

THE ECO-TOURISM VALUE OF NATIONAL PARK: A CASE STUDY FROM THE PHILIPPINES

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ABSTRACT

National parks or generally protected areas (PAs) normally hold a high value as a recreational resource or destination. Though in many cases no fee or charge is made to view or enjoy natural ecosystems, people still spend time and money to reach PAs. These costs of spending (for transport, food, accommodation, time, etc.) can be calculated, and a visitation rates can be compared to expenditures. These travel costs reveals the value that people place on recreational, tourism or leisure aspects of PAs. The aim of this paper is to estimate the value of the recreational benefits from Mt. Pulag National Park (MPNP) of Cordillera Administrative Region (CAR), Philippines. The valuation uses the individual travel cost method (ITCM) which estimates the value of a non-market good like recreation. The linear recreational demand for Mt. Pulag is estimated as $r = 3.67 - 0.000087tc$, where r stands for the number of days intended to stay in Mt. Pulag and tc represents the travel cost per day. The estimated aggregate consumer surplus and the recreational value of MPNP, year 2007, were valued at ₱47,062,560.00 and ₱56,335,590.00 respectively. Greater market values are generated from off-site expenses than from on-site expenses. If taxes were collected, the host municipality, would have earned ₱ 4.7 million. The value of MPNP is important in terms of its contribution to the market economy. These values can determine that marketing of eco-tourism for Mt. Pulag and can be used to generate efficient tourism tax collection, and other fees i.e. green fee or user's fee to improve management for Mt. Pulag. The result of the study can be significant to future researchers where issues of conservation and policy options are concerned.

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1. Introduction

Forests are a particular focus of environmental concern. In many countries, forest areas are increasingly valued more for their environmental benefits than for their timber. Forests are reserve for wildlife conservation, watershed protection and very recently more on the reason of their recreational values. In other cases, forest are valued because of cultural and heritage significance particularly to the indigenous people. Property ownership is complicated among the indigenous people, ownership is communal and cultural influence is strong. Thus, more often than not development projects are met with resistance because of the cultural significance that indigenous people attached to the economic resource. It is thus increasingly significant for development and social planners to evaluate alternative forest's land use while maintaining a harmony between development efforts and respecting the values, practices and institutions of indigenous groups.

Oftentimes indigenous groups are left behind by development projects because of the inability of social planners to understand ethnic values and practices. Development efforts can co-exist taking into account ethnic values. Eco-tourism provided the needed development strategy for indigenous areas. Eco-tourism minimizes physical encroachment of the resource while at the same time bringing in economic activities that can benefit the locals without losing the aesthetic and recreation values of the resource.

Indigenous groups who lack or possess little awareness of the economic value of their resources most often compromised "their resources" with development projects which brings short run benefits but leaves the local community saddled with the brunt of environmental degradation.

The aim of this paper is to estimate the value of the recreational benefits from a specific national park in the Cordillera Administrative Region (CAR), Philippines. The valuation uses the individual travel cost method (ITCM) which estimates the value of a non-market good like recreation, with a specific goal of estimating the quantity demanded for recreation from alternative forest land use. Other output of this research is to provide an estimate of the spill-over benefits of recreation. The estimated value can be used to assess the economic impact of further development of the resource. The end of this paper is to assist forest policy and management systems become more attune to the customs and individuality of indigenous communities.

2. Rationale of the Study

At 2,922 m above sea level, Mt. Pulag is considered the 2nd highest mountain in the Philippines, next to Mt. Apo of Mindanao with only a few meters difference. It is considered as one of the most beautiful National Parks in the Cordillera Administrative Region (CAR). A major area of the mountain has been designated as National Park by virtue of Proclamation No. 75 dated 20 February 1987. Mt. Pulag in the international community is referred to as the seat of the culture of indigenous peoples of Benguet.

Mt. Pulag is typically different from the rainforest-mountains in the Philippines because of its open area (no trees mountain) that sometimes it is referred to as the Bald Mountain. The vegetative cover is classified as 50% mossy forest; 25% cultivated/residential; 20% pine forest; and 5% grassland. The mountain hosts 528 documented plant species. Among its native wildlife are 33 bird species and several threatened mammals such as Philippine deer, giant bushy-tailed cloud rat and long-haired fruit bat. Mt. Pulag is one of 18 sites identified as ecosystems and habitats containing high plant diversity in the country. It has floral affinity within continental Asia and Australia.

Mt. Pulag is important, to the indigenous inhabitant of the mountain and to the national economy. To the indigenous people, it is their major source of life support. From the slopes of Mt Pulag's seven mountain peaks and unique vegetation zones comes the water that supports the life of the communities living within and outside the park. The dynamics of rain and the floral system brings springs, creeks, and rivers that provide water for domestic, livelihood, and irrigation purposes (DENR, 2004). The highly diverse plant and wildlife are sources of food, medicine, fuelwood, and timber for houses of the local community.

To the national economy, it contributes to tourism and energy generation. Mt. Pulag is highly valued by mountain climbers and trekkers, Filipinos and foreigners. It provides ecological recreation and is visited for its panoramic and breathtaking landscapes spread into three municipalities: Kabayan and Bokod both in Benguet and Kayapa, Nueva Vizcaya. The dynamics of rain and the floral system brings springs, creeks, and rivers that provide water for domestic, livelihood, and irrigation purposes. Its tributaries also drain into major river systems that feed into two hydro-electric power plants in the province of Benguet and one in the province of Isabela.

The economic importance of Mt. Pulag cannot be overlooked. Unprotected, it is prone to threats of expansion and encroachment of agricultural farms, timber poaching, wildlife hunting and bio-prospecting activities and piracy, unregulated tourism and infrastructure development. Farm to market roads are constructed encroaching the National Park which may cause the loss of importance flora and fauna valued for their rarity. Concern for indigenous people's right, i.e. Indigenous People's Right Act (IPRA), had not been in consonance with the Proclamation no. 75. The passage of the IPRA law has allowed ownership and possession by indigenous peoples of their ancestral domains, which cause more encroachment in the protected area. The passage of IPRA is seen as a license to convert lands to other uses (Tamiray, 2001).

Unregulated land use and conflicting laws are not only results political agenda, but it is attributed to the shortcoming of standard valuation methods and cost-benefit analysis. In the case of Mt. Pulag, there is no strong economic valuation undertaken so far to justify its existence as a National Park entitled to protection and conservation secured from land speculators, ecological hazards and unmitigated infrastructure development. This study takes the initiative of determining the true value of Mt. Pulag with a strong inclination on its recreational value. As an off-shoot of this study, it also estimates monetary values accruing to the municipalities hosting Mt. Pulag entry points and to bus and tourist

operators arranging trekking activities to Mt. Pulag as the spill-over effects of eco-tourism in Mt. Pulag.

3. Research Problem

Mt. Pulag, as a National Park is encroached by development and ancestral claims from the indigenous people posing a threat for loss of important flora, fauna and degradation of water tributaries feeding to the rivers of two major hydro-electric plant in the country. While the implementation of IPRA would benefit the indigenous people in terms of land ownership, it should not infringe national interest. The lack of concrete justification to protect natural resources are often a result of lost cause, because of the inability of development and social planners to present a measurable value of the economic resource in question. The lack of a market for the recreational and aesthetic values of natural resources, such as the Mt. Pulag, results to poor policy options.

The aims to justify the on-going concern on the protection and preservation of the Mt. Pulag as a National Park by conducting an ex-post economic valuation of the recreational value of Mt. Pulag. What is really the true value of this program?

The overall goal of the study is to measure the recreational value of the Mt. Pulag National Park, Benguet, CAR, Philippines. The specific objectives of the study are:

- 3.1 to determine the willingness-to-pay (WTP) of the users of Mt. Pulag;
- 3.2 to determine and quantify the recreation demand curve for Mt. Pulag;
- 3.3 to estimate the economic value of Mt. Pulag National Park; and
- 3.4 to estimate the monetary value of the spill-over effects of the recreation demand of Mt. Pulag.

4. Literature Review: Valuing Ecotourism

Valuation is an indispensable and effective tool in natural resources appraisal and assessment of project development, a priori. As such, it is a must that prior to any development projects or conversion of natural resources, an ex-post evaluation must be carried out, not only to determine the economic feasibility of such endeavor but more on its impact to the environment and natural resources.

