

The Criteria and Principles of Sustainable Development in Terms of Changing the Quality of It

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Abstract: Along with responsible addressing for future generations, efficient use of natural resources, energy, materials, informational and technologic presumes, in the same time, intensifying the activity of durable economy for satisfying today’s requests of human society. Sustainable development provides a framework trough which the communities can use the resources efficiently, create efficient infrastructures, protect and improve the quality of life and new technologies, create new activities, which will strengthen their economy. It can help at creating of healthy communities that can sustain both our new generation, and those that follow. The sustainable development was the innovative concept of development, after that, from the general and theoretic plan of development, to be founded the solutions of particularization of it on activity domains, concomitantly with the appropriate measures of practice realization the principles of the concept. Efficient use of natural, energetic, material and informational resources suppose both the responsible approach for the future generations and the intensifying of the sustainable economy working for the actual requirements satisfaction of the society. The work treats a unified and coherent set of criteria and principles specifics for the strategic and integrated management of sustainable development in relation with increasing the efficiency of using natural resources, energetic, material and informational.

Keywords: sustainable development, resources, economic development, technological changes

Jel Classification: O33, Q01

1. Introduction

Human species has entered in the stage of history and creation 80,000 years ago, but 200 years of industrialization managed to endanger the life of the planet, that is over 4.5 billion years. And that is because the economy and industrial era have irresponsibly abused of nature, in order to increase profits, treating it as a mere resource. Only in the last hundred years the world's population tripled, the global economy has increased 20 times, the consumption of fossil fuels increased by 30 times and the industrial production by 50 times.

At the beginning of this millennium, human society is facing global problems such as overcrowding, food shortages, pollution, climate changes, resource depletion, economic instability, species disappearances, illiteracy, social and political instability, inadequate healthcare system, the danger of a nuclear war, increase crime etc. A special place in the global problems of humanity is taken by the environmental issues; this study is important especially when we talk about environmental protection.

The current economic development, in the forms that we know, is entirely destructive to the environment. It has been observed a quantitative worsening of pollution and a change of environmental problems, *a change of resources' quality*. As prominent phenomena: local pollution engages the global pollution, which enhances the greenhouse effect, this is the most significant example. There is a "disconnection" of the geographical origin of pollution from the place of its manifestation, and some environmental problems will easily affect the whole planet. The ecological and economic interdependences are becoming more powerful, this way increasingly affecting the farer territories. A decision at a microeconomic level influences, through the chain of causality, the economic and the environmental conditions, which are often ignored, and as a result the shortcomings of the legislative framework.

2. The Tendencies of Changing the Sustainable Development Resources

2.1. The concept of Sustainable Development

It is Lester Brown's merit to have launched first - in the World Watch Institute in 1984 - the term "sustainable development" which then came into specialized literature as a reference term and it became the subject of all studies and policy documents that analyzes the issues of the contemporary economic and social development.

The first definition came up in the World Commission on Environment and Development entitled “Our Common Future” (Brundtland, 1987): “the development which aims satisfying the present needs without compromising the possibility for the future generations to satisfy their own needs”. Since the Commission was chaired by the Prime Minister of Norway, Dr. Gro Harlem Brundtland, was also known as the Brundtland Report. In an interview in 2003, the author of the report shows that, although “the definition of sustainable development remains the same, [...] the world today understands much better the economic, social and ecological pillars of sustainable development and how they are intrinsically connected” (Bugge and Watters, 2003).

To talk about the pillars of sustainable development, it must be stated that the original definition was formulated in English and the term is and remained “sustainable development”.

As mentioned in the article (Petrisor, 2003), the word “sustainable”, stands for “sustain” and “able”, stands for capable. From here it derived two interpretations that lead to the same result, namely “the development of the support capacity” (Conway and Barber, 1988):

- a. “the ability to support” - in this respect, it is about the capacity of natural resources to sustain indefinitely the human society development (Markandya and Pearce, 1988), that is a *sustainable use* of natural resources (Allaby, 1988). In other words, it speaks of the use of natural resources within *the capacity of support* (IUCN, WWF, UNEP, 1980).
- b. “self-sustaining capacity” - in this case, it is about a development that will ensure the human socio - economic evolution without major changes (which could jeopardize the existence of future generations), but this leads to the idea of an evolution in the limits of the
- c. capacity of support (Coomer, 1979).

