LOW CO_2 EMISSIONS ECONOMY– THE NECESSITY TO IMPLEMENT IN THE EUROPEAN UNION

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Abstract: Inthe current period, even if we relateto the climate changes or at the irrational exploitationof the natural resources, both of they puta negative fingerprint on the abilities of the next generations tobenefitofa standard of livingat leastas well as the current generations. The researchaims to designingand following upof steps which will ensurethe transformation of the current model ofindustrialized economy, characterized by apronouncedpercentageof the greenhouse gasesemissions (GHG), into amodelof economy with reduced emissions of these gases whoaim at reducingof possible risks deriving from thechanging of the environmental conditions. Later, I extended theresearch on the so-calledGreeneconomywithlow emissions of carbon dioxide (CO_2) at EU level, and it appears that, the essence of the conceptof sustainable growth is itself the long term objectiveof the European Union, that is tobecomeenergy-efficient and withan economywith lowcarbondioxide emissions.

Keywords: sustainable economy, economy with low GHG emissions, emissions of CO_2, targets,measures

Introduction

At present, we face a pronounced pollution of the environment that we live in and in which we develop our economic activities. The recent international economic crisis records continuous and irreversible deterioration of the surrounding environment, with negative effects on human subjects as well, prove the capacity and the reduced limits of reaction of the economic system towards the major instabilities regarding the surrounding environment.

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The transformation of the international economy in one with reduced carbon emissions comes as a certain solution. We tried to discover scientifically grounded solutions in what regards the internalization of the environmental issues in an economic approach. The treatment and study of governing sustainable development is very complex and the reduction of carbon dioxide emissions represents only a stage.

The determination to choose a proper public policy is more obvious as the sectoral dimension used in public administration has to be modified, giving way to integrated approaches that are coordinated in a horizontal plan. Moreover, the increase of the globalization and integration level brings about a vertical integration of the public policies that will have to include convergent objective of sustainable development.

Public Policies - Low-Carbon Economy

The majority of the EU countries and its member states proposed that the Kyoto Protocol should continue with a new period of 8 years after 2012, as it is the only structure that provides compulsory commitments of reducing emissions of gases with greenhouse effect.

The 18th conference of the United Nations Organization regarding climatic changes - Doha in Qatar, had as an objective the attempt to advance the negotiations on limiting the emissions of gases with greenhouse effect and the preparation of the future global agreement with compulsory value for all the states that are Parts. So, once with the ending of a new period of commitment under Kyoto, the new juridical agreement will become functional, obliging all the parts and having a global inclusion. (The Kyoto Protocol included countries responsible for only 13-16% of the global GES emissions and it is prefigured to become effective from 2020.

At present, there are designed and followed the steps that will ensure the transformation of the present pattern of industrialized economy with reduced GES emissions. There is the possibility that this stage to end in the year 2050. Thus, ambitious objectives are required, such as: changeover, major transformations of the conventional industries, supporting new non-pollutant industries, increasing energetic efficiency, continuance of innovation and indentifying those solutions which ensure the substitution of the products with an energy intensive content, functioning, organizing and developing a new market.

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At the basis of the *pattern of the economy with reduced carbon emissions* it is taken into account the stimulation of that behaviour of the individuals/economic agents that pursues to reduce the possible risks that result from the change of environmental conditions. The human activities are responsible for the present high level of emissions; the environment, the ecosystem as a whole went through transformations, at the moment recording its incapacity to recover/go through destructive activities. At present, either we report ourselves to the effects of the climatic changes or to the irrational exploitation of natural resources, both they put a negative manner on the possibilities of the future generations to benefit of a standard of living at least the same as the present generations.

The pattern aims not only at responsible behaviour but also at technologies with favourable consequences both for the economic system and for the environment.

The solutions of the new economy take into account three categories of public policies objectives:

- decreasing the quantity of energy that a certain activity needs, that is *reducing the request for carbon;*
- decreasing the quantity of emissions of gases with a greenhouse effect on the unit of produced energy, thus *reducing the intensity of carbon;*
- *developing the capacity to absorb of carbon* by collecting it.

