

INVOLVING THE POPULATION IN ENVIRONMENTAL CHANGE AND EXTREME EVENTS VULNERABILITY ASSESSMENT THEORETICAL REMARKS AND CASE-STUDIES

DAN BĂLTEANU, ANDRA COSTACHE

*Romanian Academy – Institute of Geography, 12 Dimitrie Racoviță, 023993, Bucharest, Romania
e-mail: igar@geoinst.ro*

Abstract. The paper emphasizes the importance of participatory research in the assessment of vulnerability to environmental change and extreme events. The focus is on different forms of population involvement (communication, consultation and participation) and their role in obtaining primary data on the components of vulnerability (exposure, sensitivity and adaptive capacity). Two case-studies conducted in Romania are summarized in order to sustain the theoretical remarks.

Key words: vulnerability assessment, participatory research, case-studies.

Introduction

It has been almost unanimously accepted that the population should be involved in assessing vulnerability to environmental change and extreme events (Smith, 1996; Slovic et Weber, 2002; Polsky et al., 2003; Roncerel et al., 2003; Kasemir et al., 2003; UNISDR, 2004; Dwyer et al., 2004). This idea is sustained by numerous arguments put forward in the specialist literature and by field research (Table 1). And yet, opinions diverge when it comes to establishing what extent is it “adequate” to involve the population. Therefore, the approach takes on many forms, local communities and decision-makers being involved in the following processes (Rowe et Frewer, 2005, quoted by Stringer et al., 2006):

- Communication (the transfer of information from researchers to the population, low or unrequested feedback).
- Consultation (gathering information from the population and from decision-makers).

- Participation (initiating a dialogue and exchanging information among researchers, population and decision-makers). Participation proves to be the most complex and systematic process, involving the communities exposed to extreme events and the decision-makers to proceed to in-depth vulnerability assessments in order to offer the opportunity and motivation for corresponding measure to be taken in order to stimulate the local capacity of response and adjustment to crisis situations (Action Aid International, 2004).

The tools used in participatory vulnerability assessment (e.g. field inquires, interviews, focus-group discussions, mental maps) are generally conceived such as to facilitate the cooperation between researchers and the vulnerable groups with a view to reaching a better understanding of the causes of vulnerability to environmental change and extreme events, and identifying viable adjustment measures adequated to local specificity.

Table 1

The role of population involvement in assessing vulnerability to environmental change and extreme events
Discussions

Arguments <i>(Heijmans, 2001; Stringer et al., 2006)</i>	Comments
The participation of population and decision-makers enables researchers to have a many-sided perspective on some events, provides a more comprehensive image on these events and reduces uncertainties. The local population's knowledge and experience affords taking some viable long-term adjustment measures.	This process may impair final research results, generating confusion when several contradictory interests are at stake (e.g. of the population, of local decision-makers, of the central authorities, and of entrepreneurs). Therefore involving the population is an approach complementing vulnerability assessment based on quantifiable variables. At the same time, sociological research tools must be correctly conceived and used in order to avoid possible sources of error.
Some programmes to attenuate the impact of extreme events view the local community members simply as beneficiaries and not as actual participants in the implementation of these programmes. In these cases, the way in which the population experiences and grasps disasters is ignored by (political, social, economic, financial and technological) decision-makers when setting vulnerability attenuation measures; there are often disparities between the local communities' traditions and practices, on the one hand, and the vulnerability reduction measures proposed, on the other.	
Involving the population in this process is in the spirit of democratic ideas, because it gives some rights to marginalised groups, which are also the most vulnerable ones. At the same time, local communities are entitled to take part in the decision-making process that directly affects their life. Safeguarding one's own family and means of living are first and foremost the interest of the people themselves and not only of experts, authorities or intervention staff.	
Involving the population contributes to insights into local traditions, into the communities' social and ethical values, which are essential in adapting to crisis situations.	
Participative vulnerability assessment highlights ways and means of cooperation between the authorities and the population liable to strengthening cohesion within the studied communities.	

