



# **Biodiversity, Ecosystem Conservation and Poverty Reduction: A Contingent Valuation Approach in Grande Riviere**

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# Ecotourism and Poverty Alleviation

- Since, the 1990s ecotourism has been rapidly adopted by many developing countries such as a vital component of their development strategies (Honey, 1999:18).
- To alleviate poverty by the empowerment of the communities. (Mitchell and Ashley, 2010; Holden et al., 2011; Zou et al., 2012).



# Community-based ecotourism led local economic development

- “At a local and regional level it offers opportunities for employment and income spurring regional and local economic development, which might be unique for many small and distant places”(Honey, 1999:14; Tisdell 2001; Hawkins & Mann, 2007; Goodwin & Santilli, 2009; Mearns, 2012;).

## “You can’t manage what you can’t or don’t measure”(EU, 2013).

Expressing the value of ecosystem services in monetary units is an important tool to raise awareness and convey the (relative) importance of ecosystems and biodiversity to policy makers (Loomis et al.,2000;Tisdell, 2012): enables more efficient use of limited funds (Crossman & Bryan, 2009, Crossman et al. 2011).

- Non use or passive values are not captured by conventional revealed preference methods: **often results in an implicit value of zero being placed on ecosystems services (Dailey, 1997; Loomis et al., 2000)**
- Resulting in **market failure!**

# Methodology: Contingent Valuation Method

- Total Economic Value= Total Use Values + Total Non-Use Values (Tisdell, 2005; Nunes et al., 2009 )
- Contingent valuation (CVM) is one of the only ways to assign dollar values to the non-use or “passive” values of the **environment—values that do not involve market purchases and may not involve direct participation.** Arrow et al.,1993; Venkatachalam, 2004; Tisdell, 2005).
- CVM creates a realistic, albeit hypothetical, market where **peoples’ value for a good or service are expressed as the willingness to pay (WTP):** measure of economic value (Haab & Mc Connell, 2002).

## Methodology: CVM

### Double- bounded dichotomous choice approach

- Respondents are presented with initial bids prices (\$10 per week ).
- If the initial response was no, they are presented with a lower price (\$5). If yes then with a higher price (\$15).
- Thus one gets the following combinations: yes-yes, yes-no, no-yes, no-no .
- “As respondents can only answer ‘yes’ or ‘ no’, they have little opportunity to bias their answers deliberately in hope of influencing the survey results”(Carson et al., 1994).
- This approach mimics how consumers make decisions to purchase private goods are made, in the market.

## Survey Results:

Distribution of responses concerning participants' willingness to donate \$10 (TT) a week for the next three years towards the conservation of leatherback sea turtles in Grande Riviere.

Responses	Mandatory		Voluntary	
	Amount	(%)	Amount	(%)
Respondents willing to pay only \$10	47	15.3	30	8.7
Respondents willing to pay only \$15	21	6.9	93	27.1
Respondents willing to pay only \$5	71	23.2	124	36.2
Respondents not willing to pay any amount	167	54.6	96	28.0
Total	306	100	343	100

## Survey Results (cont'd)

	Minimum	Maximum	Mean(\$TT)	Std. Dev.	Visitors	Total (\$TT)
Expenditure per visit (TT\$)	20	1,500	308.4	249.784	343	105,933

Visitors willing to pay more to view the leatherback sea-turtles in Grande Riviere	Participants	%
\$ 5 more	76	22.2
\$ 10 more	36	10.5
\$ 15 more	30	8.7
\$ 20 more	15	4.4
More than \$20	29	8.5
<b>Total Willing to pay more to enter Grande Riviere</b>	<b>186</b>	<b>54.3</b>
Willing to pay same	128	37.3
Willing to pay less	15	4.4
Not Sure	14	4
	343	<b>100</b>



