

Protecting the Environment – a Vital Issue in the Contemporary World

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Abstract

Today's worldwide concern regarding environment issues is by no means a passing fancy of no substance but a vital problem of epic proportions. Although tons of research performed since the last decades of the 20th Century have sufficiently proved the causes and effects of our environment problems, the perfect solution to undo them all will probably never be found. Contemporary legislation everywhere is sparing no efforts in trying to best meet the new realities imposed by this situation and to constantly adapt to emerging factors.

Keywords : environment, environment law, environment protection, pollution, ecology

1. Introduction

Environmental protection is a top priority objective for all and it holds a maximum importance for the European Union as well as for Europe and the globe in its entirety. As Daniela Marinescu has previously said, environmental protection is "a vital issue in the contemporary world"⁴⁶. The right of access to a healthy environment must be respect for and by each of us. With each of our contributions, the environment will be more safely protected, as will our future generations. We must not forget: water, air and other natural resources cannot be compartmentalized between borders; they are resources.

This fact presupposes international cooperation in order to attain the goal of a healthy environment. Each action against polluting factors is a step gained towards this final goal; the added value of all such actions combined – from a national to an international level – is awareness of the problem and a firm policy regarding the environment issue. It is generally accepted that the environment could be declared "healthy" when all the necessary conditions for a normal life and development of all living creatures of Earth are ensured.

2. The Notions of Environment and Natural Resources

As the world's population continues to grow, human induced stresses on biophysical resources increase proportionately. In the richer countries, environmental awareness, and the necessity to incorporate ecological considerations in land management and the ability to subscribe to tenets of sustainable agriculture have contributed to national strategies for a rational use of biophysical resources.

The poorer third world countries, on the other hand, are unable to embrace these 'lofty' ideals and continue on the road to reduced productivity and an inability to feed themselves.

It is evident that in the foreseeable future, unless the latter countries are assisted to better manage their resources and address food security through an important emphasis on soil and water conservation, the capacity of the planet as a whole to maintain an acceptable quality of life will be reduced.

⁴⁶ Marinescu, D. –*Environmental Law*, All Beck Publishing House, Bucharest, 2003, p. 3

To all these we can add a series of phenomena which manifest themselves at a global level such as the ongoing deterioration of the ozone layer, the worsening of the greenhouse effect, the gradual melting of the polar caps, the disappearance of an increasing number of fauna and flora species, the ever more frequent acid rains, the sharp increase of chronic diseases etc. Because they are aware of the self-destructing danger that the humanity is in, scientists everywhere have been raising many signs of alarm, especially during the second half of the last century. Consequently, political figures, heads of states and governments have taken a series of measures at an international and national level in order to stop the deterioration of the environment and to initiate efforts of recovery from the imbalances caused by the destroyed ecosystems. Thus, the institutional and legal framework was created for ensuring that the worldwide policy of environmental protection is actively put into practice.

The notion of "environment" is one of the fundamental concepts which form the basis of ecology as a full fledged science and it is subjected to legal provisions concerning its potential for capitalization and protection of all of its component parts. The Romanian scientist Emil Racoviță has defined the environment as being "the totality of all worldly happenings/manifestations, phenomena and energies which come into contact with a living entity, influence its existence and provoke a reaction in the aforementioned entity"⁴⁷.

The term "environment" - according to its dictionary definition - has a double denotation: "life background for an individual" and "the totality of all conditions likely to act upon the existence of all living organisms or upon the activities of man". The Directive from June 27th 1967 defines the environment as "the water, air, soil and their inter-relations as well as the relations between them and all living organisms. Current environment legislation ⁴⁸ defines the environment as "the totality of Earth's conditions and natural elements: air, water, soil, subsoil, all aspects inherent to landscapes, all atmospheric layers, all organic and inorganic matter as well as all living entities; all interacting natural systems which include the aforementioned elements, including material and spiritual values, the quality of life and the conditions which can influence Man's health and welfare.

The specialized legal literature and the existing national provisions⁴⁹ in several different states as well as some documents pertaining to international organizations are used concomitantly with the terms "environment", "biological medium", "surroundings" or even "human medium" as alternative expressions with the same meaning.

