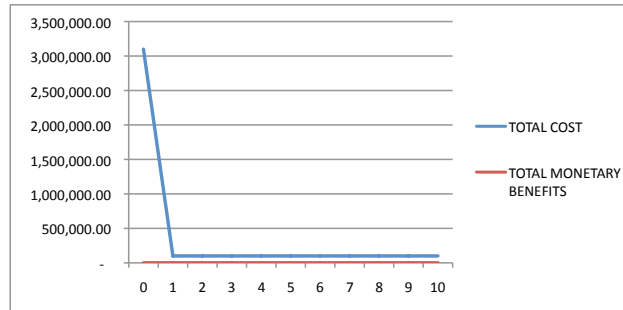
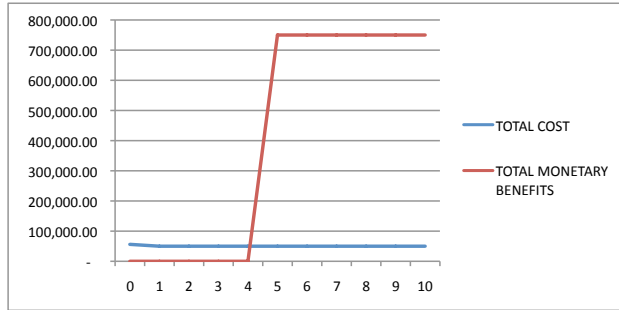


Scenario #2 (Mangrove restoration)

	0	1	2	3	4	5	6	7	8	9	10
TOTAL COST	56,200.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00
TOTAL MONETARY BENEFITS	-	-	-	-	-	750,000.00	750,000.00	750,000.00	750,000.00	750,000.00	750,000.00

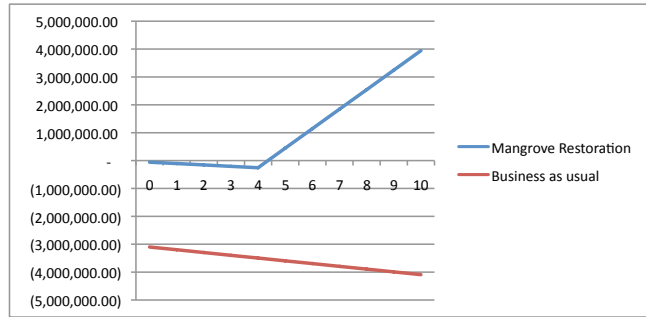
Scenario #1 (No action)

	0	1	2	3	4	5	6	7	8	9	10
TOTAL COST	3,100,000.00	100,000.00	100,000.00	100,000.00	100,000.00	100,000.00	100,000.00	100,000.00	100,000.00	100,000.00	100,000.00
TOTAL MONETARY BENEFITS	866.03	866.03	866.03	866.03	866.03	866.03	866.03	866.03	866.03	866.03	866.03



Break even analysis (comparison of 2 solutions)

	0	1	2	3	4	5	6	7	8	9	10
Mangrove Restoration	(56,200.00)	(106,200.00)	(156,200.00)	(206,200.00)	(256,200.00)	443,800.00	1,143,800.00	1,843,800.00	2,543,800.00	3,243,800.00	3,943,800.00
Business as usual	(3,099,133.97)	(3,198,267.95)	(3,297,401.92)	(3,396,535.90)	(3,495,669.87)	(3,594,803.85)	(3,693,937.82)	(3,793,071.80)	(3,892,205.77)	(3,991,339.75)	(4,090,473.72)



Scenario 1: Cost and Returns for Mangrove Reforestation and Rehabilitation													
	DESCRIPTION		0	1	2	3	4	5	6	7	8	9	10
COST	Materials		6,200.00										
	Direct Labor		50,000.00										
	Maintenance Cost			50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00
	TOTAL COST		56,200.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00
RETURNS	Shoreline protection \$8,000 per ha per year	ok											
	Averting damages to coastal communities (\$600 per ha)	ok											
	Marine /Fish resources		-	-	-	-	-	750,000.00	750,000.00	750,000.00	750,000.00	750,000.00	750,000.00
	Educational/Research	ok											
	Eco-tourism and Livelihood	ok											
	Climate Regulation	ok											
	Biodiversity	ok											
	Aesthetic appreciation	ok											
	TOTAL MONETARY BENEFITS		-	-	-	-	-	750,000.00	750,000.00	750,000.00	750,000.00	750,000.00	750,000.00
ANNUAL NET INCOME		(56,200.00)	(50,000.00)	(50,000.00)	(50,000.00)	(50,000.00)	(50,000.00)	700,000.00	700,000.00	700,000.00	700,000.00	700,000.00	700,000.00
BREAK-EVEN ANALYSIS		(56,200.00)	(106,200.00)	(156,200.00)	(206,200.00)	(256,200.00)	443,800.00	1,143,800.00	1,843,800.00	2,543,800.00	3,243,800.00	3,943,800.00	