Environmental resources are common goods that offer various types of services in tangible and intangible forms. Conservation and management of these resources are so high that most of the time the benefits derived from there, are taken for granted specifically the intangible forms. There are also cases when development projects being implemented are sustainable. The opportunity costs of a protected are the benefits that society or individuals lose when an area is protected. The residents have to forego outputs that they have been usually receiving, which may be important to their livelihood (Gong, 2003). With increasing awareness of recreational values of forests natural resource, it is therefore needed to properly place a value of these natural resources for us to give basis whether certain development project is sustainable in the long run or not.

There is growing body of literature focusing on ecotourism valuation and protected areas in developing countries. This research is an ex-post of the Mt. Pulag National Park (MPNP). The primary approach used in this study – travel cost method (TCM), which was introduced by Hotelling (Hotelling, 1947) – has been recently applied in developing country contexts. This paper is an attempt to design a theoretical and empirical basis for the recreational value of Mt. Pulag, following the established individual travel cost method (ITCM). The ITCM assumes that various factors influencing visitors' travel costs (including direct costs and the opportunity costs of visitors' time) influence the length and frequency of park visitation. National parks or generally protected areas (PAs) normally hold a high value as a recreational resource or destination. Though in many cases no fee or charge is made to view or enjoy natural ecosystems, people still spend time and money to reach PAs. These costs of spending — for transport, food, accommodation, time, etc. — can be calculated, and a visitation rates can be compared to expenditures. These travel costs reveals the value that people place on recreational, tourism or leisure aspects of PAs.

The study by Navrud and Mungatana (Navrud & Mungatana, 1994) shows that the Travel Cost (TC) and the Contingent Valuation (CV) methods can be applied to value natural resources in developing countries. These two methods were used to estimate the recreational value of wildlife viewing, which is a valid estimate of the total economic value of the wildlife species. The annual recreational value of wildlife viewing in Lake Nakuru National Park in Kenya was found to be \$7.5-\$15 million. The flamingos accounted for more than one third of the value. Viewing is becoming an important part of the global trend of increasing ecotourism, this shows that sustainable management of wildlife resources could provide a very significant and much needed revenue source for developing countries in the future. The challenge for the developing countries is to find ways to realise this economic potential, which also secures the preservation of wildlife.

The TCM as a technique in valuation has been tried and tested in several studies all over the world. Cases presented here are just a few of the studies conducted, selective of developing countries, using the Travel Cost Method (TCM). The existing literature on ITCM had been studied that is applied in developing countries with similar content on eco-tourism and implication to forest policy and management.

A study conducted by Pedro (1995) at Lake Danao, Ormoc City entitled “Economic valuation of a protected area: Lanao Danao National Park”. Based from the findings of the study, variables affecting preservation demands and total WTP are age, household annual income, sex, rate of forest visit, WTP for entrance fee and concern of respondents towards environmental preservation. Option value was influenced by same variables as preservation values whilst existence value was affected by wilderness/biodiversity preference. Another study conducted by Van der Linden and Oosterhuis (1988) in Holland with an objective to estimate welfare loss for severe damage to forests and heather also employed WTP. Findings revealed that WTP is dependent on level of income and changes in income, number of forest and heather visits, perceives gravity of the acid rain problem, age education and social class. On the other hand, recreation and ecotourism valuation of Indonesian Mangrove Project was conducted using willingness-

to-pay (WTP) values. The project begins with no visitors and increases to a stable level of 4,000 visitors in year 6. The annual quantity includes only visitors at the East Luwu Plains site. It was estimated that unit value used of the Indonesian Mangrove Project are: (1) \$10.48 to \$36.96 per visitor (ecotourism) (2) \$10.00 to \$26.25 per Indonesian visitor (recreation) and (3) 94.90 per foreign visitor (recreation). Ecotourism value varies with length of stay (one or two days). Recreation value reflects origin of the visitors (foreign or domestic).

Another study conducted by Tobias and Mendelsohn (1991) composed of two studies also used CVM for recreational opportunity at Costa Rica. They estimated a \$35 per visitor value for recreation at a 10,000 hectare Costa Rican tropical forest reserve using the Travel Cost Method (TCM). They included only Costa Rican visitors in their study. Constanza et al., used two methods to calculate the value of coastal wetland recreation in the U.S. Using the travel cost method, they estimated the value at \$70.67 per visitor. Using contingent valuation, they estimated a value of \$47.11 per visitor.

The travel cost method was applied to Dhaka Zoological Garden in Bangladesh. A visitor questionnaire collected data on origin, distance travelled, income and expenses. Several demand curves were constructed using regression analysis to describe the relationship between travel costs and number of visits, yielding information on willingness to pay per visitor (Hecht 1999).

A local study made in the CAR is the socio-economic valuation of the proposed BSU Biodiversity Centrum. A survey was done for Baguio/off-site and La Trinidad/on-site respondents on how much they are willing to pay for the Centrum. The research found out that Baguio and La Trinidad residents are willing to spend Php861.08/head/day and Php724.90/head/day respectively. The recreation demand curve was also determined to compute or estimate demand elasticity and change in consumer surplus. Finally, the research yielded the estimated economic value of the Centrum at Php2,108,693,560.

The study conducted by Abala (Abala, 1987) examined the factors that influence willingness to pay for park services. The study revealed that certain factors may help explain people's willingness to pay for the park services: the socio-economic characteristics of park users, and the physical attributes of the park itself. The result of the study further reveals that animals per se do not seem to be significant in determining the users' willingness to pay for park services. It is also clear that the current gate charges should be raised to reflect the users' willingness to pay for park services, since this will not affect the visitation rates to the park. Econometric methods are applied to data from 333 Nairobi National Park users.

The methods and findings of these reviewed studies served as the foundation on which the current study is undertaken. Likewise, similar findings from these studies are aimed to be elicited from this research.

5. Scope and Limitation

In determining the willingness-to-pay (WTP), the study will rely on secondary data and records of the Mt. Pulag National Park Protected Area Office and the Wildlife Division, Department of Environment and Natural Resources (DENR)–CAR Regional Office and CENRO-Baguió. The probability of an undocumented park visitor is unlikely owing to the strict implementation of “no registry, no entry”. The secondary data generated from these offices is the basis for determining the WTP and recreation demand. It cannot be used to consider some factors that cause the change in the quality of the recreation. The study does not intend to measure recreational quality, nor does it intend to relate recreational quality to environmental quality. The latter is not considered in the economic valuation of Mt. Pulag.

The data generated from secondary sources will be strengthened via interview with on-site visitors. Their responses shall not be used in the estimate of the WTP and recreation demand, but will be used to strengthen the economic argument of the study. Since secondary data is used, the value of enjoyment cannot be inferred from the results of the study. To avoid biases, opinions generated from interviews of on-site visitors will be true only for them but it is not insinuated by this study that it should be true to all who visited the national park. Although, result of interviews to on-site visitors will be included in the analysis of the study, some socio-economic data may not be available during the data gathering, hence, these are not included in the study.

The tool used in this study provides only current value but it cannot insinuate anticipated gains and losses due to changes in the resource conditions. This study undertakes only estimates of consumer surplus for policy making, demand for recreation to establish a better approximate of entrance fees.

6. Theoretical and Conceptual Framework

The theories supporting the concept of the ITCM are the Marshallian demand function, the consumer surplus and the estimate of benefit and cost. These theories are briefly discussed below.

The travel cost method is used to estimate the value of recreational benefits generated by ecosystems. It assumes that the value of the site or its recreational services is reflected in how much people are willing to pay to get there. It is referred to as a “revealed preference” method, because it uses actual behavior and choices to infer values. Thus, peoples’ preferences are revealed by their choices. TCM methods were revealed in a number of environmental valuation studies with economic approach to calculate welfare measurement. Grandstaff and Dixon (Grandstaff and Dixon, 1986) and Kaosa-ard, et al., (Kaosa-ard, et al., 1995) studies combined TCM with contingent valuation method (CVM). Both studies revealed direct benefit and translated in consumer surplus.

