

THE IMPACT OF THE CAP-AND-TRADE SYSTEM ON SUSTAINABLE DEVELOPMENT IN ROMANIA

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The issue of pollution is an important contemporary issue. Within the last 20 years, there have been global studies on how to stop global warming. The European Union is the world leader in concrete measures undertaken in this respect. The introduction of the cap-and-trade system, begun in 2005 with the carbon emission certificate trade mechanism is considered a modest success that needs perfecting. The new EU directives of 2009, that come into effect in 2013, test member countries in the area of conventional and renewable energy strategies which have to be adapted to the national environmental protection strategies.

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Introduction

The impact of climate change on a global scale is more and more evident. The European Union, in the first decade of the 21st century, implemented a measures to reduce greenhouse gas emissions through the cap-and-trade method, using financial means, such as „carbon certificates”, creating a functional „carbon market”. These measures were in line with the Kyoto protocol, which sets objectives until the year 2012. In the year 2009 the ambitious legislative package for the 2013-2020 period came into effect. The EU wishes to reduce greenhouse gas emissions by at least 20% as compared to the year 1990, as well as to increase the percentage of green energy usage from 9 to 20% and to decrease primary energy consumption by 20%. The impact of implementing the energy/climate change package on the Romanian economy would affect the energy sector, the legislative process, profession reconversion, scientific and technological research, as well as the policy of attracting foreign investments and European funding.

Conceptual frame

People engage in market exchanges when they anticipate that through these operations their overall wealth increases. When, through these operations, the optimum results aren't reached, the neoliberal theory calls this *market failure*⁴⁰. One of these market failures are externalities.

Externalities are costs or benefits for a certain party which does not take part in the transaction. The classical case of negative externalities is pollution. For resources to be optimally used, the price paid for using them has to cover the *opportunity cost*. Nobel Laureate James M. Buchanan demonstrates the necessity of interpreting cost as *natural derivation from the act of choice*. If a company can use a factor de productie without paying for it, the resulting offer curve does not represent the whole marginal production cost.

$$\text{Social cost} = \text{private cost} + \text{externalities}$$

When the produced quantity is too great compared to the whole cost, then the social cost represented by the externality must be *internalised*. According to the methodology, as seen by the neoclassic theory, the government, which presumably always acts in the best interest of the public,

⁴⁰ Revista Economie Teoretică și Aplicată nr. 7/2006 Radu Șimandan, *Polurea și proprietate: Cât mai rezistă teoria eșecurilor pieței?*, <http://www.ectap.ro/articole/128.pdf>.

must intervene and correct the flaws of the market. The government, in order to fulfill its regulatory task, may use two methods: to impose centralised taxes, according to economist A.C. Pigou, or decentralised and tradeable (pollution) permits.

If property rights over some resources, used as production factors, are in the clear, the owners would be encouraged to enter into negotiations with the one that does the pollution. If there is the possibility of these negotiations, but these do not lead to optimum results, they are considered market failures. Elements of the negotiations, such as: informing, negotiating, stating, monitoring and applying the terms of the contract are activities that include costs, designated as **transaction costs**, highlighted by Nobel laureate economist Ronald Coase⁴¹. An analysis based on transaction costs defines externalities as follows: *the net value of externalities constitute the minimum threshold for associated transaction.*

According to Coase's theorem: in an exchange where external costs are present, the agents will negotiate until the point in which the resulting production is at an optimum amount, if three conditions are respected⁴². These conditions, in the case of pollution, are as follows:

- it is clearly defined when something can pollute, and in what amount.
- those who pollute have to pay to do it or they can be paid, by the owner of the affected resource, to abandon the practice of polluting.
- informing, negotiating, stating, monitoring and applying the terms of the contract should be at a low cost.

The problem of climate change is the consequence of **market failures**: those who produce damages to others by greenhouse gas (GHG) emissions do not usually pay anything.⁴³

Taking action against climate change can be achieved in three ways:

1. By states taking individual or collective action to reduce or limit the greenhouse gas emissions through imposed standards and regulations. This is called „**command and control**”

2. Carbon/energy tax

3. Imposing a limit on emissions while simultaneously trading in emission certificates. This is called „**cap and trade**”

If the first mechanism is of a public nature, the other two work through market means. State control is strong in the first case, medium in the second, and weak in the third.