## Econometric Results: Model with Covariates; Voluntary payment scheme

Explanatory Variables (Beta)	Coef.	Std.	p>z	z	(95% Conf Interval)	
Age	-1.4199	0.4873	0.004	-2.91	-2.3751	-0.4646
Gender	-2.8925	0.9664	0.003	-2.99	-4.7866	-0.9983
Visit	0.8339	0.8965	0.352	0.93	-0.9233	2.5911
Education	-0.2726	0.2816	0.333	-0.97	-0.8245	0.2793
Income	1.8944	0.4166	0.000	4.55	1.0778	2.7110
Expenditure	0.0001	0.0017	0.948	0.06	-0.0034	0.0036
Marital status	3.7832	0.8841	0.000	4.28	2.050	5.5161
Entrance fee	-0.3313	0.8125	0.069	-1.82	-0.6890	0.0263
Conservation	7.3701	2.0919	0.000	3.52	3.2699	11.4703
Mandatory payment	-1.3974	0.3368	0.000	-4.15	-2.0577	-0.7372
Cons (Sigma)	6.9221	0.4634	0.000	14.94	6.0139	7.083
	Log likelihood				-420.02415	

## Econometric Results: Model with Covariates; Mandatory payment scheme

Explanatory Variables (Beta)	Coef	Std.	p>z	z	(95% Conf. Interval)	
Age	-0.2116	0.7774	0.785	-0.27	-1.7353	1.3120
Gender	1.0195	1.5423	0.509	0.66	-2.0032	4.0424
Visit	1.5355	1.4085	0.276	1.09	-1.2250	4.2962
Education	-0.1470	0.4565	0.456	-0.32	-1.0419	0.7477
Income	0.2008	0.6521	0.758	0.31	-1.0771	1.4788
Expenditure	0.0037	0.0028	0.181	1.34	-0.0017	0.0093
Marital status	-1.1758	1.4259	0.410	-0.82	-3.9707	1.6190
Entrance fee	-0.0009	0.2958	0.997	-0.00	-0.6890	0.0263
Conservation	0.4591	3.2428	0.887	0.14	0.0740	2.6761
<b>Voluntary payment</b>	1.3750	0.6638	<b>0.038</b>	2.07	0.0739	2.6761
Cons (Sigma)	10.2469	0.9262	0.000	11.06	8.4316	12.0622
	Log likelihood				-353.0047	

## Econometric Results : WTP Estimates

	Coef.	Std.	z	p> z	(95% Conf. Interval)	
WTP (Voluntary scheme)	8.9556	0.4201	21.32	0.000	8.1323	9.7789
WTP (Mandatory scheme)	3.5680	0.7898	4.52	0.000	2.0198	5.1161

### Conservation value of the leatherback-sea turtles in Grande Riviere

	WTP Value		Annually (15000 visitors average per year)	
	TT\$	US\$	TT\$	US\$
Voluntary payment	8.96	1.34	6,451,200	1,001,739
Mandatory payment	3.57	0.53	2,570,400	399,130

# Conclusions and Discussions

- Following the approach used by Stoll & Johanson, 1998; Bandara & Tisdell, 2003; the conservation value for the voluntary payment scheme was calculated to be about 6.45m TT; and 2.6mTT with regards to the mandatory payment scheme.
- CBE can result in an eco-village being formed with “good” institutions; the development of institutional capacity: thus enhancing capabilities of which poverty can be said to be the lack of or the deprivation of, (Nussbaum, 2003; Sen, 1995:15, 2005).
- North (1990), Rodrik (1999), Williamson (2002) and Rodriguez-Pose (2010): **you can have all the capital and infrastructural but without the appropriate institutions, long run economic growth will be an ever elusive goal.**

## Conclusion and Discussions

- Institutions facilitate the formation of clusters: “critical masses in one place of linked industries and institutions” (Porter,1998)
- “...Clusters represent critical masses of skill, information, relationships, and infrastructure in a given field... it is clusters that drive economic development. They create new capabilities, new companies, and new industries” (Porter, 1995).
- Thus, increasing possibility of product and economic diversification; “a radical change in the institutional structure....particularly in the economic, social and political arrangements” (Beckford, 1972).
- Perhaps the **“REAL”** value of tourism development in a Rentier economy such as Trinidad and Tobago is to facilitate the formation of the right institutions



**THE END**  
**THANKS FOR YOUR ATTENTION**  
**COMMENTS AND SUGGESTIONS WILL BE**  
**GREATLY APPRECIATED !!!!**