The basic premise of the travel cost method is that the time and travel cost expenses that people incur to visit a site represent the “price” of access to the site. Thus, peoples’

willingness to pay to visit the site can be estimated based on the number of trips that people make at different travel costs. This is analogous to estimating peoples' willingness to pay for a marketed good based on the quantity demanded at different prices. The travel cost method is modeled on standard economic techniques for measuring value, and it uses information on actual behavior rather than verbal responses to hypothetical scenarios. It is based on the simple and well-founded assumption that travel costs reflect recreational value.

According to Loomis, et.al., (1999) if recreation is the primary gain from ecosystems services, then the changes or variation in visitors' travel costs to the resource can be used to trace out the demand curve for recreation. From this demand curve, the consumer surplus of the recreation can be estimated.

The number of visits from the point of origin to reach Mt. Pulag, with the selection of the individual's trekking site, and the travel costs (off-site and on-site), are used to derive an aggregate demand curve for visits to the site, and thus for the recreational or scenic services of the site. This demand curve shows how many visits people would make at various travel cost prices, and is used to estimate the willingness to pay for people who visit the site (whether they are charged an admission fee or not). Other factors may also affect the number of visits to a site. People with higher incomes will usually make more trips. Part of the analysis considers personal characteristics, such age, gender, educational attainment. A more thorough application will take these and other factors into account in the statistical model.

Welfare changes are important. We would like to measure changes in welfare when there are policy questions to consider. To weigh which decision is best, an economic efficiency criterion must be considered. Whenever an environmental policy is implemented there are winners and losers. The economic efficiency criterion requires that the gains to the winners exceed the losses imposed on the losers. Benefit-cost analysis is a method used to calculate and compare monetary gains and losses. One way to estimate benefit and cost is to use the consumer's surplus or economic surplus.

The concept of "economic surplus is the basis for the theory of economic benefits. Considering a market good the consumer's economic surplus is the difference between what the consumer is willing (and able, in this case the entrance fee) to pay and the market price (amount actually spent, in this case the travel cost) for the resource good.

The consumer surplus is the difference between the consumer's maximum willingness to pay and the market price. The consumer surplus is a monetary measure of the net benefit that the consumer gained from the transaction.

The consumer surplus for market goods is generally associated with using or consuming such goods. In contrast, consumer surplus for non-market goods such as recreation on a National Park can arise from two sources: use value and non-use value. In the case of recreational quality improvements, use value is the increase in consumer surplus arising from on-site use of higher quality recreation site.

The ITCM allows for the measurement of the recreational demand that reflects the individual's willingness and ability to pay for visiting Mt. Pulag. With the aim of modeling the recreational demand for Mt. Pulag, we follow Khan (2004), assuming that the utility of the individual will depend on the total time spent (on-site and off-site) to visit Mt. Pulag, the individual's perception of Mt. Pulag, and the quantity of the numeraire. Taking into consideration the number of days the individual intends to visit Mt. Pulag, the time spent can be represented by the number of hours.

The individual tries to maximize his utility and tries to solve his utility maximizing problem:

$$MaxU = (X, r : Z) \quad (1)$$

Subject to the twin constraints of money and time budgets:

$$W + p_w * t_w = X + c * r \quad (2)$$

$$t^* = t_w + (t_1 + t_2)r \quad (3)$$

Where X = the quantity of the numeraire whose price is one,
 r = the number of days intended to stay in Mt. Pulag,
 Z = vector of the respondent characteristics,
 W = exogenous income,
 p_w = wage rate
 c = monetary (economic) cost of the trip
 t^* = total discretionary time
 t_w = hours worked, t_1 round trip travel time, t_2 time spent on site

Time as a constraint suggests that both the travel to and from the site and time spent on time spent in the recreation activity (off-site and on-site). The individual is also assumed that she or he is free to choose the amount of time spent at work and that work does not convey utility (or disutility) directly. Thus, the opportunity cost of time is the wage rate. The opportunity cost is well emphasized in the study because it corresponds to the opportunity cost of income foregone by the present use of a resource (Cesario, 1976). In this study, the opportunity cost of time was both off-site and on-site was considered. This was well argued by McConnel (1992) in his study that the opportunity cost of on-site time should be included in the price variable.

In the framework of cost-benefit analysis, opportunity cost measures the value of what society must forego to use the input (Gong, 2003). The monetary cost of a trip to the site has two components, the entrance fee and the monetary cost of travel. Therefore, the monetary cost of the trip is the price paid per visit (p_r). Where p_r is the full price of a visit, which is the sum of entry fee (f), p_d is the per origin (in hours) cost of travel and d is the point of origin, as shown in equation 4,

$$p_r = c + p_w(t_1 + t_2) \quad (4)$$

Finally, the full cost of the trip (c) is assumed to take the following form:

$$c = f + p_d * d \quad (5)$$

Therefore, the full price of a visit to MPNP takes the following functional form:

$$\begin{aligned} p_r &= c + p_w(t_1 + t_2) \\ p_r &= f + p_d * d + p_w(t_1 + t_2) \end{aligned} \quad (6)$$

The model for utility maximization to derive the recreational demand for Mt. Pulag draws heavily from the works of Freeman (1993), Ward and Beal (2000), Day (2001) and Khan (2004).

In the study, the individual's utility takes the form of a Cobb-Douglas utility function, as follows (subject to the twin constraints):

$$U = X^\alpha r^\beta \quad (7)$$

The solution to constrained utility maximization requires setting a new function with the *Lagrange multiplier*. This new function is called the *Lagrangian function*.

$$L = X^\alpha r^\beta + \lambda(W + p_w t^* - X - p_r r) \quad (8)$$

We linearize the utility function via the natural logarithm to allow for the calculation of the demand function (r).

$$L = \alpha \ln X + \beta \ln r + \lambda(W + p_w t^* - X - p_r r) \quad (9)$$

From equation 9, we determine the first order conditions of the lagrangian function.

$$\frac{\partial L}{\partial X} = \frac{\alpha}{X} - \lambda = 0 \quad (10)$$

$$\frac{\partial L}{\partial r} = \frac{\beta}{r} - \lambda p_r = 0 \quad (11)$$

$$\frac{\partial L}{\partial \lambda} = W + p_w t^* - X - p_r r = 0 \quad (12)$$

Equations 10 and 11 will allow for the determination of the λ .

$$\frac{\alpha}{X} - \lambda \quad \longrightarrow \quad \lambda = \frac{\alpha}{X} \quad (13)$$

$$\frac{\beta}{r} - \lambda p_r \longrightarrow \lambda = \frac{\beta}{p_r r} \quad (14)$$

$$\alpha + \beta = \lambda r + \lambda p_r r \quad (15)$$

$$\lambda = \frac{\alpha + \beta}{X + p_r r} \quad (16)$$

The value of λ (lambda) now represents the money metric utility. This means that for every ₦1 increase in wealth, the marginal utility of consuming X good will increase by α (alpha), and by β (beta) for consuming r good.

Since the recreational demand for Mt. Pulag is represented by r , from equation (14) it is now determined as follows:

$$r = \frac{\beta}{\lambda p_r} \quad (17)$$

Where $\lambda = \frac{\alpha + \beta}{X + p_r r}$,

$$r = \frac{\beta}{\frac{\alpha + \beta}{X + p_r r} * p_r} = \beta \left(\frac{X + p_r r}{\alpha + \beta p_r} \right) = \frac{\beta}{\alpha + \beta} \left(\frac{X + p_r r}{p_r} \right) \quad (18)$$

$$X + p_r r = W + p_w t^*,$$

$$p_r = c + p_w(t_1 + t_2), \text{ and}$$

$$c = f + p_d * d$$

Therefore, the recreational demand is represented by,

$$r = \frac{\beta}{\alpha + \beta} \left(\frac{W + p_w t^*}{f + p_d * d + p_w(t_1 + t_2)} \right) \quad (19)$$

The basic demand framework used in the analysis for the valuation of Mt. Pulag recreational benefits, we use the linear demand curve, as shown in Figure 1. The demand curve illustrates that each point along the demand curve represents the willingness to pay for visitation at Mt. Pulag (days intended to visit at Mt. Pulag) at a certain price (travel cost). The higher travel cost the less will be demanded for visitation at Mt. Pulag. The entire area under the demand curve approximates the gross willingness to pay to visit Mt. Pulag.

