



NATURAL RESOURCE MANAGEMENT IN THE CONTEXT OF SUSTAINABLE GROWTH

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Abstract:

Present realities show that the 21st century is the period of the greatest discoveries and transformations of the human civilization but, at the same time, of the most complex and, quite often, unsuspected effects on life. The demographic explosion and the unprecedented progress of all activity branches were naturally followed by an increase in the demand for raw materials and energy, and this in turn showed the need for thoughtful exploitation of natural resources so that the development of society may be a sustainable one. Moderate exploitation of resources has become essential given the fact that the sustainable development of human society directly depends on the sustainable exploitation of natural resources. A sustainable exploitation of resources leads to the preservation of biodiversity and atmospheric stability as well as to a steady base of resources.

Key words: Natural resources, sustainable development, sustainable exploitation, biodiversity, demographic explosion, the Brundtland Report

Motto:

To waste, to destroy our natural resources, to skin and exhaust the land instead of using it so as to increase its usefulness will result in undermining in the days of our children the very prosperity which we ought by right to hand down to them amplified and developed.
(Theodore Roosevelt')

In a world of constant changes and witnessing an unprecedented demographic explosion, natural resources, both regenerating and non-regenerating, and their efficient exploitation often come to the society's attention.

The present paper aims to analyze the way in which natural resource exploitation affects the environment and to come with viable solutions leading to an efficient exploitation, following the requirements of sustainable development.

Natural resources represent the total mineral and ore deposits, cultivable lands, forests and waters that a country possesses,¹ which means that natural resources are substances that appear naturally and which are considered valuable in their natural form, without being modified. Natural resources are considered to be land, forests/wood, minerals and other natural goods which, when extracted from their natural environment, can be transformed in goods the use of which implies their direct consumption. A country's natural resources determine not only its wealth, but also its status in the world economic system, by

determining its political influence. Developed states are less dependent on natural resources for wealth because they have a base in the infrastructure capital for production.

Resources represent physical or abstract elements which, from a dimensional standpoint, are characterized by four attributes: quantity, quality, time and space.² Resources are used in order to meet human necessities. In other words, natural resources are environmental goods drawn into the economical circuit in order to produce goods and services necessary to man.

Throughout history, natural resources have had an important influence over the evolution of the human society, over the development of national economies and that of the world economy. Today, the increasing need for physical resources represents a concern for scientists (most of the resources are non-regenerating, thus being "the factor that limits the lifespan of the human species").³ Even resources that are, in theory, regenerating can become, almost totally and irreversibly, non-regenerating when one considers pollution,⁴ and in the contemporary society's development pollution is more and more present.

As a whole, resources can be grouped in three big categories:

- human resources (the population);
- natural resources (solar radiation, water, air, plant and animal life, soils, mineral substances in the soils, rocks, fossil fuels and ores);
- capital resources;⁵

There are several factors that determine this division of natural resources. They concern both the duration of the use of the resource as well as the degree of knowledge about them or their origin. A classification of natural resources according to the above-mentioned factors is presented in the following table.

Table 1. Natural resource classification

After the duration of their use	<ul style="list-style-type: none"> ➤ non-regenerating resources – limited natural resources presenting the risk of exhaustion (oil, methane gas, coal) and ores; ➤ regenerating resources – resources that replenish in time; normally, this category is represented by living things that can grow back (fish, forests etc.) and can, through rational use, be used on an unlimited basis; soil, water, wind, tides and solar radiation are also included here, even if they are not alive;
After the degree of knowledge	<ul style="list-style-type: none"> ➤ set resources – resources known in detail; ➤ estimated resources – resources only partially known, on the basis of analogy with other known resources or of research made in isolated places; ➤ potential resources – resources not yet identified but with the chance of being discovered in a more or less near future as a result of research;
After the type of management	<ul style="list-style-type: none"> ➤ resources in private property – resources managed by economical agents in a decentralized way; ➤ resources in public property – resources managed by the state or leased to economical agents;
After their origin	<ul style="list-style-type: none"> ➤ biotic resources, derived from animals and plants; ➤ abiotic resources, derived from earth, air, water etc. (this category also includes mineral and energetic resources);
After their effects	<ul style="list-style-type: none"> ➤ polluting resources (oil, coal etc.); ➤ non-polluting resources (solar energy);

