Study on Carbon Governance at Sub-national Level in the Philippines

FINAL REPORT

Revised

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Ateneo School of Government
The Graduate School of Leadership and Public Service

Table of Contents

LIST OF TABLES

1 INTRODUCTION

1.1 Background

The Institute for Global Environmental Strategies (IGES) is undertaking a study on Establishing New Market Mechanism through the Development of Methodological and Institutional Framework for Monitoring, Reporting and Verification (MRV) in Asian Developing Countries from May 2011 to March 2012. The objective of the study is to promote proper evaluation methods on the activities initiated by the Japanese government in developing countries and assist developing systems to measure, report and verify GHG emissions reduction and/or sink in those countries in order to develop a crediting mechanism which will provide a win-win situation between Japan and those countries.

Specifically, the study involves two major components:

Component 1: Examination of methodological framework for the MRV of GHG; and
Component 2: Support and research for the establishment of institutional and governance structure, and capacity building for the MRV of GHG.

Component 2 is being undertaken by the Governance and Capacity Group (GC) of IGES. Currently, the GC is conducting simultaneous researches in the urban planning sectors of Asian countries such as China, India, Indonesia, and the Philippines.

The Ateneo School of Government (ASOG) was contracted by the GC of IGES to undertake this Study in the Philippines. This Philippine study intends to document the current state of carbon governance in the country at a sub-national level including case studies of selected local government/s and sample GHG mitigation project undertaken in the local level.

A Work Plan was submitted to IGES on July 2011 which covers the proposed activities to be undertaken for the study in the Philippines from 1 July 2011 to 31 October 2011. The scope of this Study in the Philippines includes the following:

- Evaluation of carbon governance local level by GHG emitting activities, in the Philippines. This includes the state of authority as well as policies and measures related to carbon governance at different sub-national levels in the Philippines;

- An in-depth evaluation of the state of sub-national and national government policies and measures for low-carbon development in Quezon and Makati Cities; and

- A case study of an on-going climate change mitigation/ low carbon development project in the selected cities.

Meanwhile, an Interim Report was submitted to IGES on August 2011 covering initial findings of the research done on carbon governance at sub-national level in the Philippines. The findings showed that at present, there is low/ ineffective carbon governance among the sub-national levels in the Philippines. However, the initial findings also indicated that various sub-national levels in the Philippines are trying to strengthen their level of carbon governance with some implementation support.

This Final Report summarizes the findings of the Study in so far as the following are concerned:

1. carbon at sub-national level in the Philippines
2. potential of carbon crediting in sectors relevant to urban planning
3. factors to generate and use data needed for carbon management

Each of these topics are discussed as separate chapters of this Report, with the case studies discussed in light of sub-topic #2 "potential of carbon crediting in sectors relevant to urban planning".

1.2 Methodology

LGUs are envisaged as important stakeholders that play specific roles in domestic climate change-related activities. LGUs oversee planning processes, establish local policies and regulations, initiate local programmes and projects, and assist in implementing national policies related to climate change. As the level of governance closest to the people, they play a vital role in educating, mobilizing and responding to the public to make grassroots changes in human behaviour.[1]

Under this study, carbon governance is taken to refer to the current state of govern-ability at LGU levels in the Philippines by various GHG emitting activities, specifically, in the following sectors:

- Energy supply
- Industry
- Transport and its infrastructure
- Residential and commercial buildings
- Waste management

Various activities and measures are examined under this study to gauge the level of participation of the LGUs in carbon governance in the Philippines and the level of implementing national policies related to climate change and GHG reporting. These activities and measures were identified (for all the participating countries in the IGES study) to include (i) level of

[1] IGES White Paper

engagement and participation in National Communications; (ii) Level of engagement in preparing NAMAs; (iii) level of participation in GHG inventory workshops; (iv) presence and enforcement of low-carbon development / climate change mitigation strategy, target, action plan, policies and measures; (v) level of monitoring of GHG emissions; and (vi) level of engagement in carbon market mechanisms particularly the CDM, among others.

This study employed the use of both primary and secondary data reviews. Primary data were gathered through interviews with key persons of the selected LGUs as case studies and conduct of a nationwide representative survey among various LGUs. Secondary data were sourced from the internet and reviews of existing literature.

The Environment Officers of the local government units (LGU) were chosen to be the primary resource persons for this study because they would be more familiar with the environmental policies and programs of their respective LGUs.

In particular Quezon and Makati cities' environmental officers were interviewed for this Study. Contact details of environment officers were obtained from the League of Cities of the Philippines (LCP) and the Philippine League of Local Environmental Officers (PLLENRO). Survey questionnaires were emailed, faxed or personally given to these environment officers. Questionnaires were also distributed during workshops or meetings where LGU representatives were present. Personal interviews via telephone were conducted for provincial environment officers.

Since the focus of the study is urban planning, most of those invited to participate in the nationwide survey were city environment officers. According to the list of LCP, there are one hundred twenty two (122) cities in the Philippines at the moment. There are eighty (80) provinces and one thousand five hundred twelve municipalities (1,512) in the country. One hundred fifty (150) environment officers/ LGU personnel have been invited to participate in the survey and eighty (80) responded. Thirty-nine (39) came from the city environment office representing 32% of the total number of cities. Twelve (12) respondents came from the provinces and twelve (12) more provincial representatives were interviewed, representing 30% of the total number of provinces. Twenty-nine (29) respondents came from the municipal environment offices representing 2% of the total municipalities.

Annex 1 provides the Survey Questionnaire template that was used for this study and Annex 2 tabulates the results of the survey. The next chapter further explains the nationwide survey methodology. Chapter three meanwhile explains the results of interviews conducted with the representatives of the Quezon and Makati cities as well as persons closely associated with or related to the in-depth study of a sample carbon mitigation project.

2 CURRENT STATE OF CARBON GOVERNANCE AT LOCAL LEVEL BY GHG EMITTING ACTIVITIES

2.1 Local Government Unit: Overview of administrative divisions in the Philippines

LGUs can either be a province, city or municipality. The following descriptions of an LGU provide guidance to the scope of this study:

Provincial Level	-	Provinces are the primary administrative divisions in the Philippines. There are around eighty (80) provinces to date, excluding Metro Manila (which is considered an Administrative Region, and not a province) and each province is further subdivided into cities and municipalities.
Urban City	-	At present, there are 122 cities in the Philippines. Cities are defined as either of the following based on population and income: (a) highly urbanized - population of not les than 200,000 and income of not less than 50million pesos (b) independent components - not highly urbanized but independent of the provincial government. Only 5 cities belong in this category: Dagupan, Cotabato, Naga, Ormoc and Santiago (c) component cities - considered under the jurisdiction of the provinces.
Municipality		Municipalities are distinct from cities in that they are always part of the province in which it is geographically located. To date, there are around 1,512 municipalities throughout the country.

Since the focus of this study is urban planning, urban city and provincial LGUs were chosen as the primary respondents of the survey.

2.2 Climate change policy measures

2.2.1 Policies and Measures

Until recently, climate change polices in the Philippines especially those which aim to reduce GHG emissions, are tucked in as a purely “environmental” concern. Hence, whether at national or local levels, addressing environmental concerns is almost equated to addressing climate change-related concerns.

Prior to the passage of RA 9729 or the Climate Change Act of 2009, there has been an absence of a national policy that squarely focuses on climate change issues. Climate change was addressed through the creation of inter-agency bodies (i.e. Inter-Agency Committees on Climate Change and Philippine Task Force on Climate Change) that coordinates among various executive agencies to facilitate implementation of different environmental laws and policies.

The country has numerous environment laws and policies that are intended for specific purposes, but indirectly promote and lead to a low carbon outcome. Examples of these are the promotion of renewable energy resources through the Mini-Hydro Act or the promotion of proper solid waste management through the Ecological Solid Waste Management Act).

In 2009, the Climate Change Act was passed, which paved the way for the mainstreaming of climate change in national and local development plans and the consolidation of all inter-agency bodies into the newly-created Climate Change Commission. While it mandates the preparation and implementation of a National Climate Change Action Plan and Local Climate Change Action Plans, mitigation is only one of the many components of said plans and is second only to adaptation as a national priority. Hence to date, only a handful of national policies and measures come close to acknowledging and/or directly addressing climate change mitigation. Further, there is yet no expressed policy for accounting GHG emissions and developing GHG inventories as bases for low carbon programs and measures.

Table 1 below summarizes these policies that promote a low carbon economy at the national level. A detailed description of these polices can be found as an Annex of this report. Table 2, meanwhile, gives examples of specific projects that are being undertaken by the various implementing agencies to carry out the policies being implemented by them.

Table 1: Existing low carbon policies by the Philippine national government

Sector	Policies	Specifics
General	Republic Act (RA) 7160	Local Government Code (authority granted to LGUs in implementing waste management and general environment-related policies)
	RA 9729 - Climate change act of 2009	Law that mainstreams climate change issue into national and local government concerns – Implementing Rules and Regulations (IRR) newly enacted and in the process of being implemented

Sector	Policies	Specifics
	Administrative Order (AO 320)	Creates the CDM DNA
	PD 1586 - Environmental Impact Assessment	EIA Exemptions to Projects intended to directly enhance environmental quality or address existing environmental problems (indirectly including GHG mitigation)
	Clean Air, Water Acts	Pollution control (indirectly including GHG mitigation)
Energy	RA 9513	Renewable Energy Act 2009
	DOE Circular No. 2002-08-005	Interim Rules and Regulations Governing the transmission, distribution, and supply of natural gas
	Various Administrative Orders (AO 110, 126,183, 228)	Energy efficiency and conservation measures of the government offices
Transport	RA 9367	Biofuels Act
	EO 290	Natural Gas Vehicle Program
	National Electric Vehicle Strategy	Promotes alternative fuels
	National Environmentally sustainable Transport Strategies	Series of measures/ plans to mainstream sustainable transport policies
Waste Management	RA 9003 – Solid waste management act	Indirectly promotes GHG mitigation opportunities and activities in solid waste management

Table 2: Some Existing low carbon projects by the Philippine national government

Sector	Measures/ projects	Specifics
Residential and commercial buildings	Philippine Energy Efficiency Project (PEEP) of the Dept of Energy	Replacement of less efficient lights to reduce GHG emissions; development of a green building rating standard
	Philippine Chiller Energy Efficiency Project of the Dept of Environment and Natural Resources	Replacement of less efficient chillers to reduce GHG emissions
Transport	Unified Vehicular Volume Reduction Program (UVVRP) of the MMDA	Reduces vehicle volume

Sector	Measures/ projects	Specifics
Waste Management	Composting Project of the Laguna Lake Development Authority	Reduces GHG emissions resulting from anaerobic decay

Meanwhile, in sub-national levels, the Local Government Code promotes devolution of powers and authority from the national government to the LGUs. However, climate change-related policies are considered new developments in the area of environment and thus have to compete with other environmental-related priorities of the LGUs.

The survey results conducted for this study reaffirms this as most of the LGUs have included climate change policies in their local action plans, with the cities being the highest as compared to the provincial and municipal level, but percentage of implementation is low.

Likewise, the survey revealed that waste and transport sectors got the highest in terms of policy measures being implemented, due to the passage of the Solid Waste Management Act 9003 and the Clean Air Act, which underscores the importance of proper enforcement of policies. Transport policies specifically refer to the vehicle emission testing being implemented by most LGUs during the annual car registration process. However, the emission testing does not refer to the carbon dioxide emissions of fuel combustions, but rather on smoke emissions of vehicles.

Though a few LGUs such as Puerto Princesa, Naga, Quezon and Makati Cities are able to implement climate change policy measures, these cities are under special circumstances, and are exemptions rather than representative of all other LGUs in the country.

A detailed tabulation of the results of the survey conducted for this study is found as an Annex to this report.

2.2.2 Level of authority and enforcement in implementing GHG reduction policies & measures

Republic Act 7160 or the Local Government Code of 1991 has transferred the primary responsibility of providing environment-related services from national government to the LGUs. This Law promotes local autonomy and decentralization by granting LGUs with powers, authority, responsibilities, and resources.

At the national level, formulation and enactment of national laws are the primary obligations of the legislative branch of government. The executive branch through the Office of the President and its cabinet members (the different departments or ministries) also possess policy-making authority. In particular, the Office of President has the prerogative to issue policy instruments such as executive and administrative orders and memorandum circulars, which require compliance from its cabinet members.

The government structure at the local level mirrors that of the national in the sense that local policies are enacted by various legislative boards of the LGU (i.e. *Sanggunian Panlalawigan* for provinces, *Sanggunian panlungsod* for cities, and Sangguniang bayan for municipalities). These legislative boards issue resolutions and pass ordinances. Meanwhile, governors and mayors serve as the local chief executive, which also has the authority to issue executive orders.

Policies are assigned to lead executive agencies to implement. Lead executive agencies are typically the administrative departments or special offices created for specific purpose or sectoral concern and granted with national and/or local jurisdiction. Inter-agency groups are sometimes created to support implementation of these policies.

Executive agencies or the inter-agency groups may also design and implement specific measures and projects to carry out the policies assigned to them.

In terms of the level of enforcement, however, implementing agencies are still dependent on institutional priorities, which in turn are dependent on a lot of factors such as budgetary constraints, and leadership (i.e. presence of "champions" that can influence decision-making policies). Some implementing agencies also have overlapping mandates, causing uncoordinated efforts in the level of enforcement.

2.2.3 Implementation Support to LGUs

Even with the devolution of powers and authority from the national government, LGUs in the Philippines face unclear roles, responsibilities and inadequate resources. Likewise, they have limited technical expertise to plan, implement, monitor and evaluate development interventions. [2]

It is for these reasons that various donor agencies and financing institutions such as the Japan International Cooperation Agency (JICA), US Agency for International Development (USAID), GIZ, United Nations Environment Programme (UNEP), United Nations Development Programme (UNDP), the Asian Development Bank (ADB), the World Bank (WB), among others have invested time, effort and resources to assist some LGUs in addressing barriers to implementing climate change-related policies and measures; and promote GHG emissions reductions.

[2] Environment and Rural Development Program, http://www.enrdph.org/program/program.php

Box 1: Some Examples of Implementation Support Provided to LGUs

1. **SWM4LGUs** *http://www.swm4lgus.net/*
   - → Assists 11 LGUs (cities) within Visayas region to implement RA 9003
   - → Assists the National solid Waste Management Commission in addressing national policy gaps and standardize guidelines for implementation RA 9003
   - → Raw data (i.e. waste characterizations) for GHG inventory of waste disposal site emissions

2. **CEnergy Project (USAID)**
   - → Assist (technical assistance, training) LGUs nationwide in doing their entity and community level GHG inventories
   - → Aims to develop and institutionalize GHG reporting scheme among LGUs in the Philippines

3. **ICLEI Local Governments for Sustainability**
   - → Technical assistance to member cities (e.g. Puerto Prinsesa and Quezon Cities) in developing GHG mitigating measures (e.g. Tri-cycle rest day and green parks)

4. **Institutional Training/ technical assistance in partnerships with academia**
   - → Ateneo de Manila University (through Manila Observatory/ School of Government): development of specialized courses; modules to empower LGUs to undertake GHG inventory

However, the fruits of these undertaking are fragmented and only to those LGUs who have or are participating in the program. Urban and more progressive LGUs also typically get the lion's share of these aids. In addition, among the administrative divisions pertaining to LGUs, cities are more preferred than provincial governments or municipal governments.

Until the provisions of the Climate Change Act are implemented, and measures under it materialize, this mode of fragmented support, and donor-driven approach of mainstreaming climate change policies and measures in the LGU level may well be the status quo in the Philippines.

2.3 Carbon Governance

2.3.1 Engagement in National Communication

Various LGUs were consulted and have assisted the Department of Environment and Natural Resources (DENR) in data gathering for the Initial National Communication that was submitted to the UNFCCC, and the 2nd national communication that is about to be submitted. However, LGU participation has only been limited to data on vulnerability and risk assessments and not on GHG-related quantifications. Therefore, it can be concluded that as of present, there is really no participation by LGUs on national GHG inventories.

