

UNESCO Global Geoparks

Model regions
for sustainable
development

From geological heritage to a sustainable future



United Nations
Educational, Scientific and
Cultural Organization

German Commission
for UNESCO

UNESCO Global Geoparks

From geological heritage to a sustainable future

Foreword



Irmgard Maria Fellner,
Director for Cultural Relations Policy
at the Federal Foreign Office,
Chair of the German National Committee
for UNESCO Global Geoparks

Dear readers,

people have long been fascinated by the markers of the Earth's past and evidence of human evolution. Making the traces of Earth's history tangible in a systematic way is an approach that emerged in the 1990s. It is this approach that forms the basis of the Geoparks Programme, which aims to help protect areas of special geoscientific and geological significance and enhance their visibility. The foundation for this is a holistic concept consisting of research – for example, the analysis of rock strata, formations and materials, skeletal remains and the histories of settlements – and the communication of scientific knowledge thusly gained. International cooperation has been an integral part of the Geoparks Programme from the outset. In 2000, four national Geoparks from France, Greece, Spain and Germany came together to form the European Geoparks Network (EGN). In 2004, the EGN together with the Chinese Geoparks, established the Global Geoparks Network (GGN). In 2015 the global network of Geoparks was integrated into UNESCO's geoscientific programme and the International Geoscience and Geoparks Programme (IGGP) was established. The Geoparks Programme complements UNESCO's conventions and initiatives for the protection, conservation and sustainable development of sites and areas of cultural, biological and geoscientific diversity. Examples of this include the UNESCO Biosphere Reserves and the Convention Concerning the Protection of World Cultural and Natural Heritage.

The UNESCO Global Geopark designation is much sought after, and the network of Geoparks is growing accordingly. We are very proud that six German Geoparks have been awarded this status by UNESCO and belong to a network of more than 160 UNESCO Global Geoparks in over 40 countries. They are evidence of Germany's rich geological diversity. Attaining the goal of preserving this significant geological heritage while, at the same time, making commercial use of the areas is not only a challenge but also an opportunity for stake-

holders at both the local and state levels. We are also gratified to witness the successful exchange of information, beyond borders, about management experiences.

While this programme has not been running all that long it has, nevertheless, already become a flagship for international cooperation in the geosciences. The Federal Foreign Office actively supports the advancement of the programme and, in 2016, appointed a national committee and established an advisory body at the German Commission for UNESCO not only with the aim of developing the six existing Geoparks, but also to provide support for those geoparks applying for UNESCO status.

It is my sincere wish that this brochure will contribute to an increased public awareness of our German UNESCO Global Geoparks and the entire network. May it show familiar places in a new light, and inspire you to personally explore these regions steeped in history.



Prof. Dr. Maria Böhmer,
President of the
German Commission
for UNESCO

To meet the major global challenges of today, we need ways of living and economic systems that are sustainable. The UNESCO Global Geoparks are model regions developing and testing such concepts. Sustainable development is being put into practice here at the communal and regional levels. Sustainable development is being put into practice here at the communal and regional levels. UNESCO's Geoparks Programme was set up in 2015, in the same year the United Nations adopted the 2030 Agenda for Sustainable Development with its 17 Sustainable Development Goals.

UNESCO Global Geoparks are concerned with the influence of the history of Earth and humanity on our present age. They combine the conservation of their special heritage – important fossil sites, caves, volcanoes, but also mining sites – with sustainable use and the shaping of a future worth living. They make this heritage a tangible experience through education and research, protection and landscape conservation, through the promotion of soft tourism and sustainable economic development and, in this way, invigorate their region. This highlights that the role of the Geoparks is not purely conservational; they combine protection with sustainable use.

Soil and rocks are the basis of life for flora and fauna, the starting point for agriculture, resource use and cultural history. Geoparks show us our planet's vulnerabilities and provide information about the finite nature of natural resources. They promote sustainable quarrying of ashlar and bulk stone and are both a location and a laboratory for widely accepted renewable energies. They convey knowledge about climate change and can show us how structural change can be accomplished to bring added value to the entire region.

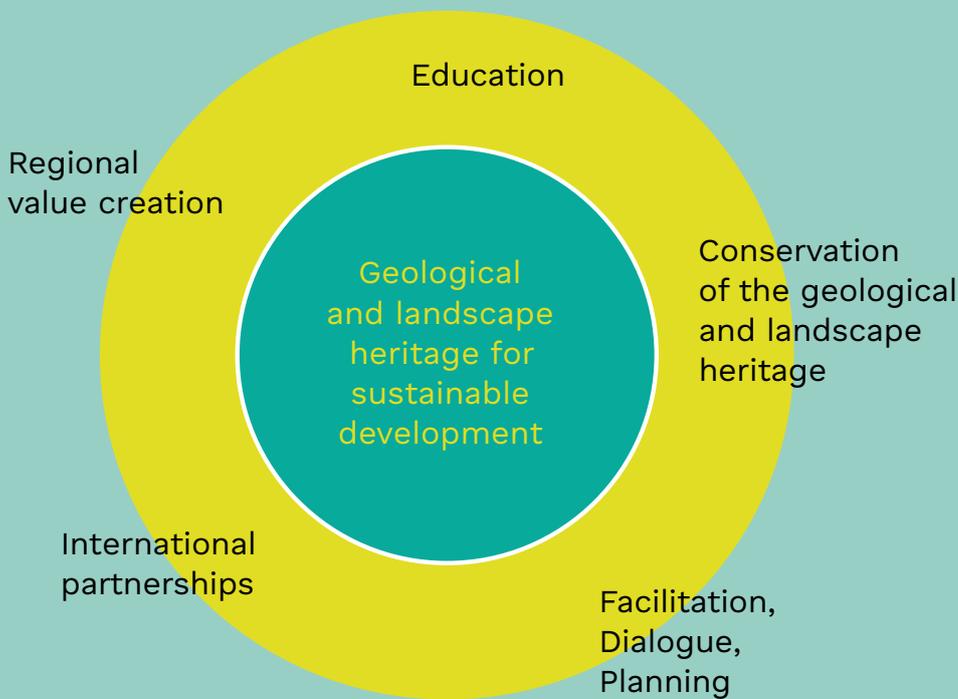
In Germany, six UNESCO Global Geoparks are working for the future of their regions. They all have many years of experience as Geoparks and were already actively engaged even before the creation of the UNESCO status

in 2015. Being awarded UNESCO Global Geopark status has provided an incentive to redesign and ambitiously develop existing activities, which already served as a role model.