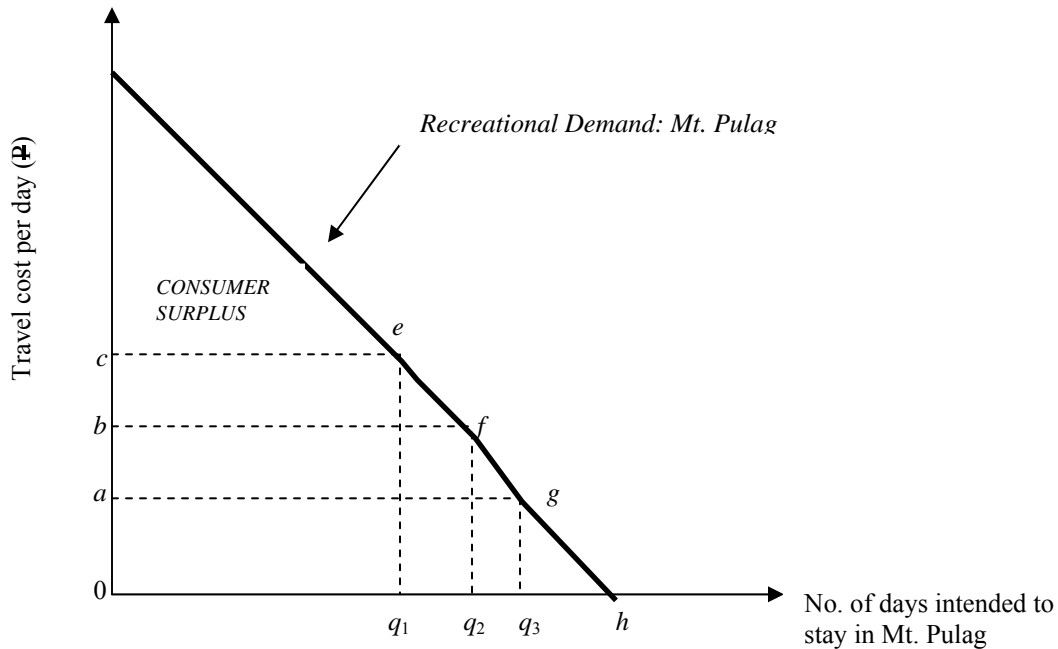


Figure 1: Benefit Estimation from Demand Curve for Mt. Pulag Visitation

In this graph, the gross willingness to pay for consuming q_1 is the area bounded by $0deq_1$. If visitors are willing to spend q_1 days in Mt. Pulag, the total travel cost (inclusive of implicit value) is represented by the area $0ceq_1$. Thus, the benefit (or consumer surplus) for park visitation, is the difference between the willingness to pay for that level of park visitation and the total travel cost to acquire this level. This benefit is translated as the enjoyment derived from paying to visit Mt. Pulag, or the existence value.

If only the explicit values (outright cash expenditure) are valued, we consider the off-site and on-site expenses to visit Mt. Pulag. The area denoted by $0bfq_2$ represents the off-site travel cost per day. This amount is estimated to be the value of the spill-over effects of eco-tourism (such as, payments by visitors to transportation companies, service providers such as hotels, restaurants, tourist agencies, etc.). The on-site expenses, represented by the area $0agq_3$, denote the estimated value revenue earnings by Mt. Pulag management, such as registration fee and green fee or user's fee.

If Mt. Pulag is a free resource (zero price for park visitation), the estimated gross benefit for park visitation is the area represented by $0dh$. This amount is the total value of the enjoyment received by the individual for visiting Mt. Pulag.

The recreational demand will also allow for the estimation of: (1) gross revenue received by the local government unit from on-site expenses paid by the visitors; and (2) the value of the spill-over effects or benefits from off-site expenses paid by the visitors.

7. Significance of the study

The study is timely for DENR-CAR. In the light of the controversy surrounding the implementation of IPRA, government funds had been poured to development projects for IPRA reducing the aesthetic of the National Park. Impacts from this development could destroy important national treasures, resulting in a serious decline in, or total loss of, the site's ability to provide recreational services. The paper can determine value of programs or actions to protect the park and compare it with the current on-going development at the site. It is hoped that the result of the study can bring the DENR and the National Commission on Indigenous People (NCIP) come up with a coordinated strategy and plan bring development to the area without compromising the economic importance of Mt. Pulag National Park.

This study is important because it is dedicated to the dissemination of views on current environmental and natural resource issue within mainstream economic thought. To its intended audience, students, academicians, policy makers, and the general public the research finds it important to contribute to the growing archives of references for environmental economics.

To the Cordillera Administrative Region (CAR), the paper is the first to explore the valuation of a very important heritage of the Benguet People. It is hoped that the economic valuation of Mt. Pulag can lead to the appreciation of the values of other important forest in Benguet in particular Mt. Dana and Mt. Ugu, both are currently promoted as alternative geo-tourism destination.

To the National Statistical and Coordination Board (NSCB), the valuation of the Mt. Pulag can contribute to their desire to come up with a gross regional product (GRP) that includes the valuation of natural resources.

To future researchers, the paper enriches the archives of studies supporting economic valuation methods.

8. Research Methodology

8.1 The Research Area

The research site is located at Ambangeg, Daclan, Bokod, Benguet. There are three entry points to the Mt. Pulag National Park: Kabayan, Bokod and Nueva Viscaya. Bokod is chosen as the research site, because this is the nearest site from Baguio City and the usual exit of most climbers and trekkers.

The research site is traveled about 4-5 hours via rough road traversing the Ambuklao-Nueva Viscaya road. The site can be reached by bus, vans and jeepneys.

8.2 The Questionnaire

A survey was conducted since the secondary data is incomplete. Initial discussion with the CENRO showed that a registry form is filled-up by visitors before entering the park. However, he is not sure whether the data needed for the research would suffice. The researcher was also advised to conduct the interview in the research site rather than in the CENRO-Baguio office.

The questionnaire contains the following: socio-economic profile of the respondents; point of origin; how much is spent for fare, accommodation, food and other miscellaneous expenditures; and a section of their opinion of protecting national parks as source of recreation and geo-tourism.

8.3 Data Gathering

Before the data gathering, a two-day orientation seminar on how the questionnaire will be administered will be conducted. Field enumerators were trained on how to conduct the survey. Local residents were identified by the DENR as enumerators. A 10-day data gathering for the peak months of park visitation (October, November, December and January).

8.4 Statistical Analysis

The demand function is derived using micro-economic simulation models and estimated using ordinary least squared (OLS) method. The null hypothesis is accepted at a significant level of 0.05.

8.5 Econometric Methods

The basic functional form for the ITCM used in the study is the linear. The linear functional form was used in the study because it approximates the best fit of the data. Linear regression results were reported in this study. The estimated consumer surplus for an individual making r visits (number of days intended to stay in Mt. Pulag) to the site in a linear form is given by $CS = -r^2 / 2\beta$ (Garrod, et. al., 1999). The linear functional form of the recreational demand implies finite park visitation at zero cost and has a critical cost above which the model predicts negative park visitation.

