Vulkaneifel Magazine

Not all volcanoes are the same Cinder cones and maars

Natural and geological phenomena The wide range of services offered by certified nature and geopark guides

The Vulkaneifel classroom Outdoor and indoor learning

Vulkaneifel tracks Exciting partner of the Eifelsteig



Where volcanoes create a landscape

Dramatic processes with mighty explosions and fire from the bowels of the earth have blasted holes in the ground and caused mountains to pile up in the Vulkaneifel. The volcanoes still smouldered here until 10,000 years ago, finally forming the Ulmener Maar, Germany's youngest volcano. The volcanic activity isn't dead yet; it's just taking a break, and waiting patiently for the next eruption.



TRAVELLING IN THE LAND OF MAARS AND **VOLCANOES**

The location of the Vulkaneifel is broadly matching the volcanic areas of the Western Eifel. Scientists have discovered about 350 eruption centers on a strip approximately 30 km broad and 50 km long.

In the landscape maar volcanoes can be recognized by their bowl-shaped form, but conical hills can also be discovered. They have lent a varied and unique wealth of morphologies to the Vulkaneifel.





Booking plus Tips & Information

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Travelling through he land of maars and volcanoes



Dear readers, guests and friends of the Vulkaneifel.

a warm welcome to the land of maars and volcanoes – and to the new issue of the Vulkaneifel Magazine.

With its vast peaks, dense woodlands, clear streams, fragrant meadows and picturesque villages, the Vulkaneifel appears as a pretty holiday region which couldn't be more peaceful if it tried.

But it's not all tranquillity beneath the recognised as a European Geopark, surface. The mighty volcanic forces part of the Global Geopark Network which once created this magical, sometimes even harsh landscape are still active today. Fire and water are what state of Rhineland-Palatinate. formed the Vulkaneifel, and continue to do so. And their legacy has thus far GEO museums display scientific phebeen impressive, with 350 small and nomena. Carefully selected cycling and large volcanoes, maars, lava flows, hiking tracks lead to the treasures of and countless sources of minerals and this fascinating landscape. Numerous carbonic acid. But the Vulkaneifel's geology has even more to offer: red sand- biotopes and geotopes. And certified stone, tropical reefs, and abundant marine deposits tell of both peaceful and turbulent times throughout the It's a feast for the senses – taste and course of the last 400 million years.

There are few regions on the planet which provide such a clear and fascinating insight into its development and changes. It is this which makes the Vulkaneifel a previous natural heritage site

supported by UNESCO. In 2010, it was inaugurated as a nature park in the

info centres provide information on guides run exciting expeditions.

pleasure, walking and hiking, cycling and mountain-biking, exploring and discovering. Embark on a journey with us in the land of maars and volcanoes.

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Where the world is in order

The Vulkaneifel Nature Park

On 31 May 2010, the Vulkaneifel Nature Park was officially inaugurated as the eighth nature park in the state of Rhineland-Palatinate, and has since borne the name of Vulkaneifel Nature Park and Geopark.

The new Vulkaneifel Nature Park boasts unique natural quality, coupled with maars, volcanoes and diverse cultural landscapes. These are ideal conditions for sustainable development, combining environmentally friendly land use with regional added value, eco-tourism, and economic development.

It has resulted in a wide range of services. Apart from the fascination with the geological past, it is also the present, with its vast peaks, sustainably managed forests, natural streams, species-rich meadows, and traditional villages, which generates excitement and enthusiasm.

Being accredited as a nature park involves protecting and preserving a number of districts and locations which have become the habitats of rare flora and fauna. Sustainable concepts must be developed and implemented - including in terms of tourism and economic interests.

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Vulkaneifel Nature Park and Geopark

Since 2000:	European Geopark (founding member)
Since 2004:	Global Geopark
Since 2005:	National Geopark
Since 2010:	Nature Park
Area:	approx. 1.300 km ²
Population:	approx. 85.000

Water is life! And this certainly applies to the Vulkaneifel. Not only do the many people from near and far appreciate and enjoy the local mineral water, but the clean water from the maars and the numerous springs and water bodies also nourish a wide range of flora and fauna.

Water and fire have formed this multi-facetted landscape, and created a number of special ecotopes which are home to plants and animals otherwise deemed very rare or even extinct. The maars are highly unique habitats, whether filled with water, filled with soil, or dry.



A precious habitat

Sanctuaries for rare plants and animals

Those who take a break as they circle the maars and stop on the shore will be rewarded with an intense natural experience. The view stretches from glistening blue, to the bright yellow flowers of the Scotch Broom, to the lush green of the wooded crater slopes.

Butterflies dance above the blossoming meadows, and azure dragonflies sparkle in the sun. The wind brings with it the birdsong from the nearby forest. A red kite circles high above, while the timid wildcat lurks in the bushes down below. Little and great crested grebes, teals and grey herons brood in the reeds, while a group of cormorants feast on fish. These are the little paradises which reveal themselves to the silent observer! Thanks to the well developed network of hiking trails and the carefully laid tracks, humans can get right in amongst it, and participate in these precious areas teeming with life.

Reserves in the Vulkaneifel Nature Park and Geopark

Nature reserves: 16 low-nutrient and dry habitats, 30 water bodies, wetlands and marshes, 5 woodland areas

Protected landscapes: 9, 3 of which span multiple districts

4 bird sanctuaries

9 FFH (FFlora Fauna Habitats)







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Common kestre



Making nature interactive is one of the Vulkaneifel Nature Park and Geopark's clear aims. Our nature park guides not only know how to make the geological phenomena here entertainingly visual, but are also well versed in the local flora and fauna. For example, traipsing through the juniper groves in the early morning, as the morning mist gradually lifts to reveal a view of the Eifel peaks, becomes an unforgettable experience. The local expert knows where the treasures lie, where rare natural beauty awaits discovery, and where to find the best postcard views.

The Nature Park and Geopark is not a park – it's more or less a cultivated natural space with tracks and trails snaking through it. The terrain often involves steep climbs and descents. Some good conditioning, strong footwear and weather-proof clothing are recommended for an enjoyable hiking and natural experience. A small backpack with food doesn't go astray either.

There is a wide range of tours and routes – both guided and unguided – some of which are also aimed at families with children or youth groups. Nature experiences are highly educational, particularly for younger audiences.

