



The Regional Training Workshop
Economic Valuation of the Goods and Services of Coastal Habitats

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ECONOMIC VALUATION OF MANGROVE ECOSYSTEM IN BUSUANGA, PALAWAN, PHILIPPINES`

Philippines' Country Presentation

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Outline

- I. Background of the Study
 - Background on Mangroves
 - Philippines' National Action Plan on Mangroves
- II. Economic Valuation of Busuanga, Palawan Demo Site
 - Background on the Demo Site
 - Framework of the Task Force
 - Study Design
 - Derived Values in Busuanga
- III. Comparisons between the Busuanga Values and the Regional Values
- IV. Conclusion

THE PHILIPPINE MANGROVES BACKGROUND



Bongao Island, Tawi-tawi, Philippines

Species Composition of the Philippine Mangrove Forests

Mangrove Classification	No. of Species	No. of Families
True mangrove	36	17
Mangrove associates	34	16
Vines	12	4
Epiphytes	11	12
TOTAL	93	49

**as of 1992*



Area and Distribution of Mangroves in the Philippines

YEAR	ESTIMATED AREA (hectares)
1920	450,000
1950	375,020
1972	227,947
1988	139,100
1988	149,400
1988	170,410
1988	258,390
2003	160,265

DOWN BY 64.4%

DISTRIBUTION OF MANGROVE FORESTS IN THE PHILIPPINES

Region	Mangrove Area (ha)	% of Total Mangrove Forest ¹
CAR	-	-
1	172	0.01
2	5,572	0.22
3	157	0.01
4	55,089	1.21
NCR	-	-
5	9,962	0.54
6	3,577	0.19
7	12,972	0.95
8	17,028	0.81
9	21,074	1.38
10	1,759	0.13
11	1,902	0.07
12	2,064	0.14
13	23,275	1.27
ARMM	5,364	0.52
TOTAL	159,967	0.55

¹ Figures are ratio of mangrove area over the total land area by region/national.

LAND USES WITHIN THE MANGROVE FORESTS

- Mangrove reserves
- Fishponds
- Degraded mangrove forests
- Other land uses (saltponds, settlement areas, public infrastructures, mainly maritime ports/harbors)



DISTRIBUTION OF MANGROVE FOREST RESERVES CONVERTED INTO FISHPONDS (as of 1985)

Region/Province	Area (hectares)
4 Palawan	950
Quezon	570
Marinduque	50
5 Albay	87
Camarines Norte	1,185
Camarines Sur	2,011
Sorsogon	50
Masbate	84
7 Bohol	1,234
8 Leyte	788
9 Zamboanga del Sur	1,493
10 Misamis Occidental	280
13 Surigao del Norte	750
TOTAL	9,532

ISSUES, CONCERNS AND OTHER DEVELOPMENTS ON THE MANAGEMENT, CONSERVATION AND DEVELOPMENT OF MANGROVES IN THE PHILIPPINES

- Continued degradation and further threats of destruction
- Overlapping functions and conflicting policies and legislation of different government agencies and LGUs
- Appropriateness of the existing CBFM Agreement for mangrove forests
- Absence of policy to address existence of fully developed and productive illegal fishponds in mangrove timber lands and protected areas

ISSUES, CONCERNS AND OTHER DEVELOPMENTS ON THE MANAGEMENT, CONSERVATION AND DEVELOPMENT OF MANGROVES IN THE PHILIPPINES

- Lack of capability of the Pagbilao Mangrove Swamp Experimental Forest to capture multitude of mangrove variations in terms of genetic, species and habitat diversity
- Streamlining the management of mangrove resources/
Institutionalizing mangrove resources development
- Institutional constraints in the management and conservation of mangrove forests
- No comprehensive research program on mangroves that takes into the consideration the broad spectrum of biology, production, product development and utilization, economics and marketing, conservation and policy considerations



NATIONAL ACTION PLAN ON MANGROVES

PHILIPPINES

PREMISE OF THE ACTION PLAN



The Philippine Mangroves Action Plan is premised on the goal of having the country's mangrove forests and the resources therein developed and managed on a sustainable basis for the economic and environmental benefits of the people.