Legal frame

In June 1992, the **United Nations Conference on Environment and Development** took place in Rio de Janeiro, where the need to integrate economic development and environmental protection into the sustainable development objectives was recognised, as well as the problem of an international environmental law, as a way of promoting sustainability, was raised. During this conference, the following documents were adopted:

- the Rio Declaration
- Agenda 21
- Convention on Biological Diversity
- Framework Convention on Climate Change

Romania ratified this document as Law nr. 24 of May 6, 1994

The Kyoto Protocol, of December 1997, is an international agreement regarding the environment, the agreement was put in action in October 2004 by the ratification of the Russian

⁴¹ Ronald H. Coase, *The problem of Social Cost*, Journal of law and Economics 10/1960.

⁴² Revista Economie Teoretică și Aplicată nr. 7/2006 Radu Șimandan „Polurea și proprietate: Cât mai rezistă teoria eșecurilor pieței? „, <http://www.ectap.ro/articole/128.pdf>.

⁴³ Andrei Moțearov, “Fișă de analiză 1. Economia sistemelor de comercializare ale cotelor de emisie de CO2.” http://m.cdep.ro/afaceri_europene/afeur/2009/az_378.pdf.

Federation. Until 19.01.2009⁴⁴ the protocol was ratified by 84 countries that are responsible for 63,7% of the total greenhouse gas (GHG) emissions in the world. Romania ratifies the Kyoto protocol through Law number 3 of February 2nd, 2001 and therefore assumed the reduction of greenhouse gases by 8% compared with 1990.

The agreement stipulates for the 37 industrialized countries found in appendix 1 of the UNFCCC (*United Nations Framework Convention on Climate Change*), a reduction of the polluting emissions by 5,2% in the period 2008-2012, as compared with the emissions of 1990. Romania is part of the “transition economy” countries in appendix 1 of the UNFCCC. Flexibilization mechanisms for reaching the reduction targets assumed by the states mentioned in appendix B are:

AAU (Assigned Amount Unit) – the international commercialization of *emission certificates* - countries that are in appendix 1 of UNFCCC.

CDM (Clean Development Mechanism) - implementing projects in developing countries (that are not in Appendix 1) for generating CER (Certified Emission Reduction) credits. The projects are initiated by the industrialized countries from appendix 1 of UNFCCC.

JJ (Joint Implementation) - between the states from appendix 1 of the UNFCCC (developed countries, developing countries). Romania is the beneficiary of the projects through the JJ mechanism, implemented by the industrialized countries. For every saved tone of CO₂eq⁴⁵ the investor obtains an ERU (Emission Reduction Unit).

The European Union, to coincide with the Kyoto protocol parameters, launched the European Union Emission Trading Scheme for all the 25 member states, on January 1st 2005 following the principle of cap-and-trade, “limitation- transaction”. The allocation of the emission process has become an important stake, in the conditions that these permits can be freely traded on the carbon market. The Commission, through Directive 2003/87/CE has foreseen for the 2005-2008 period that member states are the ones that assess the amount of permits through the allocation with a free title and in a direct way. The scheme takes place on a three implementation periods: the first between 2005-2007, the second between 2008-2010 with a reduction by 8% of GHGs as compare to the 1990 levels, and the third period between 2013-2020. Financial instruments included in this scheme:

EUA – European Union Allowance – a tradeable unit (valued on the stock market) of the Transaction Scheme. 1 EUA represents the right to emit one tone of carbon

CER – Certified Emission Reduction – a unit equal to one tone of carbon dioxide. CERs are issued for the reduction of emissions from C.D.M. – Clean Development Mechanism (green energy) activities.

ERU – Emission Reduction Unit – obtained through a J.I. (Joint Implementation) project. One unit equals one tone of carbon dioxide.

VER – Verified Emission Reduction – are carbon credits which may be used to compensate carbon emissions. 1(one) VER corresponds to one tone of carbon dioxide.

