



# Key Geoheritage Areas

Scoping study and guidelines

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## Scoping study and guidelines

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## Acronyms

ASSP – Auxiliary Boundary Stratotype Section and Point (may also be referred to as a Standard Auxiliary Boundary Stratotype, or SABS)

GBF – Kunming-Montreal Global Biodiversity Framework

GGN – Global Geoparks Network

GSSP – Global Boundary Stratotype Section and Point

IAG – International Association of Geomorphologists

IGU – International Geographical Union

IPO – Indigenous People Organisation

IUCN – International Union for Conservation of Nature

IUGS – International Union of Geological Sciences

KBA – Key Biodiversity Area

KGA – Key Geoheritage Area

ProGEO – International Association for the Conservation of Geological Heritage

SDG – Sustainable Development Goals

UIS – Union Internationale de Spéléologie

UGGp – UNESCO Global Geopark

UNESCO – United Nations Educational, Scientific and Cultural Organization

WCC – World Conservation Congress

WCPA – World Commission on Protected Areas

WGGA – Working Group on Geoheritage Assessment

WH – World Heritage

## 1. Setting the context

IUCN's World Conservation Congress (WCC) 2020 adopted [Resolution 074](#) on the 5 November 2020 which, amongst its operational paragraphs, requested the Director General of IUCN and the IUCN World Commission on Protected Areas (WCPA) to: *"...support the development of a detailed study envisaging the establishment of a future IUCN initiative on Key Geoheritage Areas, as a complement to the existing Key Biodiversity Areas programme, in order to protect geoheritage sites of global conservation significance and move towards more integrated nature conservation"*.

The IUCN members that proposed the Resolution, the WCPA Geoheritage Specialist Group –with input from the IUCN Secretariat focal point for this Resolution (T. Badman, Head of Heritage and Culture)– established a working group to develop this study, which includes proposals for new Key Geoheritage Areas Guidelines. The requested document was drafted by the working group and submitted for consultation, with the intention of obtaining feedback from across IUCN, in particular from IUCN members and Commissions, as well as from other geoheritage experts and organisations. The current version of the document incorporates the valuable comments and suggestions received during the consultation and also the amendments provided by two external reviewers.

The initiative considers IUCN's approach to **Geodiversity**, **Geoheritage**, and **Geoconservation** which are understood as follows:

**Geodiversity** is the variety of rocks, minerals, fossils, landforms, sediments and soils, together with the natural processes that form and modify 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 fossils of organisms and their habitats. Geodiversity elements are part of natural capital and contribute to all types of ecosystem services. In 2021 UNESCO accepted the request of the geoscientific community to establish the International Geodiversity Day, on the 6th October each year, a request that was sponsored by IUCN.

**Geoheritage** corresponds to those elements, features and processes of geodiversity, either singly or in combination, that are considered to have significant value for scientific, educational, cultural, spiritual, aesthetic, ecological or ecosystem reasons and therefore deserve conservation. Internationally, geoheritage is recognised within two UNESCO's initiatives: The Convention for the Protection of World Cultural and Natural Heritage – also known as the World Heritage Convention (in particular through criterion viii) and the International Geoscience and Geoparks Programme (IGGP). At the national, regional and local levels many protected areas conserve geoheritage, often in combination with aspects of biodiversity.

**Geoconservation** is the practice of conserving, enhancing and promoting awareness of geoheritage.

Annex 2 provides additional definitions for other key terms.

The KGA Programme will draw as appropriate from the [KBA Programme](#), established in 2016, including the [IUCN Standard for the identification of Key Biodiversity Areas](#), [The KBA Guidelines](#), the KBA governance structure and [proposal process](#).

## 2. Definition and aim of KGA

Key Geoheritage Area (KGA) is defined as: *"area with well-defined boundaries where significant geological features (including rocks, minerals, fossils, sediments, soils, landforms and landscapes) represent past or on-going Earth processes contributing substantially to the global understanding of the planet's history and its life-support systems and provide opportunities for increasing public awareness, knowledge and understanding of geoheritage conservation. In addition to their scientific value as geoheritage, KGA may also have supporting cultural, ecological, aesthetic, and/or educational values"*.

In order to simplify any text, reference to "geological features and processes" in the KGA context includes all types of rocks, minerals and structures, fossils, soils, sediments, landforms and landscapes formed through physical, chemical, and biological processes, as usually studied within the discipline of Geosciences.

The primary aim of this initiative is to recognise and conserve geoheritage sites of international significance. It seeks to communicate and promote this information to raise public awareness about the value of these sites, foster their conservation and advance geoconservation practices worldwide.

## 3. The need for and opportunities for KGAs

Considering the existence of other international designations, why are KGAs necessary as a new category of sites within which to frame nature conservation internationally? The need and justification for this initiative include the following:

- As geodiversity is part of nature and geoheritage is part of natural heritage, there is a crucial need for consistent advice on how they can be recognised as a basis for defining strategies for management, protection, conservation and sustainable use and development;
- Geoheritage is at risk due to a lack of, or ineffective, international and national conservation approaches;
- While many areas of geological and geomorphological importance have been recognised through existing international programmes (including UNESCO World Heritage Sites, UNESCO Global Geoparks, UNESCO Biosphere Reserves; IUGS GSSPs, ASSPs, Geological Heritage Sites and Heritage Stones and the Ramsar Convention on Wetlands), there is still a need to raise public awareness about geoheritage and to promote the involvement of national and local administrations and communities in its identification, protection, management, conservation and sustainable use;
- Information and approaches regarding the conservation of geosites with international significance are currently fragmented and dispersed among various organisations (UNESCO, IUGS, IUCN, national and regional institutions and databases). The KGA initiative seeks to establish a global reference database for internationally recognised geosites, aiming to enhance knowledge and promote standardised management practices.
- KGAs will include marine areas outside state boundaries, and hence not included in current nature protection regimes, but are nevertheless of high geoconservation importance. Such areas can contribute to raising public awareness of the need to initiate protection systems for marine geoheritage areas of international significance beyond national jurisdictions;



- Through the KGA initiative, site managers can be provided with information on and examples of best geoconservation practices, regardless of the formal designation label under which they operate (including WH, UGGp, Biosphere Reserve, Protected and Conserved Area, etc.);
- The KGA initiative will promote the designation of new protected and conserved areas or the expansion of existing ones. Where key biological and geoheritage values overlap in such areas, the recognition of KGAs can foster integrated management to the benefit of both biological and geological interests.
- Transboundary KGAs can foster the international cooperation on nature conservation;
- The promotion of KGAs will raise societal awareness of the value nature as a whole, contributing to fostering nature restoration initiatives and nature-based solutions;
- Together with KBAs, KGAs will provide a comprehensive network of the globally most important areas for nature conservation where protection and management should be prioritised, and which will support initiatives of national and local administrations;
- KGAs will play a key role in preventing the loss or degradation of geodiversity, which in turn will help address declines in biodiversity, as geodiversity provides the fundamental framework that supports biodiversity.
- KGAs can provide support to local communities and indigenous peoples through opportunities to ensure the conservation of important sites, including those with additional values –such as cultural, ecological and aesthetic– connected to their geoheritage. This could include opportunities to share in any benefits from the recognition and responsible use of the geoheritage, such as employment, economic investment, societal mobilisation, civic pride and improved scientific and educational understanding;
- The selection and protection of KGAs will help the international geoscientific community to better address the United Nations Sustainable Development Goals (SDGs) (Agenda 2030) and to advise decision-makers accordingly.