Online information available at:

www.geopark-vulkaneifel.de -> Naturraum Vulkaneifel

www.eifel-natur-reisen.de -> unser Naturraum Vulkaneifel What is a Geografic We are particularly proud, and consider it a duty, that the Vulkaneifel is one of the four founding regions of European Geoparks – along with the Réserve Géologique Naturelle de Haute-Provence (France), Petrified Forest Lesvos (Greece) and Parque Cultural del Maestrazgo (Spain) – to devise the idea of developing geologically unique regions in 2000. The Global Geoparks network followed in 2004.





and the Vulkaneifel has been there from the beginning

A key element of a geopark is its unusual, internationally recognised geological heritage, as well as the existence of geotourism infrastructures, such as geo info-points and museums. The region has a strategy, possesses the tools to sustainably protect the natural geological heritage, and uses them to develop the Geopark area. Long-term enhancement of geo infrastructures for tourism purposes, creation of a geo identity, increasing regional awareness of the natural geological heritage, and passing on and exchanging information are the primary goals of the geopark networks. UNESCO backing underlines their global importance to education, science and culture.

The title of Global Geopark/European Geopark is always granted by a commission formed by the network for a fouryear period. Applicants and members must undergo an evaluation or re-evaluation.

In addition to raising the locals' awareness about "their" natural geological heritage, its preservation and development, the geoparks also act as a network to promote cultural and scientific dialogue far and wide. They have therefore become an important instrument for developing joint strategies for a peaceful and sustainable future. At the same time, they boost appreciation for the rich variety of geological phenomena, and thus significantly help protect the geodiversity.

Every geopark encourages its visitors to frequent the other, more distant geoparks to discover their geological treasures.

There are currently 102 Global Geoparks in 30 countries on 3 continents. Of these, 59 are European Geoparks (yellow stars), located in 21 European nations (as of April 2014). It's hard to believe that this global network is only ten years old.

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An idea going around the world

GEOPARK





Network websites: www.nationaler-geopark.de www.europeangeoparks.org www.globalgeopark.org Sunrise on the edge of the Rother Kopf near Gerolstein The coffee is steaming away in the big mugs, and the smell of freshly grilled bacon hangs in the air. Our geopark host has been true to his word: A hearty breakfast is the perfect way to start of today's adventures. We're both very excited, because we've booked a tour with Johannes Munkler for the day. Mr Munkler is a nature and geopark guide. And a doyen of the Eifel, our host assures us. Before the sun has even risen, he picks us up from our cosy guesthouse. It's pleasantly fresh, and dawn is already breaking.

Infectious enthusiasm!

A journey through 400 000 000 years of geological history

With the expert nature and geopark guide We put on our backpacks, filled with a lunch pack, delicious mineral water and some rainproof clothing, and set off on our way, reaching the entrance to the Vulkan-Pfad trail just a few meters later. We cross soft meadows up to the maar crater, while behind us, the Schalkenmehrener Maar slumbers under wisps of morning mist. At the top, we are greeted by a captivating sunrise. The panoramic view over the Eifel peaks is overwhelming ...

It is hard to find a landscape which showcases its history of fire and water as beautifully as the Vulkaneifel. Accompanied by our expert nature and geopark guide, the distant past is brought to life, cause and effect are rendered plausible, and tracks in the landscape become journeys. The specially trained guide's enthusiasm for the fascinating geological phenomena is infectious, and the Vulkaneifel's landscapes and nature become an interactive experience!

Some 30 certified **nature and geopark guides** specialising in different fields accompany interested guests and groups on hiking, cycling and GPS tours through the Vulkaneifel Nature Park and Geopark. Fixed itineraries are also offered.

Programmes and information: Brochures on the natural experience programme are available from the Tourist Information Office or at www.geopark-vulkaneifel.de

The NATURAL EXPERIENCE PROGRAMME is published twice a year, and is also available for download at www.geopark-vulkaneifel.de

ATURERLE

Vulkaneifel Magazine



Witnesses of a fiery past **Volcances in the Eife**

The Eifel Mountains may not be spitting fire any more, but every year, the landscape still rises up by around one millimetre. Geophysicists have found that the earth's crust underneath is much thinner than in most other regions in the world. And everything points to the fact that volcanoes could still keep forming here.

But there's no need to worry; the Eifel Mountains are among the best researched volcanic regions on the planet – and measurement instruments currently show no risk.





The Eifel volcanoes were first active some 45 to 35 million years ago. Phenomena such as the Eckfelder Maar date back to this time. A second phase began around one million years ago, ending with the most

Volcanic cones and funnels

Careful examination of the two aerial photographs on the left reveals some clear differences: The top picture shows volcanic cones rising up out of the landscape, while the lower picture features two circular depressions – maar funnels. The reason why they look so different lies in their formation history.

Volcanic cones: When magma rises up from the earth's mantle, it can, depending on its composition, create very high pressure, which is then released in huge explosions. This results in an eruption of lava, ash and cinder, and, as the pressure decreases, also lava flows.

The geological interplay between these deposits gradually forms the cinder cones and strato volcanoes commonly found in the Eifel. If the summit crater fills with water, it develops into a crater lake, like the Windsborn Crater Lake, which is the only one to be located north of the Alps.

Cinder cones Bedrock Disturbance Magma Main vent Cinder embankment Summit crater Eruption column

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recent eruption, the Ulmener Maar, 10,900 years ago. 350 epicentres have so far been identified in the Vulkaneifel, approximately 270 of which originate in the more recent phase.

Maar funnels: If, as it rises, the magma hits aquiferous strata, this water rapidly vaporises, resulting in massive explosions. The surrounding rock at the contact point is shattered, transported upwards, and spat out. The blasted-out explosion chamber then caves in, leaving a funnel on the earth's surface, enclosed by a ring-like wall made from the ejected materials, and creating a maar. The collapsed funnel can fill with water and become a maar lake.

Maars are the Vulkaneifel's trademark. There are officially 75 of them, ten of which contain a lake – the "Eyes of the Eifel". In many other maar funnels, the lakes have silted up and developed into raised bogs with special plant populations. Other maars never filled with water or have levelled out due to natural erosion, and are now only identifiable as flat, bowl-shaped depressions.



Maar funnels

- 1 Magma
- **2** Groundwater
- **3** Explosion chamber
- 4 Vent
- **5** Funnel
- 6 Tuff embankment
- Ø Base surges
- 8 Eruption column

Does the Vulkaneifel have geysers?