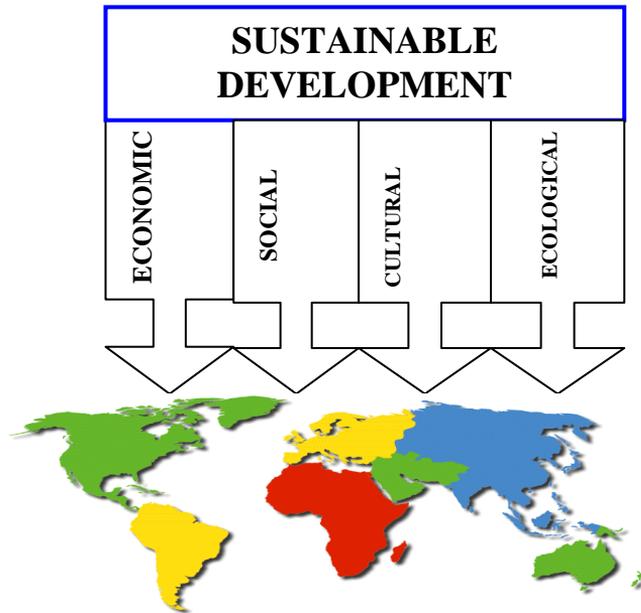


Figure 1. Spatial Dimension of Sustainable Development

2.2. Changing resources of Sustainable Development

The essence of sustainable development of human society is given by the management, its actual and future *natural and energetic resources, materials and information*, in relation to the projects of economic growth, ensure an increasingly better quality of life and of the environment.

Taken as a whole, the *natural resources and natural conditions* represent **the natural factor** which, together with the demographic factor and the level of development of instruments, influences the economic development of the countries and it is at the basis of the sustainable development. The economic development is achieved not only to satisfy the basic material needs, but also to provide resources that would improve the quality of life in directions such as health, education and a good environment. Many forms of economic development call for the environment, meaning that they use natural resources, energy, materials and information (resources available, most often at the limit) that generate polluting products and environment deterioration. But at the same time there are many ways in which certain types of economic activity can protect or improve the environment. Regarding *natural and energy resources*, the activities are conducted in two main directions: *the rational use of natural resources* through economic processing

technology (reduction and recycling of waste) and *reduce consumption and use of unconventional sources of energy*. Currently, the emphasis is on the rational use of natural resources and energy, becoming an imperative for the present. Along with that, the material and information resources complete the sustainable development.

2.3 Criteria and principles

Sustainable development principles will continue to be the subject of wide discussion and debates on the national and international level but, in general terms, they are currently well established and conceptualized. The economic development is important for any company, but its benefits must be greater than the costs, including the costs related to the environmental conservation and protection. In this context, it should be focused on the ways in which these principles can and should be applied in various sectors of the economy and social development.

Sustainable development, by its essence, expresses the need for harmonious integration of economic development, responsible governance, ensuring social cohesion and human-nature biome; these issues are revealed by the principles of sustainable development made in **Agenda 21 of the World Conference on Environment and Development** in Rio de Janeiro (1992). Among these **principles** there are:

- people must be at the centre of all development initiatives;
- searching solutions to problems should be through a holistic approach, making use of science and technology;
- encouraging human communities to recognize their cultural, moral and spiritual values;
- communities' capacity of self determination by protecting the rights to their own development;
- national sovereignty implies insuring the security of people and the quality of the environment;
- gender equality;
- peace, order and national unity;
- social justice, spatial equity, and intra and intergenerational, that would ensure equitable distribution of resources and it would provide equal opportunities for the members of the society;
- democratic participation in decision making;
- institutional viability that would ensure the convergence of interests of different groups;
- viable economic development based on equity between communities, age, social classes, ethnic groups, geographic areas, generations, etc;
- human population distribution so as not to exceed the support capacity of the environment;

- ecological health through the recognition of nature as a common heritage for future generations;
- the equity between bio geographical areas in the management of natural resources;
- global cooperation of nations on Earth.

To achieve this goal it is necessary to promote specific strategies, based on the theoretical, economical, social, technological, political, cultural, ecological and institutional point of view.