Photo: Porto Santo Island, UNESCO Biosphere Reserve, Portugal © José Brilha

## 4. Identification of KGAs

The nomination of KGAs is founded on the scientific value of key geological features and active processes of clear international significance. The working group recommends that the identification of KGAs should be based on the following five distinct criteria (Table 1).

Table 1 – Criteria to assess the scientific value for the nomination of KGAs. Modified from Working Group on Geoheritage Assessment, Unpublished report, 2018, IUGS. The regional geographical and/or geological context is considered to be supranational but below the global level.

Criteria	Definition
Representativeness	A KGA is a significant example illustrating a geological process or feature that provides a substantial contribution to the understanding of the evolution of the Earth, including its climate and the evolution of life, in the regional geographical and/or geological context where the KGA is located, or to the advancement of geosciences in a broader context.
Rarity	A KGA presents a rare or exceptional record. This criterion can be assessed by the number of geosites showing similar geological features in the same regional geographical/geological context.
Type or key locality	A KGA is recognised for its importance as an international reference or model for stratigraphy (e.g., GSSP or ASSP), palaeontology, mineralogy, geodynamic processes, geomorphology, etc. in the regional geographical and/or geological context where the KGA is located.
Evidence and scientific knowledge	A KGA has an international significance based on a history of notable scientific publications on its geological features and which may include sites that have made, or have the potential to make, seminal contributions to the geological sciences.
Integrity	A KGA presents a sufficient and ongoing conservation status to ensure that the geological features or processes of significance can be fully safeguarded and maintained (including in the context of any fragility or vulnerability to both natural processes, e.g. weathering, erosion, and human actions, e.g. quarrying, specimen collection, land management activities such as forestry or farming).

To be classified as a KGA, a site should represent one or more of the criteria of **Representativeness**, **Rarity** and **Type or key locality**. These criteria should be supported by **Evidence and Scientific Knowledge** and with a consideration of its **Integrity**, a requirement that should be met and monitored from the moment of designation.

In addition to their scientific value, KGAs can also be characterised by cultural, ecological and aesthetic values, (Table 2), as well as their potential for educational and/or touristic uses. Additional values and uses should not be used to select or assess a KGA proposal. However, these values and uses may be important in terms of the significance of a KGA to local communities. Recognition as a KGA could encourage or complement local engagement efforts to protect and manage these sites. In this context, IUCN's IPO members were consulted regarding the inclusion of criteria related to recognising sites considering the indigenous and traditional knowledge.

The size of a KGA is directly related to the type and specific characteristics of the geological features that have recognised as having international significance. All major geological elements that justify the KGA status should be included within its boundary which should also be defined to facilitate appropriate management. The single KGA boundary may include a "functional zone", essential to the integrity of the KGA that can (a) facilitate management, or (b) allow the space for ongoing natural processes to function.

Table 2 – Framework to assess additional values for the nomination of KGAs. \* Modified from Verschuuren et al. (2021).

Values	Component of description	Definition
Cultural *	Association with geological features	The cultural value is directly associated with KGA's geological features and/or processes.
	Previous designation	The cultural value is already recognised by an international organisation or designation (e.g. UNESCO) or by a relevant national organisation of the country.
Ecological	Association with geological features	The ecological value is directly associated with the KGA's geological features and/or processes.
	Previous designation	The importance for species and/or ecosystems of the site or area is already recognized, e.g. as a KBA or through other international (e.g. UNESCO, IUCN) or national nature conservation designations.
Aesthetic *	Association with geological features	The aesthetic value is directly associated with KGA's geological features and/or processes.
	Previous designation	The aesthetic value is already recognised by an international organisation (e.g. UNESCO) or by a relevant national organisation of the country (e.g. the KGA is recognised as a natural landmark in the regional geographical context).

## 5. Geological themes

The international significance of a KGA is justified by the exceptional value of its geological features associated with one, or more, geological themes (Table 3) and within any regional geographical and/or geological context where the KGA is located. For instance, a proposal for a KGA in Switzerland within Theme 9 (Glacial and periglacial systems) will need to demonstrate the significance of the site in at least an Alpine context.

The selection of such themes for a site will also facilitate future organisation of and access to information about the KGA in any future database. It is envisaged that each geological theme will be coordinated by a scientific committee constituted by experts from different countries. Each scientific committee will be responsible for the evaluation of new KGA proposals submitted under each theme and to produce a recommendation about the designation as a KGA.

Table 3 – The feature(s) with international significance of the proposed KGA should be associated with one or more of these geological themes (modified from Mc Keever and Narbonne, 2021).

