

CONSIDERATIONS RELATING ENVIRONMENTAL POLLUTION AND IT'S CONSEQUENCES

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Abstract. *Polluting the planet, a common national and international awareness issue, is reality nowadays, when disturbing the natural equilibrium of the planet is an imminent fact. The European Union's demands impose a new outlook on global environmental issues, as a result of the pressure on the environment and other consequences that the economical development brought. The problem now consists in setting the middle grounds between further economical and social development and preserving or improving the present state of the environment as the only way to protect not only our generation but also the ones to come. The transformations in the quality of the environment that occur at a global level demand finding solutions to maintain the ecological equilibrium of our planet in the perspective of a durable development.*

Keywords: pollution, greenhouse effect, the environment.

1. Introduction

There is an increasing need of attention and responsibility on behalf of each citizen in order to live in a clean environment, to breathe fresh air, to drink clean water and to be able to use the life conditions that nature has to offer. But it seems like people neglect this important aspect of their lives which leads to further damage of the environmental conditions and thus damaging their own health and the ones around them. The impact of economical development polluted the ground, water and air at variable levels, endangered or extinct species of animals or plants and man is confronting illnesses caused by pollution, a phenomenon that has spread across countries and continents taking over the planet. For new section header copy&paste this entire row, then replace the text.

2. General presentation

The phenomenon of environmental pollution is described as an abnormal structure or percentage of components in the environment and/or foreign substances that alter the health of human beings or create discomfort through their direct effect on people or the increased concentration of it and the period of time they affect the people. Pollution is one of the fundamental issues of humanity nowadays and it's the direct consequence of the ecological imbalance between man and nature.

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The environment is defined by the Law of Environmental Protection as an ensemble of natural elements of the Earth: air, water, ground and underground, all the layers of the atmosphere, every organic and unorganic matter, live beings, natural interacting systems of elements form the ones previously mentioned [1]. It is easy to see that responsible for polluting the environment is the man, pollution being the consequence of it's social and economic activity.

Pollution started with man's social evolution and now it is one of the main concerns of scientists in different fields of activity, of states and governments and of people all over the world. This is because the danger that pollution is has grown and it continues to grow, demanding urgent moves to stop it on a national and international level.

If we only talk about how pollution affects people, we can divide it into categories as following [2]:

1. *Biological pollution* is the oldest and most well-known of them; it stands for the spreading of germs in the environment that cause diseases. The main danger of biological pollution are the epidemics that have a large number of victims. As a result of the measures taken biological-bacteriological pollution is nowadays under control or with a reduced frequency.

2. *Chemical pollution* is the result of producing and spreading chemical substances into the environment. This type of pollution is ever more present now because of the growing levels it reached but also through more diverse categories of substances. The main danger this type of pollution brings is the highly toxic risk that this substances have.

3. *Physical pollution* is the most recent form and it includes firstly the radioactive pollution as a result of the extensive use of radioactive isotopes in science, industry, agriculture, farming, medicine. The real danger of radioactive substances on the environment is their toxicity, even in small doses.

Another form of physical pollution is sound pollution. The noise, vibrations and ultra sounds are frequent in the living and working environment of the modern man and the intensity of sound pollution is increasing. Overcrowding and traffic are two of the most polluting factors in the everyday life and have serious consequences on people. An increasing number of people living in big cities turn to psychiatrists to find relief for their general bad state.

The most recent form of pollution with wide influence on the environment, mostly on water and air or indirectly on people's health is thermal pollution.

The wide variety of physical pollution and also the relatively short time from it's acknowledgement makes it less known as the biological and chemical one so it

needs special efforts of investigation and research to be held under control in the future.

The most common forms pollution takes are *ground pollution, water pollution and air (atmospheric) pollution*. These basic elements of human life are also the most affected by the irresponsible actions of people.

The ground, like air and water is an environmental factor that has a direct influence on health. The quality of the soil determines the formation and protection of water, surface water and also underground water. **Ground pollution** is considered to be the result of inadequate use due to random deposits of household refuse and industrial waste or the inadequate use of chemicals in agriculture.