The growth of energetic efficiency, regenerative energies (wind, solar, geothermal, marine), the development of non-pollutant technologies, the increase of collecting and depositing carbon, bio fuels, electrical vehicles or those with hydrogen, the decrease of cutting trees, the encouragement and support of forestation, all these highlight themselves as the optimal solutions to reduce the GES emissions or to adapt to the new climatic conditions. (Table 1)

Table 1:

Optimal solutions to reduce the GHG emissions

	2020	**2050**	**2100**
Decreasing the request for energy	Creation and functioning of carbon markets	Electrification of infrastructure and growth of the role of	Electrification of the whole infrastructure and of transport

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	and institution of standards	underground transport	
Decreasing the energetic intensity	Collection and underground storage of carbon, exhaustive regulations and planning regenerative energy	Collection and storage of carbon, at the same time with the growth of regenerative energy, average extension of nuclear energy	"Intelligent" electricity networks, energy storage at large scale
Increasing the capacity to collect carbon	Creation and functioning of the market of preserving the capacities to collect	Increasing the capacities and maintaining some installations in order to retain the carbon from the atmosphere	Collection of carbon to develop on functional markets

Source: Programme for Sustainability Leadership, Cambridge Institute

The public policies to reduce the GES emissions should be based on three components: taxing carbon, technological policy and excluding barriers of behavioural change.

In order to achieve the pattern, the general frame includes:

a. the exigencies for adapting and disproof for the national plans;

b. ensuring the legal frame for the technological and investment transfer;

c. constitution and functioning of the financing and/or transaction mechanisms.

The target of reducing emissions rises to 50% in 2050 at a global level, being distributed as follows:

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- the developed states - reduction 80-90% with an intermediate target of 30-40% until 2020, having as a reference year - the year 2000;
- the emergent states- targets without any coercion until 2020 and adaptable targets under 50% reduction depending on the accomplishment capacity;
- elaborating some targets with coercion for the sector of navigation and internal and external aviation until 2025 and the indicatives until 2050.

The effort of the countries members of the EU joins a series of governmental organizations (ONU, OECD) and non-governmental (World Wide Fund for Nature) that provokes us both for adopting some active environmental policies which lead to the reduction of the GES emissions level and for adopting some adaptation policies as a measure of defending against climatic changes.

Within the pattern of the economy with reduced intensity of carbonthere will be countries that opt in favour of imposing taxes on pollution, others may choose the option of creating a market of emission certificates, any of the methods of internalizing external expenses are applicable. For example, in the domain of electric energy, the last option is appreciated, because of having a limited number of licenses that can ensure the reduction to zero of the emission of gases with a greenhouse effect in a shorter period of time. Also, they are completed with other measures as a consequence of the complex links that exist in global economy.

Green economy withlow CO_2 emissionsat EU level

The gist of the concept of sustainable growth is the long-term objective of the EU themselves, that becomes effective from an energetic point of view and with an economy with reduced emissions of carbon dioxide, which in fact defines Europe Agenda 2020.

The global academic environment, after several systematic and repeated activities with forecast character oriented towards the future, considers that four stages are necessary for a sustainable economy:

1. The economy with reduced carbon dioxide emissions;
2. The "decarbonised" economy;
3. The economy with a low climatic risk;
4. The sustainable economy. (Table 2)

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Table 2:

Transition towards sustainable economy

Failures of the present economy	**Positive actions**	**Targets of positive economy**
Short-term orientation	Long-term orientation	Development
Inequitable distribution	Promoting equity	Equity
Unclear indicators	New indicators	Innovation
Externalizing expenses	More responsibility	Participation
Governing failures	Good governing	Accessibility
Divided purpose	Definite purposes	Diversity
Improper values	Creating the values of sustainability	Sustainability
Education deficiency	Education	

Source: Cambridge Programme for Sustainability Leadership (CPSL), 2009

According to the table presented above, the transformation of economy will extend on a long period of time and as a result of the limits and factors of rigidity of the present economic system, it will not be made quickly as essential transformations will be needed in all the fields of activity and in the way of thinking, style of life, education, health and political organization. In other words, it is necessary to transform economy and economic policies and to transform social and cultural values.

The European Union aims at *reduced shares of dioxide of carbon emissions with 20%* until 2020 (reference year - 1990) (reducing with 20% GHG emissions compared to 1990 represents only a reduction with 14% compared to the level from 2005), as well as *the growth of both the energetic efficiency* with 20% and the weight of *the production of energy from sources of regenerative energy* - 20-25% from of the level of the final consumption of energy.

