

## CSR ANALYSIS OF LARGE HUNGARIAN ENTERPRISES<sup>1</sup>

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### **ABSTRACT**

*The main goal of our research was to analyze the biggest Hungarian enterprises' CSR activities. We chose the 100 largest companies in our country in different sectors. A criteria system was used that gave us a certain picture about Hungarian CSR activities among the biggest companies. The most popular actions included environmental protection, education and health. Transparency was regarded as the least preferred activity, only a few company used it in their CSR strategy. According to our hypothesis, the most polluting companies have the most intense CSR activities. Hungarian CSR activity still needs further development, because 30 companies out of the 100 have no visible CSR activity.*

Keywords: CSR activity, company analysis, Hungary

### **INTRODUCTION**

Nowadays, Corporate Social Responsibility (CSR) is a required activity in practice. Before this research, we previously analysed the CSR activity of SMEs within the framework of the TÁMOP-4.2.2.A-11/1/KONV-2012-0038 project. Big companies were excluded from that project, therefore, in order to be fully informed, this sector had to be analysed. Due to the shortage of financial resources and the size of the project, we analysed the websites of these companies according to certain aspects. This research provided an opportunity for comparing CSR activities of different sectors and to draw general conclusions. It can be ascertained that those sectors showed high CSR activity where customer trust is especially important (e.g. banking sector) and environmental pollution is significant.

### **MATERIAL AND METHODS**

During our research we analysed the HVG journal's top 500 company list. This list ranks Hungarian enterprises by turnover and it does not include financial institutions because turnover as a concept can not be defined in their case. Analyzing the entire list of 500 would have demanded an extensive work which would exceed our financial- and time resources. Therefore, we analysed only the websites of the first 100 corporations to examine their CSR activity. Information about "Corporate Social Responsibility", "CSR" or "Sustainability" was the most

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relevant aspect to analyse. CSR activity and its communication were analysed by our special criteria system.

### **Historical outlook**

CSR is rooted in the United States, like many other things in the world. Howard Bowen's book about "Social Responsibilities of the Businessman" was published in 1953. He said that social responsibility is an obligation for businessmen to aim a point of view, make decisions and do actions in order to satisfy society goals and values. These thoughts were underappreciated among his contemporaries, organizational researchers begin to deal more intensively with his assertions only after the 1970s (Szlávik, 2009). The need to establish such social and economic models, where the corporate sector plays a role, were intensified by ethnic and social tensions in the United States of America. Besides helpful events, there were restraining factors at the beginning of CSR. For instance, the most famous objections came from a Nobel award winning economist Milton Friedman, who had Hungarian ancestors. According to Friedman, a corporate responsibility biased against profitability would destroy the foundation of free society. In the 70s CSR meant mostly environmental questions and more and more companies drafted their "Code of Ethics". In the 80s, trust for managers weakened and the international economic crisis did not work in the favor of CSR. In 1983, Friedman developed the Stakeholder Theory whereby companies followed the effects of their activity on the stakeholders. In those days societies became aware of environmental pollution and it led to environmental awareness in CSR. In the 90s, company goals supporting charity became a new element and environmentally based management systems were established. Meanwhile, CSR has been re-evaluated: with larger numbers of conscious consumers, CSR has become a part of successful business practices.

## **RESULTS AND DISCUSSION**

### **Study GRI reports**

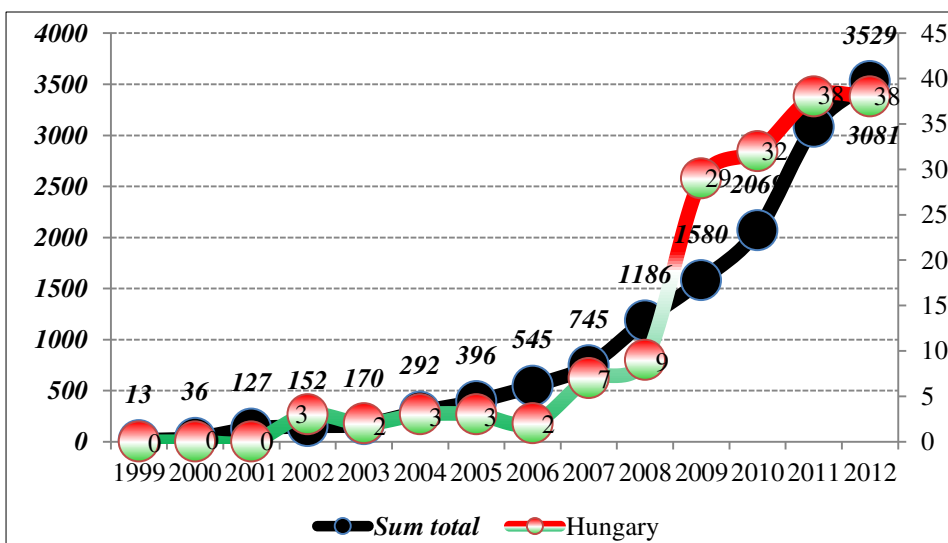
GRI (Global Reporting Initiative) is a civil organisation (non-governmental organization) includes many involved groups which was founded in 1997 in the US by CERES and UNEP (United Nation Environment Program). GRI created a comprehensive sustainable report framework used by organisations worldwide. The frameworks, including report guidelines, determine the principles and indicators about making reports on economic, environmental and social performance. The guidelines are free to the public.

The number of GRI reports is growing year by year (*Figure 1*). This fact is not only true globally, but for Hungarian companies as well. A small break was observable during the global crisis, but, according to the tendencies, more and more domestic companies participate in this initiative.

When it comes to GRI method, we can say that many sectors are involved and it is hard to translate it to Hungarian. The most important 10 sectors appear on *Figure 2*. As it can be seen, investment have the most significant role (11.5%, consumer trust), followed by the energy sector with 6.8% (environmental protection) and the food industry with 5.7% (consumer trust and environment protection).

Figure 1

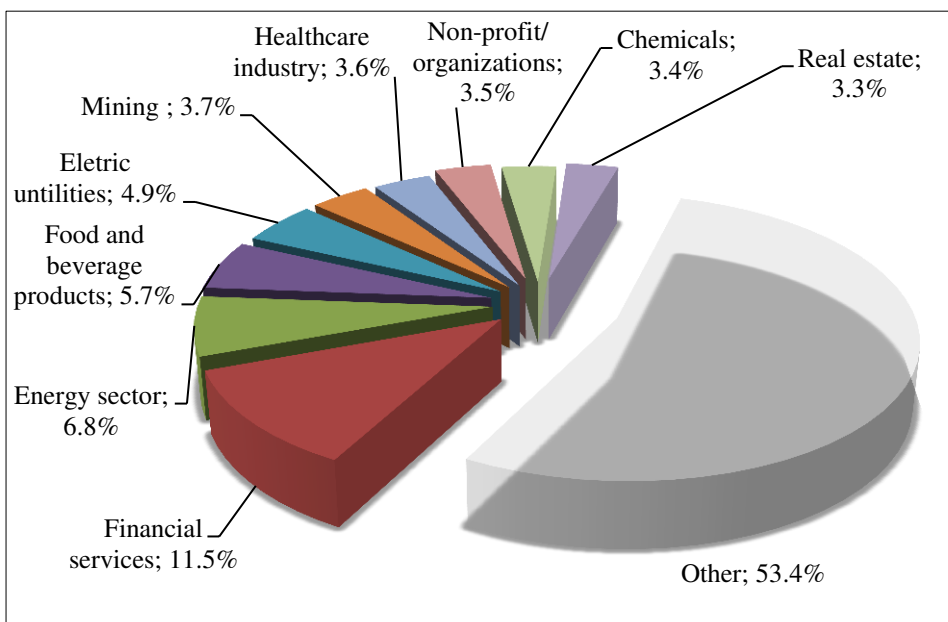
Number of GRI reports (1999-2012)



Source: *globalreporting.org*

Figure 2

Distribution of GRI reports by sector (1999-2012)



Source: *globalreporting.org*

## **Results of Companies Research**

CSR activities in Hungary was first used by multinational companies. Therefore, it is important to study the geographic division of the analysed 100 companies. Of course it cannot be terminated properly, but it is important that 58 companies or parts of company groups operate globally (or are at least active on more than one continent), 18 of them are mostly active in Europe, while 24 operate only on the Hungarian market. Many companies obviously follow their parent corporation's CSR policy, sometimes expanded with local adaptation. There were 9 companies where only the main – and rather general – CSR activity was published only in English. In these cases, the companies' CSR leave a negligent impression in the observers and it seems they are dealing with it only because it is expected.

The most visible part of CSR was the activity for external stakeholders, but of course internal stakeholders were also involved. Internal CSR activity was less intensively communicated, however, there were exceptions. 42% of the analysed companies have done internal CSR activities, but at the same time 34% believed that both external and internal CSR was important.

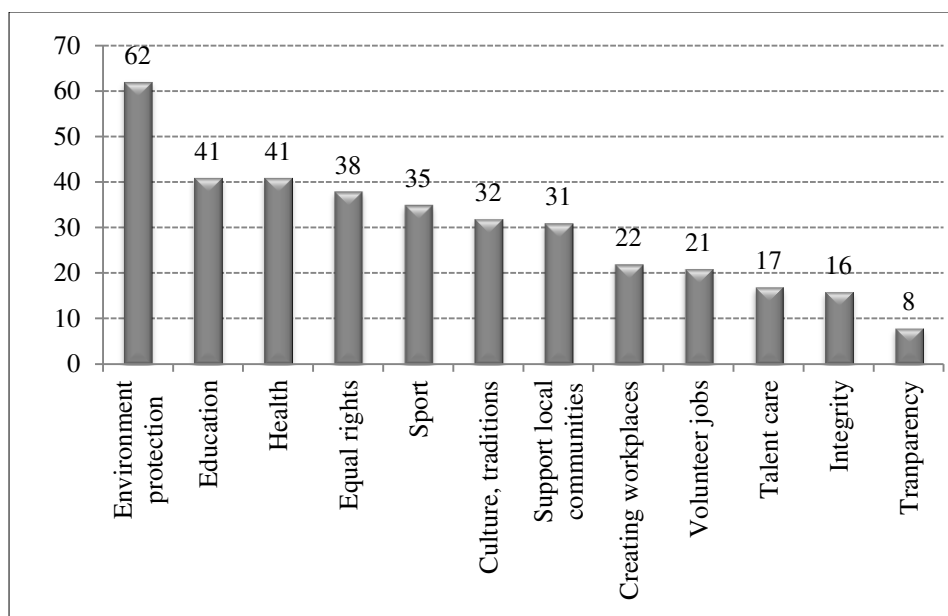
The goal of CSR communication is to document these activities among stakeholders. If the activity or chain-of-activity is effective enough, it will result a greater awareness than the average. The most outstanding result for that is an official recognition. Eighteen out of the 100 biggest domestic companies got some kind of award for their CSR activity. On the other hand, it is another opportunity when a company establishes a CSR award (e.g. for suppliers). We found 21 companies like that.

According to *Figure 3*, companies had the more CSR activities regarding environmental protection issues. It is reasonable since this problem has the highest public awareness and there is no company which is not interested – directly or indirectly – somehow in environmental protection. Similar to international tendencies, mainly those companies which pollute the environment intensively had the most spectacular CSR activities. From the biggest 100 companies TVK, MOL Zrt. and Elmü Hálózati Kft. are good examples. Questions of health (e.g. screening tests, creating healthy workplace, etc.) were also important for stakeholders, therefore this area was preferred (41%). Education had the same ratio compared to health, and equal rights ranked fourth on the list. Sport, culture and localism had the same frequency, but at the same time, transparent operation and integrity seemed to be less important.

We also analysed whether companies apply their own CSR philosophy. In our opinion, those who take CSR seriously can create their CSR strategy based on their own activity. Among the analysed companies, 51 had their own CSR philosophy. In CSR history, companies did not prefer areas connected to the activity in order to avoid corruption, suspicious trades and concentration. This philosophy was not successful, because, in case of a certain problem (like environment pollution), the company often did not have an existing connection with the relevant organizations and social groups. Learning from this, nowadays many companies prefer transparent CSR connected to their activity, and in our research it was observed at 51 companies. 32 companies make CSR reports and publish them on the Internet.

Figure 3

Field of CSR activity among companies



Source: Based on company websites

In some cases, a company joined an existing program instead of creating their own. We observed 34 cases like that. We consider the possibility of feedback important if the company has already carried out CSR activities. With this “gesture”, a certain conversation can start and that could strengthen the seriousness of some initiatives. Such cases were observed only in 16 cases, which is a rather humble number. Only 15 companies took advantage of publishing their financial reports. This low value is not surprising considering the earlier results, since *Figure 3* shows the underappreciated transparency.

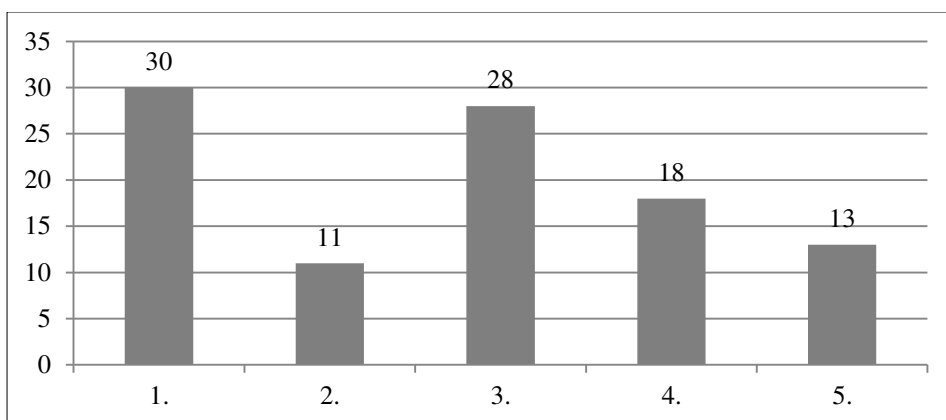
At the end of our research – allowing some subjectivity – analysed companies were evaluated based on the available information. Five groups were created as follows (*Figure 4*):

- No CSR information is available on the company’s website (1).
- Only the activity of parent corporation is available on the website, no Hungarian information is accessible (2).
- The CSR activity is available on the website, but it covers only 1-2 area(s) (3).
- The company does significant CSR activities for external and internal stakeholders as well (4).
- Most of the analysed CSR aspects were available on the website (5).

Dividing groups of 4 and 5 was difficult because drawing a concrete border-line was crucial.

Figure 4

Number of companies based on their CSR activities



Source: Based on company websites

According to *Figure 4* only 13 companies have almost a complete CSR activity and communication:

- MOL Magyar Olaj- és Gázipari Nyrt.
- Magyar Telekom Távközlési Nyrt.
- E.On Hungaria Zrt.
- E.On Energiaszolgáltató Kft.
- Tisza Vegyi Kombinát Nyrt.
- Mol Energiakereskedő Zrt.
- Philip Morris Magyarország Kft.
- MVM Paksi Atomerőmű Zrt.
- Telenor Magyarország Zrt.
- BAT Pécsi Dohánygyár Kft.
- ElműHálózati Kft.
- Mátrai Erőmű Zrt.
- Nestlé Hungária Kft.

