

## SUSTAINABLE DEVELOPMENT IN THE CONTEXT OF THE RELATIONSHIP „MAN – NATURE”

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**Abstract.** *In the long run, the environmental protection actions will have to correlate with the country's social-economic development actions and the concept of durable development of the economy, resource exploitation and quality of the environment will have to be taken into account. It is common knowledge that the intensity of the pollution phenomenon is a result of the economic structure, especially of the industry, of the existing legal framework and of the level of ecologic education of the citizens in the country.*

**Keywords:** Sustainable development, economic and social development, environmental protection, technological development, innovation, technology transfer

### The Concept of Durable Economic and Social Development

The brief presentation of this concept of *durable economic and social development* aims at making the more or less knowledgeable reader understand a series of interrelations and relations of DURABLE development.

A global view on *durable development* could make reference to the connection between the main economic and social development indicators: *population growth, raw materials, economic growth, population consume, social protection, natural environment*. Terra has always been and remains the cradle of human race civilization, but it is also *a humongous astral „ship”*, *wondering among the immense cosmic ocean, having on board over 500 thousand vegetable species and over 1.000.000 animal species that lived together millions of years, in an almost perfect equilibrium, until the human race has appeared on Earth.*

The phrase formulated by Lester R. Brown in his "History is in a Hurry" points out the special importance granted to global, durable approach, in the present conditions of society development.

*"The Rhythm of History is accelerated - the author underlines - while the natural limits of the Earth are in contradiction with the continuous increase of human demand. More and more often human exploitation is in conflict with the regeneration capacity of the fish banks, forests, water reserves, soils as well as with the earth ecosystems capacity of absorbing carbon dioxide".*

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The problem of durable development is a concept launched on the occasion of the launch of the report entitled "*Our Mutual Future*", at the workshop of the World Commission on Environment and Development in 1987, and it was defined as "*Type of development ensuring satisfaction of the present needs, without compromising the possibility of the future generations of satisfying their own needs.*"

The concept implies insurance of a three level performance:

1. Economic, respectively increasing the degree of use of resources and stopping the loss of non regenerating resources.
2. Ecologic: avoiding environmental degrading.
3. Socio – cultural: ensuring living conditions for human fulfillment.

In accordance with reaching the goals for durable development, the economic and environmental policies will have to face major changes, leading to the reduction of imports of resources per useful effort unit.

The XX<sup>th</sup> century economists, including Nicolas Georgescu – Roegen<sup>1</sup>, have contributed to the elaboration and promotion of the concept of economic and social (viable) development. This concept has been adopted at the highest political level, at the UNICED (United Nations Council for Economy and Development) Conference in Rio de Janeiro, in June 1992, aiming at stimulating international cooperation and the elaboration national action plans. The principles, goals and objectives of durable development have been written in the Rio Statement and in the Agenda 21 Action Programme, heads of states and governments from 118 states who attended the Conference, have unanimously agreed that the environment, economic and social development are inseparable. On this occasion, durable development has become global strategic option for the next century, supporting the need for continuing economic and social development, while protecting the environment, as the way for improving the quality of life.

The general principle of durable development bears, in an independent way, the first responsibility for mental, social and economic wellbeing of any people. In order to put this principle into practice, the need for “united action” is underlined in order to adopt various approaches and measures.

• *Durable development represents an alternative under the circumstances of global, regional and local cooperation, and provision of durable development is the responsibility of every individual. Governmental action alone is not enough to put into practice durable development. It can be said that economic reform that is in progress cannot be conceived outside durable economic and social development, but only together with it.* Businessmen, groups of interest, scientific

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<sup>1</sup> GEORGESCU, N., R., *The Law of Entropy and the Economic Process*, POLITICAL Printing House, Bucharest 1979

community, education, mass-media and NGOs have to get involved through interrelated actions in promoting durable development and consolidating the governmental actions. Many countries, including EU member states, operate this concept through national Commission for Durable Development.

