

HOW „WISED UP” ARE WE IN MATTERS OF CLIMATE CHANGE?

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In the so-called sociological project we examine the changes related to climate and environment as well as the transformation of values and attitudes and analyze the social contexts of these factors in today's Hungarian society. The environmental problems caused by climate change have already changed the way of thinking both of individuals and social groups, their relation to the environment, and the adverse consequences that enhance the natural environment. It is our assumption that the importance of environmental considerations, their recognition and awareness, and the change of value system are determined by different groups of individuals and communities. It can be influenced by the schooling, township and the age as well. Differences can also be made on the basis of a worldview. Compared to domestic sociological studies, the novelty of our research is precisely in the study of environmental values by social groups, group awareness, environmental changes and the transformation of value systems in an area where individuals, families and other communities are particularly sensitive to environmental issues.

Keywords: climate change, Balaton, information sources

ABSTRACT

Szociológiai vizsgálatunk az éghajlati és környezeti változásoknak, valamint az értékrendnek, értékorientációknak és attitűdöknek az átalakulását, ezen tényezők társadalmi összefüggéseit elemzi a mai magyar társadalomban. Az éghajlatváltozás következtében kialakult környezeti problémák megváltoztatják egyének és társadalmi csoportok gondolkodását, környezethez való viszonyát, a kedvezőtlen következmények felértékelik a természeti környezetet. Feltetésünk szerint a környezeti szempontok fontossága, annak felismerése és tudatosulása, az értékrend változása társadalmi csoportonként eltérő, egyének és közösségek kultúrája által meghatározott. Befolyásolhatja az iskolázottság, a települési hovatartozás és az életkor, de valószínűsíthetőek különbségek világnézeti hovatartozás alapján is. A hazai értékpszociológiai vizsgálatokhoz képest kutatásunk újszerűségét éppen a környezeti értékek társadalmi rétegenként, csoportonként eltérő tudatosulásának, a környezeti változások és az értékrend átalakulásának vizsgálata adja egy olyan térségben, ahol az egyének, családok és más közösségek környezeti érzékenysége különösen erős.

Kulcsszavak: éghajlatváltozás, Balaton, információforrások

INTRODUCTION

In the project named “Regional impact of climate change related extreme weather and damage minimization opportunities for the coming decades”, we conducted a questionnaire-based survey on the research topic “Climate change related values and attitudes”. The questionnaire called “Climate change related values and attitudes in the Balaton region” has a chapter called “Problem per-

ception, referential points and information sources”, in which we focused on how sensitized the Balaton regional population is to climate change (global warming) and how this impacts their everyday life. We also sought to answer where people get their information on these issues, and how they perceive these information sources.

During the planning phase there was a debate among the sociologists on whether a general

population sample is necessary,¹ as opposed to surveying those social groups of specialists and public figures supposedly well-versed in climate change issues.

As a compromise, both the special groups (or agents, as István Kamarás terms them) and the regional population were surveyed using the questionnaire.² Population sampling was necessary to determine the level of awareness in the general public, and comparing their data to the agent groups' answers, and in many cases this produced new conclusions.

The first three questions are identical to our 2008 Balaton elite survey's.³ Responses are therefore – with due consideration to constraints – comparable to the 2013 survey's data. The first question addressed general issue perception.

HAVE YOU EXPERIENCED CHANGES IN THE WEATHER IN RECENT YEARS?

The great majority of respondents – close to 90% – have of course noticed weather change. There is no significant correlation to gender, education, status groups, religion or political views, the only interesting finding relates to age groups. There is a distinct difference between young and old participants' responses! Pooling the data from all age groups over 35 we have 4% (9 respondents) did not report noticing changes in the weather, for under 35's this ratio was 18% (13 respondents). In the two lower age groups, and especially in the 25–34 range (where, counting positive responses, “only” 78,8% reported noticing change, over 10 percentage points below average), concern with this question was below average.

¹ Earlier research focused on the Balaton regional elite: Lake Balaton Development Council Social Research Group CLIMATE CHANGE – ELITE questionnaire, January 2008, principal investigator: Miklós Oláh.

² Though these samples proved smaller than originally planned (300 instead of 400 general population, and 40 instead of 50 per agent group) the sample size proved adequate.

³ Climate change. Opinions and attitudes in the Balaton region, Research report, compiled by: Miklós Oláh in: Comitatus Önkormányzati Szemle/Council Review, Dombi, G. – Oláh, M. – Retz, T. (2008).

We can only attribute this comparative indifference to the fact that this age group is most engaged in family and work. This might result in a decreased sensitivity to weather phenomena. A similar result was produced by the 2008 Balaton elite study: “Responses to our issue awareness question indicate that the Balaton regional elite has directly encountered climate change and is aware of the issue. Only 14 respondents reported no change at all in weather,” – the research report states. 92,2% of the 179 respondents, encountered changes in the weather, while 7,8% failed to notice changes in January 2008. The next question was directed toward the issue's temporal dimension:

HOW LONG HAVE YOU BEEN SENSING THESE CHANGES?