Working out an as complete data-base as possible, might imply resorting to sociological research tools in order to gather information on all vulnerability components as follows:

a) *Exposure* to environmental change or to extreme events:

- causes and characteristics of events – affected area, duration, frequency and intensity;
- a record of previous events with similar particularities;
- changes occurred over time in the particularities of extreme events;

b) *Sensitivity*, basically the degree to which the analysed system, or its components could be affected by certain pressure factors:

- identifying areas prone to potentially hazardous processes / phenomena and description of possible effects;
- distinguishing the vulnerable groups (by experience, knowledge, mentality, access to resources and information, location, sex, age, and social status);
- identifying vulnerability causes – environmental conditions, social-economic conditions (isolation, discrimination, marginalisation and poverty), inefficient local management;
- description of the crisis situation and its consequences (damage to the population, to economic activities, and infrastructure; consequences for people's means of living; impact on social relations; psychic effects).

c) *Adaptive capacity* of human communities exposed to certain pressure factors:

- identifying existing response strategies and assessing their effectiveness (possibly correlating them with previous events that led the development of such strategies);
- describing the response of both population and authorities, the very moment of event occurrence, as well as before and after it. Identifying the factors that lie behind the response (e.g. previous experiences, education level, age, sex, and ethnicity);
- the way in which the population refers to extreme events (e.g. fatalism – passive acceptance; denial or underestimation of the danger; active stance, initiative and voluntary participation in impact prevention or reduction);
- the population's expectations when faced with an extreme event (assuming or transferring responsibility for resolving the crisis situation);
- social relations and their characteristic features (confidence, civic spirit, creation of informal networks of material assistance, or tensions between population and authorities);
- identifying vulnerability reduction measures;
- establishing correlations between the consequences of crisis situations and vulnerability-generating processes, liable to influencing the population's response capacity to extreme events.

Perception of the April 2005 flood events at Foeni and Otelec–Timiș County (type of population involvement: consultation; tools used:

questionnaire-based enquiry). The questionnaire administered in two localities to a sample of over 50 people, was worked out on the basis of the above-reported structure. The results obtained (Bălțeanu and Costache, 2005) have shown that the frequent occurrence of flood events and the population's perception of the probability for such events to recur, had an aggravating impact. The fact that flooding of that scale had not occurred over the past 30 years and the conviction that such phenomena could not happen, had either delayed the implementation of pre-disaster measures (warning signals and evacuation of the population), or had reduced their efficiency. Thus, until the very last moment, the inhabitants of both localities deemed it futile to be evacuated. People's answers to questions of voluntary participation are indicative of specific social relations and their impact on events. Thus, 41% of respondents said that physical incapacity (old age, physical affections), lack of request resources, or disappointment with the villagers and the authorities who failed to assist them during the floods, would prevent them from participating. Both at Foeni and Otelec some pointed out the lack of solidarity within the community when first aid was needed, or afterwards. At the time the questionnaire was being administered (July 2005), this was one of the causes conducive to social tensions, obvious when it came to the distribution of aids, damage evaluations and flawed dialogue with the authorities.

The findings have revealed that, in such situations, beside improving communication between authorities and population, throughout the development of events, it is necessary for post-disaster measures to be correctly and transparently implemented e.g. damage evaluation, distribution of

financial aid or food. Most respondents appeared to be satisfied, or partially satisfied with the first aid they had received; yet, when speaking about the measures taken by authorities, the answers were rather reserved, concluding, however, that in their critical situation any aid was welcome. The interviewees said that in the very first hours after the settlements had been flooded, the authorities seemed to be at a loss, quite disorganised, major assistance coming from families and acquaintances.

Also long-term measures were deemed to be insufficient, 55% of the respondents suggesting that before flooding, people had a certain degree of confidence in the authorities' capacity to cope with like events (but they did not "meet expectations"). The majority were disappointed with the post-event reaction of the central authorities, they had the feeling of being abandoned, forgotten and that measures to resolve the situation of flood-affected people were slow in materialising.

Noteworthy, the population had a responsible attitude towards such events, over half of the respondents decided to take up an insurance policy against flooding.

Perception of environmental change and extreme events in the Petroșani Depression (type of population involvement: participation; tools used: two focus-group discussions). The discussions were organised at Petroșani in August 2004. The first debates session was attended by six people aged 17-60 years old, four of them having academic studies. They represented the population, the NGOs and the legal consultancy firms for the civil society. The second session numbered nine participants with academic studies representing the local administration, the National Pit-Coal Company and

the National Agency for Development and Implementation.

The initial set of questions had in view the following aspects: hazardous natural phenomena affecting the Petroșani Depression communities; impacts on revenues; the role of the human communities in triggering the extreme events or the environmental degradation; vulnerability of the Petroșani Depression communities to environmental change compared to other regions of Romania and capacity of adjustment to environmental change; human and social capital, an indicator of the communities' capacity of adjustment to socio-economic and environmental change.