Interviews conducted with one of the authors of the initial national communication revealed that the approach used for computing GHG emissions have been the top-down approach (using national data, and IPCC default values) rather than bottom up approach.

2.3.2 Engagement in NAMAs

The results of the survey conducted for this study indicates that knowledge of NAMAs among LGUs are very low, ranging from 7% -18% with the city level getting the highest percentage.

Meanwhile, interviews conducted with National Task Force on Climate change (NTFCC) revealed that while NAMAs are gaining more interest in various international and national discussions and conferences, NAMAs are not yet being discussed in the local level. Discussing NAMAs at this stage is deemed as an immature attempt since the government has yet to define NAMAs in the Philippines.

2.3.3 Participation in GHG Inventory Workshops

Level of participation in GHG inventory workshops among the LGUs are likewise low, ranging from 31% - 46% with the city level slightly higher than the provincial level;

As discussed in the preceding sections, climate change related policies, including GHG accounting, are currently third-party initiated, and mostly grant/ aids. Only those LGUs that are able to gain the needed support eventually participate in GHG inventory workshops.

As a result, most LGUs do not have the capacity to conduct GHG inventories within their jurisdictions (3% - 31% with the city getting the highest percentage). In the absence (yet) of the provisions of the Climate Change Act to take effect, participation in GHG inventory and capacity of LGUs to conduct a detailed, and realistic GHG emission profiling are relegated to being voluntary measures undertaken by some LGUs.

GHG inventory capacity building programs such as the Phil GHG Accounting Program (PHILGARP), pilot testing of HEAT software of ICLEI in select areas and the GIZ/ KfW project on solid waste managements for LGUs are examples of implementation support measures that may promote LGUs participation in the near future.

Another capacity building program worth mentioning is the Climate Change Clean Energy (CEnergy) program of the USAID. Currently bring implemented nationwide, it aims to build the capacities of 37 cities for GHG accounting to be completed in one and a half years to support development of respective local climate change actions plans, as mandated by the Climate Change Act.

2.3.4 Barriers to carbon governance

While prestige and proper identification of GHG mitigation and cost-cutting measures can be the reasons why LGUs should be motivated to do GHG inventory, the lack of budget allocation as well as low public awareness on climate change issues are some of the major barriers faced by the LGUs. The limited personnel tasked to handle all the environmental concerns of the cities/municipalities including addressing climate change issues present a big challenge.

The survey also revealed that more pressing matters, such as waste management, disaster preparedness, vulnerability and risk assessment and infrastructures such as flood control are the major concerns of the LGUs in the Philippines. Only fifteen (15) respondents indicated interest to conduct GHG inventory, but not high on their priority list.

2.3.5 Schematic mapping of carbon governance

Table 3 below shows the schematic mapping of carbon governance at the national and sub-national levels in the Philippines. The table shows the capacity of the national government to measure GHG emissions of the identified sectors and the inability of the other sub-national levels to do the same. But the initiative is limited to the measurement of GHG emissions for the purpose of complying with the UNFCCC requirement. There is no existing reporting or monitoring mechanism for GHG emissions in the Philippines. Likewise, there are no mandatory regulations or specific targets on GHG emission reduction in any of the sectors at the moment.

Table 3: Schematic Mapping of carbon governance at national and sub-national levels in selected sectors

Level Sector	National government	Provincial government	City government	Municipal government
Energy Supply	Yes	No	No	No
Industry	Yes	No	No	No
Transport	Yes	No	No	No
Residential and commercial buildings	Yes	No	No	No
Waste management	Yes	No	No	No

2.3.6 Climate change mitigation measures

2.3.6.1 Monitoring of GHG emissions

GHG inventory in the Philippines is only conducted on a national level as part of the national communication being submitted to the UNFCCC. The Philippines has submitted two national communications with the base year of 1994 and 2000 prepared in 1999 and 2010 respectively. The national GHG inventory report included emissions of the following sectors: (a) energy, (b) industry, (c) agriculture, (d) waste and (e) land use, land use change and forestry. The energy sector is subdivided into power generation, residential, industries agriculture, transport, commercial and fugitive emissions.

On the sub-national level, only two LGUs reported knowledge of their GHG emissions, namely, Puerto Princesa and Naga, from the provinces of Palawan and Camarines Sur respectively. The city of Puerto Princesa reported their GHG emissions on energy, agriculture, waste, foresty and land use. The two cities received technical assistance in the development of their respective GHG inventories.

2.3.6.2 Engagement in CDM Projects

Philippine LGU's lack of entity and community level GHG inventory and capacity to do so also reflects in its level of participation in project-based GHG accounting measures, such as the CDM.

CDM participation in the Philippines has largely been limited to private entities/ organizations, with very few projects being attributed to LGUs. To date, only two (2)[3] registered CDM projects

[3] Payatas Landfill Project of the Quezon City Government and solid waste composting project of the different municipalities within Laguna de Bay area

in the waste management sector (collection of methane in solid waste disposal sites and or composting) have seen primary participations of LGUs.

Previous attempts[4] by other LGUs to bank on single CDM projects has been marred by delays and other issues that contributed in their failure to complete registration to the CDM executive board.

Furthermore, a look at project proponents under the CDM programme of activities also revealed low participation of LGUs. Among the four PoAs under validation, LGUs are most likely to be proponents only of a methane capture project of a landfill which it likely owns, hence participating only in the PoA being managed and coordinated by Landbank. Should the Development Bank of the Philippines decide to push through with its PoA on composting, it may well be a potential CDM opportunity for LGUs.

[4] Such as the proposed Mini-hydro project in a municipality in Surigao del Sur and another in Visayas; retrofit of tricycle engines from 2-stroke to Direct injection technology

3 POTENTIAL OF CARBON CREDITING IN SECTORS RELEVANT TO URBAN PLANNING

While the National Climate Change Action Plan (NCCAP), which will serve as the basis for a future Local Action Plans and provide the systems and structures for an effective carbon governance at the local level, remain pending for approval at the national level, successes in the area of carbon governance can be glimpsed through noteworthy efforts of a few LGUs who have been at the forefront of combating climate change issues in their localities.

Of particular interest are two (2) LGUs in Metro Manila who have voluntarily done many efforts to address climate change. These are Quezon and Makati Cities, two of the more progressive LGUs in the Philippines. At present, these LGUs can be considered more of an exemption rather than representative of the current state of carbon governance at sub-national levels in the Philippines. However, it is envisaged that other LGUs will soon follow suit and these two case studies may provide valuable lessons that other LGUs in the Philippines can learn from. These will also provide substantial information on the potential carbon crediting activities that can be undertaken in the sectors of energy supply, industry, transport, residential, commercial buildings and waste management.

The next two sub-sections discuss an in-depth evaluation of the state of sub-national and national government policies and measures for low-carbon development for these cities. The last two sub-sections meanwhile provide examples of carbon mitigation projects implemented within these cities with focus on one successful example of a carbon mitigation project under the clean development scheme.

3.1 Case Study: Quezon City

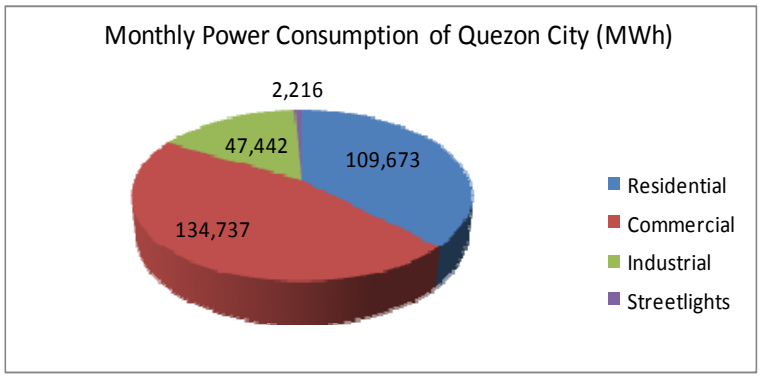
3.1.1 Profile

Quezon City is an urban centre with a land area of 160 square kilometres and the largest city in Metro Manila in terms of population and land area. It is bounded on the north by Caloocan City and San Jose del Monte; on the south by Pasig, Mandaluyong and San Juan; on the west by Manila, Caloocan and Valenzuela; and on the east by Rodriguez, San Mateo and Marikina.

The City has a total population of 2.86 million as of 2008, the biggest among all the cities in the National Capital Region (NCR) and the third biggest LGU in the Philippines. It has four (4) congressional districts, composed of 142 Barangays. The total households are 635,798.

The City received the Galing Pook Award in 2008 for the Management of the Payatas Landfill, the first GHG emission reduction project on landfill in the Southeast Asia. In 2009, Quezon City again received the Galing Pook Award for the management of its park system, the biggest park system in the country. Under the leadership of the previous administration, 166 new parks have been developed, upgraded and transformed. At present, the City has 550 parks aggregating to 226.06 hectares.[5]

The average monthly power consumption of the City is 294,069MWh. The graph shows how power consumption is distributed in Quezon City.



Commercial establishments account for 46% of the total monthly power consumption of the City. The City has 54,748 businesses registered in 2009 with an annual average of 10,686 new businesses for the period 2006-2009.

[5] Quezon City annual Report 2001-2010

3.1.2 Climate change initiatives of Quezon City

3.1.2.1 Climate Change Planning

The present administration of Quezon City manifested its resolve to address environmental concerns by creating the Environment Policy Management Council in-charge of implementing all the policies adopted by the City Government concerning the environment. The Chairman of the Council is the Mayor supported by the heads of the different departments. The Council will also take over the task of the Carbon Finance Capacity Task Team in actively participating in the Carbon Finance Capacity Building (CFCB) Programme of the World Bank and Ecological, Economy and Social Responsibility (ECOS). It shall be responsible for the implementation of the Green Procurement and Green Building Programs of the City.

The Environmental Protection and Waste Management Department (EPWMD), created in 2000, is in-charge of developing and directing the Comprehensive Environmental Protection Program of the City including the delivery and efficient garbage collection services to promote sanitation and prevent environmental pollution.

The Planning Division of the EPWMD is directly responsible for the GHG inventory initiatives in Quezon City. They are undergoing training on Greenhouse Gas Inventory under the Climate Change and Clean Energy Project (CEnergy) of the US Agency for International Development (USAID)[6]. The project aims to provide capacity building for selected local government units (LGUs) on accounting for greenhouse gases (GHG) and the development of a GHG Inventory Management Plan. The team is also participating in the capacity building programme of ICLEI in the use of the HEAT+ software[7] for GHG reporting and management.

Aside from the core team from the EPWMD, included in the GHG Inventory team are members of the Technical Working Group of the Environmental Protection Council composed of the representatives of the different departments primarily for data gathering and initial encoding of data. The Team is subdivided according to the major sources of emissions, namely, (a) Buildings, (b) Street lights, (c) Vehicles, and (d) Wastes. Data quality control and encoding to the excel spreadsheets are being done by the EPWMD technical staff. Though a workshop on HEAT + software has been conducted for the Quezon City team, there is no actual use of the software at the moment. The activity data are encoded in excel spreadsheets. Based on the initial experiences of the team, using the HEAT+ program is not very hard, but encoding the data requirements takes time. The program also includes built-in emission factors and formulas resulting to easier computation. The skills developed under these training programs will enable the City to:

- prepare a community-level GHG inventory of the City including GHG emission management plan;

[6] http://www.cenergy.ph/Task3.php
[7] http://heat.iclei.org/heatplus/

- estimate the GHG emission reductions of mitigation projects implemented;
- develop the City's Local Climate Change Action Plan;

The City wants to take the lead in the preparation of GHG inventory and management of GHG emissions. They plan to eventually require the private sector to do the same.

3.1.2.2 Energy

The promotion of renewable energy power sources and energy efficient technologies are the primary mitigation measures being implemented by the City. They are presently working on three (3) projects:

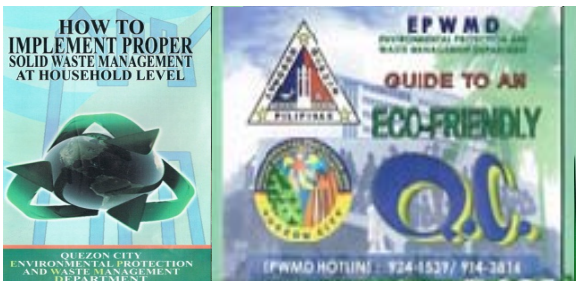
1. Conversion of 22,000 streetlights to LED. This project is being developed with the World Bank providing technical and financial support. There is a plan to develop a Programme of Activities (PoA) to replace identified number of streetlights for the whole of Metro Manila. Quezon City will be the pilot project wherein they estimated to reduce 4,313 tCO2e annually. Their streetlights consume 2,216 MWh of electricity monthly. The project is in the process of evaluating the LED sample most appropriate to the Philippine climate.

2. The City is also consulting on the use of photovoltaic cell to light the walkways of City hall and in 3 big schools.

3. The Mayor is also strongly pursuing the study of using hydro power sources using major rivers in the City for the benefit of the Barangays where the rivers are located. The City will invest in the technology, but the Barangays will own and manage the power plants.

The City has long been practicing energy conservation measures such as turning off lights during lunch time.

3.1.2.3 Households and Schools



The City has prepared several information materials on waste management with some brochures specifically targeting the households. The leaflets contain information on the different types of wastes, how to manage household wastes and the other different programs of the City on waste collection. They also have regular environment education campaign at the Barangay level.

There are also special programs for schools. Aside from the continuous IEC campaign, they implement projects such as the *"hakot bulasi sa eskwela*" wherein the school children are given school supplies and groceries in exchange for the recyclable wastes they bring to the schools using the point system. The City also organizes junior environment police in several pilot high schools. Selected students are "deputized" as enforcers of environmental laws/ordinances that are applicable in schools such as waste segregation, anti-littering and the like. For the college level, the City has organized integrated environmental organizations in universities and colleges as implementers of environmental programs.

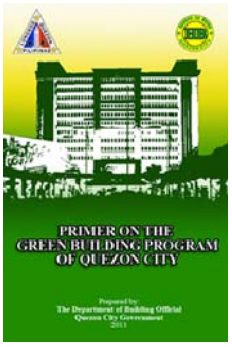
3.1.2.4 Industry

Quezon City launched the "Green Procurement Program" where industries are encouraged to patronize green companies and use green products. The City is taking the lead in implementing this program internally. This program is being implemented in coordination with the "Eco-labelling" Program of the Department of Environment and Natural Resources (DENR) and the Philippine Center for Environmental Protection and Sustainable Development, Inc (PCEPSDI). PCEPSDI has presented Quezon City the National Ecolabeling Programme-Green Choice Philippines, where the purchase and use of ecolabeled products and services will be aligned in the existing procurement processes of the LGU. The said program also complies with Executive Order 301 Series 2004, directing all departments, bureaus, agencies and offices under the Executive Branch of government to establish Green Procurement Program. The NELP-GCP will act as the 3rd party verifier for the government's eco-purchases.[8]

Industries have 5 years to retrofit or comply with the green building standards. The City is also planning to require the private sectors to develop and report their GHG inventory.

3.1.2.5 Building

SP 1917 (2009) provides the detailed guidelines on the "Green Building" policies of the City. It includes specifications on construction or retrofitting of buildings and other structures to meet the minimum requirements of green infrastructure. It also provides for incentives such as building tax credits. The "Green Building" is being coordinated with the Philippine Green Building Council (PhilGBC). A green building standard will be developed for the whole city. PhilGBC presented to the City its BERDE rating system as a tool to measure the environmental soundness of buildings.



Six companies have already applied under this program.

[8]http://www.quezoncity.gov.ph

3.1.2.6 Transport

The policies covering the transport sector are contained in SP1917 (2009). Below are the three policy measures that have been identified to reduce GHG emissions including the status of their implementation.

