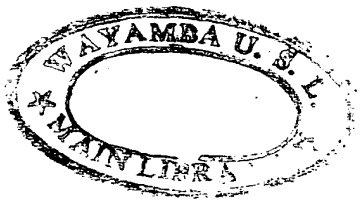
Demand for Nature Tourism: Estimating Recreational Benefits from the Viharamahadevi National Park in Colombo

NAWARATHNA BANDA H.M.

University of Kelaniya
Kelaniya
SRI LANKA
nawarathna77@yahoo.com



Abstract:-

The Viharamahadevi Park is a public park located in Colombo, Sri Lanka. It is situated exactly in front the beautiful colonial style Town Hall building. The park is named after the mother of famous king Dutugamunu. The park was built during British rule of Sri Lanka, named as the Victoria Park after Queen Victoria and it is still referred to as the Victoria Park amongst some of the city's dwellers. The park features include a huge Buddha statue and a series of water fountains. It also includes a mini zoo, and a children's play area. The Viharamahadevi Park is the only public park in Colombo, and is maintained by the Municipal Council of Colombo.

This study, which is among the Sri Lanka to value recreational benefits, estimates the benefits of establishing and managing the Viharamahadevi National Park near Colombo. The study examines how much park visitors are willing to pay to visit and enjoy the park. Annual benefits from the Park are considerable—the total annual consumer surplus or economic benefit obtained from recreation in the Park is approximately Rs. 12 million (US$ 0.12 million). Various factors influence the value visitors obtain from the park — these include travel cost, household income, and the quality of the park. Improvements in the quality of the park are likely to increase recreational benefits by a significant 35%. The study recommends that a Park entrance fee of Rs. 20 per person be introduced, which could be utilized for park Management. This would generate nearly Rs. 3.7 million in revenues annually, a sizable amount of money that represents about 2% of the annual budget allocated to the Environment Sector in Sri Lanka.

Keywords: Environmental valuation, travel cost method, total recreational value, national parks

1. Introduction

Tourism is traveling for predominantly recreational or leisure purposes or the provision of services to support this leisure travel. The World Tourism Organization defines tourists as people who "travel to and stay in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes not related to the exercise of an activity remunerated from within the place visited". Tourism has become a popular global leisure activity. In 2006, there were over 842 million international tourist arrivals.

Tourism is vital for many countries, due to the large intake of money for businesses with their goods and services and the opportunity for employment in the service industries associated with tourism. These service industries include transportation services such as cruise ships and taxis, accommodation such as hotels and entertainment venues, and other hospitality industry services such as resorts (en.wikipedia.org/wiki/Tourism).

Recreation or fun is the expenditure of time in a manner designed for therapeutic refreshment of one's body or mind. While leisure is more likely a form of entertainment or rest, recreation is active for the participant but in a

refreshing and diverting manner. As people in the world's wealthier regions lead increasingly sedentary life styles, the need for recreation has increased. The rise of so called active vacations exemplifies this.

Hunziker and Krapf, in 1941, defined tourism as "the sum of the phenomena and relationships arising from the travel and stay of non-residents, insofar as they do not lead to permanent residence and are not connected with any earning activity." In 1976 Tourism Society of England defined it as "Tourism is the temporary, short-term movement of people to destination outside the places where they normally live and work and their activities during the stay at each destination. It includes movements for all purposes." In 1981 International Association of Scientific Experts in Tourism defined Tourism in terms of particular activities selected by choice and undertaken outside the home environment.

The United Nations classified three forms of tourism in 1994 in its Recommendations on Tourism Statistics: Domestic tourism, which involves residents of the given country traveling only within this country; Inbound tourism, involving non-residents traveling in the given country; and Outbound tourism, involving residents traveling in another country.

The UN also derived different categories of tourism by combining the 3 basic forms of tourism: Internal tourism, which comprises domestic tourism and inbound tourism; National tourism, which comprises domestic tourism and outbound tourism; and International tourism, which consists of inbound tourism and outbound tourism. *Intrabound tourism* is a term coined by the Korea Tourism Organization and widely accepted in Korea. Intrabound tourism differs from domestic tourism in that the former encompasses policymaking and implementation of national tourism policies.

Ecotourism, also known as ecological tourism, is a form of tourism that appeals to the ecologically and socially conscious individuals. Generally speaking, ecotourism focuses on volunteering, personal growth, and learning new ways to live on the planet; typically involving travel to destinations where flora, fauna, and cultural heritage are the primary attractions.

Responsible ecotourism includes programs that minimize the negative aspects of conventional tourism on the environment, and enhance the cultural integrity of local people. Therefore, in addition to evaluating environmental and cultural factors, an integral part of ecotourism is in the promotion of recycling, energy efficiency, water conservation, and creation of economic opportunities for the local communities.

Ecotourism, responsible tourism, and sustainable development have become prevalent concepts since the late 1980s, and ecotourism has experienced arguably the fastest growth of all sub-sectors in the tourism industry. The popularity represents a change in tourist perceptions, increased environmental awareness, and a desire to explore natural environments. Such changes have become a statement affirming one's social identity, educational sophistication, and disposable income as it has about preserving the Amazon rainforest or the Caribbean reef for posterity.

To approach an understanding of the problem, a clear definition must delineate what is, and is not, ecotourism. Ideally, ecotourism satisfies several general criteria, including the conservation of biological diversity and cultural diversity through ecosystem protection, promotion of sustainable use of biodiversity, share of socio-economic benefits with local communities through informed consent and participation, increase in environmental and cultural knowledge, affordability and reduced waste, and minimization of its own environmental impact. In such ways, it contributes to the long term benefits to both the environment and local communities.

However, in the continuum of tourism activities that stretch from conventional tourism to ecotourism proper, there has been a lot of contention to the limit at which

biodiversity preservation, local socio-economic benefits, and environmental impact can be considered "ecotourism". For this reason, environmentalists, special interest groups, and governments define ecotourism differently. Environmental organizations have generally insisted that ecotourism is nature-based, sustainably managed, conservation supporting, and environmentally educated. The tourist industry and governments, however, focus more on the product aspect, treating ecotourism as equivalent to any sort of tourism based in nature. As a further complication, many terms are used under the rubric of ecotourism. Nature tourism, low impact tourism, green tourism, bio-tourism, ecologically responsible tourism, and others have been used in literature and marketing, although they are not necessary synonymous with ecotourism.

The problems associated with defining ecotourism have led to confusion among tourists and academics alike. Definitional problems are also subject of considerable public controversy and concern because of greenwashing, a trend towards the commercialization of tourism schemes disguised as sustainable, nature based, and environmentally friendly ecotourism. According to McLaren, these schemes are environmentally destructive, economically exploitative, and culturally insensitive at its worst. They are also morally disconcerting because they mislead tourists and manipulate their concerns for the environment. Despite objections, greenwashing continues to grow unabated. The Nature's Sacred Paradise, a theme park in Quintana Roo, Mexico, is responsible for displacing local Mayan communities and illegally keeping endangered species in captivity to attract visitors. The development and success of such large scale, energy intensive, and ecologically unsustainable schemes are a testament to the tremendous profits associated with being labeled as ecotourism (Jacobson, and Robles (1998).

