulates mood and reduces anxiety thus, being active every day can be a partial countermeasure to the stress brought by the pandemic. Furthermore, for people who are already feeling distressed, being active is found to be as effective as medications and psychotherapy. Physical activity is one factor which could greatly help battle against adverse outcomes from COVID-19.

Mental Health and Well-being.

Access to green spaces also alleviates the consequences of quarantine and other public health measures on the mental health and well-being of the people. Several studies have already established how such measures bring about loneliness, anxiety, and depression to name a few as cited by Brooks et. al. (2020). Being quarantined for too long is associated with poor mental health outcomes. The country's National Center for Mental Health's hotline saw an alarming spike of calls in the midst of the COVID-19 pandemic, including a monthly average of 53 suicide-related concerns from an average of 13 to 15 daily calls before the pandemic. The institution's mental health providers are said to be receiving

around 32 to 37 calls a day and from around 300 to 400 calls in May 2019 to February 2020 it stretched to at least 1,000 calls from April to July in year 2020 (CNN Philippine Staff, 2020). Health Spokesperson Vergerie said that majority of the calls are due to anxiety-related concerns. Meanwhile, UNICEF also warned that lockdowns have negative effects on children's well-being (Lalu, 2021). With that being established, maintaining access to parks and green space could counteract these negative effects, urban nature can provide people with opportunities to escape household confinement and enjoy a host of positive effects on well-being (Samuelsson et. al., 2020). Spending time in nature is one potential way to cope with the negative physical and psychological health impacts from major stressful life events (Espinola et. al., 2021). Moreover, urban green spaces could contribute to enhancing individual and community resilience during stressful times.

Urban Health of Metro Manila during the Pandemic

Metro Manila is the worst affected region in the Philippines, where most cases are recorded in the country (Patag, 2020). A state of calamity and community quarantine have been in place in the region since March 15 and, as previously mentioned, the third round of ECQ was implemented from August to present at the time of writing. As of September 13 2021, there have been 732,962 confirmed cases of the disease in Metro Manila, with 9,216 deaths (DOH). Data from the DOH as well indicate that barangays in or near

commercial hubs in the region were among the areas most affected by this uncommon increase in cases and that some of the barangays in the top 10 list shown in the article are among the most populous villages within their respective cities. This is a possible reason for the surge of the cases (de Leon and Bueza, 2021). Health Under-Secretary Maria Vergerie noted that Metro Manila, which accounts for about a third of the country's economy, continues to show an upward trend in the newly reported COVID-19 cases, spiking by an estimated 13% in recent days at the time of writing (Al Jazeera, 2021).

There should be improvement in the policy direction of both national and local government institutions as part of the health agenda of all government levels. Policies that promote and protect parks, gardens, and other green areas should include the community. As relevant policies and programs are to be localized, stronger coordination among all levels of governance for better planning and effective Land Suitability Assessment¹ (especially with the underutilized areas), a more effective national-level monitoring, and increase in fiscal support are crucial but deemed necessary. In the context of the pandemic, keeping green spaces

accessible to the public in times of social disruption is one major area that the Philippine government needs improvement on. One way to further the development of green spaces especially in urban centers of the country is including the accessibility of these green public spaces to the policies that involve quarantine and social distancing as relevant to social disruptions like that of virus/disease, hence resiliency for future pandemics.

As reported in ABS-CBN News (2020) and Yahoo News (2020), Metro Manila is the epicenter of the pandemic. Both news articles stated that the virus is more active in urban centers. Hence, Metro Manila's COVID problem is connected with the urban state of health of the metropolis. Several studies have established that green and public open spaces promote physical and mental health. Thus, the development of green and open spaces will directly ease the impact of COVID and other potential pandemics for it lowers the chance of being high-risk and improves the overall well-being of the nation in the long run. Overcrowding and pollution may be part of the blame but there is also the lack of facilities that can help improve the overall physical and mental health of the populace. Protecting urban forests, parks, gardens, and other environmental areas will improve the resiliency of people living in Metro Manila.

METHODS

Qualitative research utilizes the data that the writer conducted from several Key Informant interviews

¹ASSURE (n.d). *Public Parks and Open Spaces - A Planning and Development Guide*. p.24. Retrieved from:
<https://chm.cbd.int/api/v2013/documents/9D0D456A-FAC1-9806-3B90-21B37D4DEE5B/attachments/207967/Public%20Parks%20and%20Open%20Spaces%20-%20A%20Planning%20and%20Development%20Guide.pdf>

together with various secondary data to go beyond a descriptive analysis, and achieve a more interpretative one as a way of gathering data. Thereafter, the researcher came up with a thematically patterned recognition between the interview and the gathered secondary document's data.

