UDC 63.630.6
IRSTI: 68.47.75
DOI 10.52578/2305-9397-2023-3-2-297-304

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ASSESSMENT OF RECREATIONAL FUNCTION OF FORESTS APPLYING CONTINGENT VALUATION METHOD

ANNOTATION

The article considers the method of conditional evaluation, which is used in assessing the recreational function of the forest on the case of State National Nature Park “Burabay” which is located on the Northern Kazakhstan. The purpose of the study is to assess the economic value of the park, which is not only the ratio of the park's budget for its construction, the popularity of the park and the impact on financial performance. The value generated by a natural park can be determined using a range of social, economic, cultural and other indicators. The Contingent Valuation Method is a technique of assessment, which consists in determining the respondents' preferences by questionnaire to analyze the values and preferences of people, which are usually expressed in the form of willingness to pay for a certain result. This method is the only way to assess unused values, when people do not show their willingness to pay their behavior or purchase appropriate purchases. The questionnaires were distributed in different seasons among 200 respondents who were introduced with the goal of the conducted research. Results indicated that the variables such as proposed entrance fee, monthly income, non-governmental organization membership, moralizing view on the environment and natural resources as well as length of stay have significant effects on willingness to pay for the recreational use of the study area.

***Key words**: valuation, non-market value, recreation, survey, method of conditional evaluation*

Introduction. The forest is a place of rest. The recreational functions of a forest are a complex of positive effects of forests and forest conditions on people’s health, depending primarily on forest conditions and the natural ecological and biological characteristics of the forest phytocenosis.The increased interest in assessing the recreational functions of forests is due to a number of serious reasons. In conditions of high population density and excessive urbanization, the forest is considered as a saving place, giving people a break from intense work, nervous tension, stress, smog, noise and gas pollution of the modern city. Speaking about forest policy in a post-industrial economy, we can express the belief that the social significance of forestry will be determined not only by wood products, but also by such forest services as protective and recreational functions. At the same time, largely secondary forests will become impenetrable and therefore unsuitable for recreation if forest care, logging, forest planting, measures for protection from entomo- and phytopathological pests and diseases, and from fires are stopped.

Recreation in general and forestry in particular are an important indicator of the level of well-being of the population, a primary link in a set of measures to restore physical and spiritual strength and improve the health of the population. The organization of recreational forest management is of

particular importance in large cities due to the high population density, environmental pollution from transport and industry, as well as the increasing intensity of life of urban residents.

By the description of Tarasov A.I. “Recreational forest management is a set of phenomena that arise in connection with the exploitation of forests for tourism and recreation. Its essence lies in a two-way connection: the impact of the forest on vacationers and vacationers on the forest” [1].

Bolshakov N.M. considers that forests, having a positive impact on the environment, acquire great general ecological protective, health-improving (recreational) and aesthetic significance. The healing role of forests is primarily determined by the formation of a special phytoclimate, which is characterized by a moderation of temperature fluctuations, relative humidity and the dynamics of air mass transfer. All this contributes to the creation of a so-called “comfort zone” for a person. [2].

Park and forest administrations offer guidance to forest areas regarding the basic requirements of forest recreation. Robert W. Douglass notes that the number of forest recreation areas should be determined, forest areas classified, forest recreation planned and relevant legislation followed [3].

Wayde C. Morse recommends contributing to a system that promotes sustainable management of outdoor recreation [4].

Michael D. Ferguson notes that visitation to parks and protected areas in the United States has increased substantially over the past several decades, raising concerns about the influence of social, situational, and environmental factors on visitor behavior and decision making. More attention is paid to behavioral adaptations, such as substitution of resources and time. This shows that in addition to social factors, situational and environmental factors should also be considered when assessing human-nature relationships [5].

Serikov M.T. considers it is necessary to determine the values of actual recreational loads to assess the recreational potential of a forest management object, in addition to characterizing the renewable part of the forest recreational resource, assessing indicators of recreational value and the values of the ecological recreational capacity of landscape areas [6].

Marc Stern notes that outdoor recreation is a type of recreation that occurs in and depends on the natural environment. And in this case, ecosystem services are the benefits that people receive from ecosystems. The field of outdoor recreation research has developed a detailed understanding of the recreation experience, but has not had a complete understanding of the contribution of the natural environment to that experience. Recreational ecosystem services are an emerging area of research that emphasizes the contribution of the natural environment to recreation. Integrating these lines of research can improve our understanding of how the natural environment contributes to the benefits and outcomes of outdoor recreation [7].