In developing countries, governments are often strapped for resources to protect, conserve and sustainably use natural resources. In such situations, ecotourism can play an important role in ensuring both natural resource conservation and economic growth. A growing body of literature stresses the role eco-tourism can play in managing national parks and protected areas. In developing countries, park entry fees are often low, or sometimes non-existent, generating little revenue therefore for park management. Further, whatever tourism revenues that exist are frequently merged with other general sources and not earmarked for park maintenance. Because of the ineffective capture of ecotourism revenues, alternative land uses that provide greater short-run returns, such as logging, agriculture, and cattle grazing, seem profitable even on public lands. The result is often deforestation, soil erosion, watershed degradation, and irreversible loss of bio-diversity (Southgate and Whitaker, 1994).

The potential benefits from charging user fees and using differential pricing in national parks are significant. User fees are a mechanism to capture the public benefits of ecotourism, which often accrue primarily to the private sector. They can also be used to reduce visits to areas that suffer from overuse and ecological damage. Developing countries have little experience in guiding natural resource managers to design effective pricing strategies. Analyses that assess the impacts of user fees and differential pricing are needed so that appropriate policies can be devised and implemented (Chase, et al., 1998).

A growing body of literature has emphasized the role of user fees in the management of national parks and protected areas, primarily in developed countries.(1) In developing countries seeking to balance environmental and economic growth objectives, the challenges facing policymakers are particularly great. Government funds are typically in short supply and enforcement of environmental regulations lax or nonexistent. Many of the visitors to protected areas, such as national parks, are foreign tourists who incur few of the costs but enjoy many of the benefits stemming from resource conservation efforts. Tourism revenues, rather than being earmarked for park maintenance or resource conservation efforts, are frequently merged with other sources of

general revenues. Yet, without user fees to effectively capture ecotourism revenues, alternative land uses that provide greater short-run returns - such as logging, agriculture, and cattle grazing - will often be pursued on public as well as private lands. The result is often deforestation, soil erosion, watershed degradation, and irreversible loss of biodiversity (Southgate and Whitaker 1994). Since the market fails to reflect these environmental costs, fewer wildernesses are preserved than is optimal (Dixon and Sherman 1991).

Under these circumstances, the potential benefits from charging user fees and differentially pricing access to national parks are significant. User fees are one vehicle to capture for the public the benefits of ecotourism which often accrue primarily to the private sector. They also can be used to reduce visitation in areas that suffer from overuse and accompanying ecological damage. Building on experiences in such areas as the setting of electrical rates and time-of-day telephone pricing, the more radical policy of differential pricing in outdoor recreation is beginning to receive some attention; however, the focus has been primarily theoretical (Wilman 1988). Some experimentation has occurred (Bamford et al. 1988), but these opportunities have been limited because of the practical difficulties in convincing policymakers to allow for such experiments. Little experience thus exists, particularly in developing countries, to guide natural resource managers in designing effective pricing strategies for protected areas. Analyses assessing the impacts of user fees and differential pricing are needed so that appropriate policies can be devised and implemented, and resources can be managed in an optimal manner.

The recreation benefits to a consumer are a measure of how much satisfaction or utility the consumer obtains from the recreation experience (Loomis & Walsh 1997). The level of particular weather variables may influence the benefit or utility derived from the recreation experience. The effect of weather on the visitor's experience may affect recreation choices, utility maximization, and net amenity benefits. The purpose of this paper is to measure the influence of weather conditions on recreation benefits--measured as net willingness to pay (WTP) for the recreation experience of a national park visit. The results of this analysis have implications for the measurement of the economic value of weather forecasts for recreation, in order to maximize value (utility) to visitors. The effect of weather conditions on recreation benefits also has implications for climate change policy. In particular, a complete accounting of the benefits and costs of climate change includes consideration of non-market effects such as recreation. If there are substantial gains or losses in recreation due to climate change this may influence the overall economic assessment of policies for slowing global climate change. Management plans that address the effects of climate change on recreation benefits can incorporate adaptation or mitigation strategies that take into account the predicted welfare impacts of climate forecasts. The measurement of recreation benefits is based on comparing the utility of additional trips with the cost of additional trips. Consumers will continue to take trips as long as the added utility (or benefits) of another trip exceeds the price (.Robert, Richardson and Loomis- 2005).

2. Research Problem

Many natural resource systems such as lakes, rivers, streams, estuaries, forests and parks are used extensively by people for various types of recreational activities. Natural resource systems provide valuable services to people. From an economic perspective, these services have two important features. Firstly, the economic value of these services depends upon the characteristics of the natural resource system. Knowledge of the value of these services is therefore important for a variety of resource management decisions. Secondly, access to the resource for recreation is typically not allocated through markets. Rather, access is typically open to all visitors at a zero price or a nominal entrance fee that bears no relationship to the cost of providing access to, or consumer valuation of, the resources. Moreover, there is little or no

variation in these access prices over time, or across sites, in order to enable an econometric estimation of demand functions (Freeman, 1993).

Like other environmental resources and public goods, national parks benefit society in many different ways. They perform not only ecological functions but also provide recreational facilities to those who visit these parks. National parks also help contribute precious foreign exchange earnings to national coffers. Sri Lanka is very deficient in forest resources because, as mentioned earlier, forests cover only 24% percent of its area and there are only a few parks in the country. These parks are, however, threatened by various activities such as forest fire, soil erosion, human settlement inside the parks and encroachment by local villagers, and pollution created by the villagers or visitors inside the parks. The overall negative impact of the above mentioned factors, along with insufficient funding, may have contributed to the mismanagement of these parks.

Two sources of funds are available for park management: (a) national and/or provincial government budgetary allocations; (b) revenues generated from park entry fees. The government budget allocated for the management of national parks in Sri Lanka is very limited as it must compete with other programs, such as education, healthcare, infrastructure, defense spending, etc., in the country. Therefore, the other alternative would be to generate more revenues for park management through user fees. At present, either there is no entry fee or only a nominal entry fee for accessing national parks. Therefore, charging entry fees to these parks could generate sufficient funds for the proper upkeep of these parks. Moreover, park revenues from entry fees might even go up if parks were suitably priced. This suggests that although the government budget allocation for National Park management faces stiff competition from other items in the budget, adjusting park entrance fees may increase park revenue. There is a dire need, however, to manage them on a sustainable basis, which in turn requires their correct valuation. The present study investigates the possibility of enhancing park entry fees to reflect the recreational benefits that national parks provide to visitors. This study focuses on the Viharamahadevi National (VDN) Park, Colombo.

