CHARACTERISTICS OF THE GEOGRAPHICAL RISK OF THE SOUTH BĂRĂGAN PLAIN. CATEGORIES AND PARTICULARITIES OF MANIFESTATION

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Abstract. Characteristics of the geographical risk of the south Bărăgan Plain. Categories and particularities of manifestation. South Bărăgan Plain is a less populated geographical unit, being the area where the main activity is agriculture. Such as, the human being is subject to the elements of risk, which result primarily from the way of manifestation that the elements of the geographical environment have. To these are added a number of new elements, generated by man himself, through the excessive exploitation of soil resources. The analysis of the geographical risk requires a number of elements of detail, but also general, related to the processing of statistical data and regional or local approaches, related to the distribution of the categories of geographical risk.

Key words: risk, risk factors, categories, plains, forms of relief

1. INTRODUCTION

This paper analyses the area between the Danube, Borcea, Ialomița and Mostiştei courses, part of the Bărăgan Plain, being one of the well-individualized sectors of the Romanian Plain.

The morphology of the South Bărăgan Plain within the Romanian Plain is that of low level, located in its southeastern part, in contact with the Danube Valley, beyond which is the Pre-Balkan Plateau (F. Achim, 2013). This aspect is accentuated by the flat aspect interfluvios which, due to their predominance, constitute a specific note for the overall appearance of the geographical landscape in general and geomorphology in particular.

2. DATA AND METHODS

The working method used by us, in determining the geographical risk areas and their role on human society, took into account the quantitative aspect that represents the effect (produced by a phenomenon or process) of risk on the whole plain unit studied (Sorocovschi, V. 2016). In other words, it was taken into account how much that category of risk affects the South Bărăgan Plain. Depending on this aspect, we have assigned a certain score (the value of the risk index) for each category of risk, a score used by us in the elaboration of the geographical risk map (Reteșan - Floca, Diana, 2003). Several points have been awarded to the areas affected by high intensity processes, which can be very difficult to correct through anthropic works. Thus, the areas subject to the

geographic risks created by the geomorphological processes of the slope and the vertical erosion of the soil were considered important and were scored with eight points, while the flood risk was scored with only two points, thus showing reduced chances and frequency of flooding. As I mentioned in the other chapters, the floods in the Danube and Ialomiţa floodplains occur frequently, but they received a low score, because, on the one hand, they have a small impact on the plains (they are not part of the plains unit, being but studied by us), and on the other hand the meadow units have an anthropic use mode, adapted to the floods. The Danube (Borcea) meadow is used only for agriculture.

3. RESULTS AND DISCUTIONS

Within the South Bărăgan Plain there are a series of risk categories, from the geographical sphere, these outlining the specificity of the geographical risk regarding the disruption of the anthropic activity and the productivity.

3.1. Categories of geographic risk

Geological risk. Generating factors (processes and phenomena), specific to this risk category are: anthropic activity; the action of water from precipitation, wind and temperature fluctuations; exploitation of underground gas and oil deposits.

The forms of relief affected are: smooth fields, ripples on sandy surfaces, terraces and meadows.

Negative effects on man and human activities are:

- reducing the productive potential of the land, increasing the risk of land degradation, etc.

- polluting the soil with petroleum products and removing them, for a period, from the agricultural circuit (In the western part of the Southern Bărăgan Plain, in the perimeter of the Ileana and Urziceni localities.

Particularities of manifestation. By carrying out the anthropic, agricultural and construction activities of the localities or of some buildings, a pressure is exerted on the surface geological deposits, disturbing the state of equilibrium they have, favouring the action of the external agents. The extraction deposits are done by drilling and installing wells, and during the course of these activities hydrocarbons are lost by spilling them onto the plains surface**.**

Hydrogeological risk. The generating factors, specific to this risk category are the following: anthropic activities, which intersect the groundwater layer; long droughts, heavy rains; use in agriculture of fertilizers and other chemicals.

The relief forms affected are: smooth fields, inclined or steep surfaces, terraces, meadow surfaces (Gâtestescu, P., Zăvoianu, I., Ţuchiu, Elena, 2012).

The negative effects on human activities consist of:

- decrease of groundwater resources;
- raising the groundwater level, followed by floods, soaking and soil degradation;
- pollution of groundwater;

Particularities of manifestation. Within the smooth field surfaces, the position of the ground level is manifested by decreases, during droughts followed by the installation of the pedological drought. Very rarely, during prolonged precipitation, the level of the groundwater increases, causing excess moisture at the surface of the soil, followed by pseudogleization of the soil and the development of shrubs.

On the surface of the Danube and Ialomiţa meadows, a much higher frequency is the increase of the groundwater level, followed by floods.

By applying chemicals, in order to improve soil fertility, water from rainfall and irrigation, transports them vertically to the groundwater layer. It is worth mentioning that groundwater pollution is also found in the perimeter of localities and garbage platforms. In all cases, when quantitative rich precipitation is recorded, the groundwater level rises and takes over the residues existing in the soil.

Climatic risk is manifested by drought, blizzard, extreme temperatures, hail, hail and wind. These are the most common phenomena in the plains.

Drought occurs in most forms of relief, with the exception of valleys and meadows, which belong to important and neighboring rivers. The effect is to decrease agricultural production.

The manifestation mode consists in the fact that on the background of a small amount of average monthly and multiannual precipitation, long periods of time appear when the precipitations are completely absent. Droughts occur especially in autumn, but also in winter. Due to the amount of precipitation and their distribution throughout the year, this relief unit falls into the category of the driest regions in Romania.

