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Mass media as a source of information about extreme natural phenomena in Southern Poland

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Abstract

The paper presents the preliminary results of the project entitled 'Public attitudes and behaviours concerning extreme natural phenomena in Southern Poland', carried out in the years 2005-2008 at the Jagiellonian University in Kraków, Poland. The aim was to study the public perception of floods, strong winds and landslides in a representative group of Polish citizens, living in rural and urban areas, who experienced the mentioned extreme phenomena and those who did not. The frequency of occurrence of extreme phenomena influences their perception, which is then reflected in people's actions, e.g. those who experienced a few floods are much more careful about future flood predictions and undertake much more precautions to protect themselves than those who experienced only one flood event. Mass media are the preferred means of information and they play a key role in shaping the understanding of environmental problems. However, the quality of information in the media is usually rather poor and burdened with a strong negative emotional load.

Keywords: extreme natural phenomena, Southern Poland, mass media, public attitude

1. Introduction

Mass media are the main source of information about environmental issues for the adult part of society in most countries. They connect us with the part of the world which is beyond our personal observation and enlarge the scope of phenomena we can experience indirectly (McQuail, 1994). In Poland, mass media were owned and controlled by the state until 1989 when communism collapsed. Therefore, until the end of 1980s, the environmental information delivered to society was controlled and limited. Since 1990, an independent mass media market in Poland has developed, following the patterns known from Western Europe and USA. However, the process has been influenced by the same factors as the economic development of the country, e.g. weakness of the national economy, little financial potential of the national

investors, lack of formal regulations concerning many issues not known in the communist system or their constant changes. That is why Polish mass media should be rather perceived as being still in the process of creation, development and shaping. So is the public awareness and attitude towards environmental issues (Kocik, 2000). The present paper is an attempt at showing some links between those two elements.

2. Methods and materials

In the years 2005-2008, a project entitled 'Public attitudes and behaviours concerning extreme natural phenomena in Southern Poland' has been carried out in the Institute of Geography and Spatial Management at the Jagiellonian University in Kraków, Poland. The aim of the project was to study the public perception of floods, strong winds and landslides in a representative group of Polish citizens, living in rural and urban areas, who experienced the said extreme phenomena and those who did not. The analysed area included 6 of 16 Polish administrative regions ('voivodships'), located in Southern Poland (Podkarpackie, Małopolskie, Dolnośląskie, Świętokrzyskie, Śląskie and Opolskie 'voivodships') with a total area of 86,432,500 sq. km and 15,289,000 inhabitants (figures from 2005). Fifteen localities of various size and type were selected, which is shown in Table 1 and Figure 1.

Table 1. Localities in Southern Poland selected for the study.

Locality	Number of inhabitants	Type	'Voivodship'	Occurrence of:		
				flood	strong wind	landslide
Grabownica	3,000	village	Podkarpackie	X		
Porąbka Uszewska	1,300	village	Małopolskie	X		
Laskowa	2,700	village	Małopolskie	X		X
Ząb	1,300	village	Małopolskie		X	
Targanice	3,300	village	Małopolskie		X	
Lachowice	2,200	village	Małopolskie	X		X
Hucisko	370	village	Świętokrzyskie		X	
Jordanów	5,200	small town	Małopolskie			
Maków Podhalański	5,700	small town	Małopolskie	X		
Polanica Zdrój	6,700	small town	Dolnośląskie	X		
Kłodzko	28,500	middle-size town	Dolnośląskie	X		
Sandomierz	25,600	middle-size town	Świętokrzyskie			X
Ostrowiec Świętokrzyski	74,200	middle-size town	Świętokrzyskie	X		
Bielsko Biała	177,000	city	Śląskie			
Opole	127,600	city	Opolskie	X	X	