Geological themes	Explanation / Examples
Theme 1: History of planet Earth and the evolution of life	The record of major events in Earth history and the fossil record of life. This includes the co-evolution of the Earth and life and its stratigraphic record, as well as the recognition that the major tectonic, oceanographic, climate, cryogenic and astronomical events and processes that have affected our planet over geological timescales have also profoundly influenced the evolution and ecology of life on Earth, and that some major events in biological evolution have profoundly changed the Earth's surface and atmosphere.
Theme 2: Tectonic systems	Mountain ranges, convergent plate boundaries (subduction zones), divergent plate boundaries (ocean ridges), sliding plate boundaries (transform zones), continental rifting valleys and cratonic shields.
Theme 3: Erosional systems	Landscapes and landforms produced by the combined action of various surface processes (except those covered by other themes). Erosional systems are shaped by (a) weathering, (b) mass movements of various kind, (c) slope runoff, (d) fluvial erosion and e) subsurface processes such as piping.
Theme 4: Volcanic systems	Volcanoes and volcanic features in both marine and terrestrial environments.
Theme 5: Fluvial and lacustrine systems	Fluvial and lacustrine landscapes and their associated features. These are systems resulting from large-scale fluvial processes, which have formed and influenced the development of valleys, flood plains, river corridors, wetlands, and lakes, along with instream features and morphology.
Theme 6: Cave and karst systems	Systems developed predominantly by dissolution of soluble rocks, mainly carbonate rocks (limestone, dolomite, marble) and evaporite rocks (gypsum, salt), although they can also develop in siliciclastic and quartzite rocks. The drainage of these terrains is mainly underground, with closed depressions and sinkholes on the surface, and caves and other conduits and passages underground.
Theme 7: Coastal systems	Erosional and depositional processes and geomorphological features in coastal areas, such as cliffs, beaches, deltas, lagoons, and estuaries.
Theme 8: Marine systems	Includes the wide range of ongoing processes and geological features of marine areas and sea floor, including physical, chemical and biological processes, tectonic settings and sedimentary environments including coastal, continental shelf and slope, submarine canyons, abyssal plains, oceanic trenches, submarine ridges, oceanic islands and coral reefs.
Theme 9: Glacial and periglacial systems	Rocks, sediments, landforms, and landscapes developed by past or present glacial and periglacial systems.
Theme 10: Desert and semi-desert systems	Involves aeolian processes and landforms, as well as features produced by intermittent runoff and evaporation, including landscape features such as dunes and dune fields of various types and sizes, yardangs, deflation hollows, wadis and playa lakes.
Theme 11: Meteorite impacts	Features produced by the impacts of meteors, comets, asteroids and other extra-terrestrial objects with the Earth, including physical structures such as impact craters, impact-related rock-types, as well as major effects caused by them, such as tsunami and mass extinction.
Theme 12: Soils	Soils and their relation with parent rock, weathering and climate. It includes soil forming processes and palaeosoils.

## 6. Governance

The KGA initiative is proposed as a partnership, coordinated by IUCN, open to organizations with aims and activities directly related to the aims and objectives of the KGA initiative, for example: UNESCO, IUGS, GGN, IGU, ProGEO, IAG, UIS and Eurogeosurveys.

The intention is that IUCN would convene a governing council supported by a Secretariat and Committees, who would be responsible for the active maintenance of the initiative (Table 4). The KGA Council would include representatives from all partner organisations.

Table 4 – Governance model for the KGA initiative.

Bodies	Composition	Tasks (indicative)
KGA Council	One representative of each one of the organizations involved in the partnership.	Manages the partnership including the inclusion of new partners; each representative will promote the KGA initiative within their own organisation and beyond.
Executive Committee	6-10 members, unless otherwise agreed with the KGA Council half of the members invited by the KGA Council and the other half selected by it from the roster of experts.	Decides on KGA designation based on the recommendations provided by the Scientific Committees; assures the smooth running of the submission and assessment processes; maintains close contact with the 12 scientific committees; invites experts for the scientific committees; promotes the KGA initiative with key international and national partners.
12 Scientific Committees	The scientific committee for each theme would be composed by 6-10 experts unless otherwise agreed with the KGA Council; half of the members to be invited by the Executive Committee and the other half selected by it from the roster of experts.	Assess new KGA's proposals and make recommendations to the Executive Committee; Advise the Executive Committee, namely about eventual updates of procedures and on geographical balance of KGAs.
Advisory Committee	6 members, half invited by the KGA Council and the other half selected from the roster of experts.	Promotes best practices for KGA management; Advise the KGA Council and the Executive Committee about eventual updates of procedures or governance
Secretariat	At least 1 person (potentially provided by one of the partnership's organizations).	Maintains the KGA web-portal and submission platform; assists with the communications; coordinates governing body meetings.

Members of the various bodies, with the exception of the Secretariat, shall be appointed for a term of four years, with the option of renewal once only. Half of the members of the Executive, Scientific and Advisory Committees are nominated, while the other half are selected from a roster of experts. The Secretariat, in conjunction with the Council, shall establish and maintain a roster of experts that should have combined and proven professional experience relevant for the aims of the KGA initiative.

## 7. Designation procedure

The designation process for KGAs should be kept as simple as possible and without the need for significant resources.

Proposals for the nomination of new KGAs should be sent to the KGA Secretariat by an appropriate international scientific organisation (see Annex 1 for an indicative but not exclusive listing), either as its own proposal or as an endorsement of a proposal received from a national scientific or professional organization, geological surveys, public administration or from individuals/communities/NGOs (Figure 1). Similarly, a national scientific or professional geological organisation can make a submission or endorse a proposal received from individuals or NGOs. Indigenous Peoples and Local Communities are invited to take an active role in proposing KGAs and, if necessary, should receive support and advice from a national/international scientific organisation.

Independently of who submits a KGA nomination, the application dossier should ideally include endorsement letters from the national/local authority responsible for nature conservation and from the national agency for geosciences. The international geoscience community is also encouraged to take responsibility for the nomination and conservation of KGAs in deep-sea areas under international waters.

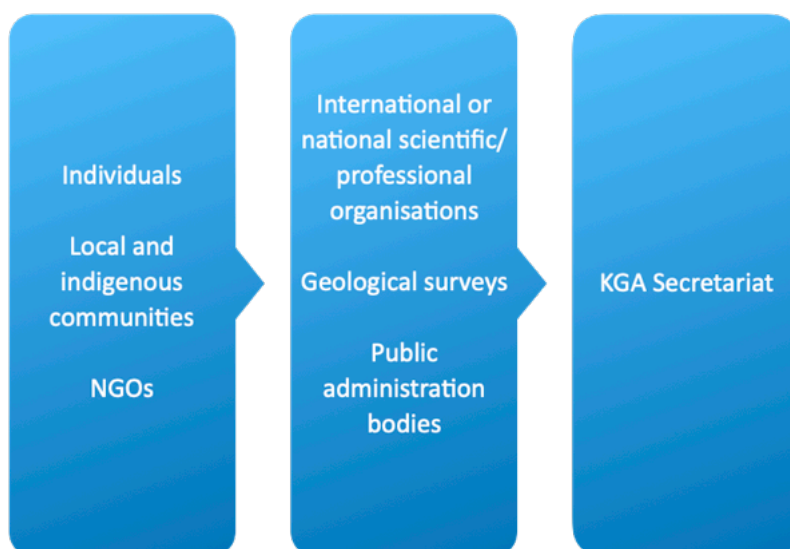


Figure 1 – Scheme of the submission of a new KGA nomination. The process may start at a local level but can also be initiated at any other level, before being submitted to the KGA Secretariat.