Water is an indispensable environmental element. The lack of water or the consumption of polluted water have multiple negative consequences on the human body. Among the **water polluting** factors are the following:

- accidental or intentional dumping of residues and pollutants from factories;
- leakage from reservoirs and underground pipes that transport oil;
- pesticides and herbicides used in agriculture that infiltrate the soil through rain water or irrigation and reach the phreatic layer.
- chemical fertilizers and leakage from zootechnical farms;
- household waste and residues;
- the salt on the roads during winter is transported with water from rain or melted snow into the ground.
- sediments of pollutants from the atmosphere or acid rain.

Potential measures of preventing water pollution:

- to forbid the random disposal of residues of any kind;
- organising properly the sewage systems and local equipments;
- building filter stands or filter systems suitable for industrial residual waste;
- providing retention and collecting systems for radioactive substances from industrial residual waters;
- control over solid waste disposal.

The air, another indispensable element to life, forms the gas outer layer of the Earth. **Air pollution** refers to the changes in it's normal composition, especially through foreign elements in the atmosphere that have a toxic effect. The sources of air pollution are: the soil, plants and animals, volcanic eruptions, combustion processes from heating in a building to the fuel used to produce energy for industrial purposes, railroad, nautical, aerial and especially road transportation.

The air is the most important environmental factor in transporting pollutants, because it serves as a platform for them spreading the fastest in the environment, thus *supervising the atmospheric quality* holds a top rank in monitoring activities.

The information about the air's quality obtained from the monitoring network show a slight improvement in the air's quality due to the diminishing of economical activities and to the updating programs, carried at an industrial unit's level, but also to the intense effort of the environmentalist agencies.

Air pollution could be considered being the worst of it's kind if we take into consideration the effects it has on a short, medium and long term. On a short to medium term pollution has negative effects on people's health, damaging the biological resources and ecosystems and causing economical loss. On the long term it produces changes on the environment like the greenhouse effect, damaging the ozone layer, acid rains all of which are the issue nowadays.

The substances emitted in the atmosphere contribute to *climate change, damage in the ozone layer and the air quality*. The main emissions come from:

- industrial sources;
- road transport, especially along the main arteries;
- construction sites.

The climate changes caused by emissions of greenhouse gas have negative consequences on the economical, social and environmental factors. Considering the possibility of restricting the gas emissions the costs of no feedback are above the costs of involving so the sooner the actions the more significant the economical benefits will be.

United Nations Framework Convention on Climate Change in 1992 draws the attention on the increasing level of greenhouse gas emissions in the atmosphere as a result of human activities. The greenhouse effect of this type of emissions determines an additional heating of the earth crust with negative effects on the ecosystems and the general health state of human beings.

The second article of the Framework Convention on Climate Change specifically states that the bottom line of the convention is *stabilizing the concentration of greenhouse gas* in the atmosphere, at a level that doesn't endanger the climate. A such level must be reached in a period of time that allows the ecosystems to adapt to the climate change, that assures food production and gives the possibility of a lasting economical development.

Following law 3/2001 Romania was one of the first countries that ratified the Kyoto Protocol to the United Nations Framework Convention on Climate Change, an act of great importance for the issue of climate change. Our country specifically committed to [3]:

- reduce the greenhouse gas emissions with 8% between 2008-2012 as opposed to the level of emissions recorded in 1990.
- elaborating and implementing policies in order to promote sustainable development;

-inaugurating before the first period of commitment, the year 2008, the National Register of Greenhouse Gas Emissions (the regulations of administrating and operating the register are in force since October 5th 2007).

According to the latest inventory in January 2009 the carbon dioxide emissions are 37% lower than the targeted level stated in the Kyoto Protocol, the minister of environment, Nicolae Nemirschi, announced during the 'Romania and climate change' conference. 'The low level of carbon dioxide is especially due to a lower production and to the fall of the industry. Romania will reach the targets set by the Kyoto Protocol without major effort or supplementary costs' Nicolae Nemirschi stated [4].

