

CLIMATE CHANGE – CHALLENGE,  
ADAPTABILITY, SOLUTION. CASE STUDY  
ROMANIA

**Abstract**

The global crisis has effected all the spheres of human activity and not only. Environment seems to be more vulnerable than expected and the climate responds through changes that appear to get out of our hands. That is why we need coherent and well defined policies than can be implemented as soon as possible without any setbacks. The present paper outlines the existing situation of climate changes and the context in which they appeared, pointing out the activities deployed by the European Commission, shows what has been done so far, bringing into discussion the case of Romania, emphasizes the impact on different aspects that Man depends on and underlines the future plans of the ones responsible to deal with such problems.

**Keywords:** climate change, policy, structural funds, best practices

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# SCHIMBAREA CLIMATICĂ – PROVOCARE, ADAPTARE, SOLUȚII. STUDIU DE CAZ ROMÂNIA

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## Rezumat

Criza globală a afectat toate sferele activității umane și nu numai. Mediul pare să fie mult mai vulnerabil decât ne-am așteptat, iar climatul răspunde prin schimbări care dau impresia a scăpa de sub control. De aceea, avem de nevoie de politici coerente și bine definite care pot fi implementate în cel mai scurt timp și fără obstacole. Prezenta lucrare conturează situația existentă a schimbărilor climatice precum și contextul în care acestea au apărut, scoțând în evidență activitățile conduse de Comisia Europeană, arată ce s-a făcut în acest sens până acum, aducând în discuție cazul României, insistă referitor la impactul asupra diverselor aspecte de care omul depinde pentru a trăi, pentru ca în final să sublinieze planurile viitoare ale celor responsabili de aceste probleme.

**Cuvinte cheie:** schimbare climatică, politică, fonduri structurale, bune practici.



## 1. INTRODUCTION

In 2008, the global crisis started to affect not only the economy and the people, but also the environment and Earth's resources. Furthermore, biodiversity was in decline globally, major ecosystems being placed under increasing pressure and because global poverty persisted, the Millennium Development Goals needed major efforts to be achieved.

Europe recognized the connection between energy and climate change and took - through a coherent legislative package - the role of a global leadership to tackle climate change, to face up to the challenge of a secured world, sustainable and competitive energy, and to make the European economy a model for world sustainable development in the 21st century (Musatescu and Comănescu, 2009). As it is mentioned in their paper<sup>1</sup>, European Union will need to improve the relation between energy and environment, this being a very ambitious purpose. Moreover, every member state has to do prodigious efforts in order to solve its environment's problems.

EU has contributed to two major international treaties on climate change, as it is shown in the *UN Framework Convention on Climate Change* (UNFCCC) and *Kyoto Protocol* in 1992 and 1997. After that, the European Commission set up the *European Climate Change Programme* (ECCP) as the key vehicle for identifying and developing, with member state experts and other stakeholders, the most promising and cost-effective policies and measures that can be taken at EU level to reduce greenhouse gas emissions. Still, there are many aspects to be declared here, to be solved and implemented.

Climate change has become, more than ever, *the main driver of EU energy policy*, with EU leaders keen to stress the progress made and to push the self-imposed goals. The agreement from March 2007 in which the European Council was to set precise, legally binding targets represented a symbol of Europe's determination. *Euractiv* has known some phases and it is clear that this new policy will have to reach even beyond the EU's borders into South-East Europe, the Caucasus, the Middle East and North Africa and will have impact not only to the 27 member states. We need to have a legal package and this energy-climate package embodies the EU policies of reducing green-house gas emissions, achieving sustainable development, ensuring energy security and realizing the Lisbon Strategy for innovation.

The legislative package includes several important directives and one regulation:

- a directive improving and extending the greenhouse gas emission allowance trading system of the Community;

- a decision on the effort of Member States to reduce their greenhouse gas emissions;
- a directive on the promotion of the use of energy from renewable sources;
- a directive on the geological storage of carbon dioxide;
- a regulation setting emission performance standards for new passenger cars;
- a directive on quality specification of petrol, diesel and gas-oil.

So far, the European Commission has presented a *White Paper* setting out a framework for adaptation measures and policies to reduce the European Union's vulnerability to the impacts of climate change. The paper outlines the need to create a clearing house by 2011 to facilitate the exchange of information on climate change risks, impacts and best practices between governments, agencies and organizations working on adaptation policies (Caragea and Alexandru, 2010). Still, these are only a few aspects presented in the *White Paper*.