When using recreational ecosystem services, various methods are used to assess the recreational function of the forest when surveying visitors. Currently, digital communications have begun to play an important role in public discourse, including online forums where participants write about their experiences of leisure and tourism [8].

A forest is one of the natural resources that provide benefits that fall under the non-market category. A comprehensive assessment of these benefits entails the valuation of the possible range of outputs that come from the forest, both market and non-market. Measuring the benefits from market commodities, which fall under production and consumption economics, is facilitated by the observed supply and demand function from which consumer’s surplus and producer’s surplus can be determined. Environmental and nature resource economics, on the other hand, is beset by the absence of the observable supply and demand functions for non-market commodities.

The more popular methods in non-market evaluation are the Travel Cost Method, Hedonic Pricing, Experimental Markets and Contingent Valuation. These methods differ greatly in their data requirements and their assumptions about economic agents and physical environments [9].

Travel cost method, hedonic pricing, experiential markets, and imputed valuation are the most popular non-market valuation methods. Travel cost method was described by Kitaibekova S., where she considers that this method is a technique applied to estimate economic use values connected with the places which are used for recreation [10]. These methods differ from each other.

Contingent valuation method is a research-based economic method for valuating non-market resources such as environmental protection or the impact of pollution. While these resources actually benefit people, some aspects of them do not have a market value because they are not sold directly. For example, most often people benefit from the beautiful nature in the park, enjoy the view of the mountains, breathe clean air, but it is difficult to evaluate everything using price models. In order to measure these aspects, a contingent valuation survey method was applied. Both models are based on utility. Usually in survey it is asked how much money people are willing to pay (or willing to accept) to maintain (or compensate for the loss of) an ecological asset such as biodiversity.

Mitchell, Robert Cameron argues that contingent valuation (CV) currently offers the most promising approach for determining society's willingness to pay for many public goods as an approach that can be successful if used carefully where other methods may fail. By developing the CV methodology, the author addresses issues of broader relevance to survey research and concludes that the contingent valuation method can provide reliable information about the valuation of public goods [11].

There are different approaches and opinions concerning CV method. Having tested many times Peter A. Diamond and Jerry A. Hausman concluded that existing methods are not suitable for damage assessment or benefit-cost analysis. They believe that the problems arise from a lack of preference rather than a flaw in survey methodology that makes improvement unlikely [12].

Contingent valuation surveys were first proposed in theory by S.V. Ciriacy-Wantrup (1947) as a method for eliciting market valuation of a non-market good. The first practical application of the technique was in 1963 when Robert K. Davis used surveys to estimate the value hunters and tourists placed on a particular wilderness area. He compared the survey results to an estimation of value based on travel costs and found good correlation with his results. This work was published as his Ph.D. Dissertation at Harvard "The Value of Outdoor Recreation: An Economic Study of the Maine Woods." See also: [3] This work, and other early applications of the method are described in Chapter 1 of "Using Surveys to Value Public Goods" by Robert Cameron Mitchell, and Richard T. Carson [4]

The contingent valuation method is used to measure all types of economic value. Zhiming Leng, Yihui Lei describe this method as a research method for determining the willingness to pay or accept compensation for various types of non-market natural and environmental resources. With the imputed valuation method, it is possible to determine the value of outdoor recreation, but this method is also the only method currently available to measure the value of other resources, such as benefits [11].

A number of economists define Contingent Valuation as the identification of consumer evaluation of services and goods that are not generally offered on the market, by asking an individual for willingness to pay a certain amount or the ability to receive compensation [13].

Contingent Valuation is an economic method for valuing non-market resources (environmental conservation or the impact of externalities such as pollution) based on a survey. Resources that provide utility to people do not have a market price because they are not directly sold - for example, people benefit from a beautiful view of a mountain, but would be difficult to estimate using price-based models. Contingent valuation surveys are one of the methods used to measure these aspects. It is often referred to as a stated preference model, as opposed to a revealed preference model based on prices. Both models are based on utility. Typically, the survey asks how much money people would be willing to pay (or be willing to accept) to preserve (or compensate for the loss of) an ecological feature such as biodiversity.