These commissions that have established their own principles and goals, in close relation with their economic reforms, but also with the existing social and economic potential. Starting from the idea that the welfare of a nation is tributary to a strong scientific and technical activity, economically developed countries have started an offensive, known under the term *technical-economic revolution*. Conveyed as the principal promoter of economic growth, in its turn, during the 5<sup>th</sup> and 6<sup>th</sup> decade, the scientific-technical revolution has generated a series of theories and economic policies capable to justify this ample organizational, economic and financial process.

In an extremely complicated moment of the cold war, when on the world's stage profound changes took place at political, economic and social level, the viability of the development models and their opportunity were being tested.

Confronted with the ideologies of the time and with the intolerance existing on both sides of the *iron curtain*, viable solutions to the problem regarding the role of the scientific-technical revolution did not try to convince any of the belligerents. Especially, since successes in the renewal of technical base and the production growth in developed countries were considered unprecedented and, the primary role of these spectacular increases were attributed to technological and scientific revolution.

There is an explanation in this regard and it concerns the need to increase the volume of the international production required by the much needed economic recovery after the destructions caused by the war, but also required by the expansion of markets, the expansion of the area of purchasing power and mass of buyers. Only towards the end of the sixth decade and beginning of the seventh decade businessmen, politicians and other socio-professional sectors began to recognize the limits of growth. Everything made in this period through the growth model, now proved to be extremely fragile and in deficit, at the same time. It was found that it is not sufficient that the growth model is specifically geared towards increasing revenue by maximizing profits, increasing physical capital, the volume of investment in factories, infrastructure, machinery, equipment, etc., unless we give the necessary attention to natural and human environment.

In addition, the energy, raw materials, as well as the financial and currency crisis would have produced a powerful earthquake in the world economy, further exacerbating global issues. Furthermore, organized offensive opinions of scientists from different fields on further economic growth based on the previous

model have demonstrated to the public, political and economic decision makers, the danger of irreversible degradation of the environment, of the human civilization itself.

At the United Nations World Conference held in Stockholm in 1972, which had the primary object of debate environmental protection and the famous report on the growth limits, conceived following responsible international debate and sent by the Club of Rome, some of the actions were sufficient to adjust the material and direct it towards saving energy and resources, however, without getting the desired results.

It took the years of crisis of the eighth decade to convince some developed countries and international financial institutions to stop the growth model and to adopt a neoliberal model of monetary and economic policies based on it. Unfortunately, not all countries adopted this new economic model, as barriers and ideological disputes have acted as an obstacle. At the United Nations World Conference U.N.C.E.D. in Rio de Janeiro in 1992, where environment and development issues were in the forefront of the agenda, the purpose of international cooperation and action programmes, the concept of sustainable development (viability) was adopted at the highest political level. This concept has now acquired a universal dimension and a wide international circulation. Initially, this concept was launched in 1987 at a presentation of a report prepared and published by the independent World Commission on Environment and Development headed by Gro Harlem Brundtland, Prime Minister of Norway.

The definition of sustainable development in the report entitled *Our Common Future* is:

*"Humanity has the ability to make development sustainable, i.e. to ensure that this face of needs present without compromising the ability of future generations to meet their own needs. The concept of sustainable development implies limits, but not absolute ones, but limitations imposed by the current state of technology and social organization on environmental resources and the ability of the biosphere to absorb the effects of human activities. However, technology and social organization can be managed and improved way to find its way to a new era of growth."*

Sustainable development principles and objectives were included in the Rio Declaration and Agenda 21 Action Programme. The *general principle of sustainable development* is that each state has, independently, *the first responsibility for the welfare of mental, social and economic development of its own people*. To implement this principle, the need to work together in order to harmonize the different approaches and measures is underlined. Each sector of the society must contribute to scientific education and education in this respect. Also,

the media and NGOs should be involved in independent actions for sustainable development. National and international cooperation in this field are mutually supportive. There were broad international debates on the definition of sustainable development and the establishment of principles and operational objectives.

