

CLIMATE CHANGE AND DESERTIFICATION IN ROMANIA

SCHIMBĂRILE CLIMATICE ȘI DEȘERTIFICAREA ÎN ROMÂNIA

POSTOLACHE ALEXANDRU GABRIEL, *Drd.*

Academia de Studii Economice din București, (România, București, Piața Romană , numărul 6, număr de contact 0213191900, www.ase.ro)
alexandru.postolache04@gmail.com

ROTARU CIPRIAN, *Drd.*

Academia de Studii Economice din București, (România, București, Piața Romană , numărul 6, număr de contact 0213191900, www.ase.ro)

GOLE IULIAN, *Drd.*

Academia de Studii Economice din București, (România, București, Piața Romană , numărul 6, număr de contact 0213191900, www.ase.ro)

DUMITRACHE VICTOR, *Drd.*

Academia de Studii Economice din București, (România, București, Piața Romană , numărul 6, număr de contact 0213191900, www.ase.ro)

Abstract

Climate change at the level of Romania generates one of the biggest challenges that the population is facing at the present time due to the disastrous effects through: increasing temperatures, drought of certain lakes, the risk of flooding on the other hand, which is increasing, modification of existing ecosystems as well as degradation of natural areas, but also the emergence of more and more diseases. In Romania, climate change affects all regions of the country, and the effects are increasingly visible, because if we look at the last few years, we observe the occurrence of unusual or unusual phenomena, all of which put a strong imprint on the quality of social and economic life. Climate change that has been felt more and more strongly in the last period of time, more exactly in the last decades, is a factor that triggers a disastrous series of consequences, affecting more and more the economic-social activity as well as the quality of life. Desertification is both a cause and a consequence of climate change and it often occurs when land management is not sustainable. This amplifies climate change, and agricultural lands lose their capacity to store the volume of greenhouse gases and carbon.

Key words: *climate, arid zone, desertification, globalization, environment.*

JEL Classification: *Q5*

INTRODUCTION

From year to year more and more land in Romania, especially in the South and West of the country, but not only is transformed into a dry area with an almost desert microclimate. Many areas in Dolj County, for example, take the form of a desert that stretches for 30 kilometers. Desertification is a process of land degradation and is greatly amplified in areas where the soil is affected by wind erosion and intensive deforestation, where a very arid climate is encountered. The result is the destruction of the layer that is fertile and the soil's inability to sustain human activities and biodiversity. The main cause of the occurrence of desertification is the destruction of forests which has very serious consequences on the soil, thus speeding up the process, since deforestation represents a source of economic income, being exploited excessively. As mentioned above, the most exposed areas of our country on the process of desertification are: Southern Moldova and the Romanian Plain, as well as Dobrogea. This makes its presence felt by shrinking the surfaces that are covered with vegetation, intensifying the erosion of the wind type, but also the amount of nutrients

that are in the soil. In recent years, these aspects have led to desertification, and one of the causes that led to the disaster is the conscious destruction of arable land, more precisely of the layer that protects the fertile soil, and the anthropic activities together with the desertification lead to the destruction of the entire ecosystem. According to the latest studies conducted in Romania, approximately, 400,000 hectares of agricultural area are transposed to the phenomenon of desertification. It is no secret that more than half of this area can be found in Oltenia, which is now called "desert". The very weak irrigation system as well as the very slow pace of building the protective curtains further accentuate this phenomenon. In the same area the temperatures are frequently high, the land has become very sandy, and the irrigation system and the weak one is almost destroyed. At the moment, it is quite difficult to stop this process, because the Romanian laws do not protect the investments made in this area.

