

## UNESCO GEOPARKS: PROTECTED AREAS WHICH INTEGRATE THE NATURAL AND CULTURAL HERITAGE IN SUSTAINING THE REGIONAL DEVELOPMENT

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**Abstract.** The last four decades brought significant achievements in a needed holistic understanding of the nature, based on a more balanced approach for its two essential components: the biotic one, better defined as *biodiversity*, and the abiotic one, named by analogy *geodiversity*. The paper briefly presents the international actions started in late 1980s which led to the creation of “the European Association for the Conservation of the Geological Heritage” – ProGEO. Shortly, a new paradigm has developed around the new concept of *geodiversity*, whose fields are *geoconservation*, *geoheritage*, *geoeducation*, *geotourism* and *geopark*, all of them significant terms, having a special role in the integrated approach of the protection and valorization of nature. A special importance in the *geodiversity*’s paradigm is given to the **geopark** which proved to represent, during the 20 years since this concept was introduced by UNESCO, a very appropriate framework for a sustainable development of the regions, based on the protection and the valorization of the natural and cultural heritage, in an integrated management approach. The paper is richly illustrated by images, depicting specific activities in the UNESCO European Geoparks, whose number increased: from 4 geoparks in 4 countries in 2000 to 72 geoparks in 24 countries in 2018.

*Keywords:* UNESCO geoparks, *geodiversity*, *geoheritage*, *geoconservation*, sustainable development.

**Résumé.** Les quatre dernières décennies ont apporté des importants accomplissements en concernant la nécessité de la compréhension holistique de la nature, basée sur une approche plus équilibrée de ses deux composantes essentielles : le biotique, mieux défini comme biodiversité, et l’abiotique, nommé par analogie géodiversité. L’article présente brièvement les actions internationales commencées à la fin des années 1980 qui ont conduit à la création de « l’association européenne pour la conservation du patrimoine géologique » – ProGEO. En bref, un nouveau paradigme est développé autour de la géodiversité, dont les domaines sont *la géoconservation*, *le géohéritage*, *la géoéducation*, *le géotourisme* et *le géoparc*, qui sont tous des termes significatifs, avec un rôle particulier dans l’approche intégrée de la protection et de la valorisation de la nature. Une importance spéciale dans le paradigme de la géodiversité est donnée au géoparc, qui a prouvé représenter, au long des 20 ans suivis après l’introduction de ce concept par l’UNESCO, un cadre tout à fait approprié pour le développement durable des régions, fondé sur la protection et la valorisation de l’héritage naturel et culturel, dans une approche de management intégré. Cet article est richement illustré par des images décrivant des activités spécifiques dans les géoparcs européens de l’UNESCO, dont le nombre a augmenté : de 4 géoparcs dans 4 pays en 2000 à 72 géoparcs dans 24 pays en 2018.

*Mots-clés:* geoparks UNESCO, géodiversité, géohéritage, géoconservation, développement soutenable.

### INTRODUCTION

The launching in 1997 of the Geopark’s concept and methodology represents the first consistent and practical measure, at an international level, for sustaining the geological protection in close connection with the development of the regions which host outstanding natural and cultural sites. Through the integrative approaches, between biodiversity and geodiversity in studying and protecting nature, between nature and culture in sustaining the development of the regions, the Geopark represents a corollary of the “geodiversity paradigm”, developed in Europe in the late 1980s and early ’90s. The promoters were the members of “The European Association for the Conservation of the Geological Heritage” (*ProGEO*), who since 1990 organized yearly international meetings, acting as a

forum of debates on nature conservation issues, followed by advices addressed to the policy makers. An important moment at the ProGEO's beginning, which was a positive sign for its further evolution, took place in July 1991 in Digne-les-Bains (France), hosting "The first International Symposium on the Conservation of our Geological Heritage". The symposium was ended by the adoption of the "Declaration of the Rights of the Memory of the Earth", which became the ProGEO's programmatic document (Martini, 1994). Since the middle of the '90s ProGEO's main activities are developed within the five European regional groups: Northern, Central, Southwestern, Southeastern (Balkan and Turkey) Europe, and Russia.