These terms reflect the complex connections between Man's social dimension and his ecological context, according to the concrete reality shaped by all factors political, economic and cultural which exist in every state even if we consider this problem globally. According to Government Emergency Ordinance no 195/2005 regarding environment protection, "natural resources" are defined as "the totality of the environment's natural elements which can be used in human activities: non-renewable resources (minerals, fossil fuels), renewable resources (water, air, soil, flora, wild fauna) and inexhaustible resources (solar, wind, geothermal, wave and tidal energy)".

3. Pollution and Its Consequences

Pollution as a global issue is a recent one, starting in the last three decades of the 20th century when the world population increased from 5 to 6 billion inhabitants. UN experts consider⁵⁰ that, by 2025, world population will grow by another 2 billion people and in 2080 it will reach 9.1 billion people.

⁴⁷ Vancea, S. - Coursebook on General Ecology, Al. I. Cuza University Publishing House, Iassi, 1972, p 17

⁴⁸ Law 137 / 1995 published in the Official Journal of Romania, Part I, no. 304 / 1995, appended and amended by Government Emergency Ordinance no. 195 / 2005 published in the Official Journal of Romania, Part I, no 1196 / 2005, amended and approved by Law 265 / 2006

⁴⁹ Marinescu, D. -Treaty on Environmental Law, Second appended and revised edition Universul Juridic Publishing House, Bucharest, 2007, p. 49

⁵⁰ Tollefson L., Dyck G. - Annual Irrigation Conference, 2007

www.irrigationsaskatchewan.com/Portals/0/Presentations/Tollefson.SIPADec07.pdf

This means that, at least for a short while keeping in mind the year 2025 deadline, we will have to feed a population of 8 billion people in the same area as now. The issue which has preoccupied scientist all along has actually been how to ensure sufficient food resources for the entire world population. It is only in the last three decades of the 20th century that scientists have raised a issue which is proven at least as important as the original one: the constant degradation of the environment through pollution, erosion and other phenomena due to the intentional or unintentional actions of humanity.

This new issue not only affects possibilities of securing sufficient food resources but also other aspects of human existence, starting with our health. According to Government Emergency Ordinance no 195 / 2005, by pollution we understand "intentional or unintentional introduction of a pollution agent which can cause harm to human health and/or to the environment, which can deteriorate any material assets or can lead to the impossibility of using the environment in question for recreational or other legitimate purposes". The same meaning was also attached to the term "pollution" by the 1982 Montreal Regulations which apply to cross-border pollution.

According to Government Emergency Ordinance no 195 / 2005, by pollution agent we understand any substance whether under solid, liquid, gas, vapor or energy form (including electromagnetic and ionic radiation, thermal or phonic emissions or vibrations) which, when introduced into the environment can affect the balance of its components, of the pertaining living organisms and/or it can cause deterioration of material assets. The pollution agent is a factor which, when present in quantities above the tolerance level of any organic species, can partially or fully inhibit their reproduction or normal development due to a toxic effect.

The toxic effect of any pollution agent is called "pollution" and it is all the more serious as the interval between the level of pollution and the level of tolerance is greater. There is no doubt that the soil is one of the most precious resource available to mankind for fulfilling its needs because the thin layer of life-giving soil at the top of the Earth's crust is sufficient to provide all the nutrients we need. To ensure political stability in developing countries, decision-makers recognize food security as a primary concern -- one that overrides all others. The negative effects of desertification, the looming consequences of global climate change, declining productivity, uncontrolled urbanization, and the longer-term impacts of deforestation or resource exploitation become insignificant when compared with the immediate concerns of feeding the population. On the other hand, in developed countries, while the abilities to sustain food production and pay attention to environmental integrity are significantly better, food security is still not being addressed as a serious issue.

This situation will probably last until artificial photosynthesis is invented. One of the great paradoxes is that mankind tends to endanger this life-giving layer through its ignorance, greed, irresponsibility etc. Even though mankind has started the battle against pollution, the total desert surface of the Earth has increased by one billion hectares in the last decades alone and the process is in an accelerated evolution. We must also add the fact that each year, dozens of millions of hectares of productive land are "devoured" by new roads, plants, factories, cities, all victims of the constant war between green and concrete surfaces.

Since any loss of farming land is inconceivable, international bodies and every nation in the world carefully monitor the changes caused by land degradation under the influence of degradation factors of natural origin or produced by human activity. The most common types of soil degradation and reduction of the productive capacity of farming land are salinisation, erosion and excess moisture which, along with drought and desertification, threaten food security of the world, particularly in terms of world population growth by another 2 billion people in the next 15 years.