Yes, the cold-water geyser in Wallenborn!

The "Brubbel" in Wallenborn (bubbling source) is a spring from which an up to 4-metre-high bubbling fountain of water – a mixture of groundwater and volcanic carbon dioxide – rises up every 40 minutes. Here's an explanation: The fissured substratum contains a hollow space which is slowly filled with rising carbon dioxide gas (CO2). If the saturation pressure is exceeded, the gas suddenly drains through the spring's borehole, and the escaping gas bubbles cause the water to rise up in the Brubbel in the same way they do in a shaken champagne bottle.

Natural phenomena simply explained – Nature and geopark guides provide answers.



How was the Strohn lava bomb created?

Weighing almost 120 tonnes, the Strohn "lava bomb" is a geological peculiarity.

With a diameter of almost 5 m, it is an impressive, unique proof of former volcanic activity in the Eifel Mountains. An explosion in the quarry at the Wartgesberg in 1969 loosened it from the quarry wall from a height of 15 m. In the winter of 1980/81, the people of Strohn used a bull-dozer to drag it across the snow on an iron slab to its present-day location.

Nature aducates

Vulkaneifel Akademie

achvortra

The park's Vulkaneifel Academy runs interesting presentations and excursions for all those wanting to know the detailed facts. Its origins were long disputed, as the volcanic forces in the Eifel Mountains were not strong enough to hurl such a large ball through the air. The answer came through coring in the ball: during the eruptions of the Wartgesberg volcano in the north, a piece of crater wall came loose and rolled back into the vent.

On its way, it collected bits of glowing lava, which stuck to its surface. During the next explosion, the ball was pushed upwards once more, to then roll back down again. This process was repeated several times until the ball reached its present-day size. It then became embedded in the crater wall, only resurfacing as a result of mining.



How did marine animals get into the dolomite rocks of Gerolstein?

Around 380 million years ago – in the Middle Devonian period –, the Eifel Mountains were located near the Equator. Reefs, in this case stromatoporoid and coral reefs, grew in a well ventilated, warm flat sea close to the coast. Over time, the reefs and lagoons ran dry. The sea water spilled in sporadically, evaporated, and left behind a highly concentrated, magnesium-rich brine, resulting in dolomitisation of the reef, which was made from calcium carbonate (calcite).

In some dolomite rocks, you can see ball-like or loaf-like structures with concentric layers. These are the remains of organisms which built up the rocks: stromatoporoids – extinct relatives of the sponge, combined with crinoids, brachiopods, trilobites and other former marine dwellers.

New adventures every day

It is difficult to find another place in Germany where the earth's elemental forces can be experienced as directly and personally as they can in the Vulkaneifel. Only here can you walk right through a volcano, jump over congealed lava streams, climb a reef's rocks, or witness a geyser spitting out its fountains.

Here, nature is the classroom, and the landscape is a special space of interactive experiences for children and adults alike. Schools and other educational establishments particularly make use of the youth recreational options available in the Vulkaneifel. Trust and responsibility, co-operation and independence can be encountered among peers differently to the way they are within the family.

Educational fun in an exciting landscape: OUTCOOT SCHOOL Vulkaneifel for kids

The region not only provides the natural setting for this, but is also a lively component of many programmes and activities - an educational adventure with rocks and water, in ice caves and basalt quarries, in open-air maar pools, or on forest excursions.

The programme is fascinating, and accommodation throughout the region is affordable for school groups and other groups. The options include the youth hostels in Gerolstein, Daun and Manderscheid, the school camp facilities near Müllenborn, the Steineberg youth centre, and the Jugendhüttendorf Vulkaneifel, which specialises in adventure holidays, interactive education, and geological excursions. Stays can of course also be tailored to personal requirements.

Other recommended addresses are the Wald-Jugendcamp in the Wirfttal Valley near Stadtkyll, the Eifelperle holiday home in Lutzerath, the Kelberg youth recreation centre, the youth centre in Bettenfeld, and the Kronenburg school camp facility. Many establishments - particularly the accredited Geopark hosts – are also equipped to host larger groups, and provide the perfect starting point for excursions, tours and expeditions into the educational natural setting of the Vulkaneifel.











foralthose who get inspired

Curiosity and the desire to broaden one's horizons are not a privilege of youth. On the contrary: educational trips are the trend for any age group. Leisure time and holidays are increasingly also being used for enriching personal knowledge. And of course fun and a good dose of adventure mustn't be neglected either. This is precisely where the nature and geopark guides' programmes come in.

Interested guests can choose from some 500 events throughout the year, plus personalised options which can be booked through any of the 30 guides by individual arrangement. It is worth briefly mentioning some of the programmes here to demonstrate the wide range of themes and the many different types of services and experiences on offer. A three-hour geological botanical expedition heads through the Wartgesberg under the motto of "Wild plants in the volcano", while the "Evening adventure into the Birresborn ice caves" involves grabbing a helmet and torch and following in the footsteps of the Romans underground.

Those who enjoy cycling will be guided to selected natural treasures on a half-day "Birds, bats, raised bogs and maars" tour. "Through the realm of the little Eifel predators" tracks down martens and wildcats, or there is also the option of hiking through the wild Üßbachtal Valley and visiting Germany's only Glauber's salt springs ...

Beyond the impressive evidence of volcanic activity, other types of scenic elements also shape the Eifel terrain, such as the calcareous grasslands of the Kalkeifel, which are among the oldest components of the cultural landscape.

They predominantly serve as pasture land for the sheep and cows of the respective village. As the prickly juniper is not eaten by the animals, its insular distribution gives the land its characteristic appearance.

Colourful diversity
on barren groundImage: Colourful diversity
on barren groundby Dr. Klaus Cölln and Andrea Jakubzik
Photos: Torsten WeberThe calcareous Vulkaneifel grasslands





Special types of forests in the Vulkaneifel by Birger Führ



The barren soil is home to numerous specialised plants, which bloom at various times of year, and thus transform the calcareous grasslands into a striking and ever changing blaze of colour. The large blue blossoms of the pasqueflower appear in early spring, while the brownflecked flowers of the burnt-tip orchid emerge later on, and the blossoms of the fringed gentian serve as the symbols of autumn. These are just a few examples of the plethora of flora species which have grown accustomed to the extreme conditions of the calcareous grasslands. The common rockrose demonstrates the adaptations required here. Growing densely on the ground, this dwarf shrub, which belongs to the rockrose family found more prevalently in the Mediterranean, protects itself from excess evaporation in this arid environment by curling up its leaves.

