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The economic valuation of environmental resources in Malaysia: A case study of Taman Tasik Cempaka in Bandar Baru Bangi

(Penilaian ekonomi terhadap sumber alam di Malaysia: Suatu kajian kes di Taman Tasik Cempaka, Bandar Baru Bangi)

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Abstract

This paper employs the travel cost method to estimate the economic valuation of recreational park, known as Taman Tasik Cempaka, Bandar Baru Bangi. A total of 150 targeted respondents of Taman Tasik Cempaka visitors were selected. The valuation for visits to the public recreational park consists of several components, namely the monetary and physical cost of travel including fuel cost, public transport fare, toll fare, recreational activities fee, food and drink and lastly travel time. The model shows that the coefficient of travel cost and quality and depth of lake water were highly significant with negative value showing inverse relationship between travel costs with the visitors' weekly visit to Taman Tasik Cempaka. The total economic value of the public recreation park in Taman Tasik Cempaka, Bandar Baru Bangi was RM5.45 million annually. Therefore, this is a clear indication that the economic value of Taman Tasik Cempaka is substantial and it is highly recommended that this park should be conserved in order to achieve sustainability and balanced development between economic, social and environment.

Introduction

Bandar Baru Bangi is a township in a suburb area in the centre of Selangor state. Historically, Bandar Baru Bangi was originally an oil palm estate which owned by West Country Estate covering 5,118 acres. Development of Bandar Baru Bangi started in 1974 after process of land acquisition had been completed by Selangor State Government from 1972 – 1978. The acquisition process has been done gradually starting with construction of residential area in Section 1 which involved a low cost, middle cost and high-end cost houses development which totaled up to 200 units. Now, after a four decade of development process, Bandar Baru Bangi is established with a total of 16 Sections forming a new township and residential area. According to Kajang Municipal Council (MPKj), the development of this township has ended by year 2007 that comprised a total of 11,040 residential unit, 308 shop-offices unit, 43 factories unit and 1 unit of administration complex.

Bandar Baru Bangi is a leasehold, matured and self-contained township. The township is located near to Sungai Ramal,

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Sungai Chua and Kampung Dato Abu Bakar. This popular township contains terrace houses, semi-detached unit, apartments, and shop-offices as well as bungalows lots. Bandar Baru Bangi comprises ample amenities that are mostly positioned within the vicinity itself. Residents can find the nearest shopping malls like Bangi Gateway, PKNS Mall and KIPMALL located within the town centre. Bandar Baru Bangi is essentially a self-contained township. Hence, the residents are not required to travel far to enjoy the amenities or even to commute to work as most of the residents are working within the area itself as Bandar Baru Bangi is also well-known for its industrial area.

Bandar Baru Bangi is the second largest city in Selangor after Shah Alam. Bandar Baru Bangi has become a popular choice among people to live in because of the availability of economic activities such as industrials, businesses, retailers and services. Large economic activities here have created many job opportunities and this is the reason why Bandar Baru Bangi is considered as the ideal place to live in.

Taman Tasik Cempaka is a famous recreational park among Bandar Baru Bangi residents. This park was gazetted as a recreational park in year 2000 by Perbadanan Kemajuan Negeri Selangor (PKNS) under the township development project. The park covers an area of 16.8 hectares which 6 hectares is reserved for manmade lake development project. The main objective of development of this park is mainly for social activities for residents either from Bandar Baru Bangi or nearby districts.

According to Kajang Municipal Council (MPKj), total development cost estimated for this park is RM6 million. Simultaneously, National Landscape Department (NLD) was approved with an additional budget worth RM3 million for creating an attractive landscape. Overall, the total cost for developing this park is worth RM9 million. The park maintenance is managed by MPKj. The park has a habitat of 20 species of flower plants including *bunga Cempaka* where this park's name was inspired from. All the trees planted in the park are served primarily for ornamental landscaping purpose.

