



Introduction

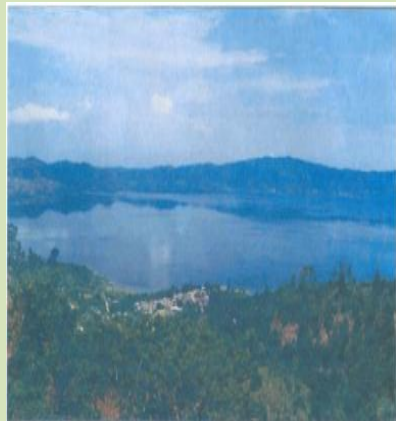


Figure 1: Lake Bosomtwe Basin

The current state of Lake Bosomtwe is one of major concern to many environmentally informed citizens of the global community. There is massive overfishing, pollution from the use of agrochemicals, livestock contamination, detergent and soap use, burning of organic and inorganic waste along the shore and uncontrolled disposal of solid waste occurring. With these activities continuing at the current rate, the continuous existence of the services of the lake are at a great risk since the above mentioned activities are recipes for eutrophication of the resource.



Figure 2: Lake Bosomtwe

A general version of the economic argument for conservation is that although the demand for recreation activity and unspoiled natural areas is increasing, the supply opportunities are constantly shrinking, creating a steady rise in the implicit price or social value of natural environments.

This irreversibility and necessary loss of future options to use these sites as unspoiled recreational or unique ecological resources create a persuasive rationale for careful development policy.

Natural resources possess both primary and secondary values, which must be recognized to serve as a basis for natural resource conservation. Lake Bosomtwe is estimated to be about 1.3 million years old, even though it is regarded as the youngest among its class of lakes. The lake site though not well developed attracts thousands of visitors annually. The high socio-cultural, economic and scientific values of this natural lake are locally and internationally not in dispute. This paper assesses the extent to which the communities around the lake recognize its primary and secondary values, particularly when it is regarded traditionally as their god. It also analyzes through the Contingent Valuation Method the local trade-off between the Total Economic Value and the primary value of the lake. The economic implications of this trade-off are analyzed for the conservation of the lake.

Results and Discussion

Table 1.0: Computation of Monthly TWTA and TWTP for conservation of Lake Bosomtwe

Midpoints of WTA in GH¢ (a)	% of sample (WTA) (b)	Total Population (WTA) (c)	Total WTA (c x a)	WTP in GH¢ (e)	% of Sample (WTP) (f)	Total Population (WTP) (g)	TWTP in GH¢ (e x g)
0	21.4	6,420	0	0	32.9	9,870	0
10	19.7	5,910	59,100	0.50	18.1	5,430	2,715
30	10.0	3,000	90,000	1.00	11.4	3,420	3,420
50	20.5	6,150	307,500	1.50	0	0	0
70	06.7	2,010	140,700	2.00	12.4	3,720	7,440
90	12.4	3,720	334,800	2.50	0	0	0
110	0	0	0	3.00	1.4	420	1,260
130	0	0	0	3.50	0	0	0
150	1	300	45,000	4.00	0	0	0
170	0	0	0	4.50	0	0	0
190	2.9	870	165,300	5.00	15.2	4,560	22,800
200+	5.8	1,740	348,000	5.00 +	08.6	2,580	14,190
<b>Total</b>	<b>100</b>	<b>30,000</b>	<b>1,490,400</b>		<b>100</b>	<b>30,000</b>	<b>51,825</b>

Total Monthly Conservation Benefits = TWTA - TWTP = GH¢1,490,400 - GH¢51,825  
 = Minimum Monthly Net Conservation Cost to government = GH¢1,438,575  
 Therefore, Minimum Annual Net Conservation Cost to government = GH¢17,262,900.00 = US\$10,789,312.50

- About 33% of local residents were not willing to pay anything for the lake to be left in its current state for their use implied that the value they hope to derive from the lake is negligible.
- The 33% knowing that the lake is common property were not prepared to fund its continuous use in the current state.
- The modal WTA (21% of population) is zero. This is an indication that local residents are not willing to give up their custody of their god.
- The zero WTA shows how non-negotiable some local residents see the lake to be as their heritage and deity which they will not accept to dispose of. It is worth noting that there is some demonstration of the primary value of the lake here, whose price is too high to quantify.
- This calls for highly skilful negotiating mechanisms if conservation plans are to be successful. It will certainly not be easy to dispose the people of the lake in any substantial way, since by the results some are going to accept any compensation or alternative livelihood package as payment for a transfer of the 'ownership' of the lake.
- Regression analysis indicated that the level of Education, level of income and belief in the deity of the lake of household heads were the most significant determinates of WTA. These were significant at the 5% level of significance and had the expected signs. The length of stay in the area as well as the belief in the deity of the lake by household heads were the most significant determinants of WTP. The correlation between WTP and WTA was high, positive and significant at the 1% level.



Boys from nearby villages practicing traditional fishing methods on Lake Bosomtwe. Large tropical trees submerged in 15-20 meters of water provide evidence of severe, long lasting droughts just a few centuries ago. Image courtesy of J.T. Overpeck and W. Wheeler, University of Arizona.

Conclusion

From the above results, it is clear that the current use of Lake Bosomtwe will lead to its eutrophication. Local taboos to preserve the site seem to have failed and therefore, government and the international community will need to urgently provide alternative livelihood activities as a first step to the conservation of the lake for the benefit of humanity.