

## IMPACT OF CLIMATE CHANGE IN THE FOOD SECURITY OF ROMANIA

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### Abstract

The climate change have an essential role in Romanian society because they can lead to undesirable effects in the field of food security and beyond.

The agricultural sector is directly affected by climate change and that is why may decrease the production of agricultural crops in Romania, but also in other countries. Therefore, a particular importance at global, European and national level is to combat climate change by adapting to their effects and attenuation. The EU food security policies refer to the common agricultural policy, but also to other innovative ideas, such as the application of bio-economy.

This article aims to highlight the importance of climate change and their role in food security, but also highlighting the best solutions / measures to ensure good food security at national level. In a sustainable way, the increase of agricultural production in Romania is necessary for satisfying the welfare of the population. Lastly, we take into account that major investments in agriculture are needed to adapt to climate change. These investments can be made by accessing European funds under the various programs of support to the Romanian state.

### Keywords

Combating climate change; food security; adaptation and mitigation of climate change; EU policies; investment in agriculture.

### JEL Classification

P28; Q14; Q18; Q54.

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### Introduction to food security in relation to climate change

Through this article it is desired to highlight climate change and their role in food security, but also the succinct description of risks and types of impacts which can occur nationwide. In a sustainable way, the increase of agricultural production in Romania is a necessity in order to satisfy the welfare of the population. Presently, through cooperation between our country and the FAO, we want to support small businesses in the agricultural field to encourage the emergence of their own (family) to ensure food security. According to the FAO report, the partnership of Romania and the FAO took place in 1961 when there were debated for the first time proposals for solving global food problems and has developed over time in order to achieve the objectives of the FAO.

Initial, the overall objective of food security has been to address the issues of food security for the population at international and national levels, but taking into account the increasing availability of agricultural products and setting the right prices for them.

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Considering the notion of "food security" conferred by the World Food Program (WFP) we can point out that the population has a high level of food security when all citizens, freely, have access and availability whenever they need for the desired food and which can provide the necessary nutritional input.

However, the specialists indicate that the basis of food security is an interconnected relationship between three main elements: (i) the availability of food refers to the sufficient quantity of food that must be available to the population evenly distributed.

Therefore, to ensure food needs in certain vulnerable areas of the world food must be imported from other countries either through trade or through State aid; (ii) the free access to food through which people can buy the amount of food they want to ensure a healthy life. Every citizen should be able to purchase the amount of food he wants through various ways: purchase, own production, loans, gifts or state aids; (iii) the use of foods that have nutritional capacity to ensure daily necessity. The climate change can directly affect food security which leads to the emergence of certain risks in the agricultural field, but also economic because they are interdependent one from the other.

Globally, the notion of "food security" acquires more meaning according to the United Nations Food and Agriculture Organization (FAO), namely:

- a. the availability of sufficient quantities of suitable food, provided through domestic production or imports;
- b. access of individuals to the best resources to obtain adequate food for a nutritional diet;
- c. food use through proper diet, clean water, sanitation and medical care to achieve nutritional welfare in which all physiological needs are met;
- d. stability, because to be safe for food, a population, a household or a person must have access to adequate food at all times.

Among the objectives of the FAO are foreseen, also, the importance of rural development by creating optimum living conditions for the inhabitants to have access to food from small family farms, in this way, avoiding the migration of the inhabitants. Lately, emphasis is placed on supporting farmers in order to develop local communities by implementing ecological and economic measures and methods to adapt to the effects of climate change. Because of the climate change that is already happening in our country, agricultural production suffers because crop yields decline. In this sense, one of the adaptation measures is being attempted, namely: cultivation of varieties more resistant to extreme weather phenomena compared to existing ones. At the same time, it should be noted that agriculture needs to develop productive systems as innovative as possible for the development of intelligent business, but also by supporting agricultural activities through a public-private partnership. Unfortunately, food insecurity can lead to undesirable risks, such as migration, conflict, malnutrition or famine.

The conditions for ensuring food security vary from one country to another and we can deduce that climate change leads to changes in other sectors, such as: agriculture and the economy that are closely affected by the effects of extreme weather phenomena. For personal reasons, it seems that Romania is at the forefront of access and availability for food, this is due to free movement between states, so it can be said that food is available and accessible to all citizens, while other countries are facing major food insecurity issues.

The extreme weather phenomenon can lead to food insecurity in some areas by reducing the number of food and access to it. These extreme phenomena, such as drought which is a special case because it has the ability to reduce agricultural and animal productivity on some areas, which leads to massive imports and higher costs for food security. The emergence of a severe drought phenomenon leads to the threat of food security locally and may endanger human health, triggering migration and conflict. According to researchers in the field, Maystadt and Ecker, it can be stated that if the drought is manifest over a longer period, the probability of a conflict increases.