1) Retrofitting of tricycles to fuel efficient technologies - There was an initial plan to implement the conversion of two-stroke tricycles to four-stroke tricycles. However, a different study showed that four-stroke tricycles are still not efficient. Thus, the campaign has been suspended until further study.

2) Use of either Compressed Natural Gas (CNG), Liquified Petroleum Gas (LPG), bio-ethanol blended gasoline or other forms of bio fuels. - This policy is being implemented on a voluntary basis at the moment.

3) The City General Services Office is directed to install, retrofit and utilize Direct Injection Retrofit Technology - This policy is not implemented

The City piloted the use of e-tricycles and e-jeepneys. However, such program has to be deferred due to some technical problems, such as, low efficiency of the vehicles in terms of kilometers travelled per charging time, low capacity in terms of number of passengers and use in inclined roads, and deficient wiring systems. Further improvement on the technology is being done before another testing is conducted.

In lieu of promoting to convert vehicles to less carbon-intensive fuels, the City is concentrating on promoting good maintenance of the vehicles. The City regularly conducts technical training for the transport sector including the mechanics of vehicle operators in coordination with the transport associations and fleet operators.

3.1.2.7 Waste

The waste sector has the most number of policies issued in connection with environmental protection. Waste management has always been a major concern of local governments in the Philippines. In spite of the signing into law of the Solid Waste Management Act in January 2011, 643 LGUs are still operating open dump sites.[9] Quezon City was acclaimed as the first urban centre to implement the Solid Waste Management Act.[10] They are presently conducting an audit on the enforcement of waste segregation at source with the help of their garbage collectors. The City has incorporated in the garbage collection contracts the need to educate the households in proper segregation and assist in monitoring compliance.

[9] http://emb.gov.ph/nswmc/pdf/facilities/open%20dumpsites.PDF
[10] Quezon City annual Report 2001-2010, p 86

Trucks are marked with **biodegradable** or **non-biodegradable** tarpaulins to indicate the type of waste to be collected upon arrival at the Barangays .

There are 40 Material Recovery Facilities in Quezon City and 25 accredited junk shops to receive and manage the recyclables collected within the City. There are also 3 Barangays who have established their own composting facilities. In some areas, the City collects kitchen wastes at the household level and placed into drums for eventual transport to pig farms in the nearby locality. The City is working with the National Solid Waste Management Commission (NSMWC) in implementing SP1501, wherein private subdivision developers and owners are being required to provide space for composting facilities and accommodate the disposal of recyclables or biodegradables.

The City is also strictly implementing SP1731 (2006), prohibiting the discharge or dispose any untreated waste water, sludge oil, chemical waste at city's rivers, creeks and waterways.

The development and operation of the Payatas Landfill, brought additional revenues to the City aside from addressing several environmental problems. The project initially yielded 344,770 Euros with 38,444 Certified Emission Reduction Units (CERs) available for sale.[11] Please refer to section 3.3 below for an in-depth look at this project.

[11] Quezon City Annual Report 2001-2010, p.84

3.1.2.8 Urban Greening

There are 550 parks within Quezon City and there is continuous effort on the part of the City government to upgrade and transform these areas for the recreational benefit of its constituents. The City sidewalks are being improved to encourage the public to walk to lessen vehicle emissions. Bike lanes are also provided in some areas to encourage the use of bicycles.

The City is also implementing the National Greening Program (NGP) launched by the Department of Environment and Natural Resources (DENR) which seeks to plant 1.5 billion trees in 1.5 million hectares nationwide in six years, from 2011 to 2016.Initial effort started by private group organizations was the planting of trees at the Quezon City Memorial Circle.

3.1.3 Way Forward

The Mayor of Quezon City has taken environment as one of its major thrust during his administration and is closely monitoring the various climate change initiatives of the City. He has committed the participation of the City in the Carbon Cities Climate Change Registry (CCCR) signed in Mexico City during the World Mayors Summit on Climate last November 2010. They already have the policies and programs on environmental protection and most of these policies have been implemented and presently being monitored in terms of compliance. However, the City lacks the capacity to estimate the possible GHG emission reductions caused by these policies and programs and set GHG emission targets. It is for this reason, that the City is presently engaged in GHG inventory capacity building programs to develop the skills to undertake GHG accounting.

3.1.4 Summary of Low Carbon Governance at Sub National Level

Table 4: Low carbon governance of Quezon City local government

Area of Policy	GHG Inv	POLICIES AND MEASURES		POTENTIAL MITIGATION PROJECTS			
		Provisions	Status of Enforcement	Title	Status	Benefits/ Co-benefits	GHG emission target
Climate Change Planning		EO No.3 (2010) establishment of the Carbon Finance Capacity Task Team to participate in the CFCB Programme of the WB and Ecology, Economy and Social Responsibility (ECOS)	Created				
		SP 982 creation of the Quezon City Environmental Protection and Waste Management	Created				
		EO 19 (2010) creation of the Environment Policy Management Council					
		Creation of a Climate Change Division	On-going				
Energy	**No**	**SP 1917 (2009)** • Installation and use of insulation and energy reduction and efficiency	On-going	Conversion of 22,000 street lights to LED	Under negotiation with World Bank; This is	Energy savings due to less electricity consumption	4,313 tCO2e annually for

Area of Policy	GHG Inv	POLICIES AND MEASURES		POTENTIAL MITIGATION PROJECTS			
		Provisions	Status of Enforcement	Title	Status	Benefits/ Co-benefits	GHG emission target
		mechanism;			part of the PoA being developed for all the streetlights in Metro Manila		Quezon City alone
		Promotion of renewable energy power sources	On-going	Use of Photovoltaic Cell for lighting the walkway in City Hall and 3 big schools in QC	Under study	Energy savings	
			On-going	Hydro power sources that will benefit the Barangay where the river is located.	Under study	Cleaner energy source and less energy cost for the concerned Barangay	
		Turning off lights during lunch time	On-going			Energy savings	
Household / Schools	No	Environment education; preparation and distribution of information materials on proper waste management catering specifically to households	On-going			Cleaner environment and better quality of life.	

Area of Policy	GHG Inv	POLICIES AND MEASURES		POTENTIAL MITIGATION PROJECTS			
		Provisions	Status of Enforcement	Title	Status	Benefits/ Co-benefits	GHG emission target
		School programme on waste management – children are given points for bringing recyclable materials; students are being "deputized" to enforce environmental rules implemented in schools.	On-going			Value formation of the children in taking care of the environment.	
Industry	No	EO 301 on Green Procurement	Framework is under development			Less GHG emissions for the manufacturer; Promotion and use of green products.	
		Mandatory compliance to Green Building within 5 years	IRR was released on June 2011; Industries and govt. offices have 5 years to retrofit and			More energy efficient building; less energy consumption; use of renewable energy materials; less	
Building	**No**	**SP 1917 (2009)** o Use of renewable building materials; o Installation and use of insulation and energy reduction and					

Area of Policy	GHG Inv	POLICIES AND MEASURES		POTENTIAL MITIGATION PROJECTS			
		Provisions	Status of Enforcement	Title	Status	Benefits/ Co-benefits	GHG emission target
		efficiency mechanism; o Solid waste and waste water treatment schemes; o Incorporation of green architecture, and reduction systems for greenhouses gases and other volatile organic compounds. o The Green Building Tax Credit	comply with the green building code; 6 companies have submitted their application			wastes	
Transport	**No**	**SP 1917 – (2009)** o Retrofitting of tricycles to fuel efficient technologies;	Not implemented				
		o Use of either Compressed Natural Gas (CNG), Liquefied Petroleum Gas (LPG), bio-ethanol blended gasoline or other forms of biofuels;	Implemented on a voluntary basis			Less emissions, less dependency on imported fuel; energy self-sufficiency	

Area of Policy	GHG Inv	POLICIES AND MEASURES		POTENTIAL MITIGATION PROJECTS			
		Provisions	Status of Enforcement	Title	Status	Benefits/ Co-benefits	GHG emission target
		○ The City General Services Office is directed to install, retrofit and utilize Direct Injection Retrofit Technology.	Not implemented				
		Piloted the use of e-tricycles and e-jeepney.	However, there is a need to improve the technology due to some problems encountered during the pilot testing.	Use of e-tricycle and e-jeep		Less pollution; less cost of fuel	
		Conduct of technical training for the City transport sector including the mechanics on the proper maintenance of vehicles.	On-going			Increase technical skills	

Area of Policy	GHG Inv	POLICIES AND MEASURES		POTENTIAL MITIGATION PROJECTS			
		Provisions	Status of Enforcement	Title	Status	Benefits/ Co-benefits	GHG emission target
Waste Management	**No**	**SP 156 (1994)** – Zero waste resource management systems through total recycling or domestic wastes and mandatory sorting of domestic wastes at source.	There is a 50% target in the reduction of waste volume. 34% has been achieved;			Less wastes produced; better air and water quality; healthier community	
		SP 1707 (2006) – Segregation of waste at the source of all households, institutional, industrial and commercial wastes into biodegradable or non-biodegradable.	The program on waste segregation started last July 2011; It is presently being audited on the Barangay level.				
		SP 1009 (2001)– Establishment and operation of ecological recycling and composting centers.	40 MRFs as of Jan 2011 and 25 accredited junk shops; 3 Barangay composting sites	Composting			
		SP 1501 (2005) – Requiring subdivision developers	More than 50 subdivisions				

Area of Policy	GHG Inv	POLICIES AND MEASURES		POTENTIAL MITIGATION PROJECTS			
		Provisions	Status of Enforcement	Title	Status	Benefits/ Co-benefits	GHG emission target
		and/or owners to provide sufficient space for the installation of composting facilities to accommodate the disposal of recyclables or biodegradables wastes generated by homeowners.	have complied.				
		RA 9003 closing of all open dump sites.	Implemented	The conversion of the Payatas open dumpsite into a controlled waste disposal facility in 2002 under the Clean Development Mechanism.	Registered with the CDM	More organized scavenging activities; Free electricity for streetlights in the area	Projected ERs per year
		SP – 1731 (2006) – Prohibiting any person to discharge or dispose any untreated waste water, sludge oil, chemical wastes city's rivers, creeks and waterways.	On-going				
		SP 1323 (2003) – Adopting a unified approach on solid waste management.	On-going				

Area of Policy	GHG Inv	POLICIES AND MEASURES		POTENTIAL MITIGATION PROJECTS			
		Provisions	Status of Enforcement	Title	Status	Benefits/ Co-benefits	GHG emission target
		SP 1630 (2005) – Authorizing the Environmental Protection and Waste Management Department to undertake the implementation and enforcement of SP 1501.	On-going				
Urban Greening	No	Citywide sidewalk redevelopment program to encourage more people to walk around the city and contribute to the reduction of vehicle emissions.	On-going			Healthier life style; less air pollution; vehicular traffic reduction	
		Revitalization of the City's park system by developing, upgrading and transforming more areas for free and pleasurable recreation.	The city has 550 parks aggregating to some 226 hectares or 1.4% of the City's urban land area.				
		NC-69, S-89 Requiring the planting of trees, prohibiting its destruction and providing penalties.	On-going	'Urban Greening Program" for the Quezon City Memorial Circle ground	On-going		

3.2 Case Study: Makati City

3.2.1 Profile

Makati City is one of the seventeen (17) cities in the National Capital Region. It is bounded on the north by the Pasig River facing the City of Mandaluyong, on the east by the Municipality of Pateros, on the northwest by the City of Manila, and on the south and southwest by the City of Pasay. A highly urbanized city, it is known as the "Business and Financial Capital of the Philippines," home to 40% of the Top 1000 highest earning, most profitable, and largest corporations in the country. It houses 56,578 business establishments, 461 banks, 87 embassies and consulates, and 10 international organizations.

With a total land area of 21.36 square kilometres, it occupies only 4.3% of Metropolitan Manila's total land area. Makati City is divided into 2 congressional districts, each having 20 and 13 barangays (communities) respectively.

As a business district, Makati City's population by day balloons to 3.7 million, but this figure significantly shrinks to 600,000 by night time. The City registered a growth rate of 0.04%.

In 2010, the City boasts of Php10 billion in annual income, which reflects the City's healthy fiscal position by meeting its revenue targets and spending within its budget. Collection from business taxes (Php4.4 billion) and realty taxes (Php3.9) make up most of the City's 2010 income. Overall local revenue collection accounted for almost 93% of the total income of Makati, the remaining 7% is made up of the Internal Revenue Allotment provided by the national government.[12]

[12] Philippines Today (21 January 2011). "Makati Collects P10-B in 2010, still 2nd to QC." Accessed on 29 Oct 2011 [Accessed in: http://www.philippinestodayus.com/news/headlines/makati-collects-p10-b-in-2010-still-2nd-to-qc/]

3.2.2 Climate change initiatives of Makati City

Apart from its economic, financial and commercial prominence, Makati City is also known as one of the most progressive and pioneering LGUs in local governance. Particularly in the field of environment, the City has been at the forefront of environmental management and governance with enactment and strict enforcement of comprehensive policies such as the *Solid Waste Management Code* and *Traffic Management Code* as far back as 2003. Makati City's former Mayor Jejomar Binay, now the current Vice President of the Philippines, is also known to be a strong environmental and climate change advocate.

Many of the city's programs and projects have been institutionalized enabling the new administration of Mayor Jejomar Erwin S. Binay, son of Vice President Binay, to carry out and sustain impacts of past initiatives. For 2012, the local government is eyeing new programs and projects that aim to promote a healthy, clean, and green Makati City.

3.2.2.1 Climate Change Planning

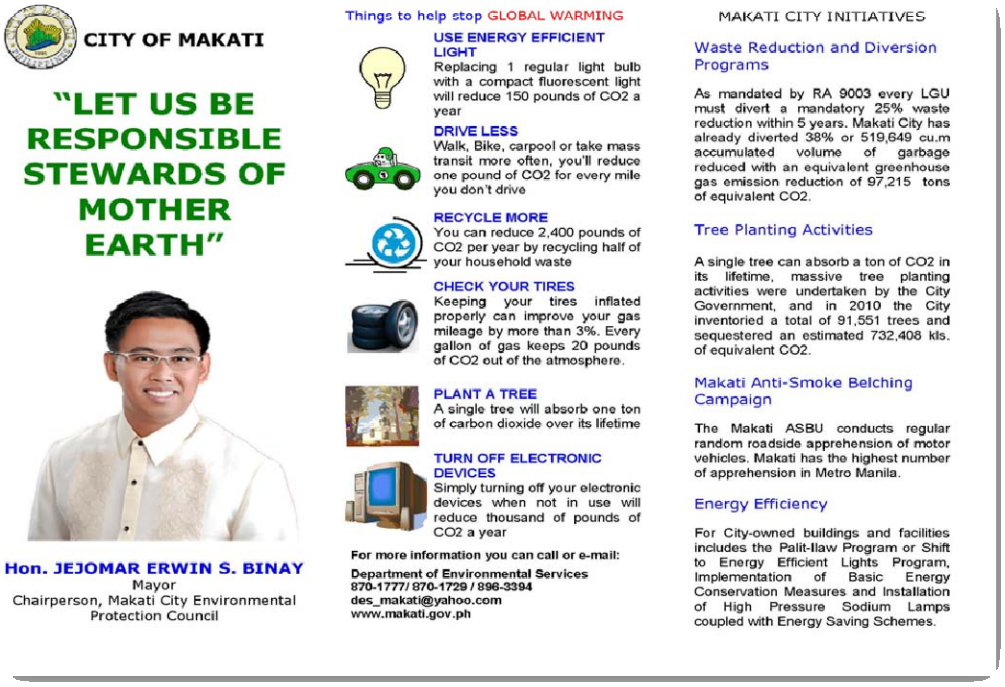
Overall environmental policy planning is undertaken by the City's Environmental Protection Council created in 2006 through an executive order. It is an interagency council composed of representatives from national government agencies, *SangguniangPanlusod* (City Legislative Council), and Ligangmga Barangay (League of Communities). The council is active and meets every second Tuesday of the month.