According to Roudgarmi (2011) qualitative research focuses on the phenomena that occur in natural settings. The author further stated that the capability of qualitative research in environmental areas is established for it can respond to many questions in environmental investigations and professional reports. Moreover, qualitative researchers study things in their natural settings, making an effort to at least make sense of or interpret phenomena by terms of the meanings people bring to them. Further, qualitative research relies mainly on the collection of qualitative data which involves the studied use and collection of a variety of empirical materials, case study, personal experience to name a few that illustrate a routine and problematic moments and meanings in individuals' lives. The researcher assumes that this approach is the most appropriate because it will allow the study to produce an elucidatory interpretation of the data. This is found to be the most apt method due to the reason that it involves a rigorous study of a particular research problem that is applied to institutions, individuals, groups, and a community (Taylor et. al., 2016) and in addition to this are social settings and events which will enable the researcher to fathom how these

factors operate and function together (Berg, 2001). The researcher isolated the study from other problems brought by the pandemic and solely focused on the significance of green spaces as an essential factor in the country in combating COVID-19 and future pandemics, to improve overall public health and achieve resiliency in line with the public health and the environment. To achieve such, the government needs to pay sustained attention to the aforementioned matters. Hence, this paper followed and utilized Bautista's framework as cited by Salvador (n.d.), where it is stated that the role of the state is critical and central and which links the state with ecology and the economy is designed to "define the environmental problem" in the Philippines. The state provides a legal framework "for a centralized, market-based, and participatory mode of governance. Its role remains vital in establishing structures that are necessary to define terms of access as cited by Salvador (n.d.), the nature of resource extraction, valuation and "environmental restoration" (Shao, et al., 2021), it defines fiscal policies as well as policies that spell out the conservation or preservation of nature. In this study, the state is the national government per se. It recognizes that in order to ensure the enhancement and expansion of green spaces to promote the health and well-being of the cities, the state is crucial and is a main actor in ensuring the enforcement and improvement of existing policies and in overseeing that local governments and other sectors are taking action in promoting green spaces as part of their mandate. This paper

follows that change is domestically driven by the state itself.

A market-based approach in environmental governance in the Philippines is apparent in the country's public-private partnership. According to DTI (n.d), the Philippine Environment Partnership Program which was launched by the government *seeks to encourage and support establishments to adopt self-regulation for improved environmental performance.* Whereas, the national government provides the regulatory assistance and other economic incentives to allow businesses carry out pollution prevention and conduct cleaner production processes. Philippine Foreign Trade ASEAN Leader and Department of Trade and Industry's Commercial Counsellor for Singapore, Malaysia, and Brunei, Glenn Peñaranda, stressed the utmost importance of the role of both the government and the private sector in order to achieve sustainable development. Peñaranda stated that

"The strengths and synergies of stakeholders will help in the formulation of better plans and programs that champion sustainable practices. We are committed in working with the private sector and civil society towards achieving green and sustainable development goals."

The Philippines is one of the antecedents of sustainable development in Asia and has been considered as one of the countries who spearheaded the establishment of a multi-stakeholder body in the Asia-Pacific region, by creating the Philippine Council for Sustainable Development in 1992 (DTI,

n.d.) which *"promotes development by policy integration, establishing indicators and standards in monitoring contributions of government institutions and businesses and continuing education, and raising awareness for current and future generations."* The Philippine Agenda 21, the nation's blueprint for sustainable development, was led by PSCD in 1997. A supplementary agenda, the Business Agenda 21, was an initiative by the business sector which *"provides the broad vision and implementing strategies and parameters for sustainable development."* Moreover, it was further discussed by DTI (n.d) that throughout the years, the government of the Philippines, through enactment of laws, has long-established the environment that enables the facilitation of the implementation of related business activities and processes that translate into key programs and activities of government and the private sector. The policies are big and heavy on *protected areas for biodiversity, wildlife, clean air and water, renewable energy, fisheries, among others.* Supplementary to this is an Environmental Compliance Certificate was made a requisite document for a project evaluation.

Moving forward, participatory governance is also evident in the Philippines. The provision of public open space is a fundamental factor of the common good. According to the good organization of Safe, Sustainable, and Resilient Environment (ASSURE, n.d.) public open spaces support a wide array of function and interaction between people and nature, which also sustains the vital functions of the environment when it comes to

public health. Further, they stated that along with other community services and infrastructure, these are actually public assets that contribute to communities being livable, safe, and sustainable. ASSURE (n.d) exclaimed that the Philippines is very much lacking in the supply of public parks and open spaces which has not been given the kind of necessary. On the other hand, Local Government Units (LGUs) or city governments have a crucial participation to achieve sustainable development through their public spaces and their respective existing green and open spaces. Laforga (2020) talked about the Local Government Support Fund-Assistance to Cities (LGSF-AC) fund which requires these local governments to utilize the funding that will develop new or enhance existing public space within their jurisdiction. LGUs are mandated as well to exert efforts for the provision and development of their public open spaces. In line with this, revisiting and reviewing the policies on the green spaces is necessary to spot areas of improvement and to further highlight the discussion on why green spaces are essential in combating COVID to achieve a more healthy and resilient nation. Data from the conducted interviews will be presented as well. This will thus reveal strengthening the coordination between the national government, the local governments, the citizens, and other sectors to achieve the desired impact on public health and resiliency.