### STEPS TO A HOLISTIC UNDERSTANDING OF THE NATURE

Several actions for protecting the geological sites, centered on impressive landscapes and geological phenomena (volcanism, geysers) were developed for over 100 years, before the creation of ProGEO. In Germany the Totenstein hill was declared "Natural monument" in 1844, in USA, Yellowstone became the world's first National Park in 1872, in Australia, in 1879 the Royal National Park was established near Sidney, and a lot of protected places were added in many countries after 1900. Despite such rather singular efforts, geoconservation, as it is named today, has remained until recently a "Cinderella" of the nature conservation (Gray, 1997).

There is a very unbalanced protection of the geological (abiotic) part of the nature, in comparison with the biological part, including the extant plants and animals. There are some reasons involved: the basic reason is the superficial understanding of the nature and its needs for protection: one may consider that only the living things deserve protection, while the so-called abiotic or inanimate part, do not. Some explanations are needed: First of all, the terms "abiotic" or "inanimate" are not proper for what they mean in the natural milieu; however, they are conventionally used for the sake of simplicity in expressing shortly the two parts of the nature. In fact, the "ground of life", scientifically and literary more appropriate than "abiotic" or "inanimate", includes the water and soil, which not only contain organisms, but the condition of most organisms' existence. More proper terms for describing the nature's essential components are "biodiversity" and "geodiversity". Although they are suitable for expressing the nature's dichotomy and thus, useful for scientific and educational purposes, these two components are closely linked and reciprocally conditioned in the natural milieu: *geodiversity* represents the support of *biodiversity*, while, through its continuous motion, *biodiversity* simultaneously generates and destroys *geodiversity*.

The functional unity of the biodiversity and the geodiversity is best expressed in the ecosystems in which the *biocenosis* (the community of organisms) interacts continuously with the *biotope* (the environment, with its physical and chemical conditions) through the nutrient cycle. Biodiversity is much better known to the general public, while geodiversity is mostly known through the landforms and "curiosities from the past" (minerals, fossils) exhibited in the museums, but not as an essential part of the nature. Consequently, while the need for the biodiversity protection is, more or less, generally understood, there is not considered a special demand for the geodiversity.

This unbalanced attitude was fortunately diminished during the last 20 years, mainly due to the ecologist movement in the world, but it is still rooted in the people's mind, such as the first impression given to an ordinary nature observer by a cliff, the symbol of Geology: massiveness and indestructibility. On such impressions, there were developed economic plans, without prior analysis, as the ecologists do nowadays. Professional geologists did both planning and exploitation, without the special care that avoids the loss of the rare and scientifically important elements. The pressure of a rapid economic growth, exacerbated in the communist countries after the Second World War, led to the loss of rare fossils, minerals, picturesque landscapes and even to the disappearance of localities, as happened in

the Motru-Rovinari region of Romania. There were irreparable losses, due to a poor understanding of the nature's equilibria and of the natural heritage values, which happened not only in Romania, but throughout the world. However, one should not blame the geologists for this, as their professional training was – and still is almost everywhere – focused on the exploitation of the “earth resources”, contrary to the biologists who are trained in a more protectionist style.

## GEODIVERSITY – CONCEPT AND PARADIGM

*Geodiversity* is a relatively new word in the nature terminology, introduced almost simultaneously in 1993 by Wiedenbien in Germany and Sharples in Tasmania (cf. Gray 2013), in analogy with the much older word *biodiversity* (1974). *Geodiversity* refers to the variety of the objects formed by the geological processes: minerals, rocks, fossils, different types of structures, ore deposits, but also those to which people are more acquainted: water, soil, caves, landforms (see Figs. in Plate I). The geological processes (tectonic, volcanic, sedimentary, metamorphic etc) are also parts of *geodiversity*. Correctly understood, as two fundamental parts of the nature, *geodiversity* and *biodiversity* allow a holistic approach in the nature's studies and management, with great beneficial effects on the environment and mankind. By far, the *geodiversity* (content, role in nature, threats) is less known to the public, as compared to the *biodiversity* and this is one of sources of its neglecting in the nature's conservation. To approach a balanced nature's conservation, it is required more awareness on geodiversity and on differentiated methods for various target groups: children, students, public, decision makers. Such actions started in 1980's in different countries, promoted by small groups of geoscientists<sup>1</sup>, more aware by their researches, of the need to protect the “geological monuments”, the most attractive part of the geodiversity.