New KGA proposals should be submitted through an online platform. After confirmation that the submission is complete and was successfully received, the scientific committee of the respective geological theme will have online access to all submitted information and will make the assessment based on KGA criteria. Further information may be requested from the proposing organisation in order to facilitate the scientific committee's decision on the merit of the proposal. When a KGA proposal refers to more than one geological theme, the final decision must take into account the assessment made by each scientific committee.

After the assessment, the scientific committee will produce a recommendation on KGA designation based on a clear justification, of: **Agree**, **Not Agreed**, **Deferred**. In case of "Agree", a new KGA is designated. In a case of "Not Agreed", the proposal will be returned to the proponent with the reason as to why the nomination

was not accepted. Should the proposal be classified as "Deferred," the proposing party will be required to provide more comprehensive data within a six-month timeframe for a second evaluation by the scientific committee. Should no new information be provided within the specified timeframe, the KGA proposal will not be accepted. Proponents will be able to appeal to the KGA Committee if there is a case of clear disagreement with the evaluation made by one of the scientific committees.

If a certain scientific committee considers that a new proposal is not appropriately linked to their geological theme, the proposal can be transferred to a different theme and therefore to the correspondent scientific committee. In order to avoid an inappropriate concentration of KGAs under the same theme with similar geological features in the same regional geographical and/or geological context, scientific committees will be responsible for identifying underrepresented regions to the KGA Committee and Council, including those that may need additional support level from relevant governing bodies to enable the submission of proposals.

Although the submission of proposals will be open continuously, scientific committees will only make assessments for specific dates (for instance, in January and June of each year).

The submission of a new KGA application is independent of the existence of protection mechanisms already in place. However, there is an expectation that within three years after its designation, proper legal protection should be implemented for KGAs at risk, as well as effective management to guarantee the conservation of its geoheritage. KGAs can fall into one of three such categories:

- i. **Fully conserved KGA** – the geoheritage values are well maintained due to effective protection and/or management;
- ii. **Unthreatened KGA** – the geoheritage values are well maintained even if effective protection and/or management is non-existent. As these values are not affected by significant, known threats, immediate protection and/or management may not be essential. Nevertheless, such measures are recommended;
- iii. **KGA at risk** – the geoheritage values are under natural/human threat which may lead to loss or degradation. Immediate protection and/or management is required.

By the end of each year, the KGA Committee will address a formal letter to the national and/or local authorities with responsibility for nature conservation with information on the new KGAs designated in that that year in their country/territory and to urge them to assure their proper protection and management, especially if the KGA is considered at risk. It is not the intention of the KGA initiative to provide systematic monitoring of KGAs once designated; however, the KGA Committee and/or the KGA Council could potentially raise concerns with the relevant authorities concerning reports of damage or threats to a designated KGA.

## 8. Communicating KGAs

KGAs will have an active presence on the web with information about each KGA, including its clear characterisation, the reason or reasons why it was designated and its defined boundaries. The information about each KGA will be available in English and in the relevant national language where the site is designated.

The web-portal will include a database allowing the storage of all data related with this initiative. The website will allow advanced searches and will also provide appropriate cartographic resources. In addition, the web-portal will present the aims and methods of the KGA initiative, as well as information about submission procedures, governance and the composition of the included committees and council.

## 9. Relation with other international designations

Although many international initiatives recognise the importance of biodiversity, few currently incorporate geoheritage-related aims and objectives. The development of the KGA initiative does not conflict with these existent designations, as the rationale behind the KGA designation differs. In some cases, however, it will inevitably compliment or support them. The recognition of KGAs is specifically intended to address the ‘gaps’ between these existing designations, as explained in table 5. The KGA initiative is inclusive and seeks to bring together all international efforts that identify geological heritage of international significance. Additionally, KGAs will provide opportunities for many geological sites around the world that, despite their international significance, do not meet the requirements of existent designations.



Photo: Mount Fitz Roy, Southern Patagonia, Argentina/Chile © José Brilha



Table 5 – Some of the gaps filled by the KGA initiative, in comparison with other international designations.

International designations	Gaps filled by KGAs
UNESCO World Heritage	<p>The guidelines for nominating a WH property emphasise the Outstanding Universal Value (OUV) of such sites and as such only the most exceptional sites geological sites globally can be included. In addition, the nomination process is complex and requires significant political support, including at a national level, to provide the necessary funding for the compilation of any proposal. As a result, only a very limited number of geological sites can be included. With a much simpler, yet still rigorous nomination process, the selection of KGAs will significantly increase the number of geological sites that can be recognised to be of international importance, including helping to support their conservation.</p>
UNESCO Global Geoparks	<p>The nomination of a UGGp implies the adoption of a sustainable development strategy applicable to the whole territory and the implementation of specific bottom-up actions to promote such a strategy with mandatory community participation, including through the development of geotouristic and educational strategies. KGAs will provide the opportunity to nominate and conserve geological sites of international significance that do not have the potential for the development of such strategies, including through a non-availability of appropriate funding.</p>
IUGS GSSPs	<p>Global Boundary Stratotype Sections and Points (GSSPs) are scientifically selected, stratigraphical reference sites used to define the global chronostratigraphical time scale. The adoption of the KGA initiative will provide an appropriate international conservation designation to support national conservation efforts to conserve such sites. In addition, the KGA initiative will enable the designation of a wide range of other stratigraphical, palaeontological, mineralogical and process-related reference sites not currently incorporated within any formal scientific designation.</p>
IUGS Geological Heritage Sites	<p>These sites are selected for their exceptional and iconic geological features or processes and are of the highest scientific importance to the international geological community, including as a mechanism through which to promote the geosciences globally. The KGA initiative will not only support the IUGS initiative by promoting the conservation of such sites, it will also facilitate the information to foster conservation and advance geoconservation worldwide.</p>
UNESCO Biosphere Reserves	<p>These reserves have been established to help understand and manage changes and interactions between social and ecological systems, including promoting the management of biodiversity and sustainable economic development. Although Biosphere Reserves have a different focus to KGAs, the designation of KGAs associated with Biosphere Reserves, while presenting no conflicts with these aims, can help promote a more holistic approach to nature conservation including through the involvement of local communities.</p>
Ramsar Sites	<p>Sites designated under the Ramsar Convention cover wetlands of international importance. Although there are geoheritage sites in wetlands, the vast majority of these cannot be considered for this designation as it emphasizes ecological aspects. As with Biosphere Reserves, however, the inclusion of KGAs with Ramsar Sites can help promote a more holistic approach to nature conservation. In addition, KGAs will include sites with all types of geodiversity elements and processes, not just wetland processes.</p>
KBAs	<p>These are sites of global importance to the planet's overall health and the persistence of biodiversity. Although KBAs have a different scope to KGAs, the eventual designation of KGAs associated with KBAs, while presenting no conflicts, can help achieve KBA's aims and a more holistic vision of nature.</p>

As proposals for KGAs may include areas with an existing international designation based on a systemic or well-established procedure, KGA status for these submissions can follow a simplified procedure, or ‘fast track’, whereby the KGA Committee will be able to approve the status provided that the relevant theme(s) and criteria have been verified by the appropriate scientific committees (Table 6).