The German Commission for UNESCO guides and supports the Geoparks in this process. We support the UNESCO Global Geoparks in their role as instruments for implementing the 2030 Agenda through consultation, expert events and workshops, as well as public relations. Our close ties to other UNESCO national commissions help us to facilitate the international partnerships of the Geoparks. At the German Commission for UNESCO we generate synergies with other UNESCO programme areas and create links between the German UNESCO Global Geoparks and other UNESCO sites and networks in Germany.

In this brochure we present, for the first time, all six of the German UNESCO Global Geoparks with their respective distinguishing features. I would like to encourage you to discover these fascinating and innovative landscapes.

UNESCO Global Geoparks – Model regions for sustainable development



UNESCO Global Geoparks are areas with geological sites and landscapes of international geoscientific significance. They prompt us to trace the contours of the past in order to understand our planet and its current conditions, and to create regions worth living in.

As model regions for sustainable development, they focus on developing viable options for the future in the region and addressing global societal challenges, such as the finiteness of natural (especially geological) resources and climate change. UNESCO Global Geoparks encourage visitors to explore, and are inviting to those who wish to live well.

There are over 160 UNESCO Global Geoparks in more than 40 countries worldwide and six of them are in Germany. They perform a variety of functions:

- They preserve geoscientific heritage of international significance for the future.
- They make this heritage accessible to visitors and residents alike and allow them to experience it firsthand through education, protection and by facilitating sustainable development in their region.

- They promote identification with the region, tourism and sustainable economic development.
- Their close collaborations worldwide make it possible for people in other countries to experience geological history, too, and for a sustainably shaped future to develop there.

UNESCO's Geoparks Programme has existed since 2015. It evolved from the non-governmental "Global Geoparks Network" (GGN), which was established in 2004. For the first time, an existing programme was thus incorporated into UNESCO structures, or more precisely, into UNESCO's "International Geoscience and Geoparks Programme" (IGGP). Since then, Geoparks have become the third UNESCO site category, in addition to the World Heritage Sites and Biosphere Reserves. Within a short time, the UNESCO Global Geoparks have established themselves as a successful development framework for their respective regions.



UNESCO Global Geoparks in Germany

7%

of the land
area of Germany
is comprised
of UNESCO Global
Geoparks

In Germany, there are currently six UNESCO Global Geoparks, which taken together cover about 7 percent of Germany's land area.

“UNESCO Global Geopark” status corresponds to satisfying a set of demanding requirements – UNESCO Global Geoparks are intended to become internationally exemplary and globally visible model regions for sustainable development that offer real added value for the respective regions and their populations.

A quality label with high standards

The prerequisite in Germany for filing an application with UNESCO is prior recognition as a “National Geopark in Germany”. The GeoUnion Alfred Wegener Foundation has been granting this award since 2002. In view of the high quality standards, new UNESCO applications – both national and international – are rigorously reviewed. Moreover, existing UNESCO Global Geoparks are evaluated every four years. UNESCO status can only be confirmed after a successful evaluation.

In Germany, the National Committee for UNESCO Global Geoparks monitors the fulfillment of requirements. This committee was appointed by the Federal Foreign Office in 2016, and includes leading experts from the fields of geosciences, sustainable development, tourism and education as well as representatives from national government and the federal states. Applications and progress reports can only be forwarded to UNESCO with the approval of the National Committee.

Besides its function as a decision-making body, the National Committee provides advice and guidance to Geoparks with regard to compliance with the demanding criteria and the qualitative development of the programme in accordance with national and international criteria.

Well-established networks at all levels

The Forum of UNESCO Global Geoparks in Germany provides a networking platform for the six German UNESCO Global Geoparks. The forum promotes the strategic conceptual development of Geoparks and geosciences. It is also represented on the National Committee for UNESCO Global Geoparks in Germany.

UNESCO Global Geoparks also collaborate internationally in an exemplary way; representatives of all the Geoparks meet regularly at European and global conferences to share expertise and experience, to agree on strategies that will advance the further development of the Geoparks and the network, and to develop joint projects. Geoparks also maintain informal and formal partnerships with each other around the globe. Four of the over 160 UNESCO Global Geoparks are transnational; one of them is on either side of the German-Polish border.