In late 1980's such local initiatives gave birth to the ProGEO European movement. The public has to know the values and the threats of the geodiversity. The **geodiversity's values** are grouped by Wilson (1994) in two basic categories: **Economic**, related to the exploited resources (water, soil, fuels, metallic and nonmetallic ores, building stones) and **Cultural (Heritage)**: scientific, educational, aesthetic values. Other authors (Bennet and Doyle, 1997, Doyle & Bennet, 1998, cited by Gray, 2013) distinguish four categories: **Intrinsic** (“the value of existing”, which imposes an ethical attitude against the anthropocentric view of free exploitation of the Earth resources), while the other three detail the aspects in the Wilson's two categories. Thus the **Cultural and aesthetic** values refer to the cultural buildings, the mythology and folklore created around geodiversity, the **Research and educational** ones point out the knowledge acquired through the studies on the Earth history, since its formation until the present days, the processes involved and their importance in education, public information and the students professional training, while in the **Economic group** are listed all the exploited resources, which represent the only value of geodiversity for most people.

Concerning the **geodiversity's threats**, these are numerous, classified according to the cause, the sensitivity of the system degree (temporary damage or permanent loss), the extension of the affected area, etc. Basically, the threats are determined by two main factors: **the natural ones**, related to the Earth's dynamic forces (e.g. the river-bank and coastal erosion) and **the anthropic** (human-induced) ones, the last being by far the most numerous and destructive. Among the human-induced threats the more common are those related to the mineral extraction (especially in open quarries), the deforestation,

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<sup>1</sup> In 1977 in the Laboratory of Paleontology of the University of Bucharest it was created a student research center for the protection of the geological monuments, which in 1990 became The Society for the Protection of the Geological Environment (SPMG), one of the first NGO in Romania.

## Plate I



**Geodiversity in UNESCO Geoparks.** Fig. 1. A 2.5 million of years in 60 meter thickness of shales and limestone. The world-famous geological section of Zumaya (Basque Coast geopark) which depicts the transition from Mesozoic to Cenozoic; Fig. 2. The folded rocks in the Massif des Bauges Geopark (France); Fig. 3. The giant trilobites, up to 90 cm. in length in the Arouca Geopark (Portugal). Here an emblematic sculpture replica; Fig. 4. A pine tree trunk in the Lesbos geopark (Greece), remain of a Miocene forest (ca.16 million years ago) covered by volcanic ash; Fig. 5. A dinosaur egg clutch, Late Cretaceous (ca 68 million years ago) in the Hațeg country Dinosaurs Geopark; Fig. 6. Picturesque crater-lakes in Azore islands Geopark; Fig. 7. Basalt columns, testimony of the volcanism, about 8 million years ago in the Bakony – Balaton Geopark (Hungary); Fig. 8. Fossil lava flows in the aurora borealis light in Katla Geopark (Iceland).

Source: Photo gallery of UNESCO European geoparks organized in the Karawanke/Karawanken Geopark, March 2018.

the river and coastal hydrologic planning, the agricultural planning, the urban extension plans, all of these leading to irreplaceable losses, but also many other with limited impact, as those linked to the military activities, tourism and lack of education or information, etc. As in the case of biodiversity, which was its source of inspiration, geodiversity is not only a theoretical concept, but a field of practical activities in nature, grouped around the *Geodiversity paradigm*. This includes geological and geomorphologic conservancy (*Geoconservation*), the geological heritage (*Geoheritage*). Earth science education (*Geoeducation*), tourism (*Geotourism*) and a special type of protected area – the *Geopark*, which allows the development of all the paradigm's parts, closely integrated.

**Geoconservation** represents the practical, methodological part of the paradigm. It includes methods, strategies, rules and legislation for the protection of the geological objects and features, landforms, soils, also for the prevention of the risks and the diminishing of the damages. "Geoconservation recognizes that the non-living components of the natural environment are just as important, for nature conservation, as the living components, and just as much in need of proper management" (Sharples, 2002). Significant improvements of geoconservation at the European and international levels took place in the last two decades. The European directives adopted in the member states mention geoconservation in the environmental policies. An important contribution in rising the policy makers' awareness on geoconservation is given to the International Union for Conservation of Nature (IUCN) and to the International Union of Geological Sciences (IUGS), within which it was recently established an International Geoheritage Commission.