The most important international financial markets on which these certificates are traded are Bluenext, European Climat Exchange, Intercontinental Exchange. Carbon dioxide emission certificates are traded on the Sibiu Exchange, as underlying asset, starting December 2009.

Member states have set, in the case of industrial output, a global limit on greenhouse gas emissions for which certificates (rights to emit one tone of CO₂eq per year) have been issued, equal in number to said limit. This system controls greenhouse gas emissions for approximately 15.000 companies, oil, gas and energy installations, celulos, paper, cement, glass and steel factories within the EU. Companies that emit more than their given quota will have to pay fines:

⁴⁴ United Nations Framework Convention on Climate Change - UNFCCC. http://unfccc.int/files/kyoto_protocol/status_of_ratification/application/pdf/kp_ratification.pdf.

⁴⁵ Equivalent carbon dioxide (CO₂eq) is the universally used unit of measure to indicate the global warming potential of the six types of greenhouse gases (GHG).

100 euros for every tone over the limit, during the 2008-2012 period, and, as an added measure, they will be forced to continue to submit the missing certificates the next year. Companies buy and sell certificates depending on how they fulfill their pollution goals.

Through the AAU mechanism, for the 2008-2010 period, the European Union has a set maximum yearly value of 2.08 billion tones of CO₂, and Romania of 75.9 million tons. Out of a total of 379.7 million certificates given to Romania for said 5 years, 351.1 million are split between 8 economic sectors, as set out in the HG 60/16.01.2008.

Sector	Certificates for 2008-2012
Energy	208,674,068
Oil refineries	28,818,122
Ferrous metal production and processing	61,654,319
Lime	4,908,313
Cement	41,251,885
Glass	1,618,308
Ceramics	1,753,842
Paper and celulose	2,449,411

According to the *Fourth Global Evaluation Raport of the Intergovernmental Panel for Climate Change* ⁴⁶, written in 2007, human activities contribute substantially to the growth of greenhouse gas concentrations in the atmosphere, determining the change of its composition and subsequent global warming.

To combat climate change, the European Parliament – in December 2008 – and the Council of the EU – in April 2009 – adopted the „Energy – Climate Change” Package, also called the 20/20/20 Laws.

The objectives set out by the European Union with regards to this law are:

- The reduction of greenhouse gases by 20% until the year 2020, compared to 1990.
- A 20% share for renewable energy in EU final consumption, as well as a 10% target for biofuel in transportation.
- A 20% reduction in energy consumption as estimated for 2020, through increased energy efficiency.

The directives that make up the package are:⁴⁷

- Directive 2009/29/CE modifying Directive 2003/87/CE and improving and extending the commercial scope of greenhouse gas emission certificates.
- Directive 2009/28/CE regarding the promotion of the use of renewable energy sources.
- Directive 2009/31/CE regarding the geological capture and storage of carbon dioxide.
- Decision 406/2009/CE regarding member states’ efforts to reduce GHG .
- Directive 2009/30/CE, which forces fuel suppliers to cut greenhouse gas emissions generated in the fuel production chain.
- Directive 2009/33/CE, which concerns the promoting of green and energy efficient road transport vehicles.

Directive 2009/29/CE stipulates:

- The extention of the affected sectors, by including new ones, as well as new greenhouse gases that originate in various industrial processes.
- Geological capture, transport and storage of all greenhouse gas emissions.

⁴⁶ <http://www.ipcc.ch/>.

⁴⁷ General report on the activity of the European Union 2009 <http://europa.eu/generalreport/>

- The assignment of greenhouse gas emission certificates shall be “100% free” for energy-intensive sectors that face the risk of relocation⁴⁸ as well as for the energy producing installation that work in a cogeneration system, with the purpose of serving centralised heating systems.
- The assignment by “auction” for the energy sector, as well as for electrical production, shall be a minimum of 30% for 2013 and shall be gradually extended to 100% by no later than 2020. These auctions shall be open, transparent and the operator shall have the possibility of buying certificates from any Member State.
- The assignment by “auction” for installation from other, non-energy, sectors shall gradually rise from 20% in 2010 to 100% in 2020 on the basis of the principals of reference values of the most efficient technology.
- The Reserve of New Installations (RNI) shall be managed on the European level, the assignment shall be with a free title, based on the reference value of the most efficient technology.