Contingent valuation studies were first proposed in the theory of S.V. Ciriacy-Wantrup (1947) as a method for obtaining a market value for a non-market good. The first practical application of this method was in 1963, when Robert K. Davis used surveys to estimate the value of hunters and hikers placed in a particular wilderness area. He compared the results of the survey with a cost estimate based on transportation costs and found a good correlation with his results. This work and other early applications of the method are described in Chapter 1, Using Surveys to Valuate Public Goods, by Robert Mitchell and Richard Carson [14].

Contingent Valuation method can be used in measuring all types of economic value, both use and non- use. Cindy Sorg Swanson and John B. Loomis describe this method as a survey technique

that constructs an exchange situation to measure willingness to pay or accept compensation for different levels on non-marketed natural and environmental resources. The contingent valuation method is capable of not only measuring the value of outdoor recreation under alternative levels of wildlife and fish abundance, crowding, in stream flow, and so forth, but also is the only method currently available to measure other resource values such as the benefits the general public receives from continued existence values of unique natural environments or species.

The basic notion of the contingent valuation method is that a realistic exchange situation for "purchasing" use or preservation, or both, of a non-marketed natural resource can be credibly communicated to an individual. Then the individual expresses his or her valuation of the resource.

The natural or environmental resource to be valued can be described to the respondent through words, drawings, photographs, charts or maps [15].

J.Peter Clinch in "Cost–Benefit Analysis Applied to Energy" describes the Contingent Valuation Method as "ask people in a survey to place a value on the environmental asset in question by rating (contingent valuation), ranking (contingent ranking), or choosing trade-offs between various policy alternatives (choice procedures)" Using this method it is collected information on preferences by asking households how much they are willing to pay for some change in the provision of an environmental good or the minimum compensation they would require if the change were not carried out [16].

As for J.C. Whitehead, T.C. Haab "Willingness to pay (WTP) valuation techniques are commonly applied to measure impacts in human and animal health" [17].

The development history of CV method is quite interesting. Although Ciriacy- Wantrup (1947) suggested the use of direct interview method to measure the non-traditional values of natural resources, the CV method did not come into use until the early 1960's, Davis (1963) first used this method to estimate the benefits of outdoor recreation in Maine backwoods area. In the early 1970's number of economists followed Davis's lead and used the CV method to value different recreational amenities. By the end of 1970's the CV method was recognized by the US environmental Protection Agency (EPA) and the US Water Resources Council as a credible benefit estimation technique. Detailed discussion of the historical developments of the CV method was given by Mitchell and Carson (1989) [18].

Generally, a CV interview consists of three parts. In the first part the researcher constructs and presents a hypothetical market to the respondent which describes the good or service to be valued, the benchmark level of provision and compensation. This is followed by a set of valuation questions to elicit the respondent's maximum willingness to pay for the good or service being valued. Finally, a third set of questions could be asked to collect information about the respondent's characteristics (e.g. age, income, previous experience with the good or service being valued, use of other related goods or services, etc). If the survey is carefully designed and pretested, individuals' responses to the valuation questions would generate WTP or WTA measures which correspond to the theoretical measures of welfare changes (Just et.al., 1982 and Mitchell and Carson, 1989)

The continent valuation method assumes that the respondents have a clear understanding of the good/ service being valued, its current status, the hypothesized extent of changes in its quality or quantity and the method of payment

The objective of a CV study is to obtain measures of consumer surplus from the respondents. This is the maximum a respondent is willing to pay for an amenity before they would decide to go without it. Depending on the nature of the good or amenity being valued, the respondents may find it difficult to properly reveal their maximum willingness to pay for the amenity. In order to facilitate the respondents; valuation process, the CV researchers have developed different elicitation methods. These methods are intended to make it easier for respondents to complete the valuation process and thereby reduce the number of non-responses and/ or zero responses [19].

J.K. Whitehead and T.S. Haab consider CVM to be the stated preferred approach for evaluating comfort, recreation, and other environmental and natural resource issues. Preferences means that survey respondents are asked hypothetical questions directly about their value to the environment. This is in contrast to revealed preference methods, such as the travel cost method and the hedonic

pricing method, for environmental valuation, in which values are revealed based on the observed behavior of the individual and family person [20].