The fifth group clearly demonstrated that tendency, and also was shown by the international comparison: mostly environment polluting sectors (e.g. energy sector) show intensive CSR activity because consumer trust is important for them (e.g. food industry).

## CONCLUSION

Based on HVG journal's 500 list, our research analysed the CSR activity of the 100 biggest companies in Hungary based on their annual revenue. It could be proved

that CSR activities had more importance and companies communicated this to the external stakeholders. The domestic tendency was harmonious with the international tendencies. Where consumer trust is important (e.g. bank sector, food industry) or environmental pollution is higher, CSR activity was more widespread. It was also observable that – departing from main trends – relatively only a few company create their own CSR ideas and image.

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## CITIZEN ASSESSMENT OF CORPORATE ENVIRONMENTAL ACTIONS IN THE SOUTH BASIN OF LAKE BALATON<sup>1</sup>

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### **ABSTRACT**

*In our research we focused on an ecologically sensitive area. We analysed the population attitudes of corporate environmental activities in the south catchment area of Lake Balaton. Our primary aim was to reveal those local population groups who are ready to be partners in CSR (and with environmental) actions regarding their consumer attitudes and purchasing decisions. The research was realised within the framework of the TÁMOP-4.2.2.A-11/1/KONV-2012-0038 project and it was based on the results of a public survey of 500 participants. Data was analysed by using multivariate statistical methods. According to our results those respondents who found the common values more important than the average showed more willingness towards environmentally friendly consumption and purchasing products from corporations with CSR activities. The “Individualists”, who prefer a specific quality of life, and the “Indifferent” group showed reluctance towards responsible consumption compared to the “Cost-oriented” group.*

Keywords: corporate environmental activities, local population groups, consumer attitudes, purchasing decisions, CSR

### **INTRODUCTION**

In our research we focused on an ecologically sensitive area, analysing the population attitudes of corporate environmental activities in the south catchment area of Lake Balaton. Our primary aim was to reveal those local population groups who are ready to become partners in Corporate Social Responsibility (and environmental) actions through their consumer attitudes and purchasing decisions. The research was realised within the framework of the TÁMOP-4.2.2.A-11/1/KONV-2012-0038 project with cooperation between Kaposvár University and the Hungarian Academy of Sciences Centre for Ecological Research. This paper is based on the results of public survey of 500 respondents.

### **LITERATURE REVIEW**

Many anthropogenic activities negatively affect the natural-ecological conditions of the catchment area of Lake Balaton. The Water and Environment Central Management published the classification of anthropogenic effects in the Sub-basin Water Management Plan of Lake Balaton. Many of these effects are connected to

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company sectors like agriculture-caused phosphorus-, nitrate-, and other emissions, industrial waste water problems, organic materials and water-extraction for fish-pond farming, industrial waste problems, industrial and agricultural water-extraction, and greenhouse gases. These factors endanger our surface water and groundwater. Tourism has a dominant role in the economy at the main Balaton holiday area and its' competitiveness determines the economic situation (Molnár, 2007). The influence of other actors on the environment of the area were analysed in different studies (Kovács, 2014; Nagy, 2014; Torma and Kovács, 2014). Therefore, the interaction between companies and the nature is specific, because economic operators in the basin depend on the state of the natural environment. (Péter et al., 2011; Buday-Sántha, 2008)

Thus, in the observed area, sustainable activities of the companies have a great importance. The current paradigm change – mainly thanks to the present economic crisis - increases the relevance of this question. For this reason, instead of biased profitability, CSR became more important (Polák-Weldon, 2012). CSR includes aims and activities regarding environment protection, maintenance and improvement (Commission of the European Communities, 2001).

According to Kotler and Lee (2007) CSR means a commitment to doing voluntary actions for the common wealth and supporting it with resources. This definition clearly states that CSR needs to be unenforceable and independent. At the same time it is not clear what motivates managers to accept this “sacrifice”.

It is our belief that within corporate culture the extension and incorporation of CSR requires much more incentive than simple concerns about future. Corporate and predictable strategic advantages are required in CSR. Accepting CSR means that we should not agree with Friedman's (1970) classic conclusions that profit maximization is the only social responsibility of corporations or with Jensen (2001) who said the same about maximizing company (and ownership) value. We agree with Mintzberg et al. (2002) that one-sided maximization of ownership value destroys and drives a wedge among society members, furthermore an egoist economy moves into inevitable collapse.

From this aspect, CSR means that we need to find the right combination between opportunistic and altruistic aspects in order to create values – even with trade-offs – for owners and stakeholders at the same time. The same principle is represented by Brugmann and Prahalad (2007). We should accept that CSR companies have to put emphasis on community and self-interest at the same time. To emphasize absolute altruism and a non-profit approach could be rather hypocritical for consumers as well. Kim and Lee (2012) analysed “stigmatized” industries (fast food restaurants or the tobacco- and beer industry) in their quantitative research regarding how the perception of motives behind CSR affects the opinion of consumers. According to their results, honest admission of individual interests leaves a much more positive impression on consumers than references about social interest in CSR. Researches about managers (Coppa and Sriramesh, 2011; Pouliopoulos, et al., 2012; Durmaz, et al., 2011) also show the „selfish” company aspects in CSR activity incentives.

In this paper we tried to find out whether consumer behaviour in the south basin of Balaton gave the opportunity for companies to take advantage of self-interested and market-oriented CSR actions.

## MATERIAL AND METHODS

During the research we used the results of a public survey of 500 participants. From this database we analysed the value preferences of the population, the attitudes about nature, the environmentally friendly consumption and the effect of purchase incentive CSR activity. Quantitative statistical methods were used for the study. Responders answered using a five-level Likert item. Factor-, cluster-, variance analysis, correlation and nonparametric comparison were also used during the research. Further methodological details will be described in the results.

## RESULTS AND DISCUSSION

Value preferences of responders were revealed with nine questions. They had to answer a five-level Likert scale about how different values are important in their everyday life. We explain the mean values of different areas according to importance. The most important value was, of course, family with the lowest standard deviation. Answers about the importance of family were rather uniform across the board (*Table 1*).

**Table 1**

### Value preferences of responders with five-level Likert item

Values	n	Mean	Std. Deviation
family	500	4.94	0.367
money	498	4.36	0.880
friends	500	4.24	0.963
free time	500	4.17	1.018
work	496	4.07	1.271
environment and nature protection	499	3.69	1.134
religion	495	2.92	1.386
local public affairs	500	2.90	1.138
politics	496	1.86	1.109

After family value, the quality of life influencing aims (money, friends, free-time, work) were the most important for responders. On the second half of the preference order environment and nature protection stood out from collective values. Environment and nature protection was definitely the most important among the community values. It was important to study how the assessment of the importance of environment and nature protection related to the assessment of other values in importance. Concerning this area, the strongest correlation – Spearman rank correlation – was with the assessment of local public affairs (Rho=0.565, p=0.01).

In the next step we analysed whether value factors could be revealed to explain the relevance-variance of more value areas. In order to determine factor values we

used main component analysis and components were rotated with varimax. Family value was excluded from the factor analysis because of the homogeneity of responses. Relevance-values were moderately useful for factor analysis (KMO=0.750, Bartlett-test  $p=0.000$ ). The number of factors was determined by the Kaiser-criteria. Factor values were defined by regression method. As *Table 2* shows, two value factors could be separable using the Kaiser-criteria. Factors explain 58.99% of the variance of preference question assessment. One factor represented the importance of individual life quality and the other factor gave information about community values. Based on the factor weight, value preference variables could be clearly classified into either of the two factors; there was no relevant overlap among the factors. This also means that the importance of individual and common interest was consistently and well separated in the respondents' judgements.

**Table 2**

**Rotated component matrix of value preference factor analysis (n=486)**

Variables	Components	
	Individual life quality importance	Community values importance
free time	.812	.147
friends	.793	.085
money	.772	.010
work	.766	.091
local public affairs	.125	.839
environment and nature protection	.297	.729
religion	-.116	.653
politics	.092	.651

In the second part of our analysis, we studied what group structure could be developed by these two factors among the respondents. To separate the groups further, more cluster analyses (Ward hierarchical, K-means, Two step) were applied. The different methods gave similar results. From these results the three-cluster K-mean method is explained below. During the cluster analysis responders were separated into three groups: Community-oriented, Individualists and Indifferent. After nine iteration *Table 3* contains cluster-means. The main characteristic for "community oriented" cluster members was that the importance of community values was above the average, while individual interest was not negligible. "Individualists" considered community values less important, while quality of life was especially important for them. Compared to the average, the "Indifferent" group believed that the individual quality of life was less important; while community values were also less significant for them.

In the following steps we present that according to each value preference cluster, differences could be seen in environment conscious behaviour. We could

find answers regarding whether environmentally-conscious behaviour appeared to concern actions based on the respondents' internal judgements. Fifteen statements were created in order to estimate the frequency of the population's simple and practical environmentally-conscious activities. Respondents used a five-level Likert scale to express how often they perform with these actions. Value "1" meant "never" while value "5" denoted "always". *Table 4* shows the average results.

**Table 3**

**Cluster means of value preference clusters**

Factors	Cluster means		
	Community oriented (n=174)	Indifferent (n=127)	Individualists (n=185)
Individual life quality importance	.31429	-1.32504	.61402
Community values importance	.98165	-.21072	-.77862

**Table 4**

**Mean of environment-conscious activities' frequency**

Statements	n	Mean	Std. dev.
I turn off the light when nobody is in the room.	499	4.67	0.662
I switch off the television when nobody is watching.	499	4.52	0.863
I try to save water during washing-up. I do not leave the water running.	499	4.26	0.958
I enjoy hiking in the nature.	500	4.14	1.120
I try to buy energy-saving household appliances and bulbs.	500	4.09	1.136
I usually have a shower instead of having a bath.	500	3.98	1.254
If I am cold, I rather wear another sweater instead of turning up the heating.	500	3.96	1.125
I recycle our household waste.	498	3.51	1.400
I completely switch off the television, video, etc. instead of using stand-by.	497	3.38	1.651
I prefer refillable containers to reduce waste.	497	3.23	1.386
I compost the organic waste of our household.	500	2.70	1.671
I do not accept the free plastic bags offered in supermarkets.	499	2.63	1.420
I choose comparable products which have an environmentally friendly trademark or label.	498	2.48	1.317
I participate in the school's/kindergarten's paper/cardboard collecting program.	500	2.06	1.451
Whenever I can. I choose bio foods instead of controlled ecological products.	499	1.92	1.176

As *Table 4* shows, responders mainly carried on “convenient” and economically interested activities in their everyday life. Higher awareness, investigation, or additional inputs were less typical in these activities.

From these statements more could be connected to conscious purchase behaviour, marked with blue colour in *Table 4*. As a result of our research, in this paper we mainly focused on these environmentally-conscious variables. According to the results of all variables of *Table 4* and the factor analysis of coloured variables, a common factor can be determined regarding environment-conscious behaviour connected to purchase situations. This common factor basically differentiates from factors explained by variance of other variables. As we focused only on environment-consciousness in purchasing situations in this study, therefore, *Table 5* shows the result of a purchase situation factor analysis (KMO=0.757, Bartlett-test  $p=0.000$ ). The results properly represent the facts mentioned above. According to the Kaiser-criteria, the analysed variables could be combined in one factor which explained 53.1% of the original variables’ variance. By increasing the number of factors to two, the explained variance fraction could be raised above 70%. However, the two factor analyses have the same results as the one factor analysis explained previously, therefore, in this study we set aside the increased factor number. Factor scores were assigned to factors using the regression method.

**Table 5**

**Factor variables and factor weight of environmentally-conscious consumption (n=494)**

<b>Factor variables of environmentally-conscious consumption</b>	<b>Factor weight</b>
I choose comparable products which have an environmentally friendly trademark or label.	.825
Whenever I can, I choose bio food originated from controlled ecological producers.	.748
I prefer to choose refillable packages to reduce waste.	.741
I do not accept the free plastic bags offered in supermarkets.	.692
I try to buy energy-saving household appliances and bulbs.	.654

For companies, purchase-motivation is another exciting attitude besides environmentally-conscious purchases. We asked the respondents to evaluate companies regarding to what degree (1=“not at all”, 5=“extremely”) their social activity inspired them to purchase products or services.

The main conclusion of *Table 6* is that CSR gave no extra motivation to purchase a product/service from a company for most of the respondents. Local residents mostly do not want to “refund” the extra inputs received with their purchase that are used for community goals. None of the activities reached the average value of 3.00. Local community development and environmental consciousness were at the “top” of the average list. Therefore, mostly these kinds of social activities could mean a market advantage – to a limited extent – for local residents.

A strong correlation was observed per pair between some purchase-motivation variables (in some cases Spearman Rho was between 0.642 and 0.906,  $p=0.01$ ). Therefore, variables could be combined into one factor with a main component method which explained 80.27% of the variables' total variance. From here on, we will call this the purchase-motivation factor (KMO=0.929, Bartlett-test  $p=0.000$ ).

**Table 6**

**Purchase-motivation effects of some CSR activities among local residents**

Social activities by companies	The answers'...			
	mean	std. dev.	median	mode
Improve local public areas (n=472)	2.53	1.396	3.00	1
Environmental consciousness (n=471)	2.53	1.432	3.00	1
Support educational establishments (n=472)	2.36	1.138	2.00	1
Support foundations, charity (n=472)	2.25	1.319	2.00	1
Communication of social problems(n=470)	2.24	1.298	2.00	1
Support cultural institutions, events (n=473)	2.21	1.248	2.00	1
Support sport clubs, sport events (n=472)	1.88	1.156	1.00	1

There were two factors which declared the responders' attitude to sustainability where the companies were involved. The "sustainability conscious consumption" factor mainly declared *generally* how environmental consciousness appeared in their consumption decisions. "Purchase-motivation" factor rather showed how often they demanded products from a *certain company* that perform some CSR activity. Obviously, there was an overlap between the two factors; however, they did not contain the same variables. Between these two factors there was a significant ( $p=0.01$ ), but weak ( $r=0.162$ ) correlation. A distinction must be made between the explanatory power of these two factors. The environmentally conscious consumption factor used during the factor analysis explained 53% of the used variables' variances. Meanwhile, the purchase motivation factor explained more than 80% of the original variables' variance.