Since 2004, Makati City has been an active participant in ICLEI's *Cities for Climate Protection* campaign, which aims to "build a worldwide movement of local governments who adopt policies and implement measures that achieve measurable reductions in local greenhouse gas emissions; improve air quality; and enhance urban livability & sustainability." [13] Mitigating climate change is addressed by the city government through three (3) major programs: (a) Solid Waste Management, (b) Energy Efficiency, and (c) Urban Greening. The implementation of these programs is aided by the city's aggressive and sustained efforts to promote public awareness on climate change and other related environmental issues. This is attained by providing internal capacity building for LGU

[13] The World Bank (n.d.), "City Profiles: Makati City, Philippines," *Climate Resilient Cities, A Primer on Reducing Vulnerabilities to Disaster.* Accessed on 29 October 2011 [Accessed in: http://siteresources.worldbank.org/INTEAPREGTOPURBDEV/Resources/573631-1233613121646/makati_extop.pdf

personnel, conducting orientation seminars and awareness campaigns, and celebrating every year environmental events, which include the following:

- Cleanliness Awareness Month (January)
- Earth Day (April)
- Environment Month (June)
- Coastal Clean-up (September)
- Clean Air Month (November)



While Makati City has received technical assistance in developing a greenhouse gas inventory as member of ICLEI, it has yet to account GHG emissions at the community level and set reduction targets. Plans are already underway to develop a local GHG inventory as the city is one of the members of the Philippine League of Local Environment and Natural Resources Officers (PLLENRO), Inc., currently undergoing training on entity- and community-level GHG accounting and management provided by USAID's technical assistance (TA), through the CEnergy Project. The Department of Environmental Services spearheads the preparation of the City's GHG inventory. The process however is done in close coordination with the following units: Office of the Mayor, Department of Engineering and Public Works, Urban Development Department, General Service Department, Economic Enterprise Management Office-Housing Division.

DES observed that ICLEI inventory tools back in 2004 basically followed the standard formula of multiplying activity data with the emission factor, similar to what is taught in the entity-level

GHG accounting and management training provided by USAID. However, DES noted that emission factors they currently use are based on local circumstances compared to default emission factors used in the past. DES also observed that current accounting tools are more detailed since the development of entity-level GHG inventory involved setting organizational and operational boundaries. Under ICLEI, they computed for city-wide GHG emissions. Under USAID's current TA, LGUs are trained to develop both entity- and community-level GHG inventory.

3.2.2.2 Energy

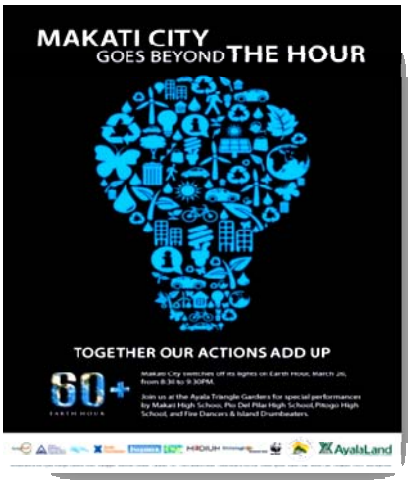
Cross cutting in nature, energy policies are discussed in the succeeding sections of household, industry and transport sectors.

In terms of projects, Makati City implements energy efficiency and conservation measures. Not only did the city government change incandescent bulbs in its markets to efficient lights, it also shifted to High Pressure Sodium (HPS) streetlights. The city will soon phased in light-emitting diode (LED) lamps for street lighting, but in December 2010, Makati City has already pioneered the LED lamps as Christmas lights.

Data on energy sector emissions are currently unavailable. However, according to Makati City, emissions from the city's energy sector have been increasing in the past years, attributed mainly to the growth of its local economy.

3.2.2.3 Household

A policy introduced for Makati residents and homeowners is the city's observance of Earth Hour in 2008. Earth Hour is a global event organized by the World Wildlife Fund and held every year on the last Saturday of March. It involves switching off lights and electrical appliances by households and business establishments for one hour to raise awareness on the need for action to address climate change. In the Philippines, WWF Philippines spearheads the event in partnership with LGUs, private sector, and NGOs. Lights are turned off from 8:30PM to 9:30PM.



At present, the city has no GHG reduction target. However, it is able to track the number of households and other establishments participating, including the number of lights turned off and its corresponding wattage. Makati

City aims to meet a 20% reduction in the number of lights turned off and in 2011, it was able to exceed this target due to an increasing number of households participating in the Earth Hour celebration. (Refer to Table 5)

3.2.2.4 Industry

Energy efficiency and conservation (EE/C) is the main theme of Makati City's low carbon policy in the industry sector. Implementation of these policies is supported by a number of projects. Foremost of which is Makati's partnership with the Department of Energy under PELMATP. This partnership would later on serve as a spring board for the city to promote energy efficient lighting systems (EELs) among the private sector. Over the years, Makati's private sector and NGO partners to include the Ayala Group of Companies, Sunlife Financial Philippines, Makati Commercial Estate Association (MACEA), the Ayala Foundation, Greenpeace, WWF Philippines, and the Philippine Green Building Council (PhilGBC).

Given its strong alliance with private and NGO groups, the city government enjoys their cooperation during Earth Hour Celebration. The increasing number of participation from both household and business establishments doubled the figure of lights turned off for year 2011 (See Table 2). This has allowed Makati City to exceed its annual target of 20% lights turned off from 2010 figures.

Table 5: Comparison of Earth Hour Results from 2009 - 2011

	2009	2010	2011
Estimated No. of Lights turned off	33,833	46,348	92,317
Estimated No. of Watts Saved	2.2 million	3 million	2.037 million
Estimated GHG Emission Reduction	1,297 kgCO2e	1,782 kgCO2e	1,210 kgCO2e

Source: Makati City Government (2011). *Makati City Earth Hour 2011 Accomplishment Report*.

Table 6: No. Lights Turned Off and Equivalent Wattage by Participating Sectors in Earth Hour 2011

	No. of Lights Turned Off	Total Wattage
Private Sector	39,629	1,116,467
Government	11,760	190590
Schools	3,3060	538,637
Barangay	7,868	191,354
Total	92,317	2,037,048

Source: Makati City Government (2011). *Makati City Earth Hour 2011 Accomplishment Report*.

Table 7: Total Yearly Electricity Consumption

Year	Electricity Consumption (KWh)
2003	1,898,211,377.00
2004	1,969,224,335.00
2005	2,015,755,249.00
2006	2,061,160,716.00
2007	2,141,083,492.00
2008	2,176,793,105.00
2009	2,116,694,705.14

Source: Makati City Government (2011)

Promoting EE/C is aided by the production and distribution of communication materials done in partnership with the Makati Environment Foundation and the Rotary Club. Within the office, Makati is also implementing basic energy conservation measures and monitoring energy and cost savings.

3.2.2.5 Building Sector

Makati City is also leading the way for the adoption of green building practices at the local level. In 2007, the City Legislative Council passed a resolution (CR 2007-044) allowing the City Mayor to enter into an agreement with the PhilGBC in promoting green building practices. Negotiations with PhilGBC are ongoing for the development of a green building program proposal. The city government plans to bolster these efforts with the enactment of a Green Building Ordinance.

At the project level, Makati City has been moving phase to phase with the HANGIN Project, which aims to install a data system to monitor air quality and correlate this with air pollution-related illnesses. Now under Phase 2, the HANGIN project is monitoring five new sites, the results of which are being analyzed by the DENR. Said project is implemented in partnership with the Ligang Barangay, Department of Health, Department of Environment and Natural Resources, and University of the Philippines College of Public Health.

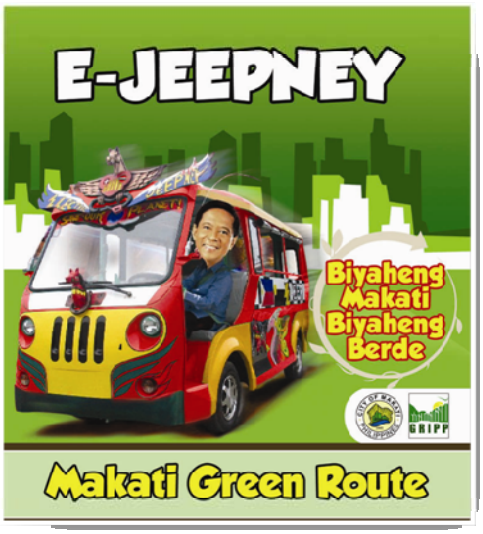
3.2.2.6 Transport

As a business district, Makati faces not only ballooning population at day time, but also traffic congestion as public and private vehicles flock to city especially during morning rush hours. The city government estimates that as many as 800,000 vehicles traverse the city's road networks. To address this, the city government enforces three major policies that aim to reduce air pollutants as well as GHG emissions: (a) a resolution encouraging motorists to use alternative fuels, (b) an ordinance to control vehicle emissions, and (c) Makati City's Traffic Code.

The first two policies are consistent with national laws, the Republic Act No. 9367 (Philippine Biofuels Act) and RA 8749 (Philippine Clean Air Act), respectively. Meanwhile, embedded in the Traffic Code are the following provisions promoting low carbon emissions:

- Promotes efficiency, safety and orderliness in the flow of people and goods through the road network
- Encourages obedience to traffic rules & compliance with speed limits
- Prescribes weight limit for loads/cargos and prohibits overloading;
- Designates routes for trucks and public utility vehicles
- Promotes road worthiness
- Mandates compliance with vehicle volume reduction programs and with exhaust emission standards of the Philippine Clean Air Act

Environmental friendly technologies are promoted for the City's transport sector. First of these is E-jeepney, now actively promoted by the city government by designating a green route where commuters could take a free ride. The city government receives a positive response from other LGUs, and drivers and operators who are interested to adopt and use the same technology. The city government is now gearing up for the second phase involves the use energy of from biodegradable waste to power an environmentally-friendly public transport system. The second technology is biofuels, particularly coco-biodiesel, ethanol, and auto-LPG. Makati City has long before supported the Biofuels Act by producing a 30-second ad played in cinemas of its major commercial centers.



Anti-smoke belching is also a major project of the local government. This involves random roadside emission testing and apprehension and an annual advocacy activity under the Clean Cities Program encouraging motorists to shut off their engine for one minutes (Annual "TigilBuga").

Finally, a private sector-led initiative is the construction of a Makati Pedestrian Network, made up of interconnected pedestrian underpass, elevated walkway, and covered walks.

3.2.2.7 Waste Management

The Makati city government carries a strong commitment towards managing solid wastes as reflected in its policies and programs. In 2003, it has already passed its Solid Waste Management Code, consistent with the national law, Republic Act No. 9003 (Ecological Solid Waste Management Act). This Code provides for the following provisions promoting low carbon practices:

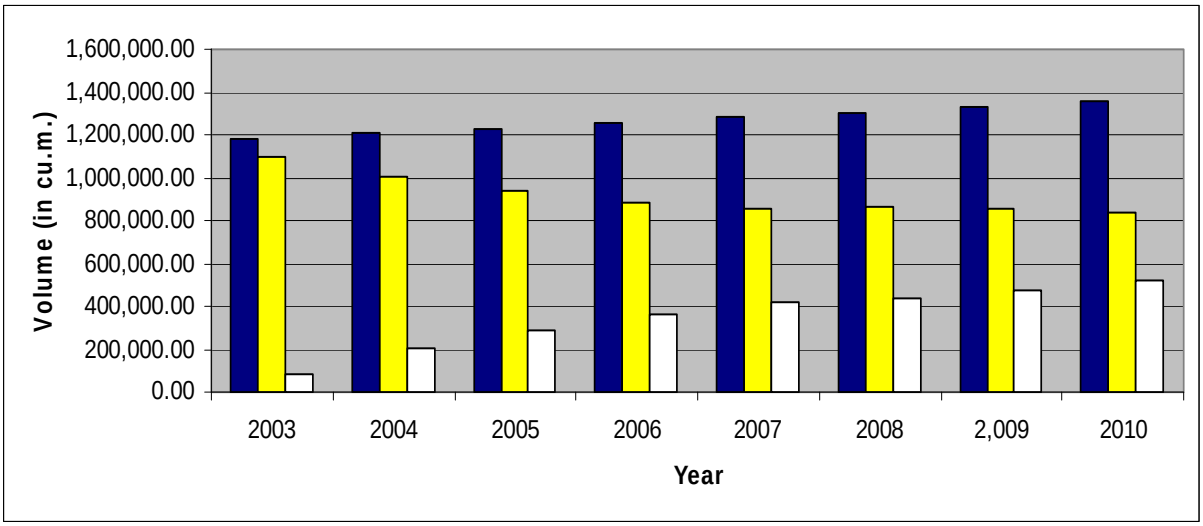
- No burning of waste at source
- Compliance of garbage trucks with emissions standards and smoke belching standards
- Segregation of wastes into bio- and non bio-degradable
- Promotion of the use environment-friendly materials
- Conduct of information, education, and communication campaigns to promote awareness

The city government, as an institution, was further reinforced through the creation of the Makati Solid Waste Management Board tasked to develop Makati's Solid Waste Management Plan and oversee its implementation. Chaired by the City Mayor, the Board has as its members representatives from the Sangguniang Panlunsod, NGO, industry, and relevant national government agencies. Since its creation, the Board has sustained its operations and meets every second Thursday of the month.

Operationalizing the SWM Code is a long line up of programs and projects that the city government has successfully sustained over the years. This includes an expansive Waste Reduction and Diversion program that emphasizes waste segregation and recycling. Barangays are also known to participate in this undertaking and initiate community-based efforts as in the case of Poblacion (Barter Project Recyclables to Goods) and West Rembo (Nutrition & Health Early Education Program, which uses recyclables as tuition of pre-school students). The city continues to promote public awareness and appreciation on the important impact of proper SWM to health and environment. Thus it regularly holds awareness campaigns of SWM I relation to health and sanitation, resource recovery, and air pollution.The city government's street cleaning services ensure the cleanliness of main thoroughfares and secondary roads all year round. It also encourages the public to maintain cleanliness especially on religious occasions that draw vast numbers of visitors such as Holy Week and All Souls Day. To ensure effective implementation of SWM programs, the city government conducts training and deputization of environmental compliance officers.

Policy and program implementation is supported by a yearly tracking not only of volume of wastes generated and reduced (See Figure 1) but also of the sector's GHG emissions (See Figure 2). From 2003-2010, Makati City projected a total waste generation of 10,145,573 cubic meters. Within this period, actual volume of wastes collected by the City was 7,344,553 cu.m., which translates to an overall reduction of 2,801,020 cu.m. or 27.6% of the total projected wastes to be generated. The year 2010 posted the highest reduction at 38.27% of projected waste generation for the year.

