LANDSCAPE ASSESSMENT – A CASE STUDY OF SUMAVA MOUNTAINS, PROTECTED LANDSCAPE AREA

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Abstract- Landscape is considered to be a public good, which is both non-excludable and non-rivalrous for individual use. As other public goods, landscape is not markable good. For assessing its value, several methods are used including willingness-to-pay, travel cost methods, choice experiment. This paper conducts a small case study application of willingness to pay method, as a method used in majority studies, for assessing the landscape value in Šumava Mountains. Results gathered from a survey serve to identify several groups of respondents their willingness to pay for an entrance fee (pass).

Key words- Landscape; Willingness-To-Pay; Stated Preferences; Šumava Mountains.

I. INTRODUCTION

Landscape, as many environmental goods, is considered to be a public good due to its nature of consumption, being both non-excludable and non-rivalrous (Burges at al., 2012). Molina et al. (2016) point out that landscape goods are rarely incorporated into economic valuation of natural resources, even though it forms a large portion of the total economic value. Bernués et al. (2014) add that economic valuation is highly controversial. Non-material good is considered to be incommensurable by many, therefore economic valuation is assumed to be a driver for commodification of nature and very difficult to be applied for certain ecosystems. Putting monetary value is not easy because individuals preferences of landscape (Tagliafierro et al., 2013). Knudsen et al. (1995) stressed that landscape cannot be the same for to individuals because each of them has a different interaction with landscape and their knowledge of landscape differs.

To assess the landscape by monetary value, several methods are used. The literature survey proved that willingness to pay (further WTP) method is used in the majority of the studies. Besides WTP some studies applied travel cost method. Travel cost method belong to a group of revealed preferences method, while WTP belongs to stated preferences methods. Travel cost method was applied in Gluck and Kuen (1997) for assessing the Alp landscape or in Melichar (2007) for assessing landscape value in JizerskéHory.Travel cost method (TCM), the oldest method for assessing environmental amenities, is a consumer-oriented method commonly used for assessing environmental amenities connected to recreational areas, natural reserves and other natural areas. The substance of TCM is a presumption that the tourist has to visit a site if he/she can use the environmental and other services provided by the site. The money spent by getting to the site represent travel cost the tourist is willing to pay for being in the site and use the services. Changes in the value of travel cost are adequate to changes in a number of visits (Dvořák, 2007).

WTP which is used in the majority of studies is a contingent valuation method (e.g. Bastian et al. 2005; Tempesta and Thiene, 2004; Getzner, 2000; or Gios et al., 2006). Contingent valuation methods (CVM), including WTP and WTA (willingness to accept) are originally proposed by Ciriacy-Wantrup in 1947 who estimated the side effects of soil erosion (Venkatachalam, 2002). It isis survey-based methodology for eliciting values people place on goods, services, and amenities (Boyle, 2003). It lies in questions to elicit respondents´ preferences for public goods by finding out they would be willing to pay for specific improvements in them (Mitchell and Carson, 1989). Respondents in the CVM studies are expected to consider and answer question in a way that coincides with economic theory (Lienhoop, Macmillian, 2007). Testing CV results alongside economic theory should create two conditions. Firstly, the percentage of respondents willing to pay a particular price should fall as the price increases. Secondly, the percentage of respondents willing to pay a particular price should increase as the demand for goods increases (Carson et al., 2000). Ellingson and Seidl (2006) add that CVM is among few methods available to measure economic value where there is no market information. Even though CVM studies have been published for many years, researchers still have to deal with some methodological challenges in preparing the CVM research. One of such a challenge is the survey instrument (in-person, telephone, and mail surveys). Mitchell and Carson (1989) discussed these instruments and concluded that even the in-person interviews are more expensive, they provide more valuable answers.
Some studies combine WTP with choice experiment, e.g. Campbell et al (2005) who used choice experiment to revel the landscape value in Ireland.

The literature survey proved studies valuating landscape use, in majority, WTP method. The paper comes out form this knowledge and intents to conduct a small case study to compare results with published studies. A case study is conducted in Šumava Mountains, Protedted landscape area. Šumava with the neighbouring Bayerischer Wald represents one of the last major unbroken areas of unspoilt scenery in Europe. It received the status of a Protected Landscape Area in 1963. The surface of protected landscape area is 944.8 km^2.