Source: replica after Vlăsceanu, G. *Economical World Geography*, course notes, 2012

Today the problems regarding the sustainable use⁶ of natural resources has become essential to the ends of sustainable development of the human society, and the careful

management of natural resources represents one of the fundamental objectives of sustainable development. The two concepts, sustainable development of the human society and the exploitation of resources, influence each other in the sense that the very essence of sustainable development derives from the present and future ways of managing natural, energetic, material and information resources. The theory of sustainable development⁷ is relatively new, having appeared almost 40 years ago⁸ as a response to environmental problems and the natural resource crisis, and is growing. An attempt at defining the concept of sustainable development came in 1987 when the Brundtland Commission, approaching themes such as man's interdependence with the environment, the need for a global vision and for common principles, the connections between economic and social growth and environmental protection, put together the Brundtland Report, called "*Our Common Future*". By trying to find a reconciliation between the environment and economy, the report tries to find a development path that sustains human progress not only in several places and for several years, but for the entire planet and for a distant future.⁹ In the vision of the report, sustainable development is seen as a process of change, in which resources are exploited, the direction for investments is chosen, development technologies are oriented and the institutions act in synchronization, improving a potential future for human needs and desires or, in other words, sustainable development means meeting the needs of the current generation without compromising the ability of future generations to meet their needs.

The concept of sustainable growth is a holistic one, combining social, economical and natural aspects and involving two of humanity's fundamental problems: the ability to create and to destroy.¹⁰ This concept designates all forms and methods of social and economic development whose fundamental principle is, above all else, assuring a balance between social and economical elements and the natural capital. The roots of sustainable development can be found in promoting the sustainable use of natural resources. The concept of sustainability has major implications in the case of non-regenerating resources which have to be exploited in such a manner as to avoid the danger of their future exhaustion and to assure that the benefits of this type of exploitation are shared with all mankind.¹¹ The definitions of sustainable use are many, but they reflect the concept of equality between generations. Though weak at first, the concept of sustainable development started to gain in influence when the subject of environment started appearing as a main point in political debates. In the context of sustainable development it becomes more and more clear that the environment must be adapted and organized to meet the needs of individuals, which implies the exploitation of natural resources in order to serve the populace. The main areas which characterize sustainable development are: economy (efficient resource management), nature (maintaining a natural life base by reducing waste build-up) and society (its needs).

The problem of the environment started being a point of interest for the European Community along with the acknowledgment that the decrease in natural resources and the effects of pollution could not be efficiently fought just between national borders. A more extended approach was needed. As such, in time, regional approaches gave way to strategies of sustainable development and the problem of the environment was integrated in all the components of Community politics. Environmental problems were approached by the international community through global scale collective measures, which it tried to define and apply based on an adequate international framework. In time, this international framework for action has suffered a dynamic evolution, comprising legal measures with a

compulsory character, in the form of treatises or conventions, or with an optional character, in the form of declarations, resolutions or sets of guidelines and political orientations, institutional measures and viable financing mechanisms.

Environment protection has become, especially in the last decade, a major problem, discussed worldwide. This has led, in time, to a series of disputes between developed and developing countries, which in turn led to the forming of organizations whose main objectives were to find ways to reduce pollution and improve environment quality as a whole.

Research in ways to reduce pollution and improve environment quality has led to the adoption of a set of actions and measures which mainly address:

- thorough knowledge of the environment, of the interactions between the economic system and natural systems, as well as their consequences;
- rational and economical use of natural resources;
- preventing and fighting against damage done to the environment, whether by man or natural causes;
- harmonizing the immediate and future interests of the society or the economical agents with regards to environment factors.

The first reunion of the international community that discussed and analyzed global environment problems as well as development necessities took place in Stockholm between the 5th and the 16th of June 1972¹². As a result of this reunion, a series of environmental programs were adopted,¹³ programs considered the founding stone of the first international framework regarding environmental problems. Although it admitted that the environmental problems of industrialized countries (the damage suffered by natural habitats, toxicity, acid rains) are not important problems for all countries, the Conference held as its main subject environmental problems, leading to an increase in public awareness of this field.

