ECOSYSTEMS AND PEOPLE:
THE PHILIPPINE MA SUB-GLOBAL ASSESSMENT
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What are its objectives?
Assess the country’s ecosystems and their services using the MA framework and contribute to the global MA process.

Which Site?
The Laguna Lake Basin (LLB), Luzon, Philippines.

Why Laguna Lake Basin?
It represents a wide array of ecosystems undergoing rapid transitions due to a multitude of factors, e.g. industrialization, urbanization, population increase in the basin and outside, demands for food and water among others.

What methodologies were used?
Multiscale analysis of ecosystem goods and services:
• Local scale (food: rice and fish)
• Basin scale (water resources)
• Global scale (ecosystem services: biodiversity and climate change)

What is the MA Conceptual Framework?

Preliminary Findings

1. Around 5,700 hectares of the shoreland is planted to rice. At an average yield of 4.1 tons per hectare, the area can supply 22,800 metric tons of palay or almost 9,000 metric tons of milled rice or 14% of total rice requirement in the Laguna de Bay Region.

2. The area can readily supply 20% of the rice requirement of the basin with improvement in rice cultivation.

3. Major factors affecting rice production are extraction of water level domestic use, drought year, better rice varieties, better fertilizer management, construction of circumferential road, decrease in land area planted to rice and land conversion.

4. Of the 7 are regularly monitored tributaries, San Cristobal was found to be heavily polluted with industrial effluents and sediments. Tanay River has deteriorating water quality. Based on Dissolved Oxygen (DO) and BOD concentration, some of the rivers are virtually dead such as Tunasan, San Cristobal, and San Juan River with DO and BOD concentration below Class C standards.

5. Major sources of pollution entering the river systems are domestic effluents and plant processing wastes, fertilizers, chemical manufacturing spillage, various industrial effluents and to a limited extent erosion materials in agricultural runoff.

6. Saltwater backflow from the Pasig River spreads over the entire lake affecting a progressive lake clearing.

7. Eutrophication is especially evident in the rising level of nitrogen and is worsened by the lack of a centralized sewage system. The problem concerning BOD is most pronounced in rivers.

8. The industrial sector is the source of toxic and hazardous chemicals (THCs) such as Hg, Cd, Cr, and Pb. Indications also noted that levels of Cr, Cd and Hg found in fish caught in Laguna Lake is almost similar to those found in lake receiving mine tailing. Agriculture also contributes to the THCs such as Cd, arsenic, Cr, Fe, Pb, Mo, Ni and Zn. These are elements in trace amounts found in fertilizers.

9. Fisheries production declined to a 64% from 1980 to 1996 in production levels due to human, industrial and environmental factors.

10. Fish pen and cage culture have increased production from aquaculture; while the escapement of fishes from the net enclosures provide indirect stocking which has greatly enhanced open water fisheries.

11. Escapement of exotic species from aquaculture has adversely affected the fisheries of the lake and there is a need for an effective containment mechanism for invasive exotic species.

12. The agricultural sector contributes 1298.7 k tons of greenhouse gases to the atmosphere in the year 2000 from rice paddy fields, livestock, and biomass burning.

13. The landuse change and forestry (LUCF) sector is a slight net source of GHG contributing 924 Kt of GHG in the year 2000, about 1 % of the national total. While much carbon is absorbed by forests (sinks), this is offset by GHG emissions from tree harvesting and fuelwood burning.

14. While the direction (+ or -) and magnitude of impacts of climate change on natural resources (water, forests) and agriculture/food security remains largely uncertain, studies have shown that there would be impacts.

15. Forest lands in the LLB could help mitigate climate change through (a) the protection of existing forests with their carbon stocks (about 19,000ha storing about 2,850 Kt C) and (b) reforestation and rehabilitation of open and degraded lands (54,000 ha with potential carbon sequestration rate of 1,338 Kt CO₂ per year).

16. Climate change is not yet explicitly integrated in planning and implementation of activities in the basin. However, there are many activities that indirectly contribute to mitigation of climate change.