Since 2008 geoconservation, together with its related aspects was included among the thematic sessions in the last three World International Geological Congresses and all the national and international symposia and congresses in Geosciences incorporate sessions on this subject. Numerous such international meetings were organized in the next six months of 2018, in Europe: in Poland – "The 9<sup>th</sup> ProGEO Symposium on Geoheritage and geoconservation" (25–28 June), Italy – "The 8<sup>th</sup> UNESCO Geoparks Conference" (8–14 September), Austria – "The 21<sup>st</sup> Congress of the Carpathian-Balkan Association" (10–13 September), Bulgaria – "Geoparks and modern society" (12–13 October). There are new journals on geoconservation, besides Geoheritage – the ProGEO scientific journal since 2009, that are announced in the world, more recently "Geoconservation Research" in Iran.

However, in spite of all this progress, the lack of any effective European directive or strategic policy, precisely dedicated to geoconservation, represents a great impediment, which demands for the outstrip, a more concrete involvement of the national forces in conjunction with the international specialized institutions.

Although geoconservation is not the aim of this article, the terminology involved needs clarification in order to explain the steps in the nature's management, in a holistic approach. Terms like *preservation*, *protection*, *conservation* are frequently used by several persons as synonyms. In fact, for specialists in nature studies and management, there is a different meaning of the terms. Although, even among specialists the views might differ, these are the generally accepted meanings of the terms: **preservation** means to keep something in its original form; **protection** is to keep something away from harm or danger; **conservation** refers to the sustainable use of natural resources; it involves the active management for retaining a certain quality. As concerns **geoconservation**, it concretely involves practical measures to maintain a geological feature (*e.g.* a stratigraphical section which displays the boundary among two geological stages, or a particular mineral vein, or a tectonic structure), without intervening on the natural changes, that means no attempt to stop the erosion or influence the natural weathering. Of course, not any object or feature of geodiversity deserves conservation, but only a very small part of these, namely those of special scientific, educational importance, or especially endangered.

These are the steps leading to the geoconservation of a site, or of an area (summarized and modified after Burek and Prosser, 2008):

*Preliminary awareness* – done by somebody who studied the site and realized its importance, by comparison with other similar sites;

*Advanced awareness*, involving deeper studies, value appreciation, existing or possible threats (These two steps do not represent geoconservation, but they are compulsory for further activities);

*Geoconservation audit* – assessment of the importance on a wide international comparative scale and establishment of the conservation priorities;

*Protection management* – actions aiming to protect, based on legislation (if existing) or on practice (national or international). In parallel, awareness, lobbying to the decision makers, emphasizing their responsibility in preserving the regional/national values, are also considered.

*Development of a holistic approach to conservation*, based on the geodiversity/ biodiversity complex interrelations into ecosystems and interconnected needs for conservation.

In conclusion, *geoconservation* represents the newest discipline in the field of nature management, a discipline which grows rapidly, in close connection with the biological field, creating thus the frame for a comprehensive approach to nature.

**Geoheritage** (*geological heritage*) is the closest part of the geodiversity paradigm to geoconservation. Together with the biological patrimony, *geoheritage* represents the natural heritage, but some of its components related to the human activity, like the rocks used in monumental buildings, are also part of the cultural heritage. (see Figs. in Plate II).

The term “geological heritage” was mentioned in the title of the “First International Symposium on the Conservation of our Geological Heritage” in Digne-les-Bains, France in 1991 (Martini, 1994), while the first reference to geoheritage as such, was at the Malvern, UK International Conference on Geological and Landscape Conservation, in 1993 (O’Halloran *et al.* (eds), 1994).

Initially the meaning of *geoheritage* was restricted to the “valuable content of geodiversity”, represented by geotopes<sup>2</sup>, objects with an assessed outstanding importance in science, education, culture, also landforms with a special aesthetic importance. This traditional approach to geoheritage was later extended to a wider range of the geodiversity values which underpins the ecological processes, namely those elements of geodiversity which intervene in maintaining the normal functionality of an ecosystem (Sharples, 2002).

Taking into consideration that *geoheritage* is not simply an esthetic, theoretical category, but one which addresses directly to *geoconservation*, the acknowledgement of the geodiversity ecological values is important in preventing the destructions, sometimes with a catastrophic impact, as those produced by great floods, or by landslides. In case of floods, the physical elements of the river streams (channels, slopes, barriers) represent such geoheritage elements with ecological importance.