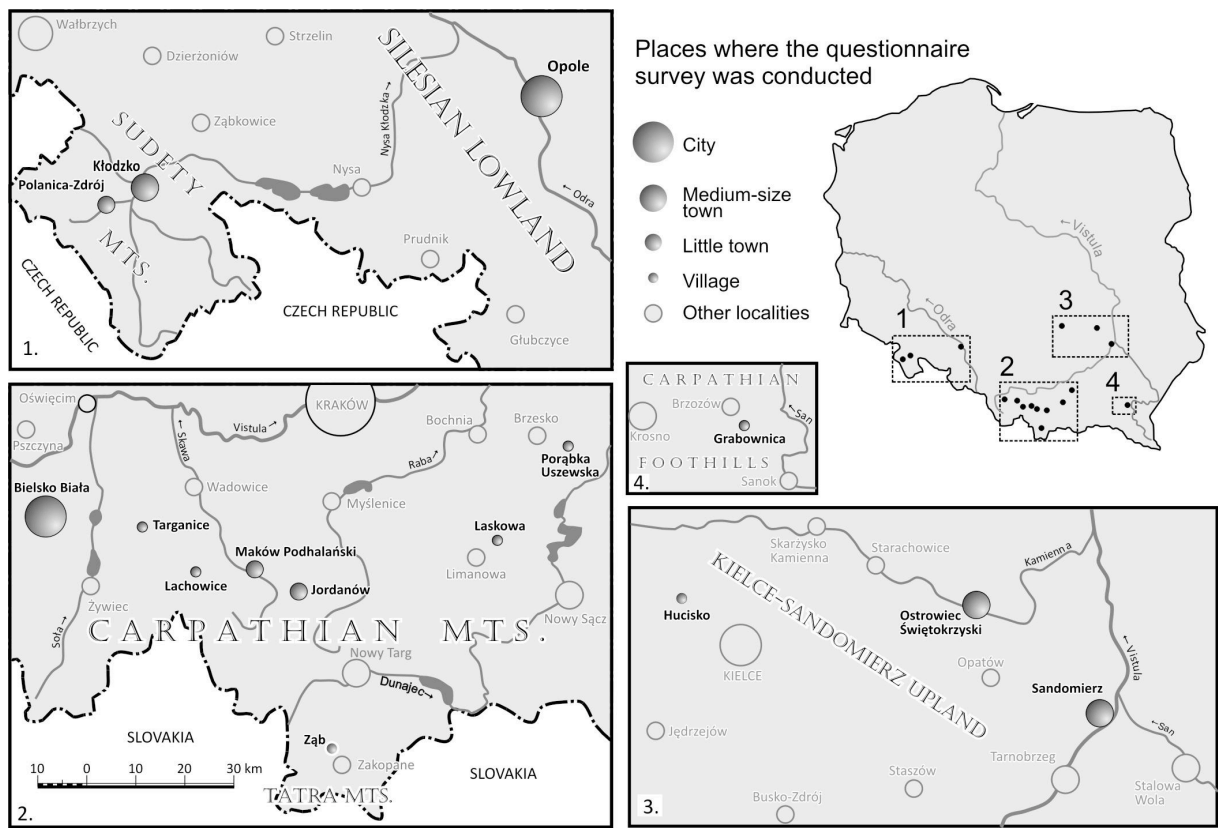


Figure 1. Maps with localities in Southern Poland included in the study.

In most localities, people experienced one or two kinds of extreme phenomena, but in two localities none of them occurred. The localities are of various sizes (from a village to a city) and are located in different geographical regions: the Carpathian Mountains, the Sudety Mountains, The Carpathian Foothills, Kielce-Sandomierz Upland, Sandomierz Basin, and Silesian Lowland. Another factor taken into consideration while choosing the localities for the study referred to the social links in the community connected with the duration of residence.

The selected extreme natural phenomena were those characteristic for Southern Poland. Floods of various sizes often occur in the mountains and landslides are typical for the Carpathians built of the Flysch complex. Strong winds are also typical for mountainous areas, but recently an increase in the occurrence of very strong winds and tornadoes (fortunately of much less spatial extent than those in North America) can be observed in non-mountainous areas, which used to be a very rare case so far. All mentioned phenomena are difficult to be predicted in terms of the time and place of occurrence and the possibilities of decreasing the loss risk caused by them are differentiated.