Table 6 – KGA assessment procedures for sites under with other international designations. Note that a “Fast track” will only for geological sites that have been recognised by IUGS as having an international relevance. Other UGGp sites will require the normal assessment procedure.

International designations	KGA's procedures
UNESCO World Heritage	"Fast track" to receive the KGA status for properties designated under criterion (viii). Properties nominated under other criteria will follow the normal KGA assessment procedure.
UNESCO Global Geoparks	
IUGS GSSPs and ASSPs	"Fast track" to receive the KGA status.
IUGS Geological Heritage Sites	
UNESCO Biosphere Reserves	A normal assessment procedure is required, following the KGA selection guidelines.
Ramsar Sites	
KBAs	



Photo: Wadi Rum Protected Area, UNESCO World Heritage, Jordan © José Brilha

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## Recommended readings

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## ANNEX 1: Indicative list of international IUGS affiliated organisations with potential to submit KGAs' proposals

African Association of Women in Geosciences (AAWG)  
Association Internationale pour l'Etude des Argiles (AIPEA)  
Association of Applied Geochemists (AAG)  
Association of Geoscientists for International Development (AGID)  
Carpathian Balkan Geological Association (CBGA)  
Centre International pour la Formation et les Echanges Géosciences (CIFEG)  
Circum-Pacific Council for Energy and Mineral Resources (CPC)  
Commission for the Geological Map of the World (CGMW)  
Coordinating Committee for Geoscience Programs in East and Southeast Asia (CCOP)  
Drilling, Observation and Sampling of the Earth's Continental Crust (DOSECC)  
Earth Science Matters (ESM)  
EuroGeoSurveys (EGS)  
International Association for the Conservation of Geological Heritage (PROGEO)  
European Association of Science Editors (EASE)  
European Federation of Geologists (EFG)  
European Geoparks Network (EGN)  
European Mineralogical Union (EMU)  
Geochemical Society (GS)  
Geology for Global Development (GfGD)  
International Association for Engineering Geology and the Environment (IAEG)  
International Association for Geoethics (IAGETH)  
International Association for Mathematical Geosciences (IAMG)  
International Association for Promoting Geoethics (IAPG)  
International Association of Geochemistry (IAGC)  
International Association of Geomorphologists (IAG)  
International Association of Hydrogeologists (IAH)  
International Association of Sedimentologists (IAS)  
International Association for the Conservation of Geological Heritage (ProGEO)  
International Association on the Genesis of Ore Deposits (IAGOD)  
International Consortium on Landslides (ICL)

International Federation of Palynological Societies (IFPS)  
International Geoscience Education Organisation (IGEO)  
International Medical Geology Association (IMGGA)  
International Mineralogical Association (IMA)  
International Palaeontological Association (IPA)  
International Permafrost Association (IPA)  
International Research Center on Karst (IRCK)  
International Society for Rock Mechanics (ISRM)  
International Society of Soil Mechanics & Geotechnical Engineering (ISSMGE)  
The Meteoritical Society (MetSoc)  
Society for Environmental Geochemistry and Health (SEGH)  
Society for Geology Applied to Mineral Deposits (SGA)  
Society for Sedimentary Geology (SEPM)  
Society of Economic Geologists (SEG)  
Young Earth Scientists Network (YES)

[Other relevant international organisations not currently affiliated to IUGS](#)

Global Geoparks Network (GGN)  
Instituto Panamericano de Geografía e Historia (Comisión de Geofísica)  
International Geographical Union (IGU) [Commission on Geoheritage and Parks]  
Union Internationale de Spéléologie (UIS) [Commission on Karst and Cave Protection]

## ANNEX 2: Glossary

All selected definitions taken from:

Crofts, R., Gordon, J. E., Brilha, J., Gray, M., Gunn, J., Larwood, J., Santucci, V. L., Tormey, D., and Worboys, G.L. (2020). [\*Guidelines for geoconservation in protected and conserved areas\*](#). Best Practice Protected Area Guidelines Series No. 31. Gland, Switzerland: IUCN.

**Active processes:** natural abiotic processes that are active in the formation and evolution of landforms and materials, such as deposition of sand along the coast, deposition of sands and gravels at the margins of glaciers and ice caps, volcanic eruptions, landslides and erosion.

**Active systems:** features and forms, such as sand dunes, river valleys, mangroves and soils, that are still developing and evolving due to natural processes.

**ASSP (Auxiliary Boundary Stratotype Section and Point):** see GSSP (Global Boundary Stratotype Section and Point).

**Conserving nature's stage:** a relatively modern concept based on flora and fauna being the 'actors' with geodiversity as the 'stage' on which they thrive. It underlines the importance of the interdependence between biodiversity and geodiversity and their coordinated conservation.

**Ecosystems:** a dynamic complex of plant, animal and microorganism communities and their non-living environment interacting as a functional unit. It is the sum total of all the abiotic and biotic processes going on, such as biogeochemical cycles and primary production.

- Ecosystem functioning: the collective life activities of plants, animals and microbes and the effects these activities – feeding, growing, moving, excreting waste, etc. – have on the physical and chemical conditions of the environment.
- Ecosystem services: the benefits people obtain from ecosystems. These include provisioning services, such as food and water production; regulating services, such as flood and disease control; cultural services, such as spiritual, recreational and cultural benefits; and supporting services, such as nutrient cycling, that maintain the conditions for life on Earth (Millennium Ecosystem Assessment, 2005). Ecosystem services are provided by both geodiversity and biodiversity.
- Ecosystem structure: the biophysical architecture of an ecosystem; the composition and arrangement of all the living and non-living physical matter at a location.

**Exposure:** a site or place where rock or softer sediments are visible at the surface. Also known as Outcrop.

**Exposure sites:** geological features that are spatially extensive below ground level actively renewed by erosion or, so that if one site or exposure is lost, another could potentially be excavated nearby. They include exposures in active and disused quarries, coastal and river cliffs, road and rail cuttings, and natural rock outcrops.