Materials and methods. Here we can continue with some example applications of the Contingent Valuation Method which was used at SNNP (State National Nature Park) "Burabay" (further Park) for defining economic evaluation of recreational functions on the case of this park. In the north of Kazakhstan, in one of the most beautiful places on our planet, on the territory of the Akmola region, the Burabay State National Natural Park is located, organized in accordance with the Decree of the Government of the Republic of Kazakhstan dated August 12, 2000. This Park is widely known as a geographical location with an original nature rarely found on earth. The surface of the Burabay tract is a low mountainous country that is part of the Kazakh small hills. The main objectives of the Park: preservation of the integrity of ecosystems, reference and unique natural complexes and objects, historical monuments, culture and other objects of historical heritage, as well as their study; restoration of disturbed natural, historical and cultural complexes and objects. The total area is 129.299 t.ha, there are 754 species in flora and 267 species in fauna. The following types of activities are legally allowed in the Park: preservation of natural complexes, unique and standard natural sites, objects of the state natural reserve fund, natural and historical and cultural heritage; ensuring a security regime on the territory of the State National Park and in its security zone; conservation of biological diversity at different levels of its structural organization: population, species; cenotic, ecosystem and landscape; conducting scientific research, monitoring of ecological systems and individual natural objects under the Chronicle of Nature program; restoration of disturbed natural complexes, objects of natural reserve fund, natural and historical and cultural heritage; regulation of the use of the park territory and its protective zone for environmental, educational, scientific, tourist, recreational and limited economic purposes; creation of favorable conditions for the development of tourism and recreation; introduction of scientifically based methods of nature conservation in conditions of recreational and limited economic use of the territory to ensure sustainable development; environmental education.

Different approaches can be used in environmental economics for measuring environmental values. They can be divided into revealed and stated preference methods. Revealed preference methods are based on how individuals actually behave, whereas stated preference methods are based on how individuals say they would behave in a hypothetical situation (White and Lovett, 1999). In this study Contingent Valuation Method was used as one of the standard and flexible approaches to measure the economic values (Hanemann, 1994). This method uses a questionnaire – based approach to estimate the economic value of non- market goods (Hanemann et.al., 1991; Venkatachalam, 2003). It does this by setting up a hypothetical market in which people are asked to state monetary bids for various goods (WTP) based on the information provided by them (Lee, 1997).

The Contingent Valuation interview questionnaire has five sections which includes "personal data"; "enlargement" and "ecosystem"; questions concerning WTP for the existence value of the park. The direct face-to-face interview is the most commonly used approach (Forster, 1989). There were some difficulties in asking some questions concerning money or there were a lot of questions which took a lot of time.

Results. 200 respondents aged 20 or more were interviewed and it was made statistical results of questionnaire analysis, shown in Table 1. The table was formed by the example of Hamid Amirnejad (Iran, 2005)

Table 1 – Approach of defendants to recreational functions, n=200

Questions	Answer range				
	Totally agree	Approve	Neutral	Don't approve	Totally don't approve
Question 1	1 (0,5%)	7 (2,9%)	6 (3%)	29 (14,5 %)	157 (78,5 %)
Question 2	133 (66,5%)	63 (31,5 %	2 (0,01%)	2 (0,01%)	0
Question 3	111 (55,5)	78 (39%)	7 (3,5%)	4 (2%)	0
Question 4	147 (136%)	29 (14,5 %)	18 (9%)	4(2%)	2 (0,01%)

Question 1: We should not have to invest to the parks, sacrifice our income and standard of living so that the next generation may benefit from recreational functions of the parks on the case of the Burabay Park.

Question 2: The arrival here to some extent contributed to the fact that places such as on the case of the Burabay Park can exist even when I could come here again

Question 3: If I do not even come here again, it is important for me that such park will exist

Question 4: For me it is important that the park will exist before the time of my grandchildren thanks to the money that we are spending now to be here.

More than 40% of respondents among 200 were female and others 60% were male. As for the occupation point of view 59 (29,5%) respondents were professionals, 31 (15,5%) businessmen and governmental employees, 31 (15,5%) retired, 67 (33,5%) housewives, 15 (7,5%) workers.

Among all respondents 81 (40,5%) had visited the park (on the case of the Burabay Park) once or some of them twice and 119 (59,5%) visited park frequently.

As for the education of respondents among 200, BSc- 47 (23,5%), MSc and higher – 39 (19,5%), vocational training -42 (21%), secondary school – 24 (12%) and 48 (24%) illiterate (most of all retired old people).

Results of the investigation from recreational attitudes of respondents that were derived from five different items including “totally approve”, “approve”, “neutral”, “don’t approve”, to “totally don’t approve” are shown in Table 1. In this table it is shown the number and percent of respondents that investigated different environmental issues in range of “strongly agree” to “strongly disagree”.

