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Committee for the activities of the Council of Europe in the field of biological and landscape diversity (CO-DBP)

Working Group on the Geological Heritage

2nd meeting
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Room 2, Palais de l'Europe, Strasbourg

Draft Recommendation No. 1 (2003) on conservation of the geological heritage and areas of special geological interest in Europe

Document established by the Directorate of Culture and Cultural and Natural Heritage

Draft Recommendation No. 1 (2003) on conservation of the geological heritage and areas of special geological interest in Europe

The Committee of Ministers of the Council of Europe,

Recalling that geological heritage constitutes a natural heritage of scientific, cultural, aesthetic, landscape, economic and intrinsic values that needs to be preserved and handed down to future generations;

Recognising the important role of geological and geomorphological conservation in maintaining the character of many European landscapes;

Recognising that the conservation and management of geological heritage needs to be taken into consideration by governments in their national goals and programmes;

Noting that some areas of geological interest might be deteriorated if they are not taken into account in planning and development policies;

Conscious of the need to promote conservation and appropriate management of the geological heritage of Europe and in particular of areas of special geological interest;

Recommends that governments of member States:

- identify in their territories areas of special geological interest, the preservation and management of which may contribute to protect and enhance national and European geological heritage; in this context, take into account existing organisations and conservation programmes currently engaged in geological conservation (Appendix 2);

- develop national guidelines for managing areas of geological interest embodying the principles of inventory development, site classification, database development and site condition monitoring, to ensure sustainable use of areas of geological interest through appropriate management (Appendix 3);

- strengthen existing laws, or develop new laws, to protect areas of special geological interest and moveable items of geological heritage, making full use of existing international conventions (Appendix 4).

Appendix 1

Philosophy and practice of geological and geomorphological conservation.

Geology and geomorphology, as Earth sciences, describe the history and form of our planet. Geology helps us to trace this history in terms of how the face of the planet has changed through time, traced through the evidence of rocks, fossils and minerals that reveal past climates, environments, mountain construction, and continent movement. The history of life itself is also revealed, how it began and evolved, how new species appeared and how species became extinct. Geomorphology describes the landforms we see today – deserts, glaciers, coastlines and others – how they were formed and also provide a record of the recent past and current processes operating on our planet.

Rocks, minerals and fossils are the archives of the history of our planet and the history of life itself. They are evidence of the passage of geological time, revealing the changes that have shaped the Earth's surface over millions of years. These archives make it possible for us to understand the way our planet looks today and the diversity of its fauna and flora. As with archaeological artefacts, geological sites, minerals and fossils are vulnerable and are a non-renewable heritage that belongs to humanity.

Human society interacts with geology and geomorphology in many ways. Through direct exploitation of mineral resources, through reshaping the landscape by industrial or agricultural activity, by the development of infrastructure links. In some cases (for example by quarrying, mining, cutting of new roads) these activities reveal geological or geomorphological information of scientific, educational or cultural value. In other ways our activity destroys this information. Removal of glacial landforms for use as building material, armouring (and obscuring) of rock sections on coasts, infilling of old quarries with waste, are all examples of destructive activities.

Europe has a rich geological heritage. The scientific principles that founded the science of geology were developed in Europe where the varied geology and geomorphology provided an inspiration for original thought. Protecting this heritage is the objective of geological conservation ("geological" being taken here to relate to both geology and geomorphology), an activity that parallels and works with the protection of biodiversity and landscapes. The term "geodiversity" has been used to describe the nature of the heritage we are seeking to protect and enhance through this work.

Although not as well developed in practice as biodiversity conservation, and not as well known to the public, geological conservation is being actively promoted in Europe through a number of programmes and the activities of many individuals. The programmes that promote geological conservation seek to recognise areas ("sites") of geological and geomorphological interest, educate the public as to their value and develop management plans or strategies that will not only protect but also enhance their value. These areas may be small features created naturally (for example river gorges, coastal rocks, sand dunes, remnant features of past glaciations) or may be large-scale natural landscapes (for example glaciers, arid terrains, volcanic landforms). Some man-made features such as road cuttings, quarries, waste heaps from mines, may also be of geological heritage value.