According to the reports of the European Committee, reaching this number of 20-25% of regenerative energy would have a multiplier effect for creating work places (over

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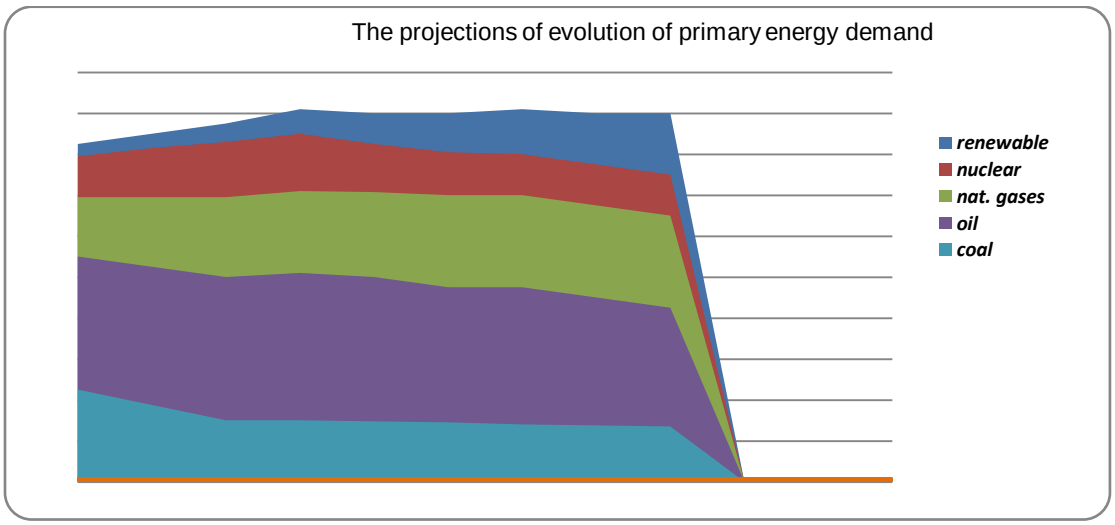
400.000), while the economy with reduced carbon emissions would create new opportunities and open new product markets (the European Committee, 2012).

As in the European Union just like in other countries, the energetic sector generates approximately 60-80% from the whole GHG emissions, also being the sector of activity in which we record the highest quantities of GHG emissions per thousands tons of oil equivalent. The European Union admitted the un-sustainability of its energetic policy, so that it has been consecrated the decision of integrated approach of the two policies. (Figure 1)

Figure 1: Primary energy demand until 2030 in EU



Source: data processed by the author

The member states engaged in fulfilling the reduction targets even if within the European Union there have been controversies regarding two aspects: 1. *the weight of regenerative energy* in the final consumption of energy; 2. the problem of *nuclear energy*, if it is neuter or not from an ecological point of view. The conclusion is that the *growth of credibility of the European policy is firmly linked to the way in which decisions are put into practice.*

Within the legislative pack, the relative targets are specified and the European Committee established the absolute targets of reducing the GES emissions in the period 2009-2013;

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generally speaking, the targets of reducing emissions are set in correlation with the objectives that the member states established and with their achievements.

On one hand, the Committee did not give the member states flexibility regarding the targets, on the other hand, in what regards public policies and the measures that come in achieving these targets, the modalities are about to be established by the national governments, also allowing the transfer of annual allocations of emissions among years/states and the application in limited values of the credits based on projects within the mechanisms of the Kyoto Protocol.

Clean Development Mechanism (CDM) or Joint Implementation (JI), two mechanisms through which the reductions of emissions resulted from investments and transfer of technology implemented in other countries are accounted for (and calculated as reductions of emissions through compensation) in the portfolio of the investing country.

The market of the emission certificates represents the main tool through which the European Union tries to quicken the innovation of technologies and the change of the economic agents' behaviour.

The reduction share established is divided into two categories:

the reduction for the sectors covered by the ETS (the transacting scheme of the emission certificates, including the sector of internal and external aviation), reported to the level of GES from 2005; and it represents a common effort of the EU;

the reduction for the sectors that are not included in the transacting scheme, having as reference year 2005; they are only in the task of the member states.

