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## **Tourists' Interest in Participating Sustainability Activities While Travelling**

*Antti Pitkämäki & Antti Honkanen*

*University of Eastern Finland, Centre for Tourism Studies*

This study examined the willingness of 1291 protected area visitors to act sustainably while travelling. The survey collected in several European countries included questions on how willing the respondents are to take part in 14 different sustainability activities such as waste recycling, saving water and energy, using green businesses and giving financial contribution. According to the results, the respondents were ready to participate in those sustainability activities that are part of some other necessary activity and not only done for sustainability. The general willingness was closer to neutral for activities which are done separately and only for sustainability and not clearly negative for any of the sustainability activities. Using a factor cluster segmentation analysis, the respondents were categorized in four different segments, which were named Locality enthusiasts, Sustainable customers, Active participants and Indifferent visitors.

*Key Words: Sustainability, protected areas, activities, willingness, environment, tourism*

People have started to consider the environment more and more in their everyday lives. It can be assumed that when people have adopted environmentally conscious thinking, they are also letting their travel choices reflect their values. In addition to environmental aspects, sustainable tourism includes also socio-cultural and economic perspectives. This study aims to examine customer perspectives of sustainable tourism from environmental, economical and socio-cultural sustainability aspects. The goal of this study is to find out if tourists and visitors of protected areas are willing to take part in sustainable tourism activities and what kinds of activities are favoured.

Data for the study was collected in 2011 using a survey for visitors of protected areas in different European countries. The survey included questions on how willing visitors are to behave in a sustainable way whilst travelling in protected areas. In addition a factor analysis was performed to find out the underlying variables that explain respondents' willingness to take part in the different activities. Also, a factor-cluster segmentation analysis was performed to find out what kind of different segments the respondents form based on the found factors, that is, different groups of sustainable (or non-sustainable) behaviour were identified.

## Background

The environmental values of nature tourists have been reported in several recent studies (Table 1). Fairweather, Maslin and Simmons (2005) used a survey of eight questions, taken from the New Ecological Paradigm (Dunlap, Van Liere, Mertig, & Jones, 2000), to study the environmental values of international visitors to New Zealand. According to results, 61% of the respondents had biocentric values and 39% had ambivalent values with none having anthropocentric values towards nature. The biocentric respondents tended to have a university education, and they had a lower income in average than the ambivalent respondents. The biocentric visitors were more willing to pay a higher price for more environmentally friendly products and services than the ambivalent visitors. However, in general environmentally friendly tourists have higher incomes and are also more educated and more interested in learning than less environmentally friendly tourists (Dolnicar, Crouch, & Long, 2008).

*Table 1. A brief summary of recent studies on environmental values of nature tourists.*

<b>Article</b>	<b>Topic of the study</b>
Fairweather & al. (2005)	The awareness of ecolabels among visitors in Christchurch, New Zealand
Lee & Moscardo (2005)	Changes in tourists' environmental knowledge, awareness, attitudes and behavioural intentions between pre-visit and post-visit stages at Kingfisher Bay Resort and Village, Australia
Mehmetoglu (2005)	Empirical typology of nature tourists as specialists and generalists based on attitudes in northern Norway
Wurzinger & Johansson (2006)	Comparison of ecological attitudes between eco-tourists, nature tourists and city tourists in Sweden
Kangas (2007)	Environmental attitudes and their impacts on travel behavior and attitudes towards ecolabels at Koli national park, Finland
Zografos & Allcroft (2007)	Market segmentation study based on the environmental values of potential ecotourists at Scotland
Luo & Deng (2008)	Effects of Environmental attitudes (measured by the new environmental paradigm NEP) to nature-based tourism motivations in park—Zhangjiajie National Forest Park, China
Dolnicar & Leisch (2008)	Environmentally friendly tourists as target segments for destination management aiming to improve the ecological sustainability of the local tourism industry in Australia
Dolnicar et al. (2008)	Review of environment-friendly tourists
Andereck (2009)	A segmentation study among nature-based tourists visiting in Arizona Welcome Center and the Chamber of Commerce offices in Holbrook and Springerville, Arizona, USA
Bergin-Seers & Mair (2009)	A profile study of green tourists in Australia
Dodds et al. (2010)	Tourists' awareness of environmental issues, the extent to which they feel responsible about preserving or protecting natural resources and their willingness to pay for environmental protection Koh Phi Phi, Thailand, and Gili Trawangan, Indonesia
Marques et al. (2010)	Benefit segmentation study among domestic visitors to Portuguese protected areas