RESULTS

Urban forest reserves, parks, gardens, and other open green and public spaces are at a premium in Metro Manila and developments have led to greater concretization. But one problem in Metro Manila is the access and availability of green spaces. This paper looked into relevant policies to spot areas of improvement from planning to implementation, to analyze in order to shed light to areas of coordination and alignment of national and local projects, and to pinpoint how relevant policies to green and public spaces are part of the health agenda of all government levels.

POLICIES

NATIONAL
RA No. 7160 AN ACT PROVIDING FOR A LOCAL GOVERNMENT CODE OF 1991
RA No. 9053: Philippine Landscape Architecture Act of 2000
RA No. 10587: Environmental Planning Act of 2013
RA No. 7586: National Integrated Protected Area System of Act 1992
RA No. 5752: The Municipal Forests and Watershed Act
Executive Order No. 27 DIRECTING ALL GOVERNMENT AGENCIES AND INSTRUMENTALITIES, INCLUDING LOCAL GOVERNMENT UNITS, TO IMPLEMENT THE PHILIPPINE DEVELOPMENT PLAN AND PUBLIC INVESTMENT PROGRAM FOR THE PERIOD 2017-2022
Executive Order No. 30 (1963): Creating an Executive Committee for the Development of the Quezon Memorial, Luneta, and other national parks
National Heritage Act

Commonwealth Act No. 141: Public Land Act

Presidential Decree No. 1216

Batas Pambansa 220: Area allocated for community facilities, Area allocated for park/playground

Batas Pambansa 880 (1985): An act ensuring the free exercise by the people of their right peaceably to assemble and petition the government for other purposes

New Urban Agenda, an extension of the 2030 Sustainable Development Goals

Philippine Development Plan 2017-2022

Green, Green, Green by DBM: launched in 2017

Philippine Agenda 2021

DBM: Local Budget Circular No. 13, dated Feb. 17.

LOCAL - SAN JUAN

Plaza Rehabilitation: Using their fund assistance of P4 million, the San Juan City LGU will activate the plaza by planting shade trees that will reduce the urban heat island effect and allow people to enjoy the place even on hot days.

LOCAL - MARIKINA CITY

Park Redevelopment in Marikina City: Marikina City identified Park 15 in Barangay Marikina Heights as an underutilized area with great potential. Currently an open field with trees and a historic grotto, the city will focus on maximizing the space by transforming it into a park, complete with jogging paths, creekside flower paths, and bike lanes

using eco-friendly pavements.

LOCAL - CALOOCAN CITY

Caloocan City's project focuses on the expansion of Caloocan Nature's Park in Amparo Subdivision.

LOCAL - QUEZON CITY

Ordinance No. SP - 2508, S-2016: An Ordinance Providing Guidelines For The Urban Design Code Of QC

Commonwealth Act No. 502: AN ACT TO CREATE QUEZON CITY

Quezon City Comprehensive Land Use Plan 2011-2025

LOCAL - MANILA

An Ordinance amending certain administration and enforcement provisions of Article XI of Ordinance No. 8119, otherwise known as The Manila Comprehensive Land Use Plan and Zoning Ordinance of 2006.

Manila City Ordinance No. 8119: mandates in its Performance Standards conformity in certain practices to the National Building Code and the National Clean Air Act (Article VII of the Zoning Ordinance)

Network of Green and Open Spaces (Section 46, Zoning Ordinance)

Historical Preservation and Conservation Standard (Section 47, Zoning Ordinance)

Ordinance No. 8607 declares the Arroceros Forest Park as a permanent forest park

MMDA
Resolution No. 11-01 series of 2011, "Approving the Implementation of the Re-Greening Program for Metropolitan Manila and Creating the Metro Manila Re-Greening Committee for the Purpose
MMDA Resolution 12-28 S. 2012, expressing support to the Metro Manila Greenprint Vision 2030 as Phase 1 and to proceed with the structural plan as Phase 2, in crafting the 2-decade plan for improving Metro Manila's Economic competitiveness, advanced social inclusivity, and livability, and reduce vulnerability to natural disaster and climate change impacts in the metropolis.

National.