This question – surprisingly enough – actually has a “correct” answer.⁴ The expected time frame – based on scientific measurements and facts – would be exactly 10 years! During the summer of 2003 – 10 years before the time of our survey – Europe and indeed Hungary was experiencing an exceptionally hot summer. Nearly all European countries saw their heat records broken, and a spike in related deaths accordingly. In Hungary, besides the record-breaking summer heat other extremities in weather were observed, with -30 Celsius the lowest January temperature for 2003 and – while snow had fallen even in early April – the heat record was set already in May with a +34 Celsius temperature measurement.

The expected “correct” reply was therefore 10 years, yet the population responded 5–6 years on average. (The same question produced a response of 7–8 years in the Balaton elite study of 2008.)

Focusing on age groups, we see that in 2003 our 18–24 group was still in elementary school, and might have been generally unimpressed by

⁴ This can be deduced from the diagrams of Vera Gácsi's presentation of May 24th 2013, Changing Climate – The future has begun, whereby the author introduces the 10 coldest and warmest seasons in the past century.

the great heatwave, explaining why they turned out to be the population group producing the most respondents who gave the lowest score for this question, namely that they had been observing changes in the weather for the past 1 (one!) year only. This is the reason the youngest group's average was below 4 years.

The relatively low average can partly be accounted for by the fact that the warmest summers since 2003 were in 2012 and 2007, respectively. (Communications and social psychology experts might do well to examine how short and long term memory affect subsequent evaluation of these facts.)

Human memory is fascinating, considering how the oldest (over 65's) report only an average of 7.13 years. The table below shows that the highest value cited was 15 years, indicating that mid-term memory seems to have overlooked the irregular weather of 10 years ago. **It may be interesting to compare the population sample subset to those of the eight homogenous groups.** High school students had definitely been young children at the time of the 2003 weather phenomena, and have not been around yet to experience the extreme heatwave of 1992's summer, with about the same decade of events as reference that the university students have.

The table shows that the ten-year period was (on average) guessed right by teachers, church officials, mayors, entrepreneurs and media experts, and it was probably the above-average age of church officials that contributed to one of their group citing 43 years of weather change, and an overall above-average score of 13 years for their group. (Interestingly enough, one entrepreneur gave an even higher estimate of 50 years.)

Human memory is a fascinating thing, considering even the oldest group (over 65's) reported only 7.13 years on average. The following table reveals that the highest value cited was 15 years, therefore mid-term memory didn't quite fix the onto the anomalous weather of 10 years ago. **This was followed up by an open question asking respondents to briefly summarize the changes they encountered.**

Our assumption was that a wide expanse of the population has some idea of weather changes and related problems, and this assumption proved to be fully justifiable. Some 90,0% provided relevant responses, 47 of these (15,7%) reported encountering change without being able to specify it, and general feedback quality tended to improve with higher schooling.

Table 1. Population sample subset compared to eight homogenous groups

Subset	Mean	N	Minimum	Maximum	Median
Population	5.64	271	1	15	5.00
High school students	4.46	37	2	10	3.00
University students	5.38	34	2	10	5.00
University teachers	10.03	33	2	20	10.00
School teachers	9.26	34	3	20	10.00
Church officials	13.26	38	1	43	10.00
Mayors	10.30	40	3	30	10.00
Entrepreneurs	10.50	34	2	50	10.00
Media experts	9.57	37	2	27	10.00
Total	7.44	558	1	50	6.00

Resource: own compilation

Of the 300 surveyed, 223 made an attempt to specify the weather change or changes they had experienced in the past years. The great majority of these listed more than one factor, and only 29 respondents gave short, two or three word replies pointing toward a single factor (such as: no seasons, summer heat, shorter winters, etc.):

(a) **heat, heatwaves and warming** were mentioned by 145 respondents, who saw the rise in temperature as the main feature of weather change. Of these, 97 of these highlighted the **summer** season while 48 mentioned heat in general as the top feature. 21 of these respondents used the popularized scientific term **global warming**, 15 as a general increase in temperature and 6 as a global phenomenon. The accurate scientific term **climate change** was only used by 2 respondents.

Our respondents included experts, and one gave a detailed description of global warming: “Weather fronts arriving with strong wind and heavy precipitation. Global warming: rising sea levels, decreasing ice caps, changes to animal and plant life.”