This classical economic theory has become outdated, and addressing global economic analysis was the basis to promote the concept of sustainable development. Departure and arrival point is the economy value, based on its standing as work, utility and concrete form of existence of matter (substance, energy and information). Sustainable development can be considered authentic creative values that can lead to economic and social development in harmony with nature. In other words, sustainable development is a continuous process of social change at global, regional and local levels to ensure every opportunity so that present and future generations have a better life. Economic recovery is not possible without coherent approach to the interdependence of economic reform and sustainable development. Particularizing this problem at our theme level, we can show that economic and social development, pointing out the fact that economic, social and ecological sustainable growth means adjustment of economic growth within the limits of nature, and economic development as a result of economic reform is possible only if it is based on an ecologically sustainable basis. Alternative environmental sustainability concerns equally industrialized countries and developing ones. Mentioning only two uncomfortable social and economic factors such as waste and poverty makes us see the universality and viability for both groups of countries mentioned above. In terms of sustainable development, economic reform approaches are important:

the development and adaptation of technology as rational organic fundamental change in consumer habits, values and lifestyles. Each process started by the economic reform should be coordinated with that of sustainable development, in order not to jeopardize the economic recovery. For example, the uncontrolled growth of the world population could undo the positive effects of all these measures. From an ecological point of view, sustainable development aims at achieving and maintaining the level of material welfare, i.e. *sustainable economic development*. Any lack of symmetry between the process of economic reform and sustainable development can create conflicts between different interests and purposes and make us leave the interests of present problems for future generations. For the timely solving of these conflicts, environmental considerations must be given an important role, based on technical knowledge and resources available in line with market demand, but with some provisions and precautions. Unfortunately, the concept of environmental sustainability, adaptability to nature and biological diversity are still imperfectly understood and various scientific information we have on them are inadequate.

Therefore, to the purpose of what has already been presented, we need to develop indicators, more scientific research, experimental practice and training. Many of the current issues of economic reform have a *global character*.

For example, global climate change as a result of human activity affects not only those who have generated pollution, but also other citizens of this planet. Since in this case, no nation or state has its own atmosphere. This is an example of the global dimension of the economic process but also of global and collective responsibility and to solve these problems joint actions are required.

Within the European Community, environment was the only policy area where action was taken based on programs developed over several years. In future, the environmental protection measures will have to correlate with the socio-economic development process in the country and must take into account the concept of sustainable economic development, resource exploitation and quality of the environment. It is common knowledge that the pollution phenomenon stems from the economic structure and industry in particular, the existing legal framework and level of environmental education of the citizens of a country. In general, this level is within the range found in Europe, but pointing out "critical" areas, such as Romania.

In these areas, the impact of the pollution phenomenon, of environmental factors is particularly severe and often accompanied by irreversible effects. Therefore, sustainable economic reform must take into account the criterion of biological protection, derived from sustainable development and to give priority to any policy and strategy, to maintain control of this phenomenon in these critical areas. Although there is an environmental infrastructure throughout the national economy, the technical level and quality do not meet international standards and it does not work fully, leading to some mismatch in terms of environmental protection policies.

In Romania, not only the structure of energy industry is polluting, but also the nature of resources, technologies and products used, for which the economic reform process in general and in particular the restructuring of industry and energy sector should focus their efforts to improve or solve these problems. In the new conditions of economic crisis, crisis leading to loss of jobs, thus creating special problems in the area of social protection, conservation of the environment could be generating profits and jobs and many activities of this kind that can be initiated by the government, but also by the economic agents, if we consider only the use of waste dumps of ash from the energy of the slag from metallurgy, the phosphor gypsum, red mud (from the manufacture of aluminum) and it is sufficient to consider that these economic activities will create many jobs.

We can appreciate that for achieving the objectives envisaged in the short, medium, long and very long term, there are several factors to be taken into account.