In Romania, considering the strict terms for the implementation of the legislative package, the “Action plan for the preparation of Romania for the enabling of the Energy – Climate Change legislative package” was approved, and thus the institutions, their responsibilities and their action plan for the next period were set out. The National Agency for Environmental Protection, through the Climate Change Service, created the “Guide for applying the 2009/29/CE Directive”⁴⁹.

The impact of the “Energy – Climate Change” Package on the Romanian economy

In Romania’s particular case, the situation of the primary energy sources is worrisome, especially in the context of analysing the energy security. The European Institute of Romania, in its “Perspectives on Romania’s energy security” study, concludes that the real situation regarding energy security is as follows:

- Dependence on importing energy resources, diversification of supply sources.
- Decisions regarding the national energy sector have an inertia of 4-20 years.
- The need to improve the efficiency of and modernise the energy sector by stimulating investments, as to reduce national losses in the consumption sector that are currently at 30-35%..
- The need to create an institutional frame for the energy sector.
- The structure of the energy balance: few resources, but expensive and diversified.
- Holds the largest share of renewable energy in the primary energy consumption in Central and Eastern Europe.
- Holds a great economical and technical potential in the renewable energy sector, unfortunately it’s untapped.

The known oil reserves will be used up in less than 20 years, natural gas reserves in about 15 years, coal reserves in 40-50 years and uranium reserves can ensure the functionality of two groups at the Cernavodă nuclear power plant until 2017.

A study⁵⁰ made by the European Institute of Romania in December 2009 analyzes the impact of the *Energy – Climate Change* Package on the Romanian economy and society. The conclusions and proposals have the purpose of facilitating the implementation of the package, but also of reducing its negative effects. Some of the most important measures proposed by the said study:

- The establishment of an institutional framework that incorporates a national planning institute, an energy and resources minister, a neutral body to supervise the energy market, a national body

⁴⁸ carbon leakage –the move towards other markets that have less strict rules than those set out by the EU

⁴⁹The Regional Agency for Environmental Protection Cluj Napoca
<http://www.arpmnv6.ro/Ghiduri%20eco/Ghid%20incadrare%20instalatii%20EU%20ETS%20post%202012%20revizuit%2022.12.2009.pdf>.

⁵⁰ European Institute of Romania, București, Impactul implementării pachetului energie-schimbări climatice asupra economiei românești, Proiect SPOS 2009 Studii de strategii și politici, www.ire.ro.

for the management of the *Energy – Climate Change* Package through information centralisation and a regulation agency for the monitoring of intermediate and final targets.

- The development of a common document that incorporates the strategies in both the energy sector and the environment.
- Investments that strengthen transport networks and energy distribution.
- Growth of energy efficiency and the reduction of final energy consumption.
- The establishment of a fiscal regime for emission certificates and their transaction, the determining of the accountant rules of expenses of the scheme's implementation for the producers of heating and electricity by cogeneration.
- The creation of a legal framework necessary for ensuring the investment of funds acquired by the selling of CO2 certificates.
- The implementation of workforce qualification programmes for designing, building and operating the new green technologies.
- The need for a rehabilitation programme of certain thermo-electric powerplants that use indigenous coal, correlated with the desulphuration programme.
- The drafting of an evaluation study of our country's potential in the geological capture and storage of carbon dioxide.
- A programme for the thermal rehabilitation of buildings.
- The drafting of a study concerning the state of centralised heating systems and of a national strategy in the area of home heating.
- The development of the nuclear program, as an alternative to the country's dependence on natural gas imports and the replacement of old energy capacities with fossil fuels.
- A regulation of the introduction of the tariff binomial for heat and natural gas.
- Ensuring that energy prices have a high degree of tolerance by the consumers, through a system of energy assistance, wholly oriented towards all low-income families by eliminating subsidies and seasonal help.
- The continuation of energy sector privatisation together with public-private partnerships.
- The growth of the level of structural fund absorption, funds meant for improving environmental factors

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