

UNESCO Global Geoparks

Model regions
for sustainable
development

From geological heritage to a sustainable future



**UNESCO Global Geoparks
From geological heritage
to a sustainable future**

Foreword



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for UNESCO Global Geoparks
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Dear readers,

“Do you want to wander forever? See, the good is so close,” Goethe already knew. With this brochure, we want to encourage you to visit the UNESCO Global Geoparks in Germany. These model regions for sustainable development not only offer relaxation in the nearby area but also provide unique windows into Earth’s history. Mostly situated in the low mountain ranges of Germany, the eight UNESCO-recognized Geoparks offer exciting insights into the history of our planet. Regionally rooted but globally active, these special places in Germany are part of a growing network of currently 195 UNESCO Global Geoparks in 48 countries.

People have always been fascinated by the evidence of the Earth’s and humanity’s past. This is the foundation of the Geopark program, which aims to protect areas of special geological and Earth historical significance and make them known to the general public. The basis for this is a holistic concept of research, including the analysis of rock layers, formations, materials, skeletal finds, and settlement histories, as well as the communication of the scientific knowledge gained.

International cooperation has been an integral part of the Geopark program from the beginning. In 2000, four national Geoparks from France, Greece, Spain, and Germany initially formed the European Geopark Network (EGN). In 2004, the Global Geopark Network (GGN) was established in cooperation with Chinese Geoparks. The collaboration with UNESCO took place in 2015 when the World Geoparks Network was integrated into the organization’s Earth sciences program, creating the International Geoscience and Geopark Programme (IGGP). The Geopark program complements UNESCO’s agreements and initiatives for the protection, preservation, and sustainable development of sites and areas of cultural, biological, and geological diversity. Examples include UNESCO Biosphere Reserves, the

Convention for the Safeguarding of the Intangible Cultural Heritage, and the Convention concerning the Protection of the World Cultural and Natural Heritage.

Geoparks are evidence of Germany’s rich geological diversity. The task of preserving significant geological heritage while simultaneously economically utilizing the areas is not only a challenge but also an opportunity for the involved local and state actors. We are particularly pleased that practical exchange of experiences across borders functions so well in the worldwide Geoparks network, despite its young age. The Federal Foreign Office actively supports its further development and has established a National Committee and an advisory center at the German UNESCO Commission to assist the existing eight Geoparks and those applying for the UNESCO title.

The advisory center assists Geoparks in identifying and implementing future topics such as digital information dissemination. Thanks to innovative techniques, long-past eras can be made tangible. Let yourself be inspired by the exciting landscapes right on our doorstep! Immerse yourself in a world full of regional diversity and culinary delights! Because that is also what UNESCO Global Geoparks represent: places of regional identity and added value.



Prof. Dr. Maria Böhmer, President of
the German Commission for UNESCO
© Kornelia Danetzki /
Deutsche UNESCO-Kommission

To meet the major global challenges of today, we need sustainable ways of living and economic systems. 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. 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.

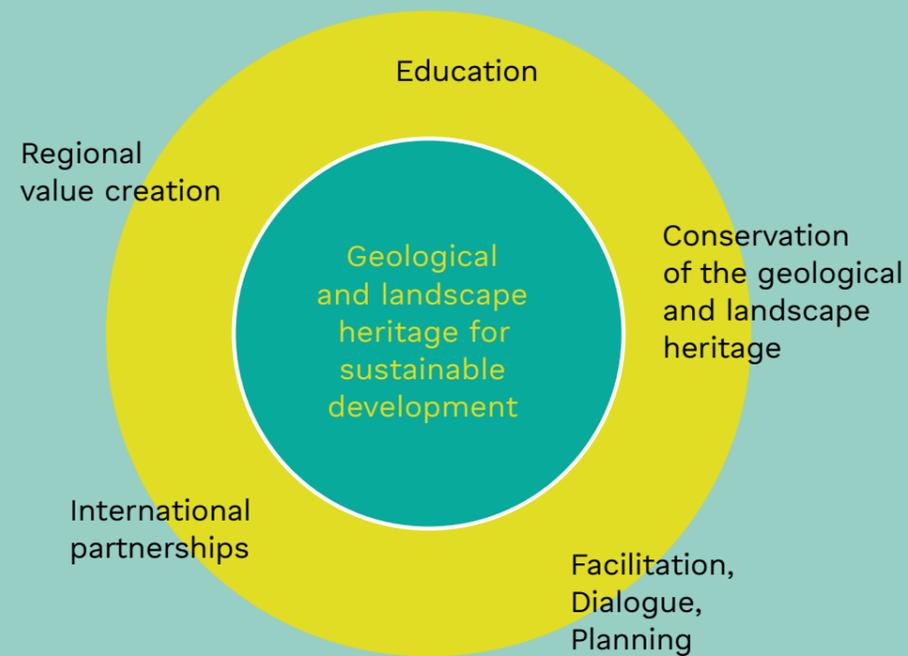
Geoparks show us our planet’s vulnerabilities and provide information about the finiteness of natural resources. They promote sustainable quarrying of ashlar and bulk stone and are both a location and a laboratory for widely accepted renewable energies. They convey knowledge about climate change and can show us how structural change can succeed to bring added value to the entire region. In Germany, eight UNESCO Global Geoparks are working for the future of their regions. They all have many years of experience as Geoparks: 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 transmission belt 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.

