

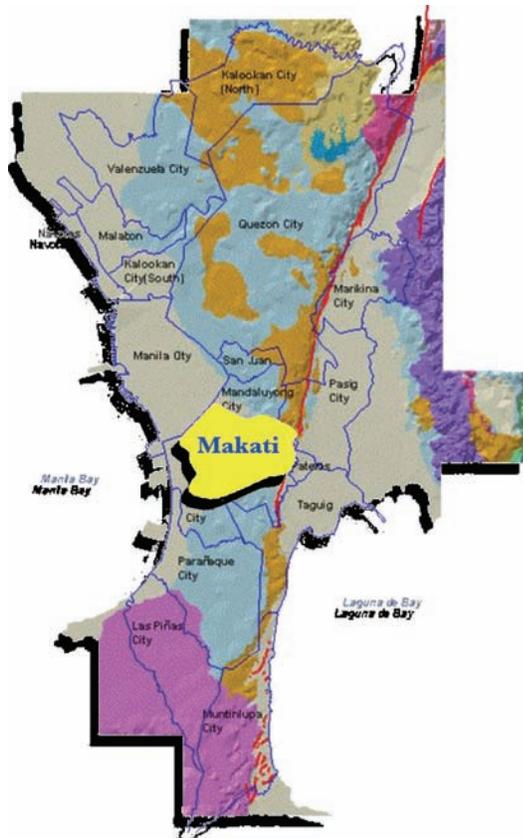
Climate Resilient Cities

A Primer on Reducing Vulnerabilities to Disasters

I/ CITY DESCRIPTION

Makati City is one of the constituent cities of Metro Manila, Philippines. Metro Manila consists of 16 cities and the municipality of Manila. Makati City is located in the central part of the metropolitan region (Figure 1). The total area of Makati City is 27.36 square kilometers, which is only 4.3 percent of the total area of Metro Manila. Makati City has a resident (nighttime) population of around 0.5 million, which increases to 3.7 million during the day due to the influx of people entering for jobs or other business purposes. The high floating population is unprecedented and contributes to the very high risk of the city to different disasters.

FIGURE 1. Map of Metro Manila Showing Location of Makati City



Source: Makati City Government.

The different city governments in Metro Manila are governed by their mayors and city councils. Most responsibilities are with the local city governments. The administration and coordination of the constituent cities and municipal areas are carried out by the Metro Manila Development Authority (MMDA). The MMDA is thus the planning authority for Metro Manila, while the local planning and implementation of the plans are carried out by the local city governments. The city governments are also responsible for providing various civic amenities and for the collection of several local taxes.



Makati City is located in the Pacific ring of fire, which is prone to high seismic and volcanic activity.



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II/ PRIORITY HAZARDS/VULNERABILITIES

The Philippines is located in the Pacific *ring of fire*, which is prone to high seismic and volcanic activity. Makati City has high seismic hazard risk because of the West Valley fault passing near the eastern parts of the City. There are several other faults that can produce large earthquakes, affecting the whole of Metro Manila.

Makati City is also prone to other hazards. It is vulnerable to typhoons that are frequently produced in the Pacific Ocean. Both the high wind and high-intensity rainfall cause damage. The City is also prone to widespread flooding during the rainy season due to an inadequate drainage system. In addition, Makati City experiences minor landslides in some locations and has some vulnerability to volcanic eruption from Taal volcano located about 60 kilometers to the south of Metro Manila.

The City is also experiencing environmental degradation due to an increase in air pollution. Since Makati City has an active economic sector, both industrial activities and vehicular traffic contribute to the City's pollution. The City feels that the level of pollution may reduce its competitiveness as a destination for regional business, and it is striving to reduce pollution levels.

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III/ DISASTER MANAGEMENT SYSTEM

The Makati City disaster management system is governed by the Makati City Disaster Coordination Council (MCDCC), which is chaired by the Mayor. The MCDCC is responsible for implementing the policies of the National Disaster Coordination Council. In ad-

dition, the MCDCC is responsible for developing and implementing various levels of disaster management plans in conformity with national policies.

The City's initiatives in environmental management have been extended in the last few years to include climate change management programs. In 2006, it created the Environmental Protection Council of Makati City (MCEPC)¹ with the following objectives:

- Address the need for an organization composed of different national agencies and offices of the City government that are directly responsible for the protection of the environment;
- Aim to pursue a strategy of sustainable development where economic development is tempered by environmental management and protection programs;
- Prepare the City for any impending or unavoidable environmental disaster and increase its capacity and capability to monitor and participate in the protection and management of the environment; and
- Establish strong linkages with private sector and civic organizations in the preparation and development of environmental management programs and projects.

The MCEPC is chaired by the Mayor and has representation from the Departments of Environmental and Natural Resources, Health, Science and Technology, Energy, and other national agencies. City representatives include all relevant departments dealing with environmental issues, urban planning, and emergency response.

Makati City joined the ICLEI Cities for Climate Protection campaign in 2004 and has been an active participant.