Conclusion. Studies were conducted at the Park among visitors of the park where we wanted to know whether people would be willing to pay towards forests conservation. The Contingent Valuation Method was used as a questionnaire-based approach to estimate the economic value of non-market goods. After investigating questionnaires, it is considered that Kazakhstan citizens in spite of their medium income are willing to pay for preserving environmental amenities, in which 55,5% (111 respondents) have the will to pay on the existence of the Park, while about10% (20 respondents) have not yet visited and 34,5% (69 respondents) of them visited the Park once or twice.

According to the studies there are more people who are interested in supporting the Park. Results of the studies show that citizens of Kazakhstan are very interested in developing and protecting especially protected territories such as the Park, i.e. 90% of respondents who answered to questionnaires were concerned on the situation and asking for much attention to the government, programmers and related organizations and the people should pay to the Park as a national and valuable asset.

From the forest management point of view, questionnaires the Park studies have had such results as the people of Kazakhstan were aware of the Park and its importance and as Hamid Amirnejad (Iran, 2005) told it was clear that a high willingness to pay in terms of both cash and kind exists in Kazakhstan for contributing towards the upkeep and improvement of the Park [21].

Acknowledgement. This article was written based on the research results of a scientific project for grant funding of the Ministry of Education and Science of the Republic of Kazakhstan for 2018-2020, No AP05134807 “Landscape and environmental assessment of the state of green spaces in the city of Astana and suburban areas, ways to optimize the landscaping system”

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ТҮЙІН

Мақалада Солтүстік Қазақстанда орналасқан Бурабай мемлекеттік ұлттық табиғи паркінің мысалында орманның рекреациялық қызметін бағалауда қолданылатын шартты бағалау әдісі қарастырылады. Зерттеудің мақсаты – саябақтың экономикалық құндылығын бағалау, ол тек саябақтың оны салуға бөлетін бюджетінің арақатынасы, саябақтың танымалдылығы және қаржылық көрсеткіштерге әсері емес. Табиғи саябақтың құнын бірқатар әлеуметтік, экономикалық, мәдени және басқа көрсеткіштерді пайдалана отырып анықтауға болады. Шартты бағалау әдісі – бұл әдетте белгілі бір нәтиже үшін төлеуге әзірлік түрінде

көрінетін адамдардың құндылықтары мен қалауларын талдау үшін сауалнама арқылы респонденттердің қалауларын анықтауды қамтитын бағалау әдісі. Бұл әдіс адамдар өздерінің мінез-құлқын немесе сатып алулары арқылы төлеуге дайын болмаған кезде пайдаланылмаған құнды бағалаудың жалғыз жолы болып табылады. Сауалнамалар зерттеу мақсатымен танысқан 200 респондентке әр маусымда таратылды. Нәтижелер ұсынылған кіру жарнасы, айлық табыс, үкіметтік емес ұйымдарға мүшелік, қоршаған ортамен табиғи ресурстарға моральдық көзқарастар және болу ұзақтығы сияқты айнымалылар зерттеуді рекреациялық мақсатта пайдалану үшін ақы төлеуге дайындығына айтарлықтай әсер ететінін аумақ көрсетілді.

РЕЗЮМЕ

В статье рассмотрен метод условной оценки, который используется при оценке рекреационной функции леса на примере Государственного национального природного парка «Бурабай», расположенного на Северном Казахстане. Цель исследования – оценить экономическую ценность парка, которая является не только соотношением бюджета парка на его строительство, популярности парка и влияния на финансовые показатели. Ценность, генерируемая природным парком, может быть определена с использованием целого ряда социальных, экономических, культурных и других показателей. Метод условной оценки — это способ оценки, заключающийся в определении предпочтений респондентов посредством анкетирования для анализа ценностей и предпочтений людей, которые обычно выражаются в форме готовности платить за определенный результат. Этот метод является единственным способом оценить неиспользованные ценности, когда люди не проявляют готовности платить своим поведением или приобретать соответствующие покупки. Анкеты были розданы в разные сезоны среди 200 респондентов, ознакомленных с целью проведенного исследования. Результаты показали, что такие переменные, как предлагаемая вступительная плата, ежемесячный доход, членство в неправительственных организациях, морализаторский взгляд на окружающую среду и природные ресурсы, а также продолжительность пребывания, оказывают существенное влияние на готовность платить за рекреационное использование исследуемой территории.

УДК 636.295.082
МРНТИ 68.39.55

DOI 10.52578/2305-9397-2023-3-2-304-312

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