As the German UNESCO Commission, it is our concern to bring together UNESCO Geoparks with other members of the UNESCO family: with UNESCO project schools, UNESCO World Heritage Sites and Biosphere Reserves, with actors in education for sustainable development. After all, we can only comprehensively address and advance the major issues of our time by working together with united efforts.

In this brochure we present, for the first time, all eight of the German UNESCO Global Geoparks with their respective distinguishing features. I would like to invite 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 195 UNESCO Global Geoparks in 48 countries worldwide and eight 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.

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UNESCO Global Geoparks in Germany

7%

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

In Germany, there are currently eight 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 eight 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 195 UNESCO Global Geoparks are transnational; one of them is on either side of the German-Polish border.



At present there are 195 UNESCO Global Geoparks in 48 countries and eight of them are in Germany.

- | | |
|---|---------------------------------------|
| 1 Bergstraße-Odenwald | 4 Schwäbische Alb |
| 2 Harz.Braunschweiger Land.Ostfalen | 5 TERRA.vita |
| 3 Muskauer Faltenbogen/ Łuk Mużakowa (deutsch-polnisch) | 6 Vulkaneifel |
| | 7 Ries |
| | 8 Thüringen Inselberg – Drei Gleichen |

1 Between granite and sandstone – continents in motion

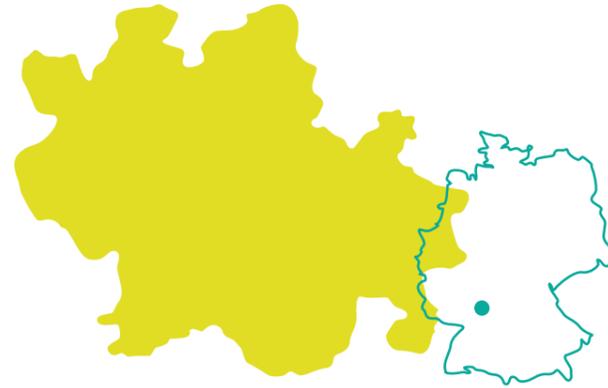
Bergstraße-Odenwald UNESCO Global Geopark

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 ages.

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 numerous other visitor destinations. There are also four UNESCO World Heritage