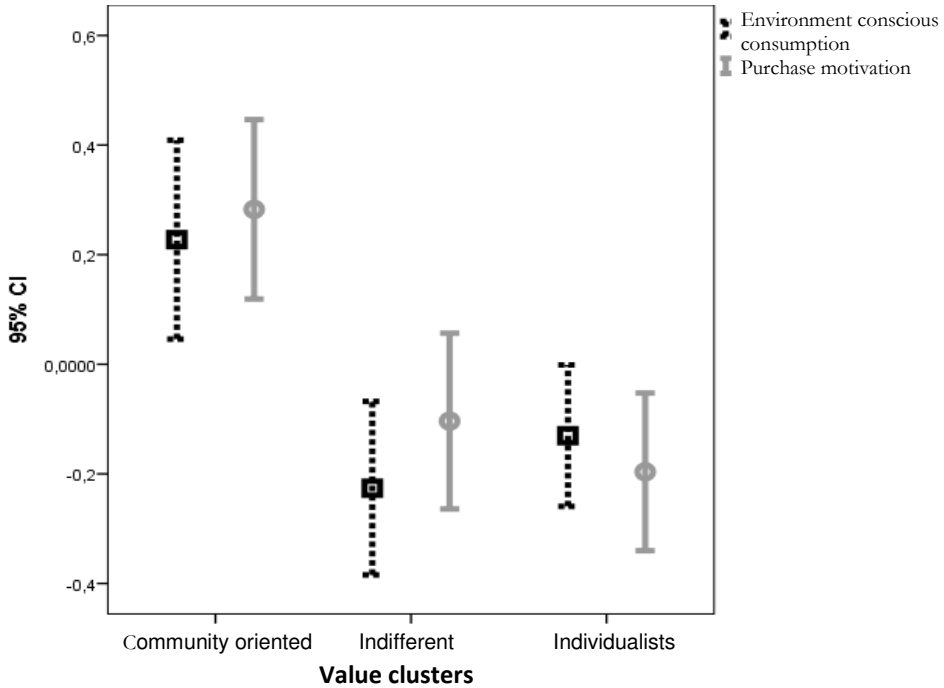
We are aware of the fact that the mentioned variables (that determined factors) did not get high value from respondents. In the followings, we demonstrate whether differences can be traceable among different value cluster members ("community oriented", "indifferent", "individualists"). Therefore, the factor means of clusters and 95% confidence intervals were analysed first, as *Figure 1* shows.

According to *Figure 1*, it is obvious that community-oriented groups stood out from the three clusters concerning environment conscious consumption and purchase motivation. Further on, variance-analysis was used to analyse whether

mean differences were significant and to find out where significant differences exist between clusters.

**Figure 1**

**Factor means and confidence intervals of value clusters**



In case of the analysed dependent (factor) variable, a variance analysis had two conditions: normal distribution and variance homogeneity could not be proved. Apart from that – referring to F-probe robustness – results of variance analysis were demonstrated in our study. At the same time, in this case, non-parametric and comparative methods (Mann-Whitney test, K-S test) – similar function with F-probe – confirmed the result of variance analysis.

According to the results of variance analysis, significant differences were observed among cluster means concerning environmentally conscious consumption ( $F=9.236$ ,  $p=0.000$ ) and purchase motivation ( $F=11.126$ ,  $p=0.034$ ). The “place” of difference was identified with Tamhane T2 post-hoc probe. Apparently, factor means of community oriented cluster significantly differed from factor means of the indifferent and individualists. Neither factor variable significantly differed between the group of indifferent and individualist. *Table 7* summarizes the numerical results of post-hoc tests.

These analyses confirmed that purchase motivation regarding companies’ environmentally conscious consumption and CSR activity was above average

among community oriented individuals. From this aspect, the individualist and indifferent cluster could not be differentiated. Preferring individual life quality above the average did not indicate additional motivation to prefer environmentally friendly products and companies who perform CSR activities.

**Table 7**

**Post-hoc test (Tamhane T2) results of analysed factor variables by value clusters**

Dependent variable	Independent variable (I)	Independent variable (J)	p (sign.)	Difference of means 95% CI	
				Lower Bound	Upper Bound
<b>Environment conscious consumption (n=480)</b>	community oriented	indifferent	.001	.161	.732
		individualists	.003	.103	.627
	indifferent	individualists	.816	-.327	.165
<b>CSR purchase motivation (n=461)</b>	community oriented	indifferent	.002	.113	.667
		individualists	.000	.216	.743
	indifferent	individualists	.795	-.171	.350

According to our results we demonstrated that mostly environmentally oriented residents were open to environmentally conscious consumption and CSR activity-based purchase. In the followings, we introduce how this group was different from the other two clusters regarding other features. During the comparison, we concentrated the two groups into one group (“individualists” and “indifferent”), because we experienced that these two groups had the same attitude towards our questions.

Demographic background variables (sex, age, family status, financial status) had no important effect on community orientation. The only verified statistical effect was the education level, but the degree was negligible. No difference was experienced among the groups regarding settlement satisfaction.

In the second step, we analysed whether the community oriented cluster members differed from the other two groups with regard to attitudes and mentality for internal, environment, sustainability and nature conservation that had not been analysed yet. Fifteen questions (“how much do you agree” type questions) were asked about sustainability and human-nature relationship attitudes. Similarly as before, 13 questions were concentrated in factor with the same methodology. Four factors were differentiated based on the Kaiser-criteria, which explained the 63.85% of the 13 variables’ variance. *Table 8* shows the relationship between factors and the original variables.

The “Ecosensitivity” factor shows concerns about the balance of nature and the damaging effects of human activity. “Technological optimism” shows trust regarding human knowledge and the inventiveness which enables mankind to



control natural processes. The “resource optimism” factor shows trust in the unexplored reserves of the Earth. We called the last factor “Problem denial” to express the belief that humans can intervene “unpunished” in the natural processes in order to satisfy their needs.

**Table 8**

**Rotated component matrix of environmental attitude factors**

<b>Variables</b>	<b>Eco-sensitivity</b>	<b>Techno-logical optimism</b>	<b>Resource optimism</b>	<b>Problem denial</b>
Nature is sensitive and can be easily unbalanced.	.779	-.095	.177	-.093
If Humanity disturbs nature, it often causes catastrophic consequences.	.764	-.043	.188	-.049
If things keep going this way, we will face a huge ecological catastrophe.	.694	-.025	.014	-.206
Mankind simply treats nature badly.	.689	-.317	-.055	.087
Plants and animals have the same rights to exist as humans.	.608	-.079	.288	-.218
Mankind is inventive enough to stop the destruction of the Earth.	-.003	.822	-.105	-.168
The natural balance is strong enough to handle the effects of modern industrial societies.	-.233	.687	.304	.213
Mankind will learn enough from nature to successfully control it.	-.199	.680	.399	.140
Humanity is entitled to have domination over nature.	-.183	.637	-.134	.522
The increase in population will slowly reach the limits of Earth.	.143	.028	.751	.068
The Earth has lots of natural resources if we learn to use it.	.262	.079	.713	-.102
The so called “economic crisis” mankind is facing is considerably exaggerated.	-.196	-.012	.083	.817
Human have the right to change nature for their needs.	-.037	.573	-.143	.607

In case of three factors out of the four, there was no significant difference between “community oriented” and the concentrated group (when  $p < 0.05$ ). Ecosensitivity showed different results: “community oriented” factor mean was 0.18 ( $n=165$ ,  $std=0.935$ ), while the cumulated average of the other two groups was -0.066 ( $n=280$ ,  $std=1.01$ ). The standard deviation was significant when  $p=0.011$  ( $F=6.49$ ). The factor was not a normal distribution; therefore, the deviation of factor values between the two groups was tested with a Mann-Whitney rank probe. In this case, significance level was on  $p=0.013$ . With less strict significance level, differences could be observed about “Problem denial”: “Problem denial” factor mean among “Community oriented” was -0.120 ( $n=165$ ,  $std=1.000$ ), while among other responders it was 0.067 ( $n=280$ ,  $std=1.005$ ). According to the variance analyses the significance of mean differences was  $p=0.059$  ( $F=3.582$ ), while based on a Mann-Whitney rank probe, the differences of factor values was significant when  $p=0.086$ . The difference of the rest of the two factor values’ (“Technological optimism” and “Resource optimism”) significance level was much higher (either using std. or rank probe).

## CONCLUSION

Based on our results – and in our opinion – a more important message can be learnt for participants of the economy and especially for company sector. This survey showed that environmentally conscious consumption and CSR activity-based purchasing was not typical among respondents. From the aspect of companies we can say that CSR – and environment responsibility, too – was not recognised in the south catchment area of Lake Balaton in the purchases of local residents.

Respondents who considered community values more important than the average had higher willingness for environmentally conscious consumption and purchase of products from companies with CSR activity. Community development and community value sensitivity increased the precondition to increase environmentally conscious consumption. We have seen that it was about “high level” community values which were above the values of individual life quality and utility.

To incite sustainable and environmentally conscious consumption, individual value emphases have weaker results than community level interests. To maintain the CSR activities for long term results instead of simply targeting individual customers, communities should rather be involved as partners to improve social-environmental problem solving. This would have direct results. Individual values and utility – which are favoured by economics and management and business administration – have less importance as an incentive factor in company and resident collaboration. The formation of – social and environmental – sustainable production-consumption alliances requires strong identity and active community. They are not maximizing their individual utility/yield, but their “right/correct” accepted values instead.

Special features of respondents in “community oriented” group could not be determined by easy identifiable demographic data. Members of the community

oriented cluster rather differed in attitudes about nature and human relationships compared to the other two clusters. From these attitudes mostly ecosensitivity could be distinguished. The main feature of community oriented residents was that they were afraid of tragic and catastrophic consequences about human intervention in nature compared to other respondents. Problem denial was also not typical for these cluster members, but at the same time, their trust in human knowledge, technology and resource reserves on Earth was similar to other responders. Therefore, the cluster members could be partners in CSR actions – that gave concrete answers to environment issues – based on their concerns about nature.

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## SATISFACTION AND RESPONSIBILITY THE ATTITUDE OF HOLIDAY COTTAGE OWNERS TOWARDS THE ENVIRONMENT

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### **ABSTRACT**

*The influence of human activities and the resulting social conflicts are widely studied in social science. In the recent study, the authors examine this issue from the aspect of holiday cottage owners on the Southern catchment area of Lake Balaton<sup>1</sup>. The questionnaire used in the research assessed the attitude and partaking of holiday cottage owners towards the environment and their experiences in various related conflicts within the society on the Southern catchment area of Lake Balaton. It was found that the respondents have various forms of behaviour regarding the protection of environment; they think about their local or global environmental problems differently and blame different stakeholders, including themselves, and clear patterns of this can be detected at the settlement level, too. All the above mentioned issues go beyond and call attention to the potential conflict situation between settlements living from tourism at the southern watershed of Lake Balaton in aspects of both the future development priorities and – as an effect of the afore mentioned – the status of the local natural and built environment.*

**Keywords:** tourism, Balaton, social conflicts, environment

### **INTRODUCTION**

The influence of human activities and the resulting social conflicts are a widely studied area in social science and have always been in the focus of policy making, both in Europe and world-wide. Without going into detail, regarding the wide literature, the author acknowledges that there is a robust and intensive research background; the priorities are linked by climate change, energy sources, biodiversity and greenhouse gas emission (FAO, 2008; OECD, 2001; 2008; 2010). The recent study looks for the relationship between the attitude and behaviour of local stakeholders situated in an environmentally sensitive area of Hungary, in the South-Transdanubian region. Lake Balaton and its environment went through a fundamental development in the last one and a half centuries due to the recognised demands for ‘tourism’ (Kovács, 2007). The theme is more recent in the aspect of the Balaton Development Strategy (Office for National Economic Planning, 2014), having been designated an area of outstanding landscape value.

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<sup>1</sup>The project was supported by the EU (IÁMOP-4.2.2.A-11/1/KONV-2012-0038 id. ‘Complex analysis of effects of anthropogenic activities and the relating social conflicts on the example of an ecologically sensitive region of shallow lake (Lake Balaton and its water shed)’

The author focused on the answers on questions which were parallel with the questionnaire used for assessing other actors involved in the whole of the survey (Csonka *et al.*, 2013; Horváthné and Nagy, 2013). In the course of the analysis of the answers, the attitudes influencing the human activities for environmental protection, the satisfaction with the environment and the views of cottage owners regarding responsibility were examined. The further analysis will aim to reveal the factors behind the behaviour and attitude of the actors of the so-called “space of environmental conflict” in order to investigate the relationship of it with the status of the environment.

## **MATERIAL AND METHODS**

In the course of the research, a randomised questionnaire survey was conducted by interviewers in June 2013 with 250 owners of holiday cottages in the following settlements: Balatonvilágos, Zamárdi, Balatonföldvár, Balatonkeresztúr, Balatonmárfürdő, Fonyód, Siófok, Balatonfenyves, Balatonszemes, Balatonszárszó, Balatonberény, Balatonboglár, Balatonlelle, and Szántód. The survey was randomised on a predefined quota of the population of the settlements on the banks of the lake. The database of the answers was analysed for extreme values and missing values, afterwards it was processed with SPSS.20.

Hierarchical cluster analysis (squared Euclidean distance) was used in order to create homogenous groups of the respondents from the aspect of their environmental attitudes. Relationships were looked for between the respondents' a) motivations and attitudes, and, b) the satisfaction and views on the responsibility of various institutions. ANOVA was used to test (F-test) and measure (eta) the influence of the attitudes of different clusters on the answers given regarding satisfaction and responsibility questions.

The Likert-scale was applied in the questionnaire survey to assess the degree of agreement of respondents from 1 (least) to 5 (most). Cross-table analysis (chi-square test, Cramer value) was used to reveal the association for the influence of settlement or attitude on the degree of agreement with certain statements.

In order to study the factors determining the various activities of individuals for the protection of the environment, factor-analysis was also conducted (Main Component analysis, Varimax method) to analyse the satisfaction with environment.

## **RESULTS AND DISCUSSION**

### **Activity of individuals for the protection of the environment**

This block of statements analysed the degree of agreement of respondents with various activities in the field of environmental protection by individuals.

Factor analysis (main component analysis) – a method suitable for ranked data – was used to define the determinant factors behind the answers (*Table 1*). The Eigenvalue of the first three factors was higher than 1; the total variance explained by the three of them is higher than 60%, which is acceptable in social surveys (*Figure 1*).