3. Objectives

The term *park* is used here to mean a piece of public land maintained in a natural state. This is a generic term, but parks are not generic places. Parks vary widely in size, features, and management style. Size can range from a few feet to millions of acres. Yellowstone National Park, for example, covers 2.2 million acres and extends into three states (Wyoming, Montana, and Idaho). Tongass National Forest in Alaska covers 17 million acres. City parks, on the other hand, are typically less than 50 acres, the smallest being Mills End in Oregon at only two feet across. Features at parks also vary widely. People might visit Yellowstone National Park to see Old Faithful, a geyser that erupts with regularity and to view wildlife such as bison, elk and wolves. Other parks are limited to a picnic table and a small grassy area. In addition to size and feature variation, management style variation also ranges broadly, from national parks where commercial logging is not permitted to Bureau of Land Management areas that allow mineral exploration. No matter what size, features, or management styles, most parks offer the visitor a chance to participate in an outdoor recreation activity. In many of the smaller parks, people participate in relaxing, picnicking and dog walking. At the larger parks, other activities come into play such as boating, back packing and rock climbing. Participating in recreation activities provides the visitor with an increase in their well-being. An increase in well-being is a non-market benefit that could come in the form of an increase in health and fitness levels or a lowered stress level.

The overall goal of the study is to measure the recreational value of the Victoria National Park, Colombo, Sri Lanka. The specific objectives of the study are to investigate (i) if there exists the usual functional relationship

between travel cost (p) and park visitation (q); (ii) to determine the factors that affect the visitors' willingness to pay (WTP) for recreational services of the park; (iii) to estimate the Consumer surplus and recreational value (benefits) of the Victoria (Viharamadevi =VN) Park; (iv) to use these values to determine an optimal entrance fee for visiting the VN park; (v) to find out whether improvements in the recreational benefits of the park would lead to a higher demand for park visitation; and (vi) to offer policy Recommendations on how overall benefits of the park can be improved. In this study, I use the Travel Cost Method (TCM) to estimate the recreational benefits associated with VN Park.

4. Methodology

This study has been used both primary and secondary data. Secondary data was collected from secondary sources and primary data was collected from two hundred respondents who came to visit the Viharamahadevi park. Interview schedule and observation method was employed to collect primary data. It was used Travel Cost Method (TCM) to analyze the data. The TCM was developed from a suggestion made by Harold Hotelling in 1947 in a release on the economics of recreation in US national parks by the National Park Service. Hotelling suggested measuring differential travel rates according to travel distances that visitors had to overcome in order to reach a park. Exploiting the empirical relationship between increased travel distances and associated declining visitation rates, according to him, would permit one to estimate a true demand relationship. If estimated empirically, this demand schedule could be used to compute the total benefits produced to park visitors, which should be equal to any entry fees they paid plus other unpriced benefits or consumer surplus (Hotelling, 1947).

Clawson (1959), Knetsch (1963), and later Clawson and Knetsch (1966) were instrumental in further developing TCM. Clawson and Knetsch (1966) showed how a zonal methodology (ZTCM) could be used to derive a demand curve for a site. The derived demand curves estimated by them appeared generally satisfactory. They exhibited a negative relationship between price and output in accordance with demand theory. Brown and Nawas (1973) and Gum and Martin (1974) developed a new form of TCM based on individual visitors, where the dependant variable, i.e., the quantity consumed, is the number of trips taken per period by individuals or households (ITCM).

There is a growing body of literature that focuses on valuing ecotourism and wilderness areas in developing countries. The primary approaches used in these studies—the travel cost method (TCM) and contingent valuation (CV)—were both pioneered in the USA and have only recently been applied in developing countries. The TC approach assumes that the various factors affecting visitors' travel costs, including both direct costs and the opportunity costs of visitors' time, influence the length and frequency of a visit to a given destination. The TCM, however, has limitations, particularly in applications to multiple destination trips (Pearse, 1968). In addition, assumptions such as the homogeneity of marginal costs and preferences of visitors from each origin are questionable (Wennergen, 1964). To circumvent such limitations, studies that have estimated the use values of protected areas in developing countries have often excluded nonresidents (Durojaiye and Ipki, 1988; Tobias and Mendelsohn, 1991). Or if foreign visitors are included, restrictive simplifying assumptions have been imposed (Mungatana and Navrud, 1994). While studies using TC have provided useful insights into the value of ecotourism in protected areas in developing countries, they may have typically focused more on estimating consumer surplus than on evaluating user fees as a guide toward designing improved park pricing strategies, which is the primary objective of this study.

On the contrary, CV relies on surveys containing hypothetical valuation scenarios in order to generate values for goods that cannot be priced directly through a market (Cummings, *et al.*, 1986). Thus, CV has more flexibility than TC in that a survey can be designed to elicit many different types of

values and not just the use value of a specific area such as a national park. Although CV has been applied to developing countries less often than TC (Lindberg and Johnson, 1994), there is growing recognition of the importance of these applications, particularly when results have direct implications for natural resource management and policy. CV has been used to measure total preservation value, which includes both use and non-use components (Echeverria, Hanrahan and Solorzano, 1995). Use values have been examined through analyses of the explanatory factors influencing WTP for increases in entrance fees and trip costs as well as improvements in park amenities (Abala, 1987; Baldares and Laarman, 1990; Moran, 1994; Shultz, *et al.,* 1997).

This study employs TCM to assess the benefits associated with recreation in a specific park, the Viharamahadevi National Park. The TCM is basically an extension of conventional household production function (HPF) models that treat the household as maximizing utility based on numerous consumption and production decisions. The TCM enables an assessment of individual preferences for the consumption of non-market goods. It uses the cost of traveling to a non-priced recreation site in order to infer recreational benefits provided by the site. TCM studies have consistently shown that as the price of access (cost of travel) increases, the visit rate to the site falls. The TCM is usually estimated as a trip generating function where the visit rate depends upon the cost of travel to the site, travel costs to substitute sites, and other socioeconomic characteristics of the visitors (Garrod and Willis, 1999).

There are two approaches to TCM, the zonal total cost method (ZTCM) and the individual travel cost method (ITCM). Since the Viharamahadevi National Park is an urban park that is located very close to Colombo, and a majority of visitors are from nearby areas, I use the ITCM. The ITCM has a distinct advantage over the ZTCM in that it takes into account the inherent variation in the data, rather than relying on zonal aggregate data. For a more practical travel perspective, the ITCM has the advantage that its trip generating function can be estimated using a smaller number of observations than the ZTCM (Garrod and Willis, 1999). However, the former requires more information about individual visitors and is reliant on an expensive questionnaire survey being undertaken to elicit visitor characteristics, preferences, and behavior. Nevertheless, the ITCM is generally more flexible and applicable at a wider range of sites than ZTCM.

