Natural Capital Accounting and Policy
The Philippines

WAVES
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Why Is Natural Capital Important?

The Philippines is producing mineral, mangrove, and ecosystem accounts. The data generated will give a clearer picture of the country's natural capital resources and provide input for investment and policy decisions.

- The country has historically relied on natural capital for its economic growth. In 2010, natural capital accounted for 19 percent of gross domestic product (GDP). (Figure 1.)
- The distribution of wealth is unequal, and poverty is high for groups that depend on natural resources: 38 percent of farmers and 42 percent of fishermen are poor, while the richest counties are the most urbanized.
- Urban growth has brought growing resource demand, waste, and pollution, adding pressure to ecosystems. Forests are shrinking—they are a key source of fuelwood and charcoal—and the agriculture sector is growing, albeit more slowly than expected. Wetlands, mangroves, and marine ecosystems are in decline, driven by urbanization, pollution and sediment accumulation, unsustainable resource use, and conversion to fishponds. Their decline directly reduces the quality and quantity of fish catch.

Demand for water is increasing, and there are already high levels of water stress. Only 4 percent of household sewage in urban areas is treated. Along with agricultural and industrial discharge, this contributes to problems with water quality.[1]

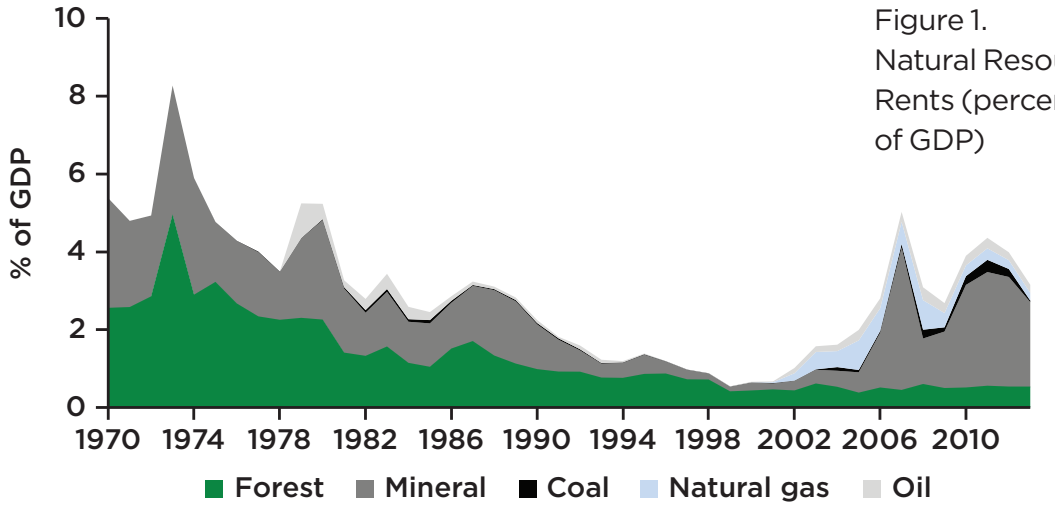

Figure 1. Natural Resource Rents (percentage of GDP)

Source: Wealth of the Nations—World Bank. http://data.worldbank.org/data-catalog/wealth-accounting (downloaded June 8, 2016).

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Wealth Accounting and the Valuation of Ecosystem Services

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What Do the Accounts Show?

Using ecosystem accounts developed for the Laguna de Bay Basin—the watershed for the country's largest lake, in metropolitan Manila—the Laguna Lake Development Authority (LLDA) has created a scorecard for local government units to assess environmental conditions and is using the information to update the Laguna de Bay Master Plan. Preparing the accounts provided a platform for data transparency between governments and local stakeholders, which will facilitate implementation of ensuing policies.

