

## ABOUT THE NATURAL VITAL ATMOSPHERIC CALOTTE AND PROTECTION OF THE GEOLOGICAL ENVIRONMENT

Nicolae HEREDEA<sup>1\*</sup>

<sup>1</sup> SC NHN Ecoinvest SRL

\* Corresponding author: office@nhn.ro

**ABSTRACT.** The author analyzes the component elements of Planet Earth, air, water and earth, in terms of the natural presence of humans and of the possibility of their life. The area where humans can live naturally is identified within the entire planetary space, which the author calls The Vital Natural Atmospheric Calotte. Its essential components are air and land.

The author analyzes and demonstrates that, based on the considerations made and in the context of the general environmental protection concerns, with everything these involve (regulations, financial efforts, applicative research, investments, etc.), equal importance should be given to earth, soil and subsoil, land, geological environment, as given to air. In such a broad concept regarding geological environmental protection, 20 main areas of activity are identified, that can and should provide recognition and positioning of geological environment protection at the same levels of attention and concern given to air, water and biodiversity.

**Key words:** *atmospheric calotte; geological environment; protection*

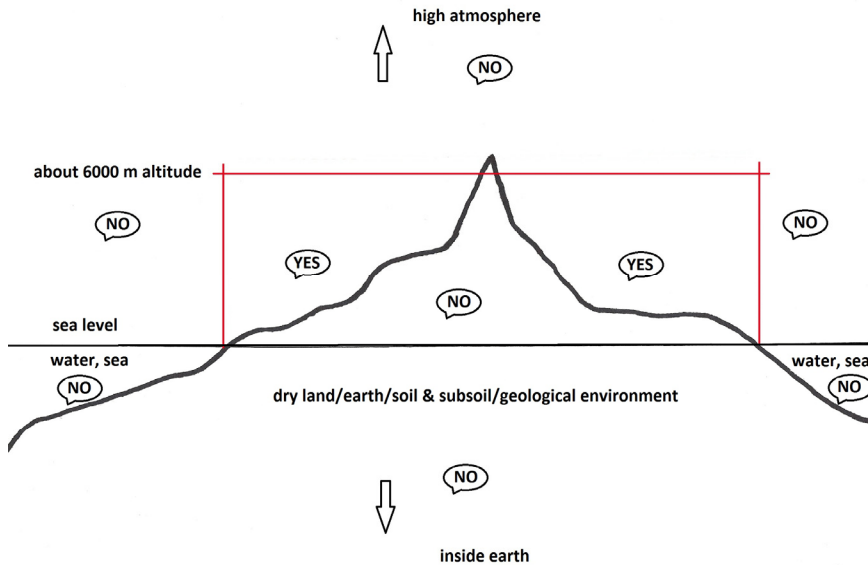
### HUMANS AND THE PLANET

The planet we live on, which we call EARTH, consists of air, water and earth (soil and subsoil, dry land, geological environment). Each of these constitutive elements of the planet is inhabited by specific living beings, which together form a "planetary biodiversity". These include HUMANS as well. The planetary area where humans can live naturally, freely, without support, is however strictly limited.

This is how the planet's nature has determined and conditioned this limitation:

- Humans LIVE naturally only in the lower atmosphere, up to about 6000 m above sea level, as well as in areas with an atmosphere below sea level.
- Humans LIVE naturally only on the solid surface of land, of the earth, of the geological environment.
- Humans do NOT naturally live:
  - on water,
  - in water,
  - in the higher atmosphere, above 7000 m altitude
  - in the ground, in the soil and subsoil, in the geological environment.

The figure below, a partial section through the planet, illustrates these limitations.



**Fig. 1.** Planetary conditioning for human life and the natural vital atmospheric calotte.

## ABOUT THE NATURAL VITAL ATMOSPHERIC CALOTTE

A comparison between the natural restrictions of the planet upon the natural area where humans can live freely, with no additional support, and the known data on the planet earth, indicates a surprising thing.

Humans can live naturally, freely, with no additional support only in an atmosphere with variable thickness, up to about 6000 m altitude above sea level, located only above mainland areas.

This atmospheric area forms a *natural vital atmospheric calotte*, with various thicknesses, fragmented in large calotte blocks corresponding to the earth, to dry land, continents, and islands.