The use of renewable energy sources was seen as a crucial element in energy policy, reducing the dependence on fuel from nonmember countries, reducing emissions from carbon sources and decoupling energy costs from oil prices. The second important element is constraining demand, by promoting energy efficiency both within the energy sector itself and at end-use.

In the same time, European Commission has established a strategy for urban environment, strategy through which by 2013 cities will have to provide a favorable environment for people, emphasizing the importance of a healthy and a safety place. Thus, European officials encourage local initiatives that are carried out projects for sustainable development of buildings with the lowest cost to the environment. Through the agency of this strategy, local and central authorities are encouraged to enter into partnerships that promote environmental measures in order to ensure through action, a good air quality, a fluent traffic and low levels of noise.

Local authorities have a meaningful tool in their public administration. Land use planning is the demand for both mitigation and adaptation on local level, which includes (Taipale, 2008):

- Minimizing the increase of car traffic and improving conditions for public transport;
- Preventing flood risks;
- Affecting on selection of the primary energy source with long standing effect;
- Promoting combined power and heat production also in smaller scale;
- Utilizing more renewables, not forgetting the energy of solid waste;

In order to meet the increasing requirements of policy makers for energy monitoring, *Eurostat* has developed a coherent and harmonized system of energy statistics. Annual data that covers the 27 member states of the EU and the candidate countries are being collected.

It is interesting to state that companies have become more interested in this field; that is why investment in integrated technologies is synonymous with reducing the amount of potential pollutants at source, reducing the consumption of resources and energy, but also with recycling residues and used products. Moreover, some researchers such as Delmas, (2003); Neumayer and Perkins, (2004); Guler et al. (2002); Corbett and Kirsch (2004) and Viadiu et al. (2006) have analyzed specific external factors that drive companies to improve their environmental performance and reached the conclusion that regulatory regime or government support, pressure from local wealthy stakeholders, civil society and foreign customers in Europe and Japan, as well as industry pressure are the most important. Others focused on the role of internal organizational factors such as "organizational structure and culture". Only a few studies have begun integrating key organizational characteristics with institutional theory. Under these conditions, a great power of acting will be needed, in order to prevent climate change and it appears absolutely necessary to gather a huge effort in the courage of dealing with what is people's mistake: a total lack of respect for nature.

## 2. WHAT HAS BEEN DONE SO FAR

Probably most of us tend to believe that Romania's efforts in the battle of climate change began with its accession to the EU, but facts show the opposite. Back in 2004, the country decided to comply with EU's Commission Decision 2004/224/EC in order to limit values for certain pollutants in ambient air. By 2005 it had already managed to reduce urban population exposure to air pollution by 6.8 points, the cut reaching in 2008 a total amount of 11.9 points from the initial situation as it can be seen from the data found on Eurostat<sup>2</sup>. On the other hand, our neighbors from Bulgaria did not face the same trend in 2008, urban population exposure rising by 5.9 points in comparison with the previous year.

Under the Kyoto Protocol, Romania agreed to reduce gas emissions by 8% based on figures for its 1989 industrial output. This meant that between 2008 and 2012, Romania had the right to emit annually about 250 million tonnes of greenhouse emissions (including CO<sub>2</sub>). Before reaching the deadline year, more exactly in 2009, Romania industries managed to emit 40 percent less CO<sub>2</sub> than its Assigned Amount Units (AAUs) of CO<sub>2</sub>. In addition to this, we ought to mention that for every tone of carbon allowances Romania doesn't use, the country is allowed to trade them for money, the amounts gained

<sup>2</sup><http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tsien110&plugin=1>

being used for developing green energy to reduce carbon emissions, such as rehabilitating coal based power plants or wind energy projects (Yacong, 2010)<sup>3</sup>.

Fighting towards climate change also means using sources of renewable energy. In what concerns biomass and wastes, 2009 was a good year for Romania which is way ahead Bulgaria, producing 3915 thousand tonnes, while the latter just 778 thousand tonnes. Another significant difference can be encountered at hydro power level where Romania managed to produce in 2009 more than 1330 thousand tonnes and Bulgaria only 298 thousand tonnes. Electricity generated from renewable sources is as well a good point to bring into discussion, Romania's production being four times bigger than Bulgaria as it can be seen from Eurostat Statistics<sup>4</sup>.

