

## Different approaches to the formation of Geoparks

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### ABSTRACT

This article deals with the formation of Geopark. European Geoparks aim to present the geological heritage in the regions where geological phenomenon is so pervasive that can attract tourists. The paper presents methods of defining and establishing Geoparks in the Slovak Republic, as well as basic rules for the establishment and operation of Geoparks included in the European Geoparks Network. The authors argue about the pros and cons of setting up Geoparks level of state bodies and organizations versus building Geoparks "bottom", from the regional level. The paper describes the possibilities of monitoring the geological attractions in the Geoparks, advantages of personal and automatic counting of the visitors. This paper also presents a formation of the geopark on the base of creation from the local level - case study – Katla Geopark in Iceland which is already a member of the European Geoparks Network and Global Geoparks Network. Briefly characterize the development of the geopark it's functioning and attractions. Reykjanes geopark case study shortly describes the process of implementation to the membership of the European Geopark Network with the actual results of the non-inclusion to the EGN.

**Key words:** Geopark, European Geopark Network, conception of formation geoparks, Geoparks development concept in Slovakia, monitoring the geological attractions, personal counting, automatic counting, Katla Geopark, Reykjanes Geopark, Iceland,

### INTRODUCTION

Geoparks are an important part of geotourism. They present territorial units, which are characterized by significant geological phenomena. Geological objects are presented in a form to become an attraction for visiting the region, whether professionals or the general public. It is only an advantage if Geopark offers to visitors other attractions, whether it is on natural, historical or cultural basis. One of the important role of Geopark is to encourage the economic development of the region by offering new jobs and increasing revenues from tourism. An important part

of a well-operating Geopark is to protect the environment in the region.

Geoparks are associated in national and later (in our case) in European and global networks of Geoparks. Establishment of Geopark is conditioned by activities of municipalities, associations and other organizations at the local level. Slovakia has issued its own way, and supports the development of Geoparks at the republican level. The result is that so far as Europe is already registered 64 geoparks in the European Geoparks Network, Slovakia, despite its undisputed potential within geotourism (Baláž et al., 2013), still has not established a national network in the

European Geoparks Network where is registered just one - Slovakia-Hungarian cross-border geopark.

## EUROPEAN GEOPARKS NETWORK

European Geopark has to encompass a particular geological heritage, with specific geological, mineralogical, geophysical, geomorphological, palaeontological or geographical features. It must comprise a certain number of geological sites of particular importance in terms of their scientific quality, rarity, aesthetic appeal or educational value.

The majority of sites found within a European Geopark must be a part of the geological heritage, but their interest may also be archaeological, ecological, historical or cultural. The authorities of each Geopark have to agree the promotion of a sustainable territorial development strategy for the area of the Geopark. A European Geopark must have clearly defined boundaries and sufficient surface area for true territorial economic development. Geo-sites in a European Geopark must be linked in a network and benefit from protection and management measures. A European Geopark is obliged to protect the values of geological heritage conservation and thus no destruction or sale of geological objects from a European Geopark cannot be tolerated (European Geoparks Network, 2001, 2005, 2006, 2007, 2008).

Geopark is the institution with defined structure and functions. The European Geopark is a territory which combines the protection and promotion of geological heritage with sustainable local development, (Zouros N.,C.: 2008). The European Geoparks Network (EGN) has been established in 2000. The Global Geoparks Network (GGN) was established by the UNESCO in 2004.

EGN Coordination Committee, the decision making structure of the Network, during a meeting in North Pennines AONB

(UK) in July 2006 (European Geoparks Network, 2006) defines the following:

- European Geopark (EG) must be managed by a clearly defined structure, organized according to the national legislation of each country, able to enforce the protection, enhancement and sustainable development policies within its territory.
- EG has to play an active role in the economic development of its region through enhancing the general image linked to the geological heritage and the development of geo-tourism. The Geopark must collaborate with local enterprises to promote and support the creation of new touristic products linked to the geological heritage.
- One of the main goals for all EGs is to improve and extend the recognition, protection, conservation and promotion of the geological and geomorphological features contained in them. To achieve this, the Geoparks are continuously developing, experimenting and enhancing methods for preserving the geological heritage and supporting the development of scientific research in various disciplines of the Earth Sciences.
- EG also aim to improve society's recognition of the importance of protecting and conserving the unique heritage of the Earth. Further activities undertaken by the Geoparks include the preservation of endangered geological heritage sites for future generations and the education of the public at large in matters concerning geological sciences and the environment. The Geoparks take an active role in organizing and hosting education and training activities at all education levels in Earth sciences, in the enhancement of the natural environment and in sustainable development policies (Hvizdák, 2013).
- EG needs to have a direct impact on the region in which it is situated by influencing its inhabitants' living conditions and environment. The aim is to enable the inhabitants to appropriate

the values of the area's heritage and to actively participate in the region's cultural revitalization as a whole.

- EG must work within the EGN to further development and cohesion of the network. All activities undertaken by the Geoparks have to be in a spirit of complementarities with the other members of the EGN. Especially in the fields of common geotouristic packages and the creation of new tourist products linked with the geological heritage, all European Geoparks have to work together in order to improve their common profile as special tourist destinations and attractions.

## CONCEPTION OF GEOPARK DEVELOPMENT IN SLOVAKIA

In 2008 the Slovak Government adopted so called **Conception of Geopark Development in Slovakia** as a basis for institutional processes, coordination of geopark movement, networking, presentation the geoparks at home and abroad.