As discussions proceeded, the set of questions suffered some modifications in that certain topics brought up into debate by participants (impact of human activity pre- and post-1989, the region's image outside its boundaries, development alternatives and drawbacks in implementing solutions). Discussions were recorded and subsequently transcribed, key-words and ideas frequently put forward were identified and included into larger categories (Table 2) in order to interpret and compare the results of the two debate sessions. After analysing them, they were distributed to the participants, and feed-back requested.

What appeared to be significantly different between the two groups was their perception of the authorities' role in protecting the environment, and the adjustment capacity to environmental change (whereas the participants in the first debate session spoke only about their own experiences, those representing the authorities assessed the general situation of the region).

Table 2

Comparative results of Focus Group discussions

NATURAL HAZARDS: INCIDENCE, IMPACT, PERCEPTION		
	FOCUS GROUP 1 (FG1)	FOCUS GROUP 2 (FG2)
Common conclusions	Low level of exposure to natural hazards “Very few natural phenomena with major impact in the Jiu Valley” “In terms of hazards, the Jiu Valleys is an isolated, pretty secure region” The hazard-triggering causes are also of anthropic nature “Hazardous natural phenomenon are connected with deforestations” “Also mining contributes to unleashing them” “It is not Nature’s, but people’s fault”	
Exemples	Floods (Lupeni, 2004, Negriile Mts; Petroșani – outskirts district 1960-1970’s – effects of deforestation, human errors, etc.).	Land degradation (Anena complex, Ștefan, and Carolina quarters in Lupeni) Floods (Lupeni – 2002, 2004)
Impact on revenues	Low Participants do not feel threatened: “...perhaps the <i>momârlani</i> (Rom. regionalism = local peasants) who possess land in the hills do”	Significant “...because of poverty, any hazardous phenomenon in the Jiu Valley is seen as a catastrophe...”
Adaptive capacity	More important is adjustment to economic change, is rather difficult	Undoubtedly low, given the socio-economic situation
Measures of hazard impact reduction	Afforestation Making the civil society more responsible and official measures firmer to eliminate the man-induced causes lying behind these phenomena	Investments in projects to consolidate certain areas. The authorities should take the requisite steps, but civic responsibilities should also be developed.
IMPACT OF HUMAN ACTIVITY ON THE ENVIRONMENT		
	FOCUS GROUP 1 (FG1)	FOCUS GROUP 2 (FG2)
Common conclusions	Impact attenuation steps devolve on the authorities, but also education and legal measures are necessary to change people’s mentality. “...People are cooperative when they see that something is being done” (FG2)	
Comparison: the dimension of human impact on the environment prior to and after 1989	Bigger impact after 1989 “Mining had a great impact even before, but now it is downright disastrous” “The scope and breadth of deforestation is by far greater now” “Waste dumps were somehow stable before” “Conservation of the pits will end in disaster, the moment will come when they collapse ... they had better stayed active”	After 1989, the human impact / mining has been reduced An explanation for the population’s attitude: - awareness of rights - with the slowdown of activities they are no longer ready to put up with us (CNH – National Pit-Coal Company representative) - pre-1989 constraints nurtured the illusion that all sectors were efficient
The authorities’ role in environmental protection	More efficient prior to 1989: constraints and doctrine led to a certain community cohesion: “All and everyone were indoctrinated and believed in playing a part in building up communism” “The system’s overall effect was clearly positive”	Absolutely more efficient after 1989 “Before 1989, environmental issues were not perceived as such, ... the authorities were not allowed to take notice”
Impact attenuation measures	Afforestation, rigorous urbanistic plans, changing mentalities, legal constraints, educating the population	Consolidation of land-degraded areas, investments in ecological reconstruction projects, development of civic responsibility