In order to model the travel cost function, I follow Freeman (1993) and assume that the individual's utility depends on the total time spent at the site (the Viharamahadevi National Park, in this instance), the quality of the park, and the quantity of the numeraire. With the duration of the visit fixed for simplicity, the time on site can be represented by the number of visits. The individual solves the following utility maximizing problem:

$$\textbf{Max: U (X, r, q)} \quad \ldots\ldots (1)$$

Subject to the twin constraints of monetary and time budgets:

$$M + \mathbf{pw} \cdot \mathbf{tw} = \mathbf{X} + \mathbf{c.r} \quad \ldots\ldots (2)$$

$$\mathbf{t^*} = \mathbf{tw} + (\mathbf{t_1} + \mathbf{t_2})\mathbf{r} \quad \ldots\ldots (3)$$

Where X = the quantity of numeraire whose price is one,

r = number of visits to the VN Park,
q = environmental quality at the site,
M = exogenous income,
pw = wage rate,
c = monetary cost of a trip,
t^* = total discretionary time,
tw = hours worked,
$\mathbf{t_1}$ = round-trip travel time, and
$\mathbf{t_2}$ = time spent on site.

It is assumed that r and q are (weak) complements in the utility function, implying that the number of visits will be an increasing function of the site's environmental quality. The time constraint reflects the fact that both travel to the site and time spent on the site take time away from other activities. Thus there is

an opportunity cost to the time spent in the recreation activity. We also assume that the individual 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. Finally, we also assume that the monetary cost of a trip to the site has two components: the entry fee *f*, which could be zero, and the monetary cost of travel. This cost of travel is *pd .d*, where *pd* is the per-kilometer cost of travel and *d* is the distance to the site and return from it.

Substituting equation (3) into (2) yields:

$M + \mathbf{pw} \cdot t^* = \mathbf{X} + \mathbf{pr} \cdot \mathbf{r}$ ..... (4)

Where **pr** is the full price of a visit, which is the sum of entry fee (*f*, which could be zero), *pd* is the per/km cost of travel and *d* is the distance in km as shown in equation 5.

$$pr = c + pw(t_1 + t_2)$$
$$= f + pd.\ d + pw(t_1 + t_2) \quad \ldots\ldots\ldots\ldots (5)$$

As equation (5) makes clear, the full price of a visit consists of four components: the entry fee, the monetary cost of travel to the site, the time cost of travel to the site, and the cost of time spent at the site. On the assumption that individuals are free to choose the number of hours worked at a given wage rate, the two time costs are valued at the wage rate. Maximizing equation (1) subject to the constraint of equation (4) will yield the individual's demand functions for visits:

$\mathbf{r = r\ (pr, M, q)}$ ..... (6)

The data on rates of visitation, travel costs, and variation in entry fees (if any) can be used to estimate the coefficient on **pr** in a travel cost-visitation function. Because of the linearity of equation (5), the coefficient on **pr** can be used to derive the individual's demand for visits to a site as a function of the entry fee.

We further assume that there are substitute sites available. In such cases, the interactions and the substitution effects among sites must be modeled explicitly. This calls for some form of multi-site model. Multi-site models are estimated as systems of demand equations. For each site *j* ($j = 1,\ldots,j,\ldots,m$), a demand equation of the following form is specified:

rji = **rj(prji , (prki , Mi , qi)** ..... (7)
(i = (*i* = *1*,... i,....., s), (k = 1,....., k,...., m),
and k ≠ *j*

Where **rji** is the number of visits individual *i* makes to the **jth** site, **prji** is the full price of a visit by *i* to *j*, and **prki** is the set of substitute prices for visits to other sites. This type of model can be estimated from data on individual observations (see, for example, Freeman 1993 and McConnell, 1985).

Factors that Determine Recreational Demand

Because It has been used ITCM, in this model, the number of trips per period made to VN Park by each individual is denoted by *r*. Various independent variables are used to explain variation in the dependent variable *r*. Both economic theory and the considerable experience of recreation managers have shown that demographic and other independent variables influence recreation visitation. Apart from demographic variables, the most important variables include travel cost, travel time, substitute sites, and site quality and congestion. Demographic variables such as age, sex, education, income, employment status, rural versus urban residence and family size affect recreational demand. Intuitively, age would appear to be an important determinant of demand for park visitation and is expected to be inversely related. That is, as age increases, participation decreases. Sex may be another determinant. It can be expected that men would be more likely to participate than women. With regard to education, people with higher education, it could be said, appreciate outdoor nature-based activities more than people with less formal education. Household income has also, generally, been found to have a positive correlation with participation in many outdoor recreation activities. It can be expected that the higher the household income, the higher the number of park visitations. Urban dwellers are likely to participate more than people from rural areas. Similarly, a

better-quality park may attract an individual more often than a degraded-quality park.

The relationship between travel cost and park visitation may be negative. On the question of what costs should be included under travel costs, some researchers have inquired closely into the costs of fuel, oil, tires, repairs and maintenance of vehicles in order to estimate appropriate travel costs. Seller, *et al.,* (1985) used the cost of fuel, accommodation and food costs. Beal (1995) also found that a majority of respondents considered fuel, food, and accommodation costs as relevant to their trip decision. Regarding the value of on-site time, McConnel (1992) argued that the opportunity cost of on-site time should be included in the price variable. McConnel, however, concluded that accounting for on-site time is so difficult that no systematic method has been developed, either conceptually or empirically.

Smith, *et al.,* (1983) suggested that cost would be some proportion k of each individual's wage rate. Numerous attempts have been made to value travel time. It should be noted though that despite the fact that the issue of valuing travel time has been addressed in several studies, there seems to be no consensus on a consistent procedure yet (Nillesen, 2002). Cesario (1976) argued that it seems more reasonable that a trade-off is made between time for travel and leisure activities rather than between work and travel time. He reviewed a number of empirical studies of commuting and found that the value of time varied between one quarter and one half of the wage rate. Like Freeman (1993), full wage was used to value time in this study. If time costs are ignored, demand will be biased. The effects of both time costs and transportation costs on the demand for recreation need to be estimated separately. However, since the two may be highly correlated and a separate estimation too difficult to carry out, time costs was given a monetary value and added to the transportation costs. In this paper, travel costs include all monetary costs of travel to VN Park as well as time cost. The time spent in traveling to the site and time spent on the site were valued at the prevailing wage rate and were added to the monetary cost of travel, including the cost of fuel (in case the visitor was using his own car) or the fare of public transportation, meals, accommodation, etc.

Prices of substitute sites also affect recreational demand for VN Park. Some visitors may believe that each national park is unique and has no substitute. Conversely, some people use other forms of outdoor recreation (like going to a movie) as substitutes for nature-based recreation in national parks. Freeman (1993) approached the substitute site dilemma by suggesting that researchers ask visitors which other single site is visited frequently and include only that site's price as the relevant substitute price. He asserted that a next-best site yielding similar characteristics and services (a national park, in this instance) is the appropriate alternative. It has been followed this approach in this study. The possible inclusion of substitute prices stems from the demand theory that states that the demand for a good is dependent on its own price, prices and qualities of substitutes, and other factors. Hence the demand for the environmental good should include the prices of substitute goods. As mentioned earlier, Freeman (1993) suggested that researchers ask visitors which other single site is visited frequently and include only that site's price as the relevant substitute price. He asserted that a next-best site yielding similar services (a national park, in this instance) is the appropriate alternative. Senarathgoda National Park in Gampaha was identified as the closest substitute site for the VN Park. It is located about 40 km from Viharamahadevi National Park.