Nowadays, this park is mainly used for social activities. Besides, this park is also utilised for research and education purposes. Recent programme was organised by UKM, UPM, UTM, MPKj and Bandar Baru Bangi Residents Associations (Bangiku) and Bangi Industrial Administrative Association (BIAA) in collaboration with Ministry of Education. The objective of this programme is to conduct cooperation activities between NGO's and Bangi residents as an effort for sustaining the park. As a result, the residents now can enjoy enhanced aesthetical value of the park after volunteers from universities and other organisations cooperated in beautifying the park. Currently, there are no admission fees being imposed to the visitors. According to MPKj spokesman, the visitors to Taman Tasik Cempaka were estimated around 500,000 in 2016.

This park is one of the very pleasure places among Bandar Baru Bangi residents where it provides them with large and beautiful lake garden mainly for healthy lifestyle. The park has crowds either in morning or evening especially during weekends. There are joggers, brisk walkers or people with their family and friends having leisure times enjoying attractive scenery in Taman Tasik Cempaka. Therefore, the objective of this study was to determine the economic value of Taman Tasik Cempaka, Bandar Baru Bangi.

Literature review

Alvarez and Larkin (2010) used travel cost and contingent valuation methods to derive estimates of economic value for

recreational use of Los Nevados National Park (LNNP) in the Andean region of Colombia. The park visitors were surveyed regarding their travel costs and willingness-to-pay (WTP) for ecological restoration of areas affected by wildfires in 2006. The travel cost data was analysed using a zonal travel cost model. It is being found that all the parameter estimates for the travel cost variable are negative and statistically different from zero, indicating that as travel costs increase, fewer visits to LNNP are predicted. Goodness of fit measures range from an R-squared of 0.256 to 0.441. The estimates of Consumer Surplus (CS) for each model specification and each of the zones included in the analysis are shown in *Table 2*. The total surplus economic value for trips to LNNP for the 13 states included and the seven-month period of available data ranges between 2.2 billion Colombian Pesos (COP) or USD 1.1 million or about 83,754 Colombian Pesos (COP) per person, and 9.3 billion COP (USD 4.6 million) or about 353,483 COP per person.

Fleming and Cook (2008) estimated recreational use values of Lake McKenzie in Fraser Island, Australia for Australian-resident by employing zonal travel cost method. According to the method, visitors to Fraser Island were given surveys with pre-paid self-addressed envelopes attached. The purpose of this technique is to let the visitors to carefully consider their replies in their own time. Lake McKenzie is the most popular visitor destination of all Fraser's dune lakes, attracting 2,000 visitors a day in peak periods. Hence, the estimated use values of the lake are in the range from $19.2 to $44.4 million per annum. The level of visitation is considered unsustainable that it might give impacts towards the lake ecosystem. Given the estimated value of Lake McKenzie from travel cost method, the management authority is considering options to address this issue by restricting access to the lake for tourism.

Hakim et al. (2011) implemented 'Study of Economic Valuation of Nature-Based Tourism Object in Rawapening, Indonesia' by applying Travel Cost and Contingent Valuation Method. The study found that there was a significant factor to determine the probability of individuals willing to pay in a certain nominal value for environmental quality. The determinants of the number of visits are an experience to visit, travel costs, income, age and perception. The economic value of ecotourism was estimated at Rp7.41 billion for consumer surplus and Rp1.65 billion for total benefit per year. This implies that the significant economic value of nature based tourism will be lost from any large scale development by degrading natural environment.

Jamal (2013) used contingent ranking technique in order to estimate the economic benefit of selected tourism attributes in Jogjakarta. The study shows that the economic values of such attributes are valuable and there is a special thing need to be highlighted especially an admission fees for Borobodur Temple and Kaliurang Resort.

