

Mangrove Scoping Study



How valuable are mangroves for the Philippine economy? Is a mangrove accounting system for the Philippines possible given available studies and data?

The Philippines is one of the countries with the most number of true mangrove species of about 18 families and 42 species. However, its mangrove forests suffered greatly from anthropogenic activities, i.e. cutting for firewood and charcoal, siltation caused by upland deforestation, and conversion of mangrove areas to shrimp ponds, fishponds and salt ponds.

Mangroves are salt tolerant trees that have adapted to living in salt and brackish water conditions. They vary in size from shrubs to tall trees and are found along sheltered tropical mudflats or wetlands or in association with estuaries and lagoons and may extend inland. Mangroves also include shrubs and palms that grow exclusively in the tidal and intertidal zones of the tropical and subtropical regions.

Mangrove ecosystems provide wide-ranging use and non-use values enjoyed across various sectors of the society. At the ecosystem level, mangroves provide provisioning and regulating services for the benefit of its surrounding communities. The increasing specialization of a number of coastal environments often lead to conversion of mangroves as trade-off for the ecosystem services it provides. For instance, clearing mangroves for aquaculture or fuel wood could result to loss of regulating ecosystem services such as coastal protection, shoreline stabilization, and carbon sequestration, among others. The heightened effect of climate change has led to mangroves being rediscovered as sentinels to help reduce vulnerabilities and contribute to increasing community resilience.

Objectives

The main objective of the mangrove scoping study was to determine the feasibility of developing mangrove accounts by assessing the available data, gaps and potential indicators. Specifically, this study reports the results of the data scoping for mangroves in the Philippines along with the developed metadata for mangroves.

Methodology

The scoping study employed meta-analysis which commenced with an inventory of relevant literature following the concept of Total Economic Value (TEV) Framework (Fig. 1).

After the initial analysis of collected materials, a prior classification was derived based on the broad categories of use and non-use values of mangrove in the Philippines context. The classification types were then referred to as mangrove accounts to include area, products, biomass and carbon sequestration, hazards, waste assimilation, and ecotourism.

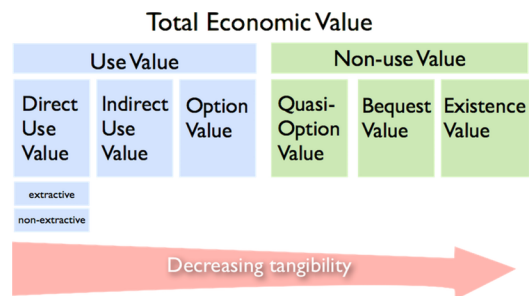


Figure 1. Total Economic Value Framework

Articles published from 1980s-2015 that have particular focus on the Philippines were consolidated. A literature synthesis was then conducted to determine the major trends in mangroves, in terms of various uses and issues, among others. To complement the discussion, intensive review of various reports of key projects on mangroves in the country, implemented both by the government and non-government organizations, was also conducted.

Scoping Study Findings

Based on the analysis, Table 1 presents the categories of the mangrove accounts proposed to be developed.

Mangrove Account	Name
1	Area
2	Products
3	Biomass and carbon sequestration
4	Hazards
5	Waste Assimilation
6	Ecotourism
Others	These include studies on gender

Table 1. Categories of proposed mangrove accounts

Area

Research reveals the rapid depletion of mangrove areas in the country. This decline is due to local exploitation for fuelwood, conversion to agriculture, industry and settlements with conversion to brackishwater ponds being the major cause of loss.

Existing initiatives in mangrove management require further evaluation to assess their impacts not only on the environment but as well as on the communities.

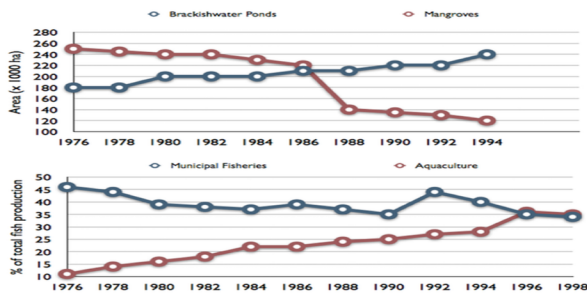


Figure 2. Changes in (a) mangrove and brackish pond area and (b) contribution of municipal fisheries and aquaculture to total fisheries production in the Philippines, 1976-1990. (Primavera, 2000)

Products

Estimates of the provisioning values of mangroves especially to fisheries at the national level prove substantial. The estimations were based on previous site-specific studies, 2006 national accounts on fishery and timber production and values and expert consultations.

As such, there is a need for an up-to-date valuation study on mangrove resources at the national level.

**Fisheries from Mangroves
Php 143.1 Million**



Biomass and Carbon Sequestration

Mangroves are highly efficient blue carbon sinks that sequester carbon and stock biomass. Potential income from carbon credits of mangroves has been an incentive to rehabilitate and conserve mangrove forests. (see Table 2)

The economic viability of mangroves to generate income from carbon credit sales are important to understand not only the potential economic benefits but also to serve as incentives for communities to venture in such initiatives. At the national level, an updated inventory and estimation of carbon storage and sequestration as well as carbon prices are needed to conduct the valuation.

Table 2. Carbon storage and sequestration from mangrove forests

Area (ha)	209,109
Carbon storage (tons/ha)	
tons/ha	87.5
million tons	18.3
Carbon sequestration	
tons/ha/yr	1.5
million tons/ha/yr	0.31
Value	
CER value from primary CDM in 2006 (US\$/ton)	10.71
Total value in 2006 (Php million)	172.21

Source: Padilla (2008).

Hazards

There has been a growing recognition on the significant role that mangroves play in disaster risk reduction and management. However, there were only a few studies found in the country about the protective role of mangroves. Moreover, as values for mangrove shoreline protection were obtained only through benefit-transfer method, there is a need for valuation studies that would reflect the protective value of mangroves in the Philippine context. The impacts of climate change on mangrove ecosystems is also worth studying.

Waste Assimilation

There were inadequate researches that reflected the regulating benefits, especially that of waste assimilation properties, of mangroves. The estimates of Padilla (2008) on waste assimilation need to be updated. Studies on the impacts of pollution on mangrove ecosystems as well as the contributing factors need to be explored.

Ecotourism

Mangrove ecotourism can directly provide income to host communities. It is also considered to be a viable option to manage mangrove areas. This particular aspect has not been fully exhausted or studied. This is evidenced by the limited number of studies found in relation to the ecotourism benefits of mangroves. Actual economic valuation of such benefits needs to be conducted in existing mangrove ecotourism sites in the country.

Recommendations:

The overall assessment of the available data points to the positive potential of creating an accounting system for Philippine mangroves.

- The rationale of putting up the accounting system is anchored on the need to urgently highlight the ecological and economic importance of mangrove ecosystems in the Philippines.
- The design of the accounting system for mangroves should strike the balance between conservation and benefit-maximization.
- To maintain ecological integrity of mangroves, the use of its provisioning ecosystem services needs to be regulated given the high potential of mangroves for disaster and natural hazards protection.
- A thorough methodological review of setting-up mangrove systems account for the country, complemented by primary data, is necessary to validate the results of the study.



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