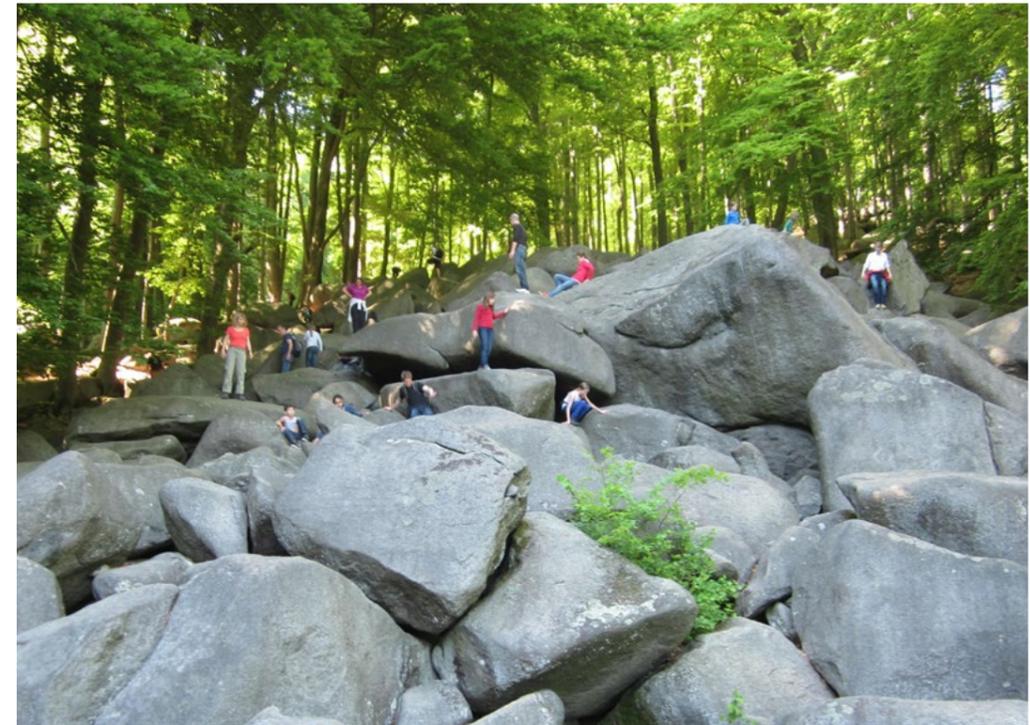
Federal States
Hesse, Bavaria and Baden-Württemberg

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

sites: the Messel Pit, Mathildenhöhe Darmstadt, 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. 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, the Greek UNESCO-Geopark Lesvos 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. In addition, he actively engages in networking activities at the European and global levels.

2002
Joined the European Geoparks Network (EGN)

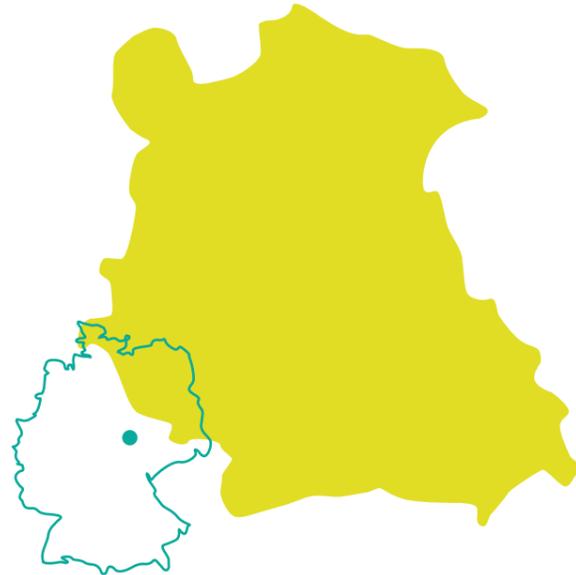
2003
Recognized as a National Geopark

2004
Founding member of Globalen Geopark-Network (GGN)

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

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



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

Miles 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 am Elm.

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



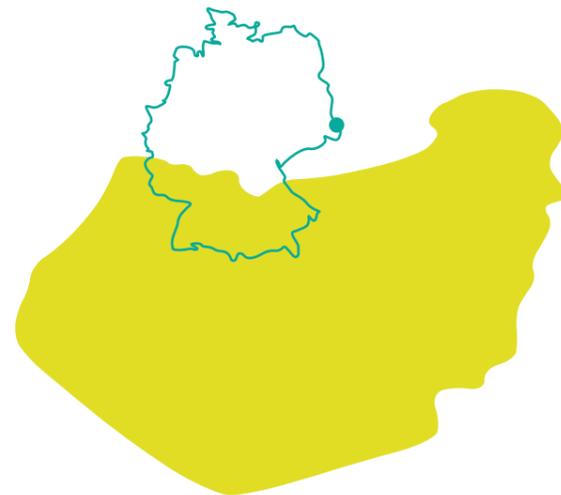
View of the shaft head frame of the Sollstedt potash plant ©Dr. Klaus George/Geopark HBLO

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.