It can be found on the Constitution and down to executive orders, that the country recognizes the rights of the people to a balanced and healthful ecology in line with the promotion of general welfare. They authorize local governments and other concerned national government agencies to ensure that they exert efforts in the implementation of and support to the establishment, development, maintenance, protection, and conservation of parks, open spaces, green spaces, and other forestry-related projects. But the policies were also seen to revolve around regulating activities concerning the use of land, buildings, and structures within the city as development like industrial development continues. Growing measures to be undertaken to prevent or

minimize the adverse effects were also seen as the population also continued to grow. Sustainable development being at the fore in planning has been recognized as well since such promote welfare and considered to help improve the overall health of the city and the population. This is evident with the current Better, Greener, Smarter Cities in an Inclusive Philippines vision.

Local.

Local governments are widely seen to be authorized to take action in promoting green spaces and keeping it accessible and available to their community, given their closeness to the community. However, the role of these LGUs seem to be intensified as evident on how the New Urban Agenda was localized. Green spaces are considered to be a part of the community's interests and needs. These parks and open spaces revolved around distance and accessibility to the public. But such is expanded to industrial thus having to meet some Performance Standards in the case of Manila while Guidelines for The Urban Design Code in the case of Quezon City. Cities are now striving towards sustainable urbanization by enhancing the quality and expanding the number of green spaces in their areas that are functional, serviceable, and accessible to the public. They focus on connecting the people to their physical environment.

According to DBM (n.d.), in order to bring about a healthier and more livable environment for the country and its constituents, they launched the program, the Green Green

Green in 2017, parallel to the Build Build Build program. The aforementioned program which is funded under the Local Government Support Fund - Assistance to Cities (LGSF-AC), is said to assist the Philippines' 145 cities and their respective city governments to comply in making their communities more livable, sustainable, and well-connected via the development and or enhancement of public open space, one of which is by green infrastructure.

Given all these, a great avenue to start having more strengthened coordination, fiscal support, and monitoring would be required to further the implementation and effectiveness of the localized New Urban Agenda alignment to the Philippine Development Plan for the period 2017-2022, and the Comprehensive Development Plans and other relevant programs of particular cities and or municipalities as they are all eyeing on enhancing the quality and quantity of green spaces. The alignment of the national government's Green Green Green program (parallel to Build Build Build) to the local is also a great avenue to pursue and sustain such parallelism and coordination of programs and projects in enhancing the green and public spaces.

The national and local policies are coherent in terms of establishing, developing, protecting, and conserving parks and open green spaces within their respective territorial jurisdictions. Several policies highlight the critical importance of protecting and maintaining access to greenery as a measure or step in preventing or

minimizing the adverse effects thereof. But the pandemic highlighted how crucial it is to take into account the size of the region and the potential population densities each street, square, or park can accommodate under such new regulations, like that of GCQ, in order to effectively enforce social distancing rules especially that it is important as some of the most virulent outbreaks of the COVID-19 pandemic have been in compact cities (Nobajas et al, 2021). Otherwise, certain areas may be rapidly overwhelmed by crowds with citizens unable to maintain the minimum safe distance between individuals.

Impact of Greenery on Health and Well-being

The study found from an interview conducted with a Forester I from the Department of Environment and Natural Resources - National Capital Region (DENR-NCR) that with more plants surrounding the urban areas, more importantly in the congested ones, more bad pollutants can be filtered and it can contribute to sequestering or mitigating airborne diseases. Related to this is a statement conducted from an interview with the Environmental Management Specialist II from the Department of Environment and Natural Resources - Environmental Management Bureau (Air Quality Management Section) (DENR-EMB), that plants can also help mitigate *particulate matter* (PM2.5). According to Shao et. al (2021) particulate matter may also be a carrier for SARS-CoV-2. They stated that the transmission routes of SARS-CoV-2 are being established,

given the narrative of environmental transmission. They also found that the survival potential of the SARS-CoV-2 virus is dependent on different environmental conditions and pollution. When it comes to particulate matter (PM), their study found that its concentrations were greatly associated with cases of human influenza and other respiratory diseases. They also cited studies in relation to COVID-19 that have shown that PM can help transmission of novel coronavirus. PM can be aggravated by the “*inflammation induced by COVID-19*”. Hence, PM may play a role as a “*booster of COVID-19*” as stated by Mescoli et al. (2020). It is also assumed that PM could be the transmission model of SARS-CoV-2 infection and could be the “*carrier*” of SARS-CoV-2, which enters the human body directly (Tung et al., 2021). Exposure to PM increases the “*ACE2 expression*” which indirectly promotes the entry of SARS-CoV-2 into the human body as stated by the previously cited authors.