Since its foundation on the basis of recommendations from the Stockholm Conference, the United Nations Environment Program has conducted activities¹⁴ in order to fulfill its role as catalyst and coordinator in environment issues in the United Nations.

Gradually, global environment problems became predominant, which required the start of additional actions for the growth of public awareness and for the taking, in a timely fashion, of functional measures both on a national and international level. Thus, in 1983 the United Nations founded the World Commission on Environment and Development known as the Brundtland Commission, which in 1987 elaborated and published the document "Our Common Future"¹⁵ which was to be the foundation of the 40 chapters of Agenda 21 and of the 27 principles of the Rio Declaration and which, to summarize, defined sustainable development as the development that meets the necessities of the present generation without compromising the ability of future generations to meet their own necessities.

Before the 1992 Earth Summit, at the conference "Mining and the Environment" of June 1991, organized by the United Nations together with the German International Development Foundation, the Berlin Guidelines were formulated. Their formulation was possible through the cooperation of representatives from industry, governments and non-governmental organizations. On this occasion the problem of transforming sustainable development rhetoric into operational standards was raised and some requirements were identified both by the governments and by the mining companies and companies in the extraction industry.

The next step towards sustainable development was the United Nations Conference on Environment and Development which took place in Rio de Janeiro between the 3rd and the 13th of June 1992 and saw 115 of the world leaders take part. On this occasion, the need to integrate economical development and environment protection in the sustainable development objective was officially recognized, acknowledging the growing importance of international environment law as a mechanism for coding and promoting sustainable development. After the conference, a series of documents¹⁶ on environmental protection and sustainable development were adopted, even reaching an agreement on conventions regarding biodiversity and climate changes.

Reactions after the Rio Summit were positive and led to the start of implementation initiatives of Agenda 21 on a regional level and to the reorientation of environment protection policies. As a result, commissions for sustainable development were founded in many states and strategies for such a development were prepared.

In 1997 in New York, heads of state and government met to evaluate the progress shown after the Rio Conference. Conclusions showed a series of shortcomings regarding social equity and poverty, which led to an appeal for a firmer implementation of accords and international conventions on environment and development. In these conditions, between the 22nd and the 26th of November 1999, the second "Mining and the Environment" (or Berlin II) conference took place. There, the evolution of mining since the Berlin I conference was analyzed, from the sustainable development point of view.

Between August 26th and September 6th 2002 the United Nations Summit on Sustainable Development, bringing together 104 heads of state, took place in Johannesburg. At the conference, sustainable development reassured itself as a central element of international agenda.

In June 2012, the United Nations Conference on Sustainable Development – Rio+ took place. In 9 days there were over 500 debates on subjects such as green energy, ecological transportation, sustainable economy, disaster reduction, desertification and others.

The event ended with a symposium where deciding authorities from all around the world took part. The commitments made during the conference aimed at gathering funds of over \$500 billion for the enactment of the sustainable development concept.

The final document, "The Future We Want", comprises the commitments made by the representatives of the 193 governments, state members of the United Nations.

"The Future We Want" contains a series of measures meant to ensure a sustainable development for the human society, including:

- establishing sustainability objectives;
- planning a new forum;
- developing a new financing strategy for the specific projects;
- encouraging the civil society to engage in environment protection etc.

The image presented shows a constant degradation of the environment which, on the background of society's exponential growth of needs, determines the necessity of applying special measures that should stop the decline of environmental factors.

The increasingly articulate context at the level of both the United Nations and the regional administrations offers at this time a more certain perspective for future generations in comparison to the situation two decades ago (Rio 1992).

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* Theodore Roosevelt (1858-1919) was the 25th President of the United States of America (1901-1909).

¹ www.dexonline.ro

² F. Bran, V. Rojanschi, G. Diaconu, *Politici Ecologice*, Editura ASE, București, 1997, p. 13.

³ N. Georgescu-Roegen, *Legea entropiei și procesul economic în Idei contemporane*, Editura Politică, București, 1979, pp. 76-77.