Herrmann pit seen from the air ©Peter Radke_LMBV



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-

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)

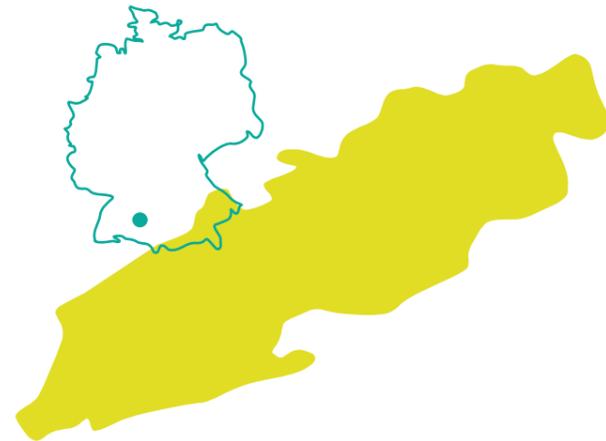
2015

Awarded
"UNESCO Global Geopark" status



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

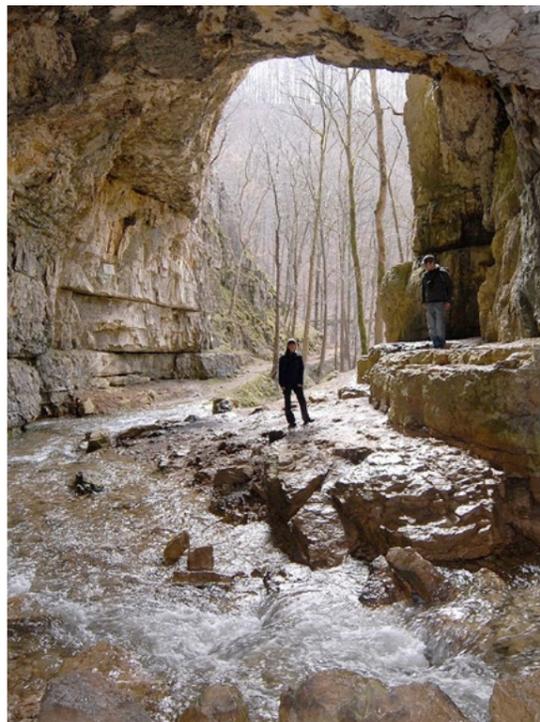
4 From the Jurassic sea to the karst mountains Schwäbische Alb UNESCO Global Geopark



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

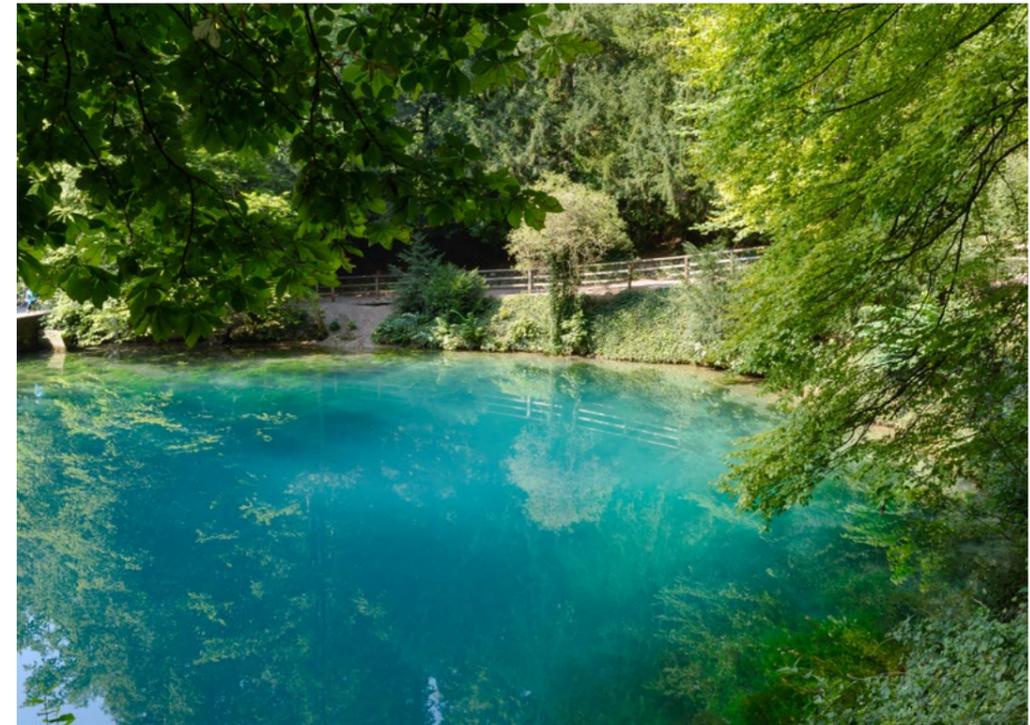
The Swabian Alb (Schwäbische Alb) is not only the region with the largest number of caves in Germany, but also forms a karst landscape, which developed over millions of years, with volcanic craters and unique fossil deposits, some of which are world-famous.