At present, there are over 160 UNESCO Global Geoparks in more than 40 countries and six of them are in Germany:

- 1 Bergstraße-Odenwald
- 2 Harz·Braunschweiger Land·Ostfalen
- 3 Muskauer Faltenbogen/
Łuk Mużakowa
(Germany/Poland)
- 4 Schwäbische Alb
- 5 TERRA.vita
- 6 Vulkaneifel

1 Between granite and sandstone – continents in motion

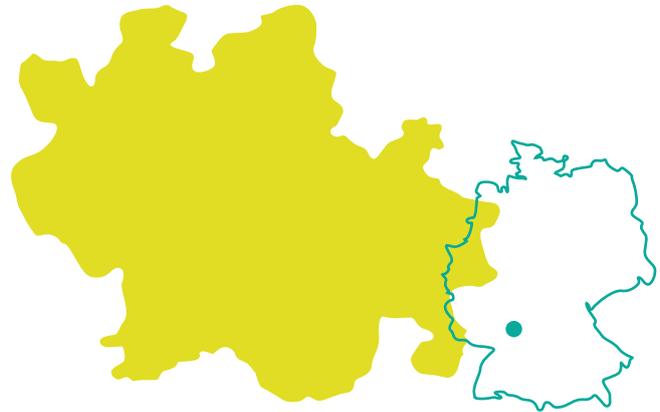
Bergstraße-Odenwald UNESCO Global Geopark

The Bergstraße-Odenwald UNESCO Global Geopark and Nature Park combines a natural and cultural area that extends from the Rhine valley in the West via the Odenwald hills to the Main valley in the East and the Neckar valley in the South. The varied landscape is a reflection of the geological substratum – it brings to life over 500 million years of Earth’s eventful history and makes it tangible.

Over the course of the Earth’s history, the landscape of the Bergstraße-Odenwald UNESCO Global Geopark has undergone several transformations. For example, the “Crystalline Odenwald” was formed from plutonic rocks and schists during the collision of two paleocontinents about 340 million years ago. The sandstone and mudstones of the “Bunter Sandstone Odenwald” were deposited from temporary rivers in a semidesert during the Mesozoic era, about 245 million years ago. In the subsequent “Muschelkalk” [shell limestone] a shallow sea covered the whole region. The downfaulting of the Upper Rhine Rift Valley began about 50 million years ago. The landscape that we see today was ultimately shaped during the ice age.

In order to help people understand this special landscape and its eventful history, the UNESCO Global Geopark combines a range of themes with a holistic view of the region. To that end, it collaborates with numerous businesses, which, for example, produce, promote and market local products. In this way, it is possible to convey the diversity of the region to visitors and contribute to sustainable regional development.

In addition, special locations invite you to rediscover the region over and over again. This includes the “Felsenmeer” (or sea of rocks) in Lautertal, the stalactite cave in Buchen-Eberstadt, the environmental education centre on the Kühkopf (an island in the Rhine) and



Federal States

Hesse, Bavaria and Baden-Württemberg

Area

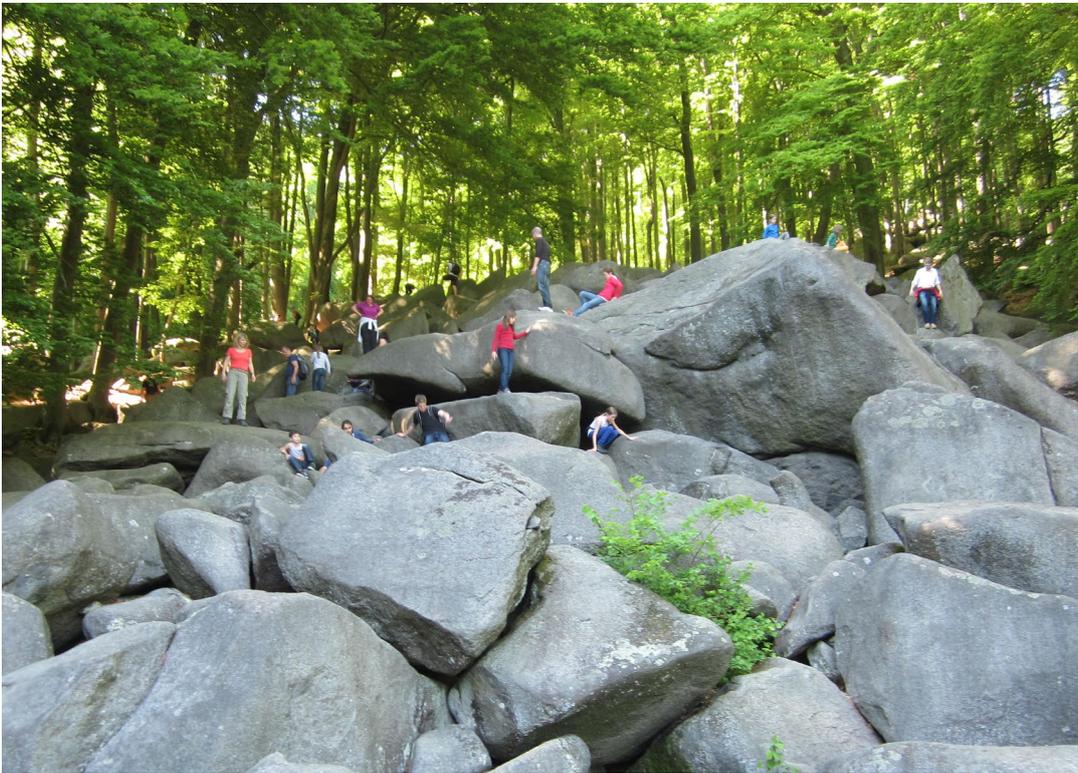
about 3,780 km²

Website

www.geo-naturpark.net



Each stone has its own special story – Ranger initiative on the topic of “Discovering Earth’s History” (© Dr. Jutta Weber/ Bergstraße-Odenwald UNESCO Global Geopark)



The Felsenmeer – an excellent geosite, a former Roman quarry and tourist highlight in the UNESCO Global Geopark.
 (© Dr. Jutta Weber / Bergstraße-Odenwald UNESCO Global Geopark)

numerous other visitor destinations in the more than one hundred member municipalities of the UNESCO Global Geopark. There are also three UNESCO World Heritage sites: the Messel Pit, Lorsch Abbey and the Roman Limes.

