

## COMPLETION REPORT

Developing an Assessment Tool to Assist Local Government Units Monitor Low-Carbon Programs in the Pursuit of Ecological Governance: The Case of Antipolo City, Philippines and Tsukuba City, Japan

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According to a publication by the Senate of the Philippines Economic Planning Office, the Philippines shares 0.31% of the world's total GHG emission and is the 6<sup>th</sup> emitter in Southeast Asia. Though not a major emission contributor, the Philippines has been developing strategies to reduce GHG emissions as well as planning cities for resilience against impacts of climate change.

One criticism of Philippine plans is the absence of targets to lower GHG emissions by a given timeframe. Another is the absence of baseline data against which the impacts of action plans can be measured. This research addressed these concerns using Antipolo City in Rizal Province as a case study. The assessment tool developed for Antipolo was modeled after the Tsukuba Environmental Style in Tsukuba City, Japan. The tool adopted GHG emission and reduction factors developed in other countries.

The assessment tool utilized was composed of two parts: the first measures carbon emissions and the second carbon reduction. Carbon emissions comprise four areas: [1] energy or electricity consumption; [2] transportation or fuel consumption; [3] solid waste disposal; and, [4] emissions in system processes on the three previous areas. These areas of measurement are based on the UN IPCC study on major sources of carbon emissions. Carbon reduction consists of: [1] use of solar energy; [2] use of non-motorized transport; [3] recycling of solid wastes; [4] promotion of open or green spaces; and, [5] other carbon emission reduction programs or projects of the city.

The assessment tool is presented as a table with five columns namely: [1] Carbon Emission or Carbon Emission Reduction Activity; [2] Carbon Emission or Carbon Emission Reduction Factor; [3] Quantity in a Year; [4] Unit of Measurement; and, [5] Carbon Emitted or Reduced.

Owing to the scarcity of data, statistics used in the assessment were derived from various years. The following is the situation in Antipolo for carbon emission: [1] Electricity, 218,857,062.54 kilograms based on 2011 data; [2] Transportation, 237,044,385.02 kilograms based on 2013 data; [3] Solid waste, 19,806,564,692.5 kilograms using 2006 data; and, [4] Emissions through system processes, 328,035,723.78 kilograms. The total carbon emissions in Antipolo City is 20,590,501,863.84 kilograms for 2013.

Carbon emission reduction in Antipolo City is possible only through solid waste management and open or green spaces. For solid waste management, 316,118,195 kilograms of carbon reduction can be achieved by recycling solid wastes. For open or green spaces 104,878,806 kilograms of atmospheric carbon dioxide were reduced. This emphasizes the significance of creating open spaces in cities that are usually lost to development.

For carbon emission reduction, Antipolo accounts for a total of 420,997,001 kilograms. Subtracting this number to the total of carbon emission, Antipolo City has a deficit of 20,169,504,862.84 kilograms of carbon reduction.

The assessment tool provides a simple guide to local governments in making decisions where action plans should focus to initiate a low-carbon city program. Baseline data enables local government to periodically monitor the success and/or failure of interventions and recommend alternative strategies to further strengthen successful interventions and/or modify less effective ones. Finally, it also enables local government to set targets within a timeframe to lower GHG emissions.

#### Publication of the Results of Research Project:

Verbal Presentation (Date, Venue, Name of Conference, Title of Presentation, Presenter, etc.) N/A
Thesis (Name of Journal and its Date, Title and Author of Thesis, etc.) <b>ESPASYO: Journal of Philippine Architecture and Allied Arts, Volume 6</b> Abstract accepted for Peer Review last September 24, 2014. Article will be submitted on November 6, 2014. Authors: <i>David Leonides T. Yap, Toshiaki Ichinose, Rowena T. Zapanta and Faith T. Dumaligan</i>
Book (Publisher and Date of the Book, Title and Author of the Book, etc.) N/A