**Finite sites:** features of limited extent that will be depleted and damaged if any of the resource is removed or lost. Examples include geological sites with fossil-bearing rocks of limited extent or a mineral vein deposit.

**Fluvial processes:** natural terrestrial processes based on water movement, usually in rivers.

**Fossil:** an organic trace or remain of former living matter buried by natural processes and subsequently permanently preserved in rocks.

**Geoconservation:** the conservation and management of geoheritage.

**Geodiversity:** 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 fossils of plants and animals and their habitats.

**Geodiversity Action Plan:** a plan that defines clear long-term aims and objectives, and sets out measurable short-term targets and actions, to conserve and enhance the geodiversity and geoheritage of a particular area. It also identifies staffing and financial resources necessary to achieve them. These plans can also assist the integration of geodiversity and geoheritage into the conservation management of different categories of protected area.

**Geoheritage:** those elements, features and processes of geodiversity, either singly or in combination, that are considered to have significant value for intrinsic, scientific, educational, cultural, spiritual, aesthetic, ecological or ecosystem reasons and therefore deserve conservation. Geoheritage constitutes a legacy from the past to be maintained in the present and passed on for the benefit of future generations. Geoheritage records the cumulative story of the Earth preserved in its rocks and landforms, as in the pages of a book. It is represented in special places (see geosite) and objects (geological specimens *in situ* and *ex situ* in museum collections) that are fundamental to our appreciation of the history of the Earth and the evolution of life.

**Geology:** the study of the Earth as a whole, its origin, structure, composition and history, and the nature of the processes that gave rise to its past and present states.

**Geopark:** a generic term ascribed by a nation or region to an area with outstanding geological heritage aimed at both conservation and promoting its use in a sustainable way. Most Geoparks are not protected areas but they may contain protected areas. See also UNESCO Global Geopark.

**Geoscience:** the study of the Earth's evolution and the current status of its abiotic aspects. The term comprises geology, geomorphology, geophysics, hydrology and physical geography.

**Geosite:** any site that has a single or a variety of geological or geomorphological features or processes worthy of protection on account of its scientific value. This is short-hand for terms such as 'geological sites' or 'geomorphological sites'.

**Geomonitoring (or Site condition monitoring):** monitoring of particular features and processes to ascertain the state of health of the component interests at a geosite or for a whole system.

**Geotourism:** sustainable tourism based on the geological and geomorphological features and processes of an area. These range in scale from a specific site, such as a tourist cave, through to extensive areas with spectacular scenery.

**GSSP (Global Boundary Stratotype Section and Point):** a standard unit used in the identification of type sections and reference points to define the boundaries of the stages in the geological timescale according to internationally agreed standards. The International Commission on Stratigraphy, a commission of the International Union of Geological Sciences (IUGS), is working to reach international agreement on the definition of global standard units. The site where a GSSP is identified and approved is marked by a symbolic Golden Spike. GSSPs can be supported by ASSPs (Auxiliary boundary Stratotype Section and Point).

**Integrity sites:** geomorphological sites that include both static (inactive) features, such as Pleistocene glacial landforms, and active features, such as those formed by river, coastal, karst and contemporary glacial processes.

**Karst:** suites of landforms, commonly including sinking streams, blind and dry valleys, closed depressions (termed dolines and larger flat-floored poljes), caves, formed largely as a product of dissolution acting on rocks that have a high solubility in natural waters.

**Landforms:** surface or underground features formed by a particular natural process, such as a glacial moraine or a sand dune or a cave.

**Landscape scale:** a wide-area conservation approach over a whole landscape, as opposed to that at the site level.

**Local Geodiversity Action Plans (LGAPs):** plans that set out a framework, guiding principles and priorities to ensure conservation of geoheritage and the networks of geosites at a regional or local scale.

**Minerals:** Inorganic substance with a characteristic chemical composition and an ordered arrangement of atoms, ions or molecules which occur by natural geological processes.

**Moveable geoheritage:** fossils, minerals, and rocks with exceptional value moved to an *ex-situ* location, for instance in museum collections, to improve their protection.

**Nature-based Solutions:** actions to protect, sustainably manage, and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits.

**OECM (Other Effective Area-Based Conservation Measures):** a geographically defined area other than a protected area, which is governed and managed in ways that achieve positive and sustained long-term outcomes for the *in-situ* conservation of biodiversity with associated ecosystem functions and services and, where applicable, cultural, spiritual, socio-economic and other locally relevant values are also conserved.

**Outcrop:** a place where rock is exposed at the surface and not covered with soil, vegetation or built structures.

**Palaeontology:** the study of fossils of past-organisms providing knowledge about the origin and evolution of life on Earth and about ancient environments.

**Parent material:** source rock or sediment from which overlying material, especially soils, are derived.

**Plate tectonics:** unifying theory combining continental drift, sea-floor spreading, seismic and volcanic activity, and crustal structures. The Earth's blocks of rocks on land and under the sea are formed into eight major and several minor internally rigid plates that are in motion relative to each other. The term also refers to the study of their relative movements over time in the formation of continents and oceans. The margins of the individual plates take various forms; the most important for terrestrial geoconservation are where the plates are colliding or where they are moving apart. Examples of the former are the margins between the Pacific and North American plates, the Pacific and the South American plates, the African and Eurasian plates, and the Indian and Eurasian plates, all of which have played a fundamental role in the evolution of major mountain systems and volcanic activity. In other places, the plates are separating; examples are best manifested on land in Iceland and under the sea along the Mid-Atlantic Ridge.



**Protected area:** a clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values.

**Robust:** the ability of a geoheritage feature or process to withstand damage arising from natural causes or human intervention.

**Rocks:** solid matter in mineral or organic form, forming part of the Earth's crust. It is subdivided by its origins into three main types: sedimentary, igneous, and metamorphic.

- Sedimentary rocks are formed from pre-existing material by soft materials (sediments) being deposited by water, ice or wind into rivers, lakes and oceans or onto the ground surface, and subsequently transformed to form more solid material. Carbonate rocks, such as limestone, dolostone, and the evaporite rocks, such as gypsum, anhydrite and salt, are particular types of sedimentary rocks found in karst areas. Limestones, sandstones and mudstones are common examples of sedimentary rocks.
- Igneous or Magmatic rocks result from the slow solidification of magma below the Earth's surface and are called intrusive rocks (i.e., granite). These rocks can also be formed on the surface due to lava cooling associated with volcanic activity and are called extrusive rocks (i.e., basalt).
- Metamorphic rocks are rocks previously formed by sedimentary or igneous processes that have been changed into different minerals and structure as a result of heat and/or pressure often associated with the movement of tectonic plates or in contact with magma. For example, marble is metamorphosed limestone.