Explore Earth history, Nature and Culture on foot

The unique geological and natural heritage as well as the rich cultural heritage of the UNESCO Global Geopark are reflected in the broad visitor services. Insights into the history of the Earth, the landscape and the regional food culture combine to form an inspiring offering.

The UNESCO Global Geopark's information centres, numerous rest points, mountain huts and marked hiking trails are available to visitors. In addition, a large number of geo adventure trails highlight special features in the landscape and natural environment. Trained Geopark rangers and volunteers can provide visitors with advice and support and, upon request, educational activities and various thematic guided tours.

International model region

A total of 102 municipalities in seven administrative districts and three federal states are members of the Bergstraße-Odenwald UNESCO Global Geopark, including the university cities of Darmstadt and Heidelberg. In cooperation with the municipalities, tourism

organisations and local businesses, the UNESCO Global Geopark acts as a cross-thematic networking platform. In this way, it contributes to the preservation of regional identity, the support and development of local products and to the realisation of infrastructure projects.

Furthermore, the UNESCO Global Geopark also has a well-established network at the international level. For instance there are currently cooperation projects and partnerships with the Chinese UNESCO Global Geoparks Lushan and Hong Kong as well as with the Portuguese UNESCO Global Geopark Naturtejo. These take the form of mutual visits, the sharing of expertise, joint training for rangers and cooperation in Geopark management and research. The Geopark participates regularly in international conferences in order to raise the global visibility of the region and, in particular, to share and develop successful hands-on projects.

2002

Joined the European Geoparks Network (EGN) and the Global Geoparks Network (GGN)

2003

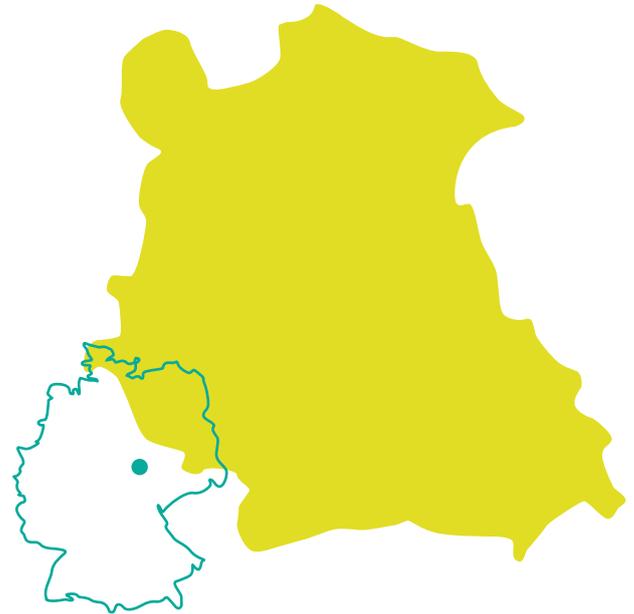
Recognized as a National Geopark

2015

Awarded "UNESCO Global Geopark" status

2 The classic square mile of geology Harz·Braunschweiger Land·Ostfalen UNESCO Global Geopark

450 million years of Earth's history have left their traces between the Harz Mountains and the heath landscape in Northern Germany. Sea cover alternated with deserts, tropical swamps and glaciers. Valuable mineral resources were created, including ore, salt, coal and crude oil. Important fossils evidence the eventful and exciting geological history of the region. With an area of more than 9,650 km², the Harz-Braunschweiger Land-Ostfalen UNESCO Global Geopark is the largest Geopark in Germany. The Geopark region is not only an industrial and research location, but also an attractive travel destination that spans both sides of the former internal German border.



Federal States

Lower Saxony,
Saxony-Anhalt and Thuringia

Area

about 9,650 km²

Website

www.geopark-hblo.de



School campaign "Looking for fossils in the Hainholz region"
(©Simone Dargatz/Geopark HBLO)

The Harz-Braunschweiger Land-Ostfalen UNESCO Global Geopark encompasses the Harz Mountains and the Braunschweiger Land to the north of it, up to the Flechtinger mountain range. In the substratum there is a particular geological structure of synclines and anticlines with salt domes and deposits of iron ore and lignite. The over 1,000-year-old mining and research history associated with these and the Harz ore deposits is a unique feature of the Geopark. The Mines of Rammelsberg together with the historic town of Goslar and the Upper Harz Water Management System form a UNESCO World Heritage Site. Johann Wolfgang von Goethe was fascinated by geological diversity and mysteries and travelled to the Harz region three times; he also climbed the highest mountain in the Harz, the 1,141 metre high Brocken.

The area between Goslar and Bad Harzburg is internationally known as the "Classic Square

Mile of Geology” because of the unique insights into the sediments from the Mesozoic era (Triassic, Jurassic and Cretaceous, from 65 to 250 million years ago). There are also prehistoric graves, excavation finds from Neanderthals and humankind’s oldest hunting tools, the Schöningen spears. Geopark information points, adventure trails, show mines, a landscape with erratics and museums all invite both visitors and locals to explore.

Two associations manage the Geopark together due to its large area. These associations are Regionalverband Harz e.V., based in the world heritage city Quedlinburg, and the Trägerverein Braunschweiger Land – Ostfalen e.V., based in Königslutter.

Model region for sustainable development

The UNESCO Global Geopark is also meeting present-day social challenges. It is a popular tourist destination. In close cooperation with the regional tourism associations, the Geopark’s managing associations and their partners from the business field are committed to responsible travel. This secures jobs and income, which in turn benefits the Geopark’s member municipalities.