Špaček and Antoušková (2013) studied the recreational value of geo-tourism areas, and focuses on the first geo-park in the Czech Republic, namely the Czech Paradise Geo-park. To assess the recreational value, the travel cost method is applied specifically the individual travel cost model. Data gathered in the respondents' survey served to determine the consumer surplus as a measure of recreational value and to develop the single site travel cost model. The dependent variable in the conducted model is the number of visits in the area and among the independent variables, studied age, education, travel cost, family status, economic activity and income. The demand function can be expressed as $y = -500\ln(x) + 1221.4$. The consumer surplus can subsequently be assessed to be CZK 497.9, expressed as a consumer

surplus of one individual tourist for one recreational stay. The constructed model predicts the number of visit as 2.76 with 0.52 price elasticity, which determines the demand to be inelastic. The single site travel cost model included the variables of travel costs, age, highest obtained education, family status, economic activity and family income. The research shows that tourists travel mostly between 61 – 90 minutes to get to the geo-park (30.8%), and almost a half of tourists (47.3%) spent CZK50–100 to get there. The knowledge about tourists' expenditure enabled the authors to determine the demand function ($y = -500\ln(x) + 1221.4$) and consumer surplus (CZK497.9). Subsequently, the single-site travel model was developed to identify statistically significant variables influencing the number of visits. Analysing these variables showed that tourists aged 55 – 64 years had the lowest frequency of visits the greatest disproportion in number of visits that was observed between respondents with elementary education and those with university degrees. Subsequently, the maximum number of visits is expected for tourists with elementary education who make 17 visits a year if travel expenses are CZK50. In contrast, the groups with the lowest frequency of visits are tourists in the income group CZK30,001 to 40,000. Tourists with a family income over CZK10,001 will visit the geo-park 12 times a year if the travel costs are CZK50.

Mwebaze and Macleod (2013) used travel cost method to establish willingness to pay of international tourists for trips to Marine Park in Seychelles. Travel cost was divided into two groups of cost which were cost for overall trip and cost for individual trip to the site of interest. The first category is using air fares as proxy and the other category using the domestic expenses such as admission fee and accommodation. The results in both categories have negative coefficient and statistically significant at the 5% significance level. The elasticity for the variables are -0.0021 and -0.0023 respectively which means inelastic demand while the consumer surplus for both categories is €157 and €128 for a single international tourist. With 47,493 population of international tourist recorded per year, estimated total social welfare from this research is approximately €3.7 million.

Jala and Nandigiri (2015) valued recreational use at the Pilikula Lake, Mangalore, India by using open-ended contingent valuation method (CVM) and zonal travel cost method (TCM). The ultimate finding of this study is to estimate value of the lake given by the results from these methods. Comparing the results from CVM and TCM, the yield values differ where average individual willingness to pay calculated from CVM is Rs.36.75, meanwhile from TCM is Rs.238. The value of TCM is based on the revealed costs that the visitors are paying for visiting the lake. Meanwhile, the CVM value is solely based on the constructed environmental markets that propose provision of extra facilities in the lake for activities like swimming, fishing and fountain. However, 92% of the visitors are already satisfied with current facilities. Hence, the results for CVM WTP is less than the results in TCM denoting further improvement in recreational facilities at Pilikula Lake is not necessary.

Jim and Chen (2006) assessed monetary value of recreational opportunities and amenities provided by green spaces in a Chinese city by employing CVM. Open-ended questions were used to gather willingness to pay information in the questionnaire. The visitors are accustomed to pay the green space entrance fees. Estimation of average willingness to pay is RMB17.40 per month which is higher than

actual entrance fee payment. Aggregate monetary value of urban green spaces attained is RMB547 million per year which exceed Guangzhou's annual expenditures on urban green spaces by six times. The positive results could assist cost-benefit analysis to justify more resources for development and management of urban green spaces towards sustainable cities.

Eugene (2016) examined relationships between trip of recreation frequency and travel cost, nature types, home to nature distance, and socioeconomic factors to estimating the value of nature recreation in Sweden. This paper was using Individual Travel Cost Method (ITCM) in order to capture information about individual consumer behaviour. The results showed that the average trips frequency to nature areas was 80 trips annually and the average travel cost for a trip to these areas was 117 SEK (16 USD), and there were negative relationships between travel cost and number of trips with 1% level of statistically significance.