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

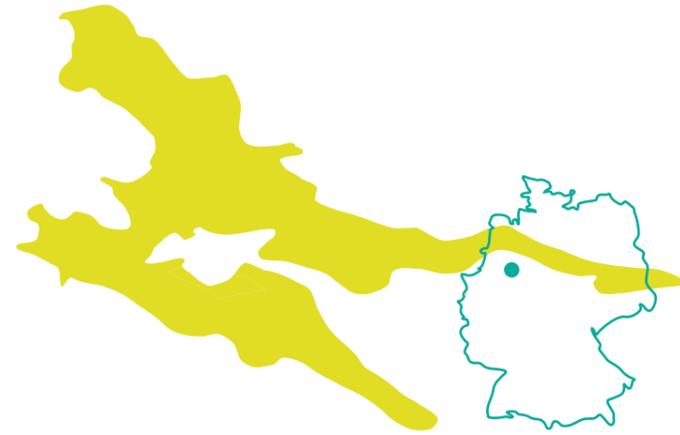
5 300 million years of geological history in one day TERRA.Vita UNESCO Global Geopark

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.



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



Federal States
Lower Saxony and North Rhine-Westphalia

Area
about 1,560 km²

Website
www.geopark-terravita.de

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

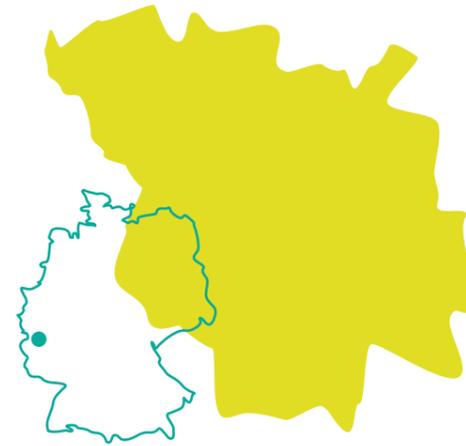
2015
Awarded “UNESCO Global Geopark” status

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

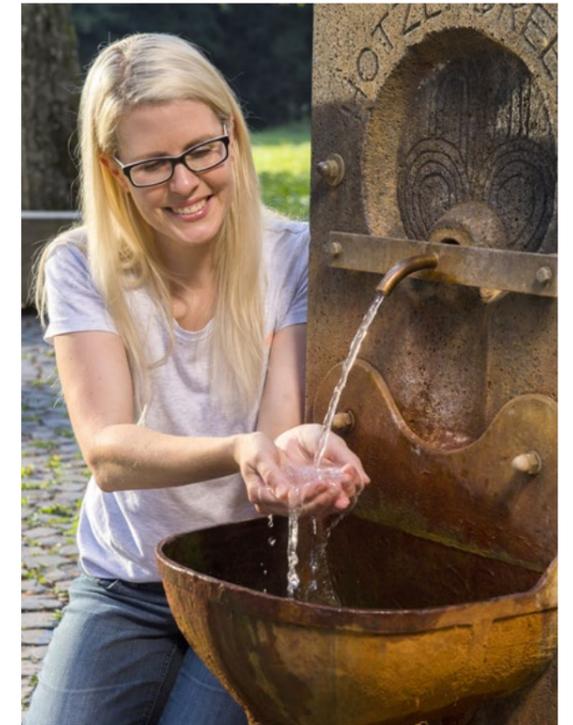
As a UNESCO Global Geopark, the Vulkaneifel has set itself the goal of preserving its regional treasures and special features and making them an essential part of the sustainable regional economic activity, from which both guests and locals benefit. The valuable geological heritage is maintained and 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)