IV/ ADAPTATION MEASURES

Makati City has initiated several programs for adapting to climate change. The City recognizes that it needs to improve the level of services provided to its residents. The different infrastructure services considered include

the construction of several new disaster-resistant school buildings in safer locations and the improvement of the health system. Some of the adaptation measures that are important for managing the impacts of climate change are described below. These programs help reduce health vulnerabilities that may be exacerbated by climate change.

Child Immunization Program

Makati City has expanded the reach and effectiveness of its immunization program. The Expanded Program on Immunization covers seven childhood diseases—measles, polio, diphtheria, pertussis, tetanus, hepatitis B, and tuberculosis. The vaccines are administered free to newborn babies up to 48 months old. Regular immunization campaigns are also conducted at health centers, in schools, and in neighborhoods. By 2010, the City hopes to completely eradicate all these childhood diseases.

Universal Health Insurance Program

Makati City has provided universal health insurance coverage for all its residents since 2006. This program enables the City to provide access to health facilities to less-privileged residents, not only in Makati City but also in any Philhealth-accredited medical facility. There are about 80,000 families from low-income backgrounds who benefit from subsidized medical services through this program.

V/ MITIGATION MEASURES

Makati City has set a target to reduce its GHG emissions by 20 percent between 2003 and 2010. The mitigation programs focus on controlling the sources of emissions and reducing electricity consumption. Some mitigation programs for reducing GHG emissions are described below.

Solid Waste Management Programs

Makati City recognizes that solid waste collection and recycling is critical not just for reducing GHG emissions but also for improving the overall environment. The City has aggressively focused on solid waste management. The Makati City Environmental Protection Council has provided leadership to the solid waste management program.

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The City has set up the Makati Solid Waste Management Board, Makati Clean & Green Committee, and Clean Cities Makati Coalition to facilitate the inclusion of all stakeholders in this endeavor. As a part of the program, the City has also started a small one-day annual collection event for recyclables. In 2007, the waste market was able to sell approximately 25,000 kilograms of recyclables.

Energy Sector Programs

Makati City has lowered its GHG emissions through reduction in electricity consumption. The City initiated a program to replace streetlights with more energy-efficient systems with programmable controls. In 2007, the program covered a total street length of 136 kilometers. In 2006, this program earned an Energy Efficiency Citation from the Department of Energy and the United Nations Development Program.

Makati City has started a green procurement policy² that prefers purchases of air conditioners with Energy Efficiency Ratio ratings. In addition, all City employees are encouraged to use nonthermal paper in fax machines. All equipment that uses ozone-depleting substances are also avoided. The electricity consumption due to lighting and air-conditioning has been reduced in city-owned buildings by using more energy-efficient lighting and modifying the air-conditioning duration.

Transport Sector Programs

The mitigation programs in the transportation sector have been developed to reduce atmospheric pollution as well as GHG emissions. Makati City experiences heavy commercial vehicle traffic. These vehicles are often identified as a major source of pollution. The City has launched antismoke-belching campaigns to prevent polluting vehicles from traveling on the City's roads. The government-owned public transportation system is being

made environmentally friendly by using low-pollution fuels and biofuels. Jeepneys (jeep jitneys), which constitute a vast proportion of privately owned transportation systems, are being refitted to use electricity, and are now called e-Jeepneys.

Urban greenery has been a Makati City initiative since 1992.

Built Environment and Densification Programs

The City experiences very heavy commuter movement on typical business days of the week. In order to reduce the vehicular traffic and encourage walking within the business district, a public-private program has been launched to connect buildings with elevated pedestrian walkways. The walkways ensure that the people can travel from one building to another completely avoiding road traffic. The use of these walkways is expected to significantly reduce short-distance vehicle movement between neighboring buildings during business hours, resulting in reduced traffic congestion and decreased GHG emissions.

Forestry and Urban Greenery

Urban greenery has been a Makati City initiative since 1992. The urban greenery program is primarily aimed at reducing atmospheric pollution. This program includes citywide tree planting in open areas and parks. The City program also focuses on median-strip and roadside greenery. A variety of shrubs have been planted adjacent to the roads for beautification and to reduce pollu-

tion. The City has estimated that the additional greenery every year sequesters approximately 25,000 kilograms of CO₂-equivalent.

Public awareness has been recognized as a critical element for sustainable climate change management programs. Makati City has initiated several programs to improve public awareness of climate change and to encourage people's participation in the climate change management programs. Special public awareness programs target school children, families, shopowners, open-air vendors, and other stakeholders. The City has developed programs to reduce GHG emissions by involving these stakeholders. Other public awareness programs include Environment Month, Earth Day, and Earth Hour. Information, education, and communication materials are regularly distributed by the City to improve public awareness.

Notes

This "City Profile" is part of *Climate Resilient Cities: A Primer on Reducing Vulnerabilities to Disasters*, published by the World Bank. The analysis presented here is based on data available at the time of writing. For the latest information related to the Primer and associated materials, including the City Profiles, please visit www.worldbank.org/eap/climatecities. Suggestions for updating these profiles may be sent to climatecities@worldbank.org.

¹ Council of Makati City, *An Order Creating the Environmental Protection*, Executive Order No. 003 Series of 2006, City of Makati, Metro Manila, Republic of the Philippines, 2006.

² Makati City Government, *Makati's Best: A Primer on Makati's Best Practices*, 2008.



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