Ever since the foundation of the Geopark, the educational activities have been

continuously expanded and adapted to current social debates. In the varied programme, the topics of Earth history, rocks and geological resources as well as soil, archaeology, nature and cultural history are addressed in a lively way for different visitor groups. Increasingly, the focus is on topics of sustainability, climate change, forests and water. All activities and services provided by the Geopark are aimed at promoting conscious and responsible action following the principles of Education for Sustainable Development. The individual subject areas are not addressed in isolation but as part of an integrated approach. More than 250 geosites grouped around a number of outstanding landmarks simultaneously provide suitable learning locations and attractive destinations for excursions.

2003

Recognized as a National Geopark

2004

Joined the European Geoparks Network (EGN) and the Global Geoparks Network (GGN)

2015

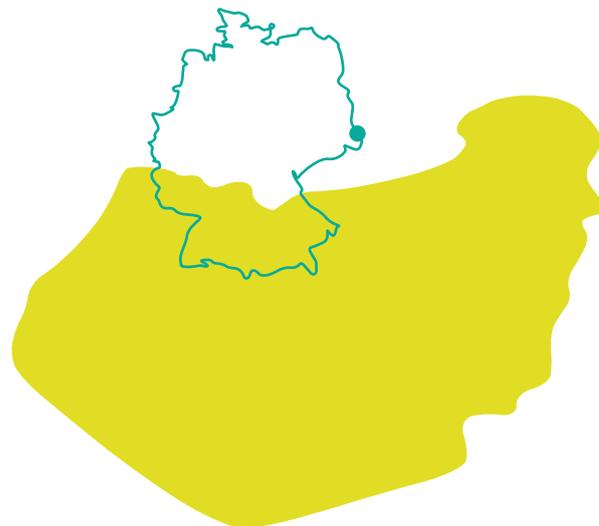
Awarded “UNESCO Global Geopark” status



View of the shaft head frame of the Sollstedt potash plant (©Dr. Klaus George/Geopark HBLO)

3 Moraine amphitheatre in the heart of Europe's Muskauer Faltenbogen/Łuk Mużakowa UNESCO Global Geopark (Germany/Poland)

The Muskauer Faltenbogen/Łuk Mużakowa lies in an area that spans the federal states of Brandenburg and Saxony as well as a Polish border region; when seen from the air it resembles a big horseshoe. The arch is a push moraine – the footprint of a large glacier, so to speak. Today it is considered one of the world's best large-scale examples of the deformation of the substratum by glaciers. After 130 years of mining, a cultural landscape has been created here that is home to a large number of biotopes and geosites worthy of protection.



Federal States

Brandenburg and Saxony as well as the Lubusz Voivodeship in Poland

Area

about 580 km²

Website

www.muskauer-faltenbogen.de

The Muskau Arch was formed during the Elster ice age 350,000 years ago. At that time, Central Europe up to the Hamburg-Berlin-Krakow line was under an ice sheet about 3,000 meters thick, similar to Greenland today. Out of this mass of ice, north of today's Bad Muskau, a "small" glacier (20 kilometres wide and long and up to 500 metres thick) suddenly emerged, "crushing" the substratum to a depth of 300 metres and piling up huge masses of earth in front of it. Through this compression, low-lying rocks and natural resources came to the surface, for example lignite, glass sands, high quality clays as well as alum clays, from which numerous mineral springs gush forth.

Between 1840 and 1970, extraction and processing industries for these natural re-



Herrmann pit seen from the air (©Peter Radke_LMBV)

sources developed. Around 60 lignite mines, underground and opencast mines, more than 30 glassworks and a ceramics industry of nationwide importance changed the landscape. Today the arch is a former mining landscape full of water and a natural area rich with woodlands with significant ecological diversity.

The landscape of the arch can be explored on foot or by bike along a well-developed network of paths that provide insights into the wealth of forms of an ice age landscape. This can be seen in the lowlands with moors, separated by dry plateaus and dry valleys, which run towards the Neisse, small round bodies of water, erratics and a large number of springs. The iron-rich Babina springs in Łęknica are a special geological feature in Europe.

Contribution to sustainable development

About 48,000 people live in the area of the Muskauer Faltenbogen/Łuk Mużakowa UNESCO Global Geopark. This includes the Lusatian Sorbs, a recognized West Slavic minority with their own language and culture. The Geopark has set itself the task of conserving natural resources, preserving cultural assets and supporting the post-mining landscape in its development – hand in hand with the development of tourism in the region. The Geopark is thus an important platform for strengthening regional identity and highlighting future prospects.

The Geopark contributes in particular to sustainable regional development through

- its function as a connecting gateway between Germany and Poland,
- environmentally sound soft tourism,
- addressing and communicating important social issues, ranging from natural and anthropogenic climate change including the use of natural resources right up to the renaturation of historic mining areas

Muskau Park, a UNESCO World Heritage Site, is located in the Geopark. Furthermore, the German-Polish Muskauer Faltenbogen/Łuk Mużakowa UNESCO Global Geopark is the only cross-border UNESCO Global Geopark in Germany and one of currently just four transnational UNESCO Global Geoparks worldwide. Given the eventful history of the two neighbouring countries, the Geopark makes a special contribution to international understanding and peace.