The highly diverse flora provides the basis for rich insect life, which has seen over 60 species of butterflies recorded over a more extensive calcareous grassland. These include the large blue butterfly with its remarkable life cycle. As a caterpillar, it begins its development as a vegetarian, feasting off the thyme blossoms, before later growing a honey gland on its back, whose secretion prompts a special type of myrmica ant to bring it into its nest. By



eating the eggs and larvae of the small ant colony there, the caterpillar reaches its full size, pupates, and finally leaves the nest as a fully developed butterfly. So there's a lot to discover on the Eifel's calcareous grasslands.



crevices.

The landscape of the Vulkaneifel is not only characterised by the maars and volcanoes, but also by the numerous brooks and rivers which have carved steep and narrow gashes and V valleys into the Devonian bedrock over millions of years. One example of this can be seen by the Lieser River between Daun and Wittlich.

The sun-drenched rocky outcrops and ridges on the upper slopes are home to a heat-loving oak forest with sessile oaks, haw, hairy greenweed, and wood sage, as well as widespread stitchwort. From here, hikers have fantastic views of the largely unspoilt Lieser and species-rich floodplains. Resting spots and refuges along the Lieser trail, also known as the Eifelsteig as far as Karl, are the perfect places for hikers to stop and take a break.

On the way down into the valley, hikers pass through the former shrubbery dominated by oaks and hornbeams, which were processed for firewood and, in earlier centuries, charcoal for iron smelting. Today, the oaks are being increasingly nurtured, as coppicing is no longer



The narrow windings of the Lieser and the steep, shady cut banks are home to a microclimate which is cool and moist all year round, and is favourable to the beautiful ravine forests characteristic of the Liesertal Valley. Over 50 different locations of this type of forest can be hiked through, some of which can only be seen/accessed from the opposite side of the Lieser. The main tree species found here are ashes, maples, elms and lindens, with alders thriving by the water. It is particularly worth mentioning the ferns, which include the prickly shield fern and hart's tongue typically found in the ravine forests, as well as the peculiar Killarney fern, which leads a non-descript existence in the shady

Another indicator species of ravine forests is the perennial honesty, with its pretty seed heads reminiscent of silver coins. In addition to the many ferns, the special microclimatic conditions are also enjoyed by moss and lichen.

And hikers will welcome the pleasantly cool air in the Lieser ravines on hot summer days.

Climatic changes can occur very quickly at a regional level. A team of researchers has recently established that such rapid climatic changes took place 120 years apart in different areas. Studies conducted in the Eifel Mountains and southern Norway found that, at the end of the last glacial stage, around 12,240 years ago, there was a period of warming, which was initially noticeable in the Eifel Mountains, but only followed suit in southern Norway 120 years later. Yet this heating occurred comparatively quickly in both regions.

It was determined that, during the Younger Dryas – a phase lasting 1,100 years towards the end of the last Ice Age –, Europe underwent a period of warming which initially included the Eifel Mountains. Core samples with marine sed-

iment from the Meerfelder maar lake showed a typical sedimentation pattern. And a similar pattern was also found in the Krakenes Lake in southern Norway, albeit 120 years later in its marine sediments.

How are such clear time markings produced? "12,140 years ago, the Katla volcano in Iceland had a mighty eruption," explains Achim Brauer. "The ash from this eruption spread across large parts of Northern and Central Europe, and we find them in the marine sediment as very fine ash particles. By counting the annual layers in these sediments, we can accurately determine the age of the ash." This ash layer is thus a clear time marker in the sediments of the Meerfelder maar lake and the Krakenes glacial lake.



Marine sediments are very precise, continental climate archives, because they contain seasonal deposits as layers, similar to tree rings. "The hard work is now having to count and analyse thousands of individual deposits under the microscope," says Brauer, "to reconstruct the historic climate year by year way back into the past."

The ash from the Katla volcano eruption thus deposited itself in the Eifel Mountains and southern Norway at the same time. Based on these clear time markings, the marine sediment from the Eifel showed a rapid warming period towards the end of the Younger Dryas, 100 years before the ash layer, whereas in southern Norway this was 20 years after the ash layer. The same warming, but 120 years difference between the two places situated 1,200 kilometres apart? "We can explain that based on the shifting wind systems. The change in climate happened very quickly at a regional level, but the polar front, i.e. the atmospheric interface between the polar air and the air from the temperate zones, needed over 100 years to return from the geographic latitude of the Eifel maars (50°) to its location in southern Norway at 62°," says Achim Brauer. In other words, a rapid change which slowly migrated north.



The result can have far-reaching effects on research, both for the past and future climate. We cannot always assume a change will have taken place everywhere at the same time, and climate models need to pay more attention to these regional aspects. Prof. Dr. Achim Brauer's team of researchers from the Deutsches GeoForschungsZentrum Potsdam (German Research Centre for Geosciences in Potsdam) and Dr. Christine Lane from the University of Oxford received organisational and logistic support from the Maarmuseum Manderscheid when taking core samples at the Meerfelder Maar. This was based on a co-operative agreement between the GeoForschungsZentrum Potsdam and the Maarmuseum Manderscheid, which governs the co-operation to ensure mutual benefit.



by Dr. Peter Bitschene a sure sign of volcanic activity



Eifel basalt with black pyroxene crystals

> Olivine bomb: olivine-rich peridotite in the basalt mantle

From ash to bomb

Basalt doesn't just exist as hard rock; it can also be found as tephra. In this case, the material is then classified based on its core size (ash for diameters up to 2 mm, lapilli when 2 - 64 mm, and bombs and blocks when < 64 mm).

The Eifel plume

The Upper Mantel beneath the Eifel contains a zone spanning a diameter of several tens of kilometres, tubular to plume-like in shape, reaching up to 50-60 km beneath the surface, where temperatures are higher and activity more volatile than the surrounding areas. This melting zone in the Upper Mantle, where all Eifel basalts originate, is known as the "Eifel Plume" because of its feather-like shape. 99% of all volcanic rock in the Vulkaneifel belong to one family: basalt. When fresh, basalt has always a grey or black colour; if it has been modified by volcanic gases, it becomes red due to the formation of ferrous minerals. Solid basalt is heavy – around three times heavier than water. The more porous it is, the lighter it is. Fresh basalt is hard, and shatters into splinters with sharp corners and edges. Basalt columns in the terrain are a classic indicator of congealed lava streams.