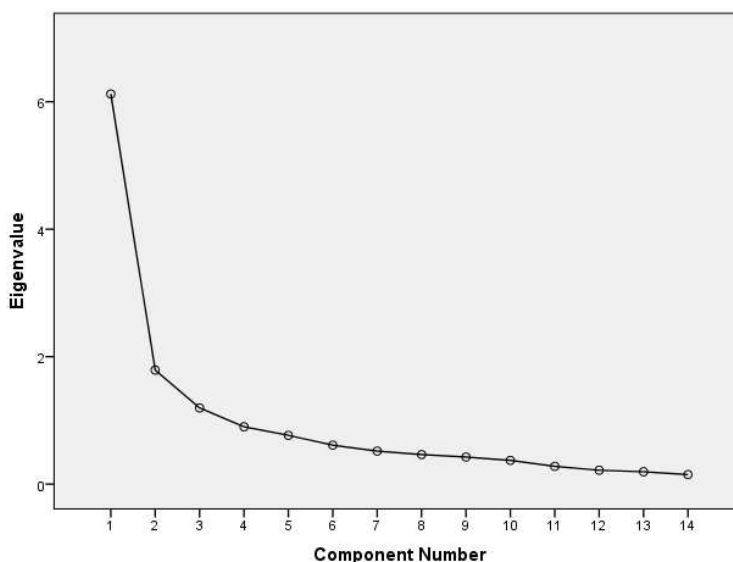
**Table 1**

**Criteria of Main Component analysis of individual motivations and the Total Variance Explained**

<b>KMO and Bartlett's Test</b>			
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.862	
Bartlett's Test of Sphericity	Approx. Chi-Square	1927.307	
	df	91.000	
	Sig.	0.000	
<b>Component</b>	<b>Rotation Sums of Squared Loadings</b>		
	Total	% of Variance	Cumulative %
1	3.729	26.638	26.638
2	2.814	20.104	46.741
3	2.564	18.312	65.054

**Figure 1**

**Eigen-values of the main components in the analysis of individual motivators**



According to the explanatory power within the components, the *answers 1, 2, 4, 5, 11* belonged to one factor, *answers 6, 7, 8, 9, 10* to another, while *answers 3, 12, 13, 14* to the third one (Table 2).

These factors were the motivators of the individuals' typical activities in environmental protection.

**Table 2**

**Components and factor matrix of individual motivators**

Answers	Component		
	1	2	3
1. Whenever I can, I buy organically certified food products.	.140	<b>.852</b>	.127
2. Among the products of similar functions I choose the one with eco-labels.	.244	<b>.847</b>	.031
3. I take care of purchasing energy saving electronic equipment, bulbs.	.340	.152	<b>.713</b>
4. I rather choose re-fill products to decrease waste.	<b>.437</b>	<b>.489</b>	<b>.391</b>
5. I do not accept free nylon bags offered at stores.	.000	<b>.744</b>	.194
6. I try to save water and do not use running water for dish-washing.	<b>.705</b>	.202	.321
7. I prefer showering to bathing.	<b>.747</b>	.199	.404
8. I rather put on extra clothes instead of putting heating on.	<b>.670</b>	.140	.425
9. I turn off the TV if nobody is watching it.	<b>.870</b>	.121	.014
10. I turn off the light if nobody is in the room.	<b>.903</b>	.102	.072
11. Instead of using the stand-by function, I turn off the TV, radio.	.170	.566	.358
12. I like hiking in the nature.	.289	.232	<b>.520</b>
13. I recycle my household waste.	.387	.215	<b>.649</b>
14. I compost the organic my household waste.	-.054	.110	<b>.759</b>

Basically, the motivators for individual activities in environmental protection have three directions: *a) thrift, b) conscious choice, c) activism.*

The hypothesis that the respondents can be grouped according to their motivations was analysed with hierarchical cluster analyses. Four clusters were defined (the motivators of these people differ from each other's at  $p < 1\%$ ); these are called 'Environmental Attitude' Clusters. *Figure 2* indicates the difference of the pattern of the three motivators in the clusters, where the reference line (at 0.00) showed no difference from mean; plus values reflect a higher role of the motivator than the average, and negative values could be interpreted as less determinant motivators for the given cluster.

According to the revealed pattern, the 'Environmental Attitude' clusters can be described with their motivators as follows:

*Cluster 1:* Economic reasons dominate as motivators for the individuals' activities in environmental protection; these people are rather active, but without consciousness in choices. *'Thrift and active environmental protectors'*

*Cluster 2:* These respondents consider environmental issues, they are motivated and more committed than the members other clusters. *'Conscious in their choice and active environmental protectors'*

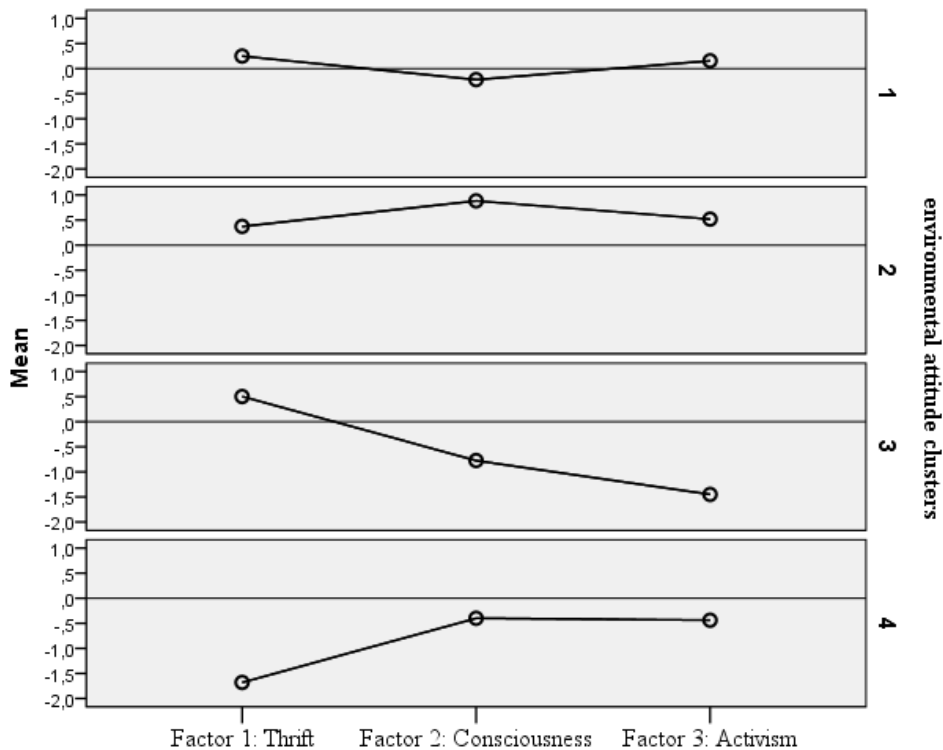


Cluster 3: There is a neutral behaviour towards choice, but reasonability is noticeable. Nevertheless activism is rare among them, which can be explained by both living conditions and family status. ‘Thrift only’

Cluster 4: Comprises the group of people “absolutely not-caring”. ‘Not-caring’

Figure 2

The pattern of evidence of individual motivators in the clusters of holiday cottage owners



### Satisfaction with elements of environment

An individual’s satisfaction with their environment can be explained relative to their motivation, not only for individual activities but also regarding pressing factors various actors think to be responsible for environment-related development of the settlement where they live.

Five components were defined as the factors of satisfaction (Table 3) with the status of the environment (either natural or built).

According to the factor matrix, the following factors can be differentiated as crucial to satisfaction with environmental elements:

Factor 1: Elements related to public institutions

Factor 2: Public cleanliness and transportation

Factor 3: Natural environment and water

Factor 4: Waste management, pollution

Factor 5: Elements related only to certain settlements

**Table 3**

**Rotated Component Matrix for Main Component analysis of satisfaction with various environmental elements**

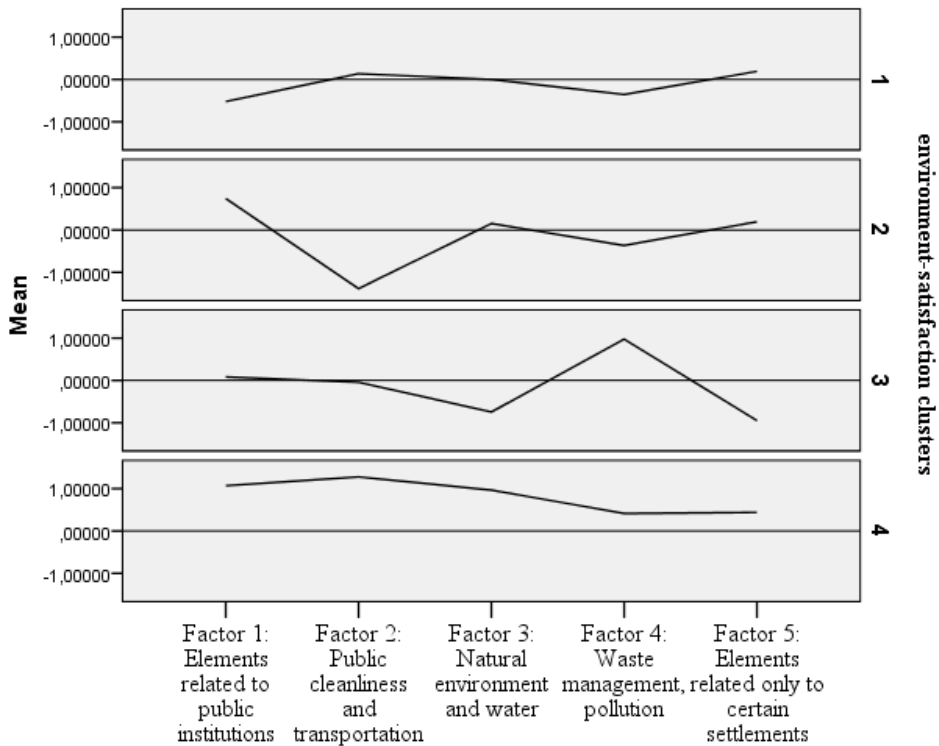
	Component				
	1	2	3	4	5
D.3.a. 1. Quality of air	.666	.013	-.065	.445	-.042
D.3.a. 2. Noise	.748	.229	.018	.218	-.123
D.3.a. 3. Waste transport	.655	.173	.095	-.027	.295
D.3.a. 4. Illegal waste disposal	.574	.475	.159	-.153	.203
D.3.a. 5. Weeds causing allergy	.290	.745	.140	-.022	.280
D.3.a. 6. Untidiness of sites (neglected areas)	.239	.806	.051	.190	.104
D.3.a. 7. Storm water management on streets, roads, other sites	.447	.397	.046	.178	.288
D.3.a. 8. Animal keeping	.648	.340	-.083	.196	.063
D.3.a. 9. Maintenance of buildings, appearance	.132	.771	-.023	.298	.076
D.3.a. 10. Natural values, landscape	.463	.256	.108	.563	-.014
D.3.a. 11. Drainage for inland waters of outskirts	.572	.205	.090	.291	.345
D.3.a. 12. Quality of waste water treatment	.313	.264	-.028	.392	.372
D.3.a. 13. Quality of running water supply	.207	.204	.068	.437	.416
D.3.a. 14. Condition of pavements, streets	.322	.542	.181	.216	.022
D.3.a. 15. Bicycling facilities	.385	.169	.394	.266	.316
D.3.a. 16. Education in environment	.523	.160	.424	.222	.211
D.3.a. 17. Attitude of inhabitants towards environment	.572	.248	.187	.436	.056
D.3.a. 18. Facilities of selective waste collection	.257	.131	.117	.201	.574
D.3.a. 19. Public cleanliness	.453	.260	.283	.144	.450
D.3.a. 20. Mosquito control	-.110	.100	.195	.044	.821
D.3.a. 21. Local and interurban public transportation	.130	.447	.281	.292	.184
D.3.a. 22. Facilities on beach	.244	.221	-.044	.708	.054
D.3.a. 23. Water quality of Balaton	.021	-.001	.033	.752	.220
D.3.a. 24. Low water level of Balaton	.160	.197	.047	.739	.084
D.3.a. 25. Fuel or ammunition, explosive reserves of earlier or still existing army bases	.004	.067	.930	.081	.094
D.3.a. 26. Brown fields of earlier industrial or agricultural facilities	.076	.071	.954	-.026	.096
D.3.a. 27. Waste disposal without soil protection	.048	.095	.948	-.048	.133

The regression coefficients of individual observations with the factors gave different patterns of satisfaction factors, which was the basis of the cluster analysis.

The results of this hierarchical cluster analysis were called the ‘Satisfaction Clusters’ of the respondents. The members of ‘satisfaction clusters’ were satisfied or dissatisfied with the factors in different patterns, which is shown by *Figure 3*.

**Figure 3**

**The mean explanatory power of factors in the ‘satisfaction-clusters’**



Members of Cluster 4 were more satisfied with all factors, with the exception of waste management/pollution. Respondents belonging to Cluster 3 were more satisfied with waste management/pollution than the others, but less so with natural environment and water. The people in Cluster 2 were most critical regarding public cleanliness and transportation and more satisfied with factors related to institutions. The Cluster 1 members were not typically more or less satisfied than the average level.

**Satisfaction clusters** were named according to their characteristics as follows:

*Cluster 1:* Average

*Cluster 2:* Critical to cleanliness and transportation

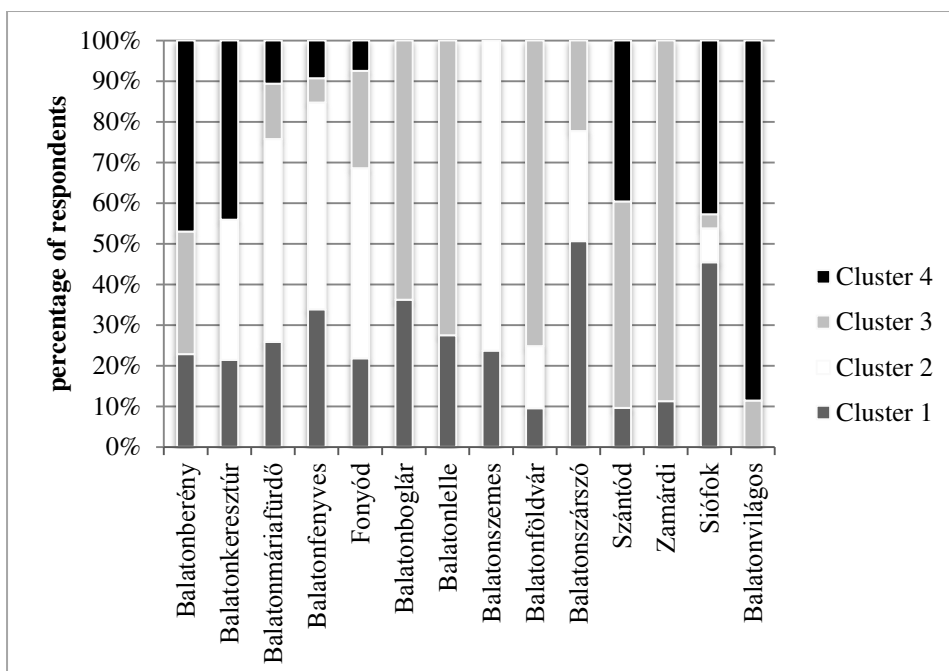
*Cluster 3:* Critical to natural environmental status

*Cluster 4:* Critical to waste and pollution load

The question was whether the opinion of respondents from various settlements was different from the aspect of their satisfaction factors (*Figure 4*).