The most important factors are enumerated below:

- Romania's Political Option to join the EU economic structures where the structures dedicated to environmental protection are essential;
- Romania's accession to treaties and international agreements for environmental protection;
- The need for Romania's integration in international flows of goods and services requiring the observance of extremely demanding environmental performance;
- The existence of high rates of unemployment stimulates interest in environmental protection and job creation;
- Reduction of resource stocks can be overcome by extensive measures to increase their efficiency, conservation of existing resources and expansion of research on the use of unconventional resources;
- Use current research and development potential on protection of the environment, specialized education, industrial capacity to achieve some of the machinery and equipment necessary in this field;
- EU countries experience can help Romania to complete the legislative framework and tools necessary to achieve compliance with this framework.

Unfortunately, at present, there are many limiting factors whose number and intensity adversely affect the achievement of environmental objectives. Here are the most important factors:

- continuous involution of the main economic indicators;
- Lack of legal tools making the law operational;
- Environmental education and lack of authority of environmental nongovernmental organizations;
- Political decisions.

For harmonization and reaching the goals, it is essential to develop scenarios capable of giving the character of economic and social development strategy for sustainable development. In this regard the following issues should be taken into account:

- Valorization of the existing environmental infrastructure;
- Collecting, sorting and recovery of all kinds of waste;
- Integration of large industrial plants and energy-product recycling process;
- Collaboration and foreign aid are absolutely essential to accelerating success in achieving objectives, strategies and environmental policies;
- Granting subsidies from the budget to stimulate markets for ecological industry collection and recycling of wastes and for upgrading technology;

- Full use of positive factors to achieve the objectives, policies and environmental strategies;
- Increase the role of educational factors, to raise awareness about the need for environmental protection.

The selection criteria for proposed scenarios must take into account several factors. First of all, it has to take into account compliance with the succession of the established strategic or political objectives, making sure that minimum material, human, legal, administrative, educational, efforts etc., are used. Secondly, those scenarios where protection of the environment generates profit, provides more jobs, stimulates improved product quality performance, increases competitiveness of domestic and foreign products should be appreciated.

To achieve the objectives contained in the scenarios for the environmental strategy, it is necessary to develop appropriate policies and programs to support that scenario. In this regard, legal, investment, and financial policies, environmental are absolutely necessary to ensure the institutional framework necessary for achieving successful economic reform in terms of sustainable development.

Also, social development, another component of sustainable development aims at ensuring a balanced distribution of wealth, the framework necessary for enjoying fundamental civil rights and basic needs fulfillment. It also provides balanced participation in the decision making process and influencing the course of events, whereas sustainable development is characterized as a dynamic process. The objective of eliminating poverty, an important goal of the world community and developing countries, can be achieved only through a right social development. Every nation must act within the world community to ensure a fair share of new technology and natural resources and material, social and cultural wealth.

People should also enjoy guaranteed equal rights in decision-making and development of their cultures. Cultural dimension (intellectual freedom and ethical development) of sustainable development is to preserve the intellectual and cultural creativity from one generation to another, with the development of ethics. It also reinforces the mutual interaction of multiple dimensions of the concept of sustainable development and cultural diversity.

*"For Romania, accepting the sustainable development doctrine is not a voluntary option, among many others possible, but the only responsible way to design medium and long term development in line with national interests and international cooperation requirements"<sup>1</sup>.*

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<sup>1</sup>\*\*\**National Strategy for Sustainable Development*, Promoted by the Governmental Working Group and the Civil Society, established based on G.D. 305/15.04.1999, p. 16.

In this respect, the Romanian Government elaboration of National Sustainable Development Strategies was necessary so that "*national development goals correlate with the experience already gained in the West in terms of quality of human life and concern for future generations ...*"<sup>2</sup>.

<sup>2</sup>. Sustainable development means improving and maintaining progressive welfare in conjunction with the requirements of rational use of natural resources and ecosystem conservation. The National Strategy for Sustainable Development has proposed the following objectives:

**Fundamental objective:**

More wealth and prosperity of all individuals and of the social assembly at national level, pursuing economic development within the limits of support of the Natural Capital, in a manner that ensures the quality of life for future generations.