Soil degradation may be the effect of natural factors or the effect of human activities. Out of human activities, land improvements alone like irrigations, although considered to be the most effective on the short and medium term, have the side effect of saturating the land. The great efficiency of

irrigation in agricultural productivity led in the last century to the considerable growth in irrigated areas. Since the year 2000, irrigated areas are experiencing stagnation at world level. The rate of annual growth of world irrigated areas has declined from a level of 2% between 1961- 1992, to 1% between 1993 and 2003; irrigated area per person in 2003 was 0.004 hectares, i.e. 7% less than the year 1978, which was one of the top indicators. However, the problem of areas that are increasingly subject to salinisation from irrigation has just started to show its true scale. In addition to the deterioration of the productive capacity of the soil through salinisation and excess moisture due to irrigation, all around the world other types of degradation happen: soil erosion, increased acidity and destruction of fertile soil layer as well as the increase of sandy soils due to excessive drought. We present a case of these destructive phenomena in the world in the table below:

Table 1. The main types of soil degradation worldwide
 Thousands of km²

	Total area	Humidity excess	Sandy or degraded soils	Erosion	High acidity	Distruption of the fertile layer of soil	Salinity
Worldwide total	134907	17382	6151	21975	5421	19133	8369
Europe	6843	1142	44	1386	-	780	219
Sub-Saharan Africa	23755	1903	3716	3627	-	3007	884
North Africa and the Middle East	12379	79	292	1185	1395	2854	780
SE Asia	28989	3083	1105	4655	-	4892	3043
North Asia	21033	5702	11	3349	3016	2796	2137
South and Central America	20498	2086	982	3923	1	2313	1115
North America	21410	3388	-	3851	-	2491	191

Source - FAO, World Soil Resources Report, Rome, 2000

Almost 1.6 million hectares of land are damaged each year worldwide due to salinisation, but this type of soil degradation is more prevalent on irrigated land.

Practice of agriculture by irrigation system by the year 2000 alone led to an increase in surface soil degradation by salinisation and excess moisture; this happened worldwide in the case of 10% of the total irrigated areas.

Soil degradation through salinisation is spreading worldwide at a rate of 20,000 km² per year, significantly reducing the productivity growth resulting from expansion of irrigation⁵¹.

As a result, the World Bank limits the grant funds for irrigation by introducing the obligation of developing pilot schemes for the best possible solutions to soil salinisation due to irrigation⁵².

As shown in the above table, salinisation affects approximately 0.06% of total world. Distribution of areas affected by salinisation on the main parts of the world is seen in the figure below:

⁵¹ Dina L. Umali - *Irrigation-Induced Salinity*, World Bank, Washington DC, 1993

⁵² Jones Wm. I. - *The World Bank and Irrigation*, World Bank, Washington DC, 1995

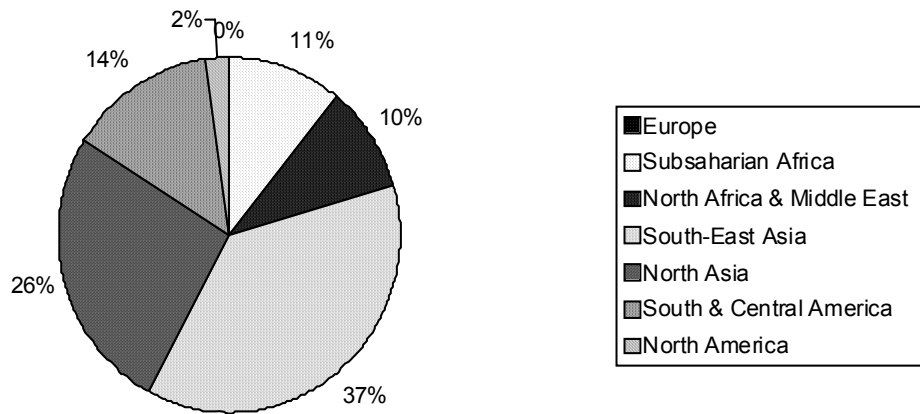


Figure 1. Distribution of areas affected by salinisation in the main parts of the world

Of the 2.4 million km² of worldwide irrigated land, the FAO data show that, at this time, there is an area of about 4,025,000 km² seriously affected by salinisation. Another negative effect of irrigation is excess moisture, affecting about 100,000 km² of soil worldwide. As shown in the table above, the excess moisture affects approximately 13% of the world's soil.