Figure 4

Distribution of respondents of “satisfaction-clusters” by settlements, n=250



There is an uneven regional distribution of the ‘satisfaction clusters’: The people belonging to Cluster 1 were situated mostly in Siófok and also had a quite fair share (5-10%) in Balatonfenyves, Balatonszárszó, Balatonmárfürdő and Fonyód; Cluster 2 was dominant (critical to cleanliness and transportation) in Balatonmárfürdő, Balatonfenyves, Fonyód and Balatonszemes. The members of Cluster 3 (positive in waste management/pollution; negative in natural environment and water) were situated mainly in Zamárdi, Balatonlelle and Balatonföldvár, Balatonboglár, but could be found in significant share in Balatonszárszó and Fonyód; while Cluster 4 (mainly satisfied with everything) constituted holiday cottage owners of Balatonvilágos, Balatonberény, Balatonkeresztúr and Siófok.

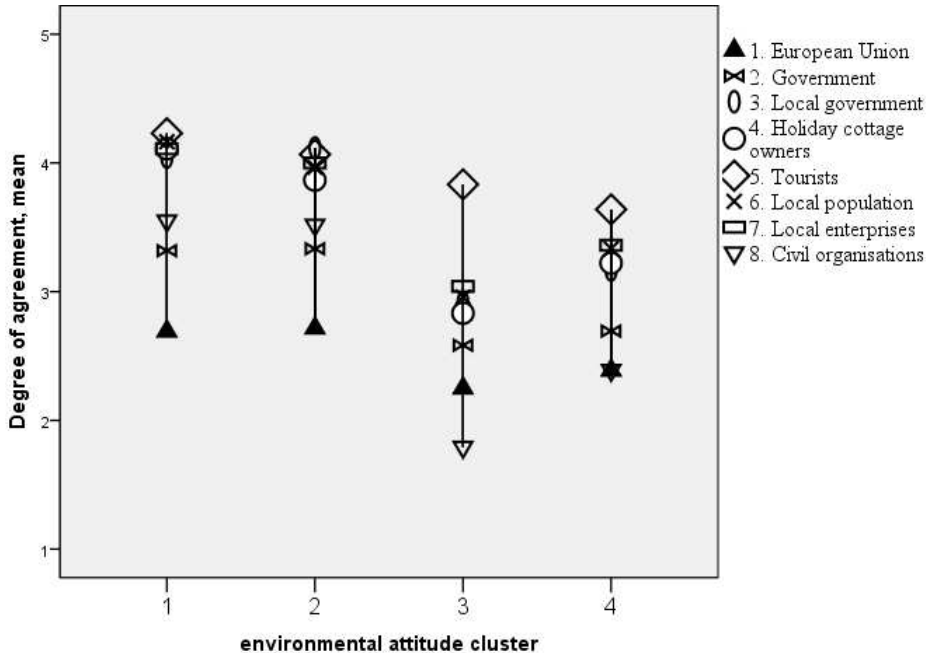
There was a clear difference in the opinion of holiday cottage owners of different settlements regarding the elements of satisfaction with environment, which indicates a potential incoherence or conflict area between the enterprises living from tourism on the southern coastal settlements of Lake Balaton.

#### The relationship between membership in environmental attitude clusters and the opinion of responsibility of various actors for environmental problems

The hypothesis was that the respondents’ environmental attitude influenced how they think about the responsibility of various stakeholders. *Figure 5* also points to a potential relationship.

Figure 5

Relationship between ‘Environmental attitude’ and opinion on the responsibility for environmental problems; n=250



Only the opinion regarding the responsibility of the EU was even (ANOVA,  $p=0.282$ ). The analysis proved that attitudes towards the environment influenced how different respondents think about responsibility ( $p<1\%$ ).

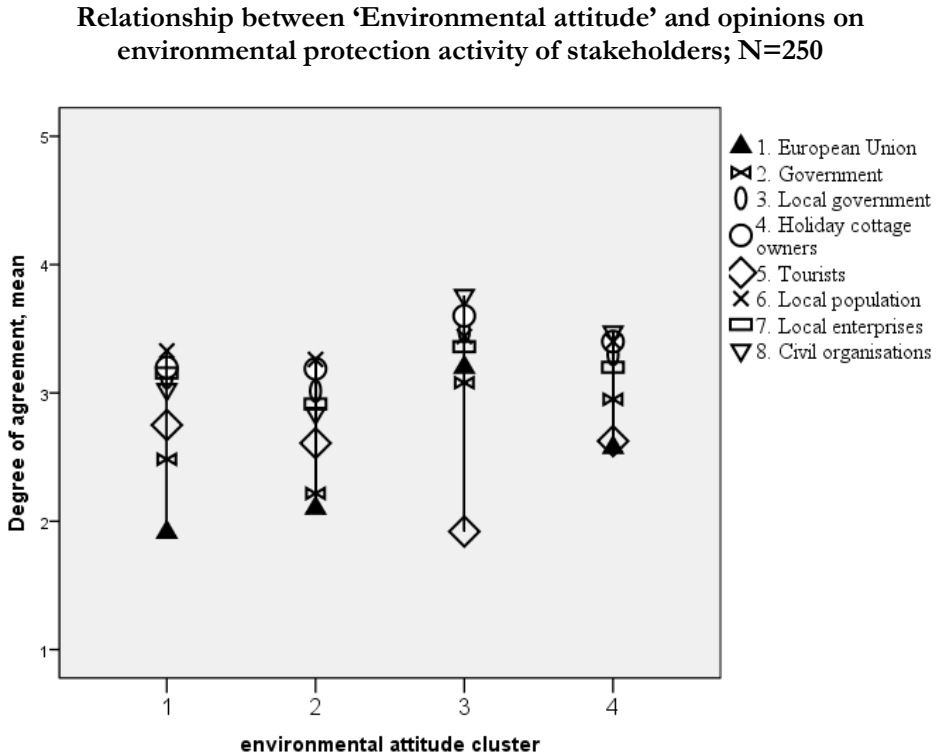
The Cluster members of *Thrift and active environment protectors* believed that the role of tourists, local companies and local-governments was the most important and their opinion was stronger than that of the other clusters. Those people who represented the Cluster of people *Conscious in their choice and active environment protectors* believed that local-governments were the most responsible and rate the role of similar stakeholders as a little bit lower than Cluster 1. According to the members of the Cluster *Thrift only*, the tourists were responsible. Members of this cluster could not decide on the responsibility of the other stakeholders, but civil organisations were the least responsible according to them. The members of *Not-Caring* cluster rate the responsibility of all stakeholders around 3 – so they did not really know.

In the following, the opinions of respondents regarding the real activity of these stakeholders were analysed from the point of ‘environmental attitude’; the potential relationship is denoted by *Figure 6*.

With the exception of local enterprises, the different attitudes toward environment result in different opinions on the activity of these actors ( $p<1\%$ ). All

of the clusters thought that the most active groups in environment protection was local population.

Figure 6



The members of the clusters ‘*Thrift and active*’ and ‘*Conscious and active*’ thought that the listed actors exerted less activity to protect the environment than the other clusters believed. They were also critical of the tourists; as previously, tourists were mentioned as having a higher responsibility; here they were also said to be not active enough. The members of the Cluster “Only thrift” thought that all actors were active enough – especially the local governments – with the exception of the tourists. The ‘*Not-caring*’ cluster members emphasised the lack of activity of civil organisations.

*All these mentioned above indicate that the attitude of the people (holiday cottage owners) influences the way they think about the environmental protection activity of various actors – the figures indicated how much they were acquainted with this work; therefore, a change in attitude may result in better involvement, or even embedment.*

### **The personal value system and the opinion on the responsibility for environmental problems**

Of course, an individuals’ value-system may have a clear influence on the more direct environmental attitude. If it is so, then the differences in the value system

also give answers to why the respondents assess differently the role and activity of various actors. The hierarchical cluster analysis of the respondents on the basis of their answers for personal values resulted in three differentiable groups:

*Value Cluster 1: Family-centred*

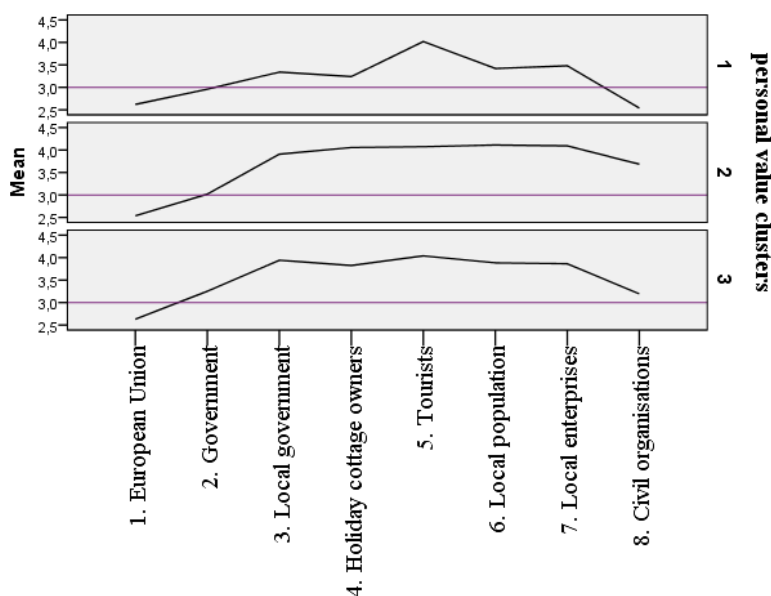
*Value Cluster 2: Extroverted*

*Value Cluster 3: Job oriented*

Figure 7 denotes some patterns in the relationship of personal values and the opinion regarding the responsibility for environmental problems.

**Figure 7**

**Patterns in the relationship of personal values and the opinion on the responsibility for environmental problems**



Significant differences were not found between the opinions of various clusters on the responsibility of civil organisations, local population and tourists.

The details showed that for those who were *Family-centred* the responsibility was not important in any case of the actors; the *Extroverted* people’s opinion was that these actors were not responsible for environmental problems, while the *Job-oriented* respondents rated responsibility higher than any of the other clusters, so they had a much stronger opinion about the responsibility.

In parallel to their opinion about responsibility, the cluster *Job-oriented* was critical of the activity of these actors. They preferred the two lowest categories in the question: “How much these actors do for the protection of the environment”. The *Family-centred* people had opinions on the tourists’ activities, which they rated at a lower level, and the *Extroverted* cluster was satisfied with the activity of all actors.

In general, the respondents' view regarding the responsible actors or institutions for environmental problems, as well as their opinion on the contribution of these actors to the solution of environmental problems, was moderate. They believed that the most responsible group was the tourists and that these actors did the least for the protection of environment. However, an opposite picture was drawn of themselves.

*Summarising, the overall knowledge of the people on the real activity of the stakeholders in environment protection has a great impact on their positive or negative opinion; and because it is limited, they can declare their opinion on only few actors.*

The answers were analysed in comparison with the settlements where the holiday cottages of the respondents were situated. Significant patterns ( $p < 1\%$ ) could be seen in the following:

- respondents from Balatonlelle, Szántód and Zamárdi thought that the activity of the local government was more outstanding,
- respondents from Balatonberény, Balatonkeresztúr, Balatonfenyves, Balatonszemes considered the role of holiday cottage owners positively,
- respondents from Balatonföldvár, Zamárdi, Siófok considered the role of local population positively,
- tourists were seen in a negative light in Balatonberény, Balatonmárfürdő, Balatonfenyves, Fonyód, Balatonszemes and Siófok.

The whole of the research on various actors of the southern water shed of Lake Balaton covered the local governments, too. The results of this part-research could be compared to the results of the current study, as the recognition of representatives of local governments by holiday cottage owners was analysed, too. In general, it was found that there is a relationship between the personal-value order of the respondents as well as their attitude toward the environment and the level of recognition of local governmental actors and policies. Respondents belonging to the 'Family-centred' Cluster had less knowledge of development and environmentally significant policies of the settlements compared to the other two clusters. Cluster 'Extroverted' was not only much more familiar with the representatives of the local governments but was homogeneously well informed about the development policies, too. Those respondents that were more active in environment protection and more conscious in their choices were also more familiar with the development planning policies than those only motivated by economic reasons.

The holiday cottage owners believed that the objectives of local government better serve other actors' interests than those of their own group. Their opinion was that local development mostly addresses investors concerns and least those of the tourists.

The analysis of the opinion of holiday cottage owners on local government development policy revealed that the geographic situation of the settlements influenced the target groups of development: tourists 47.8%, holiday cottage owners: 52.7% (eta).

*Summarising, the geographic situation of the settlements (west-east) influences the development measures of local governments according to the respondents.*



## CONCLUSIONS

It was found that the respondents had various forms of behaviour towards the protection of their local environment. They thought about their local or global environmental problems differently and blamed different stakeholders, including themselves, regarding which clear patterns were detected at the settlement level, too. All the above mentioned go beyond and call attention to the potential conflict situation between settlements living from tourism in the southern watershed of Lake Balaton in aspects of both the future development priorities and – as effect of the aforementioned – the status of the local natural and built environment. By revealing the factors behind the behaviour and attitude of the actors within the so-called space of environmental conflict, the author's further aim would be to investigate the relationship of it with the status of the environment.

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## ATTITUDE OF TOURISTS IN AN ENVIRONMENTALLY SENSITIVE REGION

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### ***ABSTRACT***

*In the course of the questionnaire-based analysis of the southern watershed of Lake Balaton<sup>1</sup> the authors aimed to reveal a regional pattern of the attitude towards the environment and its protection among tourists of the region. The survey of 250 people addressed the environmental conflicts in the region. The hypothesis was that certain sub-regions can be differentiated by their attitude patterns on the basis of the survey. It was found that the behaviour of the respondents is highly affected by their way-of-thinking (five clusters were defined) as well as the motivating factors. The questionnaire-based interview and the results of the analysis revealed that the tourists visiting the analysed region have various motivations, attitudes and activities, which all influence the way of they care after the environment. The potential conflict behind this variability is that these groups of tourists with different behaviours and approaches choose their holiday destination systematically, and, thus, there are places where the environment is better taken care of, while others suffer. It was seen that, from this aspect, the conditions and facilities provided by certain holiday resorts (settlements), as well as the financial conditions, may influence the choice of the tourists with a different attitude towards the environment.*

Keywords: tourism, Balaton, social conflicts, environment

### **INTRODUCTION**

A widely studied area in social science is the influence of human activities and the resulting social conflicts, and, within that, environmentally-conscious behaviour (Nagy, 2012). Environmentally conscious behaviour is encouraged by both world-wide (WHO, 2009; 2013) and national or EU-level policy programmes (In the recent study, the authors examine this issue from the aspect of tourists on the Southern catchment area of Lake Balaton. A similar analysis was done on a sample of 250 holiday cottage owners, as well (Horváthné, 2014). The whole of the questionnaire used in the research assessed the attitude and partaking of various actors on the Southern watershed of Lake Balaton in order to reveal these actors' attitude towards environment and their experiences in various related conflicts within society (Horváthné and Nagy, 2013). In the recent study, the author focuses on the answers to questions that are parallel with the questionnaire used for assessing the other actors involved (Csonka et al., 2013) in the entire survey. In the course of the analysis, attitudes influencing the individuals' activities for environmental

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<sup>1</sup> The project was supported by the EU (TÁMOP-4.2.2.A-11/1/KONV-2012-0038 id. 'Complex analysis of effects of anthropogenic activities and the relating social conflicts on the example of an ecologically sensitive region of shallow lake (Lake Balaton and its water shed)'

protection, their satisfaction with the environment and the views of tourists on their responsibility are all examined.