Site quality may also affect park visitation. The higher the site quality perceived by visitors, the higher the consumer benefit. There may also be the issue of multi-purpose-or-destination trips. People often visit several sites within one trip. The problem that arises then is how to allocate the total travel costs among these multiple destinations. Loomis and Walsh (1977) suggested two options. First, one can drop observations from multiple destination trips and estimate demand with just the single destination users and compute a per-visit consumer surplus figure based on these

functions. This average visitor consumer surplus can then be aggregated across all visitors to estimate total consumer surplus. Alternatively, one could ask visitors what proportion of the cost of the trip should be attributed to each destination. To provide for this, a multi-purpose question was asked and some crude allocation of costs was used to estimate travel costs. Visiting a site may be part of round trip involving visits to other locations. Only a portion of the travel cost then relates to the recreational site in question. Since there was only one substitute site located nearby, multiple sites were not a serious problem in the present study. However, it was put the question about multiple sites to the respondents and travel costs were calculated accordingly.

Sampling is a critical issue for travel cost studies. While some scholars prefer stratified sampling from the total population (Choe, *et al.,* 1996; Hanker, *et al.,* 1997), others use random sampling from user groups only (Farber, 1988; Yaping, 1998). In this study, it was concentrated on the user group for a number of reasons. Individual visitors instead of households were chosen as respondents for interviews. "Visitors" were broadly defined as those who use the VN Park for recreation.

In order to estimate the total universe (U) of visitors, a daily head count method was used at various entry points to the park on weekends and weekdays for one and a half months during the data collection. A head count survey was undertaken at various entry points of the VN Park for about 45 days in the year 2007. The average number of visitors was 200 and 300 on weekdays and weekends respectively. Thus, the total population was approximated as 91250 visitors per year based on a daily average of 250. Although secondary information is not available on the total number of annual visitors, it was held discussions regarding the approximate population of visitors with various officials. It was inferred from these discussions that the daily average of visitors ranged between 220 and 330, which was nearly the same as this head count average.

Regarding sampling, Schaeffer, *et al.,* (1996) suggests that "[a] systematic sample is generally spread more uniformly over the entire population and thus may provide more information about the population than any amount of data contained in a simple random sample." This study used systematic random sampling where every 10^{th} visitor was interviewed. In case he/she refused, another visitor was interviewed.

5. Data Analysis

Like many other developing countries, Sri Lanka is seeking to revitalize its tourism sector, including nature based tourism. Sri Lanka is one of poor South Asian countries in terms of bio-diversity. Forests cover as little as 24% of the country and deforestation rates have been high In recent years, however, the Government of Sri Lanka has shown an interest in the expansion and proper maintenance of the national park system. But, though the number of national parks and reserves is small in Sri Lanka, their management is far from satisfactory. This may be partly because of insufficient governmental funds and open access of visitors to these places. Economic valuation of these environmental Resources can provide valuable information for the better management of parks.

Sri Lanka a rich land of forestry (both natural and man-made) has a long history for forest management. Since ancient kinghood, there are evidences of sustainable utilization of forest resources. However, at present, most of the natural forests have been declared as "Protected" due to very rich biodiversity, and therefore management activities are mainly focused on man-made forests or forest plantations.

Although the natural forests are known to be the best in protection the environment and biodiversity, forest plantations too play a vital role in both protection and production. Because almost all the natural forests in Sri Lanka are to be protected, timber produced by the forest plantations is utilized for commercial purpose. However, the collection of non-wood

forest products is allowed in many of the natural forests in order to manage them in sustainable manner.

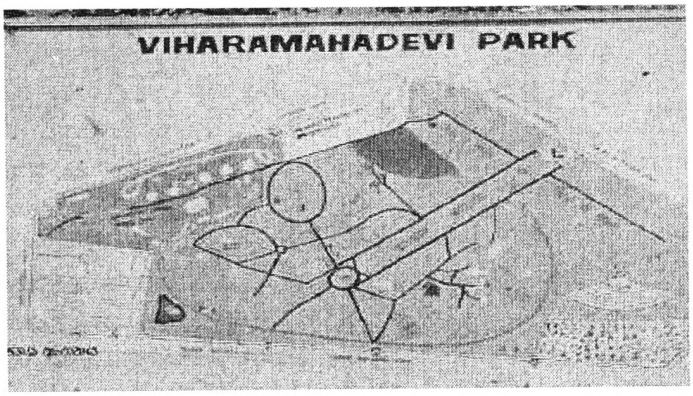
Other than timber, forestry also provides other tangible and intangible benefits. The natural forests contain most of the biodiversity, and therefore serve a crucial ecological function. Forests also protect soil and water resources, so that they make a positive contribution to agricultural productivity and hydropower production. In addition, natural forests are important from the viewpoint of outdoor recreation and aesthetic values. Forests, especially in the montane catchments, have a very important role in soil and water conservation. Some forests and some forest plantations have this as their primary function, but some tree species (pines, eucalypts, teak) may under certain conditions cause soil erosion by suppressing the ground vegetation, especially if they are planted as dense monocultures on steep slopes. Questions may also arise as to whether forests, forest plantations, or trees consume too much water, at the expense of other (more remunerative) uses.

Sri Lanka is one of the most densely populated countries in the world, ranking 19 in population density (Maddumbabandara, 2000). It is also the second most populous nation among the countries of the south Asian Association for Regional Cooperation (SAARC). The increase in population and the resulting demands for land, for agriculture and other development programs have seen forest cover dwindling over the recent years. A survey based on satellite imageries carried out in 1992 shows that close canopy natural forest cover has reduced to almost 24 per cent in 1994.

One of the main underlying causes of deforestation and forest degradation is the poverty that is often associated with landlessness and the poor land tenure system. Shifting cultivation, excessive harvesting of forest products and the conversion of natural forests to plantation and arable land are the other significant factors that have influenced the unprecedented deforestation.

Like many roads and places in Colombo, the Viharamahadevi Park is a rename of a park created by the British. Originally named Victoria Park after Queen Victoria, it was renamed in 1958 in honor of a different queen, a Sri Lankan one rather than a British. This is quite similar to what happens in former British colonies. It supposes the name Viharamahadevi was chosen so that the initials V.P. can be retained. I visited the park with members of Asia Explorers during our tour of Sri Lanka.