The other major factor – which many mentioned in relation to global warming, or as an independent phenomenon – was

(b) **changes to traditional winter-spring-summer-autumn cycles**, with alternating seasons losing distinction (“the seasons are missing”) and recognition of a lack of inter-seasonal transitions and recognizable distinctions. According to one respondent, “some portions of winter aren't wintry, while summer has bits which aren't summer.” “Seasons flow together” 87 of 223 legible responses addressed the issue of seasons.

Interestingly there were only 23 cases of winter being mentioned along with summer, but while some described unusually short

and warm winters, others characterized winters as unusually long and cold. Surprisingly, while reports of long cold winters and mild short winters were essentially equal (11%), only one respondent described winters as volatile, while another reply described winter as both short and cold. We can deduce that – beyond the fact that memories of the same events are individually variable – volatile winters definitely point toward climate change. While the majority of respondents identified extraordinary heat as the definitive feature of summers, winter proved to be a less straightforward issue.

In connection to hot summers, nearly one-tenth of respondents (20 in all) also mention that **changes in weather are felt in the body**, that summer heatwaves and frequent weather fronts are unpleasant and unhealthy. Other summer-related factors are **droughts and aridity**, these two terms were used in a total of 17 replies.

Recognizing extreme weather change is thus concurrent to widely differing opinions. Yet the majority share the view that global warming is a fact, which some interpret in terms of excessively hot summers, while others observed that these summers also cause droughts, describing these in terms of “hot and dry”.

The Balaton elite study produced similar result, which researchers summarized as follows:

“One generally held opinion was that there is an increase in extreme weather phenomena, more extreme droughts and precipitation, greater variations in temperature. These were typical responses from 41,3% of respondents: “droughts and extreme weather are more prevalent; heatwaves followed by torrential rain; extreme weather, long and dry summer,

the hot season damages foliage extensively and is a discomfort to people as well”. Another set of typical answers describes the blurring of traditionally distinct seasons. This group reports shorter spring and autumn seasonal transitions, or even their occasional disappearance, as well as unpredictable weather in our region: “seasons are losing their character; winters are mild, spring is starting to disappear; springtime is becoming shorter, winter is followed directly by summer.”

Besides its direct effects, climate change was also observed by some through its indirect effects. They reported phenomena which are themselves triggered by other factors, in this case by warming: “changes in wind direction, more frequent southern winds; springs in our area are drying up, out of 12 only 1 stream is left running; typically Mediterranean species are cropping up; the Sun burns more powerfully; Balaton water levels are more volatile”.

When discussing climate change and warming, our first ideas relate exclusively to its negative impact, which are almost certainly heat-drought-desertification, and related phenomena.” (Highlights in the original!)

We were also eager to find out where climate change information comes from. To our question **What are your sources for climate change related information and news?** we received the following answers:

Table 2. Climate change news sources

1. Television 95.0%	8. Internet 59.4%
2. Radio 91.0%	9. Specialist magazines and publications 4.4%
3. Daily papers 57.4%	10. Deals with the issue through work 3.4%
4. Weekly papers, magazines 25.4%	11. Personal experience 9.5%
5. Friends 64.5%	12. Other sources, as specified: 0.4%
6. Directly from experts 4.4%	
7. From NGO's 12.2%	

Resource: own compilation

More than one answer was applicable, and as the above results show, the average person is not dependent on printed materials for information. The internet is gaining ground as a primary information source, though this is particularly true of trend-setting groups (agents), as shown in the table below:

Table 3. The internet as news source reported in sample subsets

		What are your sources for climate change related information and news? internet		
		Yes	No	Total
Subset	General population	59.40%	40.60%	100.00%
	High school students	97.44%	2.56%	100.00%
	University students	92.50%	7.50%	100.00%
	University teachers	87.50%	12.50%	100.00%
	Elementary school teachers	82.05%	17.95%	100.00%
	Church officials	90.00%	10.00%	100.00%
	Mayors	100.00%	0%	100.00%
	Entrepreneurs	95.00%	5.00%	100.00%
	Media experts	95.00%	5.00%	100.00%
	Total	76.46%	23.54%	100.00%

Resource: own compilation

Within the general population, the younger age group was significantly more susceptible to internet use than older groups. It appears that 55 is the age limit over which the internet has made no real impact, though the highest age group is also becoming increasingly internet-permeated. It is worthwhile comparing the internet to other, traditional sources of information. (Both for general population and agent group samples.)

Table 4. Weekly newspapers and magazines marked as sources by subset

What are your sources for climate change related information and news? Weekly papers and magazines				
		Yes	No	Total
Subset	General population	25.42%	74.58%	100.00%
	High school students	31.58%	68.42%	100.00%
	University students	37.84%	62.16%	100.00%
	University teachers	57.89%	42.11%	100.00%
	Elementary school teachers	45.95%	54.05%	100.00%
	Church officials	42.11%	57.89%	100.00%
	Mayors	57.50%	42.50%	100.00%
	Entrepreneurs	48.72%	51.28%	100.00%
	Media experts	50.00%	50.00%	100.00%
Total		36.21%	63.79%	100.00%

Resource: own compilation

Examining age groups we find that while the middle age group tends to read paper-based media, young people rely on the internet, and old people, presumably at least partly due to low funds, do not spend money on newsprint. The quality of information that people receive from these forementioned sources is well reflected in the results of the next question.