Aside from particulate matter, air pollution also plays a role in the severity of COVID-19. The Harvard study (2021) stated that air pollution is affecting COVID-19 mortality. In addition, respiratory diseases are risk-factors for COVID-19. In line with this, people with chronic lung diseases can make them more likely to get severely ill from COVID-19 (CDC, 2019). A staff from Mayo Clinic (2021) stated as well that COVID-19 targets the lungs, so one is more likely to develop severe symptoms if they already have lung problems. In addition, according to OECD (2021),

people suffering from preconditions linked to air pollution are more vulnerable to the effects of the SARS-CoV-2. The study was able to reveal from DENR-EMB that 80% of the pollutants come from motor vehicles. Moreover, aforementioned from the DENR-EMB was that plants can mitigate particulate matter. In line with this, OECD (2021) said that exposure to a major form of air pollution, fine particulate matter, is significantly harmful as it penetrates deep into the lungs and blood streams, causing heart and respiratory diseases and premature death.

Another good reason for the promotion of expansion of green and public spaces is that the findings that indoors are riskier than outdoors for better ventilation, are still intact even with the evolution of variants and the emerging Delta variant. According to OECD (2021), air pollution indoors is an issue for buildings and small establishments with lacking or poor ventilation systems. Circulation of people in buildings with poor ventilation can also facilitate the spread of COVID-19 and other viruses (OECD, 2021). Schive (2021) stated that outdoor transmission of the virus is rare. Less than 10 percent of documented viral transmission happens in outdoor settings. The figure of “10%” has been established even by the CDC. Most experts and several studies as well have claimed that the actual risk of outdoor transmission is far lower – likely less than 1%. The authors cited that a Japanese investigation of 110 cases found the probability of transmission to

be 18.7 times higher indoors compared to an “open-air environment.” A more recent study cited closely scrutinized transmission between 18 infected construction workers and 496 of their close contacts. The cited study showed that the infected individuals were nearly 25 times more likely to spread the virus to their co-workers in enclosed places in comparison with the outdoor settings. The transmission of the virus was 26% to their co-workers indoors while infecting only 1.4% of their outdoor workmates. Even if outdoor transmission has been proven to occur, it was almost always been associated with long and close interactions which is said to be the riskiest type of interaction in *any* environment. Even with the more transmissible Delta variant, outdoor interactions for a short period of time, like passing someone somewhere, carries negligible risk and is of less worry.

However, physical health is not the only problem. As the country puts the people on lockdowns like a boomerang, people are having mental health issues brought by a long-term confinement. Brooks et. al. (2020) cited a plethora of quantitative studies where it reported a high likeliness of symptoms of psychological distress and disorder. The studies reported as well general psychological symptoms, emotional disturbance, depression, stress, low mood, irritability, insomnia, post-traumatic stress symptoms, anger, and emotional exhaustion. Low mood and irritability were said to stand out as having high prevalence. On the same interview at DENR-NCR, the

significance of physical and visual access to greenery and its impact on mental health was emphasized. The Forester I stated that in terms of aesthetics, the surroundings are beautified and the monotony of the urban area, wherein gray and concrete is overpowering, are alleviated. He stated the case of EDSA i.e., with buildings everywhere. But they established that with various and apt plant species, the area is beautified thus strengthening the impact on the visual aspect. Jackson (2003) judged from other related literatures and studies that health-giving architecture exposes individuals to visionary access to greeneries, natural light, and ventilation which are principal factors to health, and access to outdoor green spaces in a less distant manner. It was further argued by Jackson (2003) that landscape architecture also contributes to a sound mind and body and similar findings were stated by Jennings (2016) that landscape architecture is important both to health and well-being because immersion in aesthetic has the capability to reduce stress and anxiety and enhance human capacity for both physical and spiritual restoration (Jennings, 2016). Having access to urban green space is highly significant for both the well-being and quality-living of the citizens because as argued, there are different ways it can influence well-being and health in a positive manner (Bertram, 2013). With more access to plants such as green spaces in this pandemic – green spaces promote physical and psychological well-being, which in turn improves resistance to, as well as the ability to cope with, new

pathogens (Kleinschroth and Kowarik, 2020).

Significance of Coordination & Monitoring in Green Urban Planning and Development

The study also found the significance of data sharing between different concerned government agencies given their own and different expertise, to achieve a more effective policy and program. In relation to the policies presented above, each level of government institution have their own mandates that authorize them to carry out the efforts in the implementation of and support to the establishment, development, maintenance, protection, and conservation of parks, open spaces, green spaces, and other forestry-related projects. This also shows that coordination and monitoring is highly conducive. From an interview conducted with the Acting Director III / MPCG, Chief Environmental Mgt. Specialist of Metro Manila Development Authority (MMDA), it was learned that with their mandate on EDSA, which is highly congested and polluted, they coordinate with DENR-NCR because the said government institution has the necessary and crucial technical capabilities and expertise on the matter. A proposal was submitted to DENR-NCR to ensure an effective program because they have better knowledge on what plants are best in that kind of urban area, given that 80% of the source of the pollution are motor vehicles. Moreover, DENR-NCR hosts relevant seminars to MMDA as a partnership. Emerson et al. (2012)

