

STATISTIC ANALYSIS – RESEARCH METHOD IN MODERN GEOGRAPHY

Case study: *Social impact of the gad phenomenon on human communities in Rovinari coalfield*

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ABSTRACT

Through the transformations specific to its evolution, society has become a very important environmental modifier and thus, human-environment relationship. By developing a case study on the social impact of the gad phenomenon on human communities in Rovinari coalfield, we will be able to point out within this article the fact that in modern geography, the statistic analysis has become a practical research method and an environmental interdisciplinary evaluation method.

Key words: *Statistic analysis, social impact, interdisciplinary evaluation, coalfield*

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1. INTRODUCTION

The diversification in the categories of anthropic impact on the environment reflects the dynamic and dimension of human-environment relations, which have a crucial role in the determination of environmental global changes that have presently become a priority of scientific research at international level.

The determinism of the ambivalent character of human-environment relations is defined by interpolating the comprising relations. Thus, what it is considered to be a factor of impact may become the effect of another factor and the environment can influence social development as the anthropic processes act as factors on its components (fig. 1). This ambivalent relation may be subscribed to the specific of human communities or to the features of the environment in a certain area. Haidu I., Crăciun A. I., 2006 was realised a study of industrial impact of the maximum runoff in Motru Charcoal Basin.

The research of the social impact of human-environment interaction effects may be performed, from the systemic perspective, both by geographers and by sociologists, biologists, landscape architects, town planners etc., for the purpose of an interdisciplinary approach of the concept.

Statistic analysis is the most efficient sociologic method used in the evaluation of the social impact within the areas of a critical environment.

The environment in Rovinari coalfield has suffered a series of changes, which have led to irreversible transformations. The recognition of this coalfield as an area with a critical environment is determined both by the mining type and by the characteristics of the local environment exposed to anthropic impact.

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The main aspects related to the socio-economic impact of the mining activities in Rovinari basin (fig. 2) is visible under the form of the changes in land use, and particularly by the gadding of private households and other objectives.

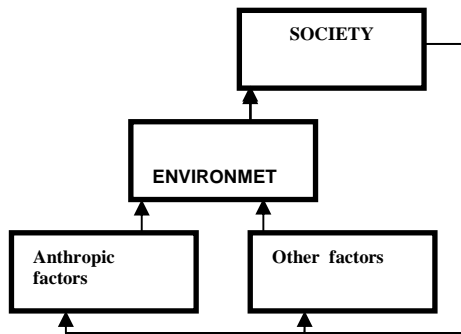


Fig. 1 Human (society) –environment relation



Fig. 2 Rovinari Quarry

During the development of the quarry, several private households were gadded from Ceauru, Roşia, Poiana, Vârţ, and Fărcăşeşti – Moşneni localities to Vărsături, Vart Nou, Ceauru Nou, Corneştii Noi and Cojmăneşti coomunes.

2. PSYCHOSOCIAL RESEARCH

The impact that the landscape structural and functional change has upon some psychological (psychosocial) components emphasizes the ambivalent character of human-environment relations, which can be corroborated with other elements and causalities (fig. 3).

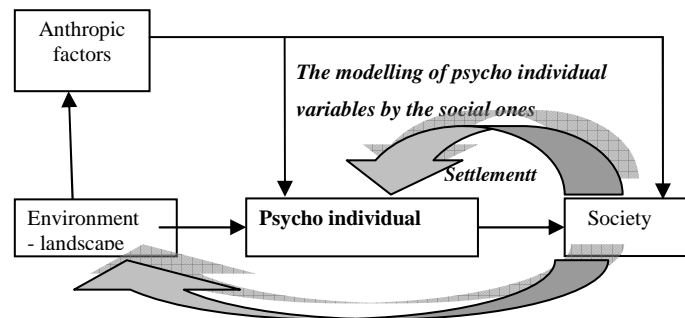


Fig. 3 The psychosocial impact of the anthropic changes

These changes show that not only the environment components affect the society (the structuring of global needs and the social decision to use them into a certain project), but certain psycho individual changeable factors intervene between the environment and the society which can influence environmental (landscape) perception.

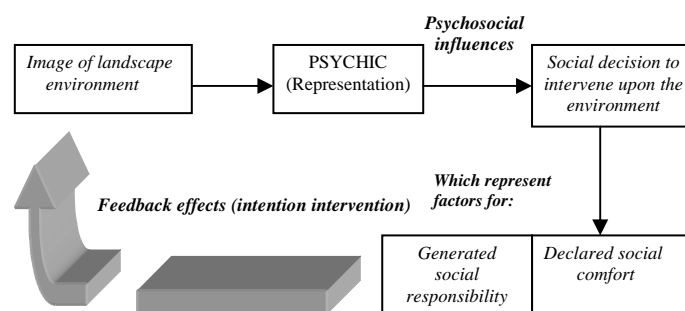


Fig. 4 Relation between the environment (anthropocized) and the psychosocial factors

In order to estimate the social impact which gadding phenomenon has on the human communities in Rovinari coalfield, from the environmental changes perspective, the *observation method* has been applied as research method, supported by the *questionnaire method*. The latter stands for the main tool of work in applying the social investigation, as a method of statistic evaluation of the environment criticalness.