In the Eifel basalt, it is possible to identify certain characteristic minerals as mm-size inclusions in the greyish-black ground mass, such as black pyroxene, bottle-green olivine, shiny blackish brown mica flakes or even white feldspars and foids. One of the typical features of our Eifel basalt is the fact that they have much less silica than most other basalts, and no pure quartz (SiO₂) at all. Because of the SiO₂ undersaturation, high alkali content (sodium and potassium), and other geochemical particularities, our Eifel basalts belong to the alkaline basalt group, known as alkali basalts for short. Our Eifel basalts belong therefore to very typical, rare forms of SiO₂-undersaturated intraplate volcanism.

The Eifel's alkali basalt magmas melt at a depth of approx. 60 – 100 km, in the Upper Mantle, rising to the surface from here within a few days. Green, olivine-containing mantle rock (peridotite) is transported up with it, usually found on the earth's surface as fist-size fragments known as olivine bombs. These very rare olivine bombs, in their many shades of green, are displayed at the geo museums in Gerolstein and Daun.

Younger Dryas∙ Warve

Alleröd-Warve

The Vulkaneifel is home to a number of scientific phenomena not found anywhere else on earth, and which are of great international interest to research and science. The latest research projects constantly result in new findings, but also questions.

The GEO museums of the Vulkaneifel region are places of information and gathering for this exciting study of creation, change and life cycles. They are the key to understanding this fascinating landscape and its history.

Every museum has its areas of specialisation, and dedicates itself to the relevant geological, natural history, historic, cultural and technical facets of the Vulkaneifel.



Understanding through experience is the basic educational premise shared by all establishments. Seeing, touching, smelling, hearing – all the senses are used to make even complex contexts "graspable" in the truest sense of the word.

The target group is broad, and even science experts can learn something new. Children and teenagers are familiarised with the topics in an interactive manner, i.e. with a "fun factor". The museums often also run accompanying/extension events, such as museum tours, excursions, workshops, presentations, exhibitions, and programmes for children and school groups.

The Vulkaneifel GEO museums

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See

Touch Smell Hear

ILLES













Eifel-Vulkanmuseum Daun

Volcanic activity in the Eifel/ worldwide, volcanic rocks, surfing through time and space with interactive computer model

Leopoldstr. 9 · 54550 Daun Tel. 06592 985353

www.eifel-vulkanmuseum.de

Eisenmuseum Jünkerath

The Eifel iron industry, iron exploitation and manufacturing, iron stoves and stove plattes

Römerwall 12 54584 Jünkerath Tel. 06597 1482

www.obereskylltal.de www.eisenmuseum-juenkerath.de

"Hands-on geology" exhibition

The region's geological features in an open exhibition, specialising in fossils from the Middle Devonian period.

Burgstr. 20 · 54576 Hillesheim Tel. 06593 809200

www.hillesheim.de

Maarmuseum Manderscheid

Maar volcanism – once and now, the Eckfelder Maar, travel to the Earth's center with the Terranaut

Wittlicher Str. 11 54531 Manderscheid Tel. 06572 920310

www.maarmuseum.de

Naturkundemuseum Gerolstein

Fossils, rocks and minerals of the region, archaeology, prehistoric and protohistoric, interactive forest section

Hauptstr. 72 · 54568 Gerolstein Tel. 06591 5235

www.gerolsteiner-land.de

Vulkanhaus Strohn with Vulkancafé

Volcanic phenomena of the surroundings of Strohn, the origin of lava bowls aund bombs

Hauptstr. 38 • 54558 Strohn Tel. 06573 953721

www.vulkanhaus-strohn.de

There is mineral water, soda water, tap water, spring water and medicinal "Heilwasser". One of the unusual features of the Vulkaneifel is that it is still also home to the carbonated "Säuerling" spring water. Each of these types of waters are special drinks.



Water isn't Water

Soda water

Soda water is not generally a natural product, but rather an industrially manufactured water. Strictly speaking, it is nothing more than an artificially produced mineral water. Treated drinking water is artificially carbonated and enriched with minerals.

Spring water

We've all been hiking, preferably in fine weather, and we know how beneficial it is to find a spring supplying us with fresh water. It's refreshing, clear and, thanks to the constant supply of oxygen which purifies the water, clean. Spring water originates in underground sources, and may only be filled there. It contains fewer minerals than mineral water.

Drinking water/Tap water

The name says it all: water for drinking. Hardly any other foodstuff is regulated as strictly as tap water, at least in Germany.

Drinking water obtained from the Vulkaneifel has an excellent quality thanks to the limestone deposits and the special filtering and storage properties of the loose volcanic rock. Drinking water sourced here is not only available to the local population; the Vulkaneifel is also a key exporter of drinking water to neighbouring regions along the Moselle and Ahr rivers.

Natural mineral water

Mineral water is a purely natural product, and is considered the oldest foodstuff on earth. It is formed out of rainwater, which makes its way through various layers of stone and earth over time, becoming purified and enriched with minerals. It is a pure foodstuff in the truest sense of the word. The mineral waters from the Vulkaneifel are sparkling thirst quenchers, both regionally and internationally.

Medicinal water

Some waters are healthier than others, and this is particularly true for medicinal water. The Eifel springs virtually have medicinal qualities. The premium product is currently only used at hospitals, where it undoubtedly belongs. But it could also become more prevalent in everyday life. Given the general rise in demand for high-quality diets, now is a good time to rehash medicinal water's image. Water from the Eifel can give our body energy and strength naturally.

The beverage market offers many products to which iron, magnesium etc. are added. Medicinal water contains these minerals naturally. It helps pregnant women suffering from iron deficiencies, reduces tiredness and sluggishness, normalises blood pressure, and its high mineral content is good for athletes and anyone else engaging in intense physical activity.







Non-alcoholic cocktail: "Volcanic eruption" Cold hibiscus tea (eight dried mallows in ³/₄ L of water are enough for eight cocktails)

20 ml berry syrup

20 ml freshly squeezed orange juice

1 tbsp freshly squeezed lemon juice Ice-cold mineral water from the Vulkaneifel to top up

Add all ingredients except for the mineral water to a cocktail glass, then top up with mineral water. Do not stir, because the cocktail gets redder towards the bottom. Serve with a maraschino cherry and straw. **Delicious!**

Many people around the world have something to do with the Vulkaneifel every day. It's practically on their menu, or, more specifically, on their drinks menu. It's the mineral water which is exported from here all over the world. The valleys are full of bubbling springs which appear naturally or are accessed through drilling. They are predominantly hydrogen carbonate sources, or carbonated springs, which have dissolved over 1 gram of CO₂ per kilogram of water. Therapeutically effective components such as iodine and radon actually make them medicinal springs.