Figure 1: Comparative Volume of Garbage waste

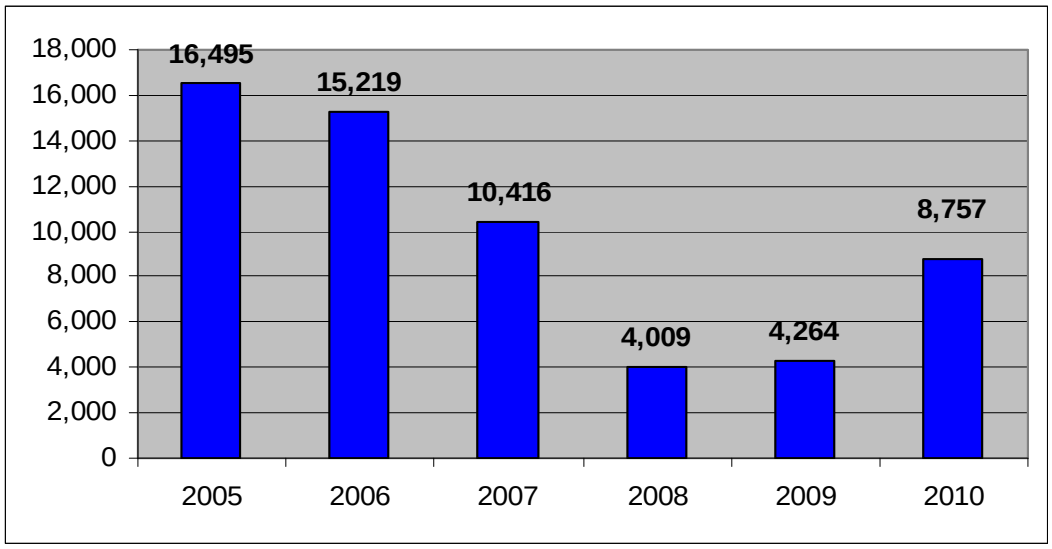


Projected Waste generation	1,182,059	1,205,700	1,229,814	1,254,410	1,279,498	1,305,088	1,331,190	1,357,814
Actual Garbage Collected & disposed	1,094,967	1,005,291	942,538	886,993	857,230	861,707	857,662	838,165
Volume of Garbage Reduced (cu.m.)	87,092	200,409	287,275	367,417	422,268	443,381	473,528	519,649
Diversion Rate (%)	**7%**	**17%**	**23%**	**29%**	**33%**	**34%**	**36%**	**38%**
Ave. Waste Disposal / Day (cu.m.)	2,999	2,754	2,582	2,430	2,348	2,361	2,350	2,296
Ave. No. of Trips / Day	156	152	143	137	129	128	127	127

Source: Almonte, K. (2011). Mitigation and Adaptation: The Makati City Way," (PowerPoint presentation)

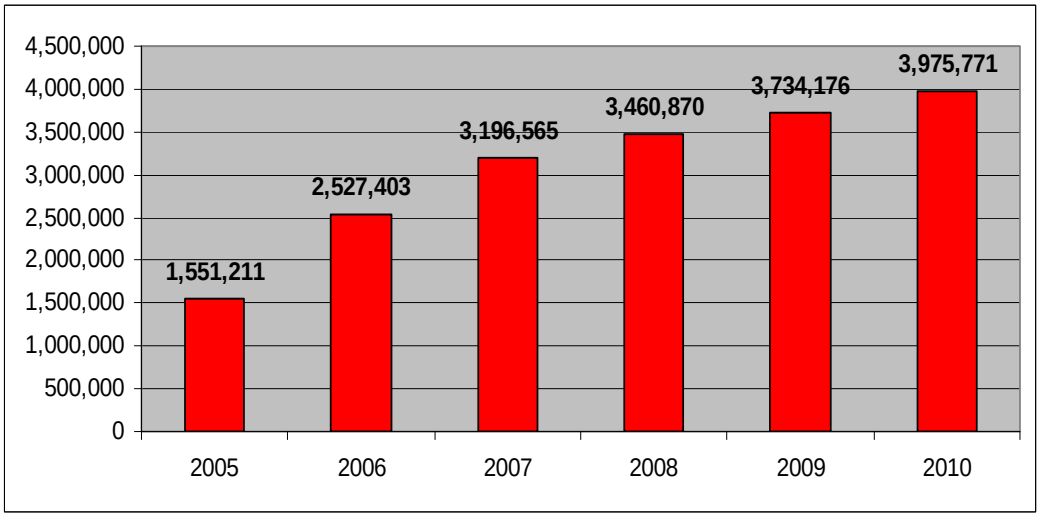
In terms of GHG reduction, Makati has reduced within a six-year period (2003-2009) a total of 88,458 tCO2e from the city's aggressive efforts to reduce waste volume. Added to this, Makati City has also reduced emissions from displaced fuel due to a decrease in garbage collection trips (See Figure 3).

Figure 2: Reduced GHG emissions in tCO2e due to reduced waste



Source: Almonte, K. (2011). "Mitigation and Adaptation, the Makati City Way."

Figure 3: Reduced GHG emissions in kgCO2e due to displaced fuel



Source: Almonte, K. (2011). "Mitigation and Adaptation, the Makati City Way."

For 2012, Makati City will intensify its SWM campaign by introducing recycling project on used tires, gradual phase out of plastics, clean up of waterways, and rolling out awareness campaigns on hazardous and toxic wastes.

3.2.2.8 Urban Greening

Makati City prides itself as a premier urban tourism destination of the country. Its Comprehensive Land Use Plan (CLUP) and Zoning Ordinance provide the basic foundation and spatial framework that will guide, control and regulate the development of the city. The Zoning Ordinance, in particular and as it relates to climate change mitigation, protects the character and stability of residential, commercial, institutional, parks and recreational spaces, and other functional areas within the locality; promotes and protects the health, safety, peace, comfort, convenience and general welfare of residents; and regulates location, use, and density of buildings and land to avoid congestion and enable access to utility services, among others.[14]

Through Clean and Green Awards Program, Makati City is able to attract various institutions by incentivizing their participation through a system of rewards and recognition. In charge of searching the cleanest and greenest environment is the Makati Search Committee on Clean and Green, created in 2006 by virtue of EO 007, series of 2006.

The City's flagship project under this sector is the City Wide Tree Planting project held every year by the LGU and participated in by private sector partners. From 2004-2010, the city has planted a total of 91,551 trees, with an estimated equivalent carbon sequestration of 732,408 kgCO2e (based on ICLEI methodology where 8kgs is the amount of carbon sequestered per tree). The city also implements landscaping and beautification projects. The private sector is encouraged to participate through an "Adopt-a-Barangay" project.

To sustain greening efforts, the city government targets the formulation of a Greening Master Plan and the enactment of an ordinance prohibiting the indiscriminate cutting of trees in the city. At present, the LGU requires individuals and organizations alike to seek permit from the city government of the DENR for cutting down trees.

[14] Makati City Government. City Ordinance No. 2000-078, "An ordinance adopting zoning regulations for Makati City and providing for the administration, enforcement and amendment thereof and for the repeal of all ordinances in conflict therewith, subject to all legal and existing rules and regulations"

3.2.3 Way Forward

The city government's vast environmental portfolio is not without challenges. The local government aims to hurdle the following issues and challenges as it relates to climate change mitigation. [15]

- Establishing a GHG inventory of all other sectors and documenting environmental initiatives of other stakeholders;
- Strengthening its policy in order to reduce GHG emissions (e.g. Green Procurement); and Increasing the awareness of the City Officials, the general public down to the household level on the effects of climate change and on how to reduce GHG emissions.

Overall, the city government of Makati is well positioned to pursue climate change programs and projects. The city has demonstrated its capacity to implement, monitor, and more importantly, sustain its local environmental initiatives. This has been largely attributed to a strong top management backing as well as a strong operational arm through its environmental department and bodies. While Makati City has been consistently monitoring GHG emissions of some of its sectors, it is preparing itself to develop within the next years a community inventory that will encompass all sectors.

[15] Almonte, K. (2011). "Mitigation and Adaptation, the Makati City Way." PowerPoint presentation presented on 18 May 2011 at the Makati Department of Environmental Services Conference Room

3.2.4 Summary of Low Carbon Governance at Sub National Level

Table 8: Low carbon governance of Makati City local government

Area of Policy	GHG Inv	POLICIES AND MEASURES		POTENTIAL MITIGATION PROJECTS			
		Title	Status of Enforcement	Title	Status	Benefits/ Co-benefits	GHG emission target
CLIMATE CHANGE PLANNING	No	**City Resolution (CR) No. 2005-214 –** authorizes the local chief executive to partner with Ligangmga Barangay and other concerned national government agencies on cooperation and creation of the Makati City Environmental Protection Council **Executive Order (EO) No. 003 Series of 2006 –** created Makati City's Environmental Protection Council	Makati City's Environmental Protection Council is active and meeting regularly LGU to formulate and enact a Green Procurement ordinance as a step to strengthen low carbon policy	**3 Major Programs** to reduce GHG Emissions: - Proper Solid Waste Mgt - Energy Efficiency - Urban Greening **Orientation Seminars on CC / IEC or Awareness Campaigns** **Climate Change 101,** capacity building for LGU employees	Ongoing implementation of programs/projects (see next table entries) Held as requested by partners or simultaneously or in conjunction with annual events Held yearly		None

Area of Policy	GHG Inv	POLICIES AND MEASURES		POTENTIAL MITIGATION PROJECTS			
		Title	Status of Enforcement	Title	Status	Benefits/ Co-benefits	GHG emission target
				Annual Environ-mental Events:	Held/celebrated annually		
ENERGY	Yes covering 2003-2009 (based on ICLEI methodology)			**High Pressure Sodium (HPS) Streetlights coupled with energy-saving schemes**	Project completed; Maintained regularly for improved illumination and monitored regularly for savings consumption and costs Phase 2 is phased conversion to LED lamps	Less energy cost	None
				Shift to Energy Efficient Lights Program for 12 Markets in Makati, a projectinpartnership with PHILIPS Electronics and Lighting, Inc.	Completed		

Area of Policy	GHG Inv	POLICIES AND MEASURES		POTENTIAL MITIGATION PROJECTS			
		Title	Status of Enforcement	Title	Status	Benefits/ Co-benefits	GHG emission target
				"grEEn Christmas" Campaign, in partnership with Greenpeace and Ayala Group of Companies; also involves lighting of Solar Parol (Lantern)	Conducted in 2009		
HOUSEHOLD	No	**CR No 2008-056** – encourages observance of Earth Hour in residences and business establishments	Enforced	**"Earth Hour"** in partnership with WWF Philippines	Observed/celebrated annually LGU monitors energy savings and emissions reduced; With increasing participation from households, LGU has consistently exceed its annual targets	Less energy cost	None
INDUSTRY	No	**CR No. 2007-025** – urges all sectors to support the *PalitIlaw* (Shift to Energy	Enforced	**Philippine Efficient Lighting Market Transformation**	LGU continuously promotes EE/C among	Less energy cost	

Area of Policy	GHG Inv	POLICIES AND MEASURES		POTENTIAL MITIGATION PROJECTS			
		Title	Status of Enforcement	Title	Status	Benefits/ Co-benefits	GHG emission target
		Efficient Lighting Systems) Program and to use CFLs for energy efficiency and conservation **City Resolution (CR) No 2008-056** – encourages observance of Earth Hour in residences and business establishments	Enforced	**Project (PELMATP)**, a project in partnership with the Department of Energy **Promotion of Energy Efficient Lighting Systems (EELs) to the Private Sector** **Memorandum of Cooperation (MOC) Signing With Greenpeace, Ayala Foundation, Macea, Ayala Land Inc., &PhilGBC to conduct energy audit of selected facilities** **Production of communication materials**	government facilities and the private sector Some private sector companies introduced initiatives Completed; LGU has energy audit of its new city hall building Conducted annually in partnership with Makati Envi Foundation and the Rotary Club		

Area of Policy	GHG Inv	POLICIES AND MEASURES		POTENTIAL MITIGATION PROJECTS			
		Title	Status of Enforcement	Title	Status	Benefits/ Co-benefits	GHG emission target
				Basic Energy Conservation Measures involving: - Reduced operation of air conditioning units - Turning off lights during lunch breaks - Reduced number of lights turned on **"Earth Hour"** in partnership with WWF Philippines	Ongoing implementation and monitoring Observed/celebrated annually	Less energy cost	None
BUILDING	No	**CR No. 2007-044 –** authorizes the local chief executive to partner with the Philippine Green Building Council for the promotion of green building practices and ensure sustainable built environment	Negotiations with PGBC ongoing for a green building program proposal Next step is the enactment of a Green Building	**Healthy Air in Good Indoor Environment (HANGIN)** Project – aims to establish and install a data system to monitor ambient air quality in relation to air pollution related illnesses	Phase 1 of monitoring 5 sites completed. Phase 2 ongoing; Monitoring of 5 new sites. Sites change every year. Next year, monitoring will return to Phase 1 sites.	More energy efficient building; less energy consumption; use of renewable energy materials; less wastes	None

Area of Policy	GHG Inv	POLICIES AND MEASURES		POTENTIAL MITIGATION PROJECTS			
		Title	Status of Enforcement	Title	Status	Benefits/ Co-benefits	GHG emission target
			Ordinance		Phase 3, analysis of monitoring results by DENR, ongoing		
TRANSPORT	No	**CR No. 2005-158** – urges the use of alternative fuels (natural gas, coco methyl ester, ethanol, auto gas, etc) for vehicles within Makati City **City Ordinance (CO) No. 2004-032** – enacts the Makati City Vehicle Emission Control Code **CO No. 2003-089: Makati City Traffic Code,** a comprehensive policy providingrules and regulations for traffic management	Enforced Enforced Enforced Next step is the possible introduction of Bus Rapid System by a private sector partner and the Makati Bikeway Project by the	**Introduction of E-Jeepney** (electric jeepney) **Clean Cities Advocacy Program: Annual "TigilBuga" (Stop Smoke Belching),** involves1-minute engine shut off in strategic places in the City	Introduced in July 2007, commercial route launched last July 2008 and Green Route re-launched last November 2009; LGU receives high interest from other LGUs, and operators/ drivers to adopt the technology Celebrated annually since 2007	Less energy cost, less air pollution, less dependency on imported fuel; energy self-sufficiency	None

Area of Policy	GHG Inv	POLICIES AND MEASURES		POTENTIAL MITIGATION PROJECTS			
		Title	Status of Enforcement	Title	Status	Benefits/ Co-benefits	GHG emission target
			city government	**Makati Anti-smoke Belching Campaign,** involves random roadside emission testing and apprehension in the city's strategic areas	Ongoing		
				Makati Pedestrian Walkway Network	Initiated by the private sector; Completed; Ongoing monitoring of use	Less fuel cost, less pollution, good for the health of the pedestrian	
				30-Second Cinema Ad on Biofuels	Completed in 2008 to support passage of Biofuels Bill		
WASTE MANAGEMENT	Yes (based on ICLEI methodology)	**CO No. 2003-095: Solid Waste Management Code** **EO 001 Series of 2005** – creates the Makati City Solid Waste Management	Enforced through a host of programs/projects The SWM Board is active	**Waste Reduction and Diversion Program:** Makati City Solid Waste Segregation & Resource Recovery Program	Ongoing since 2006	Less wastes produced, Less space needed for the wastes, less air and water	None

Area of Policy	GHG Inv	POLICIES AND MEASURES		POTENTIAL MITIGATION PROJECTS			
		Title	Status of Enforcement	Title	Status	Benefits/ Co-benefits	GHG emission target
		Board	and meets regularly	ANGELS (Agents of New Generation Environment Lovers and Saviors) of Cleanliness Program	Ongoing since 2006	pollution, better environment	
				3Rs (Reduce, Reuse, Recycle) in Christmas	Ongoing since 2006		
				Makati City Weekend Waste Market	Ongoing since 2006		
				Community Based Recyclables Market	Ongoing since 2008		
				City Hall Recyclables Collection Drive	Ongoing since 2006		
				Community-based Projects	Ongoing Held annually		

Area of Policy	GHG Inv	POLICIES AND MEASURES		POTENTIAL MITIGATION PROJECTS			
		Title	Status of Enforcement	Title	Status	Benefits/ Co-benefits	GHG emission target
				SWM Advocacy Seminars and Awareness Campaigns on SWM in relation to health, sanitation, resource recovery, and air pollution **Training and Deputization of Environmental Compliance Officers** **Regular and Occasion-based Street Cleaning Services**	Ongoing Ongoing		
URBAN GREENING	Yes (based on ICLEI methodology of per tree carbon	**Comprehensive Land Use Plan**, which provides the spatial framework of the overall development plan of the city and integrates various sectoral concerns into a plan that guides the location, amount, intensity, and type of	Implemented thru the Zoning Ordinance	**City Wide Tree Planting**	Done yearly by LGU and private sector partners during celebration of Earth Day, Environment Month, and Harbour day.	Better air quality; better environment	None

Area of Policy	GHG Inv	POLICIES AND MEASURES		POTENTIAL MITIGATION PROJECTS			
		Title	Status of Enforcement	Title	Status	Benefits/ Co-benefits	GHG emission target
	sequestration)	activities that can take place throughout the city **CO 2000-078: Zoning Ordinance-** Law that guides, controls and regulates development of the city in accordance with its *Comprehensive Land Use Plan* **EO 007 Series of 2006** – creates the Makati City Search Committee on Clean and Green to institutionalize a system of incentivizing efforts of various institutions in maintaining a clean, healthy, and green environment **CR No. 95-004** – declares the month of January as Cleanliness Awareness Month	Enforced The Clean and Green Committee is active and searches yearly for cleanest and greenest public facilities. Observed annually	**Clean and Green Awards** **Landscaping and beautification projects** **Joint Public-Private Community Beautification Program** ("Adopt a Community")	LGU requires application of permit for cutting of trees in the city LGU to draft Makati City Greening Master Plan and to enact ordinance prohibiting the indiscriminate cutting of trees Ongoing Ongoing Ongoing	Well planned community	

3.3 Case Study: Quezon City Controlled Disposal Facility Biogas Emission Reduction Project "The first CDM landfill gas to energy project in the Philippines"

3.3.1 *Background*

The project is a CDM registered project which aims to showcase Quezon City's compliance to RA 9003.