Puhakka (2011)	Environmental concern and responsibility among nature tourists in Oulanka PAN Park, Finland
Puhakka & Siikamäki (2012)	Knowledge of ecolabels and the link between travelling behaviour and ecolabels
Konu & Kajala (2012)	Segmentation study based on tourist motivations to visit in a protected area, Finland

Also Zografos and Allcroft (2007) used a survey based on the New Ecological Paradigm to study the environmental values of potential ecotourists in Scotland. The results showed that of all the respondents, nearly 80% belonged to one or the other of the ecocentric segments. Other studies reporting tourists' environmental views include Higham, Carr and Gale (2001), who also report ecotourists having ecocentric rather than anthropocentric values, and Lee and Moscardo (2005), who report a high environmental concern among ecotourists.

Puhakka (2011) interviewed national park visitors to gain information on nature tourists' considerations of environment and sustainability in national parks in Finland. Based on the interviewees' environmental concern and responsibility, she identified four different types of visitors. Puhakka's (2011) results nonetheless show willingness among national park visitors to behave sustainably as the majority of the interviewees were at least somewhat willing to behave environmentally responsibly whilst visiting national parks.

Tourists' concern over the environment does not necessarily mean they would behave more responsibly (Puhakka, 2011, Swarbrooke & Horner, 2007). In addition to tourists' environmental values, the sustainability of their behavior is affected by other factors (Swarbrooke & Horner, 2007). Hence, instead of the more commonly reported environmental values, here we report protected area visitors' willingness to behave sustainably rather the underlying environmental concern and other values.

## Data and methods

Data for the study was collected during the spring and summer 2011 by using two different kinds of questionnaires. One of the surveys was targeted for potential/previous visitors of national parks and other protected areas and was implemented mainly as an electronic survey distributed via e-mails and social media. The other survey was targeted for visitors on site. The surveys took place in several national parks and other protected areas in seven different European countries (Spain, Italy, Germany, Slovakia, Latvia, the UK and Finland). The total amount of respondents from the two surveys was 1291 with 681 respondents from the survey aimed for previous/potential visitors and 610 respondents from the on-site survey. In this study both surveys are joined to one data.

The questions are not directly based on previous studies but were developed for this study with the works of Zografos and Allcroft (2007), Fairweather et al. (2005) and Dunlap et al. (2000) as the basis. The surveys had 14 questions regarding how willing the visitors are to take part in different sustainability activities such as waste