Starting with 2012, the sector of aviation was included in the scheme and the industry of aluminium and non ferrous metals - 2013 alongside the energetic industry, the metallurgic industry, the cement industry, the chemical and petrochemical, the industry of processing glass and fibreglass of processing ceramics, the industry of paper and carton, which were comprised in the scheme.

The non-ETS sector aims at transport, agriculture and services, in the activity sectors that are not comprised in the ETS, excepting the international marine sectors and those comprised in Land Use, Land-Use Change and Forestry-LULUCF, being characterized by a large number of economic agents, but which have a low individual impact on the environment; however, if these sectors are taken together, they rejoin 60% of the total

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quantities of GES emissions; reported to GDP (PIB)/ inhabitant, each country contributes to the non-ETS targets; the national targets are different, depending on the wealth of the states.

In support of the institutional effort there appears the need of participating in a much larger spectre of the companies and economic sectors; as market elements to be introduced other sectors and harmful substances too.

In the Report "Environmental Outlook to 2005", published in 2012, the Organization for Economic Cooperation and Development stated that "the consequences of the lack of actions are the expenses of the lack of actions in support of the environment, but also quantification in an economic orientation. The same organization in the report "Better Policies for Better Lives" (2014) states that without implementing the new environmental policies, it will be recorded a request of energy with over 75% bigger in 2050, especially because of emerging economies (over 82% will still come from conventional economy), which will cause the increase of the level of GES emissions with an average of 55%, especially from the growth of the level of carbon dioxide with 75%, indentifying the following risks:

- diminishing of biodiversity with 11% especially in Africa, Asia, Europe;
- reducing of forest areas with 12 %;
- an increasing trend of water request depending on the requests from the processing industry (over 400%), of the thermal electrical stations (over 150%) and of the domestic consumption (over 120%); the risk of water shortage will increase, especially in the North and South of Africa, Central and South Asia, about 40% of the world population will experience this deficiency, this is concluded in the Report.

The agreement and transposition in the European legislation of the International Environmental Report (2009, 2013) established that the overtake of the carbon dioxide concentration in the atmosphere of 460 parts per million would have as an effect the increase of medium global temperature; IPCC (Intergovernmental Panel on Climate Change, a scientific organism that provides the scientifically bases of the evaluations and decisions of the ONU Convention on climatic changes), in its fifth evaluation report (AR5, October 2014) by making a total of all researches helped the understanding of the results of the most recent scientific, technical and socio-economic researches regarding

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the climate of climatic changes, their adaptation and attenuation, emphasized the fact that this process of global warming becomes irreversible. This way of thinking names the basis of the International Agreement regarding Climatic Changes (Copenhagen, 2009) itself, also ensuring continuity with the aim of a global agreement and regulation regarding the decrease of the emissions of gases with a greenhouse effect (GHG).

Conclusions

The existence and operation of the external factors that block the normal functioning of the economic system and highlight its cyclicality, indicate the fact that the process towards a sustainable development of the world economy is irreversible and inevitable; *if the market mechanism is not regulated and the parts do not agree in finding the solutions to external pressures, there is the risk for crises to increase and deepen;* moreover the economic and social policies of the governments are short-term and medium-term oriented towards economic growth, protecting a certain style of living of individuals, subsidization of consecrated industries.

At present, the states member of the EU implement policies and measures in accordance with the target of the Union to reduce with 20% the GES emissions; the groups of African countries and of small insular countries showed a different position; asserted that the period of eight years will diminish the efforts of reducing the emissions requesting the maintaining of the period of five years (2013-2017). Russia, Japan and New Zealand did not assume compulsory targets of reducing emissions as a consequence of the high level of energetic efficiency of their economies (any internal additional effort to reduce emissions becomes expensive and a little feasible from an economic point of view; one takes into account the marginal expenses to reduce emissions - in the country with old technologies, their replacement determines a substantial reduction of emissions to accessible expenses; the countries with top technologies - have already reduced the GES emissions, the improvement of these technologies implies extremely high expenses). The three countries announced that they will continue having commitments under the Convention (including the USA), just that the nature of these commitments is voluntary.

The solution identified - the parts can establish new targets, even more ambitious that the current ones, but those that they can propose after 2015 - the so-called ambition mechanism.

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The environmental challenges are best treated by the market based policies or policies type order-and-control, while the support of the technological progress is generally made through non-selective measures that stimulate the creation and propagation of new knowledge regarding certain districts, technologies, companies or fields of activity.

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