2.4 Climate Changes

Climate changes represent the greatest threat that the mankind is facing in the last millennia, threatening the natural environment, world economy, lifestyles, everyone's security and safety. Climate changes are of two kinds: **continuous** that progresses slowly and **anomalies** that occur suddenly. Strongly felt in Romania and in other parts of the world, they both predict an era fraught with catastrophic dangers. According to previous evaluations of the specialists in the atmospheric physics and meteorology, the average global temperature will increase by approx. 1.7 ° C during this century; they are now contested by other studies that claim that the effect will be several times more intense. Because of planetary green house phenomenon, the atmosphere is as a ship in a microwave. But, in order to uniform a bit the global temperatures, there must be intense storms and rainfalls, which have been unusual so far; unfortunately the local excesses such as: heat, drought, forest fires, etc. cannot be avoided. The Tropical areas have hurricanes with winds exceeding 250 km / h and the temperate areas experience violent storms and most probably periods of frost or strong blizzards. These weather disturbances, that we were convinced that they would occur in a fairly distant future, that would leave us time to prepare; they already occur all over the world. Tornados occur in Romania and, weekly, in the Gulf of Mexico, destructive hurricanes happen.

The Global warming, due to greenhouse gas (GHG) and other less obvious reasons will be followed by consequences that will manifest slowly, that in the end it will be catastrophic. Besides hurricanes, melting icebergs, in the mountains and the poles, the heating marine waters and enhancing rainfalls will raise the level of oceans, making them invade permanently and transiently the islands and continental plains, reducing the cultivated areas. Rivers will be shorter and along with the rivers and ponds, they will overflow from time to time, as happened in the summer of 2005. Note the fact that the torrential rains, which flow on slope land, slip in basements, garages, destroying the walls made of adobe and other light materials, triggering landslides, undermines foundations, etc. Because of that it will be necessary of gradually moving towards higher ground, and then people will feel the lack of agricultural products, being obliged to resort additionally to the food from the sea.

The temperature increases faster at the poles than to the equator and more in the Northern hemisphere than the one in South; it was estimated that in these areas it will be 5 to 6° C higher in the coming decades. However, the reduction of areas covered with snow or ice will decrease the ability of solar radiation reflectance of light, increasing the absorption of heat from the earth. It will reach an increase of 5 to 6 m at the ocean level so that the Netherlands, half of Bangladesh and Calcutta could be invaded by water.

Table 1. Temperature rising, the medium average towards the period 1951-1980, according to GHCN (2008)

Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Temperature rising °C	0,35	0,12	0,14	0,24	0,38	0,30	0,40	0,57	0,33	0,33
Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Temperature rising °C	0,48	0,56	0,55	0,49	0,62	0,54	0,57			

Simultaneously, the favourable influence of the bay current will be hindered by numerous icebergs detached from Northern Calotte, in their movement towards the South. Thus, North-West Europe will suffer a strong cooling, possibly even a new glacial era, whose duration is unknown. To a certain extent, the rest of the continent will also cool.

The unpredictable volcanic phenomena and other natural factors may influence climate changes. Floods as in the summer of 2005 and the Frost as in early 2006, it could be just a warning for what awaits us in the near future.

3. Conclusions

The resources of sustainable development are constantly changing. At this time the climate changes will lead to the changes of other resources that lay at the basis of this development.

1 Scientists attribute most of these temperature risings to human activities which release carbon dioxide (CO₂) and other greenhouse gases (GHG) into the atmosphere. According to recent research, an average global warming of 2°C or above compared to the pre-Industrial Revolution level would result in dangerous and irreversible impacts, including the following projections:

- **Water shortages** — Globally, more than three billion more people would be at risk as a result of water shortages. The predicted loss of ongoing glacier melt

water in India alone would cause water shortages for 500 million people and for 37% of India's irrigated land.

- **Food insecurity** — More frequent droughts in Africa and elsewhere would lead to lower crop yields, and there would be a general decrease in cereal crop yields extending beyond the tropics to mid-latitude and temperate regions, mainly due to increased evapotranspiration.
- **Health impacts** — Three hundred million people would be at greater risk of malaria and other vector- and waterborne diseases; and the health costs of climate change are projected to double by 2020, partly as a result of heat stress, but primarily because of increased rates of diarrhoea and malnutrition in low-income countries.
- **Socio-economic impacts** — Initial estimates of socio-economic losses with moderate temperature increases include gross domestic product (GDP) losses of a few to several GDP percentage points, with net global damage of up to 20% for unmitigated climate change compared to much lower abatement costs in the case of early mitigation action.
- **Effects on ecosystems** — 35% of terrestrial species would be at or near extinction by the year 2050, including the loss of unique ecosystems/species

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