According to the specialists, "climate change can lead to increasingly difficult issues to be handled by citizens and local communities, being the most pressing challenge of humanity because we are constantly looking for food and by 2050 it is expected that ninety billion people will feed." (Godfray et al., 2010).

### **The role of adaptation to climate change in the agricultural field**

According to the hypotheses presented by the European Commission, the term "adaptation" can be defined as a "prediction of the negative effects of climate change, as well as the adoption of appropriate measures to prevent / minimize losses and damages that may result from these undesirable effects by identifying appropriate opportunities. Research over time has shown that actions or measures have been implemented before risks or undesirable effects occur due to climate change, leads to an investment-friendly financial economy.

However, it should be noted that the implementation of adaptation strategies plays an important role at local, national and international level. Because of the complexity and extent of climate change, adaptation strategies are more successful at national or regional level because it acts directly on the target area.

In our country, the central competences in the field of climate change adaptation are assigned to the Ministry of the Environment through the Directorate for Green Energy, Climate Change and Sustainable Development. In addition, there is also a National Commission on Climate Change that is an interministerial body, with advisory role, without legal personality, whose activity is coordinated by the central public authority for environmental protection and climate change. This National Commission on Climate Change was reorganized by Government Decision no. 1026/2014 and subordinate to this committee was created a working group on Climate Change, called the Technical Group. This technical group is made up of experts from the authorities, governmental and non-governmental institutions and organizations. The technical group meetings are invited representatives of academic and higher education institutions, as well as civil society organizations and the business community, which contributes to solving specific technical issues at sectoral level.

As a European Member State, Romania must aim at preventing and combating climate change, as well as reducing carbon emissions to achieve the objectives set out in the Paris Agreement and the Kyoto Protocol. Regarding the National Climate Change Strategy, the first version was developed in 2005 approved by the Government Decision (No 645/2005).

At the same time, in 2008, The Ministry of the Environment has developed the Guide on Adaptation to the Effects of Climate Change, approved by the Ministerial Order (No 1170/2008). In July 2013, the Government of Romania adopted the National Strategy on Climate Change (2013-2020) by Government Decision no. 529/2013. This document sets out the post-Kyoto objectives, goals and actions for improving and adapting components.

Adaptation component of the National Climate Change Strategy 2013-2020 aims to provide a framework for action and guidelines to enable each sector to draw up an individual action plan in accordance with national strategic principles. In October 2016, the Romanian government adopted the new strategy, built on cooperation with the World Bank. This new strategy is approved by DG no. 739/2016 for the approval of the National Strategy on Climate Change and Growth Economy based on the National Action Plan on Low Carbon and Climate Change for the period 2016-2020, the Government's decision repealing Decree-Law 529/2013. Collaboration between the Ministry of the Environment and the Ministry of Environment has led to the achievement of its main objectives (i) Integration of mitigation and adaptation measures into national strategies, policies and programs of Romania, it will be an important step in developing a path towards low carbon green growth in Romania; (ii) the program implemented jointly by the World Bank and MMSM aims to enable Romania to reach its goals "Europe 2020" strategy, which provides EU Member States with a

framework and means to move towards a greener and more competitive economy with low carbon emissions, with efficient use of resources and resistant to the risks of climate change. Agricultural sector is directly affected the effects of climate change because agricultural crops are interdependent with the optimal climatic conditions. Also, the release of greenhouse gases into the atmosphere from agriculture contributes to the undesirable effects of climate change. However, it should be noted that in the agricultural sector it is possible to intervene more quickly and easily than other sectors of activity with a view to reducing greenhouse gas emissions or mitigating and adapting to climate change. Romania as a Member State of the European Union must apply the appropriate measures with a view to enhancing sustainable agriculture, as well as the integration of certain aspects of climate change into the Common Agricultural Policy (CAP). According to the European Commission on Rural Development and Agriculture, "through the European Union's Common Agricultural Policy (CAP) it is desirable to ensure the welfare of farmers taking into account the imposed requirements for maintaining the health of the population and animals, environmental protection and food security."