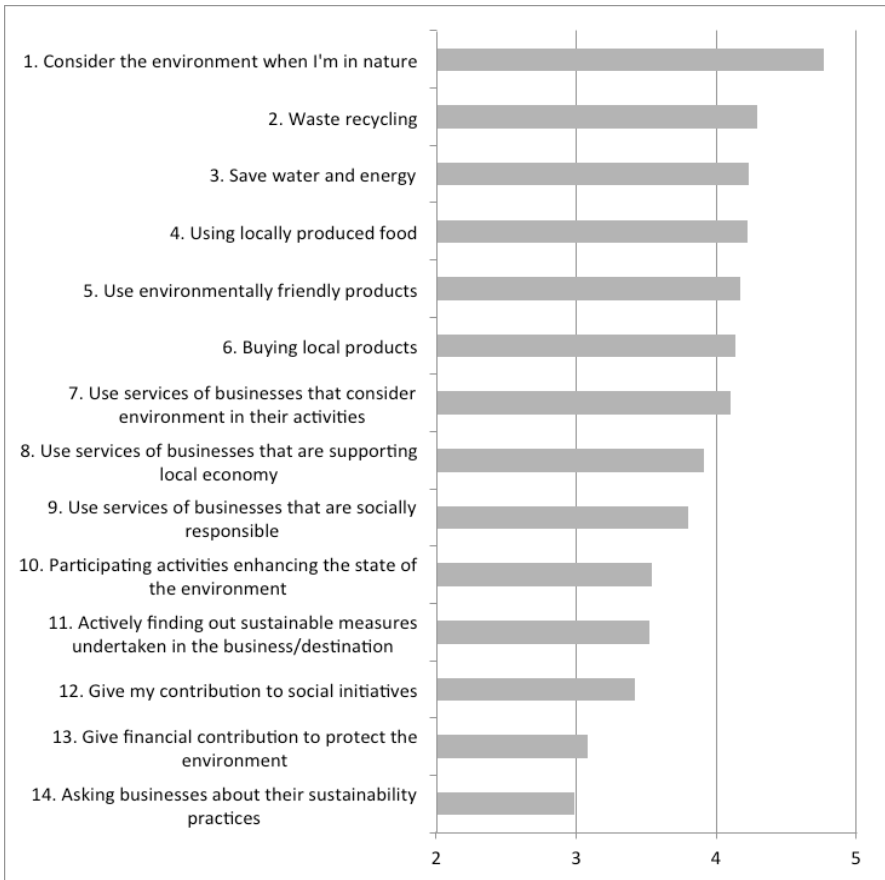
recycling, saving water and energy, using green businesses and giving financial contribution whilst travelling (see Figure 1 for a list of the activities). A Likert-scale from 1="not willing at all" to 5="very willing" was used. Out of all the respondents, 90% answered to these 14 questions.

First, the average value of all respondents for each sustainable activity was calculated. The willingness of respondents to take part in sustainable activities whilst travelling was examined utilizing principal component analysis with varimax rotation. The principal component analysis is a procedure that identifies 'a hidden structure' in a set of variables, in this case identifying and measuring relationships of variables which describe sustainability activities. The Cronbach's alphas were computed to prove the internal consistency of variables in each component.

After that K-means cluster analysis was conducted. The procedure is commonly called factor-cluster segmentation. Even if Dolnicar and Grün (2008) remark on several problems of the factor-cluster segmentation approach the procedure was chosen because of the fear of overrepresentation of some aspects but also because a possible underlying structure among the variables in the analysis itself was the interest of study. If highly correlated variables are used for cluster analysis, some aspects represented by these variables will be overrepresented in the clustering solution why factor-clustering segmentation is commonly used. Complying with the instructions of Dolnicar and Grün (2008), reducing the number of items in the questionnaire's pre-testing phase and retaining a reasonable number of relevant, non-redundant questions would be a better option when possible. However, as Mooi and Sarstedt (2011) state, if there are doubts about the data structure, factor-clustering segmentation may still be a better option than discarding items that may conceptually be necessary. In this study, the pattern of questions is not a solid and established construct but developed for this particular study partly based on previous studies. There is a possibility that the same aspect of sustainable behaviour was attached to the analysis more than once why it may be overrepresented in the analysis if a cluster analysis with raw survey data is conducted. ANOVA was used to identify statistical differences between the clusters. Finally, the variability in terms of demographic factors between the segments was analyzed using cross-tabulations and chi-square tests.