The basic model for recreational demand for Mt. Pulag depicts the number of days intended to visit Mt. Pulag as a function of factors such as the travel cost per day, time spent in traveling, monthly income, educational attainment, age, gender, occupation, nationality, and the individuals perception as to: (1) WTP to preserve Mt. Pulag; (2) presence of solid waste management (SWM) in Mt. Pulag (sanitation and pollution control); (3) reliable and courteous tourist guide and porters; (4) guidelines and procedures on the use of Mt. Pulag is strictly implemented; and (5) orientation is conducted by the Mt. Pulag staff for visitors to insure that safety and security measures are strictly adhered to. The demand takes the following functional form:

$$r_{ij} = \beta_0 + \beta_1 tc + \beta_2 mi + \beta_3 tr + \beta_4 a + \beta_5 g + \beta_6 ed + \beta_7 occ + \beta_8 nat + \beta_9 vp + e_{ij} \quad (20)$$

$$r_{ij} = \beta_0 + \beta_1 tc + \beta_2 mi + \beta_3 tr_{(Akiki=1)} + \beta_4 a + \beta_5 g_{(Male=1)} + \beta_6 ed_1_{(College\ Level=1)} + \beta_6 ed_2_{(College\ \&\ Post\ Grad.=1)} + \beta_7 occ_1_{(students=1)} + \beta_7 occ_2_{(Gov't\ Empl=1)} + \beta_7 occ_3_{(Businessman=1)} + \beta_8 nat_{(Filipino=1)} + \beta_9 vp_1_{(WTP\ to\ preserve=1)} + \beta_9 vp_2_{(with\ SWM=1)} + \beta_9 vp_3_{(reliable\ porters/guides=1)} + \beta_9 vp_4_{(strict\ implementation\ of\ rules=1)} + \beta_9 vp_5_{(conduct\ of\ orientation=1)} \quad (21)$$

Where r_{ij} = number of days intended to stay in Mt. Pulag by the i th individual
 tc = travel cost per day (round trip total cost from an individual's residence to and from the site and includes the opportunity cost of travel time and stay at the park)
 mi = individual's monthly income
 tr = choice of trekking site (Akiki or Ambangeg)
 a = age
 g = gender
 ed = educational attainment
 occ = occupation
 nat = nationality
 vp = visitor's perception
 e_{ij} = error term

The variables tr , g , ed , occ , nat , vp were treated as dummy variables. Table 1 summarizes the explanatory variables and hypotheses.

Table 1: Explanatory variables and hypotheses

Variables	Expected sign	Description
Travel cost	Negative	It includes round trip total cost to and from Mt. Pulag National Park including opportunity cost of travel time and time spent at the site. It is hypothesized that the intended number of days of visit to Mt. Pulag and travel cost are inversely related.
Household income	Positive	Household average income and the intended number of days of visit to Mt. Pulag are hypothesized to be positively related.
Age	Negative	The hypothesis is that the visitor's age and the intended number of days of visit to Mt. Pulag is inversely related.
Gender	Positive	Males are assumed to visit Mt. Pulag National Park more often than females.
Education	Positive	It is expected that the level of education of the respondents and the intended number of days of visit to Mt. Pulag are positively related.

Variables	Expected sign	Description
Occupation	?	It is hypothesized that the level of occupation of visitors can inversely or positively affect the intended number of days of visit to Mt. Pulag may be inversely related.
Nationality	?	It is assumed that nationality of visitors and the intended number of days of visit to Mt. Pulag are inversely related.
Willingness to pay to preserve Mt. Pulag	Negative	It is hypothesized that the willingness to pay of the visitors and the intended number of days of visit to Mt. Pulag are inversely related.
Other visitors' perception	?	The presence of solid waste management (SWM) in Mt. Pulag reliable and courteous tourist guide and porters, guidelines and procedures on the use of Mt. Pulag is strictly implemented; and orientation is conducted by the Mt. Pulag staff for visitors to insure that safety and security measures are strictly adhered to, can positively or negatively affect the number of days of visit to Mt. Pulag.

Reviewed literatures, with certain similarity to the present study, are those studies conducted by Bann (Bann, 1997), Bien (Bien, 2001), and Sinoeun (Sinoeun, 2001). Bann argued that the information on the economic benefits and operational practices in the mangrove area in Koh Kong province might be employed in economically optimal management strategy. It has integrated certain forest management and how it will affect the demand for mangrove forest. Bien case study in North Upland Vietnam selected variables of socio-economics, environmental, and institutions to determine the value under certain regimes. Sinoeun advanced his arguments that cost and benefits analysis on the use of Sihanouk (Ream) National Park in Cambodia is viewed by different stakeholders. Sinoeun used CV surveys of tourist park visitor

9. Results and Discussions

9.1 Descriptive Statistics

Table 2 shows that most trekkers aged 27 years, relatively young visitors, having a mean average of Php27, 086 monthly income. Most trekkers were also male, single, of the college level/vocational and professional Filipino citizens.

Table 2: Descriptive Characteristics of Sample Respondents

PROFILE	Descriptives				
	Mean	Mode	Standard Deviation	Minimum	Maximum
Age	26.88	25	6.951	13	59
Estimated Household Income per month	27,086.00	15,000	44,018.287	100	500,000
Gender	1.36	1	.479	1	2
Civil Status	1.81	2	.485	-1	5
Educational Attainment	3.61	4	1.021	-1	5
Occupation	4.07	4	1.839	-1	6
Nationality	1.01	1	.170	-1	2

Considering the favorite trekking site, table 3 shows that most trekkers prefer the trail of Akiki showing that out of 1000 respondents, 705 of them or 70.5% took the challenge of the said trail.

Table 3: Favorite Trekking Site

Trekking Site	Count	%
Akiki – Ambangeg	705	70.5
Ambangeg – Ambangeg	295	29.5

Table 4 presents the distribution of trekking site preferred by the visitors based on their respective profile.

1. As to age classification, adults out – numbered the youth such that 437 and 202 of them had the trek from Akiki and Ambangeg respectively. To sum it up 639 from the 1000 respondents are adults.
2. Relative to classification of wage earners, those earners above the minimum wage rate were the most enthusiastic trekkers and most of them took the Akiki trail with a number of 482 trekkers. This explains that the higher the income of the respondent, the higher the latter is willing to visit Mt. Pulag.
3. As to the gender, the result shows that most of the trekkers were male.
4. Considering the civil status of the trekkers, most number of the trekkers was single, whereby 552 of them preferred the Akiki trail.
5. As to educational attainment, those of college degree were the most willing to visit the site and 385 of them also preferred the Akiki trail.
6. As to the occupation of the respondents, the professionals were of the greatest number of respondents who had visited the site with a number of 414 respondents.
7. Lastly, as to nationality, most respondents were Filipinos with the number of 983 respondents.

Table 4: Distribution of Profile as to Trekking Site

Profile		Trail	
		Akiki	Ambangeg
Age classification	Youth	268	93
	Adults	437	202
Classification of wage earners	Non-wage earners	112	19
	Below minimum wage rate earners	70	31
	Minimum wage rate earners	41	30
	Above minimum wage rate earners	482	215
Gender	Male	455	190
	Female	250	105
Civil status	Married	140	70
	Single	552	218
Educational attainment	No education	1	0
	Primary education	3	1
	High school	72	12
	College level/vocational	162	51
	College degree	385	197
	Post graduate	70	28
Occupation	Unemployed	80	21
	Agricultural sector	10	2
	Laborer and unskilled worker	17	8
	Government worker	49	24
	Professional	264	150
	Businessman	42	19
	Others	239	67
Nationality	Filipino	690	293
	Foreigner	11	2

Table 5 shows that most respondents were working having a total number of 796 or 79.6% trekkers out of the 1000 respondents.

Table 5: Frequency Distribution of Students and Working Respondents

		Frequency	Percent
Valid	Students	204	20.4
	Working	796	79.6
	Total	1000	100.0

9.2 Estimated Travel Cost

Table 6 presents the relationship of the point of origin of the respondents and their preferred trekking destination towards Mt. Pulag. From the table, most trekkers were from Manila with a total of 638 trekkers out of the 1000 respondents. Moreover, from this 638 respondents, 440 of them preferred the Akiki–Ambangeg trail as their trekking destination. The table also shows that most trekkers came from far places as compared to those who live near the site.

Table 6: Point of Origin and Trekking Destination

		Destination		Total
		Akiki	Ambangeg	
Point of origin	Manila	440	198	638
	Benguet/CAR	168	51	219
	Other Province	94	46	140
	Abroad	3	0	3
Total		705	295	1000

Table 7 reveals that 13 hours was the mean average of travel of most trekkers. Most trekkers had visited Mt. Pulag only once in a year and intended to stay for 1 day. It also shows that trekkers incurred Php 3618.95 average total cost of visiting Mt. Pulag

Table 7: Descriptives

	Mean	Mode	Minimum	Maximum	Std. Deviation
Hours of travel	13.07	10	2	72	10.485
Number of times of visit	1.22	1	1	12	.900
Intended number of days to visit Mt. Pulag	2.86	2	1	12	1.937
Total cost of visiting*	3618.95	3000	5	53535	4089.139

*Total cost of visiting Mt. Pulag represents only the explicit values.