## MATERIALS AND METHODS

During the course of the research a randomised questionnaire survey was conducted in June 2013 with 250 tourists in the following settlements: Balatonvilágos, Zamárdi, Balatonföldvár, Balatonkeresztúr, Balatonmáriafürdő, Fonyód, Siófok, Balatonfenyves, Balatonszemes, Balatonszárszó, Balatonberény, Balatonboglár, Balatonlelle, Szántód. A database of the answers was analysed for extreme values and missing values, afterwards it was processed with SPSS.20.

Hierarchical cluster analysis (squared Euclidean distance) was used in order to create homogenous groups of respondents according to the aspect of their environmental attitudes. Relationships were looked for between the respondents' a) motivations and attitudes and b) their satisfaction and views on the responsibility of various institutions.

The Lickert-scale was applied in the questionnaire survey to assess the degree of agreement among respondents from 1 (least) to 5 (most). Cross-table analysis (Chi-square test, Cramer value) was used to reveal the influence of settlement or attitude on the degree of agreement with certain statements.

In order to study the factors determining the various activities of individuals for the protection of the environment, factor-analysis was conducted (Main Component analysis, the Varimax method) to analyse the satisfaction with the environment.

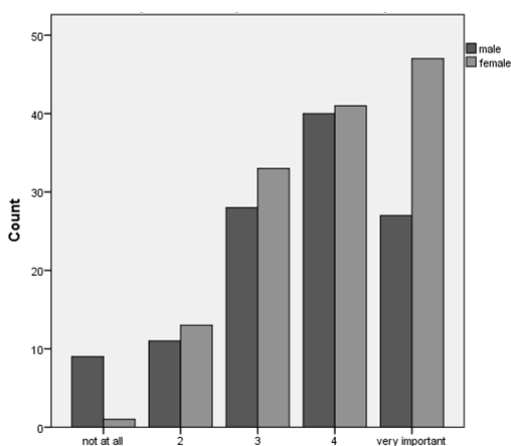
## RESULTS AND DISCUSSION

### Attitude of tourists towards the environment

The protection of the environment and/or nature is important for a higher number of people (*Figure 1*), although women have higher share in the category "very important".

Figure 1

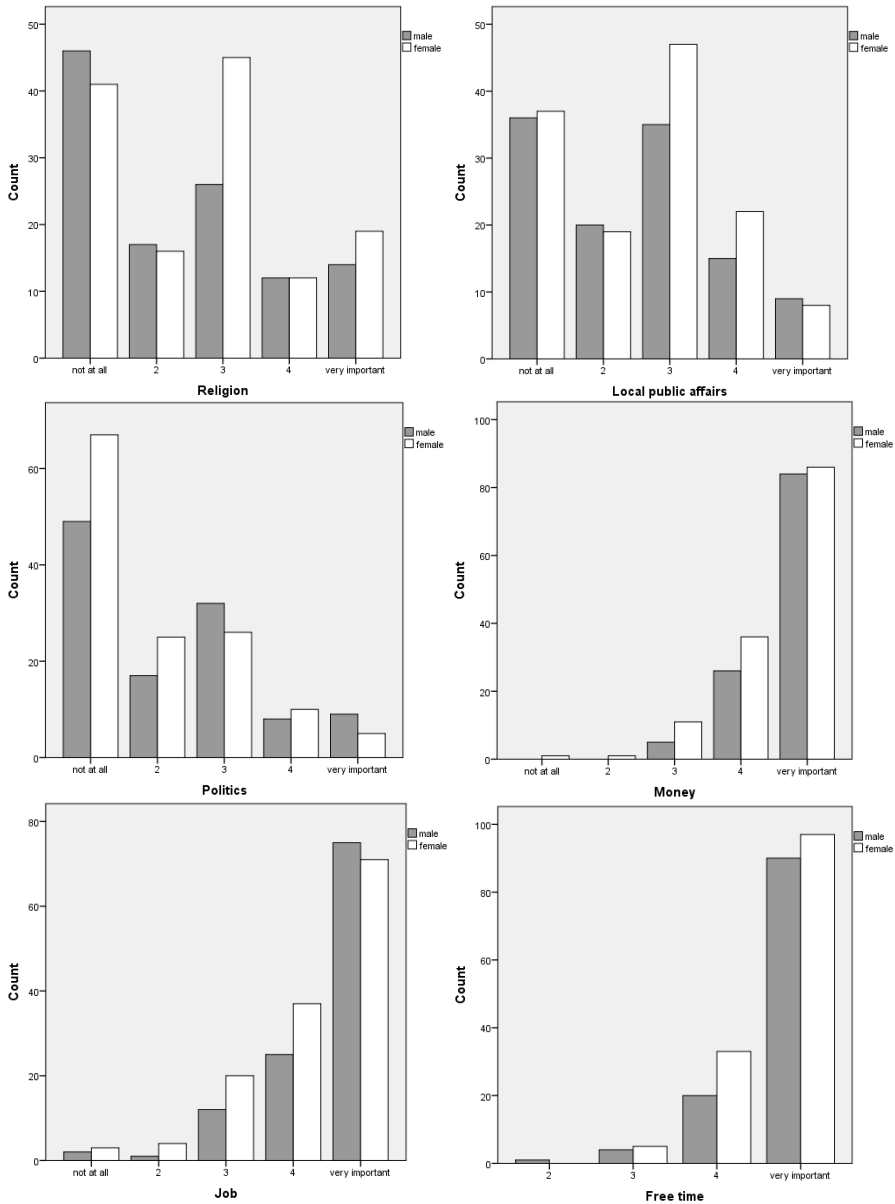
The importance of environmental or nature protection, n=250



While the importance of the other personal values received similar ratings, the respondents considered family, free time, friends, job and money important, but politics not important, meanwhile religion and public issues were rated neutral for respondents (Figure 2).

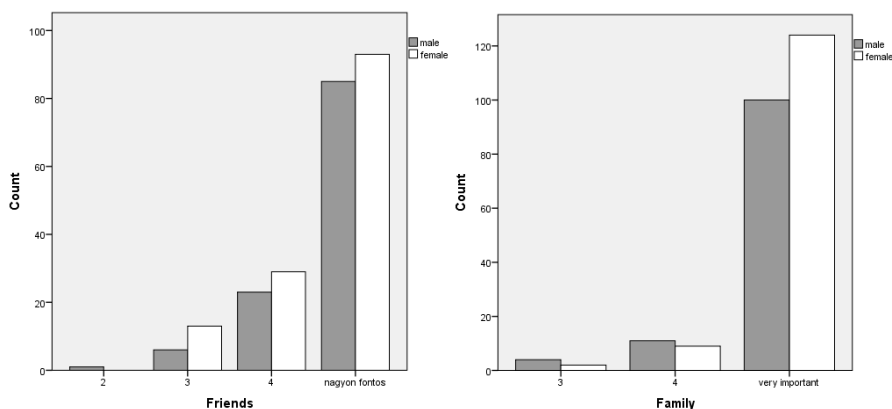
Figure 2

Importance of other personal values, n=250



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Whenever the respondents rated environmental protection as of high importance, they were also asked whether they are personally active in environmental protection.

The respondents were asked about the frequency of certain activities related to environmental protection. The answers reflect that people frequently ‘take care to buy electricity saving machinery or lightbulbs’, ‘choose a shower instead of bath’, ‘switch off TV or if not in use’, ‘save water when doing the washing up’, ‘put on an extra pullover instead of turning on the heating’, ‘take nature trips and ‘practice recycling’. However, respondents scored rather neutral to their ‘choice of environment friendly labels’ or ‘refill packs’ and ‘not accepting nylon bags offered in stores’.

The people never or very rarely ‘buy eco-labelled products’, ‘compost organic waste’ and ‘turn off TV or radio instead of stand-by function’ and ‘collect beverage carton for schools’.

The factor analysis of the 15 different activities was expected to reveal a well defined pattern in the activity and behaviour of tourists. Main Component analysis was confirmed by the correlation matrix showing the correlation of many variables at around 0,5-0,7; the adequacy test (KMO) as well as the Bartlett test proved that the data are suitable for the method (*Table 1*).

**Table 1**

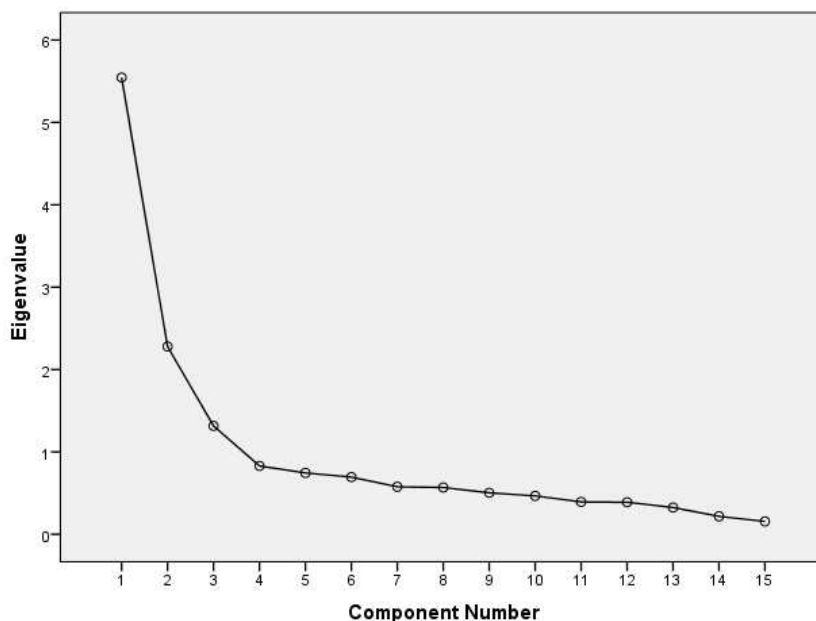
**Measuring adequacy of the variables on the activity of tourists**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.861
Bartlett's Test of Sphericity	Approx. Chi-Square	1 700.727
	df	105
	Sig.	0.000

The scree plot (Figure 3) and the total variance explained confirmed that 3 factors can be defined<sup>2</sup>.

Figure 3

Scree plot for activity of tourists



The Table 2 summarises the factor values indicating to what extent an individual variable correlates to the factors.

The three differentiated factors behind the behaviour and activities of the tourists can be defined as:

Factor 1: consciousness in choice

Factor 2: thrift

Factor 3: activism

The hierarchical cluster analysis resulted in five groups of people, which have different motivations toward environmental protection.

*Cluster 1:* tourists who consider economic decisions in addition to being environmentally conscious in their choices. These people are active but sometimes their opportunities are narrowed by conditions (e.g. composting, availability of environmental programs in schools).

*Cluster 2:* conscious both in economic and environmental aspects; active in their behaviour.

<sup>2</sup> These variables have an Eigen-value above 1, which means that its explanatory power in the total variance is higher than that of one single variable

*Cluster 3:* motivated for environment protection, but only determined by economic factors. They do not consider environmental labels and are not active in environment protection.

*Cluster 4:* the members of this cluster have better economic status (as they do not care that much about thrift) and are conscious of their choices regarding environmentally friendly products (which are in general more expensive), but these tourists are less active concerning trips to nature and selective waste collection.

*Cluster 5:* totally unconcerned.

**Table 2**

**Rotated Component Matrix for activity of tourists**

	Component		
	1	2	3
1. Whenever I can, I buy organically certified food products.	.075	.888*	.192
2. Among products with similar functions I choose the one with eco-labels.	.123	.873	.055
3. I take care to purchase energy saving electronic equipment, bulbs.	.770	.161	.131
4. I prefer to choose re-fill products to decrease waste.	.306	.646	-.170
5. I do not accept free nylon bags offered at stores.	.157	.706	.157
6. I try to save water and do not use running water for dish-washing.	.774	.137	.001
7. I prefer showering to bathing.	.728	.120	-.001
8. I put on extra clothes instead of turning on the heating.	.682	.121	.104
9. I turn off the TV if nobody is watching it.	.829	.057	.048
10. I turn off the light if nobody is in the room.	.803	.110	.051
11. Instead of using the stand-by function, I turn off the TV, radio.	.122	.604	.405
12. I like hiking in nature.	.508	.286	.161
13. I recycle my household waste.	.658	.138	.335
14. I compost the organic waste from my household.	.123	.071	.821
15. I take part in the recycling programs of local schools	.118	.175	.766
<i>Extraction Method:</i> Principal Component Analysis.			
<i>Rotation Method:</i> Varimax with Kaiser Normalization.			

\* the coefficients' square is the explanatory power of the factor in the variable; minimum requirement would be 0.35 at sample size n=250

**Characteristics of the tourist clusters**

It was assumed that the five clusters of the tourists can be characterised by different attitudes, which can be seen in the answers given by the respondents on various habits or opinions. These answers are grouped by their nature: personal values (such as family, job, politics, etc); personal interest and responsibility to the local or



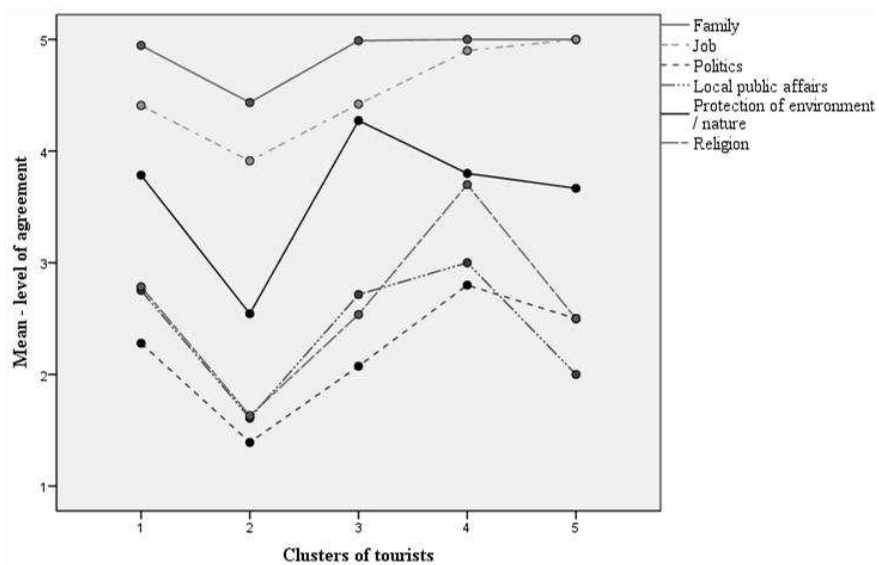
global environment; the personal activities (listed above) and the way these people think about the responsibility of various organisations regarding environmental problems.