## Results

An average value of all respondents for each sustainable activity was calculated. The average values are shown in Figure 1. The highest average value, close to 5, was for activity 1 and the lowest for activities 13 and 14. The average willingness was slightly less than 4 for activities 8 and 9. None of the activities had a clearly negative average willingness (that is, average value of less than 3). In general, the eagerness was higher for those activities that are part of some other, necessary activity. The willingness was lesser for those activities that are done especially for sustainability. For example, participating activities enhancing the state of the environment or giving financial contribution to protect the environment would require more active effort than just performing daily tasks more sustainably.



*Figure 1. Average value of all respondents for each sustainable activity, N=1291. The question asked was “How willing are you to take part in following sustainable activities while travelling?” 5 = “very willing”, 1 = “not willing at all”. Note the offset of the scale.*

Next, different attitudes concerning to take part in sustainability activities were examined utilizing principal component analysis. Four quite clear components were found. They together explained 67.3 % of the variance. The Kaisere-Meyere-Olkin (KMO) measure of sampling adequacy (KMO= 0.869) and the Bartlett’s test of sphericity ( $p < 0.001$ ) confirmed that the analysis was appropriate. The internal consistency of components was measured by Cronbach’s alphas. Reliability was adequate with the scores ranging from 0.687 to 0.886 (Table 2).

Table 2. Factors and the associated sustainability activities for each of them.

Components	Loadings	Eigen-values	Variance explained	Conbach Alpha
<i>Active sustainability</i>				
Asking businesses about their sustainability practices	.780	3.133	22.379	.825
Participating activities enhancing the state of the environment	.758			
Give financial contribution to protect the environment	.745			
Give my contribution to social initiatives	.670			
Actively finding out sustainable measures undertaken in the business	.670			
<i>Sustainable services</i>				
Use services of businesses that are socially responsible	.817	2.306	16.468	.853
Use services of businesses that are supporting local economy	.793			
Use services of businesses that consider environment in their activities	.744			
<i>Passive sustainability</i>				
Waste recycling (at the destination/business visited)	.782	2.130	15.211	.687
Consider the environment when I'm in nature	.682			
Use environmentally friendly products	.611			
Save water and energy (e.g. in shower)	.608			
<i>Locality</i>				
Buying local products	.876	1.858	13.272	.886
Using locally produced food	.869			

The components and their activities are displayed in Table 2. The first component was named *Active sustainability*, referring to active participation in activities that are done especially for sustainability. The second component was named as *Sustainable services*, referring to acting sustainably by favouring sustainable and responsible services. The third component was named as *Passive sustainability* due to these activities being necessary activities that are carried out in a sustainable way. The fourth component was named as *Locality*, because in these activities sustainability is carried out by favouring local products and locally produced food.

For the forthcoming analysis, four variables named accordingly with the components, were built using the factor scores. Factor scores were calculated by choosing the option regression included in the principal component analysis of SPSS. K-means cluster analysis was performed on the basis of four new variables in order to identify the segments of respondents with similar attitudes to take part in sustainability activities. K-means cluster analysis is one of the most popular methods of segmentation (Dolnicar, 2002).

Trials with two to five clusters were executed (see Hair, Black, Babin, & Anderson, 2010). A final cluster solution of four clusters proved to be the most meaningful based on the results of the cluster formation as well as preliminary discriminant analyses assessing the discriminating power of each item. From chosen model three discriminant functions were generated. The first function explained 35.8% (eigenvalue: 1.272), the second 33.8% (eigenvalue: 1.201) and third 30.4% of the variation (eigenvalue: 1.078). The order of discriminating power between all clusters were in descending order *Sustainable services*, *Active sustainability*, *Passive sustainability* and *Locality* according to the test of equality of group means and the standardized canonical discriminant function coefficients. The classification matrix revealed that 95.3% of all trip cases could be classified correctly. Clusters were compared using

Table 3. Distribution of means between clusters and their F-values.