⁴ Pollution represents the modification of natural components in the presence of foreign components, called pollutants, as a result of human activities, and which through their nature, concentration or time of action cause harmful effects to health, create discomfort or prevent the use of environmental components essential to life. (The U.N. World Conference, Stockholm, 1972). Pollution is a real, sustainable and, mostly, measurable effect. The Romanian environmental legislation does not directly refer to pollution but defines the notion of environmental damage seen as an “alteration of physical, chemical and structural features of the natural environmental components, the reduction of biological diversity and productivity of natural and man-made eco-systems, the damage of the ecologic balance and the quality of life mainly caused by water, atmospheric and soil pollution, over-exploitation of resources, their poor management and capitalization, as well as poor land administration.” (Environmental protection Law nr. 137/1995, published in Romania’s Official Gazette nr. 304 from December 30 1995). Most of the existing definitions and regulations see pollution as a corruption of the environment, even up to actions which cause physical damage with demonstrable results. (Mircea Duțu, *Ecologie. Filosofia naturală a vieții*, Editura Economică, București, 1999, p. 61).

⁵ N. Georgescu-Roegen, *Legea entropiei și procesul economic în Idei contemporane*, Editura Politică, București, 1979, pp. 76-77.

⁶ The Convention regarding diversity states that *the sustainable use of resources consists in using the components of biological diversity in a manner and at a speed that do not lead to the long-term decline of biological resources, as such maintaining their potential of fulfilling the needs and aspirations of present and future generation.*

⁷ The term “sustainable development” was created and introduced in the middle of the 1970’s by Barbara Ward, the founder of the International Institute for Environment and Development. In 1997, after the Maastricht Treaty, sustainable development becomes one of the European Union’s main objectives. In 2001, during the Göteborg summit, the EU’s Sustainable Development Strategy is adopted. In 2002, an external dimension was added to the strategy in Barcelona. The EU’s Sustainable Development Strategy, revised in 2006, includes a series of key-objectives, political principles and challenges which are reference fields for all activities and policies in the EU, with the purpose of keeping them on the way of sustainable development.

⁸ The Human Environment Conference in Stockholm in 1972 was the moment when the fact that human activities harm the environment (and, as such, threaten the Planet) was recognized.

⁹ *Our Common Future*, WCED, Oxford University Press, New York, 1987, p.4.

¹⁰ D. Crocker, *Criteria for Sustainable Development*, University of Arizona Press, Tucson, 2002.

¹¹ Stockholm Conference, Principle 5.

¹² Stockholm Conference on Human Environment.

¹³ Under the motto **One Earth**, the Stockholm Conference in 1972 proclaimed the 5th of June as World Environment Day and adopted a series of documents:

- The Stockholm Declaration represents the main document of the conference and contains 26 principles that are meant to underline the major importance and necessity of protecting the environment and state, among others, every man’s duty to protect and improve the environment;

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- The Action Plan for the Human Environment, having three parts: the program for evaluating the global environment, activities for managing the environment and support measures;
 - The United Nations Environment Program – UNEP, whose Board and Secretariat were founded in December 1972 by the United Nations General Assembly;
 - The Voluntary Environment Fund, founded in January 1973 in accordance with financial procedures of the United Nations.

¹⁴ The activities of the United Nations Environment Program can be classified in two big groups oriented towards different problems:

- regional problems of environment factors: water, air and soil pollution (especially damaged terrains);
- global problems: acid rains, exhaustion of the ozone layer, climatic changes, deforestation and desertification, conservation of biodiversity, the international transportation of toxic and dangerous products or waste, protecting the environment in times of armed conflict.

¹⁵ The Brundtland Report.

¹⁶ The documents adopted at the Rio Conference were:

- The Rio Declaration, containing 27 principles;
- Agenda 21, a plan of action for the sustainable development starting from the 21st century, spanning over 40 chapters destined to specific program fields, structured in the terms of the base of action, of objectives to accomplish, of activities that need to be conducted and of implementation methods;
- A document with no compulsory power, containing the principles for the management of conservation and sustainable development of all types of forest (Statement of Principles on Forests);
- The institutional organization of the World Commission for Sustainable Development;
- The financing mechanism for the implementation of Agenda 21.