European Federation of Geologists

# EFG STRATEGIC POSITION

# Geodiversity, Geoheritage & Geotourism: Advancing the Future Sustainability of Europe and Preserving the Memory of The Earth

## EFG Panel of Experts on Geological Heritage – December 2023

**Although they have been defined more than 30 years ago, the concepts of geodiversity, geoheritage and geotourism continue to be little known in society and, as a result, are undervalued in various public policies and strategies. In this regard, the European Federation of Geologists highlights the importance of geodiversity as a support for biodiversity and as a basis for the prosperity and well-being of humankind, as well as the importance of geoheritage for preserving the Memory of the Earth. Geotourism also offers an opportunity to create unique experiences while building public awareness, fostering local sustainable development and promoting conservation of geoheritage. This document is the first step in the development of an Action Plan for an EU Geodiversity, Geoheritage & Geotourism Strategy.**

The concepts of geodiversity, geoheritage and geotourism were defined in the 1990s but so far have been largely overlooked in the EU Nature and Tourism policies and strategies. However, they are important to achieve sustainable biodiversity, land use and socio-economic development.

The environment comprises geological and biological elements and processes that cannot be considered separately. Geodiversity is part of nature and geoheritage is part of natural heritage.

Although society has already relatively good knowledge about biodiversity and its importance, there is a huge gap in awareness regarding the contribution of geodiversity to natural capital, ecosystems services and human well-being.

Numerous localities provide us with the evidence to reconstruct the billions of years of history of our planet and the evolution of life on it. They are 'time capsules' that preserve the Memory of the Earth and constitute our geoheritage.

Learning about geodiversity and geoheritage through geotourism, not only promotes awareness of their values but also their conservation, contributing to the sustainable development of local communities.

### 1. Geodiversity

This concept represents «*the variety of rocks, minerals, fossils, landforms, sediments, and soils, together with the natural processes that form and alter them. It includes past and present geological and geomorphological features and processes that record the history of the Earth and the evolution of life forms as represented in the geological record, including plants and animals and their habitats.*

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*The elements of geodiversity provide the foundation for life on Earth, and they maintain natural capital and ecosystem services.» (*Crofts *et al*., 2020).

Geodiversity can enable a far clearer understanding of the Earth systems that shape the world we live in today, as well as the crucial events and processes that are imprinted in the geological record.

1. **It is the reflection of the geological and geomorphological phenomena** that drastically modify our planet and its landscapes, and that may have a consequential impact on people and wildlife.
2. **It underpins life on Earth and its ecosystems, having a profound influence** on biodiversity and its evolution.
3. **It is essential** to the economy, social development, historical and cultural heritage, as well as human leisure, health, and well-being.
4. **It plays a pivotal role** in both promoting and shaping the more sustainable use of natural resources and in the achievement of the UN Sustainable Development Goals (Agenda 2030).
5. **It can help to inform nature-based solutions** to the management of natural hazards such as those arising from weathering and erosion, flooding, sea-level rise and landslides.
6. **It links the people, cultures and environments of Europe** and shapes our identity and 'sense of place', having a powerful influence on our development as a species, and as a source of inspiration for both science and the arts.
7. **It is a rich source of** evidence for the evolution of life on Earth, ancient environments, and past climates as well as extinction events. Such learning about the past can provide a key for humans to understand, explain and plan for future environmental changes.
8. **As a resource for education and research**, it can promote cross-curricular and life-long learning as well as **provide the basis of a range of green tourism and recreational opportunities** based on its **aesthetic, ecological, cultural, artistic and spiritual values.**
9. It is **an integral part of nature and the natural environment**, and its resilience cannot be taken for granted: some parts of geodiversity – particularly those valued as **geoheritage** – **require conservation and active management** to harness benefits and counter threats.
10. Geodiversity plays a fundamental part in **delivering ecosystem/geosystem services** (regulating, supporting, provisioning, cultural and knowledge services; Gray, 2004). It provides the foundations and habitats for all living things. It is the source of materials used to build our towns and cities; it provides our energy resources, including renewable energy and the materials mined to manufacture wind turbines and solar panels; it allows us to store our waste, provides us with freshwater and attenuates our pollution; it helps us to understand and predict natural hazards, it inspires our artists and provides us with incredible landscapes from mountains to coasts.

## 2. Geoheritage

Geoheritage refers to the those features and phenomena of geodiversity which primarily have special scientific value as a record of Earth's history and geological processes, but may also have supporting educational, cultural and tourism values.

