



Estimating the Costs and Benefits of the Conservation of a Coastal Wetland Suwanna Praneetvatakul

An economic analysis of wetland values requires identifying the relevant wetland functions and resources and assessing their importance in terms of their impact on or relevance to economic activities and the value of those functions.

The following use values of a coastal wetland were estimated.

(a) Please propose the valuation techniques (especially direct and indirect market based value), indicator or measurement and data needed

Goods and services	Estimated value (\$'000 per year)	Valuation techniques	Indicator or measurement	Data needed
Building materials	10			
Fuelwood	20			
Peat	2			
Medicinal herbs	15			
Meat/skins	30			
Wild foods	100			
Fish	150			
Fodder	5			
Water for domestic use	15			
Water transport	3			
Eco-tourism/recreation	350			
Research license medicinal value of wild plants	20			
Shoreline stabilization and erosion control	15			
Groundwater recharge	20			
Flood and flow control	25			
Sediment retention	12			
Water quality maintenance	15			



The annual expenditures incurred in conserving the wetland as a protected area were estimated as follows.

Unit: \$'000 per year

Items	Protected areas Management
Government	
- Site Management	150
- Data Management	
Multilateral and Bilateral	
- Species management	75
- Institutional capacity building	25
Local NGO's	
- Education	25
Total	275

(b) Please calculate the net present value (NPV) of conservation over a 20 year period taking into account the following additional information.

- Tourist operators incur private expenses of \$ 150,000 per year to run the wildlife (e.g. monkey) viewing and fishing operations (transport, labor, administration, camping, etc.)
- Assume a discount rate of 10% per year

(c) Please calculate the net present value (NPV) of the following development option. Wetland can have alternative land uses and suppose the next best use was conversion of the wetland for intensive agricultural use. The net benefits of complete wetland conversion to intensive agriculture can be measured by.

- Net private returns from annual agricultural yields (estimated at \$300,000 per year)
- Deduct the direct costs incurred in the development such as the costs of drainage, dredging and filling (estimated at \$200,000 in the start up year of the project)
- Deduct any additional environmental costs that arise due to the conversion (e.g. increased flooding downstream due to wetland conversion). Estimated at \$15,000 per year
- Assume a discount rate of 10% per year

(d) Comparing NPV of conservation and development options

(e) Scenario analysis: new development option

Assuming that the price of agricultural crop increases due to the promotion of food export, as a result, the annual agricultural return increases two folds.

Please calculate NPV of the new development option and discuss the policy implication for government