It involves the extraction, collection, processing, flaring and utilization of biogas generated at the controlled dumpsite facility.

The project is located at Area 2, Barangay Payatas spanning over 22 ha. of land.

The project is also the first of its kind in the Philippines in the area of waste management. Under the Philippine rules and regulations, controlled dumpsites such as this project do not require the management of the biogas emission,, so the Quezon City LGU does not need to undertake this type of project. However, because of the City's commitment and the availability of private support, the project came to be implemented. Thus, apart from being a showcase project, it also is a concrete example of success in public-private partnerships.

Box 2: Payatas Landfill Project at a Glance

CDM Project Title: Quezon City Controlled Disposal Facility Biogas Emission Reduction Project

Location: Area 2 Barangay Payatas (22 ha of land)

CDM Letter of Approval: Issued April 25, 2007

CDM Registration: February 1, 2008

Commissioning of Biogas Plant: March 2008 (4,200 MWh of electricity)

Electricity Usage: Plantsahan ng Bayan (free for use in ironing of clothes of the communities) and to power streetlights

Total Credits claimed to date: 38,444 CERs

Major Players: Quezon City LGU – proponent; owner of facility
Pangea Green Energy Philippines (private entity) - Project developer (including operations and CDM monitoring)
Payatas Residents/ Communities – direct Local beneficiaries

The disposal facility processes 1,100 tons of wastes daily (other biodegradable wastes are diverted to nearby composting facility within the area) . 411 dump trucks are hired everyday to collect and bring these wastes from various parts of the city to the dumpsite. 54% of the total wastes are biodegradable, 23% residuals and 16% recyclables.

3.3.2 *Project milestones*

Pre-project Scenario

The payatas landfill site has been operational since the 70s, taking on wastes from the various cities in Metro Manila.

It was closed however in July 2000 due to a tragic incident that saw the dumpsites collapse. The dumpsite was later reopened to cater only to the city's disposal needs.

In response to this, the LGU created PAYATAS OPERATIONS GROUP, a special unit under the Environmental Protection and Waste Management Department to manage, operate and secure the dumpsite. It is through this group that the idea of a public-private partnership was first explored.

In 2004, IPM Environmental services, a private firm, was contracted by the LGU to operate, upgrade, ensure the safety and improve on the whole dumpsite.

Also, preparations are being undertaken to check the potential of a biogas utilization project following CDM rules. In May 2006, Pangea Green Energy Philippines Incorporated (with its parent company Pangea Green S.r.1) expressed its interest to develop and implement the Project for Quezon City. After a thorough evaluation of the technical and financial capability of Pangea, Quezon City granted the right to fully and exclusively implement, manage and operate the biogas utilization project through the signing of a Memorandum of Agreement (MOA) in February 14, 2007.

Meanwhile, In 2006, a final closure plan for the whole dumpsite was approved by the Quezon City LGU in compliance with DENR issued rulings for RA 90 03. Incorporating the plans that were already in place since 2004, the final plan included among others, the following: slope reprofiling, construction of benches, greening of the slopes both for aesthetic appeal and prevention of erosion, improving the drainage systems, creation of access roads and the addition of composting facility to cater to those wastes that are slowly being diverted away from the dumpsite.

CDM Project Scenario

Pangea was given the right to extract, collect and process the biogas produced by the facility for a minimum of 10 years in order to mitigate the pollution caused by the biogas emissions. Obligations of Pangea under the MOA include the planning, building, management, operation and maintenance of the biogas extraction, collection and processing plant. Pangea will provide the necessary investment to accomplish its obligations.

The Quezon City LGU is the owner and operator of the disposal facility. As such, the LGU will be responsible for the overall management of the disposal facility according to the Philippine laws, rules and regulations, and ensure Pangea's uninterrupted implementation of the CDM Project.[16]

Under this arrangement, CERs generated by the project will be shared by Pangea and the Quezon City LGU.

The project was issued a revised Certificate of Non Coverage for its environmental impacts assessment on March 2007[17].

Pangea also consulted with the Department of Energy, Department of Environment and Natural Resources on the national level and with the Quezon City local government unit. In cooperation with the Payatas Operations Group (POG), Pangea invited stakeholders from the local community to a public consultation on February 23, 2007.

The project applied for a letter of approval after the stakeholders' consultations meetings were conducted, and was given the approval on April 15, 2007 by the Philippine DNA.

The project was registered in Feb 2008 as a CDM project. The biogas plant was commissioned in March 2008, and first CERs were issued for reductions generated starting 1 Feb until 31 Aug 2008. 2nd monitoring period covers period from September 1 2008 to June 2009.

[16] CDM PDD version 11 dated 30/11/2007

[17] An new certificate has to be procured based on the designs of Pangea. Previous Certificate was given to the project based on the designs of the Philippine National Oil Company, one of those who were previously interested in pursuing the project

3.3.3 *Stakeholders of the project and capacity to monitor GHG*

Table 9: Stakeholders of the Project

Stakeholder		Role/s
LGU – project proponent	Payatas Operations Group	Manage, operate and secure the dumpsite; oversee the implementation of Pangea of the Facility as well as the implementation of other projects (such as composting) within the Payatas area ;
	Environmental Protection and Waste Management Department (EPWMD)	
Private Partner/s	Pangea Green Power Philippines	planning, building, management, operation and maintenance of the biogas extraction, collection and processing plant for a minimum of 10 years
Beneficiaries	Communities in Payatas	Participate in dialogues and other activities (i.e. organization of scavengers etc), secure the area and the projects (perimeter lights/ streetlights)

While Pangea Green Energy S.R.L. (mother company) is in charge of the emission estimates in the CDM project design documents, the CDM Project management is under the responsibility of the local office (Pangea Green Energy Philippines). The local office holds a project management office within the landfill area and is composed of a plant manager, an assistant plant manager, resident engineer and asst engineer, all Philippine Nationals that are trained and equipped to carry out the day to day implementation of the project. The mother company provides technical support and advice, and serves as the technical director and quality assurance provider for the project.

As required under the monitoring plan for the project, the key personnel of the project management office are trained by the technicians of Pangea and/or by the technology providers (e.g. of the biogas analyzers, biogas technology etc). Furthermore, the plant manager who is Filipino draws up a yearly training needs assessment and plans the needed training for the staff in order that they be equipped to monitor, measure and check & detect possible problems and calculate emission reductions (through standardized worksheets).

3.3.4 *GHG Emission reduction Methodology*

In accordance with CDM methodology, the project applies the following:

- ACM0001 – "Consolidated baseline methodology for landfill gas project activities"
- AMS-I.D. "Grid connected renewable electricity generation"

Furthermore, following the CDM additionality tool , the project uses benchmark analysis to prove its additionality. While the project developer is a local government, the partner (Pangea) is a private entity and using IRR is appropriate to judge the viability and the selection of investments.

As discussed above Pangea handles the CDM implementation of the project, including computations and emissions monitoring. The LGU oversees Pangea in its conduct of these activities, therefore there is no real need for the LGUs to specialize in GHG computations for their project. However, the basic skills and knowledge needed for them to oversee project implementation is essential.

3.4 Other examples of low carbon mitigation projects implemented by Quezon and Makati Cities

As mentioned in section 2.3.1.6.2 above, there is a low participation rate for LGUs in CDM. This finding can be further extended to include participation in low carbon development projects, in general.

Recognizing the need for increased participation of LGUs in these kinds of project, various donor agencies have embarked in partnerships with these LGUs on low carbon mitigation project affecting a larger number of the LGUs population. Please see discussions above for a thorough list of all projects of the LGUs. The table below presents some examples of the other projects with donor-agency support and their roles.

Table 10: List of other projects with potential for increased LGU participation in carbon governance

Sample Project	Description	Partner institution	Role of Partner Institutions
Conversion of 22,000 streetlights to LED (Quezon Cty)	Pilot project on energy efficiency by replacing existing streetlights with LED within the LGU	World Bank / World Bank Institute	Technical assistance - - Provides GHG emissions calculation, feasibility reports, advisory in choosing technology, planning LGU finances the project

Sample Project	Description	Partner institution	Role of Partner Institutions
Conversion of streetlights to HPS Makati City)	Energy efficient technology through use of high pressure sodium lights	ICLEI	Technical assistance LGU computes for emissions using the ICEI tools
Implementation of Green Building Policy of the City (Quezon City and Makati	Rating system/ tax incentive for new and existing buildings	PhilGBC other industry players	PhilGBC provided their rating system for the LGU to adopt Quezon City LGU initiated tax incentives pro-rated based on the building's rating system; LGU also incorporated LEEDs standard in their rating system Makati LGU still to enact the ordinance which outlines the rating system and the incentives
E- jeepney (Makati Cities)	Public transportation using electricity	Private company	Technology provider ; project implementor Makati LGU oversees the implementation of the project
Urban greening (tree planting) – Makati City	Carbon sequestration project in the urban setting	Private institutions operating in Makati	Private sectors adopt a barangay where they undertake tree planting activities Makati LGU monitors GHG emission sequestered and computes using tools provided by ICLEI

4 LOOKING FORWARD: FACTORS TO GENERATE AND USE DATA NEEDED FOR CARBON MANAGEMENT

The combined results of the survey and the research on the case studies presented in the preceding section indicate that as of today, the level of carbon governance in the Philippines, as measured by the pre-identified indicators of the Study, is low.

The cases of Quezon and Makati cities demonstrate that there are a number of projects particularly in energy efficiency (e.g. streetlights, green buildings) transport (e.g. shift to electric vehicles) and wastes sectors that have the most potential for LGUs to implement for promoting low carbon governance at the local level.

Box 3: Sectors and Projects with most potential for LGUs to implement low carbon governance in their localities

Sector	Potential Projects	Possible Drivers for success
Buildings	Energy efficient "green" buildings	Tax incentive; mandatory Rating system; compliance with local ordinances
Energy demand	Streetlights retrofit or replacement to more efficient technologies	Lower operating bills ; short payback period for project;
Transport	Shift to efficient fuels or shift to efficient technologies (conversion from 2-stroke to 4 stroke tricycles)	Mandatory compliance with transport ordinance; Penalties for violation of emission standards; Financing support to transport operators/drivers
Waste	Landfill gas collection; composting	RA 9003 implementation Promotion of livelihood from composting and recycling

The study also hinted that the potential to strengthen carbon governance at LGU levels is relatively high, and this potential may be reached in the coming months or years. The presence of a number of on-going local initiatives, and donor-funded undertakings indicate that there is movement toward a more governed carbon management in the near future.

The concrete examples shown by the Quezon and Makati Cities indicate that the Philippines is journeying towards a stronger carbon governance.

GHG inventory

It is worthy to note however, that the beginning of a journey towards low carbon governance is the ability of the LGUs to measure, report and verify the GHG emissions attributed to them and to the stakeholders (businesses, industries, people) within their jurisdictions. Thus capacity building and assistance is extremely needed in this area – for LGUs to properly account for their emissions – both in the national and sub-national levels.

Particularly, assistance will be needed in implementing the Climate Change Act, a unifying law and framework for climate change policy in the Philippines. Once approved, the National Climate Change Action Plan (as mandated to be created under the Act) will be the basis for LGUs to develop local climate change action plans.

LGUs will particularly need assistance in monitoring, reporting and verifying their emissions as wells as in identifying mitigation opportunities at the local level. The fact that the Philippines is an archipelagic country and diverse in culture makes the need for a more tailor-fitted approach to identifying mitigation options that is apt to each of the sub-national governments involved.

Climate Change Champions

A point to highlight also is the need to nurture a succession of "champions" within the LGUs who can promote and decide to implement low carbon governance policies. The case studies have shown that champions are needed to see low carbon projects implemented. There should be champions within the decision-making body (ie. Mayors, elected officials) as well as champions within the implementing staff. Capacity building activities should be apt to target the needs of each of these players.

Carbon Markets other than CDM

There is not much LGU participation in the CDM markets, except for those projects in the solid waste management sector. Uncertainties in the CDM market further limit future LGU participation except under Program of Activities (PoA).

There are only a few potential PoAs where LGUs may participate: Landbank-initiated PoAs on Landfill, animal waste managements; Development Bank of the Philippines' composting project; DENR's chiller replacement program and PoAs on hydro-electric power. When these projects get registered, LGUs can reassess their options to enroll their projects under these CDM approaches.

In the absence of a CDM market, other partnerships between potential buyers and the Philippine LGUs must be explored, particularly focusing on promising sectors for urban planning.

ANNEXES

Annex 1: Survey Questionnaire

Dear Respondents,

Climate change, more commonly referred to as global warming is one of the most pressing issues that we face today. Recent reports prepared by scientists confirm that the increasing concentration of greenhouse gases (GHG) in the atmosphere is the cause of global warming.

Both public and private sectors are already adopting programs and projects to address this global problem. Of particular interest is how the local government units (LGUs) are responding to this challenge through mitigation[18] or activities that reduce GHG emissions. It is for this reason that the Ateneo School of Government (ASoG) in partnership with the Institute for Global Environmental Strategies (IGES) is doing a study which aims to evaluate the capacity of the local government units in implementing carbon policies and programs as a key step towards measuring, reporting and verifying reduction of GHG emissions in relevant sectors.

We hope that you can take a few minutes of your time to fill out the following survey questionnaire. Your answers to this survey will help us make a meaningful and reliable assessment of LGU capacity in the Philippines and provide appropriate recommendations that may assist them in the future. Kindly return to us the accomplished survey on or before **10 August, 2011.**

Name and location of the local government unit: _____

Please check applicable income classification per DOF No. 23-08: [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [ ] 6

Name of Respondent: _____Contact/Mobile Number: _____

Position/Designation: _____Email address:_____

Department/Office: _____ Fax Number: _____

Section 1: Awareness on climate change

1) Have you attended seminars, workshops, conferences on climate change? [ ] Yes [ ] No
2) Estimate the degree of awareness of **your local government unit** on climate change issues.
   [ ] Low *(We have heard about climate change.*)
   [ ] Limited *(We understand what climate change is, but we need to know more before we act on it.*)
   [ ] High *(We know enough about climate change and we already initiated policies and program.*)

3) Please choose 5, and rank from 1-5 according to the present priorities of your LGU.