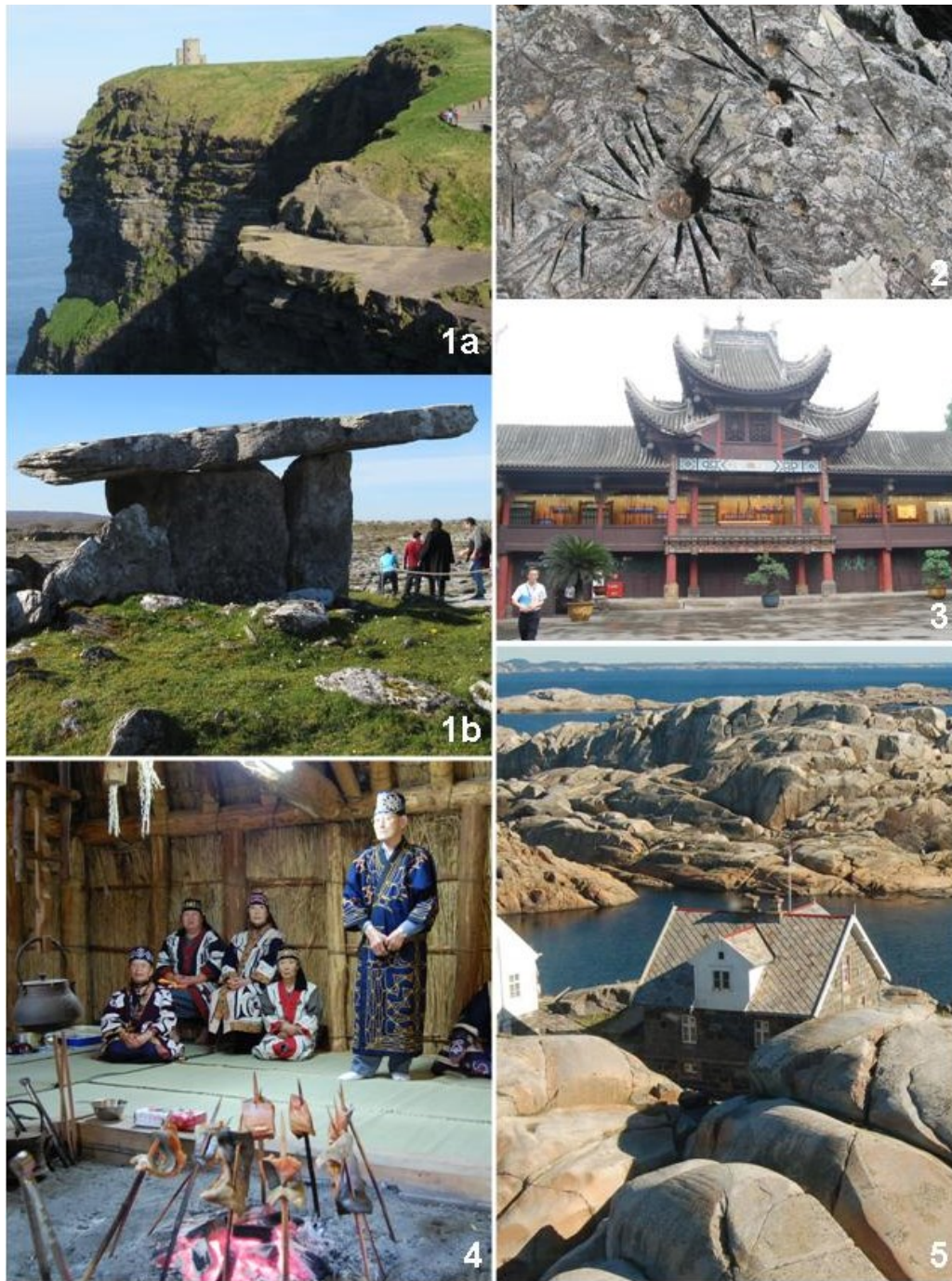
**Geoeducation** (education in the field or Earth sciences) encompasses the measures, methods and actions for promoting geodiversity, of the phenomena and processes at the origin of the geologic objects and landforms, of the Earth history with its multitude of interconnected events, changes of the geographies, extinctions and appearances. Most of the geoeducation is world widely practiced in non-formal ways offered to the general public by the Natural history museums, specialized geological museums, by scientific TV films, conferences, popular scientific publications, etc. An important place in geoeducation is given by the education based on ecological effects of the surface exploitations in quarries for coal, limestone and other rocks, as well as of the oil and gas exploitation fields. Together with the measures for preventing the pollution effects, this part of geoeducation represents the geo-ecological education (Grigorescu, 1994).