defined collaborative governance as the process and structures of policy decision making and management with engagements from different spheres for the success in carrying out a public purpose that could not otherwise be accomplished. On the other hand, Lemos & Agrawal (2006) stated that hybrid forms of environmental governance recognize that no single actor possesses the capabilities to address environmental problems. Furthermore, the study was able to expose from the same interview conducted with MMDA that other sectors, be it LGUs or the private sector, were influenced by and copied their greening practices. This thus shows that these sectors have the capability to include greening in their plans on development as well. This is in relation with DENR-NCR's statement above that the more plants the better. Hence, this proves that there is a possibility to have access to greenery almost everywhere in urban areas even with the demand of development, especially now that this pandemic has revealed its necessity.

DISCUSSION

Green Space Policies for Healthy and Resilient Cities

The impact of green spaces is now a necessity and a public concern. The COVID-19 crisis provided the opportunity to re-assess the accustomed ways of work and the future of environmental governance. "*Parks and green spaces are important even without the pandemic but much more important because of it...*" as stated by former health secretary Dr. Esperanza Cabral in

Rappler (2021). Keeping green spaces accessible in times of pandemic builds up the resiliency of the city. Samuelsson et. al. (2020) argued that securing the access to nature to the public should be a fundamental strategy of cities when coping with crisis as it offers resilience for maintaining well-being in urban populations, as is evident in the current situation. This is in line with the significance of visual and physical access obtained from the interview conducted. Urban green space provides refuge during the ongoing pandemic over the short-term but also enhances long-term resilience against similar adversities in the future, thus, green spaces should be considered as essential and be kept accessible in crisis like today. Urban greens places are useful both for serving as an avenue for stress release during times of societal disruption like this current pandemic and as well as help people to mentally prepare for such times both physically and mentally (Kleinschroth and Kowarik 2020). Physical activity as a recommendation has already been put in place, and there is much more evidence that such activity could contribute both to reducing the severity of COVID-19 illness and enhancing the quality of life both before and after infection (Sallis and Pratt, 2020). Keeping green spaces accessible is also keeping people away from long-term home confinement. For the reason that, confinement measures can result in increased exposure to indoor air pollution. This is particularly relevant for developing countries where many people still rely on polluting fuels for

cooking stoves and heating (Bannerji, 2020).

Little attention has been paid to the correlation between the environment and the emergence of infectious diseases even if there is growing evidence that connects the two phenomena. OECD (2021) stated that improving air quality alleviates the occurrence of cardiovascular and respiratory diseases which increases the vulnerability of individuals and communities to pandemics like the COVID-19, and produces wider benefits as well for public health, well-being, and resilience. They further backed that limiting people's exposure to pollution such as air pollution will reduce the vulnerability to future pandemics and contribute to enhancing health and well-being. It was stated from the interview above that having more plants, the better. The continuous demand on development and industrialization should now always be accompanied with green policies to achieve a sustainable, healthy, and resilient city. It is estimated by WHO (2020) that 9 out of 10 people breathe air containing high levels of pollutants. In addition, as economies begin to recover from the pandemic, resumption in air travel, movements of people within and between cities, and production levels in factories will see an increase in outdoor air pollution (OECD, 2021). Good air quality not only has the capability of lowering the vulnerability of individuals and communities to pandemics similar to COVID-19, but also of generating wider benefits for public health, well-being, and resilience.

Exposure to air pollution is associated with various adverse health outcomes in the short and long term, such as increased risks of cardiovascular, respiratory and developmental diseases, as well as a higher risk of overall mortality (WHO, 2018). Improving air quality can help increase resilience against acute respiratory illnesses as well as generate wider societal benefits. Better air quality, thus, can greatly help in balancing out mortality for it is a preventive measure in respiratory diseases which are risk factors for diseases like this current COVID-19 situation. In addition, there are significant economic benefits from improved air quality as a result of fewer air pollution-related illnesses, which means less money spent on medical treatments and reduced impact on work productivity through lower absences due to sickness (OECD, 2021). This is the reason why in designing sustainable cities green environmental areas must not be an afterthought in the planning of city development. It has also become an essential part of urban governance due to the fact that the health of the population is now a major concern for the government, particularly with the current pandemic. The need for green spaces is now a public concern and necessity. Keeping green spaces accessible to the public in times of pandemic is one major area that the Philippine government needs to improve on. COVID-19 has essentially revealed the necessity to enhance the health of the populace in cities. One way of doing this is to improve the physical and mental health of the people by

giving them areas where they can move and interact with nature.