SOCIAL CAPITAL. THE REGION'S OUTSIDE IMAGE		
	FOCUS GROUP 1 (FG1)	FOCUS GROUP 2 (FG2)
Social capital	Heterogeneous population Low level of human and social capital Clear-cut delimitation between local peasants' <i>momârlani</i> communities and mining communities The labour force brought to the Jiu Valley had a distinctive level of civilisation: the post-1950 immigrants "failed to attain the level of Hungarian, Austrian and other immigrants" "Problems began after Ceaușescu had come to power and brought in labour from all over the country It was then that the balance gave way after this human flood poured in (FG1)	
The Jiu Valley's projected image, isolation	Negative image, even at the level of the central authorities, caused by the <i>mineriade</i> events (miners' violent marches toward Bucharest) "We are isolated because of the way the country perceives us due to the <i>mineriade</i> ... it will take some ten years before for this perception is likely to disappear ..." Socio-economic and environmental problems in the Jiu Valley are not bigger than in other regions of Romania	

Major perception similitudes have in view development of civic responsibilities and assumption by the civil society of its duty to prevent and attenuate the negative consequence of hazardous situations and environmental change; also aspects of how the population and the local decision-makers relate to the central authorities; the findings revealed people's feeling of isolation caused by *mineriade* and the negative image promoted by the mass-media. In the participants' view, socio-economic and environmental problems in the Petroșani Depression were not more severe than in other regions of the country, but continued

to be perceived in a negative manner because the central authorities were unaware of the real situation. This had a discouraging effect on the local communities, weakening their capacity to adjust to crisis situations.

Summing up, we would say that the results yielded by the consultation and participation of the population in the two case-studies confirmed the necessity for this type of approach, highlighted particularities of the local vulnerability context, as well as of communication difficulties between population and decision-makers.

BIBLIOGRAPHY

- ActionAid International 2004, *Participatory vulnerability analysis. A step-by-step guide for field staff*, London, 35 p.
- Bălțeanu, D., & Costache, A., 2006, 'Conceptul de vulnerabilitate. Aplicații în geografie', *Revista Geografică*, Tom 12, pp. 5-12.
- Bălțeanu, D. & Costache, A., 2006, 'Percepția efectelor inundațiilor din aprilie 2005 la Foeni și Otelec (județul Timiș). Considerații preliminare', *Studii și Cercetări de Geografie*, Tom LI-LII, 2004-2005, p. 139-152.
- Costache, A. & Hodorogia A., 2005, 'Participatory research applied in geography. The results of two focus group discussions in the Jiu Valley', *Analele Universității Valahia, Seria Geografie*, Tom 4-5, pp. 216-224.
- Dwyer, A, Zoppou, C, Nielsen, O., Day, S. & Roberts, S., 2004, 'Quantifying social vulnerability: a methodology for identifying those at risk to natural hazards', *Geoscience Australia*, Record 14/2004, viewed on 10 November, 2005, www.ga.gov.au/iamage_cache/GA4267.pdf
- Heijmans, A., 2001, 'Vulnerability: a matter of perception', *Disaster Management Working Paper*, 4/2001, Benfield Greig Hazard Research Center, University College of London, 17 p.

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- Inter-Agency Secretariat of the International Strategy for Disaster Reduction, UNISDR, 2004, *Living with risk. A global review of disaster reduction initiatives*, Geneva, 430 p., viewed on 17 April, 2006, www.unisdr.org
- Kasemir, B., Jäger, J., Jaeger, C. & Gardner, T. M., 2003, *Public participation in sustainability science. A handbook*, Cambridge University Press, 267 p.
- Polski, C., Schroter, D., Patt, A., Gaffin, S., Martello, M., L., Neff, R., Pulsipher, A. & Selin, H., 2003, *Assessing vulnerabilities to the effects of global change: an eight-step approach*, Belfer Center for Science and International Affairs Report, 5, Harvard University, 19 p.
- Roncerel, A., Boyer, B., Alam, M. & Rahman, A., 2003, *Participatory approaches for NAPA preparation: an overview*, UNITAR, Geneva, 33 p., viewed on 20 May, 2004, www.unitar.org/ccp/Addis
- Slovic, P. & Weber, E. U., 2002, *Perception of risk posed by extreme events*, 21 p., viewed on November 10, 2005, www.ldeo.columbia.edu/chrr/documents/meetings/roundtable/white_papers/slovic_pdf
- Smith, K., 1996, *Environmental hazards. Second edition. Assessing risk and reducing disasters*, Routledge, London, New York, 389 p.
- Stringer, L. C., Dougill, A. J., Fraser, E., Hubacek, K., Prell, C. & Reed, M. S., 2006, 'Unpacking Participation' in the *Adaptive Management of Social-ecological Systems: a Critical Review*, *Ecology and Society*, 11(2):39, 22 p.