

MONETARY VALUE AND SOCIAL ROLE OF FOREST RECREATION SERVICES IN LATVIA

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Abstract

Recreation services are the forests' non-market goods which constitute a substantial part of the total economic value and are important for the choice of multi-functional forest policies. However recreational services do not always have a market price and comparatively less literature applies value orientations to examine issues concerned with recreational use of natural resources. This research reports on the findings of the comprehensive, national-level study about the contribution of forest recreational services to Latvia's national economy in 2009 and about the respondents' declared choices, travel costs and willingness to contribute some money for improvement of amenities in a forest. Two general information sources were used to obtain the information - available statistical data and the contingent valuation survey to estimate the respondents' choices and habits for recreation activities in the forests. Results show that forest recreation is very popular and highly valued in Latvia. The statistical analysis confirms that the significant differences exist between varied respondents' socioeconomic groups in their objectives, choices and preferences to use the forest recreational services.

Key words: forest recreational service, economic value, contingent valuation.

Introduction

Forests are the source of a wide range of services (Stenger et al., 2009; Bestard and Font, 2009; Köchli and Brang, 2005; Termansen et al., 2008; Tahvanainen et al., 2001) and include indirect use values (waste protection, watershed services and carbon storage); non-use values (wildlife habitat and diversity preservation) and direct use values (recreational opportunities) (Barrio and Loureiro, 2010). Over the last two decades an increasingly diverse range of social and cultural values associated with forests (Edwards et al., 2011; de Vries and Goosen, 2002), and studies across Europe show that forests are among the most popular settings for outdoor recreation (Nielsen et al., 2007; Mann et al., 2010). People needs for outdoor recreation refers to innate desire to re-establish the severed links with nature in settlements, as expounded by the biophilia concept of Wilson in 1984. The attitude toward forest resources and services predicts four types of people's environmental value orientation ('sentiment', 'ecology', 'utilitarian', 'negativity') (Li et al., 2010) which include stress recovering (Guilio et al., 2009; Köchli and Brang, 2005), improving of mental and physical health, satisfaction with natural aesthetics (Barrio and Loureiro, 2010), acknowledging of historical and cultural importance and providing of commodity benefits (Li et al., 2010). Recreation services are the forests' non-market goods (Chen et al., 2004; Termansen et al., 2008) which constitute a substantial part of the total economic value of forests in modern society (Bartczak et al., 2008; Turvainen, 2001). However many of the forest goods and services do not have a market price (Stenger et al., 2009), the monitoring of recreational visit numbers to forests is patchy and inconsistent (Edwards et al., 2011) and comparatively less literature applies value orientations to examine issues concerned with recreational use of natural resources (Li et al., 2010; Nielsen et al., 2007). The demand

for non-market benefits is increasing faster than the demand for most wood products in many parts of the world (Stenger et al., 2009) and the diverse range of social and cultural values associated with forests has come to be recognised by the European forestry sector (Bernath and Roschewitz, 2008; Roovers et al., 2002). It is now widely acknowledged that the taking into account the forests' recreational services and an understanding of residents' recreational habits have implications for forest management and land use policy more generally (van der Horst, 2006; Bartczak et al., 2008; Turvainen, 2001). Moreover, projecting the multiple benefits of greenspaces in monetary values provide a universal language to justify the expenditures, and permits fair competition with other demands for policy and financial support (Jim and Chen, 2006).

Given the complexities of forest ecosystems and their environmental features, many different valuation methods can be used to get at different facets of the non-market goods and services provided by forests (Eberle and Hayden, 1991; Turvainen, 2001). The fundamental assumption is that the value of all goods can be expressed in money equivalent terms and that value is based on a goods' utility to humans. These value rankings of non-market goods can be empirically identified by: the indirect revealed preference methods - Travel-Cost Method (TCM) and the stated preference method - Contingent Valuation Method (CVM) (Whitehead, 2000; Faber et al., 2002). While applications of TCM and CVM to value recreation services are quite common in Western Europe and USA, their use in transition economies in Central and Eastern Europe is in its infancy (Bartczak et al., 2008). The primary reason seems to be the absence of a legal obligation to require a monetary evaluation of environmental policies (Tyrvainen and Väänänen, 1998).