**Sediment:** soft unconsolidated material, which range across a variety of sizes, from the finest clays and silts, through coarser sands and pebbles, to the coarsest boulders.

**Sensitivity:** a measure of the susceptibility or robustness or fragility of a particular feature or a process to damage irrespective of whether it is natural or human induced, and the degree to which it is affected or will respond.

**Significance:** a comparative expression based on either specialness or rarity or of the best example of a feature or process.

**Soft rock:** a rock that is relatively easily eroded and weathered by water, ice or wind. Some sandstones are a good example.

**Soil:** material composed of mineral particles and organic remains that overlies the bedrock and supports growth of rooted plants.

**UNESCO Global Geopark:** a territory recognised by UNESCO where sites and landscapes of international geological significance are managed within a holistic concept of protection, education and sustainable development. Geoparks are not considered protected areas, but rather as tools for engaging communities and business interests.

**Value:** the geoheritage value of a site or specimen has a number of components. Intrinsic value means important in itself independently of human appreciation. Scientific value relates to the value for research and education. Aesthetic, cultural and spiritual values refer to human connections, interactions and appreciation of geoheritage. Ecological value relates to supporting biodiversity and ecosystem functioning. The diversity of substrates, landform mosaics and soil formation, together with processes such as water flow regimes, sediment supply, erosion and deposition, provide the foundations for habitats and species and ecosystem

functioning. Environmental goods and ecosystem services values relate to the direct and indirect benefits that people receive from the natural environment and properly functioning ecosystems.

**Vulnerability:** a measure of the likelihood of damage to a geo feature or process from natural or human-induced causes. It is typically determined by considering by sensitivity to change and adaptive capacity to change.

## ANNEX 3: Frequently Asked Questions

### # What is a Key Geoheritage Area (KGA)?

A KGA is an area with well-defined boundaries where significant geological features (rocks, minerals, fossils, sediments, soils, landforms and landscapes) represent past or on-going Earth processes contributing substantially to the global understanding of the planet's history and its life-support systems and provide opportunities for increasing public awareness, knowledge and understanding of geoheritage conservation. In addition to their scientific value as geoheritage, a KGA can also have a role supporting cultural, ecological, aesthetic, and/or educational values.

### # What is the main aim of this international initiative?

The main aim is to provide a comprehensive and systematic procedure to facilitate the recognition and maintenance of geoheritage values of international significance and to communicate and promote this information in order to foster their conservation, and hence advance geoconservation worldwide.

### # What are geological features and processes?

In the context of KGAs, any reference to geological features and processes includes all types of rocks and their minerals and structures, fossils, soils, sediments, landforms and landscapes originated by physical, chemical, and biological processes, as usually studied under the scope of Earth Sciences.

### # Why do we need a new international designation for geoheritage?

The absence of international conventions or agreements on geodiversity and geoheritage significantly contributes to society's limited awareness of the importance of these topics. The KGA initiative aims to communicate and promote information on geoheritage to enhance its conservation and management. It has the potential to address several limitations in existing designations, including:

- Current designations do not comprehensively cover all geoheritage sites of international significance and have some gaps that need to be fulfilled;
- Information on geoheritage of global importance is dispersed and challenging to access, hindering the promotion of geoconservation strategies;
- National and local authorities responsible for nature conservation might not have adequately developed geoconservation programmes due to a lack of action at an international scale, including in response to current IUCN activities.

### # Is the KGA initiative in agreement with national and international sustainability policies and principles?

The KGA initiative aims to globally promote nature conservation, with a particular emphasis on non-living elements of nature. These elements not only possess inherent conservation values but also serve as the foundation for all ecosystems. The conservation of KGAs will contribute to the objectives of nature restoration and to foster healthy ecosystems.

### # Does the KGA designation threaten in any way current ecosystem and biodiversity management actions?

No, a KGA designation poses no threat to ecosystems and biodiversity. In fact, a holistic approach to nature conservation, integrating both abiotic and biotic components, has been proven to be much more effective.

### # Will an eventual KGA designation jeopardise in any way biodiversity international goals already set for a certain area/country?

No, the international recognition of the geoheritage value of a certain site as a KGA has no negative consequences for ongoing or future biodiversity strategies. Healthy ecosystems necessitate proper management of both geodiversity and biodiversity components.

#### # What distinguishes a KGA from a UNESCO World Heritage site?

The designation of a geological site as UNESCO World Heritage is based on the fulfilment of three conditions: to meet criteria (vii) and/or (viii); to satisfy the conditions of integrity (integrity is a measure of the wholeness and intactness of the natural heritage and its attributes); and to have the guarantee of protection and management given by the state party. These three conditions make the nomination of geological sites exceptionally challenging, resulting in only a very limited number of extraordinary geological occurrences having the opportunity to attain World Heritage status. In contrast, although the KGA nomination is also grounded in a rigorous scientific assessment, it is anticipated that the KGA initiative will broaden the scope to recognize numerous geological sites that may not meet the stringent criteria for inclusion in the World Heritage List. It is noteworthy that a KGA site may partially or completely overlap with a UNESCO World Heritage Site.

#### # What distinguishes a KGA from a UNESCO Global Geopark?

UNESCO Global Geoparks (UGGp) are single, unified geographical areas where sites and landscapes of international geological significance are managed with a holistic concept of protection, education, and sustainable development. UNESCO Global Geoparks are established through a process that requires firm commitment by the local communities, a strong local multiple partnership with long-term public and political support, and the development of a comprehensive strategy that will meet all of the communities' goals while showcasing and protecting the area's geological heritage. The criteria for achieving UGGp status mean that internationally significant geological sites located in regions lacking communities or where these communities choose not to participate in a geopark strategy will not be eligible for UGGp nomination. The KGA initiative, however, offers the opportunity to acknowledge these geological sites that may not meet the requirements for UGGp designation. It is important to note that a KGA may partially or entirely coincide with a UGGp.

#### # What distinguishes a KGA from a UNESCO Biosphere Reserve?

UNESCO Biosphere Reserves are interdisciplinary approaches to understanding and managing changes and interactions between social and ecological systems, including conflict prevention and management of biodiversity. Some UNESCO BRs work in geoconservation and have inventoried their geological sites. While Biosphere Reserves and KGAs have distinct yet complementary focuses, both areas can coexist within the same territory without giving rise to conservation or management conflicts. It is noteworthy that a KGA may partially or entirely overlap with a UNESCO Biosphere Reserve.