1. It is **important for unravelling the history and the evolution of life on our planet, thus preserving the Memory of the Earth.**
2. **Geological collections** (minerals, rocks, ores, fossils) – moveable geoheritage objects – and heritage stones are an important part of geoheritage that should not be neglected. Together with geological sites (immoveable geoheritage), they offer valuable information to understand and interpret major events in the evolution of life on Earth, ancient environments, and past climates, to establish the age of rocks and to correlate rock units in different parts of the world.
3. Geoheritage sites and features are **under increasing pressure and threats** from human activities (including urbanisation, infrastructure development, land-use changes, mineral extraction, and coastal protection, as well as activities that disturb the oceans together with seabed geomorphology, sediments, and processes) and from climate change.
4. **Implementing geoconservation measures on geoheritage sites, objects (collections) and heritage stones** prevents their destruction or damage and **allows preserving special geoheritage phenomena and features for our present and future generations**. **Geoheritage sites, objects and heritage stones** play not only crucial role in research, education and spreading basic geological knowledge but also represent great potential for sustainable development and tourism.
5. **Conservation of geoheritage is also important to preserve human history**, allowing us to acknowledge and understand our place in the history of the planet.
6. **Geoheritage offers unique opportunities for the valorization and promotion of regions** and to enhance the appreciation of their environments.
7. **European Geoparks** are examples of the sustainable economic use of this georesource.
8. **Geoheritage sites, collections and heritage stones** can play an important role in the education of school children, the public and professionals concerning the complex relationships between geology, soil, climate, biodiversity and land use, as well as changes in flora, fauna and land use over time.

## 3. Geotourism: Capitalising Geodiversity and Geoheritage

Geotourism is a form of tourism, specifically focused on geology and landscape, helping travelers to increase their knowledge on natural wonders and the ways to preserve them (Hose, 2000; Newsome & Dowling, 2010). Many landscapes, geological phenomena and fossil sites have long attracted tourists, artists and explorers for their aesthetic, cultural and spiritual values, and artistic inspiration.

1. Geotourism offers a whole new, largely under-developed, sector for many localities, being a **sustainable tourism business opportunity**. It can be a factor for local job growth, either directly or as a multiplier effect. To develop a sustainable tourism business opportunity, interest parties should collaborate with tourist organisations at all levels.

2. **It can act as an attractive pathway to showcase the value of geoscience.** Geotourism has great potential for creating stronger and more positive relations with representatives of local communities, local authorities and local businesses. It provides a basis for showing the importance and relevance of geodiversity and geosciences to different target groups. It offers an opportunity

to promote an understanding of earth sciences, and the conservation of geodiversity through appreciation and learning.

3. Geotourism **demonstrates the real-life importance of environmental protection**. It enables convenient, non-confrontational forums to discuss our use of natural resources. It is a key factor in cultural heritage, the basis of human history and conflict and how people live. It provides opportunities for demonstrating the reality of climate change and education about climate change. Thus, it can be a **vector for greater awareness and dialogue on wider issues and solution building.**

## 4. Proposal for an Action Plan for an EU Geodiversity, Geoheritage & Geotourism Strategy

As stated above, geodiversity gives us evidence of past climate and landscape changes and their causes, and thus helps us to understand and plan for the impacts of future environmental changes and to predict natural hazards. Understanding of geodiversity plays a determinant role in combating climate change, modification of hydrological and biogeochemical cycles, increasing pollution of land, water and air, loss of biodiversity, habitat fragmentation, rapid loss of productive farmland, changes in land cover and land-use, reduced water supply, and decrease of ecosystem services.

Therefore, inclusion of geodiversity is essential to accomplish most effectively the EU Nature Directives & Biodiversity Strategy for 2030, being also a key element to consider in the Nature Restoration Law, and in all laws and policies dealing with nature and nature protection. Geodiversity is also paramount to deliver the European Green Deal, The Critical Raw Materials Act, The EU Soil Strategy for 2030 and the UN Sustainable Development Goals (Agenda 2030).

Being regarded as the 'treasures of the Earth', geoheritage sites, collections and heritage stones have a special role in preserving the 'Memory of the Earth'. Therefore, considering them in policies dealing with nature and nature protection is safeguarding and ensuring the immortalization of our common history, allowing us to acknowledge and understand our place in the history of the planet.

Europe has outstanding examples of geodiversity and geoheritage. In fact, many touristic offers and tourism actions are promoted based on geodiversity and geoheritage, but these elements often end up in the background in favour of historical and cultural aspects of a region.

Geotourism offers an opportunity to capitalize geodiversity and geoheritage, creating unique experiences while building knowledge (Geoeducation), fostering local sustainable development and generating revenues and wealth. Thus, it is in Europe's best interest that geotourism is considered in tourism strategies and policies.

Several resolutions, recommendation, manifestos and initiatives regarding the importance and the need to conserve geodiversity and geological heritage have been already proposed by several organizations (Annexe 1).