Forests in Latvia are an important part of people's everyday life and their everyday landscape – 56% of total area is covered by forest (33% in Europe average) or 1.3 ha per capita. The majority – 59% are conifer forests (in 2006). The state owns 50.2% of Latvia forests, but the access is available to the public for recreational purposes in 99.5% of Latvia forests (United Nations Economic Commission for Europe, 2005). One of the aims in the social sphere of Latvia Forest policy is to balance the interests of society and forest owners in using the social values of forest. Every year more and more inhabitants in Europe and also in Latvia go to the forest to relax – pick mushrooms and berries, observe nature, go fishing, hunting, ride a bike, go on a hike or simply for a walk, have a picnic or participate in different sports activities. The Joint Stock Company “Latvijas Valsts Meži” (Latvia's State Forests) (hereafter also JSC) actively participates in organizing the recreation opportunities in the state forests. The inhabitants of Latvia are interested in using the recreational opportunities in the forest however the current economic situation, when the level of unemployment is 17.2% (Central Statistical Bureau, December 2010), the picking of berries and mushrooms is not a recreation any more, but it has become a source of well-being.

The main goal of this study is to analyze the data, obtained in the national-level study estimating the amount and monetary value of the forest recreational services and the respondents' declared choices and willingness to contribute some money for a well organized forest with amenities in 2009. The research also discerns whether the differences exist between varied respondents' socioeconomic groups in their objectives, choices and preferences to use the forest recreational service.

Materials and Methods

In 2010–2011 in the framework of the project ‘Additional research for the development of integrated forest accounts model in Latvia’ (agreement No. 51110/C-116, Ministry of Agriculture of Latvia Republic) the research document about the contribution of forest non-market services in the national economy in 2009 was worked out. To obtain the information about forests recreation services, amounts and offering we used available statistical data and the internet resources. The data about the number of people visiting the territories with admission fees and/or other paid services connected with tourism are obtained from JSC (information about 2009) and Nature Conservation Agency (in connection with the reorganization - information about period 01.01.2009. - 31.05.2009.) The data about the number of nature trails and recreational areas with definite admission fees are obtained from the internet but are not sufficient, because they do not show the cases of repeated visits and total incomes in 2009. According to the available information, 33 nature trails and objects have admission fees and guided tour fees or payment for car parks, but the visit of 120 nature trails and objects are free of charge.

The data about the organized and charged orientation sport events in the forests were obtained from the internet resources, but they are not sufficient. In Latvia there are 38 sport clubs, but only 15 of them have homepages with available information about participation fees and number of participants. To obtain the additional data about the residents' habits, choices and preferences to use the forest recreational service as well as the payment for transport to get to the forest and willingness to contribute some money for improvement of amenities in a forest in 2009, the contingent valuation survey (hereafter CVS) was used.

The CVS's questionnaire was designed based on the research of Turvainen (2001), Mayor et al. (2007) and Zandersen et al. (2007) about the economic valuation of recreational resources. The first section of the CVS's questionnaire introduced with the purpose of the study and instructions to help respondents understand the questions. The second section included questions about actual recreational experiences and activities through the following questions: what management regime is the most appropriate for recreational use, what the purposes of recreational activities are, and when the respondent usually visits the forest – in working days, at weekends or in vacations/holidays. Depending on the answer about frequency of visits, we asked about the distances travelled to the site, mode of transport and travel cost for one person in both directions. The third section contained the description of the hypothetical scenario and the valuation question. The open-ended payment card approach (Jim and Chen, 2006) was adopted in this study because this technique provided direct prompts, clarified their willingness-to-pay, and allowed them to express their preferred amount if they were not satisfied with the given choices (Henemann, 1994; Turvainen, 2001; Venkatachalam, 2004). Besides that we asked about the payment per year for entrance in the forest with amenities. The last section of the questionnaire provided the general socioeconomic information.

The public opinion poll in Latvia (December, 2010) was carried out in cooperation with the LTD SKDS. The methodology of estimation based on the assumption that sociological research would contain representative information about the contribution of forest recreational services was worked out. The quantitative Omnibus poll method was used – the representative selection, at least 1000 respondents at the age of 18–74 (the general selection representing the totality the whole territory of Latvia). The common error of the research with such selection amount is $\pm 3.1\%$, with 95% probability level. The total number of ‘face to face’ interviews in the dwelling-places of the respondents was 1003. The Statistical Package for Social Science (SPSS V.19) was used to analyze the collected data. A series of Chi – square (χ^2) tests to determine differences at 0.01 significance level in order to find out the possible differences or similarities between the answer of different groups of respondents were applied.