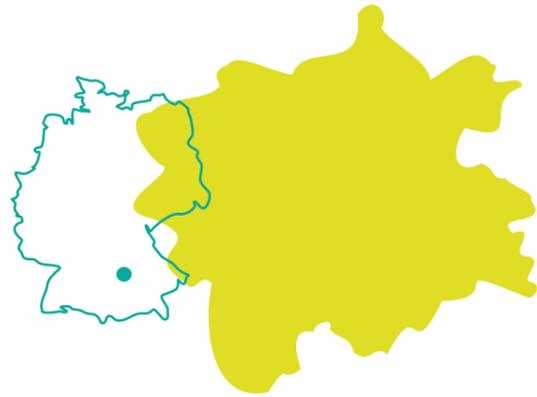
2004
Joined the Global Geoparks Network (GGN)

2005
Recognized as a National Geopark

2015
Awarded “UNESCO Global Geopark” status

7 A meteorite crater up close

UNESCO Global Geopark Ries



Federal state
Bavaria, Baden-Württemberg

Area
1750 km²

Website
www.geopark-ries.de/en

With a crater diameter of about 25 kilometres, the Nördlinger Ries is one of the best preserved and most intensively researched meteorite craters on earth.

The shallow crater basin is still clearly visible in the landscape today. The Nördlinger Ries is one of the few impact craters worldwide to have been continuously inhabited since the origins of human history. Due to its high scientific importance as the second proven impact crater on Earth, it is an attraction for geo-tourists and a “must” for geoscience researchers. In the UNESCO Global Geopark (UGGp) Ries, interested locals and visitors can clearly comprehend the effects of the cosmic catastrophe. The presentations of the impact and its consequences are designed to be experienced and understood by a wide range of visitor groups.

Besides the traces and consequences of the impact, the extraordinarily long history of human settlement in the Ries Crater is also fascinating. Diverse cultural and historical testimonies—monasteries, churches, fortresses and castles as well as medieval towns—are waiting to be explored.

Unique geological heritage

The Ries Crater not only represents a unique geological heritage in Germany and Europe, the UGGp Ries also plays a vital role as a research and training field for the exploration of the Moon and Mars.

For example, the Ries Crater was of crucial importance for the investigation of the Moon by NASA's Apollo programme. Unrivalled in Germany, a large piece of Moon rock collected during an Apollo landing mission is on display for visitors in the Ries Crater Museum in Nördlingen. For good reasons, geological field training for astronauts from ESA and NASA is still carried out in the Nördlinger Ries today.

Experience the UNESCO Global Geopark Ries

In the Geopark Ries, three Info-Centres and numerous Info-Points offer a good introduction to the thematic fields of the UGGp Ries. The meteorite crater with its most important sights, can best be experienced on foot. On the Ries Panorama Trail, for example, the entire Ries crater



Former Suevit-quarry Altenbürg © Dietmar Denger



Geopark Ries tour at Adlersberg © Dietmar Denger

can be hiked around in seven day stages over a distance of 128 kilometres. Grandiose views into and over the crater basin as well as fabulous natural landscape become long-lasting memories.

The crater can also be superbly explored by bike. The cycling path “From crater to crater” connects the two impact craters Nördlinger Ries and Steinheim Basin. On the GeoRadweg, guests can discover the geological features from the UGGp Ries all the way into the Altmühltal Nature Park.

Contribution to sustainable development

The certified nature and landscape guides of Geopark Ries see themselves as mediators between nature and man. They make an important contribution to nature-based, gentle tourism and to education for sustainable development (ESD). ESD also plays a major role in the teacher-training courses organised by UGGp Ries. Cooperation with “Geopark Ries schools” and extensive teaching and learning materials provided by Geopark Ries bring ESD closer to the people. The adventure geotopes with nature trails are particularly popular as “green classrooms”.

In addition to the Geopark Ries Info-Centre in Nördlingen and the indoor Info-Point in Wemding, the Donauwörth office and the Nördlingen branch are also barrier-free.

The appeal of the Ries Crater has been increasingly strengthened, especially against the

background of soft tourism, through the development, improvement and maintenance of the now eight adventure geotopes with nature trails as well as the Geopark themed hiking and cycling trails. Three Info-Centres and Info-Points also contribute to an attractive approach to visitors.

In cooperation with the Heide-Allianz Donau-Ries, the UGGp Ries is constantly working on the protection and preservation of the dry-grassland habitat. Sheepherding plays a key role. The geotopes, which are also always biotopes, are protected and continuously maintained by Geopark Ries and its partners.