#### **Pricing agricultural products and their availability on the market**

At European level, Commission representatives are monitoring and analyzing farm and food prices, and based on these, updated reports are published. In the agricultural field, Romania must be competitive and attractive on the European and international market. In this regard, it is necessary to set the objectives of farms from micro level to micro level (small family farms) to achieve technical performance indices, economic and financial implications of the profit of farmers / agricultural companies, but also the growth of the Romanian economy. Regarding the change in the selling price of agricultural products influences the activity of farmers / farmers, especially in developing countries in Europe. However, the price of agricultural products may be lower at a local level than those established at national or international level, because there are specific indicators that can influence the trading chain (taxes, infrastructure, trade policy, etc.).

#### **Types of potential national risks in the agricultural field**

At European level, the classification of agricultural risks is carried out according to a study accomplished by the Joint Research Center of the European Union: (i) political risks resulting from negotiations on EU internal trade agreements, and these may have a negative effect on price variations or subsidies paid to farmers / farms; (ii) commercial risks resulting from balancing between traders and farmers; (iii) health risks resulting from the implementation of standards or measures for the protection of human and animal health; (iv) climatic risks that may directly affect crops.

#### **Impact factors that can affect agricultural production nationwide**

The agricultural sector issues greenhouse gases into the atmosphere, although on a smaller scale than other economic sectors. At the same time, this sector can provide solutions to climate change issues. In this regard, the agricultural sector needs a broader approach with reference to reducing greenhouse gas emissions and adapting to the effects of climate change. Regarding the implementation of adaptation measures, from technological options to improving farm management practices and policy instruments (eg action plans for adaptation). To deal with anticipated changes, of climatic conditions, farmers can change crop rotation for best use of available water and can adapt sowing data according to temperature and rain patterns. Also, they can use crop varieties more suited to new weather conditions (eg more resistant to heat and drought) or can plant shrubs or small forested areas on arable land to reduce water leakage and to act as a windbreak. It is also important better information of farmers on climate risks and achievable adaptation solutions. EU Member

States have already taken action to adapt. Much of the work done so far have focused on preventing the effects of meteorological extremes, perceived as imminent risk (such as floods).

The main factors that may have a negative impact on agricultural produce are representatives by: (i) the concentrations of CO<sub>2</sub>, as the high amount of CO<sub>2</sub> in the atmosphere can lead to increased biomass production and the efficiency of water use for crops, but productivity cannot be increased; (ii) sea level due to rising sea levels may flood certain vulnerable areas and agricultural land, that is why flood protection measures are necessary. However, the drinking water supply may be affected due to salinization; (iii) extreme meteorological phenomena at local or regional level, such as drought or floods.

### **Investment in agriculture to adapt to climate change**

Investments lead to improving the efficiency of agricultural practices (for example, enhanced fertilizer application and improved manure storage) the implementation of the Nitrates Directive (involving requirements on the use and management of manure) and support for the achievement of the objectives of the Common Agricultural Policy (CAP), e.g. establishing a link between direct payments of aid to farmers and the environmental conditions fulfillment in order to reduce emissions from agriculture.

Farmers can not cope alone with the effects of climate change. Public policy must provide the right support so that agricultural producers adapt their agricultural structures and production methods and continue to provide rural services. The CAP already contains constituents that should to facilitate adaptation to climate change. Facilitating farmers' access to risk management tools, such as insurance programs, which can help them cope with weather-related weather losses as a result of climate change. Rural development policies offer chances to offset the adverse effects that climate change can cause to agricultural producers and rural economies, for example, to provide investment aid for more efficient irrigation equipment. Agricultural and environmental programs to encourage better management of soil and water resources by agricultural producers are also important for adaptation.

In order to meet medium and long-term climate change objectives, but also to ensure the food security of a state it is necessary to accelerate investments in the agricultural sector at national and local level. Also, research plays an important role because tangible solutions to mitigate and adapt to climate change must be assessed and identified, as well as promoting and informing climate policies and investments. As far as agriculture is concerned, responsible institutions have to invest in irrigation infrastructure and water use technologies in agriculture. Investments in the agricultural sector in response to the effects of climate change have a higher degree of success at the micro level, such as small farms, family farms. The situation is managed in a punctual and unitary manner and the benefits resulting from the investments will be higher than if they were acting after producing the negative effect.

### **Conclusions**

This article is the beginning of a long study on the close link between climate change and agriculture to ensure food security in Romania, which is a subject of particular importance to state and private public institutions. That is why, it analyzes specific indicators for the measurement of agricultural production, their consumption by the population, but also identifying potential risks. The presentation of this succinct information is the awareness of accelerating adaptation to climate change and the need to access external funds to take measures and to look at the risks and types of impact. In this regard, there is an acute need to raise awareness of public and private institutions for the integration and application of best practices, tools and technologies to adapt to the effects of climate change.

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