Viharamahadevi, the girl who would be queen, was born poor, and was cast adrift as a sacrifice to favor the gods. She was rescued off the coast at Kirinda by King Kavantissa, who took her as his wife. Her only significance in history is for having a son, Dutugemunu, who managed to wrestle Anuradhapura back from the conquering Cholas of South India and united Sri Lanka for the first time.



Economic theory does not suggest any particular functional form for TCMs. The most common practice is to statistically test various functional forms such as:

(1) Linear $r = \alpha + \beta P$
(2) Log-linear $log\ r = \alpha + \beta P$
(3) Double-log $\log r = \alpha + log\ \beta P$
(4) Negative exponential $r = \alpha + log\beta\ P$

The estimated consumer surplus for an individual making r visits to the site in case of a linear form is given by CS = -r2 /2β. The linear functional form implies finite visits at zero cost and has a critical cost above which the model predicts negative visits. The consumer surplus in case of the log-linear functional form is given by CS= -r/2β. It

implies a finite number of visits at a zero cost and never predicts negative visits, even at a very high cost (Garrod and Willis, 1999). Having tried various functional forms, it was decided that the linear functional form was the best fit for our data. Therefore, only linear regression results were reported.

The basic model used in this study depicts the number of visits to VN Park as a function of factors such as the travel cost, time spent in traveling, substitute sites, income, education, age, sex, rural versus urban residence, family size, site quality, employment status, etc. Thus, the model may be specified as follows:

$r_i = ß_0 + ß_1$(travel cost) + $ß_2$ (household income) + $ß_3$ travel cost (substitute site) + $ß_4$ (age of visitor) + $ß_5$ (visitor's highest level of education) + $ß_6$ (household size) + $ß_7$ D_1 (sex dummy)+ $ß_8$ D_2 (residence dummy) + $ß_9$ D_3 (park quality dummy) + e_i . . . . (eq. 8)

Where r_i , the dependent variable, stands for the number of visits by the i^{th} individual to VN Park per period of time, *travel cost* means 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 park. *Travel cost to substitute site means* travel cost to and from a residence to a substitute site including travel time costs. D_1 = 1 if male and 0 otherwise, D_2 = 1 if urban dweller and 0 otherwise, D_3 = 1 if the visitor's perception about the site's recreational facilities is good and 0 if bad. Table 1 summarizes explanatory variables and hypotheses.

Table 1: Explanatory variables and hypotheses

Variables	Expected Sign	Description
Travel cost	-	It includes round trip total cost to and from VN Park including opportunity cost of travel time and time spent at the site. It is hypothesized that the no. of visits to the site and travel cost are inversely related.
Household income	+	Household average monthly income in RS. Rupees (SR Rs.107.50 = 1 US$). It has been hypothesize that household income and the no. of visits to the site are positively related.
Price of substitute	+	Travel cost from a residence (place of living) to and from the next best alternative substitute site including travel time and time spent at that site. Henarathgoda (HN) Park was identified as a substitute site based on respondents' view. It is hypothesized that VN Park and HN Park are substitutes so that the travel cost of HN Park and the no. of visits to VN Park are positively related.
Age	-	Age (in years) of the visitor/respondent at the time of interview. The hypothesis is that the visitor's age and the no. of visits to VN Park are inversely related.
Education	+	Highest level of education (in years) of the respondent. It is expected that the level of education of visitors and the no. of visits are directly/positively related.
Household size	±	Number of family members in a household. The household size may also affect the no. of visits to park but the sign is not certain; it may be positive or negative.

Sex	+	Sex of respondents (D_1 = 1 if male and 0 otherwise). We assume males will visit the VN park more often than females.
Residence	+	Respondent's area of origin (D2 = 1 if urban dweller and 0 otherwise). Visitors from urban areas, especially the Colombo, will visit the park more often than those from other areas, including rural areas.
Park Quality	+	Quality of the site/park (D_3 = 1 if perception of the visitor is good about the park and 0 otherwise). It is assumed that if the visitors know that the quality of the park is good, then they will visit it more often than those who think that the quality of the park is not good.

Table 3: Sample Respondents Reporting Recreational Trips, Income, Travel Costs to VNP and Substitute Site

Variables	Mean	Minimum	Maximum
No: of Recreational Trips per year	7	1.00	2.00
Yearly Spending on Ecotourism (Rs)	4500.00	900.00	7000.00
Household Monthly Income (Rs)	11000.00	5000.00	9500.00
Distance (Km)	30	1.13	80.45
Yearly Travel Cost to VP (Rs)	3260.00	400.00	4360.00
No: of Trips to VP Per Year	7	1	14.00
No: of Trips to Substitute Parks per year	1.52	1.00	4.00

Source: Fieldwork – 2007

The following Table 3 shows some statistics on trips to recreational site, income of households, and distance of site from visitor's place of living. On average, the sample respondents visited nature-based recreation sites about 7 times per year with their mean yearly spending on recreation at Rs. 4500. Their mean monthly income is Rs. 11,000. The average distance between the two parks and the respondents' origin was 40 km. The average travel cost to the VN Park was Rs. 2,500. The average number of trips to substitute site were about 3 annually.

Table 3 shows descriptive statistics of sample respondents. About 65 per cent of the respondents were male and 35 per cent were female. As many as 55 per cent were married and 45 per cent single. The average age of the respondents was 37 years and the average household size was about 5. More than half (54 %) of the respondents had primary-level education. About 1 % were illiterate.

More than half the visitors visited the park up to 3 times and 28 % between 4-6 times a year. The sample annual mean number of visits was 7. Half of the respondents (50 %) considered the quality of the park as good compared to 36% who believed it to be bad or very bad, with about 14 per cent answering with "don't know". These figures demonstrate that the majority of the visitors were happy with the recreational quality of the park. The majority (55 %) of the visitors were from urban areas compared to 45 % of the visitors who were from rural areas. Similarly, more than 64 % of the respondents wanted improvements in the quality of services of the park. To the question on how to allocate more resources for park management, 36 per cent of the respondents preferred an increase in the entrance fee, 40 per cent chose a reallocation of the government budget while 24 per cent advocated a voluntary donation towards the parks' management funds.