Hence, creating more green spaces and keeping them accessible to the public should not be an afterthought rather, the national government, local government units, urban planners, should thoroughly consider as to what is appropriate and important for the overall health of the population and how best to implement its accessibility in trying times that require quarantine and social distancing.

The green initiative adopted by government agencies like the MMDA was proven to be of great influence and also serves as an inspiration to different cities and other sectors as they have a great potential in encouraging and influencing others in applying the same practice for the improvement of the aesthetics, environment, and consequently, the overall health of the city and the people. This is crucial more importantly in highly congested and polluted urban areas which are found to be pandemic-stricken or epicenters of this pandemic. Data from the DOH indicate that barangays in or near commercial hubs were among the areas most affected by the unprecedented spike in cases. (de Leon and Bueza, 2021). It is clear that the Coronavirus situation has highlighted the need to put more emphasis in developing high quality green spaces in all districts and areas of the cities, as in times of such mobility restrictions both short distances and good quality of urban greenspace would be urgently needed (Barton et. al., 2021). In line with this, policies have not promoted the

expansion of open green spaces despite the necessity. Moreover, the policies presented above showed how they serve as guides and remain as is because when it comes to compliance to and enforcement of these policies about green and open spaces, they are not that evident even after its enactment. With the lack of green spaces in times like the current pandemic, the continuous urbanization sprawl, growing population, and spatial scarcity will make social distancing harder to observe and overall health will be less likely conducive.



Along with the issues of congestion, pollution, and undeveloped lands, the challenges to their conservation and maintenance intensifies as well. Some cities are already conserving and maintaining the green spaces within their territorial jurisdiction and this is a step forward for the improvement of the overall health and well-being of cities in Metro Manila and the populace. In the

case of QC which is continuously growing and expanding economically from residential to industrial, maintaining their role of the Green Lung of the Metropolis is a current top priority. Manila has saved their critical forest, which is also considered to be their last lung. On the other hand, on MMDA's end, with 80% of motor vehicles as their main source of harmful pollutants which results to air pollution coupled with spatial scarcity, to create a green space, they opted to install vertical gardens on the center islands of the major artery of Metro Manila. Existing policies both on the national and local level are geared towards improving the overall environmental quality and health of their city but are not so heavy on including green spaces in their planning and development whilst promoting sustainable development and enhancing the standard of living. The COVID-19 pandemic highlights the vital importance of urban greenspaces as an essential quality-of-life element in sustainable cities (Kleinschroth and Kowarik, 2020). Albeit the pandemic situation, urban planners and doctors are now saying that the government should create more public parks and green spaces to usher in a 'better normal' (Rappler, 2020). Congruent to this is the statement that planners, designers, architects, landscape managers, and journalists are already writing about how this crisis will transform our relationship with public space (Roses et. al., 2020). It was highlighted above that given the different expertise and technical capabilities of stakeholders,

coordination and data sharing between them is significant in planning and implementation. This, together with strict oversight and monitoring from the national government can ensure achievement of the desired impact. Previously mentioned are data sharing and coordination. A better understanding of the role of environmental health as a crucial component of overall health priorities will help to inform policy responses in the recovery from the current pandemic and preparedness for such future shocks. Such an understanding will also generate significant co-benefits in terms of improving the overall health of communities and increasing the resilience of societies. Policies above may need amendment by considering the spatial sizes of the region and also in accordance to the development planning of cities especially when it is clearly stipulated in the policies that it needs improvement as highlighted by this current pandemic situation. Engagement from different spheres in governance is a crucial factor in order to successfully carry out a public purpose that could not otherwise be accomplished (Emerson et al., 2012). Data and information about the socio-spatial distribution, vegetation, quality, and accessibility of green spaces with residents nearby are still lacking. According to Nobajas et. al. (2021) it is fundamental to take into account each neighborhood's morphological characteristics and the potential population densities each street, square or park can accommodate under such new regulations in order to effectively enforce social distancing rules.

Otherwise, certain areas may be rapidly overwhelmed by crowds with citizens unable to maintain the minimum safe distance between individuals. Moreover, most major urban areas are not adequately prepared to respond to such an infectious disease, as in certain areas public space can become quickly overwhelmed simply by locals exiting their homes due to an inadequate provision of available public space. In revisiting the old policies, it was revealed that the particular guidelines below which describe the land allotted or to be allotted for open spaces need to be reviewed, given the continuous urbanization sprawl, growing population, and spatial scarcity.

