

Payment for Wildlife Ecosystem Services in the Okavango Delta, Botswana

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Introduction

- This study seeks to investigate the value that tourists assign to the wildlife in the Okavango Delta so as to assess the potential of establishing a payment for ecosystem services (PES) market to enhance their conservation.
- The focus is Moremi Game Reserve (MGR) in the Okavango Delta where the country's rich biodiversity is found.
- The study focuses on the following *disputed wildlife species*: **cheetah, leopard, lion, and wild dog**

Introduction cont'd

- These animals happen to have a very high viewing value to tourists yet they impose a negative externality to local communities by killing their smallstock, implying that their future sustainability is not guaranteed.
- With the need to diversify the country's economy from diamond mining to tourism, endangering valuable species constitutes shooting oneself in the foot.
- It is thus important to value the species in searching for sustainability strategies for the tourism industry and human welfare.

Literature

- Bulte *et al.*, (2008) conducted a simple CBA to consider the rationale of paying Maasai near Amboseli NP in Kenya to improve wildlife habitat.
- They found that the conservation effects of a PES scheme are likely to be sufficiently large to warrant implementation.
- Nelson (2008) valued Tarangire NP in Tanzania and argues that initially the people who produce wildlife did not get anything from the revenue collected.
- However all actors have now entered into an agreement which provides the community with annual payments for protecting important seasonal wildlife habitats.

Literature cont'd

- Bennagen *et al.*, (2006), used CVM to explore the potential of PES in two northern Philippine sites.
- The results revealed a positive WTP for watershed protection among the tourists, with the local tourists' WTP on average PhP37/person/visit and the adventure tourists' WTP PhP133/person/visit
- The study also established that several existing legal and regulatory enactments in Philippines could support a PES.

PES Market

- The **good** considered here is the recreational viewing value afforded by the *disputed wildlife species*: **cheetah, leopard, lion, and wild dog**.
- The **supplier** of the good is the MGR and the communities of Mababe, Sankuyo and Khwai villages.
- The **demand** for the good derives from recreational viewing by local and foreign tourists.
- Since this is a feasibility study, no **institution for mediating PES** trades exists as yet.

Methodology for establishing the magnitude of Demand

- Data for this study was collected from tourists who visited MGR in December 2008. Information about respondents' socio-economic characteristics was obtained through direct interviews using structured questionnaires.
- Two methods were used: CVM and TCM and only data for non-resident visitors was analysed.
- CVM uses hypothetical survey questions to elicit people's preferences for public goods and captures both use and non-use values while TCM infers values placed by visitors on environmental amenity services from costs they incurred in order to experience the services. It captures only the use value. To be precise, the DC CVM (single-bounded) with a follow-up OE question is used, as well as the ZTCM.

Results

- **CVM results:** Logit model estimates

Variable	Coefficient	P- Values	Marginal effects
Bid(β)	-0.109	0.000***	-0.028
Age	0.006	0.645	0.002
Gender	-0.302	0.474	-0.068
Education	1.370	0.074*	0.292
Income	0.0000765	0.000***	0.292
Environmental importance	0.311	0.028*	0.365
Constant(α)	6.856	0.001***	
LogL	-63.73		

- Level of significance: 1%, 5% 10% denoted as ***, **, * respectively.

Results cont'd

- **TCM results:** Semi-log model estimates

Variable	Coefficient	P-value
Cost	-0.0001638	0.000***
GDP per capita	0.0000254	0.001***
Age	-0.0080859	0.296
Gender	0.1225685	0.493
Education	0.004363	0.075**
Environmental importance	0.052341	0.015**
Constant	-9.322652	0.000***
Adj Rsquared	0.0250	

- Level of significance: 1%, 5%, 10% denoted as ***, **, * respectively.

Results cont'd

- CVM and TCM

Valuation type	Mean value/visitor	Aggregate for all visitors
WTP-MGR	64.13	2 557 312
WTP-disputed species	29.63	1 183 956
CS-MGR	637	25 453 246
CS-disputed	295	11 787 610

Challenges for Establishing PES

- The most difficult challenge here is the nature of the good to be marketed, it is in the form of intangible consumer surplus. PES requires an institution that mediates demand and supply.
- Demand side of market—most of the CS comes from foreign tourists (how can it be captured and used in a PES?).
- Determining the appropriate amount and form of payment to the stewards is another problem because PES will only have the desired effects if it reaches the communities in a way that will influence their attitude towards wildlife conservation.
- How to avoid perverse incentives to the communities is an obstacle too.

Conclusion

- The study sought to determine the value of the *disputed* wildlife resources in the Okavango Delta in Botswana so as to assess the potential of establishing a payment for ecosystem services (PES) market to enhance their conservation.
- The study found a strong indication of support for and willingness to pay for wildlife ecosystem services in MGR.
- CVM results yielded an estimated mean WTP of about USD 64/tourist/visit which was about USD 49 more than the current entrance fee suggesting that the current fee could be raised substantially without affecting the tourist flow negatively.
- The CS obtained from TCM was USD 637 implying that if the government wants to increase the price, this is the value to cut from, bearing in mind that when the price is increased, some people may not visit.
- The values obtained from the CVM and TCM can be used to determine the 'price' for the wildlife in MGR so as to see how to share the benefits with the local community.
- Policy makers should look at PES as an incentive-based policy instrument to financially support conservation.