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University of West Hungary  
Faculty of Forestry

Ph.D. theses

**Methodology of the valuation of forest  
recreational functions and study on forest  
recreation**

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## **1. Definition of the subject**

The recreational function gets an increasing role besides the two other functions, namely the wood production and the protection both in Hungary and internationally. In the course of this process and especially in Europe (mainly in countries with low forest cover) the recreational function gets more and more important in accordance with societies increasing expectations. A good environmental status positively influences peoples' health and mental condition of the people.

There are several studies going on internationally on demonstrating and quantifying these effects and to get a deeper understanding of the processes.

The financing of the activities of forest managers connected to the recreational function is presently unsolved. We can propose possible solutions and develop a suitable strategy only if we have exact information on visiting habits and the value judgment of the society concerning recreational services.

At present the EU decree 1698/2005EK "Support for Rural Development by the European Agricultural Fund for Rural Development" regulates the newest, the most important subsidy forms for the forestry, where the common goal is to increase the multifunctional role of the forests. The valuations in the reports to be handed in to the EU have to be based on economically sound, accepted and unified methods.

## **2. Objectives**

- an overview of the current international situation among valuation methods based on economy
  - an overview of the most frequently used methods with special respect to possible errors in their application. The contingent valuation is investigated on a greater length because this is the most accepted and dealt with method
  - definition of forest tourism and its place in tourism
  - study on Hungarian forest tourism and a dynamic state report based on surveys in the whole country
  - based on the result the definition of a strategy for forest managers and tourism service providers related to forests
  - recommendation of valuation methods most suitable to Hungarian conditions
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### **3. Hypotheses**

The hypotheses of the research are as follows:

1. The study of the international literature on the topic and consultation carried out abroad revealed a diverse picture about forest recreation and research methods used to study it. In general it can be stated that in most of the countries there were such investigations but the practice is not uniform in the methods to be applied. I assume, that the response rate in a properly prepared and carried out survey based on questionnaires will be sufficient for a statistical evaluation of the questions
2. The individual forest visiting habits are strongly influenced by the social status of the respondent (education, age, income)
3. For those activities, which already appeared on the market the willingness to pay of the society is much higher than for those goods which are freely available to anyone. Society rejects the introduction of free goods into the market.
4. Demand and the opinion of the society regarding forests is not in connection with the available supply. In order to increase satisfaction a change in the mind and attitude of the society is needed. It is not enough to increase the supply side and the achieved results will not be proportional to the costs spent.
5. Recreational activities appearing in the forest can be grouped and characterized according to different aspects. Using these groups the future trends and development priorities can be determined.

### **4. Research methodology**

In the first, qualitative part of the research possible uses of money-based economic valuation and their possible errors are investigated. After presenting the valuation methods currently used in Europe the present position of the EC is shown concerning subsidies supporting forestry and the valuation methods connected to them. The opinion of an expert panel was also investigated using SWOT analysis. Based on a low intensity and not representative sample the background information and characteristics behind the terms forest tourism was explained.

The quantitative phase of the research consisted of analyzing and where possible comparing multiple high intensity representative surveys. The characterization of forest tourism and the determination of the typical uses of forests was primarily based on two, high intensity representative samples carried out by the Institute of Forest Assets Management. Three years elapsed between the two samples and this made an analysis of the dynamic processes possible. The

changes even a greater time span could be investigated using the surveys taken in the framework of the Multifor.RD (FAIR CT 98-4223) program between 1999 and 2002.

There were two additional surveys available with a similar topic which, although they were not representative provided useful information to get a clearer picture.

At the beginning of 2008 there was a possibility to conduct a smaller survey consisting of two parts with the support of the Southern Plain Forest Company. The questionnaires in these surveys contained some of the questions from the previous high intensity samples making an even more detailed analysis of the dynamics of forest tourism possible and by including an open question concerning willingness to pay they can be considered as preliminary steps for a larger scale survey in the future.

## **5. Results of the surveys**

Regarding to the tourism use of the forests the following results have to be stressed:

- Among the factors age, education and income mainly education has an effect on the forest visiting habits of people. The effects of age and income can be neglected, especially taking into consideration the fact, that income has a strong correlation with education. Based on this observation the content of the information tables in the forest can be designed in a way that they contain information suitable for people with higher education, because in their case the demand for visiting the forest is proportionally higher.
- In the distribution of visits within the year one can expect on equalization between seasons, and there will be a significant proportional increase in winter activities.
- The importance of intangible features (forest scenery, quietness, fresh air) is proportional to the education. The same cannot be stated for the real features (look-out towers, lakeshore, recreational facilities)
- In 75% of the answers the main hindrance of a more frequent visit to the forests is lack of free time
- The highly educated and the age group 20-39 had the highest ranking of the nature protection function of the forests. The proportions in the age distribution show that the education system puts a high emphasis on the situation of nature protection and on the broadening of the environment-minded thinking.
- The responses clearly emphasize the role of clean, fresh air, which is the most important feature for the society in relation of forest tourism.