The mineral water from the Vulkaneifel is exceptionally rich in precious minerals, thanks to the volcanic substratum it passes through on its long journey. The carbonic acid responsible for this mineral enrichment is labelled as virginal, because it comes from the depths of the earth and has no contact with the surface. It can therefore also be called the volcano's breath.

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Sparkling enjoyment

Mineral and carbonated springs in the Vulkaneifel

The outlet temperature of most mineral waters is under 12°C, but the Vulkaneifel also has hot springs. With a temperature of 32°C, the warmest water can be found in Bad Bertrich, bubbling out of Germany's only Glauber's salt spring.

Holiday regions in the Vulkaneifel Nature Park and Geopark



Discover the earth's original vital force: the GesundLand Vulkaneifel

Alive – powerful – grounding. These words describe the GesundLand Vulkaneifel at the Vulkaneifel Nature Park and Geopark, the down-tempo region around Daun, Manderscheid, Ulmen and Bad Bertrich. Whether on foot or by bike, this is where you can experience the earth's original vital force! Sensing pristine nature becomes pure enjoyment for the mind and body.

Getting healthy

Recharge the batteries and start enjoying life again. The idyllic natural setting of

the Vulkaneifel will help you do it. Combined with special back, leg or dietary programmes, the volcanic landscape and its deep-blue maars has a particularly powerful and stabilising effect. Here, you can clear the mind and find harmony with nature and yourself.

Staying healthy

Hike through the picturesque natural setting of the Vulkaneifel, explore the region by bike, riding past wild meadows and forests to the Moselle river, or enjoy peace

and tranquillity in the sauna after relaxing in the natural open-air spas or Vulkaneifel hot springs – a special treat for the mind and body.

Moving healthy

Discover the powers of nature along the region's diverse cycling and hiking tracks, improving your fitness in the process. It's beneficial to health and wellbeing. The GesundLand Vulkaneifel invites you to feel the positive effects natural experiences can have on the mind and body.



GesundLand Vulkaneifel

GesundLand Vulkaneifel GmbH Leopoldstraße 9a · 54550 Daun Tel. +49 (0) 6592 951 370 Fax +49 (0) 6592 951 320 www.gesundland-vulkaneifel.de with the Tourist-Information offices in Daun, Manderscheid and Bad Bertrich



Holiday region Gerolsteiner Land

Mineral water, cycling and dolomites – these terms are all inextricably linked with Gerolstein. But the Gerolsteiner Land region also has a lot more to offer, such as Stone Age caves and medieval castles.



Tourist-Information Gerolsteiner Land Brunnenstr. 10 · 54568 Gerolstein Tel. +49 (0) 6591 94991-0 www.gerolsteiner-land.de

Holiday region Hillesheim

Murderously beautiful is the way Hillesheim, the capital of crime thrillers and mysteries, describes its recreational services and facilities. A healthy dose of excitement is guaranteed at all times!



Urlaubsregion Hillesheim/Vulkaneifel e.V. Am Markt 1 · 54576 Hillesheim Tel. +49 (0) 6593 809 200 www.krimiland-eifel.de www.hillesheim.de

Holiday region Kelberg

Als Partner der Erlebnisregion Nürburgring steht natürlich Motorsport auf dem Programm. Weit ruhiger geht es in der herrlichen waldreichen Landschaft zu, die man zum Beispiel auf der Geschichtsstraße erwandern kann.



Tourist-Information Kelberg Dauner Straße 22 · 53539 Kelberg Tel. +49 (0) 2692 872 18 www.vgv-kelberg.de www.geschichtsstrasse.de

Holiday region Oberes Kylltal

In addition to the geology theme, which is particularly apparent around Steffeln, there are opportunities to enjoy refreshing leisure activities at the at the Kronenburg Lake or take a scenic flight from the airfield Dahlemer Binz.



Tourist-Information Oberes Kylltal Burgberg 22 · 54589 Stadtkyll Tel. +49 (0) 6597 2878 Fax +49 (0) 6597 4871 www.obereskylltal.de











New Relation of the Annual Annua Annual Annual

It's an intense experience. The wind hisses through the vegetation by the side of the road, carrying with it the twittering of birds from the forest, and the rustling of leaves. Herbs, hay and cattle add a touch of spice to the air. With every step further up the crater edge, the scale of the maar funnel becomes more apparent – as do the forces which formed it. Ten thousand years ago, the earth shook here, grew, and caved in again.

It's exciting to relive that. And it's thrilling and educational to track past events. But the Vulkaneifel can inspire you with more than just its evolutionary history. It is a magnificent, well developed hiking region, and a diverse low mountain range with beautiful river valleys, forests full of game, fertile depressions and rolling hills, many of which rise up as wooded volcanic cones.

More **intense** with every step ...



Eifelsteig & Vulkaneifel tracks



"Where rock and water accompany you"

This is the motto set for an attractive hiking trail, spanning more than 300 km through very diverse landscapes, which include the Vulkaneifel. It is the Eifelsteig, which, as a premium hiking trail, has been awarded the "Deutsches Wandersiegel".

www.eifelsteig.de

In addition to the **Lieserpfad** track, which Manuel Andrack declared as being the "world's best long-distance hike" in his book "You must hike", there are other well-known main trails which also head through the Vulkaneifel, such as the **Karl-Kaufmann-Weg**, the **Josef-Schramm-Weg** and the **Vulkanweg**.

The fascinating themes associated with the Vulkaneifel are the subject of numerous regional adventure trails, such as the **Geschichtsstraße** Kelberg, the **Määrchen-Naturwaldpfad** between Gillenfeld and Eckfeld, the **biodiversity track Darscheid**, the **bees educational track**, the **witches**, **hangmen & scoundrels tour** Ulmen, as well as the adventure track **knights**, **robbers and Romans** in Bad Bertrich. Added to these are typical geo theme tracks, such as **millstone and ice caves** at the Rother Kopf, **deserts**, **water and volcanoes**

Vulkaneifel Magazine

around Gerolstein, and the **Volcano adventure trail** Strohn, just to name a few.