- RA 7160 SECTION 17: management and control of communal forests with an area not exceeding **fifty (50) square kilometers**; establishment of tree parks, greenbelts, and similar forest development projects
- PD 1216 (October, 1977): mandates owners of residential subdivisions to provide **30% of their land to an open space allocated** exclusively for parks, playgrounds, and recreational use
- RA 5752 (1969): Every municipality or city shall exert efforts to establish, develop and maintain a permanent forest, tree parks, or watershed within public land owned by such municipality or city with an aggregate size equivalent to **at least two (2%) percent of its entire area**

- Ordinance No. SP 2508, S-2016: Allocate **as many open spaces as possible** at street level to create a comfortable environment

Urban planners and public health advocates think the pandemic may just be the highly and much needed push for the creation of more public parks and green spaces in Philippine cities, especially in the concrete and monotonous area of Metro Manila. Thus, this shows that the country needs to strengthen their policies and programs in relation to green and public spaces coupled with monitoring from the national-level to see to it that cohesive cooperation within all levels of governance and other stakeholders or concerned government institution is working and solid for the further expansion of green spaces in order to see to it that a sustainable and resilient city as well as the overall health and well-being of cities and the population is being managed and desired goals are achieved, pandemic or not.

It was also highlighted from the interview that not only the government has the capacity to expand the greenery, but other sectors have the capability as well. Metro Manila possesses considerable potential in providing more green spaces most especially in highly urbanized areas, thus the potential to be more resilient as an individual and community as a whole, to social disruptions like this pandemic that we have today. With the plethora of studies establishing the benefits of having more green spaces as well as

how it can help countries in achieving resiliency, it can be said that it is indeed feasible and can be achieved through the state's policies and programs as well as strengthened implementation. There are several studies establishing the consequences of home confinement but psychological resilience can be achieved. Espinola et. al. (2021) cited from American Psychological Association (2020) that psychological resilience is the process of an individual to adapt to adversity, trauma, tragedy, threats or significant sources of stress. On the other hand, at a more macro level, social resilience is a community's ability to recover from and/or respond positively to external stresses and disturbances as a result of social, political, or environmental change. More green spaces accessible and available to the public makes the government at all levels attend more to the needs of the community, most certainly based on how these open green spaces promote physical and mental health. Thus, it could directly ease the impact of COVID and other potential pandemics. Building a stronger infrastructure of parks and green space throughout the country will help limit the impact of future public health disasters and will lead to a more resilient and healthier overall city and population. But as all relevant policies were revisited, it was found that there is a need that these policies need to be reviewed as they do not promote the expansion of the green spaces despite the urgency. The policies also revealed that the success of the implementation of these policies requires a stronger coordinating mechanism among all levels of governance and other

stakeholders. A great avenue to start having more strengthened coordination, fiscal support, and monitoring would be among the localized New Urban Agenda, the Philippine Development Plan for the period 2017-2022, and the Comprehensive Development Plans of particular cities and or municipalities as they are all eyeing on enhancing the quality and quantity of green spaces.

CONCLUSION

There are many good reasons to pay sustained attention to the role and significance of the green spaces in addressing health and environmental problems in the Philippines, more importantly as highlighted by this current pandemic. The study highlighted how cities, especially the urban areas, can achieve greater societal benefits by improving their green spaces, in light of being sustainable and resilient. This paper emphasized that such is feasible through the policies and programs as implemented by the state. Moreover, this study found the advantage of data sharing and coordination with other institutions in accordance to their technical capabilities, expertise, and other relevant fields in formulating policies in order to effectively solve problems as it will positively impact well-being, health, and the environment, especially in this context of pandemic. Hence, the study emphasized the need of reviewing some existing policies for the expansion of green spaces or to further strengthen the implementation and monitoring that other levels of governance are taking measures of as

part of their mandate. The lack of strict monitoring and formulating new policies and programs in relation to greenery hampers the proper implementation and sustainability of related programs and projects for the common good. The findings of this study are an asset to the community as this study covered enhancing their relationship with the physical environment amidst the pandemic and for future pandemics that will come. No single actor is dominant and has the ability to handle all problems that needs to be solved. The public sector alone cannot supply ecosystem services efficiently and effectively. Hence, the existence of economic incentives to the private sector in order to be competitive. This can then be harnessed to protect the environment. These market-based approaches would allow the market to better reflect environmental costs and the main advantages associated with economic incentives are improved relationships between the private and public sector, innovation, self-sustenance, and better planning and management. Coordinating with other levels of government, government institution, and other sectors will sustain the limitations of each actor. The study showed that improving the air quality also improves the overall health of society. Consequently, with future pandemics to come, this can lower the severity of the people infected as well as help in balancing out the mortality rate. Moreover, it was proven that other sectors are capable to take part in expanding the greenspaces which really shows that Metro Manila truly poses a considerable potential to further

development and at the same time, impose and include the greenery within those development plans. To be able to achieve the desired impacts on health of cities as well as the resiliency, coordination must be strengthened. Such will help address inefficiencies and weaknesses of each actors as well as the areas of improvement found on the policies reviewed. This also can help the nation as a whole to prepare for future pandemics.

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