2006

Recognized as a National Geopark in Germany

2009

Recognized as a National Geopark in Poland

2011

Joined the European Geoparks Network (EGN) and the Global Geoparks Network (GGN)

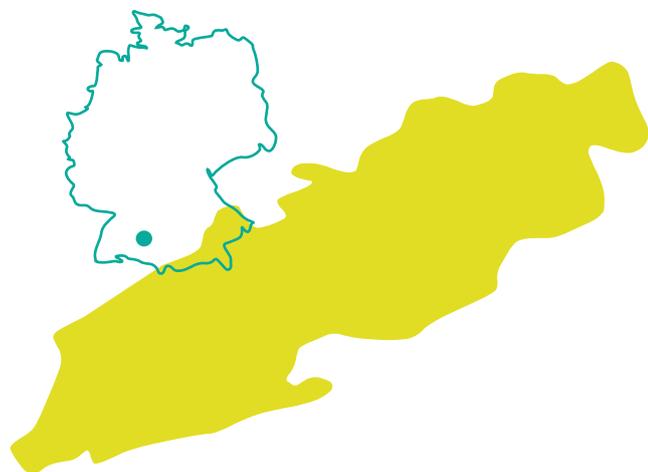
2015

Awarded “UNESCO Global Geopark” status



The Babina springs in the Polish part of the territory (©Head Office Łuk Mużakowa)

4 From the Jurassic sea to the karst mountains Schwäbische Alb UNESCO Global Geopark



Federal state

Baden-Württemberg

Area

about 6,200 km²

Website

www.geopark-alb.de



The Falkensteiner cave – a rare active water cave with an impressive entrance portal (©Reiner Enkelmann)

The Swabian Alb (Schwäbische Alb) is not only the region with the largest number of caves in Germany, but also forms a karst landscape, which developed over millions of years, with volcanic craters and unique fossil deposits, some of which are world-famous.

With around 6,200 square kilometres, the UNESCO Global Geopark in southwest Germany covers the entire Swabian Alb. Around 1.4 million people live in this area. The karst mountains of the Swabian Alb were formed over millions of years. Today it conveys a unique image of the Jurassic period. There are over 2,800 documented caves and twelve show caves to discover in the Swabian Alb. Their fossil sites are world famous. Sites have entered academic jargon – like the Aalenium or Pliensbachium – to denote the geological phases in the Jura.

Its special topography with sheltering caves and geological natural resources contributed to the early settlement of the Swabian Alb. It became one of the birthplaces of the human culture. The oldest figurative artworks were found in the caves (the “Venus of the Hollow Rock” and the “Lion Man”) together with humankind’s oldest musical instruments. The Celts also left their traces. The “Heuneburg” is the oldest town north of the Alps and the “Heidengraben” the largest Celtic settlement in Europe.

The meteorite crater with a central hill in Steinheim am Albuch is also an internationally renowned geosite. Just as exotic, but typical for the Alb, is the volcanism from 12 to 15 million years ago. In the landscape, you can still spot over 350 volcanic vents, craters, maars, fens, thermal and mineral springs.

In 2006, a panel of experts selected the 77 geo-scientific and scenically most significant points in Germany, the “national geosites”. Nine of them are located in the Schwäbische Alb UNESCO Global Geopark. The three UNESCO World Heritage Sites “Caves and ice age art in the Swabian Alb”, a section of the “Upper German-Rhaetian Limes” near Aalen and a site of the “Prehistoric Pile Dwellings” in Blaustein are likewise located within the Geopark.



The "Blautopf" near Blaubeuren – an impressive karst spring in the Swabian Alb
 (© Uoaei1 / CC BY-SA 4.0_wikicommons)

Experience the Geopark

The Schwäbische Alb UNESCO Global Geopark maintains a total of 27 information points, including show caves, museums, nature conservation centres and educational facilities. The network of partners also includes numerous nature, cave and landscape guides. In cooperation with universities, administrative districts and municipalities as well as partner companies from the fields of business and tourism, projects are being realised that convey two core ideas: knowledge of the geological wealth and dealing responsibly with this treasure that has been entrusted to us. As part of a comprehensive visitor guidance concept for the region, special geosites have been designated as geopoints and, in this way, the region has been made accessible for geotourism.

Education for Sustainable Development

With so-called "Geopark Schools", the Geopark has launched a cooperation programme that addresses and encourages children and young people from the region, as future trustees of the planet, in a special way. Schools in the area that meet certain criteria and would like to implement the messages and goals of the Geopark can become partner schools of the Geopark. As "Geopark Schools" they help to anchor the relevance of sustainable be-

haviour and management in the collective consciousness of the pupils through targeted educational offerings with a geo-scientific focus. In this way the Schwäbische Alb UNESCO Global Geopark provides a valuable contribution to the 2030 Agenda and makes it possible to understand how geology shapes the present day and the future.

2002

Recognized as a National Geopark

2004

Joined the European Geoparks Network (EGN) and the Global Geoparks Network (GGN)

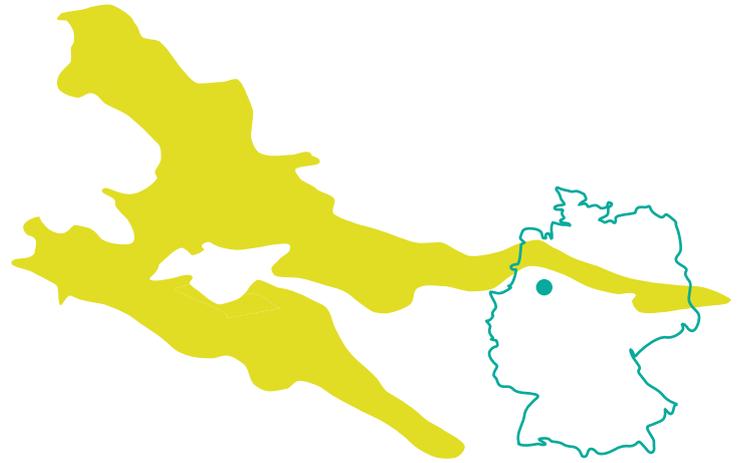
2015

Awarded "UNESCO Global Geopark" status

5 300 million years of geological history in one day TERRA.Vita UNESCO Global Geopark

TERRA.vita, the name of the Geopark and Nature Park, stands for “Earth and life” or the “course of the life of the Earth” – the Earth’s geological history. At the TERRA.vita UNESCO Global Geopark the past 300 million years are nearly fully documented. Between moors and wooded mountain ranges geological and climatic processes can be seen between river land scapes and end moraine features: there are hard coal forests, dinosaur tracks and erratic boulders from the ice age.