- The most disturbing for the society is litter in the forest, which was mentioned by 44% of the whole sample.
- Among the disturbing factors contradicting terms also appeared, like noise-silence, roads and lack of roads, which draws the attention to the different preferences.
- Urban population prefers well opened-up park forests, excursion facilities around cities during their visits
- From the recreational point of view those forests meet the demands of the people which have an important role as nature protection objects because of their diversity.
- Typical target stand characteristics are for recreational use:
  - Broad-leaved species, possibly mixed with conifers
  - Stand planted at an irregular spacing
  - Mixture of multi-layered and one-layered stands
  - Forests containing parklands and clearings
  - Old or mixed aged stands
- The greatest demand is for the following activities according to the answers: camping – sleeping in the forest, sports in the forest – taking photographs and guided botanical tours, educational paths.
- The greatest proportion of recreational facilities can be found on the area of state forest service branches, which supervise forest which are most frequented by tourism (Budapest, Eger, Miskolc, Pécs and Szombathely). If we analyze this proportion by counties the highest scores go to Borsod-Abaúj-Zemplén, Zemplén, Pest and Heves. The overwhelming part (80%) of the facilities are state-owned. The second most important group of owners are municipalities with 9%, while the proportion of privately owned facilities is 7%. In 2004 out of 1456 facilities only 40% could be considered to be in proper shape.
- According to the opinion of the respondents the state has to play an important role in providing financial means to cover the costs related to recreation.
- The acceptance of the offering 1% of the personal income tax is increasing with education, and a similar tendency can be observed in the willingness to pay directly to support recreational investments. An opposite tendency could be observed in the case of the opinion about public works and foundations.
- During the estimation of the average cost of a forest visit in Hungary using the travel cost method (TCM) we calculated a value of 1087 Ft, thus approximately 4,18 Euro. In my opinion due to the specific circumstances this value is not at the bottom of the real range of values, it is rather in the middle of the interval, or it might even overestimate the real costs. The annual value of the recreational services of the Hungarian forest can be estimated at 140 billion Forints.

- In general it can be stated, that an overwhelming part of the society rejects the answer related to willingness to pay during a contingent valuation method
- Using the right and well formulated questions in combination with questioner a very high, 74% response rate could be reached. It means that the contingent valuation method can be applied in Hungary.
- The public opinion and demand related to forests is not proportional to the available supply. In order to increase satisfaction in the society, the attitude and the thinking has to be transformed, the development or increase of the supply is not sufficient or the cost will not be proportional to the achieved results.

## 6. Theses

1. I proved that under Hungarian circumstance economic methods of valuation of recreational services such as travel cost method and contingent valuation method can be used. A criteria of a successful contingent valuation is the question asked in accordance with the Hungarian situation.
2. The relation of the society and forest with respect to the recreational use is in a phase of considerable change. The distribution of forest visits within one year is starting to level out. For the winter period I found that considerably less people remain constantly at home than in the previous years.
3. Services already introduced totally or partly into the market can be considered as accepted, the proportion of the rejection of willingness to pay is considerably less. The answers have a higher ranking than in the case of free goods. For services freely available at present the society rejects support for their possible introduction into the market.
4. Forest in the surrounding of settlements, which can be reached in a short time can be considered of great importance, and we can forecast even a higher visiting frequency. I showed, that mainly areas which are opened up with respect to recreation are visited most frequently, thus the frequency of use can be regulated by carefully planning the future investments into the development. The most intensive forms of use are walks aimed at rest and recreation, hiking and biking.
5. I proved, that those forests meet the expectation of the society as recreational forests which are also important because of their biodiversity and landscape variety (Uneven age class distribution, mixed with parkland, multi-layered and established in an irregular spacing)
6. I proved, that the level of education unambiguously influences forest visiting habits of people. I showed, that people of higher education visit

the forests more often, while lower education comes with a lower frequency of forest visits.

7. I proved, that the importance of quietness of the forests is considerably higher among higher educated people. The importance of the fresh, clean air was proportional to the education. In the case of lookout-towers, lakeshores and recreational facilities no correlation could be shown with education, in these cases age is an influencing factor.

## **7. Recommendations**

The counting of visitors has to be started at every significant location in cooperation with forest companies and forest estates in order to gain accurate, up-to-date information on forest tourism activities. The simplest sources of information is the sales statistics of tickets for services which can be used by purchasing ticket (e.g. narrow gauge railroad, forestry museum, display sites, lookout towers which can be visited by purchasing ticket). One can expect, that according to the guidelines of the EU and the possibilities in financing from subsidies more and more forest services will be freely available so there will be no data on ticket sales. In such new facilities the installation of observation facilities and the processing of the data has to be supported. We shall be in continuous connection with the international organization dealing with these problems in order to have up-to-date information on the available new technologies.

In most of the cases forestry has a good connection with the local inhabitants. On the other hand the locally a globally available PR possibilities are often not used, or poorly used by the forest companies. The PR activities have to be strengthened and a very good starting point to this is the development of the recreational functions of the forests.

Forest visiting habits of the Hungarian people are similar to those in the western countries, results gained from data gathering can be compared in their magnitudes. By developing long term forecasts and strategies the results of international investigations can be used under Hungarian circumstances. The conditions of the use of these methods have to be clarified and a database has to be compiled about methods and results of their application.

Expectations and problem from the side of the society are not in strong correlation with the present supply and possibilities. The problem of litter, which was the most frequently mentioned negative feature can be solved in a most effective way by forming the consciousness of the society. The possibilities of a more efficient communication and PR have to be explored.

Also the possible role of communities in forest tourism has to be investigated, how could they take part in the management of forested areas close to settlement having an importance in forest tourism. At the European level the proportion of



the forests owned by communities is higher, than in Hungary. The different forms of subsidies have also to be identified.

The elaboration of a Hungarian Forest Tourism Strategy is suggested as a supplement of the National Forestry Program or as a part of the National Forestry Strategy, similarly to the Nature Protection Strategy. It is recommended to involve the different professional and NGO organizations (Nature Protection Office, Touristic Association of Hungary) into the work. To support the strategy a survey, similar to that of the Institute of Forest Assets Management would be necessary in the year 2010 which would be comparable with the previous surveys, and the monitoring should be repeated every five years. As a part of the reports to be prepared for the EC the improvement of the recreational services has to be justified by economically sound valuation methods which would justify the use the EU subsidies. The survey and later the monitoring should be designed in a way that as a part of it a contingent valuation – supporting the value determination – could be carried out

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