II. MATERIALS AND METHODS

Landscape in Šumava Mountains was assessed by WTP approach. The take-it or leave-it approach with follow-up was applied. The entrance fee (a pass) as a payment vehicle was used.

A survey for respondents, tourists, was conducted in Šumava Landscape protected Area. Before asking valuation questions, respondents were assured that the interview serve only for academic purpose, not for potential pricing policy. The interviewer made sure that respondents have proper knowledge of assessed landscape. The respondents were asked: "What maximum amount are you willing to pay for being in the area and still have the same utility from the visit?" The initial bit was EUR 3.7 per visit. If respondent rejected, he/she was offered a second bit at a half (EUR 1.9). Similarly, if respondent accepted, he/she was offered a double of initial bit. The process was repeated until proper amount was found. This was supported by respondents'´ subjection of amount between interval they accepted and rejected.
Finally, respondent were asked socioeconomic questions. In total, 120 observations were elaborated.

III. RESULTS

Tourists coming to Šumava Protected Lanscape Area, visit this region because of landscape beauty (75.9%), and being in nature (69.8%). Other reason for being in Šumava are visiting friends and relatives (35.9%), and under 10% of respondents come for natural attractions, water sports and children vacations.

There are 20.0% of tourists who are not willing to pay any hypothetical entrance fee 34.3% of tourist are willing to pay up to EUR 1.8. 31.4% of tourists are willing to pay more than EUR 1.9 and less than EUR 3.6. 23.6% of tourists are willing to pay in the interval EUR 3.7–5.4. Only 3.6% of tourists are willing to pay between EUR 5.5 and 7.3, and 7.1% of tourists are willing to pay more than EUR 7.4.

The willingness to pay was subsequently analysed by socioeconomic characteristics of respondents. According to the age of respondents, the highest willingness to pay was indicated in a group of respondents in their 25-34 years and 35-43 year (see table 1).

Table 1: WTP according to the age

Age (years)	State value (average value in EUR)
15-24	2.9
25-34	3.8
35-44	4.2
45-54	4.1
55-64	3.1
Over 65	2.0

Table 2. WTP according to the education

Education	Stated value (averagevalue in EUR)
Elementary High school	2.7 3.1
Technical institute/college	4.2.
University	3.9

The analysis of education showed that respondents with technical institutes of college valuated the landscape by the highest value.
Finally, the analysis gender was conducted. This analysis showed that women are willing to pay higher payment for entrance fee (mean value EUR 3.5) than men do (mean value EUR 3.2).

CONCLUSION AND DISCUSSION

Landscape is considered to be a public good, which is both non-excludable and non-rivalrous for individual use. As other public goods, landscape is not markable good. Literature survey proves that WTP is applied in majority studies. WTP was also used for small case study in Šumava Protected Landscape Area. Results of this small case study show that revealed valueis than the value found by Bastian et al. (2015) who valued landscape in Ore Mountains in Germany. On the other hand these values are lower than found in Molina et al. (2016) with EUR 9.25 per visit or Getzner (2000) whose results are EUR 7 per visitor and visit. Also Gluck and Kuen (1977) found out higher values in Austrian Alps, EUR 5 per visitor and visit. In general studied conducted in the Alp shows higher value of landscape than those conducted in other parts in Europe (e.g.Gios et al., 2006; Notaro and Paletto, 2011).

For further research, it is necessary to extend the number of respondent interviewed.Higher amount of respondent also enable statistically significant analysis. The limits can be also seen is the usage of WTP, which has limits it-self. Horowitz and McConnel, (2002) points out the controversy over

whether WTP really measures people's willingness to pay. The problems may emerge if the respondents are not aware of the good or service they are supposed to evaluate. Misunderstanding between the surveyor and the respondent may rise up when the respondent answers a different question than the surveyor had intended. Strategic bias may occur when a respondent supplies a biased answer with the intent of affecting a particular. Mitchell and Carson (1989) add that despite many years of experience with the surveys, survey methodologist agree that the knowledge about how respondents answer survey questions is still relatively primitive.

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