The blizzard occurs within the entire plain area and leads to uneven deposition of the snow layer, which produces multiple blockages in the anthropic activity, such as disruption of circulation, isolation of localities, etc. The blizzard is manifested when the background of the fall of a precipitation in solid form (snow), and the wind, especially the Crivat. Here the blizzards are produced every year, with different effects, depending on the amount of snow and the intensity of the wind. Thus, the snow is blown by the wind and then deposited in sheltered places, at the shelter of dams on the surface of the field.

The high temperatures occur in the hot season, when days with temperatures exceeding 30ºC are frequent, reaching an average of 40 days/year with such temperatures (Octavia Bogdan, 1980). This climatic phenomenon produces, first of all, the decrease of agricultural productivity and dryness, at the level of the soil.

At the opposite pole are the low temperatures, which occur during the cold season, as early as November and at the latest in March, are risk elements when they occur due to the lack of snow cover, or after liquid rainfall falls. The average number of days with temperatures below - 10ºC is about 35/year, which introduces a risk for the agricultural crops sown in the fall. Also in such situations, there is a blockage of the water flow on the valleys, especially on the Danube and Borcea, followed by the installation of the ice bridge. Thus floods appear in the spaces belonging to the meadow of the great river, but also of Ialomiţa.

The storm, in fact special intensifications of the wind, when its speed exceeds 120 km/h, occurs especially in the hot season, with a rarer frequency, than once a year. However, in the context of global climate change, these phenomena have begun to appear, such as the Făcăeni tornado from August 2002, from Drajna from July 2019, etc. They destroyed homes, roofs of buildings, forests, orchards and agricultural crops.

The hail represents a meteorological phenomenon that leads to the destruction of agricultural crops, in advanced vegetative stages, as well as the degradation of the roofs of buildings. The probability of occurrence is high, on the whole surface, but especially in the central spaces, from the perimeter of the localities Dragalina and Perișoru, where there is a frequency of hail production twice a year.

The mechanism of action on the anthropic elements consists in the fall of ice particles with a round or oval appearance, whose dimensions are 1-5 cm in diameter. Such phenomena occur mainly in summer, in July and August, when in the background of successive and numerous days with high temperatures, the hot air rises rapidly in height, causing condensation of water vapour and its recirculation through currents, so that at high altitude where the temperature is negative, large particles of ice are consolidated.

The wind blows predominantly in the east and north-east direction, with a frequency of 60% in these directions, it can occur at any time of the year, but especially in the cold season. The wind accentuates the drought and drying processes, contributing to the evaporation of water from the surface of the soil, or even the crop plants during the growing season. In summer, the wind blows hot and dry from the south west, bringing dust from northern Africa and producing the rapid installation of the moisture deficit.

The edaphic risk consists of soil degradation, desertification, siltation and pseudogleization or even gleezing. In the South Bărăgan Plain, soil is the most important resource, because agriculture is supported on its soil. Its exploitation, more and more intense during the last century, developed especially, with the mechanization of the works and the practice of intensive agriculture with two crops per year, led to a process of degradation and destruction.

Thus, by applying chemical fertilizers and treating crops, the pH and chemical composition of the soil have been changed, an irreversible process, with changes that are reflected in the chemical processes in the soil.

As a result of the agricultural works, there is a soil cushioning, which can lead to the emergence and propagation of the shrubs, a process followed by those of gleezing, pseudogleisation and even soil degradation and the decrease of agricultural productivity.

In the last decades, a process of desertification has been observed, consisting of the excessive crumbling of the soil and its transformation into a kind of dust, where the organic components of the soil are less (Surdeanu, V., Rădoane Maria, Rădoane, N., 2003). This process is more visible on the fields located to the north, at the contact with the Ialomiţa Valley, where the sand has a high participation in the soil constitution. Basically, every year the affected areas extend south, against the background of the increasing frequency of droughts and the destruction of irrigation systems.

The geomorphic risk is manifested by: tapping, suffocation, deflation, rainfall, diffuse flow, concentrated flow, ravenation and even torrentiality (Rădoane, Maria, Rădoane, N., Ichim, I., Surdeanu, V., 1999).

Taxation and suffocation are two associated processes, which occur under the existence of consistent loess deposits, for the most part of the plain. These lead to the emergence of shrubs and in this way it is possible to reduce the productive potential of the agricultural land. Over time, there have been works on landscaping, through levelling and drying, but the results were only immediate, because over time the drifts evolved through the extension and appearance of the suction funnels.

Deflation, a process consisting of wind action on fine dust particles, leads to desertification and dust deposits over agricultural crops, roads and localities. In the spring, some crop plants, such as wheat, are partially uprooted by the action of the wind. It is reached a clogging of the lake basins.

4. CONCLUSIONS

The particularities of manifestation of the geographical risk are multiple, with local manifestations depending on the existing conditions. This plain area is a vulnerable one in the face of the action of natural processes and phenomena, but also of the way in which human resources intervene and exploit local resources, because they can manifest themselves inversely, with undesired and long-term effects, sometimes even irreversible. The main means of production in the South Bărăgan Plain is the soil, more precisely its fertility. Depending on the mode of use, phenomena or processes have been observed that prevent proper use and exploitation.

Over time, effects of some phenomena, such as climatic and meteorological ones, have been observed with immediate action, others with medium or long term effects.

In the anthropic use of this plain area, it is observed that areas with high geographical risk are often used. For example, the Ialomitean and Danube slopes, near which many localities are built, are often affected by the processes here. However, due to their proximity to water resources, historical development situations, national transport routes, etc. have been used.

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