More important for the future is the formal geoeducation provided in schools to the children. Unfortunately, in most of the countries, geoeducation in schools is far from the expectations of a global understanding of nature. The knowledge on geodiversity is based on the object’s descriptions,

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<sup>2</sup> Among the new geological terms, introduced in analogy with the biologic ones, there is also *geotope*, although its geologic meaning “geological site” is different from *biotope*, meaning the physical environment of a biologic community (*biocenosis*).

## Plate II



**Natural and Cultural heritage in UNESCO Geoparks.** Fig. 1. Nature and culture in the Burren and Cliffs of Moher Geopark (Ireland): (a) – Carboniferous layers along the “Atlantic road” in western Ireland (b) Standing stones (*menhire*) covered by horizontal stone plates (*dolmen*), probably a prehistoric burial ground as the more famous Stonehenge in England; Fig. 2. Prehistoric graffiti engraved in very resistant oceanic lavas (*ophiolite*) in the Beigua Geopark (Italy); Fig. 3. The “Salt museum” in a traditional Qing Dynasty building in Zigong Geopark (China); Fig. 4. Ainu people in a traditional house in Mont Apoi Geopark, Hokkaido island, Japan; Fig. 5. Houses spread within the glacier molded blocks in Gea Norvegica Geopark. Source: Photo gallery of UNESCO European geoparks organized in the Karawanke/Karawanken Geopark, March 2018.

not on processes and in a continuous tendency of reducing the number of allocated hours. It is worth mentioning that these remarks are based on discussions the author had in the last 25 years with geoscientists and teachers from different countries, occasioned by the numerous attended geological international meetings. Fortunately, but not at the needed dimension, there is an increase of geoeducation provided to children and students in field, involving practical demonstration, during summer schools.

**Geotourism** represents the most attractive part of the geodiversity, in the same time the easiest way to approaching people to the geodiversity values and the understanding of the needs for conservation. There are several definitions of geotourism, among which “a form of natural area tourism” that specifically focuses on geology and landscape. The tourism to geosites promotes an understanding of Earth sciences through appreciation and learning. This is achieved through visits to geological features, use of geo-trails and viewpoints, guided tours, geo-activities and patronage of geosite visitor centres (Newsome and Dowling, 2010, p. 4). Two aspects are essential in developing the geotourism in an area: scientific researches to document the importance of the visited places and management in organizing the geo-trails. Through the rules promoted and the connections made within the trails with flora and fauna of the area, also with the cultural sites, geotourism is closely linked to ecotourism. Besides its commercial significance, the geotourism has a special socio-economic importance for the local communities, sustaining the development of the area, by the relate services offered, selling of the local food and handicraft products. (see Figs. in Plates III and IV).

Undoubtedly, the **Geopark** represents the “meeting point” of all the geodiversity paradigm subjects, the frame in which they join and find proper conditions to develop. The concept of geopark emerged in the late 1990s as a logical follow up of the ProGEO movement in Europe, whose efforts for highlighting the urgent needs for the geological protection lead to the idea, among a restricted group of geoscientists and nature managers, that only through practical demonstration in a coherent system, these values and needs, might be generally understood and sustained. The idea was supported by UNESCO who launched in 1997 the geopark concept based on some principles and recommendations, among which:

- *A geopark is a territory which comprises geological sites of special scientific importance, rarity or beauty; but also places of ecological, historical or cultural value.*
- *All the heritage sites in the region, either natural or cultural are managed together in an integrated system.*