And of course the **Eifelsteig** is another talking point. Based on the motto of "Where rock and water accompany you", the premium track, which has been awarded the Deutsches Wandersiegel (Quality Seal of the German Hiking Association), spans a length of 313 km, running right through the Vulkaneifel from Aachen, over the High Fens, to Trier.

The Eifelsteig does not actually visit the many worthwhile and interesting locations and sections of the Vulkaneifel, which is why 14 premium partner **Vulkaneifel tracks** were created to serve as access ways and a source of further enrichment. Some of these entail several days of hiking, and themselves make for an exciting, diverse and certainly unforgettable week of hiking in the Vulkaneifel.

closer with every



The 313-kilometre-long Eifelsteig passes through attractive natural areas and attractions. On its left and right are socalled partner tracks: the Vulkaneifel tracks and other interesting hiking trails serving as access ways to the Eifelsteig. Spanning a hiking distance of almost 380 km, the length of the Vulkaneifel tracks exceeds that of the Eifelsteig. Like the latter, they too are premium routes meeting the same high-quality standards. They all feature uniform, consistent signposting, and are marked with the respective logo.

Vulkaneifel tracks – exciting partners of the Eifelsteig





The Vulkaneifel tracks

The eight circular and six longdistance hiking tracks vary in length and degrees of difficulty. There is also the option of half-day detours or multi-day hikes as add-ons to the Eifelsteig.

Route descriptions and interactive route planner available at:

www.geopark-vulkaneifel.de www.eifelsteig.de www.eifel.info Exploring the phenomena, highlights and natural beauty of the Vulkaneifel is the aim and purpose of the Vulkaneifel tracks. And they do it brilliantly. Each track has its own charm and character. Sometimes the focus is on culture and history, sometimes on the maars and hot springs, and sometimes they follow the peaks from viewing point to viewing point, thereby reflecting the diversity of the Vulkaneifel region.

The Vulkaneifel tracks have been carefully established by experts in the local geological, historic, cultural and natural attractions. But it's not a case of racing from one site to another; the track is instead the destination. Hikers soon fall under the Vulkaneifel's spell, appreciate the tranquillity revealing the voices of nature, and enjoy the countless treasures big and small revealed to them along the way.

step...

As hiking is known for being more fun when done with others, all Vulkaneifel tracks are of course suitable for groups and families. The shorter trails are also suitable for younger children. Shoes and clothing similarly need to be appropriate for your adventure. Beautiful little patches are the perfect place for a picnic, while good dining options ensure physical wellbeing and a restful night's sleep.



A free hiking app is available from the Apple Store and Android market to help with planning and orientation. You will quickly be able to find all the Vulkaneifel tracks under the premium tracks section: **App Wandertouren Rheinland-Pfalz.**

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Three premium cycling tracks head through the Vulkaneifel: the Kyll-Radweg, the Maare-Mosel-Radweg, and the Vulkan-Rad-Route-Eifel. The first two are perfect for recreational cyclists and families with kids, while the third is primarily aimed at competitive riders. Those who prefer things a bit more easy-going can also hire e-bikes on site.

The individual routes can be enhanced with adventure detours, and the themed tracks such as the Kosmosradweg "Kleine Kyll" and "Mineralquellen-Route" are also particularly interesting.



To ensure the kids don't miss out either, there is also a special children's cycling track. Along the virtually flat sections between Densborn and Bewingen, and between Daun and Gillenfeld, even the little ones can experience nature, culture and history, together with their expert companions Willi Basalt, Biggi the Bee, Elli the Owl and Freddi the Bat.

Exploring by bike: CVCINC the nature park and geopark

Cycling has long ceased to be a secret tip in the Vulkaneifel, and hosts acknowledge this popularity by constantly improving their facilities. Hoteliers, restaurateurs, farmhouses and bike hire in the Eifel guarantee top-quality service centred around cyclists – and it's been proven: they have been classified as "bike-friendly" by the Allgemeiner Deutscher Fahrradclub (General German Bike Club, ADFC), and have since been working closely in route teams.

All routes also have consistent, uniform signposting in accordance with ADFC quidelines.

Cycling track network in the Vulkaneifel

St. Vith

available online, the Vulkaneifel Cycling Atlas and the Eifel Cycling Magazine also provide a good basis for planning individual routes and holidays. In the Kylltal Valley, the Trier-Cologne train line which hugs the route similarly offers good "train & bike" combinations, while a "Radelbus" (www.regioradler.de) ensures convenient bike transportation between Daun and Wittlich/Bernkastel-Kues.

Stadtkyll

Kyllbur

Bitbu

he VulkanBike TrailPar

to your heart's content







Further online information on cycling options in the Vulkaneifel

www.gesundland-vulkaneifel.de www.kylltalaktiv.de www.vulkanbike.de www.eifel.info



Cycle along railway lines through the Vulkaneifel and into the Moselle Valley

A ride along the Maare-Mosel-Radweg track, which follows the former railway line from Daun to Bernkastel-Kues, is a real enjoyable treat, as it has virtually no inclines and is therefore perfect for recreational riders or families with children – in both directions.

Over viaducts and bridges, through tunnels and Eifel forests, and past the maars and extinct volcanoes, it heads down into the Moselle vineyard landscape. You can find out even more about the land and its people on one of the eight cycling adventure detours.

Source: www.outdooractive.com



Connecting the Eifel with the Ardennes

In the western half between St Vith and Prüm, the almost entirely sealed route follows former railway lines. This section has few inclines, and is therefore also suitable for families and recreational riders. The landscape here is characterised by rolling plateaus.

Things get more challenging after Prüm. The middle section passes through the Prüm, Kyll and Alfbachtal valleys, involving several major ascents. But cyclists are rewarded with extensive views over the volcanic cones of the Eifel, and long descents. The route continues on through Gerolstein and Daun to the Nürburghöhen hills.

Source: www.outdooractive.com



Following the Eifel region's most important northsouth route – right through the Vulkaneifel

The cycling track from Dahlem to Germany's oldest city, Trier, heads in a straight line down through the Eifel Mountains. The starting point is easily accessed again via the Cologne-Trier train line. The long-distance cycling track snakes its way along the Kyll, past numerous castles, through the diverse landscapes of the Eifel. It starts in the northern Eifel, with their dams and lakes like the lake Kronenburg. From the Kyll-valley you can also take the bike to Eastern Belgium on the former railway-track from Jünkerath to Weywertz.