#### # What distinguishes a KGA from a Ramsar site?

The designation of a Ramsar site is grounded in the international Convention of the same name, with a primary focus on recognizing the importance of wetlands, which include all lakes and rivers, aquifers, swamps and marshes, wet grasslands, peatlands, oases, estuaries, deltas and tidal flats, mangroves and other coastal areas, coral reefs, and all human-made sites such as fish ponds, rice paddies, reservoirs and salt pans. While Ramsar sites and KGAs have distinct yet complementary focuses, both areas can coexist within the same territory without giving rise to conservation or management conflicts. Notably, a KGA may partially or entirely overlap with a Ramsar Site.

#### # What distinguishes a KGA from a IUGS Geological Heritage Site?

A IUGS Geological Heritage site presents extraordinary – even iconic – geological elements and/or processes of the highest scientific international relevance, which are used as a global reference, and/or have made a substantial contribution to the development of geological sciences through history. The site should be one of the best examples of its kind globally and its scientific knowledge / relevance must be well demonstrated with scientific publications. While both the IUGS and KGA initiatives focus on geoheritage of international scientific

significance, KGAs are designed as instruments for actively promoting geoconservation, aligning with IUCN's policies and best practices. It is important to note that a KGA may partially or entirely overlap with a IUGS Geological Heritage Site.

#### # What distinguishes a KGA from a IUGS Global Boundary Stratotype Sections and Points?

IUGS Global Boundary Stratotype Sections and Points (GSSPs) are stratigraphical reference sites which define the lower boundaries of stages on the International Chronostratigraphic Chart. While GSSPs exclusively concern sites with international stratigraphic significance, a KGA designation can be conferred upon areas with other geological reference localities, for instance palaeontological, geomorphological, mineralogical or process-related). In addition, a KGA might not only include the designated GSSP section, but could incorporate adjacent areas and sections complimentary to the GSSP designation.

#### # What distinguishes a KGA from a Key Biodiversity Area (KBA)?

KBAs are sites contributing significantly to the global persistence of biodiversity. This contribution depends on the global distribution and the abundance of the biodiversity elements for which the site is important. Despite having distinct yet complementary focuses, KBAs and KGAs can coexist within the same territory without giving rise to conservation or management conflicts. It is important to note that a KGA may partially or entirely overlap with a KBA.

#### # What is the added value of a KGA designation compared with the variety of other national designations (national park, natural reserve, natural monument, national monument, etc.)?

The international recognition conferred by the KGA designation serves as a means to raise local/and national awareness on the significance of the natural values in a specific area. This recognition contributes to the implementation or strengthening of protection and management mechanisms by local and national administrations.

#### # Is it possible for a KGA to have other international and/or national designations?

Yes, the KGA designation may overlap other local, national, or international designations.

#### # Is it necessary that a KGA nomination has a national /local designation?

No, it is not mandatory for a KGA nomination to have a prior local or national designation. However, it is anticipated that local and national authorities will commit to ensuring the conservation of geoheritage values in every KGA.

#### # Who runs the KGA initiative?

A partnership of international organisations will be responsible to initiate and maintain this initiative. Organisations such as UNESCO, International Union for Conservation of Nature (IUCN), International Union of Geological Sciences (IUGS), Global Geoparks Network (GGN), International Geographical Union (IGU), International Association for the Conservation of Geological Heritage (ProGEO), International Association of Geomorphologists (IAG), Union Internationale de Spéléologie (UIS), and Eurogeosurveys have been invited to be part of this partnership.

#### # How is the KGA designation given?

The KGA designation will be granted following approval by the KGA Committee, which relies on a recommendation put forth by a scientific committee comprising international experts.

#### # Is it necessary to renew a KGA designation?

No, a KGA retains its designation unless the geoheritage values that led to its international recognition are seriously compromised or lost. The intention is not to implement systematic monitoring of KGAs once they

are recognized. However, the KGA Committee and/or the KGA Council may express concern and liaise with relevant authorities in response to reported damage or threats to a designated KGA.

#### # Who can submit a KGA nomination?

Proposals for the nomination of new KGAs should be submitted to the KGA Secretariat by an international scientific organisation, either as an independent proposal or as an endorsement of a proposal received from a national scientific or professional organisation, public administration body or from individuals, communities, or NGOs. Likewise, a national scientific or professional organisation has the option to submit its own nomination or endorse a proposal received from individuals or NGOs. Indigenous Peoples and Local Communities are encouraged to play an active role in proposing KGAs, and if needed, they should seek support and guidance from a national or international scientific organisation.

#### # How large / small can a KGA be?

The size of KGAs is directly linked to the type and specific characteristics of the geological features with international significance. All principal geological elements justifying KGA status should be encompassed within its boundaries. Furthermore, the size of KGAs should be aligned with their operational management requirements, whether it be a small outcrop spanning a few square metres or a larger area.

#### # Is it necessary to pay to submit a KGA nomination?

No, the submission of a KGA nomination is free of charge.

#### # What does a KGA designation imply to a park manager or to the national/local authority responsible for nature conservation?

A KGA designation does not impose an obligation on protected area managers or national/local authorities to implement specific actions. However, there is an expectation that PA managers and local/national authorities will ensure the conservation of geoheritage values in every KGA. If these values face threats, whether natural or human-made, leading to degradation and requiring immediate protection and/or management, the site can be labelled as a "KGA at risk." If the geoheritage values in a KGA are definitely lost, the KGA designation is removed.

#### # Are KGAs necessarily protected areas?

No, it is not compulsory that a KGA nomination has a previous local/national designation. However, it is expected that local/national authorities guarantee the conservation of geoheritage values in every KGA.

#### # Does a KGA designation necessarily implies a specific budget to the country/local administration?

No. While a KGA designation cannot compel a park manager or national/local authorities to implement specific actions, it is also challenging to anticipate its costs. The required management for a particular site is highly variable and depends on factors such as size, type of threat, site vulnerability, and more.

#### # Does a KGA require periodic monitoring and reporting?

No, the intention of the KGA initiative is not to mandate or establish systematic monitoring of KGAs once recognized. However, the KGA Committee and/or the KGA Council may express concern and liaise with relevant authorities in response to reported damage or threats to designated KGAs.

#### # Does the nomination and management of a KGA necessarily imply geoscientific expertise?

Yes, the identification and justification of the type of geoheritage values can only be carried out by geoscientists. Additionally, the management of geological sites, known as geoconservation, requires specific expertise.



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