9.3 Additional Information Elicited from Visitors

Additional information on respondents' choice of other recreational sites and perception of their experience of Mt. Pulag was also elicited by the researchers. Tables 8, 9 and 10 provide the results. On the other hand, Tables 11 and 12 provide for their responses as to their willingness to re-visit Mt. Pulag and willingness to pay to preserve Mt. Pulag.

- Choice of Recreational Sites

Table 9 presents the percent distribution of the choice of recreation of the respondents. The data reveals that most respondents had visited other recreational sites, such as beaches, parks, caves/underground rivers, for the year 2007. Frequently visited recreated sites are caves and underground rivers and beaches.

Table 8: Recreational Sites Visited by the Respondents

Recreational Sites Visited	Frequency	Percent
Beach	505	50.5
Parks	403	40.3
Caves/Underground River	537	53.7
Others	243	24.3

- Visitors' Perception

Respondents were asked to rate, in a scale of 1 to 4 (with 1 having the lowest rating and 4 the highest rating) their perception regarding the qualities of Mt. Pulag. Table 9 provides the statistics relative to the qualities of Mt. Pulag. "*Quality of air, quality of the park, and cultural significance,*" were described by the respondents as well-preserved and maintained. According to the visitors, they enjoyed the scenic beauty of Mt. Pulag in general.

Table 9: Descriptive Statistics of Visitors' Perception

	Mean	Mode	Minimum	Maximum	Std. Deviation
Rarity of flora and fauna	0.498	0	0	1	0.500246
Quality of air	0.884	1	0	1	0.320385
Ability to support biodiversity	0.495	0	0	1	0.500225
Quality of the park	0.66	1	0	1	0.473946
Cultural significance	0.575	1	0	1	0.49459
Sanitation and pollution control	0.478	0	0	1	0.499766
The pristine state is well preserved	0.477	0	0	1	0.499721

- Management Rating

Table 11 reveals the statistics regarding the services and activities in Mt. Pulag. Respondents were asked to rate, in a scale of 1 to 4 (with 1 corresponding to the highest rating and 4 with the lowest rating) the services and activities in Mt. Pulag . The results will be used to help park managers to improve the management systems. The “*overall courtesy and hospitality, reliability and courtesy of tourist guide and porters, maintenance of environmental quality of Mt. Pulag for eco-tourism, strict implementation of guidelines and procedures, and conduct of orientation,*” were rated 1 as equivalent to excellent.

Table 10: Management Rating: Descriptive Statistics

	Mean	Mode	Minimum	Maximum	Std. Deviation
Overall courtesy and hospitality	0.76	1	0	1	0.427297
The facilities are adequate and clean	0.401	0	0	1	0.490346
Tourist guide and porters-reliable and courteous	0.708	1	0	1	0.45491
Env'tal quality of Mt. Pulag is properly maintained for eco-tourism	0.627	1	0	1	0.483844
Mt. Pulag has proper waste disposal	0.427	0	0	1	0.49489
Guidelines and procedures-strictly implemented	0.548	1	0	1	0.49794
Orientation is conducted by the Mt. Pulag staff for the visitors to insure safety and security	0.792	1	0	1	0.40608

- Willingness to pay to Revisit and Preserve Mt. Pulag

Respondents were asked if they are willing to re-visit and willing to pay to preserve Mt. Pulag. Answers revealed differences in visitors’ perception. Table 11 reveals that most respondents were willing to revisit Mt. Pulag, such that 897 respondents or 89.7% of the 1000 respondents answered in the affirmative.

Table 11: Willingness to Re-visit Mt. Pulag

		Frequency	Percent
Valid	Yes	897	89.7
	No	69	6.9

Table 13 shows that 394.18, the mean average trekkers, who are willing to pay to preserve Mt. Pulag.

Table 12: Descriptive Statistics

	Mean	Mode	Minimum	Maximum	Std. Deviation
How much willingness to pay to preserve Mt. Pulag	394.18	0	0	25000	1382.686

When respondents were asked of the reasons for not willing to pay to preserve Mt. Pulag, it showed that the cost is too much for them to shoulder. This response showed a significant percentage of 18% out of the total responses. Table 13 summarizes the results. Respondents with significant answers were only reflected to the table and respondents who have no opinion were disregarded.

Table 13: Reasons for Not Paying

Reason	Frequency	Percent
<i>It cost too much too visit the park already.</i>	180	18.0
<i>There are other national parks much more in need of preservation than Mt. Pulag.</i>	68	6.8
<i>The indigenous people must be more concerned of the preservation of Mt. Pulag than us.</i>	87	8.7
<i>There is not much biodiversity to see now in the park</i>	36	3.6
<i>Environmental problems are less important than the problem of unemployment and inflation.</i>	64	6.4

9.4 Empirical Results

9.4.1 Test Statistics

The variables chosen in the study to estimate the demand follows the underlying economic theory. The chosen variables indicated in Table 1 were chosen in the analysis of the recreational demand for Mt. Pulag showing no problem of multicollinearity in the data set (Loomis and Walsh, 1997).

Table 14: Estimated Results of the Linear Regression Equation

Variable	Coefficients (t-stats)	Coefficients (t-stats)	Coefficients (t-stats)
Dependent Variable	No. of days intended to stay in Mt. Pulag (Akiki Trail)	No. of days intended to stay in Mt. Pulag (Ambangeg Trail)	No. of days intended to stay in Mt. Pulag (All Sample)
Intercept	3.40 (14.21)*	3.39 (3.79)*	3.67 (16.22)*
Travel Cost Per Day	-.000089 (-16.51)*	-.000061 (-3.53)*	-.000087 (-16.32)*
Individual Monthly Income	.0000014 (1.58)***	.0000021 (.65)	.00000088 (0.98)
Choice of Trekking Site			
Akiki	-	-	.221 (4.12)*
Ambangeg	-	-	.221 (4.12)*
Age	-.009 (-1.9)*	-.025 (-3.05)*	-.014 (-3.62)*
Gender: Male (1)	.257 (5.3)*	.467 (3.97)*	.289 (6.40)*
Educational Attainment			
College level	.200 (2.33)*	.420 (1.49)***	.201 (2.33)*
College degree/Post graduate	.247 (2.64)*	.613 (2.31)*	.284 (3.15)*
Occupation			
Students	-.422 (-5.05)*	-.239 (-1.07)	-.447 (-5.60)*
Gov't Employees	-.218 (-2.37)*	-.062 (-.32)	-.181 (-2.17)*
Businessman	.037 (.368)	.452 (1.99)*	.207 (2.25)*
Nationality: Filipino (1)	-.529 (-3.45)*	-.094 (-.12)	-.612 (-3.89)*
Visitor's Perception			
WTP to preserve Mt. Pulag	-.059 (-1.26)	-.330 (-2.97)*	-.109 (-2.48)*
Presence of SWM	-.078 (-1.55)***	-.279 (-2.34)*	-.111 (-2.35)*
Reliable tourist guide	.169 (3.02)*	.118 (.916)	.168 (3.21)*
Strict implementation of rules	.031 (.560)	.423 (3.37)*	.117 (2.28)*
Orientation is conducted	.002 (.029)	-.482 (-3.43)*	-.146 (-2.41)*
R ²	.299	.308	.311
F-Statistics	23.01	6.17	27.74

*, **, and *** indicate significance at 5%, 10% and 15% respectively

Table 14 reports 3 results of the travel cost regression models. The first and second regression results provide estimates for the recreational demand from visitors who have chosen from two trekking sites namely Akiki and Ambangeg (Akiki trail takes longer hours to reach the summit of Mt. Pulag than Ambangeg trail). The last column presents regression estimates of visiting Mt. Pulag as a whole, which consists of two distinct units.

In general, the higher the travel cost (on-site and off-site) spent to visit Mt. Pulag, the lower is the number of days intended to visit the park. Likewise, income of visitors positively affects the demand to visit the park. The respondents' choice of trekking site positively and significantly affects the recreational demand for Mt. Pulag visitation.