Source: www.outdooractive.com



From the Ahr cycling track to the Kyll cycling track, or vice versa. The track follows the Ahbach Valley through a region which has been characterised by lime mining since Roman times. Cyclists will ride along a former railway line, and therefore avoid virtually any inclines, for almost the entire distance. The relatively short track is dotted with attractions, including one of the most beautiful brook valleys in the Eifel, the "Bolsdorfer Tälchen". Those who have already been riding for a while are recommended to try the Barfußweg track with 22 stops over more than 1.5 kilometres – and to enjoy the view of the former natural landscape. It's also worth getting off your bike in Hillesheim – to visit the 13th century city wall. *Source: www.outdooractive.com*

Wilkan-Rad-Route Eifel



Mountains, castles, basalt and fit legs

This breathtaking route which climbs up to the Nürburg and rapidly descends to Bad Bertrich is a challenge for competitive cyclists. But they are rewarded with high-speed descents and the finest views of nature: The Mosbrucher Weiher nature reserve and its 11,000-year-old maar is sure to thrill any nature lover, while the impressive youngest Eifel maar in Ulmen is also a great place to stop and relax. Those who find the water too cool there can take a bath in the more temperate medicinal waters at the route's destination, Bad Bertrich. It is home to the only Glauber's salt spring, which has been bubbling up there amongst 2000-year-old Roman relics. *Source: www.outdooractive.com*



Connecting the Ahr and the Lieser

The first two thirds of this cycling track follow a gentle, even climb along the Ahbach, from its mouth at the Ahr to its source around Dockweiler. In doing so, it crosses the traditional limestone region of Üxheim-Ahütte, passing directly by the Nohn waterfall, through Oberehe-Stroheich, and curving around the "Dreiser Weiher" maar, before reaching the home of mineral springs, the town of Dreis-Brück. After crossing the water divide between the Ahr and Lieser, the route ends at the cycling track hub of Daun, where the Eifel-Ardennen-Radweg and the Kosmosradweg invite you to continue on from the Maare-Mosel-Radweg trail.

Source: www.outdooractive.com

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Travelling through the solar system

The endless vastness of the universe is brought closer here throughout a one-day stage. Everything beyond our comprehension of time and space becomes "palpable". This winding track runs from the Daun spa resort, through Pützborn, Oberstadtfeld, Niederstadtfeld and Schutz, to Meerfeld, and is broken down into two themed areas. First, it travels faster than light from the sun to its satellites, in keeping with the scale with which the individual planets are presented using steles and display boards. In the second stage, cyclists travel through time between the present and the big bang.

Source: www.outdooractive.com

trailpark
VulkaneifelVulkanbikeTrailpark Vulkaneifel

A playground for bikers

Spanning an area of 500 $\rm km^2$ and a route network of 750 km, the Vulkaneifel is the perfect place for varied mountain-bike rides.



The "**Kôulshore**" offers some cracking highlights. The name, made up of "Koul", the Eifel dialect for lava pit, and the English term "shore", represents technically challenging single trails, rapid descents, and woody north-shore elements guaranteed to provide a rush of adrenalin and action. These routes are not suitable for amateur riders.

The annual **VulkanBike Eifel Marathon** in and around Daun is a special kind of mountain-biking festival. *Source: www.vulkanbike.de/*

Mighty volcances Magical maars

Off along the German Volcano Route

The German Volcano Route connects interesting geological highlights in the Eifel region's volcanic landscapes over a total distance of 280 kilometres.

The charming, varied route boasts maars, cinder cones, lava streams, domes, calderas, and countless bubbling springs. Be fascinated by the geological, vulcanological and cultural historic attractions, and enjoy the interesting and entertaining geo museums, where you can track down the secrets of this unusual natural heritage. The German Volcano Route allows the volcanic landscapes of the Eifel region to be explored over several stages by car.

Info centres and museums provide accompanying regional and local geological facts, as well as details on the wide range of tourist facilities. Because apart from learning about the mighty forces of the earth's interior, a stay along the German Volcano Route also involves relaxation and pleasure at the various hotels, B&Bs, restaurants and guesthouses.



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Experience the unusual







not the everyday grind

The eifelnaturreisen services impressively demonstrate that attractive natural experiences are compatible with conservation measures. And what's more, nature is given added tourism value without affecting the habitats or the local flora and fauna, and is thereby ultimately protected. Because people will only appreciate what they know, and only protect what they appreciate.

At one with nature

Respectful handling of the Eifel region's nature and its flora and fauna is the key element when planning and implementing natural adventure options for tourists, with emphasis consciously placed on exclusivity and sustainability. Nature lovers and families will be taken to unusual protected landscapes, biotopes and geotopes in small groups, accompanied by specially trained, expert nature guides, who entertainingly highlight the unique features of the Eifel landscape and its flora and fauna. Nature is king here, and the resting times required by the animals in the individual natural spaces in order to develop properly are respected. This creates a holiday atmosphere in which adventure is combined with an awareness of beauty and the need to protect the Vulkaneifel.

Anyone who prefers the unusual to the usual, and is looking for a unique, exclusive nature experience, will love the services offered by eifelnaturreisen. (www.eifel-natur-reisen.de)



Maars, volcanic cones, spectacular rock formations, and bizarre guarries with million-year-old fossils are all well and good, but the expedition can be made even better if accompanied by friendly local experts. And the specially trained nature and geopark guides on guided hikes and excursions are just the people.



The Vulkaneifel Welcome!

Vulkaneifel Magazine



Selected geopark hosts are particularly keen to demonstrate to interested visitors how the volcanic landscape can be combined with sumptuous treats, artistic creativity, or exciting activities. Geopark hosts are the first port of call, and offer a particularly warm welcome to visitors to this landscape.





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Dieses Angebot wird im Rahmen des Entwicklungsprogramms PAUL unter Beteiligung der Eu-ropäischen Union und dem Land Rheinland-Pfalz, vertreten durch das Ministerium für Umwelt, Landwirtschaft, Ernährung, Weinbau und Forsten, durchgeführt.

EUROPÄISCHE UNION Europäischer Landwirtschaftsfonds für die Entwicklung des ländlichen Raums: Hier investiert Europa in die ländlichen Gebiete.