WHAT DOCUMENTS, ESSAYS OR STUDIES RELEVANT TO CLIMATE CHANGE ARE FAMILIAR TO YOU?

This open question produced far fewer applicable answers. While the second question, also open, had most respondents describing their ideas of how the weather was changing, the background information query only resulted in 32 respondents giving applicable information on their own sources. Among them we find several experts listing multiple options, but the most frequent item was the Kyoto Protocol (24 mentions), a result questionable

at least in one respect, that the Japanese location might be so generally recognized due to its being specifically mentioned in the next question. Interestingly, six participants have heard of the National Climate Change Strategy, the VAHAVA climate change project was mentioned by two, while five respondents cited online sources, and two mentioned UN resolutions in general.

One expert reported “contacting all kinds of information” through work, and one university student from the general population sample cited a course called environmental economics as a primary information source. We also received one complete “correct” response: several Club of Rome studies since the 1960’s, various future impact scenarios published, such as *The Limits to Growth* by Meadows et al.

Of course the 2008 Balaton elite study cannot be compared to the population sample. It is surprising, however that the elite too appeared overwhelmingly uninformed. (65,9%) of the 179 people queried gave a negative answer.

Table 5. Familiarity with climate change related documents (2008)

Kyoto Protocol	18
Printed press, relevant literature	14
VAHAVA project results	12
Hungarian peer-reviewed publications	9
International studies, reports	9
Electronic media (TV, radio) articles and features	4
International conferences	3
Internet articles	2
Rio Declaration	2
Documentary film by former US Vice President and presidential candidate Al Gore	2
No reply	118

Resource: own compilation

To quote the closing report of 2008:

“We addressed familiarity with the Kyoto Protocol directly in one of our questions. With 90% of respondents having heard of the

document, we may infer that the majority has a good general idea of Hungary's obligations outlined in that treaty.

Table 6. Hungary's supposed obligations prescribed by the Kyoto Protocol

Carbon dioxide emission reduction	100
Pollutant emission reduction	19
Adhere to the Protocol guidelines	10
Observe emission limit values	2
No reply	55

Resource: own compilation

The following items received one mention each: due to its position in the world Hungary has no duties to perform; preparatory measures for impending climate change; initiating environmental investment projects; fund allocation for environmental protection; adapting the regulatory system; other minor tasks.

Besides the Kyoto Protocol, we also checked acquaintance with other significant international and Hungarian documents. Of those listed, best known was the proposed National Climate Change Strategy, while one-fifth of those queried recognized the Hungarian climate change initiative VAHAVA. The international IPCC report was only familiar to 18% of respondents. Surprisingly, most participants were also familiar with other relevant publications. Prevalent mentions included National Meteorology Service reports, Balaton-related reports (undoubtedly including the well-known study on water supplementation in relation to climate change), articles from Climate Change magazine, and reports from World Watch Institute.”

CONCLUSION

We may observe climate change awareness disparities between expert groups and the general population. While the population is aware of the occurring extreme weather, they are far less informed regarding the causes and foreseeable impact of these phenomena. The

vast majority of respondents – about 90% – perceived the weather change. There was no significant correlation between gender, school qualification, status groups, religion or political views, only in the age-specific groups we could observe an interesting feature. (The age group of younger adults was less concerned about climate change than the elderly one.) Our assumption that a large sections of the population have a vision of the changing weather and the related problems, has been fully justified.

When an open question was asked from the respondents in order to briefly explain what kind of change(s) they have perceived, 90% of the respondents gave valuable answer.

Analyzing the content of the given answers, most of them mentioned the global “warmth” (hotness) and its synonyms, in which, the most important feature of weather change was told as the rising of temperature. On the other hand, the most important factor is the change in the traditional winter – spring – summer – autumn period, also the disappearance of seasons rather than the alternation of seasons, and the recognition that there is no transition between the seasons and the seasons do not differ anymore. We were also curious about where the climate change information came from. The so-called average person relies less and less on paper-based information. (They spend less and less on newspapers and magazines.)

They rely more and more on the Internet, and this is even more relevant to think-tank and expert groups. People belonging to the younger age range rely significantly more on the Internet than the elderly ones in a population sample. It seems that there is a limit above the age group of 55's where the internet has not been so significant yet, and they are mostly informed from television. Only a few of the official documents on climate change are known.

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