The greenhouse effect is the process of air heating as a result of caloric radian reflection from the Earth's surface and the carbon dioxide in the air. Whilst the solar radion is constant the greenhouse gas increases their concentration.

The consequences of the greenhouse effect are:

- increasing air temperature;
- melting of the glaciers and the rising level of the planetary ocean;
- mutations in the distribution and structure of the vegetation and the agricultural production.

The rising level of the Planetary Ocean is a threat not only for the insular countries but also for countries with a low altitude. The pressures on the climatic equilibrium of the Earth are related to the different type of emissions of gas that have the property of absorbing the infrared rays resulted in the heating of the Earth's outer layer. These gases called greenhouse gases are emitted as a result of the actions of humans. Their evolution, the majority of industrialized countries, has to be linked with the reduction of emissions, on a short and long term, in order to avoid climate changes that make life on Earth ever more difficult.

The Kyoto Protocol nominates the next as being greenhouse gases: *carbon dioxide, methane, nitrogen oxide, hydrofluorinecarbide, perfluorinecarbide and hexafluorine sulphur*. The greenhouse gas emissions in the atmosphere come from the main energy sources usage. Therefore petroleum is the main source of carbon dioxide which represents 40% of the emissions of fosil fuels [5]. Petroleum is used for all types of engines from automobiles, planes and heating systems. Coal and natural gas also release large quantities of carbon dioxide after burning. At the same time the clearing of rain forests is responsible for 20% of the total amount of carbon dioxide.

Through our actions we can lower with 50% the carbon dioxide emissions before 2050 [6]; industrialised countries must lower their emissions by 80%. If the organisations in power and people everywhere unite in this effort of it is possible to make the temperatures rise with less than 2 degrees Celsius before

the end of this century. In order to reduce the greenhouse gas emissions there have been actions of replacing fossil fuels in the combustion processes with other types of fuels (biomass).

Based on a study made by the European Environment Agency regarding the carbon dioxide emissions in different fields of activity in the E. U. countries between 1990-2006 shows that out of all the sectors transports registers a significant growth in carbon dioxide emissions, as seen in figure no. 1.