The results of the ANOVA show that the clusters' members haven't got different habits in choosing the length of their holiday. They are also similarly influenced by the quality of the natural environment or the water quality of Lake Balaton.

Although the difference between the way of their thinking is eye-catching (Figure 4), which is illustrated by the relative importance of family ( $p=0.00$ ), job ( $p=0.01$ ) and moreover of local affairs, politics, environment or nature protection and religion ( $p=0.00$ ).

Figure 4

**Difference in the importance of personal values of the clusters' members**



Additionally, it can be seen that environmental protection is more important than other community values, such as religion or public affairs, but it has a different relative position for each cluster.

Similarly, the general way of thinking about personal values determines the attitude towards environment both in terms of personal interest and responsibility (Figure 5). There is also a clear difference between the putative efficiency of individual activity in favour of the solution of environmental problems ( $p=0.00$ ).

The tourists were also asked about their individual activity regarding the protection of the environment. The overall opinion is shown in Figure 6. It is again the cluster 2 that believes in its inefficiency, while cluster 4 is the most hopeful.

When it comes to the details, the clusters are highly different (Figure 7).

Figure 5

Opinion of respondents on environmental protection in terms of interest, personal responsibility and efficiency

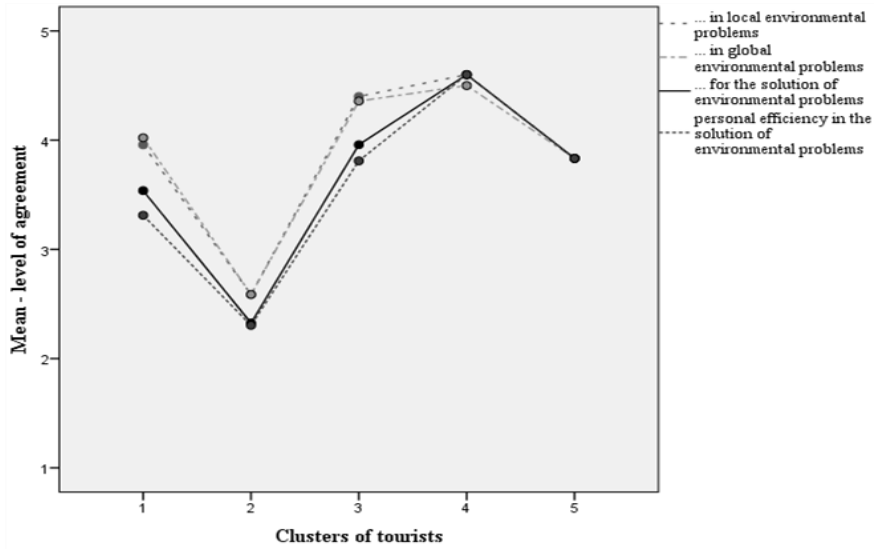


Figure 6

Opinion of tourists on their personal contribution to environment protection, n=250

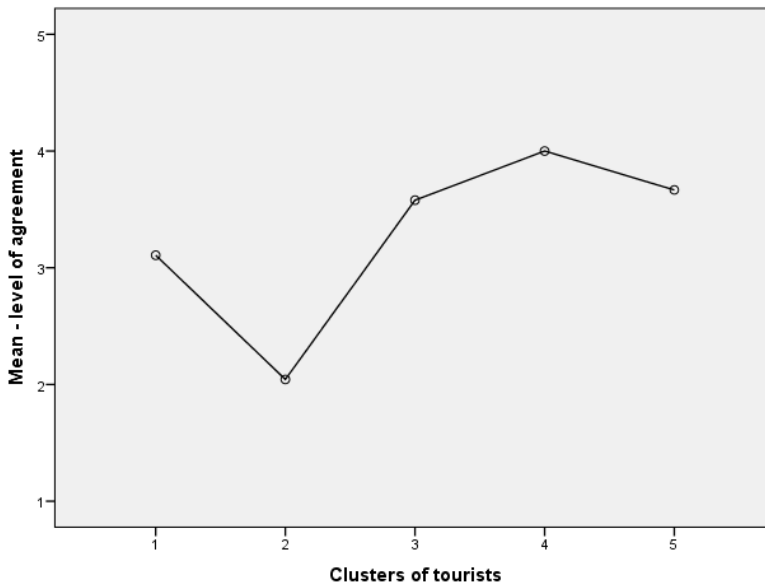
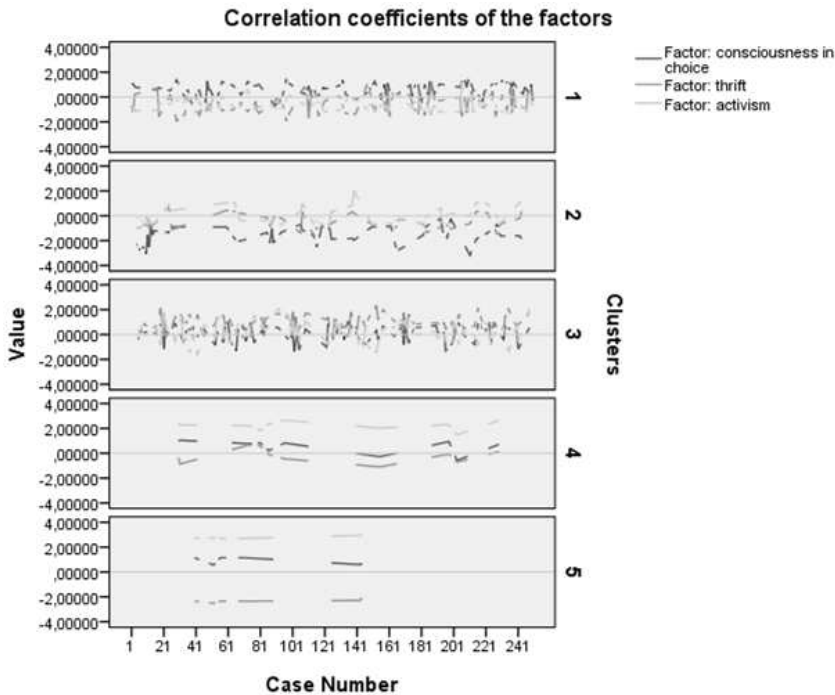


Figure 7

The evidence of factors behind the behaviour of tourists in the different tourist clusters



It is found that tourists of the analysed region clearly have a different approach (attitude) regarding their personal activities for environmental protection (*Figure 7*). The most conscious cluster is Cluster 1 with moderate evidence of thrift and active participation as motivators. Clusters 4 and 5 have a slightly similar level of consciousness, but for both of these clusters activism is a well defined motivator of individual habits. The difference between Cluster 4 and 5 is made by the fact that Cluster 5 is much less motivated by economic aspects (thrift). Cluster 2 has the lowest motivation for environmental protection, neither consciousness nor (or to a lesser extent) economic considerations are of interest to them. If anything, it is active participation which can be a motivator for them.

According to the above mentioned characteristics, the following cluster categories are defined:

- Cluster 1: The Conscious
- Cluster 2: Unmotivated
- Cluster 3: Economically-driven
- Cluster 4: Active and sound
- Cluster 5: Active

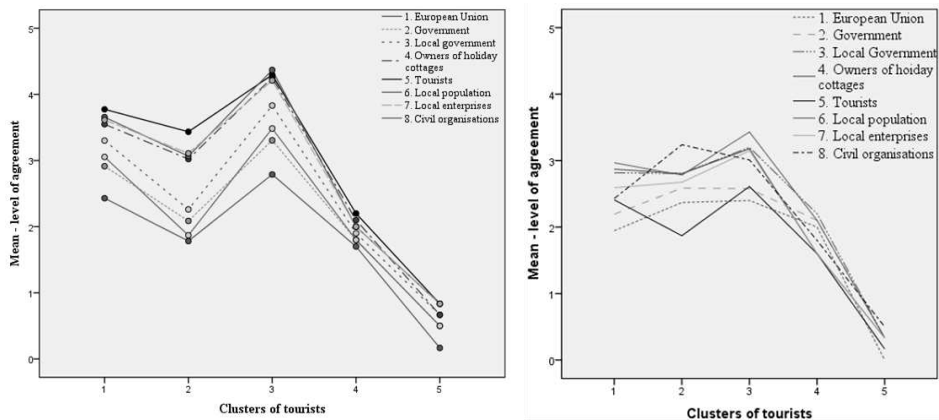
All the above indicate that the tourists of the analysed region can be approached and reached for the purposes of environmental protection in different ways. Another implication is that if the tourists of different attitudes towards the environment target different places, then an influence on the status of the local environment can be traced or measured.

The difference between the ways of thinking of different clusters of tourists in the analysed region can be seen in their opinions of the responsibility and activity of various organisations working on environmental problems.

According to the respondents, they see each given organisation as having a higher degree of responsibility for protecting the environment than the degree to which each actually acts. More interesting, though, is the fact that Cluster 5 hasn't got enough information to give their opinion, while they rated their personal activism as being higher than that the other clusters (*Figure 8*). The most critical is Cluster 3, while the least is Cluster 4. Local population, enterprises, tourists and owners of holiday cottages have the highest responsibility according to the respondents; conversely, the tourists do less or almost the least for environmental protection. The putative role of civil organisations, however, is high, compared to the responsibility.

Figure 8

**Opinion of respondents on the responsibility and contribution of various organisations to environmental protection, n=250 (p<0.05)**



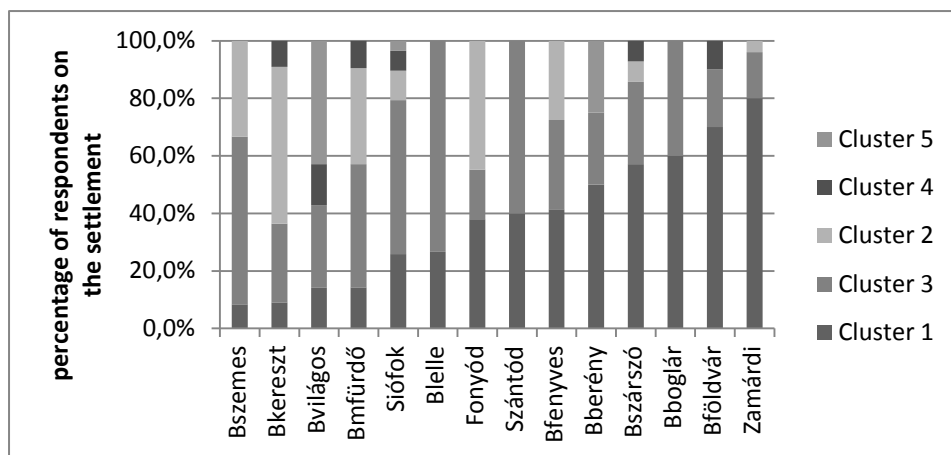
There was a correlation found also between the cluster membership and the level of graduation, as well as the current job status of the respondents. Cluster 2 has a significantly higher number of pupils and Cluster 1 has a significantly higher number of jobless people, while they are much less in Cluster 4 (p<0.05). The proportion of respondents with a higher level education is the highest in Cluster 1 and 3 (p<0.05).

The hypothesis regarding whether groups of tourists of different attitude visit different settlements for holiday was analysed with ANOVA, too. It was found that cluster membership and the chosen place of holiday are in relationship (*Figure 9*).

The tourists of Siófok belong to Cluster 1 and 2 mainly; the members of Cluster 1 visit Balatonfenyves and Balatonlelle. The tourists of Cluster 4 visit fewer settlements for holiday; they can be seen in Fonyód, Balatonmárfiafűrdő, Balatonfenyves and Balatonkeresztúr. In Zamárdi, typically the tourists of Cluster 3 and in less extent those of Cluster 2 and 5 can be seen.

**Figure 9**

**Distribution of cluster members by settlements (place of holiday), n=250**



Summarising, the questionnaire-based interview and the results of the analysis revealed that the tourists visiting the analysed region have various motivations, attitudes and, thus, activities, which all influence the way they care for the environment. Of course, while the contribution of these people is not the same regarding the actual status of the environment (e.g. children, jobless people or housewives), it is still reasonable to interpret the results in a way that indicates there is a confirmed concern that tourists with different views and attitudes influence the environment of various settlements differently.

## CONCLUSIONS

Statistical tools were used to test the applicability of the data provided by the questionnaire based interview of 250 tourists in the Southern watershed of Lake Balaton in order to reveal patterns in their personal behaviour and attitude toward the environment. The objective of this analysis was to find and define these patterns, which can be the basis of following researches which seek to reveal correlations between the similarly (local population, holiday cottage owners) or in other way (local governments, companies, etc) studied attitude of other actors. The final outcome of the complex research is expected to reveal the relationship between the ecologically sustainable development of the settlements situated on the watershed and the human activities influencing it.

It was found that five different groups of the tourists can be defined within the analysed region, whose clusters are characterized by different ways of thinking both in the responsibility and contribution to environmental protection. The *potential conflict* behind this variability is that these groups of tourists with different behaviour and approach choose their holiday settlement systematically, and, thus, there are places where the environment is better taken care of, while others suffer. It was seen that from this aspect the conditions and facilities provided by certain holiday resorts (settlements), as well as the financial conditions, influence the choice of the tourists with a different attitude toward the environment. Although the results confirmed that the quality of nature or water does not differ along the analysed settlements.

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## ENVIRONMENTAL ATTITUDES AND BEHAVIORAL PATTERNS OF CONSUMERS IN THE SOUTHERN CATCHMENT AREA OF LAKE BALATON

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### **ABSTRACT**

*It is not by chance that environmental consciousness is a popular and current topic. Due to the various processes of globalization and consumerism, mankind causes seemingly irreversible damages to the Earth. Our research aims at exploring the environmental attitude of residents living in the key settlements within the southern catchment area of Lake Balaton<sup>1</sup>. Results indicate that respondents show above average interest in environmental issues, but consider their own responsibility insignificant (or at least less significant). Further, the number of those who believe that their actions can efficiently contribute to the preservation of the environment is even smaller. The higher one's level of education is, the more likely one will show environmental responsibility, impressions of "effective contribution" and bias towards ecofriendly products - although the popularity of these latter is not significant yet among the residents of the southern catchment area of Lake Balaton, since only 17.4% of the consumers look for these instead of the more traditional product lines. The most wide-spread preservation actions among the residents are the selective management of waste and power saving.*

Keywords: ecofriendly, sustainability, environmentally conscious consumer attitude, selective waste management, power saving

### **INTRODUCTION**

It is not by chance that sustainability is a popular and current topic. Due to the various processes of globalization, consumerism, the new ever-faster lifestyles and the rapid world population growth rate, mankind causes seemingly irreversible damages to the Earth. In order to sustain our current lifestyle we would need a new Earth with a size 50% larger than our present one, and without taking substantial steps by 2050, even two Earths will not be to enough satisfy our needs (Kitzes, 2009).