**Main objectives:**

Ensuring the health of the population. Ensure complementarities and correlation between all economic and social sectors, aiming at sustainable human development.

Establishment of potentially competitive sectors and directions of sustainable development as priorities in the context of major trends worldwide and in accordance with international obligations assumed by Romania.

Resizing and reshaping economic and social structure, and turning it into a sustainable system. Ensure continuous and stable growth of living standards and in accordance with the criteria of EU integration.

Stopping the damage and start rebuilding its natural capital. Develop a coherent legislative and institutional system, compatible with the EU countries and strengthen democracy by encouraging civic participation. Human resource training according to the requirements of scientific, technological and information in all international economic and social sectors.

Ongoing monitoring and assessment of economic, social and environmental performance, through a system of determined quantitative and qualitative indicators.

**Economic Balance and Sustainable Economic and Social Development**

Economic balance in terms of economic - social development approach is a concept which should be in interdependence and correlation with various factors that contribute to achieving this balance:

- *Financial balance* - equality between the needs for financial resources required by the needs of production and circulation of goods and services, on the one hand, and the possibility to cover for them, on the other hand;

- *Budget balance* - equality between state revenue and expenditure;
  - *Cash balance* - the correlation between existing monetary mass in circulation and the quantity of goods and services on the market under a certain speed of movement of money;
  - *The trade balance or balance of payments*;
  - *Balance between economic growth and technological development*;
  - *Balance between economic development and environmental protection*;
  - *Balance between technological development and environmental protection*;
  - *Balance between economic development and social protection, etc.*
- In the same way, through various links between the above mentioned factors, but also between other factors as well, *global economic balance* is achieved, which may be located both at micro and macro level.

*Global economic balance* is conceived as a result of partial balances, hence as interdependence and correlation between *different systems of economic balance* conditioned by a multitude of factors determining the achievement of these balances. The link between quantitative and qualitative aspects of local and global economic balance is expressed by unity of the functional economic balance and of the structural one.

**The state of the functional economic balance** is determined by two factors:

- *Resources* - that define the economic potential;
- *Need for resources* - for productive, social and individual consumption needs, while the **state of the structural economic balance** is given by the structural relationships between different sectors.

So, **sustainable economic and social development** is carried out under the imperative of the global economic balance, of the evolution of variables and parameters of the national economy in time.

### **Optimum Economic and Social Sustainable Development**

Sustainable socio-economic development implies a realization of the optimum time between its constituents. Achievement of economic optimum economic system requires the achievement of economic efficiency in accordance with economic interests pursued. Economic optimum cannot be conceived outside the interdependence of economic equilibrium and economic processes.

The negative aspects of economic development that abound in daily life and are characterized by pollution of water, soil and air, with serious consequences upon human health and welfare, have impressed the experts on the environment. These environmental perturbations are not local, but rather by themselves and through their interactions with other factors, they demonstrate a regional or global

character. Failure to meet fundamental human needs have created unreasonable ruthless pressures on exploitation of the environment. Destruction of forests, loss of arable land, low productivity as a consequence of disease and malnutrition and growing pressure on fragile ecosystems, which so often results from poverty, have important consequences as the pollution created by industry, technology and overconsumption, act as elements that undoubtedly lead to rapid depletion of natural resources base. So now, the problem addressed to the entire humanity is to achieve a balance between spatial environment and economic development. This complementary relationship generates concern and profound changes in thinking and decision for specialists, economists, politicians, etc. If until recently it was a common fact to characterize environmental problems only in terms of gross national product growth, now, when confronted on the ideate level, the fight against pollution is performed in accordance with the socio-economic development. Without this struggle to produce a brake, a threat to development or negligence in supervision and environmental protection.