	<i>Locality Enthusiast</i> N=278	<i>Sustainable Customers</i> N=319	<i>Active Participants</i> N=451	<i>Indifferent Visitors</i> N=120	F
Active sustainability	-0.377 <sup>B</sup>	-0.851	<b>0.848</b> <sup>A,B,D</sup>	-0.052 <sup>A,B</sup>	404.277*
Sustainable services	-1.154	<b>0.830</b> <sup>A,C,D</sup>	0.240 <sup>A,D</sup>	-0.436 <sup>A</sup>	469.580*
Passive sustainability	<b>0.384</b> <sup>B,D</sup>	0.109 <sup>D</sup>	0.217 <sup>D</sup>	-1.995	338.460*
Locality	<b>0.360</b> <sup>B,C,D</sup>	0.110 <sup>D</sup>	-0.091 <sup>D</sup>	-0.784	43.416*

\*p&lt;0.001

Superscript in the mean value of a cluster denotes those clusters that have significantly lower mean score

Bold denotes highest value across clusters

ANOVA. Because multiple tests were computed based on the same data sets, p-values had to be Bonferroni corrected (Boksberger & Laesser, 2009).

The cluster names were based on the characteristics of them (Table 3). *Locality enthusiasts* had the highest willingness for the activities belonging to *Locality* and *Passive sustainability*. When comparing to the other clusters, *Locality enthusiasts* were clearly less ready to participate in the activities of *Sustainable services* and less eager to take part in the activities belonging to *Active sustainability*. An explanation for *Locality enthusiasts* could be that additional trouble is more related to the activities of *Active sustainability* than to the activities of *Passive sustainability* and *Locality*. Why they were less willing than average regarding the activities belonging to *Sustainable services* could be that these respondents are less interested in spending money on services, sustainable or not.

The respondents of the cluster *Sustainable customers* had the highest willingness regarding the activities belonging to *Sustainable services* and their eagerness regarding the activities of *Passive sustainability* and *Locality* was somewhat higher than average. An explanation for the cluster *Sustainable customers* could be that perhaps these respondents are generally more interested in spending money on services. They have general interest in sustainability activities, but their willingness regarding such activities is less than average when it comes to the extra trouble.

The largest cluster was *Active participants* with 39% of all the respondents belonging to this group. The respondents of this cluster were more interested in the activities of *Active sustainability* compared to the respondents of the other clusters. The average factor scores of *Active participants* for the activities of *Sustainable services* and *Passive sustainability* was also above average. When comparing to the other clusters, the respondents of *Active participants* are more active and ready to go through additional trouble to act sustainably. Although their willingness regarding the activities of *Locality* is slightly less than average, it is not very much below the high average of all respondents.

The respondents of the cluster *Indifferent visitors* have less than average readiness regarding all of the four factors. The respondents of *Indifferent visitors* comprise of respondents whose attitudes towards the different sustainability activities are less than in average. The only factor of the cluster *Indifferent visitors* for which the ave-



rage was not far from all respondents was *Active sustainability*, for which the average of all respondents is the least willing.

A profile of segments with similar attitudes to take part in sustainability activities is presented in Table 4. A cross tabulation with the chi square statistic ( $\chi^2$ ) was used to determine whether the variables are statistically independent or if they are associated. A p-value less than 0.001 means, that the particular variable has statistically significant differences between the clusters.

The age groups do not have significant differences among clusters while gender is almost significant ( $p = 0.046$ ). It seems that males are categorized in *Indifferent visitors* more often than females. The respondents with a university degree (bachelor's or master's) are categorized in *Indifferent visitors* less often than average ( $p = 0.017$ ). The difference between the countries was statistically significant ( $p < 0.01$ ). *Locality enthusiasts* consisted relatively more of the respondents of the Italian survey and respondents of the UK the least. *Sustainable customers* was characterized by having relatively more respondents of the German, UK and Finnish survey. The respondents of the Spanish survey were categorized in *Active participants* more often than the respondents of the other countries. *Indifferent visitors* had relatively more respondents of the German and Slovakian surveys, and relatively less respondents of the Spanish and Finnish surveys. The majority of the respondents were domestic visitors in each country.