A showcase project in terms of sustainable regional development is the regional and marketing initiative “Culinary Geopark Ries”. In cooperation with restaurateurs, producers and refiners, the programme aims to preserve typical regional delights and stands for a return to the region's very own cuisine and local products. All members are committed to a code of conduct which obliges them to use regional ingredients.

2006

Recognition as a German National Geopark

2022

Designation as “UNESCO Global Geopark” and admission to the European Geopark Network (EGN) and the Global Geopark Network (GGN)

8 On the tracks of the supercontinent PANGAEA

UNESCO-Geopark Thüringen

Inselsberg – Drei Gleichen

The UNESCO Global Geopark Thuringia Inselsberg - Drei Gleichen comprises parts of two different landscape areas from the Thuringian Forest and the Thuringian Basin. The name of the Geopark refers to its highest elevation, the Großer Inselsberg (916.5 m above sea level) and to an ensemble of three medieval castles in the Thuringian Basin, which are called “Drei Gleichen”. The region combines an enormous geological diversity from the Carboniferous to the Jurassic - from the formation to the disintegration of Pangaea - in a very small area.



Federal state
Thuringia

Area
about 725 km²

Website
www.thueringer-geopark.de

The Badlands in the Thuringian Burgenland Drei Gleichen, which have been designated as a National Geotope, can be explored via well-signposted and informative GeoRoutes. The three castle mountains of the Wachsenburg, Burg Gleichen and Mühlburg consist of colorful rocks of the Upper Triassic. Red and green-grey clay and marl stones emerge on the southern slopes almost without vegetation and characterize the landscape below the castles, which are within sight of each other.

Other special features in the Geopark include evidence of the Thuringian Forest's more than 1,000-year mining history, which is illustrated in show caves, visitor mines and Geo-Infocentres and focuses on the sustainable use of local raw materials.

Experience research live

The highlight of the Geopark is the Saurian Discovery Trail with the world's unique Bromacker fossil site between Georgenthal and Tambach-Dietharz, which has also been designated a National Geotope. With its numerous, excellently preserved early tetrapod skeletons



Examination of water samples in the context of the Forest and Water Week Ruhla ©Kerstin Fohlert



View from the Aschenbergstein at the Tabarz Volcano Trail to the Großer Inselsberg, 916.5 m above sea level ©Stephan Brauner

and the associated tracks, the site provides an insight into the diverse life 290 million years ago. With the BROMACKER project, a new type of scientific cooperation was launched with the aim of linking research and knowledge transfer in such a way that the public can actively participate in research with new types of science communication. Examples of this are the BROMACKER_chroniken on Instagram and the BROMACKERlab in Gotha, where visitors become researchers themselves.

Another research project in cooperation with our partner-UGGp Chelmos Vouraikos in Greece focuses on the study of cave fauna in both Geoparks. In particular, the study of the massively occurring ostracods makes an important contribution to climate change research.

A contribution to sustainable development

For some years now, the Geopark has been working more intensively on communicating sustainable development to different target groups, be it for children in schools or extracurricular activities as well as in adult education/continuing education for teachers. For example, an ESD vacation program lasting several days was developed with the AWO youth club “Free-time”: The Forest and Water Week Ruhla. The target group (grades 6-8 from regular schools, high schools and independent schools) is sensitized for sustainable forest management and the economical use of the valuable resource drinking water.

The Geopark is also part of the international GEOfood program, whose goal is to support local, sustainably managed producers and suppliers of food and beverages in the Geoparks and to award them with a seal of quality. For example, the Rosenhof Holzhausen produces valuable rose water from Damascene roses, which are sustainably cultivated at the foot of the Wachsenburg Castle.

2008
Recognition as National Geopark of Germany

2021
Admission to the European Geopark Network (EGN) and the Global Geopark Network (GGN)

2021
Award as “UNESCO Global Geopark” (UGGp)

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

2 ZERO HUNGER

3 GOOD HEALTH AND WELL-BEING

4 QUALITY EDUCATION

5 GENDER EQUALITY

6 CLEAN WATER AND SANITATION

7 AFFORDABLE AND CLEAN ENERGY

8 DECENT WORK AND ECONOMIC GROWTH

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

10 REDUCED INEQUALITIES

11 SUSTAINABLE CITIES AND COMMUNITIES

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

13 CLIMATE ACTION

14 LIFE BELOW WATER

15 LIFE ON LAND

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

17 PARTNERSHIPS FOR THE GOALS



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.

Imprint

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