The first part of the study presented in this paper was carried out by means of questionnaires. Three different questionnaires were prepared, each to analyse a different extreme phenomenon. In every questionnaire, the first questions concerned the subjective perception of danger caused by the possible occurrence of a certain phenomenon and the frequency of its actual occurrence. Then we asked about the possibilities of obtaining support in case of occurrence of the phenomenon and the expectations concerning authorities responsible for that support. The next issue were the reasons of economic losses and possibilities of their diminishing. Subsequent questions concerned people's preparedness in case of occurrence of the phenomenon, including concrete actions undertaken by them. Then we asked about the sources of information about that particular phenomenon and preferred solutions concerning information flow. The questionnaire ended with questions concerning the person's direct experience of the phenomenon, duration of residence in the locality, age, gender, education, place of work and monthly income.

Table 2. Type of questionnaires distributed in the studied localities and rate of return.

Locality	Questionnaire type	Number of copies sent	Rate of return (%)
Grabownica	flood	200	38.5
Porąbka Uszewska	strong wind	200	54.5
Laskowa	flood, landslide	200 200	55.5 51.0
Ząb	strong wind	200	43.0
Targanice	strong wind	200	56.0
Lachowice	landslide	200	55.0
Jordanów	flood	200	57.0
Maków Podhalański	flood	200	51.5
Polanica Zdrój	flood	200	90.5
Kłodzko	flood	400	41.8
Sandomierz	landslide	280	61.4
Ostrowiec Świętokrzyski	flood	400	80.0
Bielsko-Biała	flood, landslide	400 200	48.0 68.5
Opole	flood, strong wind	600 200	66.8 36.5
Hucisko	strong wind	140	56.4

The presented sequence of questions allowed us to learn what people think and know about an extreme phenomenon, what they do to protect themselves against it and why (i.e. whether the knowledge and perception is translated into any real actions), and finally what are the sources of information, whether people see the need to learn more and how they would like to get more information. Therefore, the role of the mass media as a source of information about extreme phenomena is presented in the context of real local experience.

The questionnaires were distributed in 15 localities in the period from September to November 2006. Table 2 shows how many copies were delivered to particular localities and sent back. Totally, 4620 questionnaires were distributed via schools to the inhabitants of the selected localities and 2646 were filled in and returned, which gives the rate of return at the level of 57%. Most questionnaires (74.7%) were filled in by women, 58.4% of the respondents were 36-50 years old and 47.4% had secondary level education. In 71.3% of cases, the monthly income per person did not exceed 1000 PLN (about 260 EUR).

Finally, there were 1667 flood questionnaires, 459 strong wind questionnaires and 520 landslide questionnaires analysed.

3. Attitudes and knowledge about extreme phenomena

All flood questionnaires (1667 copies) were divided into three groups depending on the real occurrence of the flood in a certain locality and its presence in respondents' memories:

1. A few floods occurred in the last 10-15 years, including one really extreme flood, and over 50% of the respondents remembered that extreme one, while about 20% remembered more than one flood;

2. Only one extreme flood occurred in the last 10-15 years and over 80% of the respondents remembered it well;

3. No flood occurred in the last 10-15 years and about 60% of the respondents did not remember any flood.

In each group there were respondents from localities of different sizes and types. Direct experience of flood increases the sense of being endangered by that phenomenon and its possible reoccurrence (declared by about 75% in groups 1 and 2 and only 28.1% in group 3). It is also associated with the opinion that the floods cause now much higher economic losses than before (57% in groups 1 and 2 and 37% in group 3).

Out of the 1667 persons who filled in the flood questionnaire, 51.5% declared that they felt not well prepared for flood, while for strong winds the share was 56.4%. The smaller the locality, the higher percentage of people convinced to be little prepared for flood or strong winds/tornados. Strong winds are perceived as more difficult to be predicted than floods which is proved by the answers to the question about the possibilities of diminishing the economic

losses caused by extreme phenomena; 49.7% of the respondents declared that the flood losses can be partially diminished, while for strong wind losses the share was 40.1%. As many as 45.5% of the respondents declared that very little can be done in case of strong winds, while for floods it was only 11.9%. Again, the inhabitants of cities were more optimistic in their opinions than the persons from villages and small towns.