Climate is a fundamental driver of the water cycle because it determines how much water is available and how much water we need. While in the short term, weather patterns determine variability of water on a day-to-day basis, in the long term climate, we can see the differences from decade to decade and this definitely alters our perception of what we regard as the normal climate. In addition to natural variability, increased concentrations of greenhouse gases are leading to climate change and that is why sustainability of water systems, irrigation systems, farming systems and dryland landscapes appear to be threatened by climate change. Talking about Romania, in 2009, 11803 thousand people were connected to public water supply, while Bulgaria had just 7529 thousand people in the same category.

The objective of Regional Operational Programme 2007-2013 is to support an equally balanced growth of all parts of the country by ensuring that all areas should have a minimum level of business, social and human capital infrastructure. Still, INFORSE-Europe states that, after the December 2010 Evaluation, the use of the structural funds is very slow (Romania Structural Funds 2007-2013, n.d.)<sup>5</sup> and the project proposals submitted by companies and local authorities in Romania amounts only to a fraction of the available amount in 2007-2013. We talk about 4.4 million euros contracted (that means 19 million Lei) from a total of 725 million euro available.

Trying to surpass the current global economic crisis, Romania needs any help it can get in order to reach the EU's standards and this situation is reflected even in its efforts to face the various climate changes. That is why the European Investment Bank (EIB) has accepted at the beginning of this year to grant Romania a loan being worth one billion euros, in the attempt of combating climate changes. Matthias Kollatz Ahnen, vice-president of EIB, even told in a press conference that the economic growth

<sup>3</sup> <http://scrippsij.blogspot.com/2010/02/romania-is-carbon-asset-to-trade.html>

<sup>4</sup> [http://epp.eurostat.ec.europa.eu/guip/mapAction.do?indicator=ten00082\\_2&mapMode=static&mapTab=2&country=ro](http://epp.eurostat.ec.europa.eu/guip/mapAction.do?indicator=ten00082_2&mapMode=static&mapTab=2&country=ro)

<sup>5</sup> [http://www.inforse.dk/europe/Structuralfunds/SF\\_Romania\\_07-13.htm](http://www.inforse.dk/europe/Structuralfunds/SF_Romania_07-13.htm)

in 2011, though small, encourages investors to become interested in Romania, Kollatz Ahnen himself being "optimistic" in what concerns the days to come. For the current year, the EIB has as its main aim that one of combating climate change through different projects which focus on enhancing the energy efficiency in old communists apartment blocks, reaching a 50 percent cut in energy consumption, as it can be seen in an article found on [www.eubusiness.com](http://www.eubusiness.com) (EIB to lend Romania up to EUR 1billion, 2010)<sup>6</sup>. Besides climate change, EIB's attention will also be drawn upon the extension of public transport networks, especially in capital city, Bucharest, where, according to a study conducted by Romanian environmental NGO Ecopolis (Calitatea aerului in Bucuresti. Efecte asupra sanatatii, 2011)<sup>7</sup>, air quality does not respect the guidelines of the European Union and citizens do not possess a realistic and coherent instrument of evaluation.

### 3. GENERAL IMPACT

Changes in regional and local climatic conditions will influence ecosystems as well as man-made settlements and infrastructure. The expected shifts in temperature and precipitation patterns may result in the modification of vegetation periods and displacement of the borderline between forests and grassland. Areas affected by dryness have increased over the last decades in Romania. The most drought-prone areas are in the Southeast of the country, but almost the entire country has been affected by prolonged droughts. Together with floods, prolonged dry periods lead to significant economic losses in agriculture, transports, energy supply, water management, health and households.

#### *Impacts on agriculture*

Over the last decade, drought- and flood-related periods have become more frequent with negative effects on crop yields, in particular on wheat and maize crop. The National Administration of Meteorology (ANM) has used different agro meteorological models (National Strategy on Climate Change of Romania 2005 – 2007, 2005)<sup>8</sup> to analyze the potential impacts on the yield of key agricultural crops in Romania.

#### *Impacts on forestry*

About one fourth of Romania is forested area, hosting a large number of species and ecosystems. The impact of climate change on Romanian forests has been assessed using global climate models. For

<sup>6</sup> <http://www.eubusiness.com/news-eu/romania-bank.9di>

<sup>7</sup> [http://www.ecopolis.org.ro/calitatea\\_aerului\\_in\\_bucuresti](http://www.ecopolis.org.ro/calitatea_aerului_in_bucuresti)

<sup>8</sup> [http://www.mmediu.ro/vechi/departament\\_meniu/schimbari\\_climatice/1\\_Documentatie/SNSC\\_en.pdf](http://www.mmediu.ro/vechi/departament_meniu/schimbari_climatice/1_Documentatie/SNSC_en.pdf)

lowland and hilly forest areas, a serious decrease in forest productivity is predicted after the year 20409 (Milcu, 2009) due to increasing temperatures and decreasing precipitation.