Methodology

Travel cost approach imputes price-quantity reactions of consumers by observing their actual behaviour with respect to the travel costs to a particular site, the number and duration of trips taken to a site and also the quality of the public good at the particular site. This model was used in order to value the visitors' willingness to visit Taman Tasik Cempaka. A number of visitors were identified and their willingness to visit the park is considered equivalent to the economic value of the park as a non-marketed good. Costs that have been evaluated are travel cost and cost of time in visiting the Taman Tasik Cempaka.

The basic premise of Travel Cost Method is the total cost (time cost and travel cost) that necessarily incurred to reach the recreational area. In context of this study, the travel cost for each respondent was calculated by taking into account all costs related to the trips such as petrol, time spent, foods and fare for public transportation and recreational activities. The total cost of visits is considered as 'price' to access to the park. People's willingness to pay to visit the recreational park can be estimated based on the number of trips made on varies travel costs.

Data collection

i) Primary data

In order to obtain primary data, surveys were conducted among visitors in Taman Tasik Cempaka. The survey was conducted among visitors in Taman Tasik Cempaka (TTC). Random sampling method was selected to obtain information from 150 visitors as the targeted respondents in this study. The interview sessions were done twice during the weekends (morning and evening) and once during the weekdays (evening).

ii) Questionnaire

Towards this study, a set of questionnaire was designed which can be divided into three sections as below:

a) First section - travel cost information
b) Second section - evaluation of Taman Tasik Cempaka (TTC)
c) Third section - socioeconomic background

iii) Analysis data

The data was analysed using Statistical Package for the Social Sciences (SPSS) ver. 20. and for further analysis, regression technique was used.

Model specification

The valuation for visits to the recreational park consists of several components, namely the monetary and physical cost of travel including fuel cost, public transport fare, toll fare, recreational activities fee, food and drink and lastly travel time. It is described by the following:

$$Z = \alpha + \beta_1 TC_r + \beta_2 Q + \beta_3 I \quad \text{(Model 1)}$$

where:

Z = Number of visit per week
TC_r = Travel cost for visiting Taman Tasik Cempaka
Q = Qualities of Taman Tasik Cempaka
I = Income

The independent variable travel cost includes transport cost and time cost, the description is as follows:

$$TC_r = C_{transport} + C_{time} \quad \text{(Model 1.1)}$$

where:

TC_r = travel cost for visiting Taman Tasik Cempaka (physical and time cost)
$C_{transport}$ = transport cost according to transportation mode that includes fuel, toll and public transport fare
C_{time} = Time cost, it includes a round trip travel time x income/hour

Result and discussion

Socioeconomics background

The study involved 150 respondents at the site consist of 40.1% male and 59.9% female (*Table 1*). Majority of Taman Tasik Cempaka visitors were from age group of 21 – 30 years (42.1%), followed by age group 31 – 40 years (28.3%), age group below than 20 years (14.5%), 41 – 50 years age groups (9.9%) and the least was age group above 51 years (5.3%). The visitors came from various races which Malay or Bumiputera was the majority (84.9%) followed by Chinese, Indian and other races which represent 7.2%, 5.9% and 2% respectively. A total of 50% of the visitors were single and the remaining were married.

Most of the visitors had a bachelor's degree (42.8%), followed by SPM (24.3%), diploma or equivalence (15.8%), master's degree (13.8%) and doctor of philosophy (3.3%). For occupation background, majority of the respondents work in private sectors with 43.4% and government sectors was 29.6%, while the remaining occupations were others (21.7%) and retirees (5.3%). In addition, for household income, most of the visitors earned RM3,001 – RM5,000 per