Table 3: Descriptive Characteristics of Sample Respondents

Age (Years)	37
Household Size	5.80
Gender:	
Male	65%
Female	35%
Marital Status:	
Married	55%
Single	45%
Education:	
None	5%
Primary	55%
Secondary	30%
Technical diploma	3%
Bachelor's Degree	5%
Graduates	2%
Residence:	
Urban (mainly from Colombo and Kaluthara)	60%
Rural	40%
Do you want to improvements in quality?	
Yes	65%
No	35%
How should the money be raised?	
Increase entry fee	39%
Govt. budget reallocation	40%
Donation	21%

Source: Fieldwork - 2007

Table 4: Reasons for Visiting VN Park by Sample Respondents

Reasons to Visit Park	No. of Respondents	Percent
Sight-seeing	12	6.0
Bird-watching	15	7.5
Walking	17	8.5
Relaxation	96	48.0
Exercising	25	12.5
Eating	09	4.5
Getting fresh air	26	13.0
Total	200	100.0

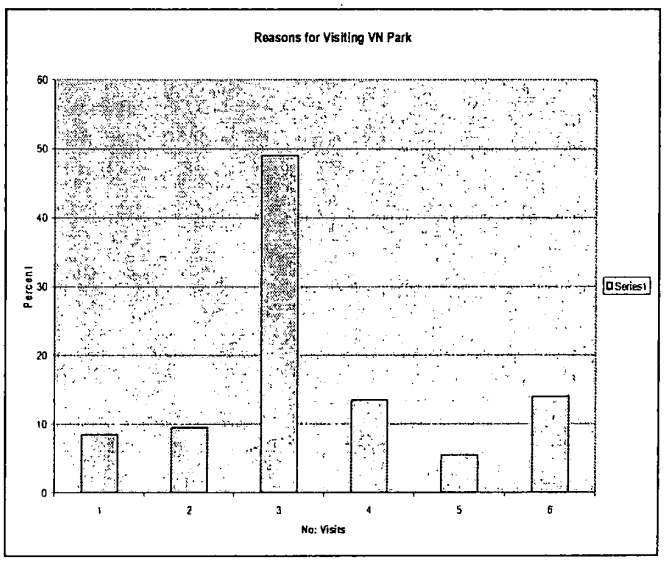
Source: Fieldwork – 2007

It is clear from Table 4 that visitors visit the VN Park for different reasons. Recreational activities at the Park include sightseeing, bird-watching, walking, relaxation, exercising, eating and getting fresh air under the green trees. The majority of the visitors (60 %) reported a combination of various reasons for visiting VN Park.

Graph number 1 shows the percentages of the reasons for visiting Viharamahadevi National Park. According to the data 7.5% visit to park for bird-watching, 8.5% for walking, 48% for relaxation, 12.5% for exercising, 4.5% for eating and 13% for getting fresh air under the green trees.

Table 5 reveals sample household distribution by income group. As many as of 60 % sample households fall in the income group of Rs.10, 000-20,000 per month. More than one-fifth (30 %) of households have a monthly income in the range of Rs.5, 000-10,000. Some 5 % of households have income of Rs.20, 000-50,000. Taken together, 90 % of the households fall in the income range of Rs.5, 000-20,000. Graph number 2 shows the frequency distribution of household's monthly income.

Table 6 shows classification of sample respondents by occupation. The data reveal that government servants accounted for 25 % of the respondents. About one-fifth (20 %) were self-employed and/or were businessmen. More than one-third (29%) of the respondents were employed in the private sector. Some 6% were laborers. Doctors, engineers and lawyers together accounted for 10 %. Housewives and non-working spouses were only 8 % of the respondents. The remaining 2 % were retired govt. servants, farmers, students, etc.

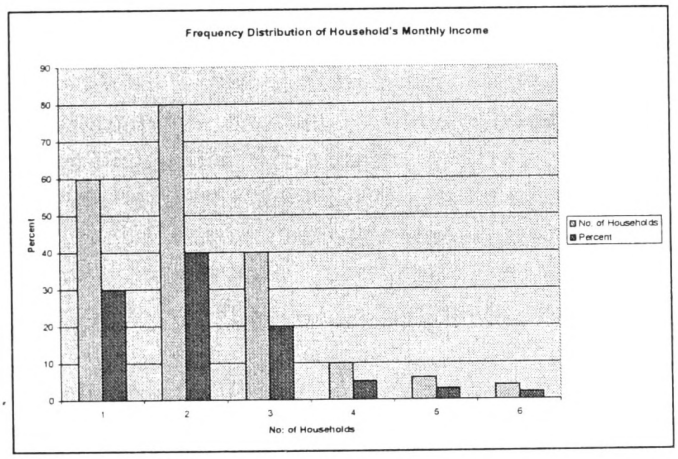


Source: Fieldwork – 2007

Table 5: Frequency Distribution of Household Monthly Income

Income Group (Rs: Per Month)	No: of Households	Percent
Up to 5000	60	30
5000 – 10000	80	40
10000 – 20000	40	20
20000 – 50000	10	5
50000– 100000	6	3
Above 100000	4	2
All	200	100

Source: Fieldwork – 2007



Source: Fieldwork – 2007

Table 6: Classification of Sample Respondents by Occupation

Occupation	No: of Respondents	Per-cent
Government Service	50	25
Self-employment/Own Business	40	20
Private Employees	58	29
Laborers	12	06
Doctors	06	03
Engineers	08	04
Lawyers/Advocates	06	03
Housewives	16	08
Others	04	02
All	200	100

Source: Fieldwork - 2007

Estimation of Benefits Based on the Individual Cost Travel Method

Table 7 reports the results of the travel cost regression models. The regression estimates recreational demand from all visitors to the Viharamahadevi Park.

Table 7: Estimated Results of Linear Regression Equations

Variable	Coefficients (t statistics)
Dependent variable	No: of visits to VP
Intercept	1.56 (2.05)
Travel cost	-1.2 (-2.46)***
Household Income	0.43 (2.8)**
Price of Substitute	0.045 (1.98)**
Age	-0.021 (-1.76)
Education	0.067 (1.71)
Family Size	0.024 (1.32)
Male Dummy 1 (1 for male)	0.12 (1.32)
Dummy 2 (1 for urban dwellers)	0.003 (1.43)
Dummy 3 (1 if visitor perception is good)	0.032 (2.89)**
R^2	0.54
F statistics	15.34

Source: Fieldwork – 2007, ** and *** shows the significant at 5% and 1% respectively

As expected, high travel costs incurred by individuals are inversely related to park visitation rates. This implies that the higher the travel cost paid by visitors to reach VN Park, the less frequently they visit. We may thus infer that there is less demand to visit the park from those visitors who live far from it compared to those who live close to the park. In addition to travel cost, household income has a positive impact on recreational demand. Visitors with high income are willing to pay more visits to the park. This implies that if the income level of visitors increases so would the recreational demand. There is also a significant relationship between the cost of the substitute site and the demand for VN Park. This is in line with the economic demand theory that the demand for a site will increase if the prices of

substitute sites increase. The education of visitors bears a positive sign while the age variable has a negative algebraic sign. But both these variables have insignificant coefficients.

The dummy variables for male, urban dweller and good perception of visitors about the environmental quality of the park have positive coefficients. However, only the latter dummy has a statistically significant coefficient. This implies that if the quality of services of the VN Park were improved, visitor would like to pay more visits to the park. It has also been explored the possibility of whether the demand curve for VN Park will shift upward to the right if its quality is improved. Most of the coefficients have the expected signs. As the R-square shows, about 50% of the total variation in the dependent variable is the explained variation. This is a reasonable R-square for cross-sectional data.