### ***Impacts on water management***

The hydrological consequences of increased CO<sub>2</sub> concentrations are significant. Modelling has been done for Romania, focusing on the main river basins. The results show the likely effects of changes in precipitation and evapo-transpiration.

### ***Impacts on human settlements***

The industrial, commercial, residential, tertiary and infrastructure sectors (including energy and water supply, transport, and waste management) are each in different ways vulnerable to climate change. The sectors are either directly affected by changes in temperature and precipitation or affected indirectly, through the general impact on the environment, natural resources, and agricultural production.

The sectors most vulnerable to climate change are construction; transport; oil & gas exploitation; tourism and industries located in coastal areas. Other industries that are likely to be affected are food processing, wood processing, textile industry and the renewable energy production.

## **4. FUTURE PLANS CONCERNING CLIMATE CHANGE IN ROMANIA**

The specific objective is to limit the long-term economic, environmental and social costs of the impacts of climate change in Romania. In order to limit the economic and social costs of climate change in Romania, the knowledge on impacts of climate change, vulnerability and adaptation will be increased<sup>10</sup>. Based on the improved knowledge, no-regret and cost-effective precautionary adaptation policies and measures will be identified and prioritised.

The following actions will be carried out to meet the specific objective:

- Strengthening the cooperation between and capacity in relevant agencies and research institutions regarding assessment of the impact and vulnerability of climate change in Romania;
- Increasing the knowledge about the ecological, economical and social consequences of climate change impacts;

<sup>10</sup>[http://www.mmediu.ro/vechi/departament\\_mediu/schimbari\\_climatice/1\\_Documentatie/SNSC\\_en.pdf](http://www.mmediu.ro/vechi/departament_mediu/schimbari_climatice/1_Documentatie/SNSC_en.pdf).

- Improving the assessment and prioritization of adaptation policies and measures, including the economic consequences of different adaptation measures. This includes the following sectors: agriculture, water management, forestry, and human settlements;
- Increasing the capacity to develop and implement adaptation policies and measures on the national, regional and local level, including taking adaptation into account in agriculture, forestry, water management and infrastructure;

The authorities should identify the main policies and measures regarding the adaptation to climate change. In terms of scientific research and development, methodological "best practices" must be established that are to:

- identify or develop approaches and methodologies for assessment of the impacts
- of climate change policies and measures;
- improve methodologies for emissions forecasting and scenarios;
- strengthen impact assessment, including risk assessment and risk management, and assessment of possibilities for adaptation.

Recent research concerning negotiations in Copenhagen have demonstrated that even climate change is a very important issue on the political agenda, parties priorities continue to pursue economic development goals and keep away from substantial financial efforts in order to fight climate change. Pragmatics say that Romania is not able to meet its "3x20by2010"<sup>11</sup> commitments and would be even less able to undertake additional obligations.

## 5. CONCLUSION

As global negotiations take place to reduce greenhouse gas emissions (GHG) and governments agree to seek opportunities, Romania has to become a serious and a credible player. On one hand, we must meet and accomplish our obligations as EU members in the following years, obligations which will cost us both money and efforts to build policies that help reduce GHG emissions in some certain sectors. On the other hand, it is very important the way the position of Romania with European Union is negotiated as on this depends our possibility to obtain funding for investments in energy and other sectors: an

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<sup>11</sup>The sourcing of 20% of EU's overall energy mix from renewable energy, a saving target of 20% of total primary energy consumption and a 20% greenhouse gas mitigation by 2020.



opportunity which allows Romanian authorities not only to reduce emissions, but also to produce more competitive energy.

Romania could gain more, both in financial and environment terms, if it commits to reasonable targets and follows to apply for coherent policies in order to meet its obligations. That is why Romania should have a strong position and fight so as to consolidate the relationship among countries for a common issue of so high importance to us. Last but not least, climate change might be just an instrument to humanise humankind as political decisions, economic interests, sovereignty marks or power attributes become senseless and powerless.

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