A geopark is run by a designated authority which adopts its own territorial policy for ensuring a sustainable development of the region. Soon after 1997 UNESCO announced the principles and the main directory lines in creating a geopark, the first four geoparks were created in Europe following the UNESCO rules: Reserve géologique de Haute-Provence in France, Vulkaneifel Geopark in Germany, Petrified Forest of Lesvos Geopark in Greece, Maestrazgo Cultural Park in Spain. In 2000 they decided to join together, initiating the European Geoparks Network, which grew year by year, up to 73 geoparks in 24 countries (March 2019 – [www.europeangeoparks.org](http://www.europeangeoparks.org)). Starting from 1995, geoparks developed in other continents. Their number increases continuously, new “aspiring geoparks” are admitted in the UNESCO network following their evaluation made by international experts. In March 2019 there were 59 geoparks in Asia (37 in China, 9 in Japan, 4 in Indonesia), 5 in North America (3 in Canada, 2 in Mexico), 2 in South America (Brasilia and Uruguay), 2 in Africa (Morocco and Tanzania). The worldwide efforts for building geoparks clearly validate the strategy of “Heritage conservation in the benefit of the nature and people” which underpins the geoparks missions.

The establishment within UNESCO of the International Geoscience and Geoparks Programme (17 November 2015) ensures a stronger support in advising the creation of new geoparks, the tendency for developing transborder geoparks became obvious in the last years. A geopark is not a new category of protected areas, although its objectives correspond partially with those of a Nature park, and sometimes the territory of a geopark overlaps partially or totally with that of a previous Nature park.