BASIS

- conforms with the stipulations set forth in the Forest Principles as enunciated by UNCED to which the Philippine government has given its commitment.
- recommendations stated here conform to one of the provisions of the Philippine Agenda 21 which echoes those of the Agenda set forth during the Earth Summit in Rio de Janeiro
- takes off from the Philippine Master Plan for Forestry Development (MPFD) which was formulated in 1990 and likewise on the Environment and Natural Resources Framework Plan, in response to a long felt need for rationalizing forest development initiatives in the country.

OBJECTIVES

- a. preservation of the remaining mangrove forests bringing them under effective management and enhancing their biological productivity;
- b. preservation of parts of the mangrove areas for protection of floral and faunal biodiversity;
- c. expansion of mangroves through reforestation and plantation development;
- d. effecting equitable access to mangroves on multiple-use, multiple-user basis;

OBJECTIVES

- e. provision of adequate supply of mangrove products and services to various end users while at the same time conserving and expanding the resources;
- f. promotion of economic development in areas around mangrove forests especially in ways that enhance mangrove protection and management; and
- g. strengthening of institutional arrangements for ensuring sustained management of mangrove resources in the country.

TIME FRAME AND RESPONSIBILITY CENTERS FOR THE IMPLEMENTATION OF THE PHILIPPINE MANGROVE ACTION PLAN

ACTIVITIES	TIME FRAME	RESPONSIBLE AGENCIES
1. Creation of the National Mangrove Committee	Immediate	CMMO-DENR
2. Delineation of the mangrove permanent forest estate	Immediate	FMB-DENR, NAMRIA, BFAR
3. Sustain national resource inventory/assessment of mangrove forests in the country	Immediate	FMB, LGUs, concerned POs
4. Replicate of the Pagbilao GRA to consider other environmental gradients	Intermediate	ERDB, UPLB and other SCUs, PCARRD
5. Adoption of C & I for management of mangrove forests	Intermediate	FMB, Academe
6. Expand the mangrove areas	Strategic	FMB, BFAR, LGUs
7. Lobby for the amendment of RA 7161 to exempt planted mangrove trees from the cutting ban provision.	Intermediate	DENR, LGUs, POS and LGUs
8. Regulate strictly the conversion of mangroves into other land uses	Immediate	DENR, BFAR, LGUs, FDC
9. Review and strengthen policy on reversion of abandoned, undeveloped and unproductive fishponds to mangrove forest estates	Intermediate	FMB, FDC, LGUs
10. Study and establish appropriate model for CBFM in mangrove forests	Immediate	FMB, FDC
11. Study and formulate policy to address existing productive illegal fishponds and/or shrimp farms	Intermediate	FMB, FDC
12. Strengthen IEC on mangrove forests/ecosystems	Continuous	DENR, LGUs, Academe
13. Sustain training for LGUs and mangrove/coastal communities on sustainable management of mangroves	Immediate	DENR, LGUs, SCUs, NGOs
14. Promote additional alternative livelihood opportunities for mangrove forest resource users	Immediate	DENR, BFAR, LGUs
15. Prioritization of Research and Development on the Mangrove Forests	Continuing	PCARRD, SCUs and other Research Institutions