With the results presented in Table 14 showing consistency with economic theory, the study further insinuates the following:

1. A greater decline in the number of days intended to visit Mt. Pulag is manifested by those choosing the Akiki trail than the Ambangeg trail, with respect to travel cost.
2. Bigger influence of income over the demand for park visitation is observed from those choosing the shorter trail (Ambangeg) to reach Mt. Pulag. Though the income coefficients for all samples and Ambangeg trekkers are statistically insignificant, results are still in line with the economic demand theory.
3. The age of respondents bears a negative sign to the recreational demand, showing higher degree of influence to demand for Ambangeg visitors. Younger visitors are more inclined to visit the park.
4. Male visitors show positive impact to park visitation with greater influence to the recreational demand for Ambangeg visitors. Male are observed to be apt to visit and trek Mt. Pulag, given that they are adventurous and have the physical agility.
5. There is evidence of positive and significant effect of educational attainment over the recreational demand for park visitation. Visitors with college degree and post graduates studies are more inclined to visit Mt. Pulag, with greater degree of influence noticeable among Ambangeg trekkers.
6. The regression estimates reveal that students (high school and college level students) and government employees contribute a negative and significant impact to Mt. Pulag's recreational demand for all samples and for Akiki trekkers. This implies that student visitors and government workers can cause a significant decline in the number of days to visit Mt. Pulag. However, the study reveals that businessmen contribute positively to the recreational demand for Mt. Pulag, with significant impact among all samples and Ambangeg trekkers/visitors.
7. Surprisingly, Filipino visitors bear a negative effect on Mt. Pulag's recreational demand, with significant effect among all samples and Akiki visitors. This implies that Filipino visitors have lower visitation rates than foreigners.

The study also explored the possibility of affecting the recreational demand given the visitors' perception as to WTP (willingness to pay) to preserve Mt. Pulag and four management areas as to: (1) presence of solid waste management (SWM) in Mt. Pulag (sanitation and pollution control); (2) reliable and courteous tourist guide and porters; (3) guidelines and procedures on the use of Mt. Pulag is strictly implemented; and (4) orientation is conducted by the Mt. Pulag staff for visitors to insure that safety and security measures are strictly adhered to. These factors were created as dummy variables with 1 representing the visitors' positive response revealing the presence of the above mentioned areas, and 0 otherwise.

Respondents were asked if they are willing (or not) to pay in order to preserve Mt. Pulag as a national treasure and a cultural heritage. Results show that WTP to preserve Mt. Pulag negatively affects the demand for recreational visit to Mt. Pulag. This may probably be attributed to the visitors' perception that Mt. Pulag is a free good, and therefore the local government is seen as the entity to spend to preserve Mt. Pulag. Additional costs attributed to the preservation, such as introducing user's fee, could significantly reduce the demand for Mt. Pulag visitation. Insignificant result however, is revealed among Akiki visitors.

Noticeably, the perception of visitors as to the presence of solid waste management in the area (specific to the summit), bears a negative effect to the demand for park visitation. This may possibly be attributed to the fact that facilities for sanitation and pollution control are still lacking in the area. On the other hand, visitors' perception as to the presence of reliable and courteous tourist guides and porters reveals direct relationship to the demand for park visitation (insignificant finding, however, was observed among Ambangeg trekkers). Similarly, the presence of strict implementation of guidelines and procedures on the use of Mt. Pulag positively influences the demand for visitation. This only implies that the presence of management areas can increase the demand for park visitation.

There is an observed different effect of the visitors' perception in terms of the fourth area of park management to recreational demand. The conduct of orientation by Mt. Pulag staff is positively related to the demand for park visitation, and this is observed among respondents who have chosen the Akiki trail, however, statistically insignificant. On the other hand, there reveals a negative effect of the visitors' perception on this area of park management to recreational demand, observed among all samples and among visitors who have chosen the Ambangeg trail. This may be credited to the view of respondents that orientation takes a long time and they are even more excited to trek Mt. Pulag than hear the orientation.

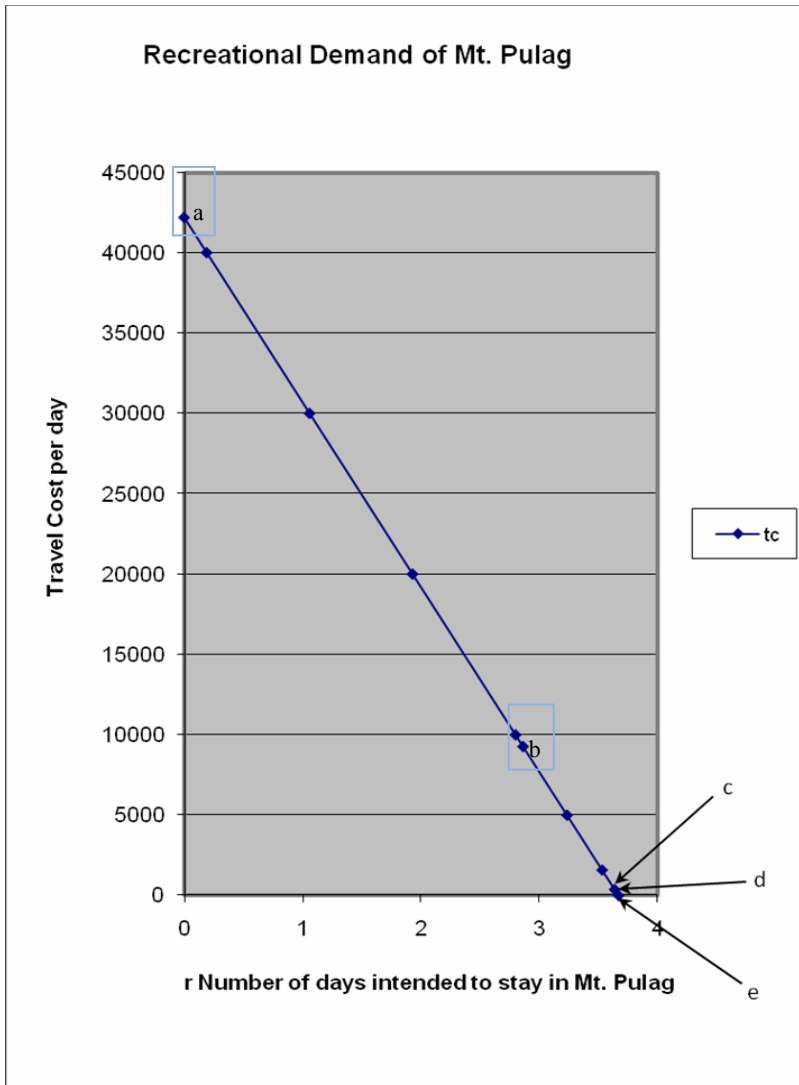
9.4.2 The Recreational Demand for Mt. Pulag

Figure 2 presents the estimated recreational demand for Mt. Pulag, and equation 21 is the estimated linear recreational demand equation, *ceteris paribus*.

$$r = 3.67 - 0.000087tc \quad (R^2 = 0.311) \quad (21)$$

$$(F = 27.741)$$

Assuming other factors are held constant, the intended r days to stay in Mt. Pulag increases by 0.000087 for every ₱1 increase in the total travel cost (tc) to visit Mt. Pulag. At zero travel cost, maximum number of days to stay in Mt. Pulag is 3.67. R^2 of 0.311 indicates that the 31% of the variation in r can be explained by tc . The variables chosen to determine r in the regression equation proved to be significant at 5%.



Point a:
 Travel cost/day: P42,183.1
 Maximum *r* days in Mt. Pulag: 0

Point b:
 Total travel cost/day: P9,273.03
 No. of days in Mt. Pulag: 2.86

Point c:
 Off-site expense/day: P1,587.34
 No. of days in Mt. Pulag: 3.53

Point d:
 On-site expense/day: P373.32
r days in Mt. Pulag: 3.64

Point e:
 Travel cost/day: P0
r days in Mt. Pulag: 3.67

Figure 2: The Recreational Demand for Mt. Pulag

9.4.3 The Recreational Value of Mt. Pulag National Park

From the recreational demand curve, Table 15 presents the calculated consumer surplus and total recreational value of MPNP for the year 2007. The aggregate recreational value equals the consumer surplus plus the total travel cost of the visit.