Table 1. Socioeconomics background

Item	Description	Percentage (%)
Age	<20 years	14.5
	21 – 30 years	42.1
	31 – 40 years	28.3
	41 – 50 years	9.9
	>51 years	5.3
Races	Malay/Bumiputera	84.9
	Cina	7.2
	India	5.9
	Others	2
Gender	Male	40.1
	Female	59.9
Marital status	Single	50
	Married	50
Education level	SPM	24.3
	Diploma/STPM/ Equivalence	15.8
	Bachelor's degree	42.8
	Master's degree	13.8
	Doctor of philosophy (PhD)	3.3
Occupation	Government sector	29.6
	Private sector	43.4
	Retired	5.3
	Others	21.7
Household income (monthly)	<RM1,000	13.2
	RM1,000 – RM3,000	10.5
	RM3,001 – RM5,000	45.4
	RM5,001 – RM7,000	12.5
	RM7,001 – RM10,000	9.9
	>RM10,001	8.6

Sources: Survey data (2017)

month (45.4%) followed by income group below than RM1,000 per month (13.2%), income group RM5,001 – RM7,000 per month (12.5%), income group RM1,000 – RM3,000 per month (10.5%), income group RM7,001 – RM10,000 per month (9.9%) and income group more than RM10,001 per month (8.6%).

Travel profile

On average, visitors travel about 11.69 km from their home to the site and from site to their home and their spending time for the distance is 17.43 minutes (*Table 2*). Frequency of visit is 2.2 times per week and their spending time for visiting the site is about 108.35 minutes.

Travel cost analysis

A linear model was regressed with the visitors' visit to Taman Tasik Cempaka per week as dependent variable (*Table 3*). Meanwhile, independent variables included in the model are travel cost, income and qualities of Taman Tasik Cempaka which are recreational facilities, landscape, peace, cleanliness, and quality and depth of lake water.

The model shows that the coefficient of travel cost and quality and depth of lake water were highly significant with negative value showing inverse relationship between travel costs with the visitors' weekly visit to Taman Tasik Cempaka. The result is matched with previous literature's result, Alvarez and Larkin (2010) that higher cost will reduce the visitors' anticipation to visit Taman Tasik Cempaka. In terms of the visitors' satisfactions with qualities of Taman Tasik Cempaka, their satisfactions with quality and depth of lake water significantly affect their frequency of visit to Taman Tasik Cempaka.

Meanwhile, other qualities are not significantly affecting their anticipation to visit Taman Tasik Cempaka. Equivalent to the nature of a recreational lake, the quality and depth of the lake is deemed to be a crucial element influencing the visitors' visit to Taman Tasik Cempaka. The coefficient of income otherwise has negative value showing that higher income does not influence the increment in the visitors' visit to Taman Tasik Cempaka. People have choices in having recreational activities either in free accessible natural environment like Taman Tasik Cempaka or people with higher income can experience comfortable work out at gymnasium.

Table 2. Visitors travelling profile for Taman Tasik Cempaka, Bandar Baru Bangi

Travel profile	Mean	Std. deviation
Travel cost (RM)	24.12	15.70
Travel distance from home to TTC - 2 way (km)	11.69	7.287
Frequent visit to TTC in a week	2.2	1.56
Time spending when visiting TTC (minutes)	108.35	61.64
Time spending for traveling from home to TTC (minutes)	17.43	12.79

Sources: Survey data (2017)

Table 3. Travel cost analysis for Taman Tasik Cempaka, Bandar Baru Bangi

Dependent variable: No. of visit per week		
Variable	Coefficient	Standard error
(Constant)	2.422	0.422
Travel cost	-0.037***	0.008
Income	-0.0000186	0.000
Recreational facilities	0.036	0.481
Landscape	0.263	0.447
Peace	0.062	0.430
Cleanliness	-0.027	0.407
Quality and depth of lake water	0.652*	0.390
R^2 (0.169)		
Adjusted R^2 (0.129)		
Std. error of the estimate (1.453)		