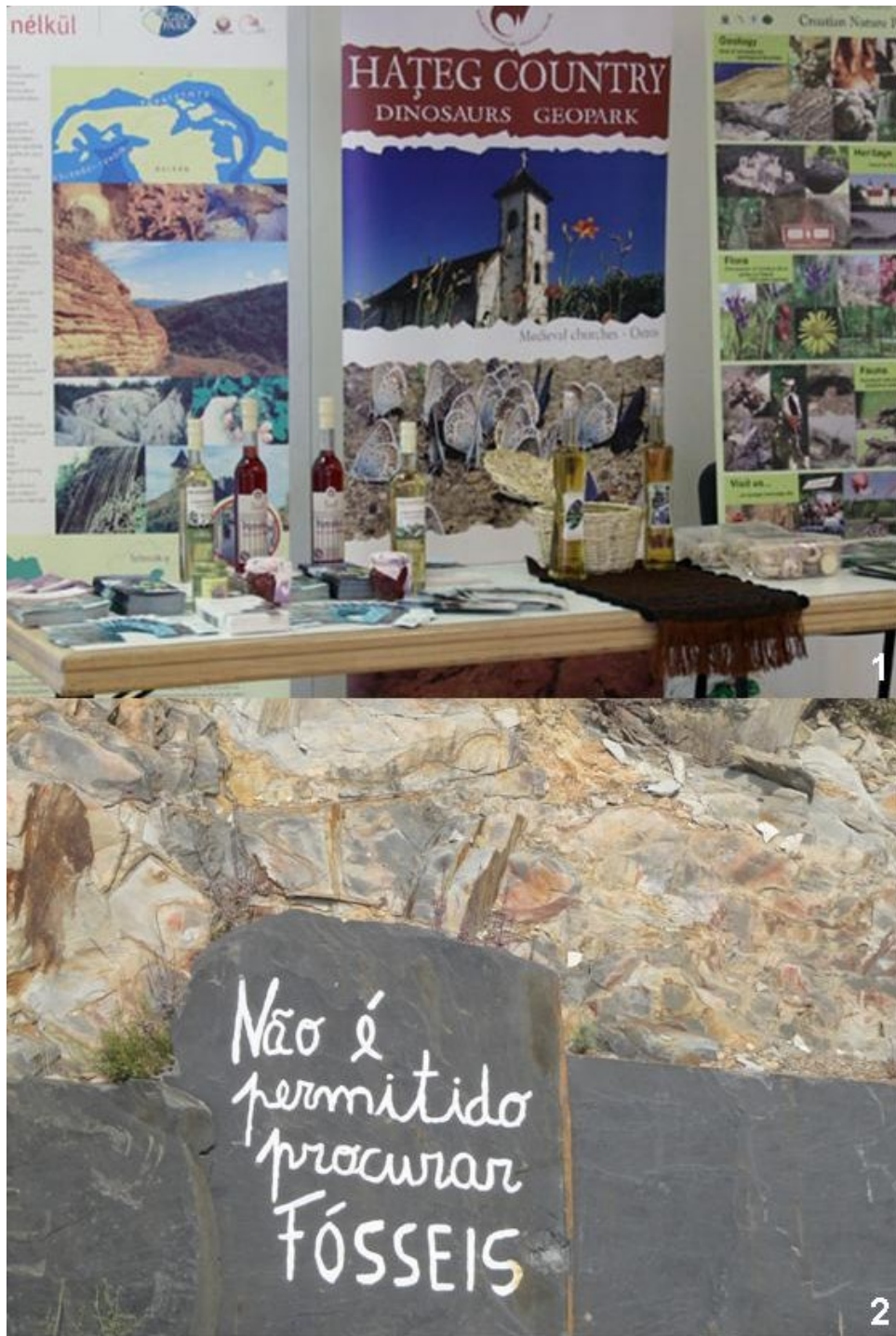


## Plate III



**Geotourism in UNESCO Geoparks.** Fig. 1. The touristic trails in the Slovenia/Austria transborder, Karavanke/Karawanken Geopark include mines, caves, cultural sites which are crossed by the visitors in small underground trains, canoe boats, bicycles and mostly by walking on forest and mountain pathways; Fig. 2. People of different ages come to the Lanzarote Geopark in the Canary islands of Spain attracted by the spectacular volcanic rocks and landscapes; Fig. 3. Getting acquainted with the beauty of the landscapes in the Adamello-Brenta Geopark in Northern Italy. Source: Photo gallery of UNESCO European geoparks organized in the Karawanke/Karawanken Geopark, March 2018.

## Plate IV



**Preservation and valorization of the heritage in UNESCO geoparks.** Fig. 1. The local products from the geoparks are presented in special exhibitions and fairs organized during UNESCO Geopark conferences; Fig. 2. Strict rules and interdictions are applied in UNESCO geoparks for the protection of heritage. Here an advertisement for not collecting fossils from the rock exposures in Arouca Geopark (Portugal), famous for the giant trilobites. Source: Photo gallery of UNESCO European geoparks organized in the Karawanke/Karawanken Geopark, March 2018.

What gives specificity to a geopark is its close connection to the human communities who participate in the development plan based on promotion and valorization of the natural and cultural heritage of the region. Contrary to a Nature park, the area of a geopark is densely populated, the humans from the region give, by their folkloric and artisanal traditions, a mark of specificity to each geopark. The local people are the main beneficiaries of a geopark, the tourism especially induces revenues for them: new pensions, restaurants, sell of local products, other services, including tourist guides. The belonging to the international community of UNESCO Global Geoparks is a matter of increasing the visibility for the region, a matter of proudness for the local people which may enhance partnerships and the creation of new jobs. Beneficiaries of a geopark might also become small enterprises, ecological and educational organizations and associations, based on established partnership with the geopark authority, all of these can find in a geopark the proper place of developing innovative projects. For universities, a geopark might become a “living laboratory”, where students could come in a direct contact with social, economic, cultural problems of a certain region with an important added value to their professional training.

A geopark offers the most appropriate frame for promoting the environmental education for children based on the geodiversity and biodiversity of the region, by pointing the geodiversity and biodiversity unity and interlinks in ecosystems, the nature’s vulnerability and needs for protection, in which the scholars have an important role to play. For teachers and researchers, a geopark also represents the most suitable place for innovation in teaching nature in field and experimenting new research methods. By their international statute, the UNESCO geoparks play an important role in providing to the national protected areas examples of good practice in the management of the nature. The strict rules applied in a geopark on which depends its periodical revalidation represent a such case.

In conclusion, the UNESCO geoparks, by their about 20 years of life, proved to represent a suitable organizational frame in the development of the integrative approaches: among the geodiversity and biodiversity in studying nature and developing management plans, between the natural and cultural heritage in valorization of the reaches of a region in its sustainable development. The geotouristic trails may become the most direct way to raise the region reputation by its heritage values. Good examples are the trails in which the geosites (places with significant rocks, minerals, fossils, nice panoramic views) are interlinked to places with interesting flora and fauna (butterflies, birds) and cultural ones (old traditional buildings, small village museums or handicraft places); such trails give to the visitors a more comprehensive, natural-cultural, view on the area, being thus more appreciated by the tourists.

**Acknowledgements:** The author thanks to Ms. Ana-Maria Răducan for the French translation of the abstract.

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