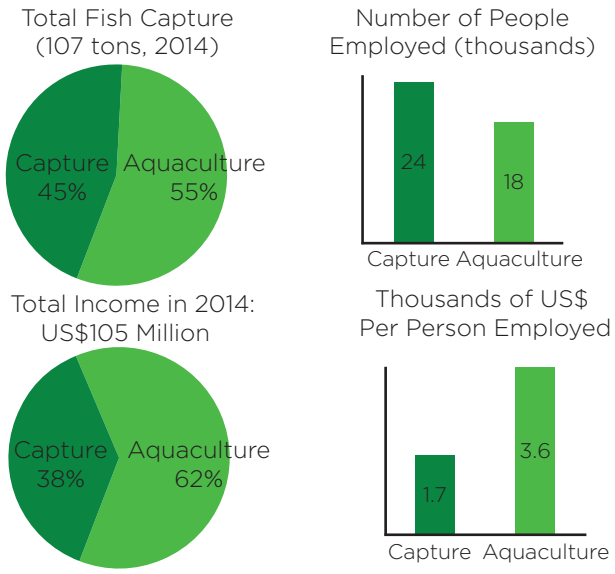
Declines in coastal ecosystems increase vulnerability. Despite regulations designed to prevent degradation, the ecosystem accounts for the Southern Palawan region show a dramatic decline in the quality of coral reefs and mangroves. This has been spurred by the issuance of new land titles and the expansion of fish ponds, settlements, and illegal logging. Degrading the quality of coastal ecosystems could reduce their capacity to provide storm protection and buffer tidal impacts, and could shrink the habitats needed to support fisheries.

Threats to food and job security are on the rise. Ecosystem accounts for Laguna de Bay highlight the importance of the lake as a source of food, jobs, and revenues (Figure 2). The figures show that higher profits from aquaculture encourage encroachment on open-water capture fisheries, which create jobs for small-scale fishermen. This tension around access to the lake is exacerbated by the deterioration of the ecosystem. The accounts show how sediments and pollution discharges threaten the ecosystem's ability to support this food chain. Data on resource rents can be used to set fair fees for operators of fish pens and fish cages.

Simulations point to future impacts of land-use changes. In the upper parts of the watershed surrounding Laguna de Bay, the destruction and conversion of natural and seminatural landscapes (such as forests and natural grasslands) can have big impacts on sediment flows. For example, changes between 2010 and 2014 led to a 20 percent increase in sediments delivered (2,400 kilotons per year, estimated using land cover as of 2014).

The accounts have been used to simulate what would happen if deforestation continued unabated, turning land cover to "bare land." Results show that the sedimentation rate would increase sharply, to 8,259 kilotons per year. Using the accounts, it is possible to target

Figure 2. Fisheries and the Economy in Laguna de Bay: Policy Implications



Impact on Local Economy:
- How do fisheries (open-water, aquaculture) contribute in terms of money and jobs?

Zoning:
- Where are the main sources of pollution, and what are the impacts on food safety in harvested fish?
- What is the distribution between aquaculture and open-water capture?
- Where should aquaculture permits be allocated?

Monitoring:
- What is the impact of access policies on jobs and revenues?
- Where is the best place to allocate aquaculture permits?
- What is the impact across the economy from redistribution policies?

ecosystem protection and regeneration efforts toward those watersheds creating the greatest impact.

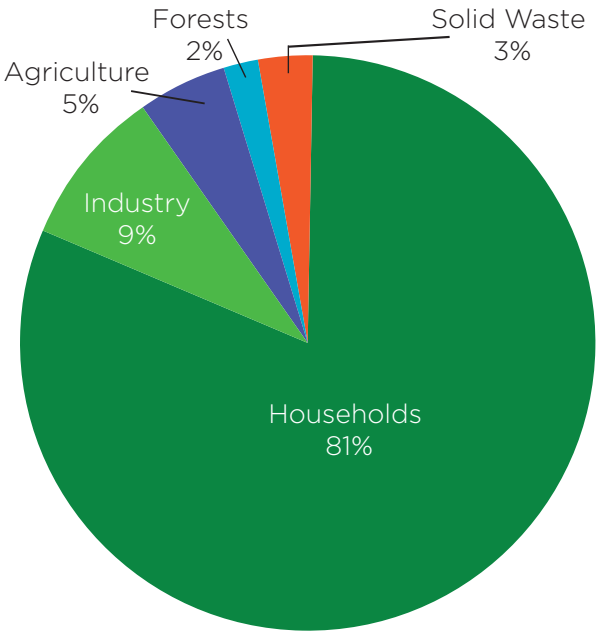
Data on soil erosion can be used to mitigate flood risks. The accounts show how rapid urbanization is compromising reservoir properties of Laguna de Bay. Water and ecosystem service accounts indicate that accelerated soil erosion in the watershed is the major contributor of sediments flowing into the lake. These accumulating sediments are changing the overall volume of the lake and its ability to contain increased inflow and rainwater, with potential impacts on flood control—a situation aggravated by the large numbers of people moving into the area.