Climate change in the last period refers to very high temperatures, as well as the lack of precipitation, as meteorologists indicate an increase of the average annual temperature in our country by 0.6 degrees Celsius, but with small differences in some regions. The warming accentuated by over 0.7 degrees Celsius is increasingly felt in the southern part of the country, as the average annual temperature reached 12 degrees Celsius, which shows 4 degrees more than the northern part of the country. For 16 years we have been dealing with increasingly hot periods and with very great ecoclimatic events of great magnitude over the last twenty years, namely: periods of drought, storms, tornadoes, catastrophic floods, even the change of seasons. [Bran, F., et all., 1995]

1. The phenomenon of desertification in areas of the country

These phenomena that are becoming more and more common are based on several types of consequences. The capital city of Bucharest is also called the "heat island" followed by the cities of Giurgiu and Timisoara, because here in the summer often the temperatures began to exceed 35 degrees Celsius many days in a row. At the country level it is very clear the tendency of increasing temperatures from South to North, especially of the extension of the phenomenon of desertification with anthropogenic and natural causes. Of the approximately 15 million hectares each year are affected by drought more than half, and the phenomenon of desertification covers about 360 thousand hectares, and the specialists state that if in the following period the necessary measures will not be taken, the population from the south of Romania, you will have to migrate to the Nordic side. Besides the fact that drought affects soils very much, another major aspect that must be considered is the fact that social-economic life tends to suffer. The strong impact is very well felt in the rural area approximately 48% of the population. Because here agriculture is the basis of society, about 30% of the population of the rural area occupies this area, which unfortunately is directly related to the weather conditions. Therefore, in this case, agriculture is at this moment the most vulnerable economic branch, when it comes to extreme weather phenomena. The most affected in these cases is the vegetable production, which is often transmitted to the zootechnical branch. Here the greatest losses are encountered especially in cereal crops, and the specialists some extreme weather phenomena, including drought can reduce the annual production by up to 50%. Here comes the fact that losses are also encountered because of the irrigation system that is not set up, it is not extended, but many times it is also non-functional, and at present the surface of Romania benefiting from irrigation is about 560 000 hectares. [Voda P., 2009].

With the decrease of agricultural production, food security is also affected, which increases the risk of deteriorating the health of the entire population. Our country is prone to frequent floods, and the largest risk areas are located especially in the hydrological basins of the great rivers such as: Somes, Mures, Olt, but also the Danube. The main causes for which floods are frequently

encountered in these areas are closely linked to the weather conditions, which due to the global warming have changed almost all the characteristics, by the fact that a large amount of precipitation is encountered in a very short time, and from from his point of view of performing some protection works we tend to unfortunately down. The main effects that the floods create have an economic and environmental nature. The damages on this side are most often individual, but also the community ones. Also here the phenomenon of explosion of strong epidemics with different diseases due to contamination of food reserves can be encountered. Romania has a history of floods if we remember the year 2005, or the Danube overturning in 2006.

In 2006, the Danube, recorded impressive values during the April-May period, because the largest flood in the last 110 years occurred with catastrophic floods and the destruction of many dams on many sectors of the river. The weather forecasts that are permanently updated by the meteorologists, show that Romania represents an eminence of some radical changes with torrential rains, floods, but also extremely dry summers, bringing numerous economic and social damages. For the period 2030-2050, in Romania it will be warmer with temperatures that will exceed one degree Celsius from another year, but the other extreme will be accentuated, namely the floods that will exceed 155 liters per square meter. Agriculture, water resources, forestry and biodiversity are just a few of the areas that will be seriously affected by desertification and climate change. In urban areas it will be increasingly difficult to live, the infrastructure will be increasingly exposed to various storms, we will have impressive amounts of snowfall, locally for the beginning of the period, but with possible expansion in a few years, which will degrade. very much the land and will bring changes in all forms of relief. [Cazac, V., et al., 2005].

We can realize that all these changes will lead to a decrease in the population, by increasing the incidences of nutrition and cardiovascular diseases. Even at global level, the trends and currently have three main directions such as: diabetes and obesity, finding alternative methods of nutrition, as well as increasing organic plantations. Also, more and more restrictions will be placed on the use of water for the industrial sector, even the domestic or agricultural ones. As the number of pollutants in the soil increases, the quality of the water will be less and less, the number of diseases will be doubled compared to the current period, and in some areas access to drinking water will be restricted. For the economic sectors the biggest changes will occur in agriculture, and in the areas that will be strongly affected by the drought there will be a reinvention of agricultural crops and we will have to increase the number of plants and species planted of exotic type. Another consequence by which desertification will make its presence more and more felt is the decrease of the river flows, which leads to the reduction of electricity production, and by 2035, the demand for energy will increase by approximately 31% because of extremely high temperatures. It is even expected that by the end of this century, the global temperature will increase by 4-4.5 degrees from what is currently happening. Therefore, Romania will be divided into two, namely the northern part which is hit by rain and low temperatures, and the southern part of the country will present extremely high temperatures, which will lead to desertification in many habitable areas at the present time, even it can be three times larger than it is now, if not acted upon accordingly. [Pătru I., et al., 2006]