Most respondents (66.2%; 53.9% in villages and 74.7% in cities) are convinced that the main causal factor responsible for flood losses is a poor condition of the flood protection infrastructure and large investments would solve the problem (Table 3). The extraordinary size of flood is blamed by 19.9% of the respondents (24.2% in villages and 14.3% in cities), while only 13.8% points to wrong location of houses, built in the flood terraces (21.9% in villages and 13.0% in cities). The answers to that question, analysed in the three groups mentioned at the beginning of this section, show an interesting feature. In the localities from group 2, 70% of the respondents declare that the main factor is a poor condition of the flood protection infrastructure. In group 1, only 59% agree with it, while twice as many persons in group 1 admit that the main factor is a wrong location of houses.

Table 3. Main factor responsible for disastrous effects of floods (% of answers).

Type of locality	Extraordinary size of flood	Poor flood protection infrastructure	Wrong location of houses
village	24.2	53.9	21.9
urban area:	19.3	67.9	12.8
<i>small town</i>	23.9	60.6	15.6
<i>medium sized town</i>	21.7	68.1	10.3
<i>city</i>	14.3	74.7	13.0
mean	19.9	66.2	13.8

Therefore, we can conclude that in the areas where there were no floods recently, people strongly believe in the effectiveness of the flood protection infrastructure, while those who experienced the flood probably try to minimize their personal responsibility and look for causal factors either in the unpredictable nature of the event or in insufficient flood protection infrastructure. At the same time, they do not want to admit that the location of their houses may be of significant importance. That conclusion is additionally supported with the answers to the question concerning whether the respondents perceive the area where their houses are located

as endangered by the flood or not. In group 1, 64.7% of the respondents answered 'yes' while in group 2 it was only 30.4% and in group 3 the rate reached 83.2%.

4. Protection activities

Out of all respondents who filled in the flood questionnaire (1667 persons), 42.2% of them declared that their house was located in the area endangered by the flood occurrence. In that group, 18% of the respondents on average declared that they had undertaken activities to protect their houses against a flood (Table 4). However, the rate varied from 45.2% in villages to 7.4% in cities, so the larger the locality, the less is done in terms of individual flood protection. The same tendency can be observed in the case of individual protection against strong winds (23.5% in villages and 9.3% in cities). The protection activities realized by small groups of inhabitants are most popular in small towns (31.5%), which can be a result of strong social links in those communities. The protection activities were studied also in the groups of respondents defined in the previous section due to the flood occurrence. There is a significant difference between group 1 and 2. Persons from group 1 undertake protective actions almost twice as often as those from group 2, who have experienced only one big flood event.

Table 4. Respondents' activity (in %) concerning protection against floods and gales (answers only from those who consider their house as located in areas endangered by floods or storms).

Type of locality	Personal activities to protect their houses	Protection activities in small groups	Application to local authorities for flood protection	House protection against gales
village	45.2	26.0	44.0	23.5
urban area:	14.7	16.0	16.4	9.3
<i>small town</i>	27.9	31.5	33.9	-
<i>medium sized town</i>	15.4	19.4	15.9	-
<i>city</i>	7.4	5.1	8.2	9.3
mean	17.9	17.0	19.3	21.4

The majority of the respondents (over 60%) are convinced that local authorities should organize and sponsor protective activities against floods (see Table 5). Only 17% of them declared that they should have done something themselves, together with their families, and 7% of them counted on their neighbours. However, in case of storms, the opinions were quite the opposite. About 70% of the respondents answered that individual actions are of greatest

importance, which is due to the technical nature of the protection facilities used against both hazards. People living in villages are much more willing to act on their own than the inhabitants of the cities.

Table 5. The main factor responsible for protecting households against floods and storms according to the respondents (% of answers)

Type of locality	Individuals with their families		Individuals with neighbours		Local authorities		Higher level authorities	
	flood	storm	flood	storm	flood	storm	flood	storm
village	27.4	70.5	3.6	5.7	51.8	18.2	17.3	5.7
urban area:	15.5	58.2	7.7	10.4	62.6	26.9	14.2	4.5
<i>small town</i>	21.3	-	10.8	-	56.7	-	11.1	-
<i>medium sized town</i>	12.9	-	9.2	-	66.5	-	11.3	-
<i>City</i>	13.9	58.2	4.2	10.4	63.2	26.9	18.7	4.5
mean	16.9	68.5	7.2	6.4	61.4	19.6	14.6	5.5