The TERRA.vita UNESCO Global Geopark comprises the northwesternmost foothills of the German low mountain ranges – the Teutoburg Forest and the Wiehen Hills – and the hilly Osnabrück Land region as well as the Ankum Heights that lie in between.



Federal States

Lower Saxony and North Rhine-Westphalia

Area

about 1,560 km²

Website

www.geopark-terravita.de



The dinosaur tracks in Bad Essen rank among the best known geological phenomena at the Geopark (©Natur- und Geopark TERRA.vita)

TERRA.vita was founded as early as 1962, at that time as a Nature Park of the Northern Teutoburg Forest-Wiehen Hills region. For almost 60 years now it has been committed to promoting the coexistence of nature and humankind in the region. Furthermore, for almost 20 years, the focus has also been on rocks and soils – in particular, on just how closely they are linked to our landscape, natural environment and everyday life. The staff at the Geopark convey the stories that rocks tell us about the long gone ecosystems and illustrate their significance for science, business and as a habitat for people and nature.

The mining of hard coal, which lasted for centuries until 2018, bears witness to an important mining tradition. On the Piesberg mountain, near Osnabrück, and on the Schafberg mountain, near Ibbenbüren, coal mining also provided access to fossils of long extinct plants and large insects. They contribute to our understanding of the evolution of forests and the origin of flying insects. Likewise, the numerous sands and gravels in the Ankum heights not only constitute an important raw



Observation tower on the Piesberg mountain in Osnabrück
(©Natur- und Geopark TERRA.vita)

material for the construction industry, they also bear witness to climate changes in the recent geological past – in the penultimate ice age, enormous glaciers slid into the Geopark area. In the Middle Ages, the sandy soils provided the basis for a farming practice that was specific to the region, namely, the making of so-called “plaggen” soil. The TERRA.vita UNESCO Global Geopark was among the regions where the first settlers of Central Europe made their homes. The Varus Battle between the Romans and the Germanic tribes took place at Kalkriese.

A contribution to sustainable development

The team at TERRA.vita is committed to showing visitors the possibilities that people have to create a sustainable life on this earth. To this end, the Geopark works closely with environmental education institutions, universities, UNESCO associated schools and regional tourism associations. In the terrain, so-called TERRA.guides bring the landscape to life by using various infrastructure measures and a range of events.

The focus is on geology; from the layers of rock we can discern out how previous ecosystems functioned and why they disappeared. From this one can draw conclusions in relation to future challenges, such as global warming, new ways of generating energy or geo risks. The Geopark addresses these societal challenges

through various ways following the principles of Education for Sustainable Development.

The De Hondsrug UNESCO Global Geopark, which is located directly on the German-Dutch border and is an hour and half long drive from Osnabrück, is a close partner of the TERRA.vita UNESCO Global Geopark. The cooperation was initiated on the basis of an INTERREG project and is primarily geared towards the areas of tourism, education and business. Visitors are thus encouraged to explore both UNESCO Global Geoparks. This also strengthens cooperation and understanding between the Geoparks.

2001

Joined the
European Geoparks Network (EGN)

2004

Joined the
Global Geoparks Network (GGN)

2008

Recognized as a
National Geopark

2015

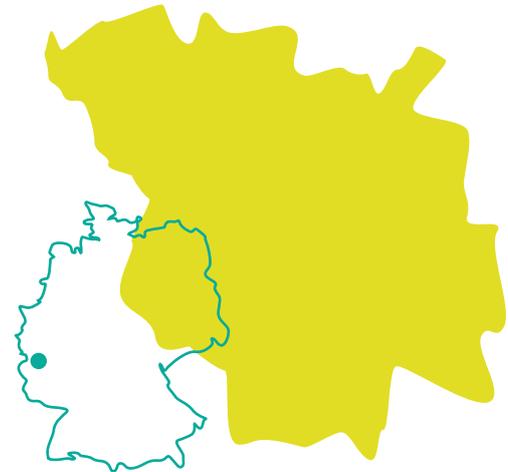
Awarded
“UNESCO Global Geopark” status

6 On the road in maar and volcano country Vulkaneifel UNESCO Global Geopark

The extraordinary Vulkaneifel straddles the area between Bad Bertrich, close to the Moselle, and Ormont, on the Belgian border. This is where the “Volcanism Adventure” takes shape and attracts guests and scientists from all over the world.

In the Vulkaneifel, powerful explosions and fires from the Earth’s interior blew holes in the Earth and caused mountains to bank up.

Up to 10,000 years ago, volcanoes were still smouldering here. The Ulmener maar was created most recently; this is Germany’s youngest volcano. Volcanic activity has not yet ceased. What it has left behind so far is impressive – almost 350 small and large volcanoes, maars, lava flows and countless mineral water springs and sources of carbon dioxide.



Federal state
Rhineland-Palatinate

Area
about 1,250 km²

Website
www.geopark-vulkaneifel.de



Maars – the “eyes” of the Vulkaneifel (© Natur- und Geopark Vulkaneifel GmbH)

Red sandstones, tropical reefs and mighty sea deposits tell the story of both quiet and turbulent times in the past 400 million years in the Vulkaneifel. Few regions of our Earth provide such fascinating insights into its historical origins and transformation.

As one of the four founding regions, the Vulkaneifel established the European Geoparks Network, which became the foundation for the subsequent Global Network, from which UNESCO's Geoparks Programme ultimately emerged.

Experience the geological heritage, protect and utilize it

As a UNESCO Global Geopark, the Vulkaneifel has set itself the goal of preserving its regional treasures and special features and making them an essential part of the sustainable regional economic activity, from which both guests and locals benefit. The valuable geological heritage is maintained and used in a targeted manner. The certified Nature and Geopark guides provide vivid explanations about the geological heritage of the region, its traditions and the special features of the region.