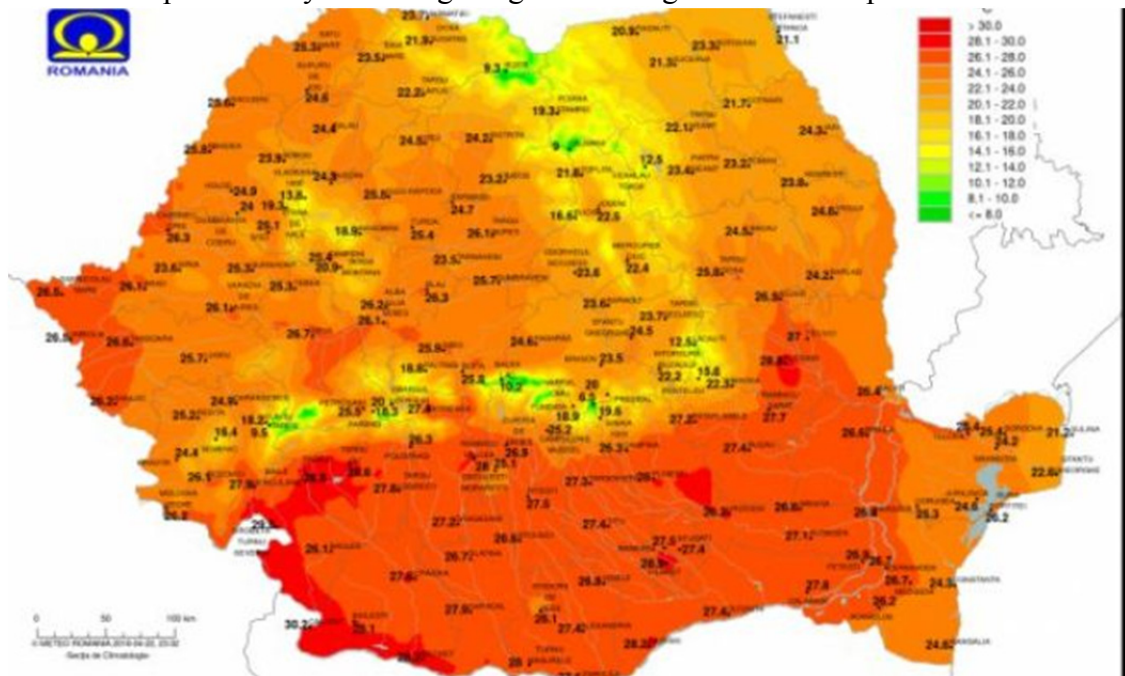
2. Desertification (the causes, effects and combating of desertification)

Adapting to everything that is happening now, is a process by which the population is taught how to react when discussing climate change. In this case we talk about multiple options that include a wide range of actions, from the technical ones to the change of behavior or even the mentality, towards the environment and here we refer to reducing water consumption through a more efficient organization. Other strategies may also refer to the implementation of warning

systems on the extreme weather phenomena that will occur, new strategies for managing and conserving biodiversity, restoring underground shelters, generally referring to sustainable development. Even if Romania has been prevented so far from forest fires that are already affecting many parts of Europe, this will not be the same when it will be installed in new periods of drought, in areas already known as Dobrogea, Muntenia and southern Moldova. At the moment we risk being affected by the worst effects of climate change and yet we contribute extremely little to removing them. [Ciulache S., & Iona N.,2009]

Combating these phenomena can be done by:

- Rethinking certain cities for the benefit of the human being, not of the cars, because it is the only solution that will help the cities to get used to this phenomenon of desertification, by continuously expanding the green spaces;
- As mentioned above, it is necessary to implement warning systems that will announce any catastrophes;
- The introduction and cultivation of live fences, as well as green roofs, in this way leading to a major improvement of the quality of the air as well as of the diminution of the floods or the flood;
- Thermal rehabilitation of all homes in the city in particular;
- Creating intelligent transport networks that will work continuously;
- Planting new forest curtains that are drought resistant, such as those in the Atlas Mountains;
- The correct distribution and dimensioning of the number of animals, and this will be done according to the transport capacity in order to avoid overweight;
- Creating and developing strong irrigation systems as well as stopping groundwater levels;
- Reduce pollution by observing the greenhouse gas elimination protocol.