Immediate – implementation needed in 1-5 years

Intermediate – Implementation in 6-10 years

Strategic – implementation after 10 years

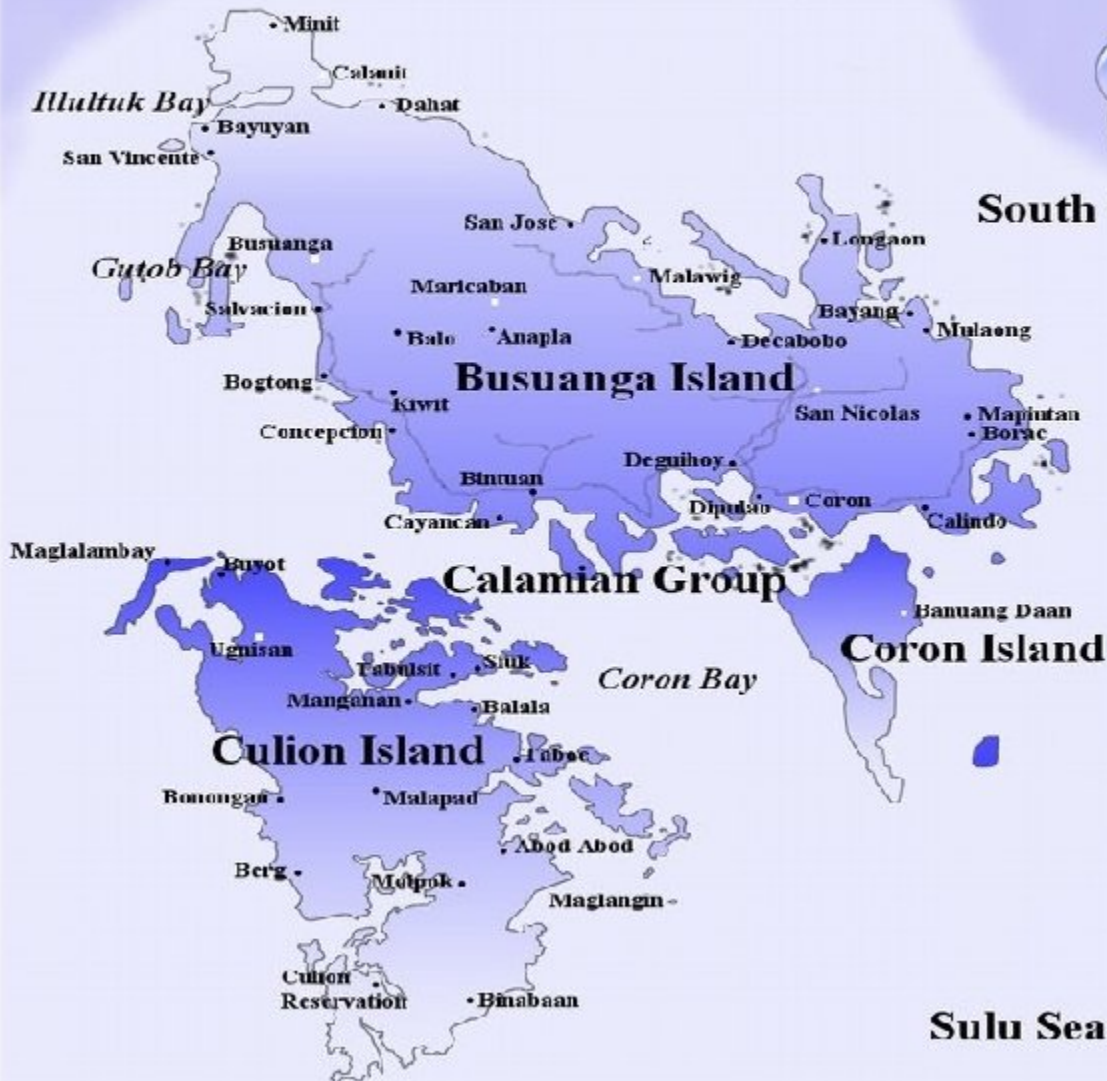
Continuing – currently being implemented and will continue on indefinitely