Despite these efforts, geodiversity and geoheritage remain poorly integrated in EU policies and strategies. The same applies to geotourism. Therefore, the EFG Panel of Experts on Geological Heritage is preparing an Action Plan for an EU Geodiversity, Geoheritage & Geotourism Strategy to help the European institutions to address these gaps and to develop a more sustainable future based on realising the values and benefits of including the whole of nature in their policies and strategies. In this way, the European Federation of Geologists stands ready to strongly support the European institutions in finding solutions to challenges associated to nature and geoconservation, playing a part in the development of European policies that include geodiversity and geoheritage in Europe and that can foster geotourism sustainable growth.

The **European Federation of Geologists (EFG)** is a professional organisation representing geoscientists from 28 national member associations across Europe. It contributes to the protection of the environment, public safety, the responsible exploitation of natural resources, and to the public awareness of geosciences' importance to society. EFG confers the internationally recognised European Geologist ("EurGeol") professional title to suitably qualified candidates. For more information see: https://eurogeologists.eu/.

The **EFG Panel of Experts (PoE) on Geological Heritage** contributes to the development of European Policies by providing high-quality information and preparing advisory documents for the European Commission and EU Parliament. The PoE consists of 13 experienced professionals from several European countries.

## References


CO-DBP/GEO, 2003: Philosophy and practice of geological and geomorphological conservation. 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, Report of the Meeting, 9-19, Strasbourg (16 September 2003).

Crofts, R., Gordon, J.E., Brilha, J., Gray, M., Gunn, J., Larwood, J., Santucci, V.L., Tormey, D., Worboys, G.L., 2020. Guidelines for Geoconservation in Protected and Conserved Areas. Best Practice Protected Area Guidelines Series No. 31. IUCN, Gland, Switzerland.

Gray M., 2004: Geodiversity: Valuing and Conserving Abiotic Nature. John Wiley & Sons, Ltd, 434 pp, Chichester/UK.

Hose T. A., 2000: European 'Geotourism' - geological interpretation and geoconservation promotion for tourists. - In Barettino D., Wimbledon W. A. P., Gallego E. (Eds.) Geological Heritage: its conservation and management, 127-146, Madrid, Spain

Newsome, D., & Dowling, R. K., 2010: Setting an Agenda for Geotourism. - In Newsome D. & Dowling R. (Eds.) Geotourism: The Tourism of Geology and Landscape, Goodfellow Publishers Limited, 1-12.


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## Annexe 1

Examples of resolutions, recommendations, manifestos and initiatives regarding the importance and the need to conserve geodiversity and geoheritage:

- IUGS Zumaia Declaration (October 2022).
- UNESCO International Geodiversity Day (November 2021). https://www.geodiversityday.org/
- EFG Recommendation on Environmental sustainability – education and training (May 2021).
- EFG response to the Public Consultations on the EU Soil Strategy (April 2021).
- IUCN [International Union for Conservation of Nature], 2020. WCC-2020-Res-074-EN. Geoheritage and protected areas. IUCN, Gland, Switzerland. https://portals.iucn.org/library/node/49213.
- EFG Review of IPBES Global Assessment of Biodiversity and Ecosystem Services (August 2017).
- IUCN [International Union for Conservation of Nature], 2012. Resolutions and Recommendations, World Conservation Congress, Jeju, Republic of Korea, 6–15 September 2012, WCC-2012-Res-048, Valuing and conserving geoheritage within the IUCN Programme 2013–2016. IUCN, Gland, Switzerland. https://portals.iucn.org/library/node/44015.
- IUCN [International Union for Conservation of Nature], 2008. Resolutions and Recommendations adopted at the 4th IUCN World Conservation Congress. Resolution 4.040: Conservation of geodiversity and geological heritage. IUCN, Gland, Switzerland. https://portals.iucn.org/library/node/44190.
- The Braga Declaration (September 2005).
- EU Manifesto on Earth Heritage and Geodiversity (November 2004).
- Recommendation Rec(2004)3 on conservation of the geological heritage and areas of special geological interest *(Adopted by the Committee of Ministers on 5 May 2004 at the 883rd meeting of the Ministers' Deputies).*
- Advice documents to the Working Group on Geological Heritage (Council of Europe, Cultural and Natural Heritage Department; CO-DBP/GEO, September 2003).
- The Dublin Declaration (September 2002).
- The Madrid Declaration (November 1999).
- The Malvern Resolution (1993).
- The Digne Declaration (Declaration of the Rights of the Memory of the Earth; 1991).
- IUGS Commission on Geoheritage and IUGS world geological heritage sites programme. https://iugs-geoheritage.org/
- UNESCO's global geoparks programme. https://www.unesco.org/en/iggp/
- ProGEO [International Association for the Conservation of Geological Heritage]. http://www.progeo.ngo/index.html.