Protection of the European geological heritage in all its forms requires consistent and persistent effort by government and non-government organisations on a pan-European scale. Programmes exist within Europe to promote the protection of geological and geomorphological features and the heritage values with which they are associated, but there is a need to develop these programmes further and create closer links between them. There is also a need to increase awareness of the importance of geological conservation to allow it to rank alongside and fully support biological conservation. Opportunities now exist to work towards these aims at the European scale working through the Council of Europe and involving member States and the various inter-governmental and non-governmental international organisations operating within Europe.

Appendix 2

Criteria for selecting areas of special geological interest and existing geoconservation programmes

GENERAL CRITERIA

Many European countries have developed, or are developing, inventory programmes to identify, describe and protect their important geological areas. These schemes reflect national attitudes to the science of geology in particular and to the landscape in general. They share, however, some common features, seeking to incorporate a number of criteria into national inventories and then protect important areas through designation as national parks, reserves, sites of interest etc. Common elements addressed, and taken into account by these national programmes in listing sites, are;

- rarity of geological/geomorphological phenomena within an area;
- the extent to which an area represents an important geological phenomenon;
- area size;
- value of the area to science;
- value of the area to education;
- degree of disturbance and potential threats.

THE IUGS GEOSITES PROJECT

Geosites is an International Union of Geological Sciences (IUGS) initiative to support identification of geological areas (sites) of international significance. The Geosites project was started in 1996 to help redress the imbalance in biological and geological conservation. This perceived imbalance derives from the national and international efforts directed towards biological conservation which often have no geological counterpart. Geosites supports national efforts and encourages the systematic development of site inventories at the national and regional levels and allows comparative studies. A key objective of the programme is to ensure scientifically based justification for sites selected for protection.

Geosites (both geological and geomorphological) are being selected and documented by regional groupings of geoscientists. Each country will contribute to the selection process by choosing and justifying its own sites in a regional geological context. Specialist groups (including input from scientists in IUGS commissions) will be formed to provide additional advice and counsel, as needed, and to carry forward assessment and documentation of particular topics, in support of national efforts

The development of a global inventory and database of geological sites is the aim of Geosites with a Global Geosites Working Group established to achieve this. The global terms of reference include the following:

- compile the Global Geosite inventory, based on the scientific assessment of key geo(morpho)logical sites;
- compile the Geosites database of key sites and terrains;
- use the Geosite inventory to further the cause of geoconservation and thus support geological science in all its forms, enabling on-site research and educational activity;
- support regional and/or national initiatives aiming to compile comparative inventories;
- participate in and support meetings and workshops that examine site selection criteria, selection methods or conservation of key research and educational sites;
- assess the scientific merits of sites in collaboration with specialists, research groups, associations, commissions, sub-commissions, etc.

Working under the above terms of reference, Geosites has an important functional role in developing a methodology for selecting sites in a European context and generating a database of such sites using comparative techniques. The programme is active in Europe and is promoted by the European Association for the Conservation of the Geological Heritage (ProGeo).

Proposed action:

Governments of member States may support the work of ProGeo within their areas of jurisdiction, encouraging collaboration with statutory national authorities, and in particular may support the work of ProGeo to develop scientifically based pan-European site inventories and the creation of associated databases.

EUROPEAN GEOPARKS

The European Geoparks programme is another tool to promote geological heritage in Europe, but seeks to include social and economic factors. The programme has the following aims and principles.

- A European Geopark is a territory which includes a particular geological heritage and a sustainable territorial development strategy supported by a European programme to promote development. It must have clearly defined boundaries and sufficient surface area for true territorial economic development. A European Geopark must comprise a certain number of geological sites of particular importance in terms of their scientific quality, rarity, aesthetic appeal or educational value. The majority of sites present on the territory of a European Geopark must be part of the geological heritage, but their interest may also be archaeological, ecological, historical or cultural.

- The sites in a European Geopark must be linked in a network and benefit from protection and management measures. A European Geopark must be managed by a clearly defined structure able to enforce protection, enhancement and sustainable development policies within its territory.

- A European Geopark has an active role in the economic development of its territory through enhancement of a general image linked to the geological heritage and the development of Geotourism. A European Geopark has direct impact on the territory by influencing its inhabitants' living conditions and environment. The objective is to enable the inhabitants to reappropriate the values of the territory's heritage and actively participate in the territory's cultural revitalisation as a whole.