ECONOMIC VALUATION OF MANGROVES IN BUSUANGA, PALAWAN DEMO SITE



Background on the Demo Site

Busuanga



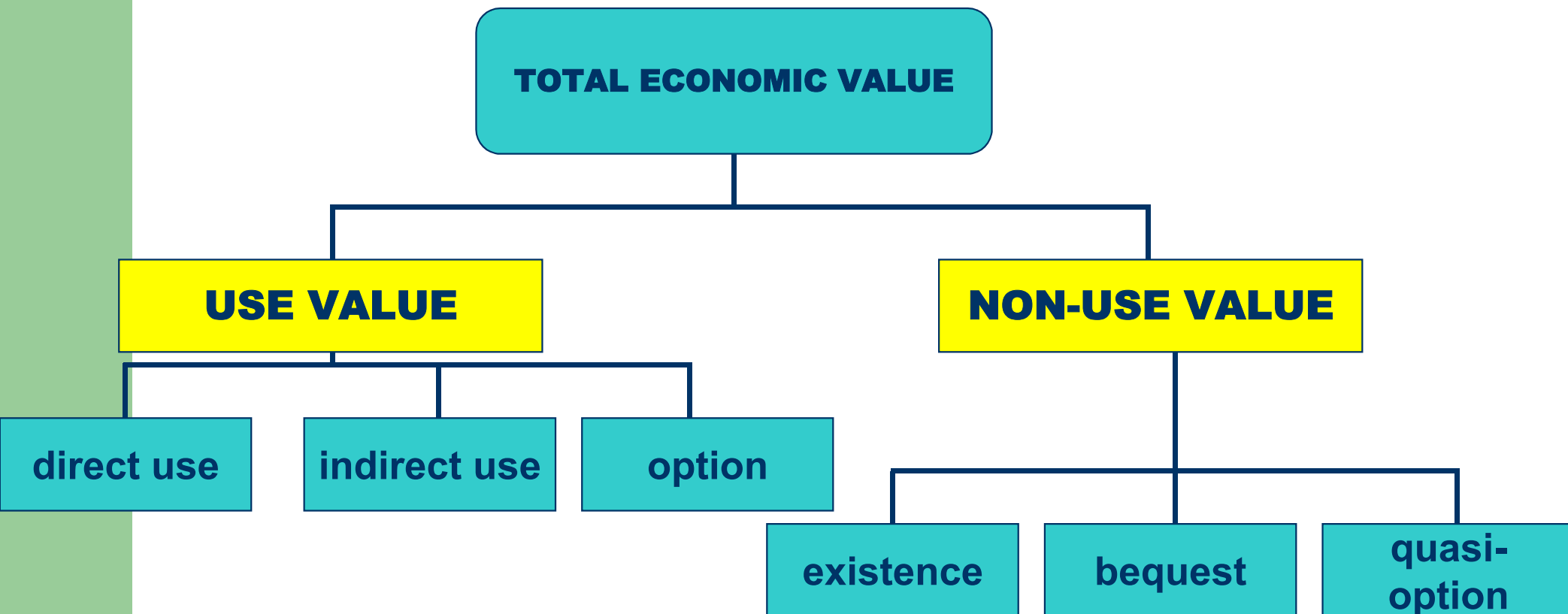
Background on the Demo Site

- Busuanga is classified as a 4th class municipality comprising 15 barangays all located in coastal areas
- It is one of the 22 municipalities situated at the northernmost part of Palawan and covers a total land area of 52,478 has.
- There are about 1,298.5 hectares of mangrove area left in Busuanga

Objectives of the Task Force

- The Regional Task Force on Economic Valuation (RTF-E) has been charged with determining regionally appropriate values for environmental goods and services provided by coastal habitats bordering the South China Sea, namely the seagrass, coral reefs, wetlands and mangroves
- Specifically, the Task Force is expected to:
 - Develop a regional valuation framework for use in evaluating the cost-effectiveness of alternative courses of action in the regional SAPs;
 - Identify available reference materials and information regarding various established economic valuation techniques that have been applied or can be applied to, the coastal resources and environments within the South China Sea region; and,
 - Providing advice and guidance, at the national level, to the Specialized Executing Agencies regarding the methodologies and values that can be used in the framework of economic and cost-benefit analysis required at the site level.

Framework of the Task Force



VALUATION TECHNIQUES

MARKET-BASED VALUE

SURROGATE MARKET-BASED VALUE

SIMULATED VALUE SURVEY-BASED

INDIRECT

CHANGE IN PRODUCTIVITY

DEFENSIVE/
PREVENTIVE
EXPENDITURE

COST OF
ILLNESS

REPLACEMENT
COST

DIRECT

ON-SITE
SALE
VALUE NET

ACTUAL
COST

TRAVEL
COST

CHOICE
MODELING

CONTINGENT
VALUATION
METHOD

Study Design

- Use Values
 - Direct Use (Firewood, Poles, Charcoal, Leaves/palm fronds, etc...)
 - Indirect Use
 - Option Value
- Non-Use Values
 - Existence Value
 - Bequest Value
 - Quasi-Option Value



Study Design

Generally, this study aimed to compute for the TEV of a mangrove ecosystem.