***Significant α=1%
* Significant α=10%

According to the estimated model, consumer surplus of visiting Taman Tasik Cempaka is calculated. Following the estimated model as follows:

$$Z = \alpha + \beta_1 TC_r + \beta_2 Q_1 + \beta_3 Q_2 + \beta_4 Q_3 + \beta_5 Q4 + \beta_6 Q_5 + \beta_7 I \qquad \text{(Model 1.1)}$$

where Z = Number of visit per week
TC_r = Travel cost
Q_1 = Recreational facilities
Q_2 = Landscape
Q_3 = Peace
Q_4 = Cleanliness
Q_5 = Quality and depth of lake water
I = Income

The variables for Q1, Q2, Q3, Q4 and Q5 were recorded as nominal data where:
1 = Satisfied
0 = Not satisfied

$$Z = \delta - 0.037TC$$

Where, the δ sign describes all the variable in the model excludes travel cost variable. Therefore,

$$\delta = \alpha + \beta_1\overline{Q1} + \beta_2\overline{Q2} + \beta_3\overline{Q3} + \beta_4\overline{Q4} + \beta_5\overline{Q5} + \beta_6\bar{I}$$
$$= 2.422 + 0.036(0.72) + 0.263(0.74) + 0.062(0.75) - 0.027(0.80) + 0.652(0.86) - 0.0000186(4664.47)$$
$$= 3.1414$$

After obtaining the δ sign, the next step is to get the choke price. The choke price is an economic term that used to describe the lowest price at which the quantity demanded for a good and services is equal to zero. Moreover, at any price below the choke price, consumer will demand some quantity of the good. Hence, at any price equal to or above the choke price, consumer will not express any demand for the good. For example, consumer might purchase 200 units of a good at RM40, 300 units of a good at RM30 and 800 units at RM10, but zero units at RM50. Therefore, RM50 would be the choke price.

The choke price is obtained when assumed Z = 0, So the choke price was:

$$TC = \frac{\delta}{0.037} = \frac{3.1414}{0.037} = \text{RM84.90}$$

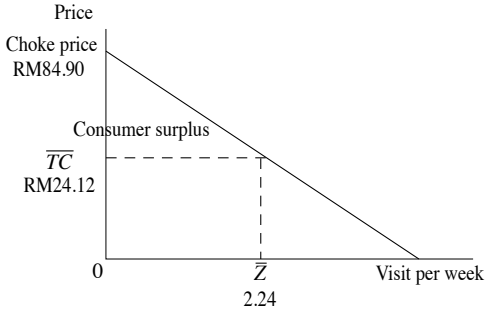

Figure 1. Demand curve for Taman Tasik Cempaka visitors

Figure 1 above mentioned about the demand curve for Taman Tasik Cempaka visitors in 2017. The choke price obtained was RM84.90. It means that visitors prefer to spend RM84.90 on foods and recreation games. Let say the price would increased by RM85, then the visitors would move away. The travel cost in the demand curve obtained RM24.12. To obtain the travel cost, we have to consider the visitors transportation cost plus the travel time until they reach Taman Tasik Cempaka. While number of visitors that visit Taman Tasik Cempaka were 2.24 times per week. The intuition here is, when travel cost price reach RM24.12, the visitors are able to visit Taman Tasik Cempaka around 2.24 times per week. If the travel less than RM24.12, the visitors would able to visit more than 2.24 times per week or the other way round.

On the other hand, actual expenditure by visitors was RM24.12 x 2.24 times = RM54.03 per week. Thus, the gross aggregate benefits of the Taman Tasik Cempaka per visitor equals to RM54.03 + RM68.07 = RM122.10 per week. Therefore, the annual gross aggregate benefits of Taman Tasik Cempaka equals to RM6,349.20.

Finally, the most interesting part that we would like to disclose is the total economic value in a year is equal to RM27,750,00.