The questionnaire consists of 13 (17) items concerning pollution issues, living conditions, economic status of the region, gadding process, land use, etc. and it has been applied to 25 individuals (representative sampling) from the subject area.

Therefore, this study identifies the social representation of environmental changes caused by the gadding phenomenon, creating a factor pattern of causes and effects. The main stages of the performed sociological investigation consist in the following:

Stage I (pilot) aimed at identifying factor variables and at selecting landscape factors, which affected the psychosocial and psychological factors studied based on the conceived causal schemes (fig. 3, 4).

Stage II (research) represents the phase in which the investigated subjects select at least three and maximum five out of the elements of the landscape changes representation. During this phase, the **causal-factor variables** are being identified and measured, as well as the determination of the sense and the value of the relation between them and the **effect-variables**.

Stage III aims to identify the phenomena transformed into social problems, which are afterwards described onto a section of hypotheses consisting of:

Hypothesis 1. Context (landscape) factors that influence *the declared motivation and affectivity* corresponding to the population in the habited area;

Hypothesis 2. Context (landscape) factors that influence the *desirable behaviour*, specific to the population in the habited area;

Stage IV. These hypotheses have been verified using the *questionnaire* that was structured in three chapters of response.

Stage V aims at identifying the causal relations, at determining their value and at drawing the conclusions of this research.

3. STATISTIC ANALYSIS

During the first stage, the processing will resume to the quantification, on each representative element, of the positive frequencies specific to the selected statistic population (ex. how many subjects have selected factor 1, how many have selected factor 2 etc.), as well as the one obtained during the grouping, analysing the most probable elements of the representation.

Following these operations, the variables' values have been processed (within the module) and mediated among the subject group and it has been selected the one with a greater value as independent variable to verify its influence in the dependent psychosocial variables (verification of the statistic hypotheses). Subsequently, a variance test was applied to this series of indexes and another multifactor test, specific to several independent variables (after we noticed their connection), was applied in order to complete the statistic chart.

I. Descriptive analysis. The causal variables (environmental): *F1-pollution, F2-gadding, F3- development of mining activities; F4- localities development, F5- roads condition*, whose statistic parameters and dependent variables are (tab. 1, tab. 2):

The parameters of the statistic series

Table 1

		f1	f2	f3	f4	f5
N	Valid	25	25	25	25	25
	Missing	0	0	0	0	0
media		3.1200	3.1600	3.5200	3.0400	3.3600
abaterea standard		1.42361	1.21381	1.29486	1.20692	1.03602
varianta		2.027	1.473	1.677	1.457	1.073
Minimum		1.00	1.00	1.00	1.00	1.00
Maximum		5.00	5.00	5.00	5.00	5.00

Dependent variables

Table 2

		responsab	expectanta	confort	intentie
N	Valid	25	25	25	25
	Missing	0	0	0	0
media		3.7600	3.0800	3.0800	3.9200
abaterea standard		1.30000	1.15181	1.32035	1.11505
varianta		1.690	1.327	1.743	1.243
Minimum		1.00	1.00	1.00	1.00
Maximum		5.00	5.00	5.00	5.00

II. Variance analysis. We can see that F1, F2, F3, F5 variables are connected between them, thus we explain them being selected. A research may be run in order to find out whether these variables have connected effects when they influence other variables.

If separately analysed, **F1** (pollution) influences responsibility and intention, **F2** (gadding) influences the intention to change, **F3** (development of mining activities)

influences, **F4** (localities development) influences declared responsibility, while **F5** (roads condition) influences the expectations regarding the impact of landscape transformation.

4. CONCLUSIONS

During our investigation process, when we used variance tests, we noticed that the context factors (landscape) influence the *declared motivation and affectivity* specific to the population in the area under study. The statistic research indicates that the independent factors have an influence on the dependent variables, which is emphasized by the results of *One way Anova* test – the values are below the admissible safety thresholds. This fact confirms the hypotheses of our research:

The greater the landscape transformation, the greater the psychological impact – *expectancies related to the impact of landscape transformation*.

The greater the negative changes of the landscape, the less significant the psychological impact – *declared social impact compared to environmental conditions*.

When using the variance tests, the context (landscape) factors show their influence on *the desirable behaviour*, specific to the population in the area under study

Taking into account that the analysed situation is critical and that the psychic reacts differently in common situations, this kind of study may be completed and even reconsidered from other points of view, from different theoretic or research levels, by using other methods, tools or terms, combining other phenomena or case variables, psycho individual, psychosocial or/and socio-cultural variables. Therefore, the evaluation of these elements determines psycho individual processing, affected by the psychosocial element corresponding to the situation, respectively the collective perception on the gadding and placement of the subjects interviewed on the matter of the present environment situation, which makes *the gadding phenomenon a real social problem*.

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