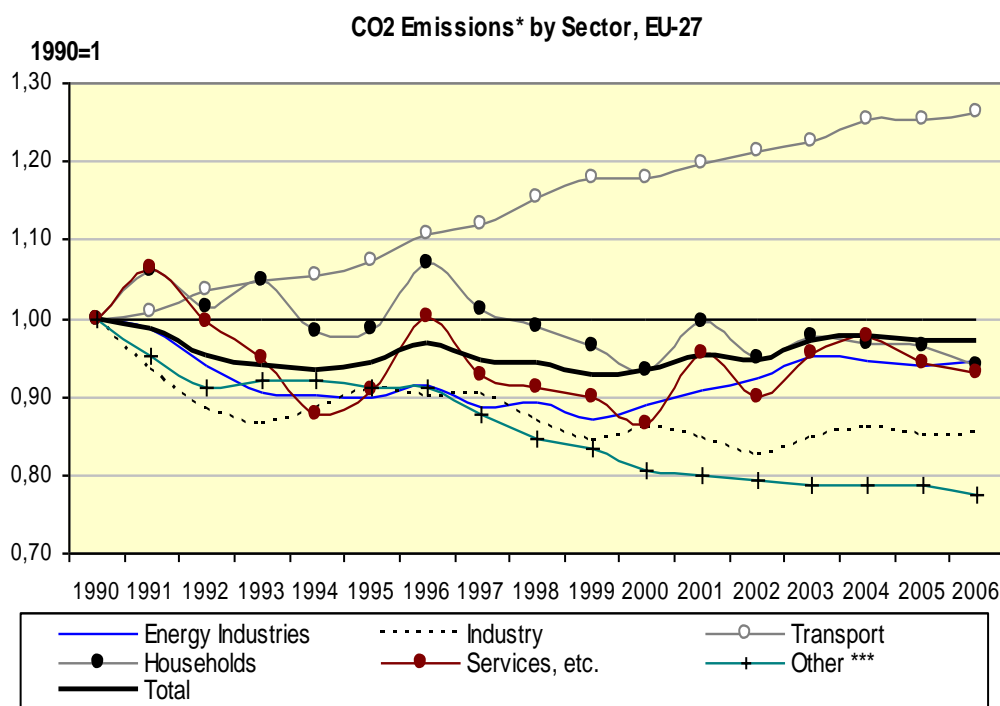


Fig. 1 Source: European Environment Agency (EEA), November 2008

The most important measures to stop massive pollution of the atmosphere are: building industrial units outside the living areas, assuring a complete combustion for the fuel used in the industry, providing industrial units the filter systems to retain pollutants, adjusting the combustion properly for automobiles in order to reduce the pollutants emissions, replacing inferior with superior fuels, less polluting, laying out more green spaces [7].

Romania tries to align with the E.U. countries in what concerns the main foresights about the impact that energetical systems have on the environment. The reduction of the impact of energetical systems on the environment and balancing the standards with the ones imposed by the E.U. will be accomplished through the following steps: rehabilitation and modernization works, turning waste dumps

of slag and ashes into safer ones, monitoring at all times the quality of the environment in the area where the most important energetical sites are, rehabilitation of the polluted grounds and put them back into the agricultural circuit, lowering the emissions of refineries and minimazing the loss (by using the new advanced technology, fair to the environment), the ecological recovery of the petroliferous areas by lowering the risks during use.

The forms of pollution are very diverse and they affect various aspects of the Earth. Some of the devastating effects of pollutants cannot be observed when the pollution takes place but in time the major consequences will affect the whole planet and at the same time the one that is responsible for this situation: the man. Even though a part of the environmental pollution is the result of natural phenomenons like the volcano eruptions the larger part of it is the result of human activities.

The action of pollution over the human body is very diverse and complex. It can turn from mild discomfort to disturbing the health state and even loss of human lifes. The cronic effects represent the most common form of manifestation of the polluted environment on health. This is due to the fact that usually most pollutants in the environment do not reach high levels that produce acute effects but their continuous action in small doses will lead to unwanted consequences.

The indirect effects of pollution are also noticeable on the flora and fauna that sometimes are more sensitive to the action of pollutants than the human body. The acknowledgement the effects of a polluted environment on heath led to the necessity of establishing some protection measures on the environment. It is safe to say that all the effects on people's health is are the result of a broken equilibrium between the human body and the environment. In conclusion, polluting the environment causes damage to the human body and that is why we should all turn our attention towards pollution [8].

Never the less mankind cannot give up the advantages of economical growth. The way to keep up with this and also mantain a satisfying quality of the environment is to make the best out of it keeping in count the possibility of permanent regeneration and conservation. Our planet's obvious signs of illness are: the thinning ozone layer, global warming, acid rains, polluted waters, soil and air. People start to understand the necessity of adopting a responsible behaviour towards nature. However the responsibility of human beings cannot be only an individual one but also a collective one: protecting the nature involves colaboration and support on a local, regional and national level but even more so on an international level.

By building factories, developing the infrastructure and transports, cutting down forests, randomly dumping toxic waste, man destroyed the natural balance of

the environment putting it's own life in danger through it. This led to the necessity of taking action in order to stop the damage done and to take measures to protect the environment in order to maintain the natural balance between all it's elements.

Conclusions

Our environment ensures the conditions necessary to live but it depends on us if we choose to use them responsibly or to waste them. The pollution of the planet is worst as days pass and the population does not give enough attention to this nocive process. The belief that this issue is only a matter of interest for the specialists and international organs is as incorrect as it is serious. Protecting our planet is a world-wide issue therefore everyone of us must take this responsibility. The war with pollution demands international cooperation.

As for diminishing the effects of climate change everyone must do more, the advantages of using a low-emission vehicle, use bicycles and public transport more and personal transport less are things we can all enjoy of. Finding efficient solutions to stop further pollution and damage is a power all of us have.

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