	Solid waste management		Water supply		Conducting GHG inventory[19]
	Disaster preparedness		Transportation		Vulnerability & risk assessment

[18] Mitigation projects are project activities that lessen, or contributes to a reduction of greenhouse gas emissions in the atmosphere

[19] GHG inventory is the measurement of the amount of GHG emissions and identification of its sources

	Renewable energy		Forest management		Infrastructure
	Energy efficiency		Flood control		Air Quality Management

Section 2: Responding to climate change

4) Is addressing climate change included in any of your local plans? [ ]Yes [ ] No

5) Do you have policies and/or ordinances addressing climate change? [ ] Yes [ ] No

6) Do you have policies and/or measures to reduce the GHG emissions of the following sectors?

[ ] Yes (If yes, please check applicable sectors) [ ] No (If no, please proceed to #9)

[ ] Energy supply [ ] Residential and commercial buildings [ ] Waste

[ ] Industry [ ] Transport and its infrastructure [ ] Others: _____

7) Please describe the status of these climate change policies.

[ ] Policies have been defined, but no definite programs of implementation yet.

[ ] Resources have been allocated and implementation procedures are in place.

[ ] Most of the policies and programs have been implemented

Other comments: _____

8) If applicable, please rank the following reasons for low implementation.

[ ] Lack of funds/budget [ ] Lack of public awareness/ support

[ ] Lack of support from management [ ]Not the priority of the LGU

[ ] Not enough manpower [ ] Others: _____

9) Do you have knowledge on the following?

a. Clean Development Mechanism (CDM) [ ] Yes [ ] No

b. Greenhouse Gas Inventory [ ] Yes [ ] No

c. Nationally Appropriate Mitigation Action (NAMA) [ ] Yes [ ]No

10) Have you participated in a GHG inventory workshop or conference? [ ] Yes [ ] No

11) Do you have the capacity to conduct GHG inventory for your LGU? [ ] Yes [ ] No

12) Does your LGU know the amount of GHG emissions in your area of jurisdiction? [ ] Yes [ ] No

[ ] Yes (If yes, please answer 12.1 to 12.4 questions) [ ] No (If no, please proceed to #13)

12.1) Does you LGU know the GHG emissions of the different sectors (energy supply, industry, waste, residential and commercial building, transport) [ ]Yes [ ] No

12.2) Does your LGU have a specific target to reduce GHG emissions? [ ] Yes [ ] No

12.3) Have you gotten any assistance in conducting the GHG inventory? [ ]Yes [ ] No

12.4) If yes, please indicate the name of the group who provided assistance:

_____

13) Will your LGU be and interested to conduct a GHG inventory? [ ] Yes [ ] No

14) Do you have an environmental officer in your LGU? [ ] Yes [ ] No

Thank you for your cooperation.

Annex 2 : Summary of Survey Results

	Questions	Province		City		Municipality		OVERALL	
		Respondents: 12		Respondents: 39		Respondents: 29		Total Respondents:80	
			%		%		%		
1	Is addressing CC included in your plan?								
	Yes	9	0.75	37	0.95	24	0.83	70	0.88
	No	1	0.08	2	0.05	5	0.17	8	0.10
2	Do you have policies on CC?								
	Yes	6	0.50	32	0.82	20	0.69	58	0.73
	No	6	0.50	5	0.13	9	0.31	20	0.25
3	Do you have policies to reduce GHG emissions?								
	Energy	2	0.17	9	0.23	2	0.07	13	0.16
	Industry	1	0.08	9	0.23	1	0.03	11	0.14
	Residential and Commercial bldgs	1	0.08	16	0.41	3	0.10	20	0.25
	Transport	3	0.25	21	0.54	4	0.14	28	0.35
	Waste	5	0.42	25	0.64	13	0.45	43	0.54
4	Please describe status of policies								
	Policies have been defined	3	0.25	9	0.23	8	0.28	20	0.25
	Resources have been allocated	2	0.17	10	0.26	5	0.17	17	0.21
	Policies have been implemented	2	0.17	12	0.31	4	0.14	18	0.23
5	Reasons for non-implementation								
	Lack of Budget	5	0.42	18	0.46	15	0.52	38	0.48
	Lack of Manpower	1	0.08	12	0.31	7	0.24	20	0.25
	Lack of public awareness	2	0.17	15	0.38	9	0.31	26	0.33
	Not the priority of the LGU	1	0.08	1	0.03	2	0.07	4	0.05
6	Knowledge of CDM								
	Yes	7	0.58	27	0.69	11	0.38	45	0.56
	No	5	0.42	12	0.31	17	0.59	34	0.43
7	Knowledge of GHG inventory								
	Yes	5	0.42	18	0.46	9	0.31	32	0.40
	No	7	0.58	21	0.54	18	0.62	46	0.58
8	Knowledge of NAMA								
	Yes	2	0.17	7	0.18	2	0.07	11	0.14
	No	8	0.67	32	0.82	27	0.93	67	0.84
9	Have you participated in a GHG inventory workshop?								
	Yes	1	0.08	12	0.31	7	0.24	20	0.25
	No	10	0.83	24	0.62	22	0.76	56	0.70

10	Do you have the capacity to conduct GHG inventory?								
	Yes	1	0.08	12	0.31	1	0.03	14	0.18
	No	9	0.75	25	0.64	28	0.97	62	0.78
11	Do you know the GHG emissions of the diff.sectors?								
	Yes	0	0.00	2	0.05	0	0.00	2	0.03
	No	11	0.92	33	0.85	29	1.00	73	0.91

Annex 3: Summary of Low Carbon Policies and Measures

SUMMARY OF POLICIES AND PROGRAM PROMOTING LOW CARBON ECONOMY

Policy / Program	General Description	Relevant Provisions	Implementing Authority
Energy			
RA 9513 Renewable Energy Act of 2009	Government's policy for promoting the development, utilization, and commercialization of renewable energy sources, and provides a host of fiscal and non-fiscal incentives to RE developers	▪ Declared policy of the State to encourage the development and utilization of RE sources as tools to effectively prevent or reduce harmful emissions …(Sec 2c) ▪ Promotes the creation of an RE market through the following: (Ch 3) - ***Renewable Portfolio Standards (RPS).*** Requires electricity suppliers to source certain portion of energy supply from RE - ***Feed-in-Tariff System.*** Prescribes fixed price for electricity produced from RE - ***Green Energy Option***. Allows consumers to choose to buy RE power - ***Net metering***. Allows consumers that generate RE to store or sell excess power… - ***RE market in the WESM***. Provides trading of RE certificates in WESM	DOE, lead agency for implementing RE Act National Renewable Energy Board tasked, among others to: a) Evaluate and recommend to the DOE the mandated RPS and minimum RE generation capacities in off-grid areas, as it deems appropriate; b) Recommend specific actions to facilitate the implementation of the National Renewable Energy Program to be executed by the DOE and other appropriate agencies of government c) Monitor and review the implementation of the NREP, including compliance with the RPS and minimum RE generation capacities in

Policy / Program	General Description	Relevant Provisions	Implementing Authority
			off-grid areas; d) Oversee and monitor the utilization of the Renewable Energy Trust Fund created pursuant to Sec 28.
Administrative Order 110 25 October 2004	Government policy that institutionalizes the Government Energy Management Program	▪ Sets as a goal the reduction of government's monthly consumption of electricity (in kilowatt-hours) and petroleum products (in liters) by at least ten percent (10%) through energy efficiency and conservation (Sec 1) ▪	DOE to establish an inter-agency coordination among all government entities to ensure compliance (Sec 2) All agencies to allocate funding to support implementation (Sec 3)
Administrative Order No. 126 13 August 2005	Directs the "enhanced implementation of" energy conservation program among government agencies to address extraordinary increase in world oil prices	▪ Mandates government agencies to "adopt and implement a program that will reduce fuel consumption for transport by 10% of their average monthly consumption" (Sec 1) ▪ Prohibits the use of government vehicles, aircraft and water craft for purposes other than official business (Sec. 2) ▪ Directs government agencies to discontinue the use of air conditioning facilities during cooler months and to switch not earlier than 9am and switch off not later than 4pm (sec 3) ▪ DTI and DOE shall develop voluntary energy conservation programs (Sec 5)	All government agencies and offices

Policy / Program	General Description	Relevant Provisions	Implementing Authority
		▪ DENR to strictly enforce smoke belching law (Sec 6)	
Administrative Order No. 183 9 July 2007	Directs the use of energy efficient lighting/lighting systems in Government Facilities (Palit-Ilaw Program)	▪ Mandates the use of energy efficient lighting systems (EELs) in all buildings and facilities by all government agencies and instrumentalities (Sec 1) ▪ Provides for administrative sanctions for failure to comply (Sec 5)	DOE through Energy Utilization Management Bureau to serve as lead implementing agencies Supporting agencies: DTI – to provide complimentary policies and activities to ensure that lighting products meet the specifications under the Philippine National Standards and the Minimum Energy Performance Standards for consumer protection DBM – approve funds and allow only EEL products for government procurement DENR – promulgate policies consistent with proper lamp waste management DPWH – to integrate the use of EELs in planning and development for government buildings/facilities and other infra dev projects

Policy / Program	General Description	Relevant Provisions	Implementing Authority
			DILG – to encourage LGUs to contribute to AO's objective by using EELs
Administrative Order No. 228 2 June 2008	Directs agencies to observe energy efficiency and conservation measures to address rising cost of energy	▪ All agencies to reduce transport fuel consumption by 10% (Sec 1) ▪ Government buildings to turn of airconditioners at 4:30pm, except those with 24-hour work (Sec 2) ▪ Agencies to replace all incandescent bulbs (Sec 3) ▪ Agencies to convert 20% of their vehicles in major cities to LPG (Sec 4) ▪ Agencies to install and/or adopt other energy saving technologies with the help of DOE and SOST (Sec 5)	All agencies
RE Plans and Programs (2011-2030)		▪ The National Renewable Energy Program (NREP) seeks to increase the RE-based power capacity of the country to 15,304 MW by the year 2030 from its current capacity level of 5,438 MW ▪ On a per technology basis, the NREP aims to: - Increase geothermal capacity by 75% - Increase hydropower capacity by 160% - Deliver additional 277 MW biomass powe capacities; - Attain wind power grid parity with the commissioning of 2,345 MW additional capacities - Mainstream an additional 284 MW	

Policy / Program	General Description	Relevant Provisions	Implementing Authority
		solar power capacities and pursue the achievement of the 1,528 MW aspirational target - Develop the 1st ocean energy facility for the country ▪ Proposes a development framework to accelerate the development and utilization of the RE sources in the country	
Clean Technology Fund Investment Plan for the Philippines	CTF-CIP is a proposal for the use of the CTF resources in the Philippines, including a potential pipeline of projects and notional resource envelope. The CIP is a "business plan" developed by the government of the Philippines (GOP) in agreement with the ADB, the International Bank for Reconstruction and Development (IBRD), and the IFC. Bases of the Plan include: Medium-Term Philippine Development Plan, 2004-2010 and Comprehensive Integrated Infrastructure Program (CIIP) 2009-2013, the Philippine Energy Plan (PEP) 2008-2030, the Climate Change: Philippine Response, Strategic Framework and Action Plan (2007), the National Environmentally Sustainable	▪ Prioritizes power and transport sectors as highest GHG emitters and focuses on intervention in 3 broad areas: - Supply and demand side energy efficiency, including grid optimization and initial investments in smart grid technology, as well us urban energy efficiency; - Renewable energy; and - Transport systems, including BRT, advanced vehicle technology, urban rail, motor vehicle inspection and emission systems, and wider use of biofuels. ▪	

Policy / Program	General Description	Relevant Provisions	Implementing Authority
	Transport Strategy (NESTS), and other relevant sector development policies and programs.		
Transport			
RA 9367 Biofuels Act of 2006	Directs the use of biofuels in all motor vehicles through mandatory blend of 1% biodiesel in diesel fuel and 5% bioethanol in gasoline, subject to increase	▪ Mandates the use of biofuels to mitigate GHG emissions (Sec 2b) ▪ Ensure availability of alternative and renewable clean energy without detriment to natural ecosystem…(Sec. 2d) ▪ Mandatory use of locally-sourced biofuels: (Sec 5) - 5% bioethanol for gasoline fuel, subject to increase of 10% after 4 years as recommended by the National Biofuels Board - 1% biodiesel for diesel fuel subject to increase of 2% as recommended by the NBB	DOE ▪ (among others) Tasked to develop the National Biofuels Program ▪ Serves as the Chairperson of the National Biofuels Board tasked to monitor the implementation of the NBP and the supply and utilization of biofuels, among others
RA 8749 The Philippine Clean Air Act of 2009	A comprehensive policy and program for air quality management, the CAA prescribes policies to control the spread of air pollution, sets standards for vehicle owners and imposes penalties for violators, and outlines various programs for air quality management and maintenance	▪ The State shall promote and protect the global environment to attain sustainable development (Sec. 2) ▪ Recognizes "polluters must pay" principle ▪ Covers carbon dioxide as one of the air pollutants (Sec. 5) ▪ ***Regulations for motor vehicles:*** New, in-use, rebuilt, and imported second-hand motor vehicles must comply with the exhaust emission standards ▪ ***Regulations for fossil fuels:*** Complete phase out of leaded gasoline,	DENR (lead) Mitigation of air pollution from mobile sources: LTO, DOTC, Private sector groups Private emission testing centers: DOTC-LTO, DTI, DENR, Private sector groups Reduction of emission from

Policy / Program	General Description	Relevant Provisions	Implementing Authority
		lowering of sulfure content of industrial and automotive diesel, and lowering of aromatics and benzene in unleaded gasoline Source: DENR, *The Air We Breathe*	vehicular use: *Introduction of emission control technologies:* DENR, DOTC, DTI, DOST, Automotive industry *Regulation in the importation of second hand vehicles:* Bureau of Customs – DOF, Bureau of Import Services – DTI, DOTC-LTFRB-LTO Strengthening of ambient air quality monitoring, reporting, and management: - EMB / EMB regional offices in cooperation with concerned government agencies Improvement of fuel quality *Change in composition of fuel quality:* DOE, DENR, DTI-BPS, DOST, Chamber of Automotive Manufacturers of the Philippines, Oil Companies, NGOs *Examination of potential for alternative fuel:* DOE, DOST, private sector groups

Policy / Program	General Description	Relevant Provisions	Implementing Authority
			Reduction in traffic congestion and improvement in traffic flow *Traffic engineering and management:* DOTC, MMDA, LGUs, concerned government agencies *Transport Policy Studies*: MMDA, DOTC-LRTA, PNR, LGUs Source: DENR (2003), *Primer on the Clean Air Act*
Executive Order No. 290 24 February 2004	Promotes the implementation of the Natural Gas Vehicle Program for Public Transport	▪ Promotes the use of compressed natural gas (CNG) as a clean alternative fuel for transport (Sec 1) ▪ Natural gas to be supplied through the use of indigenous gas resource and importation of liquefied natural gas (Sec 2.1) ▪ All public transport such as public utility buses, jeepneys, taxis and other PUVs are encouraged to use natural gas fuel (Sec 2.3)	DOE (lead) Co-implementing agencies: EMB/DENR - fast track the issuance of Environmental Compliance Certificates (ECC) for NGV facilities and refueling stations and shall formulate emission standards for CNG DOF - create a pricing environment conducive to the use of CNG vis-à-vis diesel and shall formulate tax policies

Policy / Program	General Description	Relevant Provisions	Implementing Authority
			relative to the NGVPPT DOST - develop and promote locally manufactured NGV conversion kits, parts and components; BPS/DTI - establish Philippine National Standards for Natural Gas Utilization in the Transport Sector and certify the safety of CNG fuel, NGVs, NGV systems and components and related equipment and facilities; BOI/DTI - enhance existing incentive packages for land transportation using CNG, conversion shops, terminals with CNG refueling stations and the manufacture/assembly of NGVs and provide incentives to the other NGV industry related activities DOTC - work with the DOE to develop an implementation plan for a gradual shift to CNG fuel utilization in PUVs and promote NGVs in Metro