The value of several indicators multiplied over a short period of time, which fundamentally changed mankind's relation to the environment. Carbon output around the world multiplied by 7, power consumption by 10 and we withdraw 9 times as much water as our ancestors did (Gyulai, 2012).

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<sup>1</sup> The project was supported by the EU (FÁMOP-4.2.2.A-11/1/KONV-2012-0038 id. 'Complex analysis of effects of anthropogenic activities and the relating social conflicts on the example of an ecologically sensitive region of shallow lake (Lake Balaton and its water shed)'

Further, world economy has to face a novel issue ever-increasing in significance. The continuous increment of the demand curve is associated with the decrement of the supply curve: our resources at hand are not sufficient to satisfy the demands of people (László, 2009). Advancement, however, can only occur if resources that are indispensable to the existence of the system (e.g., energy, knowledge, etc.) are growing proportionately or ever more rapidly than the economy itself. Otherwise, a downturn may begin or - in the worst case - collapse might occur (Lányi, 2011). The essence of the issue is that the human brain can only deal with stimuli in its perceptual field; therefore, we are not able to react to ecological changes, as these are not happening fast enough. We only perceive the effect of these vaguely; we do not consider the escalating situation threatening enough, since problems in their initial phase are only present at microscopic, general levels (Goleman, 2009).

Therefore, it is essential for sustainability to valorize the role of systems built on local knowledge and working culture, while strengthening the role of local communities and valorizing food autonomy (Lányi, 2011).

### **AIMS**

The aim of the present study is to survey the environmental attitudes and behavioural patterns of the residents in the southern catchment area of Lake Balaton. The study presents part of the results obtained from the questionnaire-based analysis of various actors and stakeholders of the southern catchment area of Lake Balaton, where further aspects and the role of these actors are analysed by researchers (Csonka *et al.*, 2013; Horváthné and Nagy, 2014). We would like to measure whether residents are inclining towards an environmentally conscious lifestyle, and which types of ecofriendly behaviour characterize these best. The study summarizes the channels through which they obtain their information, and reviews those factors that block residents from maintaining an environmentally conscious lifestyle.

### **MATERIALS AND METHODS**

The results were obtained through a questionnaire survey which was conducted with 500 participants during the summer of 2013. All of the participants were residents of the settlements within the southern catchment area of Lake Balaton. The survey was carried out in 23 major settlements within the southern catchment area, in the form of personal interviews. Sampling in settlements was weighted by settlement size and distance from the shore.

Gathered data were processed using the SPSS 16.0 statistical software package and Microsoft Excel spreadsheet application. The questionnaire contained 12 questions. Closed-ended questions were evaluated based on the percentage share of results, while the interpretation of scalar questions happened on the basis of averages with the standard 95% confidence interval (and a 5% margin of error). In order to establish target groups and to segment the sample accordingly, scalar questions were assessed using factor and cluster analysis. Results obtained are illustrated in tables.



## RESULTS AND DISCUSSION

Based on the answers for the first question of the survey, we found that respondents' inclination towards environmental issues is about the same at both the global and local levels. As it is visible from *Table 1*, respondents' interest in environmental issues is above average.

**Table 1**

### **Respondents' degree of interest in the condition of the environment at the global and local levels**

Statement	Average	Standard deviation	N
Issues concerning your local environment	3.66	1.08	498
Issues concerning global environment	3.60	1.11	499

Residents of Somogyvár were the least interested in local environmental issues, the average of their answers is 2.867, while residents of Karád displayed the greatest interest, the average of their answers is 4.47. The residents of the two settlements are also those who displayed the lowest and the most robust levels of interest regarding issues concerning global environment (average values of 2.73 and 4.5, respectively;  $p < 0.00$ ).

Based on the answers, it is plausible to state that while a relatively large portion of the residents are concerned about environmental issues, they seem to consider their own responsibility less significant (to the question they replied with an average value of 3.34), and the number of those who believe that their own actions can effectively contribute to the solution of environmental challenges is even lower—the average value assigned to the statement is 3.03 ( $p < 0.00$ ).

The sense of responsibility is increasing proportionately with one's level of education ( $p = 0.037$ ) and the same correlation is found when establishing the significance of environmental actions ( $p = 0.014$ ).

The assessment of responsibility is also peaking in the aforementioned two settlements: while residents of Karád graded the importance of the issue with an average value of 4.13, Somogyvár residents responded to the question with an average value of 2.0 ( $p < 0.00$ ).

Residents judged that at the moment they perform below average in solving environmental issues. Using the same Likert scale, they judged their performance with an average value of 2.95 ( $p < 0.00$ ). The number of occasions on which the state of the environment is considered in decision making is also increasing proportionately with one's level of education ( $p < 0.00$ ).

The fact that the majority of respondents, i.e., 74%, would take part in solving environmental issues, and only 25% of the residents wouldn't can give rise to positive expectations.

Significant correlation was found between individuals' willingness to participate and one's level of education; the higher the resident's level of education, the higher the displayed inclination towards the protection of environment is ( $p=0.026$ ).

We also sought an answer to the question, what are those activities that participants would be willing to do in order to preserve/improve the condition of their environment? The majority of the residents replied that they would primarily contribute to the preservation of the environment with more throughout (‘thorough’) power saving (42.2%) and selective waste management (41.2%). In another comparison, we were interested in those actions that residents of the settlements would be ready to commit to preserve their environment. As regards selective waste management, more than half of the residents in 8 settlements would contribute to the issue this way. This solution is most popular in Mezőcsokonya, where nearly 87% of the respondents would reduce environmental pollution by recycling waste, but more than 50% of the residents in Somogyjád, Szántód, Siófok, Balatonföldvár, Balatonboglár, Balatonkeresztúr and Mesztegyő also replied positively. Power saving is important for the residents of 9 settlements. More than half of the locals in Somogyjád, Szántód, Kereki, Balatonkeresztúr, Balatonföldvár, Mesztegyő, Mezőcsokonya, Marcali and Siófok would like to pay more attention to power saving in their homes.

Voluntary work was also popular among residents (35.4%). It is noteworthy that a group of surveyed locals does not want to voice their opinion regarding the preservation of the environment (8.6%), and notifying the authorities is unpopular among individuals (16%). Actions requiring financial investment are also unpopular (10.6%).

Voluntary work attracts a larger portion of men than women. 42.3% of males, while only 30.3% of female respondents would improve the condition of environment this way ( $p=0.004$ ). A higher level of education fosters positive results in this respect too. In addition, the higher one's level of education is, the more likely one will voice an opinion ( $p=0.02$  and  $p < 0.00$ ).

Buying ecofriendly products is also unpopular: only 17.4% of participants would change traditional products to green ones, although a higher level of education seems to increase commitment to ecofriendly products, too.

Ecofriendly means of transportation are primarily popular among women. Nearly three times as many women would pay more attention to use ecofriendly means of transportation ( $p=0.001$ ).

The survey revealed which are those pull factors that respondents consider the most harmful for the proliferation of environmentally friendly behavior. *Table 2* summarizes the results.

The majority of respondents cited financial obstacles; based on the results, financial factors are the most serious problems that prevent residents from solving environmental issues. The second most cited cause also leads back to the respondents' insufficient level of income. Surveyed locals find traditional products cheaper than their ecofriendly counterparts, and, accordingly, they cite their insufficient incomes as the obstacle preventing them from buying these.

*Table 3* sums up the primary media through which residents obtain news related to the environment.

**Table 2**

**Factors inhibiting the proliferation of environmentally friendly behavior**

Statements	Percentage
I lack sufficient income.	40.6%
Traditional products are cheaper than ecofriendly ones.	32.8%
It is hard to change proven, everyday habits.	20.6%
We are in need of proper infrastructure.	11.8%
Other residents are not interested in the preservation of environment.	6.2%
It is too time and energy consuming.	3.0%
It requires a lot of effort and returns little benefit.	1.4%

**Table 3**

**Obtaining news about environmental pollution**

Media	Percentage
Television	90.2%
Printed press	28.6%
Radio broadcasts	26.2%
Internet	25.8%
Personal conversations	13.4%
Municipal notifications	6.2%
Educational lectures	3.4%
Technical textbooks, scientific journals, academic conferences	3.0%

More than 90% of the respondents use television as the primary source of orientation about environmental pollution, while nearly 30% prefer printed press, radio broadcasts or the internet for obtaining information.

The usage of media like technical textbooks, scientific journals and academic conferences are increasing in proportion with one's level of education, though its audience makes up less than 10% of the degree holding residents.

One of the sections of the questionnaire consisted of 15 scalar questions and each of these captured attitudes towards different ecofriendly actions. Respondents were required to assess how often they perform the actions in question using Likert scales. In order to reduce the number of variables to a more manageable level and to reveal their interrelations, we used factor and then cluster analysis. Relying on Bartlett's Test of Sphericity and the Kaiser-Meyer-Olkin (KMO) criterion, we examined whether the data are adequate to undergo analysis. *Table 4* summarizes the results.

Results of Bartlett's test show that the level of significance is lower than 0.05, thus, we reject the null hypothesis; there are correlations between the initial variables, therefore, obtained data are suitable to undergo factor analysis (*Sajtos and Mitev, 2007*). The value of the KMO measure is 0.779, which indicates a good result, so obtained data are suitable to undergo analysis.

**Table 4**

**Results of the KMO measure and Bartlett's test**

<b>Kaiser-Meyer-Olkin Measure of Sampling Adequacy</b>		0.779
<b>Bartlett's Test of Sphericity</b>	Approx. Chi-Square	1774.516
	df	78
	Sig.	0.000

Based on our research, we set up 4 factors. The established 4 factors explain 62.04% of the results.

The first factor is named *“Demand for ecofriendly food products”*. This way of thinking indicates environmentally conscious food consumption behavior. The primary concern is the ecofriendly labelling of the product and its organic farming origin. Preference is given to refill packs and products with less packaging. The way of thinking underlying the second factor rather considers aspects like cutting down on water and energy consumption over ecofriendly food products, therefore, it is named *“Economical consumption”*. The factor group associated with this thinking also emphasizes selective waste management. The third factor is characterized by its stressed aspect, i.e., *“Energy saving”*. The fourth factor group is named *“Recycling”*. The associated way of thinking prefers composting and beverage carton recycling. Using Ward’s method and subsequently the K-means method, we established that the ideal cluster number is 4. After excluding missing data, in the course of analysis the program processed 489 answers given by respondents.

Cluster “A” grouped 25.77% of the respondents, Cluster “B” 31.70% of them, “C” 22.70%, while the group named “D” contained 19.83% of the surveyed locals. Respondents in cluster “A” and “B” are those who signal ecofriendly behavior, while groups “C” and “D” are primarily motivated by financial factors in their decision making.

The behavior of cluster “A” members are the most likely to display ecofriendly inclinations. They try to contribute to the preservation of the environment by using less energy and water. They only use lights on purpose, they rather take a shower than a bath, they turn off electronic devices if nobody is engaged with them, and they also aim at saving on heating bills. The members of the group also manage their waste selectively, but to reduce pollution they lay their key emphasis on the purchasing of refill packages. Purchasing available bio products and looking for green labeling was only typical in this cluster. On the other hand, they are not taking part in beverage carton collecting campaigns and they are not composting their food waste. Residents of Siófok, Szántód and Balatonboglár are the most environmentally conscious, as 55%, 48.6% and 47.4% of the surveyed locals in these settlements (respectively) are members of the first cluster.

Cluster “B” is still ecofriendly, but compared to members of the first cluster, inclination here is declining. They seek to use energy and water economically, and they seek to cut down on the heating bill. The fact that, as opposed to the previous group, cluster “B” respondents try to recycle organic household waste by

composting is an environmentally positive result. Even though they are more likely to participate in beverage carton collecting programs, frequent participation is not typical. In addition, they are not paying attention to buying products with ecofriendly properties. They are not buying products with less packaging consciously and they are not refusing shopping bags either. Around 60% of the surveyed locals in Balatonföldvár, Somogyvár and Somogyjád, 57.1% in Kereki and 53.3% of the Mezőcsokonya respondents are members of this cluster.

In Cluster “C” and “D” it is much less frequent that surveyed people pay conscious attention to the ecofriendly nature of their actions. Members of cluster “C” try to be economical with the energy and water usage by washing up with less water, not washing up with running water, turning off the television if nobody is watching it, as well as switching off lights in empty rooms. Besides these, commitments to other environmental actions are not typical. 77.8% of Mésztegyő residents and 56% of surveyed Lengyeltóti participants are the members of this cluster.

Cluster “D” is the less environmentally conscious group. Although they seek to save water and energy, their inclination is the least significant. Fonyód locals are presented with the highest proportion in the group, in their case 53.3% of the respondents are members of cluster “D”.

Basically, the members of all four clusters voiced a positive opinion when asked about their willingness to participate in the solution of environmental issues. Although in all four cases the proportion of those who are ready to act is above 65%, the aforementioned tendency is present here too: 84.7% of cluster “A” members, while only 65% of the members of cluster “C” would actively participate in solving such issues ( $p=0.01$ ).

53.8% of those who would donate money are members of cluster “A”, and one third of cluster “A” and “B” members would do voluntary work ( $p<0.00$ ; 0.025). Cluster “A” members are the most likely to notify the authorities when encountering environment polluting activity, although even in this group only half of the members would seek such cure ( $p<0.00$ ). Ecofriendly transportation is also the most popular among the members of cluster “A”, approximately 60% of them would use public transportation, for instance ( $p<0.00$ ).

Nearly 30% of the members of cluster “C” and “D” cited the lack of infrastructure when they had to name causes preventing the proliferation of ecofriendly behaviour ( $p<0.00$ ).

## **CONCLUSIONS**

In this section we will sum up the most important insights obtained through the interpretation of the answers.

Based on the results, for the majority of the surveyed locals the changes of the environment are important issues and they are seeking information about these. Most of them are aware of their own responsibility in the pollution of the environment, and this ratio is increasing proportionately with one’s level of education. Few of the respondents feel that their actions can effectively contribute

to the preservation of the environment, and it is likely that this is why so little is being done at the moment, and also why in most of the cases ecofriendly behaviour is only present as an intention. Clearly, the most wide-spread preservation actions among the locals near Lake Balaton are selective management of waste and power saving. It is noteworthy that a group of surveyed locals does not want to voice their opinion regarding the preservation of the environment, and respondents are generally not willing to complain to the authorities, either.

Actions requiring financial resources are also unpopular and most respondents cited their insufficient income as the factor preventing them from living an environmentally conscious life. The most popular type of media is equivocally television: more than 90% of the respondents use this medium to gather information about environmental pollution. Last, but not least; ecofriendly products and organic food are not widespread yet among the residents of the southern catchment area of Lake Balaton.

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