In other words, the ultimate goal of environmental policy planning and development is to improve life. Under these conditions, new kinds of social and economic development are required, able to link the development constraints and possibilities of natural basic resources required by all human activities. Future prospects offered by technical and scientific discoveries arising from our living space, the biosphere, will put us in a position to benefit from other developments capable to significantly improve the existing welfare.

Power of surges and sea currents, the secrets of genetic diversity and biochemical complexity that surrounds us are all characteristics of the world that remained unexplored, but at the same time, can threaten our existence through new types of development. The future is now preparing, consequently it should not be neglected by the new economic thinking that many of us try to understand.

### **General Considerations on the Current Geopolitical Context in Addressing Environmental Protection Issues and “Man - Nature“ Relationship**

The future international agreement beyond 2012 should have been signed in Denmark, when the Kyoto Protocol expires. Although everyone agrees to say that this new protocol should be signed during the Copenhagen meeting, when it comes to negotiating the document item by item, it becomes complicated. Optimistic statements, full of friendship and mutual respect between the government officials worldwide have full coverage to the negotiating table, where each tries to get as much for the country they represent. The first good news is that America no longer opposed, as it was the case before at the Bali conference. Indonesia showed that Americans are equally aware and concerned about the effects of global warming and agreed that an international protocol is the best

solution to resolve the situation. What will include this document is still unknown, at least for now. Americans demand a sectorial approach to the problem of global warming. In other words, identifying the largest sources of pollution in each country and reducing carbon dioxide emissions in those sectors. An example: Germany is a major producer of cars. As such, this sector should be targeted for emission reductions, while other areas lagging behind in this country, not having to make any change in production. U.S. officials have competed in praising this approach, making lobby so that the Copenhagen Protocol to be signed in this way. Moreover, another big polluter of the planet, the European Union insists on the adoption of other strategies on climate change. Although I agree with the Protocol, EU representatives, particularly those in Britain, France and Germany, argue that big countries should reduce their polluting emissions, in all areas: industry, agriculture, transport, tourism etc. These countries consider that the method is more efficient and affects less poor and developing countries who suffer most from global warming: it is not because of them that the effects are seen, but because they are polluted and do not pollute too much and still have no money to take action against floods, desertification, species extinction, erosion of shores, etc. And Europeans pull the teeth of their theory, arguing that reducing sector emissions will possibly have the effect of ruining many emerging economies.

Areas of concern to the entire planet, such as renewable energy (including the chair are bio fuels), transport (particularly aviation), were only marginally mentioned at the meeting in Tokyo. Our Planet still looks for the best solution for second generation bio fuels. Basically, large areas on Earth, especially forests and wetlands have been destroyed in recent years and replaced with fields that are growing bio fuel crops. So far, the Europeans were the only holders of a strategy. They had set a target that in 2020, 10% of fuels used in the European Union come from bio fuels. But the goal was severely criticized recently at the EU Spring Summit, when leaders of several countries have complained about the destruction of ecosystems and increasing price of food. Regarding aviation, the biggest polluter in the transport sector, silence again. Aviation was not included in a plan to reduce emissions anywhere, in any country in the world, so that only an international decision could stir things here. According to environmentalists, this led to a shortage of natural resources for the world and for future generations. In the report, Europe 2007 - Gross Domestic Product and Ecological Footprint, WWF carried out a comparative analysis of performance of European Union countries, registered in three key areas since 1971: economic growth measured by gross domestic product, the pressure on natural resources, measured by the ecological footprint, and human development, measured by human development index developed by the United Nations. *Just a generation ago, Europe was an ecological creditor, using fewer natural resources than were available to*

*consume. Today, however, Europeans consumption exceeds the carrying capacity of natural ecosystems. If all people on this planet would have the same lifestyle with the Europeans, we need more than 2.6 planets to provide the necessary resources and to neutralize the waste generated, "said Tony Long, director of the European WWF Office.*