Distribution of areas affected by excess moisture in key locations in the world is seen in the figure below:

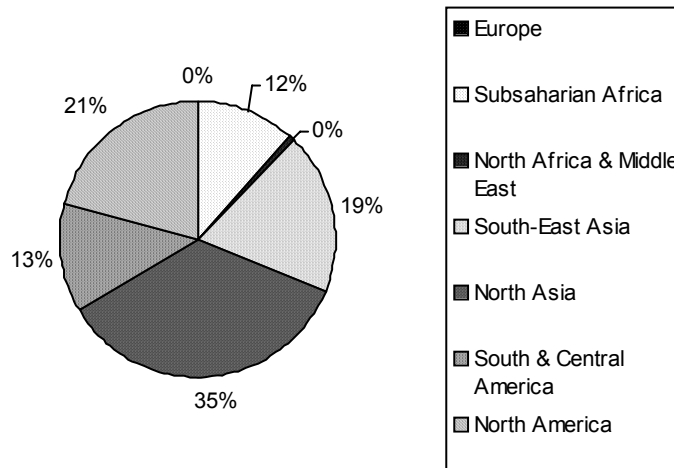


Figure 2. Distribution of areas affected by excess moisture in the main parts of the world

We emphasize that more than half of global irrigated areas have emerged in the last 50 years, which means that the effect of excess moisture and salinisation have manifested in several dozen years and have just begun to show their negative power. It is foreseeable that in the coming years an increasingly larger area of farming land will be affected by salinisation. These lands will lose their productivity, thus greatly reducing the positive effects of irrigation. As shown in the table above, erosion affects about 16% of the world's soil.

A first step in enhancing or even sustaining productivity is minimizing biotic and abiotic stresses and providing optimal environment for maximizing yields. Significant advances have been made in reducing pest and disease stresses and exploiting the genetic potential of several crops. Similar progress has been made with respect to tolerance to abiotic stresses, such as resistance to moisture stress and soil acidity.

This has resulted in large areas of monoclonal cultivars, which present another threat of reduced genetic diversity. An eight to ten fold increase in crop productivity in the better-endowed regions of the world during the last few decades has resulted in grain surpluses.

The focus on productivity and short-term returns to labor and capital of past decades has reduced land quality. In the soils of the tropics, which generally are of lower quality compared to temperate soils, damage to land quality and environment as a whole have reached proportions never anticipated a few decades ago. Distribution of areas affected by erosion in key areas of the world is seen in the figure below:

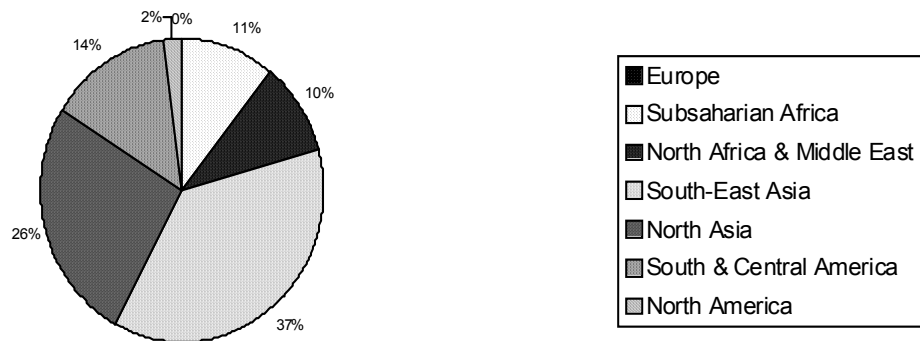


Figure 3. Distribution of areas affected by erosion in key areas of the world

India, Japan, the United States, Australia and many other countries suffer from soil erosion, but China remains the most affected country. Over one third of China is affected by soil erosion, a phenomenon which threatens crops and water supplies. Each year about 4.5 billion tons of soil are lost to these factors, threatening the country's ability to secure food resources. If soil loss continues at this rate, yields in northeast China could fall by 40% in the next 50 years. Arable land, out of which 99.7% of the world's food is obtained, is reduced by more than 10 million hectares annually due to soil erosion. The United states lose ground due to erosion 10 times faster than its natural rate of recovery, while China and India, 30 or 40 times faster⁵³.