- A European Geopark develops, experiments and enhances methods for preserving the geological heritage.

- A European Geopark has also to support education on the environment, training and development of scientific research in the various disciplines of the Earth Sciences, enhancement of the natural environment and sustainable development policies.

Critical differences between "Geosites" and "Geoparks" are in scale and the intention of the latter to include socio-economic factors and to encourage and recognise opportunities for rural regeneration within Europe. As presently constituted, the European Geoparks programme has the capacity to integrate groups of Geosites into a single park with the intention of promoting the educational and economic use of such areas.

Proposed action:

Governments of member States may work with the European Geoparks programme to identify terrains within their jurisdiction that may merit this form of recognition.

EUROPEAN DIPLOMA OF PROTECTED AREAS

The European Diploma for Protected Areas was established by the Council of Europe to protect natural and landscape heritage, seeking to recognise protected areas that are of truly European, rather than national or regional, significance. The Diploma is awarded on the basis of natural heritage or landscape value, level of protection and state of conservation. Conditions for the award of the Diploma are strict but it can be awarded to natural or semi-natural areas that have important biological, geological or landscape value. These values may be expressed scientifically, culturally or aesthetically. In all cases appropriate protection systems must be in place.

The award is time limited so regular monitoring and regular re-assessment are needed to ensure renewal of the Diploma. This regular review encourages a high level of protection for Diploma sites. The Diploma also encourages networking of managers and sharing of experience. The Diploma also provides – through its recognition of biological and geological phenomena – a useful model for integration of a range of natural heritage values into a protected area system.

Sites awarded Diploma status include 'strict' geological sites such as the palaeontological site of Ipolytarnoc Nature Conservation Area (Hungary) but extends to wider landscapes with important geological features such as the karst landscape at Karlstejn in the Czech Republic and the volcanic terrains of Teide in Spain.

The Council of Europe acknowledges, through the Diploma, that productive collaboration between protected area programmes is important at the European level, and recognises the possibilities of collaboration with UNESCO and the IUCN as examples of such possible joint working.

WORLD HERITAGE CONVENTION

Background

In 1972 the General Conference of UNESCO adopted the Convention concerning the Protection of the World Cultural and Natural Heritage. The Convention provides for the creation of the World Heritage Committee, its Bureau and the World Heritage Fund. The Operational Guidelines for the Implementation of the World Heritage Convention allow for identification, on the basis of nominations submitted by States Parties, of cultural and natural properties "*of outstanding universal value"* which are to be protected under the Convention and to list those properties on the World Heritage List.

The Operational Guidelines for the Implementation of the World Heritage Convention define "natural heritage" as follows:

- "*natural features consisting of physical and biological formations or groups of such formations, which are of outstanding universal value from the aesthetic or scientific point of view;*

- *geological and physiographical formations and precisely delineated areas which constitute the habitat of threatened species of animals and plants of outstanding universal value from the point of view of science or conservation;*

- *natural sites or precisely delineated natural areas of outstanding universal value from the point of view of science, conservation or natural beauty".*

The Convention is therefore capable of recognising a wide range of geological and geomorphological phenomena, including the relationship between cultural and natural values at a landscape scale.

European World Heritage sites

The World Heritage List currently contains the following European sites with specific geological and/or geomorphological interests. Many other European World Heritage sites have such features of interest but are not explicitly recognised in site citations.

European World Heritage sites with important geological and geomorphological interest (natural criteria (i))	
Site Name	***Country***
Messel Pit Fossil Site (Palaeontological site)	Germany
Caves of the Aggtelek Karst and Slovak Karst (Cave systems)	Hungary and Slovakia
Aeolian Islands (Volcanic island systems)	Italy
The High Coast (Post-glacial coastline)	Sweden
Dorset/East Devon Coast (Palaeontological and Earth history site)	United Kingdom
Giant's Causeway and Causeway Coast (Volcanic coastline)	
Pirin NP (Limestone landscape)	Bulgaria
Lake Baikal (Ancient lake system)	Russian Federation
Kamchatka Volcanoes (volcanic processes and landforms)	
Jungfrau-Aletsch-Bietschorn (Glacial processes and landforms)	Switzerland
Monte San Georgio (Fossil site)	

The objective of the World Heritage Convention is to recognise natural and cultural sites of *"outstanding universal value"*. As a consequence, the Convention will recognise a limited number of geological sites within Europe. It does serve, however, as a model for recognising the scientific, cultural and economic value of conserving geological and geomorphological phenomena. The model can be used to encourage other site and landscape based conservation approaches.