Figure 3 presents two linear demand curves for VN Park visitation. The actual user demand for VN Park is represented by equation (1) and is the lower curve in Figure 2. A hypothetical demand for VN Park, which is based on improvements in the quality of park services, is given by equation (2) and is represented by the upper curve in Figure 2. In order to find out visitors' perceptions about quality improvements in the park, respondents were asked what kind of improvements they would like to see at the park. Table 8 presents details on the kinds of improvements that were identified and preferred. Visitors were asked about the number of visits that they would make if park facilities were improved. This number was used as the dependant variable to estimate the hypothetical demand curve. Improvements in the quality of park services shift the demand curve upward to the right.

Table 9 shows consumer surplus and total recreational value of the VN Park for the year 2007. The total recreational value equals the consumer surplus plus total cost of the visit. The annual monetary recreational value of the VN Park is about Rs. 36 million (approximately US$ 0.36 million). This is the value that the park yields every year for the economy. However, this is not the revenue of the park. This value is divided into consumer surplus of the visitors and total travel cost of the visitors. The total travel costs include the opportunity costs of time as well as payments by visitors to transportation, food etc. Total recreational value was also projected in the new (quality improved) scenario, which amounted to Rs. 39 million (US$ 0.39 million).

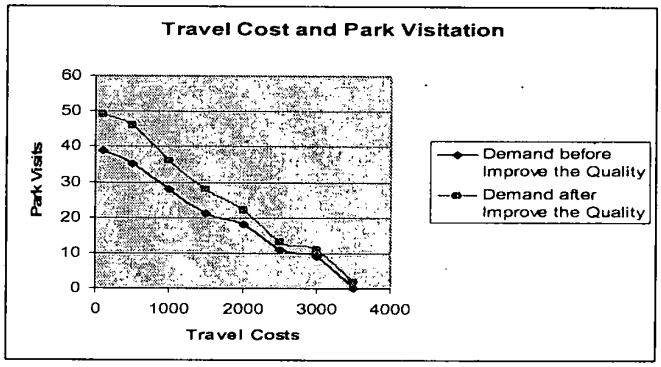
Table 8: Visitor's Perceptions Regarding Improvements in VN Park

Area of Improvement	Details
Recreational Site	Bird-watching, Relaxation, Walking tracks, Exercising, other
Information about VN park	Maps, Information sign, Precaution sign
Traffic	Traffic safety and Parking
Miscellaneous	Waste disposal, Lavatory, Food and beverages services

Source: Fieldwork - 2007

$\mathbf{D_i} = 37.15 - 0.011TC$ (R^2=0. 5712) . . . (1)

$\mathbf{D_i} = 49.37 - 0.013$ TC (R^2=0.561) . . . . (2)



One of the policy goals of this study was to suggest an optimal entry fee that would maximize revenue for park authorities. It has been simulated the impact of increasing the entry fee from its current level of zero to Rs. 20 shows an inverse relationship between the total annual number of visitors and the entrance fee. That is, when fees increase, visits decline. There is no different from the typical demand curve for any other good.

Table 9: Recreational Value of the VN Park in 2007

	Consumer Surplus		Recreational Value	
	Actual	New Scenario	Actual	New Scenario
Per Visitor (Rs)	221.0	318.0	1894.0	2091.4
Total (Rs. million)	22.1	31.8	190.1	207.8

Source: Fieldwork - 2007

The total revenues can be estimated from imposing various levels of entry fees. The data show that if a sum of Rs.20 were determined as the entry fee, it would generate the maximum total revenue (i.e., Rs. 4.1million) annually. According to this figure, the total revenue to be generated from entry fees would constitute 3 % of the entire budget for the environment sector. Although the budget allocated for VN Park was not reported accurately by the Park authorities, it is estimated that money generated from a park entry fee would constitute a significant proportion of the park budget. The total revenue rises initially as the entry fee is enhanced from zero to Rs. 15, reaches its maximum at a fee of Rs. 20, and declines thereafter, implying that Rs. 20 would be an optimal entrance fee. The figure also reveals the fact that as entry fees increase, the consumer surplus declines. Initially, it is Rs. 350 per person when the entrance fee is zero and declines to Rs. 75 when the entrance fee is Rs. 50 per visit. When the entrance fee is Rs. 20, the consumer surplus is Rs. 120.

6. Conclusions

Given the growth in eco-tourism and increasing interest among NGOs and governments in natural resource conservation, non-market valuation techniques are needed to estimate the economic benefits of environmental resources such as national parks. In this study, It has been used the individual travel cost model to analyze and measure the recreational value of the VN Park. Government planners envision VN Park as an eco-tourism destination. Keeping in view the large amount of consumer surplus and recreational values of the VN Park, Local and provincial level governments can justify a larger annual budget for managing the park. This analysis shows that if the quality of VN Park is improved, it will attract more visitors and, in turn, generate greater revenue. This calls for the government to reallocate monies for Park improvements. Alternatively, the government could also consider introducing an entry fee to access the VN Park. Since consumers are willing to pay much higher fees than they actually do for park visits, an entry fee of Rs. 20 can be imposed. This entry fee would generate estimated revenue of Rs. 2.1 millions/year, which could be used to improve park management.

The recreational benefits and entry fees estimated for VN Park could provide guidance for park management beyond the Viharamahadevi National Park. There are several national parks in Sri Lanka that too are in need of additional investments. It can be hoped that this study will draw attention to the demand for nature and the benefits that accrue from investing in nature.

Reference

Barkin, D. (2002). Ecotourism for sustainable regional development, Current Issues in Tourism, 5(3-4):245-253.

Kerry R. T, Devid Pearce and Ian Bateman (1994), Environmental Economics, An Elementary Introduction, Prentice Hall, London, UK

Mellgren, Doug (2007-05-16). Travel Experts See Worrisome Downside to Ecotourism. Associated Press, Retrieved on 2007-05-21.

Cater, E. (1994). in Cater, E., and G. Lowman: Ecotourism in the Third World - Problems and Prospects for Sustainability in: Ecotourism, a sustainable option?. United Kingdom: John Wiley and Sons.

Baumol, W.J., and W.E. Oates (1977), Economics, environmental policy, and

quality of life, Englewood Cliffs, New Jersey, USA: Prentice Hall.

Hardin, G. (1968). The tragedy of the commons, Science, 162:1243-1248.

Elper-Wood, M. (1998), Ecotourism at a Crossroads: charting the way forward. Nairobi, Kenya: The final report from the Conference of Ecotourism at the Crossroads.

Jacobson, S.K., and R. Robles (1998), Ecotourism, sustainable development, and conservation education: development of a tour guide training program in Tortuguero, Costa Rica. Environmental Management, 16(6):701-713.

Robert B. Richardson and John B. Loomis (2005), Climate Change and Recreation Benefits in an Alpine National Park, Journal of Leisure Research, Vol. 37,

Ziffer, K. (1989), Ecotourism: the uneasy alliance, Conservation International/Ernst and Young.