*“The development we are currently evaluating is very far from the stated objective of the EU and countries of the world on sustainable development. This discrepancy is due to the fact that business decisions often ignore the natural capital that we have available. Economic indicators are essential. But without taking into account a healthy natural resource, ecological deficits will go unnoticed and ignored. It is as if we spend money, without realizing that liquid natural capital of this planet, "says Emaka Anyaoku, president of WWF.*

Except for Finland, Latvia and Sweden, all EU countries face a shortage of natural resources. Even if these countries have important ecological reserves compared to other EU countries, this does not mean that they can manage properly. For example, in Finland environmental pressure increased by 70% since 1975, one of the highest growth rates in the EU. Germany, Bulgaria and Latvia have managed to reduce its ecologic footprint in the last three decades and at the same time, to increase its human development index. However, Germany's ecological footprint is 2.5 times the natural resources available and more than twice the global average per person. In Greece and Spain both the economy and consumption is constantly increasing. Greece has the highest ecological footprint growth, while human development index has not climbed a lot. France is part of the overall EU trends. With improved technology, France has a larger volume of resources, and consumption is increasing, especially in energy.

In Eastern Europe, for example, Hungary's footprint - as other countries that had a centralized economy - has decreased since 1991, mainly due to economic changes occur once the end of the Soviet period. For Slovenia, in 1995, to speak of sustainable development, in global terms, the ecological footprint per capita in 2003 but doubled, while the level of development has increased by more than 5%. In Romania ecological footprint is 2.4 (lowest in the EU), but the country remains an ecological debtor (biocapacity being 2.3). The difference between ecological footprint and biocapacity varied over time: until 1970 biocapacity was higher than the footprint, between 1970 and 1994 the ratio was reversed. Assessments made after 1994 until 2003, shows that biocapacity was higher than the ecological footprint, with the exception of two years. It is interesting to watch whether these trends will continue, taking into account GDP growth has been achieved in this period and the country's EU integration. „ *Romania still has an exceptional natural capital compared to other EU countries. Pressures to which it is subject, however, are enormous. Chaotic economic development, infrastructure projects -*

*some even financed with EU funds – taking into account the devastating impact on the environment, irrational exploitation of natural resources, all this leads to a rapid increase in pressure on ecosystems. There are solutions for a healthy economic development, which does not result in augmenting the ecological debt."* said Dana Carataș, Communications Coordinator WWF Danube - Carpathian Romania. Romania has halved emissions of greenhouse gases in the period 1990-2000, being ranked the fortieth of the most polluting 50 countries, according to a ranking conducted by Reuters, using the latest available data for all countries since 2000. Emissions of greenhouse gases were reduced by 49 percent in 1990-2000, to the equivalent of 125 million tons of carbon dioxide, but the amount subsequently recovered on a rising trend, climbing to 155 million tons in 2004. Overall, Romania polluting emissions fell by over one third between 1990-2004. Kyoto Environmental Protocol bounds each state to reduce emissions of greenhouse gases. Emissions can be charged to another state, so that the world should be kept at a certain level, which offers the possibility of transaction with emission rights.

The United States remained in first place in the whole range, with an advance of pollutant emissions by 15 percent in 1990-2000 the equivalent of 6.928 billion tons of carbon dioxide, a trend that continued after 2000, so that this amount increased to 7.074 billion tons. On the second place, far from the U.S., follows China, the emissions of the equivalent of 4.938 billion tons of carbon dioxide in 2000, going up by 32 percent from 1990. The most important advance in the period 1990-2000 was registered by Malaysia, an increase of 80 percent of pollutant emissions.

Despite significant advances, the amount of carbon dioxide equivalent produced places Malay State in the second half of the ranking. Meanwhile, Kazakhstan has made the most significant decline in emissions of 51 percent, the total amount of carbon dioxide equivalent, placing it at 161 million tons in 2000. Government sources have said that Romania should allocate 10 percent of GDP to reduce emissions of greenhouse gases under EU rules, but the financial effort is very high, so that private sector should be involved, including the privatization of large energy. EU executive proposed rules to reduce by 10 percent of pollutant emissions between 2011-2020.

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