Results and Discussions

The main forest recreational services having impact on Latvia's national economy were identified: firstly, educational services (the incomes from admission fees and/or other paid services connected with tourism in protected natural areas and recreational areas in the state forests); secondly, sport and adventure activities in the forests (the participation fees); thirdly, others with recreation connected services (the sum/per year of inhabitants individual choice

to pay for transport to visit the forest, for entrance fees in different object of recreation and amusement in the forests, and the willingness to contribute some money for improvement of amenities in a forest). In Latvia there are a lot of privately owned forests and the information about the incomes and number of visits to the different recreational and amenity objects in those forests is not available. The total sums of the available data about the forest recreational services are shown in Table 1.

Table 1

The amount and monetary value of the forest recreational services in 2009

No.	Recreational service	Number of visits	Sum (LVL)
1.	The organized sport activities: 15 orienteering sport clubs (total number – 38) which have available information in internet about participation fees and number of participants	15 sport clubs with total number of participation – 51 930	121 028
2.	The number of people visiting the territories with admission fees and/or other paid services connected with tourism (information about 01.01.2009. - 31.05.2009.)		
2.1.	Gauja National Park	6463	4 097
2.2.	North Vidzeme Biosphere Reserve	180	55
3.	The number of people visiting the recreational areas in Latvia State forests in 2009		
3.1.	Tervete Nature Park	75 000	103 000
3.2.	Pokainu forest	11 300	10 700
4.	Number of natural trails with admission fees and guiding service – 33; trails for free -120	Information is not available	Information is not available
Total			~136 000 LVL (194 000 EUR)

The first question of the public opinion poll asked to rank the given forests with different levels of management in four ranks from the most suitable for recreational use (rank No.1) till the least suitable (rank No.4). The results are shown in Table 2. The natural forest was mentioned as the most appropriate forest for recreation, but the least appropriate – the forest with intensive management. In comparison, in 2008, the forest with recreational amenities and the forest with intensive management were mentioned as the most appropriate forests for recreation, but the least appropriate – the natural forest and the forest – park (Donis, 2008). In this survey, the differences between those forest types were not defined. The people's perception differs from their education level, experience and expectations (Faber et al., 2002) and in this case the respondent's understanding was subjective and spontaneous. It is partly the reason why so great contradictions among respondents' choices in 2008 and in current survey exist. However, in further researches those definitions to obtain the more equitable results have to be clarified.

The vast majority of respondents (83%) visited the forest

during 2009. To the question how often the respondent usually visits the forest for recreational activities obtained following results were obtained: 17% of respondents did not use the forest for recreation, 57% of respondents usually visited the forests at weekends, 16% of respondents - in working days and 10% - in vacations/holidays. As the most popular recreational activities the respondents mentioned walking, picking the berries and mushrooms (respectively - 50%, 43% and 69%). However, these rates show both – those who go to forest for recreational purposes and also people who pick berries and mushrooms for selling them to gain additional income. In comparison with Poland, the vast majority (85%) go to forests for walking, though berry and mushroom picking is considered almost as important (80%) (Bartczak et al., 2008). The survey results showed that 44, 8% of respondents use the transport (private or public) to go to the forest, and we calculated that the average sum for a round trip per person is 1, 33 LVL (1.9 EUR). The obtained data were proportionally related to the total number of Latvia's inhabitants in the age group 18 - 74 (Table 3).

Table 2

The forest suitability for recreational use

Landscape's description	Rank				Mean	Position
	1	2	3	4		
Natural forest	589	85	147	46	1.6	1
Forest with intensive management	18	115	139	595	3.5	4
Forest with recreational amenities	162	357	271	77	2.3	2/3
Forest - park	97	309	310	151	2.6	2/3

Table 3

The respondents' declared choices and willingness to contribute in 2009

No.	Payment	Rate (%)	Amount (LVL/ EUR)
1.	The total transport cost for one trip (for each person in both directions)	44.8	1 009 830/ 1 436 867
2.	The total sum of using the amenities in the forests with admission fee	17.2	1 107 720/ 1 576 152
3.	Willingness to contribute some money for amenities' improvement in a forest	26.2	3 065 893 / 4 362 397
Total			5183443 LVL/ 7375417 EUR

Using the amenities in the forests with admission fee is quite rare – only 17.2% of respondents choose such service and the monetary value of contributions is 1 107 720 LVL (1 576 152 EUR) in 2009 (Table 3).