The impacts go beyond areas close to the shoreline, as this ecosystem buffers flooding threats to to the nearby capital city, Manila. This is of particular importance given the recurrent hurricanes in the area. The accounts provide direct information on location of settlements in relation to flood control[2] and important georeferenced information for practical policy planning—about areas that are prone to producing sediments, for example.

Targeted approaches are needed to improve water quality. The ecosystem and water accounts for the Laguna de Bay Basin also show that household sewage is by far the largest contributor to pollutants in the lake (Figure 3). Targeted actions—for example, connecting households to the sewer system—could reduce pollution by as much as 80 percent.

Mining data can help shape reforms. Mineral accounts shed light on the urgent issue of insufficient government revenue from the development of mineral resources, as well as the social and environmental impacts of mining in relation to its contribution to the economy.[3] Preparation of the accounts followed intense dialogue between government (national and local), business owners, academic groups, indigenous groups, and local communities.

Figure 3. Sources of Organic Pollutants into Laguna de Bay (2014)



The information can be used to help shape fiscal reform and potential benefit sharing for indigenous peoples.

Agricultural changes put pressure on forests. The land account in Southern Palawan shows an increase of about 150 percent in perennial crops—from more than 46,000 hectares in 2003 to nearly 114,000 in 2010 and 116,000 in 2014—with oil palm and coconut plantations accounting for the largest expansions. Over that same period, forests with closed canopies declined sharply, from more than 130,000 hectares in 2003 to 28,000 hectares in 2010, before recovering slightly to reach more than 33,000 hectares in 2014.

Carbon stocks have seen an overall decline. It is important to keep in mind the fast pace at which closed forests have disappeared or turned into open (more degraded) forests, with impacts on ecosystem services such as carbon and water regulation. Physical accounts for carbon, for example, show that closed forests store nearly twice as much carbon as open or mangrove forests.

These accounts show a significant loss in carbon stock, but a potential reverse in the speed of decline. Accounts in Southern

Palawan show that between 2003 and 2010, carbon stock declined by 6.4 million tons, or 41 percent of the 2003 amount. In 2014. the carbon stock had recovered slightly, showing an increase of 0.2 million tons between 2010 and 2014. The total stock in 2014, however, still represents only 40 percent of the stock in 2003. The estimated annual value of carbon sequestration in Southern Palawan ranges from US$18 million to US$52 million, depending on the market price of carbon dioxide. The accounts help to demonstrate the importance of forests in Southern Palawan in relation to carbon emissions. The information can be used to help strengthen the Philippine Greenhouse Gas Inventory Management and Reporting System, expand the National Greening Program, and do measurement, reporting, and verification for initiatives on reducing emissions from deforestation and forest degradation (REDD+).

Notes

[1] WAVES. 2016. *Philippines Country Report 2016* and *Pilot Ecosystem Account for Southern Palawan.* World Bank: Washington, DC.
[2] WAVES. 2016. *Laguna de Bay Basin Ecosystem Accounts: Executive Summary.* World Bank: Washington, DC.
[3] Gervacio, BM. 2016. "Philippines: Use of Mineral Accounts – Department of Environment and Natural Resources, the Philippines." In: *WAVES Policy Forum: Natural Capital Accounting for Better Policy.* WAVES, The Hague, The Netherlands.

Wealth Accounting and the Valuation of Ecosystem Services

WAVES is a World Bank-led global partnership that aims to promote sustainable development by ensuring that natural resources are mainstreamed in development planning and national economic accounts.

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