

Faraon, Alvin¹, Adelina C. Santos-Borja¹, Neil V. Varcas¹, Kim P. Mercado¹, Jocelyn G. Sta. Ana¹ and Emitterio C. Hernandez

¹ Laguna Lake Development Authority

Valuation of ecosystem services of Laguna De Bay Basin as affected by changes in land cover

Key words: Ecosystem Service, Valuation, Land Cover, Sedimentation

Abstracts:

Wealth Accounting and Valuation of Ecosystem Services (WAVES) is a World Bank-led partnership established in 2010 that aims to promote sustainable development by ensuring that natural resources are mainstreamed in development planning and national economic accounts. The Laguna de Bay Basin is one of the two pilot sites for ecosystem accounts under WAVES Philippines. The accounts developed were on land, water, ecosystem condition and production. This paper highlights the land accounts especially the effects of changes in land cover to the ecosystem services being provided by the lake basin.

Land accounts are important to support the Laguna Lake Development Authority's strategic environmental policy by providing information on the status of and trends in the land cover and use in the watershed. The development of land accounts entailed the following steps: (i) data scoping; (ii) data collection and preprocessing; (iii) development of maps; (iv) preparation of tables of land cover units; (v) calculation of land cover change over time; and (vi) assessment of accuracy and validation activities.

The major land cover changes in the basin using satellite images were analyzed for the periods of 2003 and 2010. The results revealed that the closed forest decreased by 35% while built-up areas increased by 116%. Rapid urbanization and industrialization in the lake region were among the issues identified. Using the SedNet Model and the 2010 land cover, the total sediment generated from the watershed under normal conditions and simulated conditions were 2,011 kilo tons and 6,885 kilo tons, respectively. As for the avoided erosion, it was 4,874 kilo tons. The monetary value of the water retention service of the lake was estimated based on the avoided damage costs from floods.

There were policy issues and challenges on management and development of the lake basin resources need to be addressed especially with climate change.