5. Mass media as the source of information

Personal experience is an important source of information about extreme phenomena. However, even in the areas often affected by floods, strong winds or landslides, only about 50% of the respondents point to personal observation as a source of information. The most popular source is local mass media, referred to by 68% of all respondents. The third source (in case of 24.8% of the respondents) is information acquired from the family members and friends. A surprisingly low rate of 5% is associated with school education. It is comparable with the impact of information distributed in the form of leaflets (5.7%). Information provided by schools is usually detached from the local environmental context, so it does not contribute much to increasing knowledge about the local environment. Besides, mass media have been a much more important source of current information for adults than school experience from many years ago (Burgess and Gold, 1985). Neither the frequency, nor the extent of economic losses had an impact on the presented pattern of answers. However, the pattern differed for the localities of various sizes and types. In villages, local mass media are the source of information about natural hazards for 60% of the respondents, while in cities for 82.4% of them. Personal observations are significant for 57.2% of the villages' inhabitants, while in cities it is only 39.8%. Finally, family and friends deliver information to 30.1% of people in rural areas and only to 18.5% in cities. The results prove that rural communities are much more dependent on natural phenomena than urban ones, and social links are much better developed there than in the

atomised urban social environment. This is also reflected in the answers to the question concerning preferred methods of environmental information flow. Inhabitants of villages prefer direct contacts and meetings (41.3%), while people living in cities would rather obtain necessary information via mass media (62.7%). The declared interest in various information sources did not depend on demographic features, financial situation or the place of work, which only proves the dominant role of local mass media among the indirect sources of information.

6. Discussion

The results presented above prove that the frequency of extreme phenomena occurrence influences the perception thereof, which is then reflected in people's actions. Those who experienced only one big flood try intensely to diminish the cognitive dissonance and deny that their houses are located in the area endangered by floods. That mechanism is known as a way of eliminating inconsistent and contradictory information when confronted with unpleasant facts or unavoidable phenomena (Aronson, 2002). Those people also act according to the threat denial response; they do not undertake actions aimed at improving flood protection infrastructure because they do not believe that such an extreme event can take place again during their lifetime (Shippee et al., 1980). Those who experienced a few floods are much more careful in such predictions and undertake much more precautions to protect themselves, which agrees with the results of Laska (1990).

Mass media play a key role in shaping the understanding of environmental problems by the inhabitants of Southern Poland, which complies with the results obtained in other countries (e.g. Stamm et al., 2000). Unfortunately, the quality of such information is usually rather poor and burdened with a strong negative emotional load. Polish mass media follow the pattern described by Mitchell (2000) and create concerns by overemphasizing the powerlessness of human beings when confronted with natural forces. Another important factor is the very limited time and space dedicated to environmental issues in Polish mass media, which is, among other factors, the effect of the lack of strong green lobby in Poland. What is worse, quite often correct information delivered by scientists is turned into the wrong one by the journalists who tend to oversimplify facts and detach them from the context (Biernacki, 2007; Bokwa, 2007). A good example is the disastrous flood of 1997 that affected 10% of Poland's territory. The media immediately adopted the terms: 'the flood of the century' and 'the flood of the millennium' and associated it with a false conviction that such flood could not happen in the next 100 or 1000 years.

Usually there is no analysis of the nature of a particular phenomenon or ways of protection against it in the mass media; instead, the inconveniences resulting from the phenomenon are stressed. Therefore, journalists increase the feelings of unexpected danger rather than help to build useful knowledge about natural phenomena (Biernacki, 2007). Piotrowski and Armstrong

(1998) argue that stories about natural disasters included in newspapers are much more detailed and in-depth than TV and radio reports. Unfortunately, it is not true in the case of Polish newspapers (Biernacki, 2007), which only proves their incomplete development mentioned earlier.

Mass media are the preferred way of obtaining information, which means that local authorities responsible for natural hazard risk management should consider using that powerful tool to a much wider extent than so far in order to raise public awareness and knowledge concerning extreme natural phenomena.

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