Trained Geopark hosts make the interconnection of the volcanic landscape with its rich pleasures, artistic creativity and exciting activity accessible to interested visitors, for example, when hiking. As Vulkaneifel Geopark hosts they adhere to the United Nations 2030 Agenda for Sustainable Development, and meet the delineated quality and environmental criteria for ecological, economic and social sustainability. To this end, they also regularly take part in the training courses and excursions provided by the Vulkaneifel UNESCO Global Geopark.

A contribution to sustainable development

In order to convey the geological value of their homeland as well as a holistic understanding of the planet, especially to children and young people, the Vulkaneifel UNESCO Global Geopark cooperates with schools and nurseries that increasingly focus on educational activities promoting sustainable development. One focal point here is the special geology and history of land use; topics such as climate change are also covered.

The Vulkaneifel UNESCO Global Geopark is a partner region in the ZENAPA (Zero Emission Nature Protection Area) project. The aim of the multi-year EU-LIFE project is to create large-scale conservation areas that are carbon neutral. On the one hand, the project contri-



Sparkling mineral water springs are a further trademark of the Vulkaneifel
(© Natur- und Geopark Vulkaneifel GmbH)

butes to the conservation of climate, nature and species through specific climate change mitigation measures and, on the other hand, it proves that these conservation goals are not contradictory, but are in fact complementary and can be achieved through cooperation. The result is a network for the sharing of experience and knowledge. The implementation of the project is backed by communication measures that aim to also bring about changes beyond the project regions. In this way, even after the end of the project, a further contribution will be made to achieving the climate protection goals of the EU and the federal government.

2000

Founding member of the European Geoparks Network (EGN)

2004

Joined the Global Geoparks Network (GGN)

2005

Recognized as a National Geopark

2015

Awarded "UNESCO Global Geopark" status

2030 Agenda for Sustainable Development

The reference framework for UNESCO Global Geoparks

The global community has set 17 ambitious goals for sustainable development to be achieved by 2030. The “Sustainable Development Goals” (SDGs) of the 2030 Agenda, adopted in 2015, have an unparalleled ambition to eradicate poverty and hunger worldwide, make quality education accessible to all, reduce global inequality, protect the climate and promote peace. Notably, these goals apply to all states and are intended to harmonise all economic, ecological and social interests of present and future generations through specific measures. The success of these measures will be monitored continuously.



UNESCO Global Geoparks are exemplary places for addressing many urgent sustainability issues. Embedded in networks from the local level to the international level, they form an important interface for sustainability issues of the future. The 2030 Agenda for Sustainable Development provides a key reference framework.

Global challenges, such as climate change and the management of finite natural resources, can be explained and meaningfully addressed on the basis of the core themes of UNESCO Global Geoparks – such as (ground) water, soil and the use of natural resources. One example is the negotiation of the conditions under which building stones and materials can be extracted from landscapes. Geoparks can also engage with other topics such as demographic change. For such issues, the UNESCO Global Geoparks can provide impetus and a platform for local and regional stakeholders and make important contributions through networking and facilitation.

Education for Sustainable Development as a focus

As sustainable development is in itself a continuous process of learning, education builds one of the main pillars and core areas of activity for the Geoparks. The concept of Education for Sustainable Development is central here. The German UNESCO Global Geoparks have set out to establish themselves as educational landscapes and experience platforms to facilitate a sustainable future for all. With their specific contexts in view, they devote themselves to the major challenges of our time, in cooperation with their regional partners, like schools, museums and other places of learning, universities and research institutes.

1 NO
POVERTY

7 AFFORDABLE AND
CLEAN ENERGY

13 CLIMATE
ACTION

2 ZERO
HUNGER

8 DECENT WORK AND
ECONOMIC GROWTH

14 LIFE BELOW
WATER

3 GOOD HEALTH
AND WELL-BEING

9 INDUSTRY, INNOVATION
AND INFRASTRUCTURE

15 LIFE
ON LAND

4 QUALITY
EDUCATION

10 REDUCED
INEQUALITIES

16 PEACE, JUSTICE
AND STRONG
INSTITUTIONS

5 GENDER
EQUALITY

11 SUSTAINABLE CITIES
AND COMMUNITIES

17 PARTNERSHIPS
FOR THE GOALS

6 CLEAN WATER
AND SANITATION

12 RESPONSIBLE
CONSUMPTION
AND PRODUCTION



Summary and outlook

As model regions for sustainable development, UNESCO Global Geoparks promote awareness of the most important global challenges of our time as well as of appropriate solutions. The United Nations 2030 Agenda for Sustainable Development provides the reference framework for this.

UNESCO Global Geoparks deal with issues of local relevance, such as demographic change and economic development, and address the challenges of global change in their region – always with reference to the special geological heritage and in connection with the respective cultural and natural heritage.

UNESCO regularly subjects its Geoparks to strict inspections, so that they may fulfil their tasks adequately, and continue to meet standards of quality. It also takes into account, cross-border cooperation and mutual sharing of experience, which enables collaboration in an international network.

The German UNESCO Global Geoparks are already operating internationally in an exemplary manner. As a category of UNESCO sites that is still quite recent, the role of the UNESCO Global Geoparks will continue to develop in the coming years – from the expanding Education for Sustainable Development projects, brokering partnerships with Geoparks from the Global South, through to devising measures to respond to major challenges like climate change.

The Geoparks Unit for UNESCO Global Geoparks of the German Commission for UNESCO supports the work of the National Committee. It is the contact point for all questions regarding applications, revalidations and further development as a UNESCO Global Geopark.

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