*The natural vital atmospheric calotte* is always based on the mainland surface, the earth surface.

## HUMANS AND THE CALOTTE

It is in this infinitesimal area of the Natural Vital Atmospheric Calotte, as compared to the size and volume of planet Earth that humans endeavor to dominate the entire planet environment and all other living species.

The evolution of humankind, equivalent until nowadays with a struggle to dominate nature of any kind, has led humans to generate negative effects upon all planet's sectors, the higher atmosphere, the planetary ocean, the soil and subsoil and even upon the Natural Vital Atmospheric Calotte.

Human activities generate obvious, easy to identify negative impacts inside the Natural Vital Atmospheric Calotte, upon the quality of air breathed by humans, as well as upon the immediate neighborhoods of the other planet sectors, soil and subsoil, water present and used for various purposes, the lateral atmosphere or the one above the calotte.

On the other hand the planet's sectors where humans cannot live naturally, freely, without support, directly exercise various actions, with effects upon the natural vital atmospheric calotte, with a maintenance role, also having a potential to modify the calotte equilibrium, which ensures the presence of living species that breathe and live in the air. As a consequence of this concept, the essential planetary elements for the presence of the Natural Vital Atmospheric Calotte are AIR and EARTH. The calotte, the natural area where humans live freely, without support, cannot exist without these two elements. Understanding the conditions, quality and stability of the calotte involves the understanding, as complex and complete as possible, mainly of air and earth, equally.

Water is only of secondary importance, as an element present inside the Natural Vital Atmospheric Calotte and as planetary element, and so is the specific biodiversity living inside the calotte, both of which are necessary for human life. Back to the two planetary elements, AIR and EARTH, which condition the presence of the Natural Vital Atmospheric Calotte, the existing research and knowledge about air are much richer than those about the earth, from the point of view of environmental knowledge and concerns. In my view it is erroneously considered that the earth, the dry land, the soil and subsoil, the entire geological structure which sustains the air in the calotte are non-alterable, non-modifiable, and inert to the effects of human activities. That their condition and quality do not negatively influence human kind, do not threaten the existence of humans in this Natural Vital Atmospheric Calotte, except by potential natural geological catastrophes. And that human activities do not essentially or significantly alter the condition and quality of the geological environment and it is therefore not worth while being concerned about the protection of earth to the same extent as we are concerned about the protection of air, water or biodiversity.

There is a general perception, even among many environmental specialists, that the earth beneath the dry land surface, at deeper levels, may be considered as humankind's long term landfill, organized or not, for any kind of waste. As a consequence of this conception and perception of the environment, there is a wide range of environmental legislation and regulations for air, water, biodiversity etc., as well as a large number of studies, investments, allocations of substantial funds, as compared to the scarce and incomplete environmental legislation on soil and subsoil, with very limited investments and allocations of funds for an understanding, as complex, complete and rapid as possible, of this second element of the Natural Vital Atmospheric Calotte - the earth.

## **ABOUT THE GEOLOGICAL ENVIRONMENT**

However what we call earth, dry land, soil, subsoil or geological environment represents the central, major element of the planet earth, on which the other two elements, air and water, are based. For this reason is the earth so important. Because it supports air and water and does not let them dissipate into the cosmic space, it supports the entire planet biodiversity; it supports humankind, thus helping it live.

And because it contains all natural geological resources which humankind needed along its development in order to build, to produce, and to generate energy. And most of all to obtain the nourishment essential for life; for this reason, in my view soil is the most important natural geological resource.

## **THE GEOLOGICAL ENVIRONMENT MUST BE KNOWN AND PROTECTED**

Where should we direct the investigation efforts for the earth, the geological environment, so as to accelerate the knowledge and understanding about it, so as to be able to protect it?