Policy / Program	General Description	Relevant Provisions	Implementing Authority
			Manila and Luzon through the issuance of directives/orders providing preferential franchises in present day major routes and exclusive franchises to NGVs in newly opened routes, compliance with emission standards and other preferential incentives DILG - formulate safety measures relative to NGV industry practices and apprehend violators of standards and safety rules and regulations. MMDA – provide regulatory and administrative support and introduce traffic schemes favoring NGVs to enhance the use of such NGVs in Metro Manila, and shall integrate the location of CNG refueling stations within the overall plan/rationalization of its intermodal terminal program. Tariff Commission - educe tariffs

Policy / Program	General Description	Relevant Provisions	Implementing Authority
			on NGVs, NGV engines, conversion kits/systems, refueling equipment and other NGV industry related equipment, facilities, parts and components.
National Environmentally Sustainable Transport Strategies (NESTS)		▪ Sets as one of the two overall goals of the Strategy is to reduce the annual growth rate of energy consumption and associated GHG and air pollutant emissions from the transport sector especially in urban areas ▪ Include the following relevant strategies: - Strengthening roadside air quality monitoring and assessment - Vehicle emission control, standards, and inspection and maintenance - Use of cleaner fuels - Public Transport and travel demand management - Development of policies and guidelines for pedestrian- and cycling inclusive land use planning and provision of non-motorized facilities - Development of environment- and people-friend infra - Road safety and maintenance - Land use planning	DOST to lead in mainstreaming EST in government processes and advocating EST to the general public

Policy / Program	General Description	Relevant Provisions	Implementing Authority
MMDA Regulation No. 96-005 / Memorandum Circular No. 03 Series of 2011 Implementing Guidelines of the Unified Vehicular Volume Reduction Program (UVRP) under the MMDA Regulation 96-005, as amended		The Unified Vehicular Volume Reduction Program (UVVRP) under MMDA Regulation No. 96-005, applies to all motor vehicles, both public and private, and prohibits the operations of same in all national, city and municipal roads of Metro Manila from 7:00 a.m. to 7:00 p.m. during corresponding days of the week, except on Saturdays, Sundays and Official Public Holidays, depending on the last digit of the vehicle's license plate	MMDA
National Electric Vehicle Strategy (NEVS)	Promotes the use of alternative fuel vehicles. It is a joint partnership between GOP and ADB that aims to reduce the country's carbon footprint of road transport. Mandaluyong City was the first LGU to receive 20 electric tricycles for testing and demonstration. "While the strategy is being developed, DOE will start introducing e-tricycles, e-jeepneys, e-buses, and e-cars with the help of local entrepreneurs and technical		

Policy / Program	General Description	Relevant Provisions	Implementing Authority
	experts. The agency is currently developing a sustainable model for introducing electric tricycles. DOE envisions that the promotion of e-tricycles will spur development of local capabilities to design and maintain small-sized electric cars. This in turn will entice private investors to set up local manufacturing facilities that will lead to the creation of more jobs and a dynamic market for locally assembled units for export to the ASEAN region in the future." ***Status***: Ongoing development of the strategy		
Industry			
RA 8749 The Philippine Clean Air Act of 2009		▪ ***Regulations for industrial sources.*** All stationary sources must comply with the National Emission Standards for Sources Specific Air Pollutants (NESSAP) and National Ambient Air Quality Standards (NAAQS) and must secure permit to operate prior to operation. Source: DENR, *The Air We Breathe*	DENR (lead) Mitigation of air pollution from stationary sources *Stack monitoring and related permitting:* - EMB and regional offices - Authorized/recognized private sector groups *Adjudication of air pollution cases:* - Pollution adjudication board *Funds for the Installation of Air Pollution Control Facility*

Policy / Program	General Description	Relevant Provisions	Implementing Authority
			- LBP - DBP Strengthening of ambient air quality monitoring, reporting, and management: - EMB / EMB regional offices in cooperation with concerned government agencies Source: DENR (2003), *Primer on the Clean Air Act*
Waste Management			
Republic Act 9003, the "Ecological Solid Waste Management Act "	Provides the legal framework for the country's systematic, comprehensive and ecological solid waste management program that shall ensure protection of public health and the environment.		Lead Agency is the Department of Environment and Natural Resources under the following offices: – National Solid Waste Management Commission (NSWMC) Environmental Management Bureau (EMB)
Others			
RA 7160 Local Government Code of 1991	Promotes local autonomy and decentralization by granting local government units with powers, authority, responsibilities, and resources.	▪ LGUs shall…enhance the right of the people to a balanced and healthful ecology (Sec 16) ▪ Provide basic services and facilities, which include among others: (Sec 17)	DILG exercises general supervision over local governments 80 provinces

Policy / Program	General Description	Relevant Provisions	Implementing Authority
		- ***Municipality/City:*** Solid waste disposal system or environmental management system and services or facilities related to general hygiene and sanitation; (b.2.vi) - ***Province:*** Pursuant to national policies and subject to supervision, control and review of the DENR, enforcement of forestry laws limited to community-based forestry projects, pollution control law, small-scale mining law, and other laws on the protection of the environment; and mini-hydro electric projects for local purposes; (b.3.iii) -	122 cities 1,512 municipalities Source: DILG website
RA 9729 Climate Change Act of 2009	Law that mainstreams climate change into policies of national and local government, mandates the creation of a Climate Change Commission responsible for formulating the National Framework Strategy on Climate Change and the National Climate Change Action Plan, and empowers LGUs to serve as frontline agencies for addressing climate change at the local level	▪ Adopts as one of its declared principles the "ultimate objective of the Convention which is the stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system which should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic	The Climate Change Commission to serve as the sole policy-making body of the government, tasked to coordinate, monitor and evaluate the programs and action plans of the government relating to climate change.

Policy / Program	General Description	Relevant Provisions	Implementing Authority
		development to proceed in a sustainable manner" (Sec 2) ▪ Tasks the Climate Change Commission among others to "recommend legislation, policies, strategies and programs on and appropriation for climate change adaptation and mitigation and other related activities." (Sec 9) ▪ The NCCAP to be developed shall identify the country's GHG mitigation potentials, among others (Sec 13e) ▪ Mandates LGUs to be the frontline agencies in the formulation, planning and implementation of climate change action plans in their respective areas, consistent with the provisions of the Local Government Code, the Framework, and the National Climate Change Action Plan. (Sec 14)	
AO 320 Creation of the CDM DNA	This designates the DENR as the CDM DNA for the Philippine, and presents the national approval process and monitoring of sustainable development impacts of CDM projects in the Philippines	▪ Provides mandate to the DENR for the following: → Formulate and develop a national Clean Development Mechanism policy, → Develop the criteria, indicators, standards, systems and procedures, and evaluation tools for the review of CDM projects. → Undertake the assessment and	DENR with other supporting agencies such as the DOE, DOST, Private sector representative, NGO representative etc.

Policy / Program	General Description	Relevant Provisions	Implementing Authority
		approval of CDM projects that will be submitted to the UNFCCC and Kyoto Protocol. → Monitor the Implementation of CDM projects, and Perform other functions that are related to and in pursuance of the development of CDM.	
PD 1586 Environmental Impact Assessment	Establishes An Environmental Impact Statement System Including Other Environmental Management Related Measures	▪ Category C and D are exempted from EIA. These Projects are intended to directly enhance environmental quality or address existing environmental problems (and indirectly address GHG mitigation)	DENR
In the Pipeline			
National Climate Change Action Plan	Outlines the government action plan for 7 strategic areas, which include sustainable energy. ***Status***: For approval by the Office of the President	▪	
Fueling Sustainable Transport Program	A mechanism to implement the Alternative Fuels Roadmap, FSTP "seeks to convert public and private vehicles from diesel and gasoline to compressed natural gas (CNG), liquefied natural gas (LNG), liquefied petroleum gas (LPG) and electric power." **Status**: For finalization by DOE	▪	

Annex 4: References

General Sources

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Republic of the Philippines (2010, October 27). An Act Mainstreaming Climate Change into Government Policy Formulations, Establishing the Framework Strategy and Program on Climate Change, Creating for this Purpose the Climate Change Commission, and for Other Purposes. Republic Act No. 9729

List of Organizations and personnel visited or interviewed:

Organization/ Institution	Contact Person	Position	Contact Details
Department of Environment and Natural Resources	Albert Magalang	OIC, Philippine DNA Secretariat	Visayas Ave. Quezon City
	Engr. Minda Osorio	Environmental Management Bureau	Visayas Ave., Quezon City
ICLEI Southeast Asia Secretariat	Victorino Aquitania	Regional Director	426-5921
League of Cities of the Philippines	Broderick Sapnu/ Drexel Roque		adbroqueii@yahoo.com
League of Municipalities of the Philippines	Rommel Martinez		Tel/Fax: (+63 2) 913 5737 to 38president@lmp.org.ph
League of Provinces of the Philippines	Mr. Alex Raul Villano	Asst. Secretary General	Tel. Nos. (632) 687-5399, 631-0170, 631-0197 Fax Line: (632) 687-4048 Email: lppsec2007@yahoo.com
League of Local Environmental Officers of the Philippines (PLLENRO)	Danny Villas/ Erlinda Creencia		870-1000 local 1232; dvv6756@yahoo.com
Local Government Academy	Marivel Sacendoncillo	Executive Director	Tel: 633-6134/ 637-1672/ 634-6416/ 638-9649, 634-1881 to 83; Email: mcsacendoncillo@yahoo.co

Organization/ Institution	Contact Person	Position	Contact Details
			m
Makati City	Kathleen Almonte	Planning Officer	Tel: 8954991, 8701727
Quezon City	Andrea Valentine Andres-Po	Chief, Plans & Development Division, Environmental Protection & Water Management Dept	Drei_andres_po@yahoo.com
Naga City	Head, City Environment and Natural Resources Office		Tel: 4731617
Provincial Government, Albay	Manuel "Nong" C. Rangasa	Executive Director - CIRCA Consultant - GO-EECT	Mobile: +639063339400 Email: nongrangasa@yahoo.com
KfW	Olga Asana-Caday	Philippine Representative	Tel No. 812-3165 local 27 Fax No. 753-1441, 753-4800 Email: Ma.Caday@gtz.de
KfW-LGU Investment Programme/ LandBank	Mr. Jose Eduardo Mandapat, Jr.	Program Management Department of Land Bank	jmandapat@mail.landbank.com

Quezon City

1. Interviews with Ms. Andrea Andres-Po and the staff of the Environmental Protection and Waste Management Department (EPWMD)
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3. Green Desk Handbook
4. Various brochures and leaflets on Ecological Solid Waste Management
5. Philippine Star, September 24, 2010, http://www.philstar.com/article.aspx?articleid=614796&publicationsubcategoryid=70
6. **Executive Order 301 by the President of the Philippines** – *Establishing a Green Procurement Program for all departments, bureaus, offices and agencies of the Executive Branch of Government*

7. **Executive Order No. 19 Series of 2010** – *Creating the Environment Policy Management Council, defining its functions and composition and providing for its technical working group*
8. **Ordinance No. SP 1917 S 2009** – *An ordinance requiring the design, construction or retrofitting of buildings, other structures and movable properties to meet minimum standards of a green infrastructure, providing incentives therefor and for other purposes*
9. **Ordinance No. SP 1731 (2006***) – An ordinance prohibiting any person to discharge or dispose any untreated waste water, sludge oil, chemical or other wastes to any part of Quezon City that will endanger the environmental condition of the City's rivers, creeks and waterways with the corresponding penalties thereof*
10. **Ordinance No. 1501 (2005***)- Requiring subdivision developers and/or subdivision owners in Quezon City to provide sufficient space for the installation of composting facilities to accommodate the disposal of recyclables or biodegradable waste generated by home owners and providing for penalties and administrative sanctions in violation thereof*
11. **Ordinance No. SP 1630 (200***5) – An ordinance amending Section 4 of Ordinance No. SP 1501, S-2005 "Requiring subdivision developers and/or subdivision owners in Quezon City to provide sufficient space for the installation of composting facilities to accommodate the disposal of recyclables or biodegradable waste" authorizing the Environmental Protection and Waste Management Department in coordination with the subdivision unit to undertake the implementation and enforcement of this Ordinance.*
12. **Ordinance No. SP 1323 (2003***) – An ordinance adopting guidelines and procedures for a unified approach or solid waste management*
13. **Ordinance No. SP 1009 (2001) –** *An ordinance requiring the Barangay Councils of Quezon City to establish and operate an Ecological Recycling and Composting Centers as part of their respective solid Waste Management Program before the end of the year 2001 and as a component thereof, to purchase and operate at least two 92) composting and shredding machines, and mandating that funds be taken from their respective shares of the unprogrammed appropriation from the Local government Equalization Funds and their respective allocations of the Waste Management Fund*
14. http://www.cenergy.ph/Task3.php
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3. Camarillo, E. (2011). "Makati City's Energy Efficiency Initiatives." PowerPoint presented on 2 February 2011 at the "Addressing Climate Change through Energy Efficiency Investments," 22/F Session Hall, New Makati City Hall, Makati City

4. Makati City (2011). “Makati City Earth Hour 2011 Accomplishment Report”
5. Makati City Government (2011). CY 2012 Annual Investment Program by Program/Project/ Activity by Sector
6. City Resolution (CR) No. 2005-214 – *A Resolution authorizing the Honorable Mayor Jejomar C. Binay to enter into a Memorandum of Agreement with the Ligangmga Barangay and the concerned national government agencies on cooperation and creation of the Makati City Protection Council subject to al laws and existing legal rules and regulations*
7. Executive Order (EO) No. 003 Series of 2006– *An Order creating the Environmental Protection Council of Makati City*
8. CR No. 2007-025 – *A Resolution urging all sectors within the City of Makati to support the Palit-Ilaw Program and to use compact fluorescent lamps (CFLs) instead of the conventional incandescent lamps, T8, or slimmer linear fluorescent lamps (triphosphor coated) instead of 40W fluorescent lamps, (T-12), and low-loss magnetic and electronic ballast instead of hte conventional magnetic ballast for energy efficiency and conservation, subject to all laws and existing legal rules and regulations*
9. City Resolution (CR) No 2008-056 – *A Resolution declaring 8:00PM to 9:00PM as “Earth Hour” of Makati City and further encouraging the observance thereof by all residents/households and owners/managers of business establishments and/or buildings in Makati City in turning off at least one (1) light during the hour everyday to ease Mother Earth from the effects of global warming*
10. CR No. 2007-044–*A Resolution authorizing the Honorable Mayor Jejomar C. Binay to enter into a Memorandum of Mutual Cooperation between the Philippine Green Building Council, Inc. On the promotion of green building practices within hte building industry to ensure a sustainable built environment, subject to all laws and existing rules and regulations*
11. CR No. 2005-158 – *A Resolution urging the use of alternative fuel (natural gas, coconut methyl ester, ethanol, auto gas, and the like) for vehicles within Makati City in compliance with the mandate of the Philippine Clean Air Act of 1999 (R.A. 8749)*
12. City Ordinance (CO) No. 2004-032 – *An Ordinance enacting the Makati City Vehicle Emission Control Code and providing penalty for violation thereof*
13. CO No. 2003-089: *Traffic Management Code of the City of Makati*
14. CO No. 2003-095: Solid Waste Management Code, *An Ordinance adopting the Makati City SolidWaste Management Code and providing penalty or violation thereof, subject to all laws and existing legal rules and regulations*
15. EO 001 Series of 2005 – *An order creating the Makati Solid Waste Management Board as mandated by Republic Act 9003*
16. CO 2000-078: Zoning Ordinance, *An Ordinance adopting zoning regulations for Makati City and providing for the administration, enforcement and amendment thereof and for the repeal of all ordinances in conflict therewith, subject to all legal and existing rules and regulations.*
17. EO 007 Series of 2006 CR No. 95-004 – *A Resolution declaring the Month of January as Cleanliness Awareness Month*