The first step to nomination of a World Heritage site is the preparation of a national Tentative List of sites of potential World Heritage status. The preparation, or revision, of national Tentative Lists provides an opportunity to recognise the role of geology and geomorphology within World Heritage. This can apply to sites that are of explicit interest for these aspects of science, or sites where geology and geomorphology underpin biological or cultural values.

Proposed action:

Governments of member States may:

- review the geological heritage of their areas of jurisdiction to identify geological/geomorphological areas of potential World Heritage status and add these areas to their national Tentative Lists of potential World Heritage sites;

- ensure that any underlying geological/geomorphological values of importance for a site are made explicit in the nomination documents for cultural and biological World Heritage sites.

Linking existing European programmes

There is no formal relationship between the various international or European programmes designed to recognise geological heritage. The respective roles of the various programmes are summarised below.

- The Geosites (IUGS and ProGeo) programme in Europe assists in the development of national site inventories and regional (trans-boundary) networks of sites.
- The European Diploma for Protected Areas recognises protected areas of European significance, including sites important for geological, biological and landscape values.

- The European geoparks (UNESCO and others) programme seeks to link geological and geomorphological features at the landscape scale to social and economic development.

- The World Heritage Convention (UNESCO) recognises sites of global significance but also provides a model for recognising geological heritage and linking it to biodiversity and cultural heritage.

Proposed action:

Member States may work with each of these programmes to identify areas of special geological significance and promote their recognition by whichever programme is most appropriate.

Governments may help to ensure that the work of these programmes is linked through an appropriate national body to ensure the most effective recognition and promotion of this area of nature conservation.

Governments may also wish to recognise that the existing European Diploma for Protected Areas could be used as, or developed into, a model for protecting geological heritage in a European context.

Appendix 3

Managing areas of special geological interest

Management of areas (sites) of special geological interest must be appropriate to the scientific interest and physical nature of the area concerned. Management of geological areas of interest must also take account of biodiversity issues and cultural considerations.

Effective management of areas of geological interest requires certain basic levels of information and understanding as to the nature, distribution and condition of sites. Clear scientific understanding of the value of areas of interest is an important pre-requisite to effective management.

Management of geological areas of interest within a national and European context will require development of the following:

1. recognition of the distribution and nature of this resource through development of national area (site) inventories;
2. classification of area (site) types according to:
a. scientific value (geological or geomorphological features displayed and their scientific importance);
b. physical characteristics (coastal, river valley, mountain, quarry, roadside exposure etc.);
c. specific management requirements of individual areas (sites);
3. implementation of site condition monitoring programmes based upon management requirements of specific area (site) types, these programmes to be linked to existing biodiversity monitoring programmes where possible;
4. creation of national/regional databases to include inventory and monitoring information. Such databases are essential for management of areas (sites) and the dissemination of information relating to their scientific and educational value. Internet-based databases should be the standard to ensure the maximum dissemination of information;
5. linking national "areas of special geological interest" databases to:
a. regional and local planning to ensure that planning authorities are aware of and take into account these special areas in creating/implementing plans;
b. biodiversity databases to ensure consistency of approach when managing natural heritage.

Proposed action:

Governments of member States may develop national guidelines for managing areas of geological interest embodying the above principles of inventory development, site classification, database development and monitoring programmes, these to be linked to existing programmes.

Appendix 4

Legislation for protecting areas of special geological interest and moveable geological heritage

Management of areas of special interest for geology, geomorphology or biodiversity requires a combined approach, using education, the development of management plans and the use of appropriate legal protection measures. Education (awareness raising) and effective management planning are essential but need to be underpinned by the law.

Legal measures to protect "environmental capital" in the form of biodiversity or geodiversity will vary according to individual national approaches. These approaches will reflect:

- national legal systems;
- different cultural approaches to protection of the environment;
- the physical differences in national landscapes;
- the different historical perspectives underlying current legal measures;
- traditional rights and activities.