Here are some possibilities:

- defining and understanding the surface of the geological environment, its relationships with the planetary elements it comes into contact with, the natural functions, its usage possibilities and limitations;
- detailed defining and knowledge of the shallow geological environment, in its entire complexity, as well as of geological area where many activities take place as part of the development of humankind;
- knowledge of geological structures containing the natural geological resources used or potentially usable by humankind;
- development and promotion of ways to increase geological and geophysical knowledge at deeper levels towards the planet center;
- discovery, study, functions and use of the earth's energies, both the known ones and possibly new ones to be discovered;
- discovery of unknown aspects, components of uninvestigated geological environment, little known or not known at all, going from the surface to the planet's center;
- identifying and studying potential new natural geological resources which humankind might use;
- understanding and surveying the generation mechanisms for all kinds of planet events localized in the geological environment which reach the surface of the geological environment overall, but mostly in the Natural Vital Atmospheric Calotte;
- studying the groundwater as a component element of the geological environment and also as planetary element essential for life, and of its relationship with the other components of the geological environment.
- understanding the relationships between the planet's living environment and the planet's geological environment, the evolution of these relationships in correlation with the planet's geological time and the lifetime of the planet's living environment.

## KNOWLEDGE TARGETS

And the final results which would emerge from such collective effort should lead to:

- identifying and understanding the natural functions of each component of the geological environment;
- protecting the geological environment components;
- preserving the geological environment components;
- limited uses of the geological environment components which should not lead to their depletion or irreversibly deteriorate the natural functions.

## TARGETS FOR PROTECTION ACTIVITIES

Attaining these four final targets requires a large amount of theoretical and applicative research on the geological environment to produce new knowledge, regulations, standards, good practice procedures, at least towards the following fields of interest for the present moment:

- ☐ protection and conservation of groundwater;
- ☐ contaminated land assessment and remediation;
- ☐ protection and conservation of soil;
- ☐ protection and conservation of natural geological resources;
- ☐ understanding and surveying natural and anthropic geological hazards;
- ☐ protection of the geological environment during drilling and exploration works, mining and oil extraction and closure activities;
- ☐ protection of the geological environment during industrial works in the soil and subsoil;
- ☐ protection and conservation of the geological environment underneath human urban agglomerations;
- ☐ landfilling of waste and hazardous noxious substances in the geological environment;
- ☐ evolution of the earth's physical fields at the level of the national as well as the world territory;
- ☐ the quality, use and protection of the surface of the geological environment;
- ☐ reducing the use risk of land areas which are vulnerable to disasters and natural or anthropic environmental accidents;
- ☐ identifying and promoting protected natural geological areas;
- ☐ the evolution of the national territory in the context of the planet's geological evolution and changes;
- ☐ regional knowledge on the shallow geological environment as a basis and optimization of human development projects;
- ☐ adapting the concept of sustainable development for the geological environment and for valorization of natural geological resources;
- ☐ adapting the environmental security and safety concepts in the context of the geological environment and of the geological natural resources exploitation;
- ☐ integrated system for monitoring the quality of the geological environment;
- ☐ knowing and valorization of the soil and subsoil as hosts for remnants of humankind development;
- ☐ protection and conservation of natural therapeutically geological resources.

## **ULTIMATE GOAL**

The need and obligation for a systemic approach, of synthesis and integration of all categories of geological data obtained over time, in uses related to the protection of the geological environment, along with many various new data and knowledge to be obtained will lead to progress in the knowledge, understanding and responsible use of the geological environment by humankind.

## **CONCLUSIONS**

The components of planet Earth, air, water and ground don't represent, in their entire planetary volume, planet spaces where man can live naturally, freely, without help.

The Natural Atmospheric Vital Calotte only, representing limited spaces and volumes of the atmosphere, located just above the ground, land, soil and subsoil geological environment, offers to the human such living conditions.

And inside the Natural Atmospheric Vital Calotte only air and earth are the planetary elements that make up the planet.

Therefore the land, as environmental planetary element and in the same time specific of the calotte, shall have importance for man, as well as the air, rather than water or biodiversity.

The 20 main directions of activity formulated together with considerations regarding the speeding of complex and comprehensive knowledge and understanding of the geological environment can and must ensure recognition and positioning of geological environment, at levels of concern and interest at least equal to those given to air, water and biodiversity.

## **REFERENCES**

- Heredea N., 2012, The Vital Atmosphere and the geological environmental protection. National Scientific Symposium GEO 2012, May 25-26, Faculty of Geology and Geophysics, University of Bucharest, Bucharest, Romania.
- Heredea N., 2012, About the Natural Vital Atmospheric Calotte and protection of the geological environment. The 9<sup>th</sup> edition of the ELSSEDIMA International Conference, October 25 – 27, Cluj-Napoca, Romania.