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Soil degradation is a process with a rather long duration, which occurs with the use of agricultural lands, as well as their extension in the geographical environment, especially the traditional communities. The effects of these degradation processes make their presence felt by

reducing the bioproductive capacity of ecosystems as well as other chemical elements. In order to be able to identify the factors that led to the triggering of the phenomenon of desertification, it is quite important to start from the fact that they appear as a consequence of some direct and indirect factors being influenced by their anthropic origin. The natural factors that lead to the occurrence of this phenomenon in Romania, is constituted by the "abuses" made by the man for the use of the pedological resources and the deterioration of the geographical space in the arid areas. The elements of a natural frame that are made up of the characteristics of the relief and the hydrographic network lead to the erosion process of the lands. [Năstase, A., 2009].

The southern area of Romania is more and more predisposed to this phenomenon of desertification and at the same time represents the surface with at least a small degree of afforestation throughout the country. These lands are characterized by an arid climate that presents a deficiency of water in the soil especially during the summer, and presents quite vitreous conditions of planting, but also of the maintenance of the forest vegetation, which makes to capture a major attention in what it looks at what species should be planted as well as what afforestation technologies should be applied, and what kind of maintenance work should be followed. The opportunity to use the soil that comes from the discovery of active quarries, consists in diminishing the process of degradation of the lands and a continuous improvement of the environmental processes.

Analyzing the whole and the western part of Romania is affected by desertification, especially the area is very prone to this phenomenon. The causes of this effect and in this part of the country emphasize the clearing that is increasingly common, over-harvesting and irrigation, and from this it results that the population leads to acceleration of the process. Over-cultivation depletes the soil, deforestation removes the tree that supports the fertile soil, and over grazing defrosts the grassland all of them leading to the threat of population health, ecological balance and food security. According to studies, it is known that by 2020, more lands in more than 10 counties will go through a process of drying. These phenomena as we have discussed above are increasingly visible in the South of the country, where entire grasslands have been replaced by sandy beaches, where also many dunes are encountered, and according to the latest estimates over one hundred. thousands of acres have already been covered with sand. Most wheat and corn production, or especially cereals, will suffer and will change by 15% by 2020 and by more than 23% by 2050. [Dinu, L., 2009].

It starts from the premise that, given that the greenhouse gases will not have an increasingly reduced concentration, the temperatures will increase by approximately 5 degrees Celsius by the end of this century, therefore a replanting is required massive seedlings on sandy plantations, where nothing can be cultivated by stopping deforestation and restoring the protective curtains. At the same time, in the South area of the country there will be situations related to the economic side as it risks becoming difficult to live and very impracticable. In this case, the whole country must take measures to restore and afforest the habitats or to adopt new technologies in agriculture, so that the lands are irrigated and the plants cultivated in a responsible system. [Grecu F., 2010]

CONCLUSIONS

The present situation shows with certainty a rather serious point in which our country is at the present moment on the process of soil degradation. In this paper I have marked the main features that are defining in the problem of desterification, by trying to bring out the ecological spirit of each one of us and placing a strong emphasis on the destructive effect of our activity on the nature at the same time with the measures that are formed at national level, reducing or even stopping the self-destruction process. More than ever, our country is at a time when each of us must centralize its resources and forces in massive actions to combat desertification, because this is the place we leave

to our descendants. Today, we belong to a generation that is in pursuit of well-being and progress, but which unfortunately underestimates the primordial role of nature and even our future. The fact is that if we postpone this process soon it will be too late not only for our country but for the whole planet. We need to realize that we have huge potential and we can rebuild the world from the ground up if we all join forces. This is the moment when we must act.

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