Scenario 2: Cost and Returns for Inaction													
	DESCRIPTION		0	1	2	3	4	5	6	7	8	9	10
COST	Materials		-										
	Direct Labor		-										
	Maintenance Cost			-	-	-	-	-	-	-	-	-	-
	Soil erosion control (potential risk for termoelectric)		3,000,000.00										
	Nutrient loss (conservative assessment)		100,000.00	100,000.00	100,000.00	100,000.00	100,000.00	100,000.00	100,000.00	100,000.00	100,000.00	100,000.00	100,000.00
	TOTAL COST		3,100,000.00	100,000.00	100,000.00	100,000.00	100,000.00	100,000.00	100,000.00	100,000.00	100,000.00	100,000.00	100,000.00
RETURNS	Shoreline protection \$8,000 per ha per year	risk											
	Averting damages to coastal communities (\$600 per ha)	risk											
	Marine /Fish resources	risk	866.03	866.03	866.03	866.03	866.03	866.03	866.03	866.03	866.03	866.03	866.03
	Educational/Research	ok											
	Eco-tourism and Livelihood	ok											
	Climate Regulation	ok											
	Biodiversity	ok											
	Aesthetic appreciation	ok											
	TOTAL MONETARY BENEFITS		866.03	866.03	866.03	866.03	866.03	866.03	866.03	866.03	866.03	866.03	866.03
ANNUAL NET INCOME		(3,099,133.97)	(99,133.97)	(99,133.97)	(99,133.97)	(99,133.97)	(99,133.97)	(99,133.97)	(99,133.97)	(99,133.97)	(99,133.97)	(99,133.97)	(99,133.97)
BREAK-EVEN ANALYSIS		(3,099,133.97)	(3,198,267.95)	(3,297,401.92)	(3,396,535.90)	(3,495,669.87)	(3,594,803.85)	(3,693,937.82)	(3,793,071.80)	(3,892,205.77)	(3,991,339.75)	(4,090,473.72)	

NET PRESENT VALUE (NPV) of MANGROVE Rehabilitation and Reforestation

15 Discount Factor (IRR)

A	B	C	D	E	F	G
				Cost / (IRR) ^{-nper}	Benefit / (IRR) ^{-nper}	
				Present Value of Cost	Present Value of Benefit	NPV (PV Benefit- PV Cost)
YEAR	Costs	Benefits	Discount Factor (15%)	Discounted Costs (BD)	Discounted Benefits (CD)	Discounted Net Benefits (F-E)
0	56,200.00	0.00	1.000	56,200.00	0.00	-56,200.00
1	50,000.00	0.00	0.870	43,478.26	0.00	-43,478.26
2	50,000.00	0.00	0.756	37,807.18	0.00	-37,807.18
3	50,000.00	0.00	0.658	32,875.81	0.00	-32,875.81
4	50,000.00	0.00	0.572	28,587.66	0.00	-28,587.66
5	50,000.00	750,000.00	0.497	24,858.84	372,882.55	348,023.71
6	50,000.00	750,000.00	0.432	21,616.38	324,245.70	302,629.32
7	50,000.00	750,000.00	0.376	18,796.85	281,952.78	263,155.93
8	50,000.00	750,000.00	0.327	16,345.09	245,176.33	228,831.24
9	50,000.00	750,000.00	0.284	14,213.12	213,196.81	198,983.69
10	56,200.00	750,000.00	0.247	13,891.78	185,388.53	171,496.75
Total	562,400.00	4,500,000.00	6.02	308,670.98	1,622,842.70	1,314,171.72

COST ESTIMATES for Mangrove Restoration (4 hectares)

	PARTICULARS	QUANTITY	UNIT COST	TOTAL COST
MATERIALS:				
	Dredging machine		pcs	USD 6,200.00
DIRECT LABOR:				50,000.00
				56,200.00
MAINTENANCE				
	Monthly monitoring and supervision	12 mo	4167	50,000.00
	Subtotal			50,000.00
TOTAL ESTIMATED PROJECT COST for Mangrove Restoration				USD <u><u>106,200.00</u></u>

Fisheries: Volume of Production based on case study of mangroves in the Gulf of Mexico

USD

175000

Marine Municipal Fisheries: Value of Production by Species, by Region
and by Province, 2002-2012 by Geolocation, Species, Year and Quarter

		2010	
		Annual	
....Batangas	TOTAL	1270910.67	1270910670
	..Acetes (Alamang)	393.67	
	..Anchovies (Dilis)	5693.47	
	..Big-eyed scad (Matangbaka)	62128.51	
	..Bigeye tuna (Tambakol/ Bariles)	..	
	..Blue crab (Alimasag)	13974.46	
	..Caesio (Dalagang-bukid)	14556.36	
	..Cavalla (Talakitok)	22428.24	
	..Crevalle (Salay-salay)	..	
	..Eastern little tuna (Bonito)	..	
	..Fimbriated sardines (Tunsoy)	..	
	..Flying fish (Bolador)	25868.97	
	..Frigate tuna (Tulingan)	270999.5	
	..Goatfish (Saramulyete)	15105.51	
	..Grouper (Lapu-lapu)	11879.49	
	..Hairtail (Espada)	1701.6	
	..Indian mackerel (Alumahan)	82436.91	
	..Indian sardines (Tamban)	82532.51	
	..Indo-pacific mackerel (Hasa-hasa)	51161.28	
	..Mullet (Kapak)	..	
	..Parrot fish (Loro)	7571.28	
	..Porgies (Pargo)	10410.35	
	..Round herring (Tulis)	4241.27	
	..Roundscad (Galunggong)	192155.75	
	..Siganid (Samaral)	9045.46	
	..Skipjack (Gulyasan)	58986.77	
	..Slipmouth (Sapsap)	9268.94	
	..Snapper (Maya-maya)	7046.51	
	..Spanish mackerel (Tanigue)	19105.8	
	..Squid (Pusit)	31821.32	
	..Threadfin bream (Bisugo)	28224.93	
	..Yellowfin tuna (Tambakol/Bariles)	46970.77	
	..Others	185201.04	