Soil erosion costs the U.S. economy approximately 37.6 million U.S. dollars each year, expressed by low productivity. Worldwide losses from soil erosion are estimated at 400 million U.S. dollars per year. This is why, while modern technologies allow for successful farming of literally millions of acres, many of these become unsuitable for farming due to our very actions of pollution.

Environmental processes can be attributed to a diversity of factors such as economic activities, geographical elements, institutional and legal requirements, cultural and social factors etc. Economic models help environment policy makers to identify relationships between different parameters and are used for scenario analysis of future trends. Forests represent the most positive factors for air purification by absorbing carbon dioxide and releasing the ever necessary oxygen. Out of the 14 - 16 billion tons of carbon dioxide released annually by burning fuels (not to mention

⁵³ Lang, Susan S. - *Slow, insidious' soil erosion threatens human health and welfare as well as the environment*, <http://www.news.cornell.edu/stories/March06/soil.erosion.threat.ssl.html>

the added quantities released through human and animal breathing) two thirds are processed by forests - the "green lungs" of the Earth, to whom we owe so much.

Forests have an equally important role in shaping and controlling the courses of the Earth's waters. Also, they create conditions for leisure and tourism which are in ever increasing demand in the modern world, they confer the bio-physical ambiance so necessary to all spas and resorts and they shelter thousands of flora and fauna species.

Government Emergency Ordinance no 152 / 2005 concerning prevention and control of pollution introduced Directive 96/61/EC on the same subject. The purpose of the GEO was an integrated approach of the measures necessary for prevention and reduction of emissions in air, water and soil due to activities mentioned in the corresponding Annex 1; also included are special measures for waste management so that a certain level of environmental protection can be reached by respecting the legislation in the field of environmental impact estimation.

Conclusions

The entire activity of environmental protection aims, on the one hand, at responsible use of available resources and, on the other hand, at correlating the systematic implementation in settlements and regions of measures for the protection of natural factors, of production technologies as ecological as possible, of efficient devices and installations to prevent pollution.

The data presented above demonstrate that the soil degradation process is perpetual, as is the need to implement land improvements, especially irrigation, due to the continued growth of the world's population.

We are aware that, through the nature of its social, economic and humanitarian consequences, pollution represents a problem with national and international resonance, therefore, the objective reality of living in a healthy environment can only be made in an internationally harmonized legislation which would lead to more efficient use of natural resources.

Economic and environmental objectives are often perceived as being contradictory. It is believed that a choice must be made between one and the other and that both cannot be achieved concurrently. The facts and figures in this paperwork shows that they this perception is wrong, and that economy and environment can go together.

Environmental policy contributes to a structural shift in employment towards jobs associated with cleaner, more efficient products and processes. The eco-industry itself is an important source of new jobs

However we conclude that although international environmental law, including the Romanian one, pay attention to environmental preservation and efficient recovery of natural resources it is not concerned to provides to an individual's rights literally healthy environment, considering the protection of this right as a result of environmental policies of each country.

We believe that this legislation is too centered on the immediate economic effects of pollution and waste of resources and it is not complete without the clear indications to protect human health, leaving that in circumstantial policy will.

References

1. Jones, Wm. I. (1995), *The World Bank and Irrigation*, Washington DC World Bank
2. Lang, S. S. - 'Slow, insidious' soil erosion threatens human health and welfare as well as the environment, <http://www.news.cornell.edu/stories/March06/soil.erosion.threat.ssl.html>
3. accessed at 11th October, 2009
4. Marinescu, D. (2003) *Environmental Law*, Bucharest: All Beck Publishing House
5. Marinescu, D. (2007) *Treaty on Environmental Law, Second appended and revised edition*, Bucharest: Universul Juridic Publishing House

6. Tollefson L., I Dyck G. *Annual Irrigation Conference 2007*
www.irrigationsaskatchewan.com/Portals/0/Presentations/Tollefson.SIPADec07.pdf accessed at 16th september, 2009
7. Umali, D. L. (1993) *Irrigation-Induced Salinity*, Washington DC: World Bank
8. Vancea, S. (1972) *Coursebook on General Ecology*, Iassi: Al. I. Cuza University Publishing House
9. Law 137 / 1995 published in the *Official Journal of Romania, Part I, no. 304 / 1995*, appended and amended by Government Emergency Ordinance no. 195 / 2005 published in the *Official Journal of Romania, Part I, no 1196 / 2005*, amended and approved by Law 265 / 2006.