Table 15: Recreational Value of Mt. Pulag National Park, 2007

	Travel Cost (₱)	Consumer Surplus	Recreational Value
Per Visitor Per Day (₱)	0	77,407.64	77,407.64
Total (₱)		77,407,640.00	77,407,640.00
Per Visitor Per Day (₱)	9,273.03	47,062.56	56,335.59
Total (₱)		47,062,560.00	56,335,590.00

If Mt. Pulag is assumed a *free good* (price paid to visit Mt. Pulag is equal to zero),

visitors' annual total recreational value is worth ₱77 million (approximately US\$1.72 million). This value also represents the consumer surplus because travel cost is equal to zero. The estimated amount represents the monetary value of visitors' *enjoyment from park visitation* (existence value). With the average travel cost per visitor valued at ₱9,373.32, the annual aggregate monetary recreational value of Mt Pulag National Park is estimated to be at ₱56 million (US\$1.25 million), and the consumer surplus is ₱46 million. This is the value that the park yields every year for the economy. However, this value does not represent the total revenue of the park. This value is further divided into consumer surplus of the visitors and total travel cost of the visitors. Total travel cost includes the opportunity costs of time (implicit costs of time spent on- and off-site) as well as explicit costs, which includes the off-site expenses (payments by visitors to transportation companies, service providers as hotels, restaurants, tourist agencies, etc.) and on-site expenses (payments by visitors for green fee or user's fee).

Consumer surplus or consumer benefit for visiting MPNP at price equal to zero is valued at ₱77,407.64 per visitor per day. With average travel cost incurred per day valued at ₱9,273.32 consumer surplus is estimated at ₱47,062.56. This shows the value of the benefit that visitors gain by visiting MPNP. The surplus also indicates the amount that the visitors are willing to pay to enjoy the park's environmental resources such as air, birds, animals and, in general, scenic beauty. The difference between the consumer surplus at ₱0 and ₱9,273.32 travel cost is the estimated amount that goes to the market economy, i.e., ₱30,345.08. This excess amount represents the value of enjoying MPNP or what is known as the *existence value* of MPNP. This is also known as the *bequest value*. By bequest value we mean the amount an individual would pay for today, so that future generations can also enjoy. Collectively, existence and bequest values are sometimes called non-use or passive use values. While these benefits are often quite small per person, the non-rival nature of these public good benefits results in simultaneous enjoyment by millions of people. Therefore, the total social benefits can be quite large (Loomis, et.al., 1999).

The estimated demand for MPNP allowed for the calculation of the gross revenue from MPNP. Gross revenue is estimated to be ₱26,520.87 per visitor (₱26,520,865.80 annual gross revenue). But a portion of this revenue reflects implicit costs. Considering the outright cash expenditure, total on-site and off-site expenses per visitor are valued at ₱373.32 and ₱1,587.34 respectively. Total explicit cost per visitor is valued at ₱1,960.66 (=373.32 + 1,587.34). Implicit cost on the other hand is valued at ₱7,312.27, indicating that the opportunity cost of time spent to visit Mt. Pulag exceeds the explicit cost. Visitors are more than willing to sacrifice this amount per day just to visit MPNP.

Assuming that the average number of r days to stay in MPNP is 2.86, and the on-site expenses per day amounts to ₱373.32, total revenue per visitor is valued at ₱1,067.70. Total annual aggregate revenue from on-site expenses per day is estimated to be ₱1,067,695.20. This value represents the amount received by the local government unit for collecting entry fees and user's fee or green fee that can be allocated for park management. On the other hand, off-site expenses per day amounts to ₱1,587.34. Given 2.86 average days to stay in MPNP, total revenue per visitor is valued at ₱4,539.79 and

annual aggregate revenue is estimated to be ₱ 4,539,792.40. This value represents the market value of MPNP, i.e., the amount of economic spill-over effects or benefits for visiting Mt. Pulag (payments by visitors to transportation companies, service providers as hotels, restaurants, tourist agencies, etc.).

10. Conclusions and Policy Implications

There is growing interest of many developing countries to focus on eco-tourism as source of employment and income. Forests or protected areas are looked upon as alternatives for development strategies. Forest areas are increasingly valued more for their environmental benefits than for their timber, but there exists no markets for forest areas particularly protected areas. The application of valuation techniques has proved useful in identifying cases where there is potential to capture PA values through the development of new markets and prices, and thereby aid generate new sources of finance for PA management. This research is an ex-post of the Mt.Pulag National Park (MPNP) and the primary approach used in this study is the travel cost method (TCM) to analyze and measure the recreational value of the MPNP.

Most of the coefficients of the demand determinants have the expected coefficients, with income statistically insignificant in the analysis. Accurate information on individual's monthly income was difficult to obtain, with a considerable number of students as respondents. Visitors' perceptions as to WTP to preserve Mt. Pulag, presence of solid waste management and MPNP staff conduct of orientation can significantly reduce the r days of stay in Mt. Pulag. This analysis call for MPNP management to improve on the provision of solid waste management in the area, and ways to entice visitors to listen to the orientation.

Whereas, visitors' perception as to the presence of reliable tourist guides and porters and strict implementation of guidelines and procedures on the use of Mt. Pulag can significantly increase r days of stay in Mt. Pulag. This analysis shows that MPNP managers can capitalize on tourist guides and porters to attract more visitors and continue the strict implementation of guidelines and procedures on the use of MPNP.

The estimated aggregate consumer surplus and the recreational value of MPNP, year 2007, were valued at ₱47,062,560.00 and ₱56,335,590.00 respectively. Greater market values are generated from off-site expenses than from on-site expenses. This only implies that there is indeed an evidence of growing commercialization of the natural resource. These values are therefore important to incorporate into resource management decisions at the government or the community level. Recognition of these values may help expand government policy which may not currently be meeting the goals of households within the community areas. Allowing for a greater role of the community areas in the protection and provision of eco-tourism can enhance or assure communities income security and equity.

The value of MPNP could also be important in terms of its contribution to the market economy. These values may determine that marketing of eco-tourism is a viable

supplement or even alternative to household agricultural production. Informal markets already exist such as the cost of hiring porters or tourist guides and lodging establishments within the protected area. With government intervention, formal or informal markets may emerge where they were absent before, therefore opening new opportunities. Community controls and incentives to conserve the national park may reduce exploitation, if they were made aware of the value of the protected area.

Very little research has been done on the valuation of national resources in the Philippines. Valuation of natural resources, particularly those declared as national parks, is a relatively new area of investigation in the country. The application of ideas and methodologies needs to be adapted and explored with the country's resource issues, which are not captured in this research. Future research should have clear policy links and focus on issues that are relevant to policy decisions. As in the case study conducted by Benitez (Benitez, 2001) of the Galapagos National Park in Ecuador, two most significant means of support have been the revenue generated through non-extractive use of the protected area. The increase in user fees in the park has not affected the number of visitors, which supports the idea that at unique sites higher fees can be associated with little or no effect on visitation levels.

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August 12, 2008

DR. GASTON P. KIBITEN

Director
Research and Development Office

Dear Dr. Kibiten:

Greetings!

We are pleased to submit a copy of the first draft of our research entitled, "*The Economic Value of Mt. Pulag: An Eco-Tourism Perspective*". The research is still a working paper and we appreciate if you could provide inputs for us to enhance or improve the paper. We are also furnishing you a soft copy of the research through your e-mail.

We intend to submit the research output for future paper presentation and publication to either of the following: (1) Journal of Economic Development; (2) Journal of Environmental Management; and (3) Journal of Economic Policy.

We have previously presented the preliminary results of the research based on the requests of Kabayan and Bokod tourism officials as regards the Mt. Pulag management and quality of services. This was done last May 27, 2008 and June 28, 2008. Please be informed that we plan to visit the municipalities this September 1, 2008 to present the final results of the study.

We hope you could join us in this endeavor and we thank you very much for your support. God bless!

Respectfully yours,

GLADYS M. NAVARRO

Research Leader

ELEANOR D. PACA

Co-researcher