Specifically, its aims were:



- 1. Identify various benefits that mangrove ecosystems provide;*
- 2. Categorize the identified benefits into use or non-use values;*
- 3. Use the concept of TEV in the context of mangrove ecosystems; and,*
- 4. Compute for the TEV of mangroves in Palawan using various economic valuation tools.*

Table 1 Framework for Mangrove Valuation. Uses listed in italics are products derived from a primary resource extracted from the mangrove ecosystem.

USES	Use Values			Qu Op	Non-Use Value	SUGGESTED TECHNIQUES
	Direct	Indirect	Option			
EXTRACTIVE						
Timber	X					
Firewood	X					
Poles	X					
<i>Charcoal</i>	X					
Leaves/palm fronds (<i>Thatch, fodder</i>)	X					
Fruit/propagules	X					
Bark (<i>tanning & dyes</i>)	X					
<i>Medicine</i>	X					
<i>Sap (sugar, alcohol, Acetic acid)</i>	X					
<i>Wood tar</i>	X					
Fish capture	X					
Crab capture	X					
Prawn capture	X					
Shellfish collection	X					
Insect and larvae collection	X					
Worms	X					
Wildlife	X					
Zooplankton	X					
Jellyfish	X					
Honey & wax	X					
Algae	X					
Other uses (specify)	X					

DIRECT USE VALUES

Extractive uses

Goods	Value/ha/yr (US\$)
Firewood	1.47
Poles	2.14
Charcoal	8.04
Nipa leaves/palm fronds	15.69
Fish capture	3.03
Crab capture	11.79
Prawn Capture	10.07
Worms	0.40
Shells	3.11
TOTAL	55.74

NON-EXTRACTIVE USE

Tourism/Recreation	X					Surrogate Market based value
Transport	X					Indirect Market based value
Education	X					Actual costs (Gov. NGO,
Research	X					
Fish culture	X					
Crab culture	X					
Prawn culture	X					
Shellfish culture	X					
Other Aquaculture (pearl)	X					
Other uses (specify)						

ENVIRONMENTAL SERVICES

Shoreline/erosion protection		X				
Flood Protection		X				
Windbreak		X				
Carbon sequestration		X				
Water purification (Prevention of saline water intrusion)		X				
Sediment removal/storage		X				
Nutrient removal/storage		X				
Oxygen release		X				
Nursery area		X				
Feeding area		X				
Shoreline accretion/Land increase		X				

BIOLOGICAL DIVERSITY

Biological diversity (Existence values of Species, genetic, community)						
Migratory species						
Endangered species						
Mangrove ecosystem Maintenance (Existence value of the system)						
Wilderness value						

SOCIAL/CULTURAL SIGNIFICANCE

Religious/spiritual significance						
Historical importance						
Presence of distinctive human activities						
Aesthetic						

NON-USE VALUES

	Value/ha/yr (US\$)
MEAN	2821.41

TOTAL ECONOMIC VALUE

	Value/ha/yr (US\$)
USE VALUE	55.74
NON-USE VALUE	2821.41
TOTAL	2,877.15

Comparisons between the Busuanga Values & the Regional Values

3000

Regional Values

Busuanga, Palawan

2700

value/ha/yr
(US\$)

	Value/ha/yr (US\$)
Regional Value	2872.25
Busuanga Value	2877.15

Conclusion

- **Problems Encountered**

- **Survey Process**

- respondents are reluctant to answer questions especially since we were from the government, it is very difficult to explain to them why we need to elicit WTP values*

- **Time, Manpower and Budget Constraint**

- Limits the extensiveness of the survey process*

- **Ignorance of respondents over the true value of the mangroves**

- the extent of value that mangroves have for them are the subsistence extractions that they do (direct use)*

Conclusion

- Realizations
 - Significance of Valuation to decision/policy making
 - Need for extensive Information & Education Campaign
 - Need to employ additional valuation techniques
 - There is a need for more extensive valuation studies on mangroves



Thank you...