Table 4. Proportion of respondents for each demographic attribute in each cluster. The sum within each cluster is 100% for each variable.

	Locality enthusiasts		Sustainable customers		Active participants		Indifferent visitors		Total	Total
	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)
Gender	$\chi^2=7.985$		$p=.046$							
Male	128	46.7%	139	44.0%	200	45.0%	69	58.5%	536	46.5%
Female	146	53.3%	177	56.0%	244	55.0%	49	41.5%	616	53.5%
Age	$\chi^2=13.857$		$p=.128$							
-25	22	8.4%	29	10.0%	46	11.7%	13	14.3%	110	10.6%
26-40	109	41.4%	127	43.8%	173	44.1%	47	51.6%	456	44.0%
41-55	92	35.0%	91	31.4%	135	34.4%	20	22.0%	338	32.6%
56-	40	15.2%	43	14.8%	38	9.7%	11	12.1%	132	12.7%
Education	$\chi^2=20.183$		$p=.017$							
Elementary/Voc	44	16.2%	70	22.3%	96	22.3%	24	21.2%	234	20.7%
College	64	23.5%	57	18.2%	103	24.0%	39	34.5%	263	23.3%
Bachelor	96	35.3%	99	31.5%	137	31.9%	28	24.8%	360	31.9%
Master's (or higher)	68	25.0%	88	28.0%	94	21.9%	22	19.5%	272	24.1%
Origin of tourist	$\chi^2=22.665$		$p=.000$							
Foreign	29	10.6%	13	4.1%	15	3.4%	13	11.1%	70	6.1%
Domestic	245	89.4%	303	95.9%	428	96.6%	104	88.9%	1080	93.9%
Country	$\chi^2=158.179$		$p=.000$							
Spain	43	15.5%	26	8.2%	135	29.9%	11	9.2%	215	18.4%
Italy	64	23.0%	59	18.5%	43	9.5%	18	15.0%	184	15.8%
Germany	16	5.8%	41	12.9%	32	7.1%	15	12.5%	104	8.9%
Slovakia	52	18.7%	27	8.5%	80	17.7%	30	25.0%	189	16.2%
Latvia	60	21.6%	70	21.9%	101	22.4%	33	27.5%	264	22.6%
UK	5	1.8%	27	8.5%	21	4.7%	8	6.7%	61	5.2%
Finland	38	13.7%	69	21.6%	39	8.6%	5	4.2%	151	12.9%

## Conclusion

In general, the respondents were clearly willing to participate in those sustainability activities that are part of some other more or less necessary activity as waste recycling and saving water and energy. The general willingness was closer to neutral for activities which are done separately and only for sustainability.

Using principal component analysis, four components were found based on respondents' readiness to involve in sustainability activities whilst travelling. The components were Active sustainability, Sustainable services, Passive sustainability and Locality. On the basis of them, K-means cluster analysis was performed to identify the segments of respondents with similar attitudes to take part in sustainability activities. The largest of four identified clusters were Active participants with 39% of all the respondents belonging to this group. The following were Sustainable customers (27%), Locality enthusiasts 24% and Indifferent visitors (10%). The differences between the visitor types could be explained by differences in the following attributes: general interest in sustainability activities, interest in using services in general and interest in going through additional trouble for sustainability. Gender, education and nationality had some effect on how the respondents were categorized in the clusters.

The respondents' willingness to take part in the various sustainability activities is a positive signal for sustainable tourism approaches such as green certified services. However, for European-wide generalisation, a more large scale study would be needed. Also, further research on the subject would be beneficial regarding barriers and drivers for willingness to act sustainably - linking the willingness to visitors' knowledge on environmental issues and knowledge and opinions on sustainable certification programmes would help in further evaluating and increasing the added value that protected area visitors gain from sustainable tourism approaches.

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