PROTECTING AREAS OF GEOLOGICAL IMPORTANCE

Areas of geological importance are subject to a range of threats that may damage or totally destroy them. Such threats may come from such sources as rural or urban development projects, coastal engineering work, or excessive visitor pressure and usage.

Legal measures for area (site) protection should define the nature of the environmental resource to be protected, fix penalties for committing damaging acts and assign responsibility to the appropriate agencies.

Proposed action:

Governments of member states may consider:

- developing and implementing new laws if such areas cannot be protected by existing laws;
- strengthening existing laws to increase protection;
- integrating the legal protection of geological areas of interest with protection of biodiversity;
- using the existing range of international instruments to protect sites including World Heritage, the European Landscape Convention and the Habitats Directive;
- the implementation of new or existing laws for the protection of areas of geological importance, these to be linked to development of national site inventories and the development of national databases of sites.

PROTECTING MOVEABLE GEOLOGICAL HERITAGE WITHIN NATIONAL BOUNDARIES

The legal protection of areas of special geological interest (geosites, geoparks, geotopes etc.) will provide protection from a variety of damaging activities, including protection from damage due to removal (collecting) of materials of scientific interest. Moveable geological materials may be collected for various reasons, such as:

- scientific study;
- commercial sale;
- use in education;
- curiosity value.

In certain circumstances, collection from areas of geological importance may be damaging to the area itself, or cause loss of valuable scientific information, for various reasons:

- physical damage may be caused to rock formations by excessive, inexpert or careless collecting;
- specimens may be destroyed or damaged during the act of collection;

- collecting of rare/unusual specimens by non-specialists or commercial collectors may result in the disappearance of important scientific specimens into private collections;
- specimens collected in one country may be exported to collectors or museums in another country, with a perceived loss of "cultural" heritage to the country of origin.

Many European countries employ wildlife legislation, nature conservation legislation, monument protection legislation or other legal instruments to protect areas (sites) from damage through collecting. In other cases control is exercised by education programmes and voluntary codes of conduct.

Proposed action:

Governments of member States may review their exiting legal and voluntary control methods to ensure moveable geological heritage is protected by appropriate legal means.

PROTECTING MOVEABLE GEOLOGICAL HERITAGE ACROSS NATIONAL BOUNDARIES

Geological specimens collected in one country may be exported to collectors or museums in another country, with a perceived loss of "cultural" heritage to the country of origin. Such international trade can be the subject of national or international control measures.

Within the European Union, Article 30 of the Treaty of Rome exempts certain categories of material from the rules on the single market and relates specifically to the protection of national treasures possessing artistic, historic or archaeological value. Geological materials do not appear to be covered by Article 30 preventing export control by individual EU states in respect of material destined for other member States. Such controls could be applied to geological material destined for export to non-EU States and EEC Council Regulation No 3911/92, which regulates the export of cultural goods outside the EU, specifically includes palaeontological material within its definition of "cultural goods" (at A 12(b) of the Annex). Control over the export of fossils by virtue of the EC Regulation would only apply in respect of exports outside the EU, and would not apply to scientifically valuable rock or mineral specimens, only to fossils.

The 1970 UNESCO Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property is an international agreement that attempts to control the movement of a wide range of "cultural" items. Article 2 of the Convention states that the *"illicit import, export and transfer of ownership of cultural property is one of the main causes of the impoverishment of the countries of origin of such property and that international co-operation constitutes one of the most effective means of protecting each country's cultural property…".*

Article 1a of the Convention refers to objects of "palaeontological interest" providing an opportunity to use this instrument for controlling movement of palaeontological material, including individual specimens, and Article 10 requires signatory countries to introduce a certification scheme that would specify that individual items were being legitimately exported.

The 1970 UNESCO Convention therefore offers a mechanism to control movement of individual fossil specimens (although not rocks or minerals), principally through introducing certification mechanisms to ensure only authorized transfers occur across national boundaries.

Proposed action:

Governments of member States may consider signing the 1970 UNESCO Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property and the introduction of a certification scheme to ensure fossil specimens are legitimately exported.