Prior to asking the question: *'Would you agree to contribute some money for a well organized forest with all amenities? If yes, what amount of money per year are you ready to pay for this purpose'* it was explained that the well organized forests can provide the recreation service for a larger number of people. The literature studies show if the stated willingness-to-pay is too high (exceeding stated income by 5%), the questionnaires are discarded as outliers (Turvainen, 2001; Jim and Chen, 2006). We decided to discard 20 questionnaires where the stated willingness-to-pay was more than 5% of income to one member of family. 27.0% of respondents answered 'yes' and mean willing to contribute was estimated 6.7 LVL (9.5 EUR). The monetary value of contributions 3 065 893 LVL (4 362 397 EUR) was estimated relating to the total set (Table 3).

Through the series of statistical analysis it became clear that there exist variances between opinions of different respondents' groups and their choices (Table 4). The greatest significance ($p < 0.01$) shows: the number of members in families in relation to frequency of visits and the choice of natural forest for recreational activities; the ages in relation to frequency of visits and with choice of forest with different levels of management for recreational activities;

the education in relation to frequency of visits, the choice of natural forest for recreational activities and willingness to contribute; the nationality in relation to choice of natural forest for recreational activities; the occupation in relation to frequency of visits, the choice of natural forest and forest – park for recreational activities; the incomes to one member of family in relation to willingness to contribute.

The significance $p < 0.05$ shows the relation between: the nationality and choice of forest with intensive management and forest – park for recreational activities; the occupation and willingness to contribute; the incomes to one family member and frequency of visits and the choice of forest with intensive management and the forest – park for recreational activities.

The significance $p < 0.1$ shows the relation between the education and the choice of forest with intensive management for recreational activities and the nationality and the choice of forest with amenities for recreational activities (Table 4).

We also tested the answers of respondents' groups from different socioeconomic groups to the questions about travel cost and using the amenities in the forests with admission fee. The significant differences were not found except in the respondents' group with different number of members in a family in relation to using the amenities in the forests with admission fee ($p < 0.05$).

Table 4

Results of contingency tables analysis

No.	Socio-economic groups/variables	Number of members in family	Ages	Education	Nationality	Occupation	Incomes to one member in family
1.	Frequency of visits	0.002***	0.000***	0.000***	0.820	0.000***	0.033**
2.	The forest suitability for recreational use						
2.1.	Natural forest	0.004***	0.000***	0.002***	0.000***	0.005***	0.168
2.2.	Forest with intensive management	0.217	0.001***	0.066*	0.021**	0.076*	0.048**
2.3.	Forest with recreational amenities	0.168	0.004***	0.134	0.076*	0.055*	0.355
2.4.	Forest – park	0.509	0.003***	0.761	0.025**	0.006***	0.015**
3.	Willingness to contribute	0.583	0.815	0.004***	0.047**	0.037**	0.000***

Designations: * - $p < 0.1$; ** - $p < 0.05$; *** - $p < 0.01$

Conclusion

This research aimed to provide an insight into the monetary value of forest recreational services and obtain the results about the use of these services by varied respondents' socioeconomic groups in Latvia, in 2009. The results of the research show that:

1. The national annual forest recreational value in 2009 was estimated around 136 000 LVL (194 000 EUR) to the total area of forests;
2. The respondents' declared choices and willingness to contribute in 2009 was estimated around 5 200 000 LVL (7 400 000 EUR);
3. The significant differences exist in answers of respondents' socioeconomic groups about the frequency of visits to the forest for recreational activities, the forest suitability for recreational use and willingness to contribute;
4. No significant differences exist in the answers between respondents' socioeconomic groups about the travel costs and using the amenities in the forests with admission fee;
5. The contribution of this study has covered some of the last research and application in forest valuation in Europe, but for further construction of the hypothetical market of forest recreational service in Latvia, the obtained data have to be proceeded by methods of TCM and WTP to become comparable with results in other countries.

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