Total economic value

$$= \Sigma \frac{\text{Number of visit a year}}{\text{Average number of visit per visitors per year}} \text{ x Gross aggregate benefit}$$

$$= \frac{500000}{114.40} \text{ x RM6,349.20}$$

= RM27,750,00 annually

Consumer surplus is an economic indicator of consumer benefit, which is calculated by analysing the difference between what consumers are willing and able to pay for a good and services relatively to its current market price. A consumer surplus occurs when the consumer is willing to pay more for a given product than the current market price. From the figure above, consumer surplus is the triangle area above TC, the calculation for the consumer surplus is as follows:

1) Consumer surplus per weeks

$$= \frac{1}{2} \text{ x (choke price - travel cost) x visit per week}$$

$$= \frac{1}{2} \text{ x } (84.90 - 24.12) \text{ x } 2.24 = \text{RM68.07}$$

2) Consumer surplus individual per week

$$= \frac{\text{Consumer surplus per week}}{\text{Category of visitors (mean)}}$$

$$= \frac{\text{RM68.07}}{3.57} = \text{RM19.07}$$

Conclusion and policy implications

The study shows that the valuation technique of non-marketed good to obtain the economic valuation of environmental resources, particularly with regards to recreational park. Travel cost method is employed in this study to value the use

values of Taman Tasik Cempaka. The visitors' anticipation in visiting Taman Tasik Cempaka is significantly driven by quality of the lake. This shows that the lake is the main attraction that influences the rate of visitation. The average travel cost is RM24.12. This value can be justified with the visitors' demographic background that not only Bangi residents visit the lake but also the visitors from other districts. Farther journey to the lake contributes to higher cost due to petrol, toll and other expenses.

The value of recreation in this park, represented by consumer surplus is RM68.07 showing an excess of what they are currently paying for. According to the consumer surplus per individual where the average travel cost divided by average group members, the value is RM19.07. This value signifies that they are willing to pay more for visiting the park. Manipulating their willingness to pay, this can be a fund for the park maintenance by MPKj. Imposing a charge for entrance either through entrance fee or donation seems possible. In returns, the visitors will benefit themselves with well-maintained Taman Tasik Cempaka.

Total economic value of the recreation in Taman Tasik Cempaka, Bandar Baru Bangi is RM27.75 million annually. From the result, the gross economic benefit of recreation is about RM6,349.2 per visitor. Based on Travel Cost Model analysis, it is clear that the economic value of the recreational of Taman Tasik Cempaka, Bandar Baru Bangi is substantial.

It is also proposed that all relevant parties including government policy planners and decision makers should take into consideration in order to conserve and sustain the values of public recreational park as well as environmental resources. The recreation function should be taken seriously into account in policy formulation affecting allocation and use of such resources, in order to achieve sustainability and balanced development between economics, social and environment.

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Abstrak

Kajian ini menggunakan kaedah kos perjalanan untuk menganggarkan nilaian ekonomi terhadap Taman Tasik Cempaka yang merupakan sebuah taman rekreasi awam yang terletak di Bandar Baru Bangi. Seramai 150 responden terdiri daripada pengunjung taman rekreasi berkenaan telah dipilih. Nilaian ekonomi terhadap Taman Tasik Cempaka merangkumi beberapa komponen kos kewangan dan fizikal. Kos kewangan meliputi kos perjalanan seperti kos petrol, tambang pengangkutan awam, tol, aktiviti rekreasi, makan dan minum. Manakala kos fizikal pula adalah masa perjalanan. Hasil daripada model yang dibangunkan menunjukkan bahawa nilai koefisien bagi kos perjalanan dan kualiti serta tahap kedalaman tasik adalah signifikan dan bernilai negatif. Nilai negatif menunjukkan bahawa hubungan songsang antara kos perjalanan dengan jumlah pengunjung di Taman Tasik Cempaka. Jumlah keseluruhan nilaian ekonomi bagi Taman Tasik Cempaka adalah sebanyak RM27.75 juta setahun. Oleh itu, jelas menunjukkan kajian ini dijalankan adalah bertepatan dalam menganggarkan nilaian ekonomi yang besar dimiliki oleh Taman Tasik Cempaka. Oleh itu, disyorkan bahawa taman rekreasi awam ini seharusnya dikekalkan bagi mencapai kelestarian alam sekitar dan seterusnya mengharmonikan pembangunan yang seimbang antara ekonomi, sosial dan alam sekitar.