Slovak Government Resolution no. 740 of 15 October 2008 was approved "The Geoparks Concept in Slovakia", in which they were allocated 3 categories:

- Geopark in operation - Banská Štiavnica Geopark,
- built Geoparks - Banská Bystrica Geopark, Geopark Novohrad – Nógrád (Fig. 1),
- proposed Geoparks (Dubnický Geopark, Zemplínsky Geopark, Sandbergsko-Pajštúnsky Geopark, Spiš Geopark, Geopark Silica, Jasovský geopark, Súľovsko-Manínsky Geopark).

Slovak government instructed the Minister of the Environment to implement the Concept of Geoparks in categories A and B, and submit to the Government on the implementation the Concept of 30 October 2012 called "Report on the



**Fig. 1** Hexagonal basal pillars in Novohrad –Nógrád Geopark (photo by Bartolomej Baláž)

implementation of the Concept Geoparks in Slovak republic".

But centralized approach, which initially seemed to be an excellent start in the development of Geoparks in Slovakia later became a hindrance Geoparks. States Geological institutions have done a good job, but not towards the creation and development of Geoparks. They have defined geological peculiarities on pre-selected areas, even categorized and prioritized the boot order of Geoparks in Slovakia. The result is incomprehensible to the public scientific description of geological phenomena, as well as creation of a number of organizations that competing with each other and waiting for financial support of their organization. One of the result of such approach is that in Europe a unique Bansko-Štiavnický region is not yet part of the EGN.

Slovak Government Resolution no. 608 of 31 October 2012 instructed the Minister of the Environment to develop the New Conception of Geoparks in Slovakia until 30th November 2014.

From this time, Institute of Geotourism F BERG TU Košice was involved to the preparing the document, but again strong centralized approach is present. The most

important contribution of our Institute was reverse of preconceptions that Geopark is a set of professionally described geological phenomena and geological maps, and that Geopark is product of geotourism with strong educational, economical, cultural and historical background.

Proposed material is sufficiently detailed. Only for a preview of the official places are still convinced of the leading role of public authorities and organizations in establishing and operating Geoparks, we present selected sections from this prepared non official material:

- Create conditions to support the activities of the building and operation Geoparks effective use of funds from the operational programs for the period 2014 - 2020 so that the used potential Geoparks as an element of tourism on sustainable development and employment services, and support business activities. Responsible: Ministry of Environment of the Slovak Republic, Ministry of Transport, Construction and Regional Development of the Slovak Republic and the Ministry of Agriculture and Rural Development of the Slovak Republic in cooperation with the relevant governing bodies
- Ensure financial sustainability of Geoparks promoting tourism in their territories. Responsible: Ministry of Transport, Construction and Regional Development in cooperation with relevant tourism organizations
- Establish an inter-ministerial Steering Committee Network of National Geoparks Slovakia to coordinate, promote development and cooperation Geoparks taking into account the guidelines and criteria of UNESCO to entry into the global Geoparks Network. Responsible: Ministry of Environment of the Slovak Republic in cooperation with the Ministry of Transport, Construction and Regional Development of the Slovak Republic, the Ministry of Agriculture and Rural Development of the Slovak Republic,

the Ministry of Culture of the Slovak Republic and the Ministry of Education, Science, Research and Sport of the Slovak Republic

- In the Geopark and territories with a view to their inclusion among Geoparks implement geological work in accordance with the concept of geological research and exploration territory of the Slovak Republic for 2012 - 2016 (view 2020) within the limits of the Ministry of Environment of the Slovak Republic for the financial year. Responsible: Ministry of Environment of the Slovak Republic
- Support the construction and operation of Geoparks from the Ministry of Environment of the Slovak Republic for the Slovak Mining Museum and the Slovak Environmental Agency within the limits of the Ministry of Environment of the Slovak Republic for the financial year. Responsible: Ministry of Environment of the Slovak Republic

#### **POSSIBILITIES OF MONITORING THE GEOLOGICAL ATTRACTIONS IN THE GEOPARKS.**

Despite the efforts of the conception of Geoparks and creating of new Geoparks at national level, raises the problem with the functioning of existing Geoparks in Slovakia. One of the most serious problems is the lack of monitoring and collection of statistical data on visit of Geopark. These deficiencies lead to the impossibility of planning and further development of Geoparks. In the Geoparks is not known traffic of the individual geosites, it is not even known their overall visit. It has many causes, such as extensive territory, lack of human resources for monitoring, respectively lack of funds to implement monitoring.

There are several possibilities how to implement monitoring:

Personal counting of visitors can be performed using a sufficient amount of

people, people trained to monitor. They need to be deployed close to the geosites, or access roads in order to monitor not just the number, but also the movement of the visitors. Data shall be completed into pre-prepared forms. Due to organizational complexity is monitoring carried out just in certain period, e.g. 1x per year. Part of personal counting is often the questionnaire survey, which finds the key information for the Geopark.

Advantages of personal counting:

- personal contact with tourists, opportunity to obtain more detailed statistical information's - age, gender, residence, as well as non –statistical information's - visitor's satisfaction, attractiveness rating etc.
- part of the census can be also consultancy for tourists – navigable, provide information's
- accurate method

Automatic counters of pedestrians are used to monitoring a specific location, such as geosite, or the use of walking trails. Allow to count the people which visited the geosite and used the sidewalk. Depending on configuration they are able to differentiate pedestrians and cyclist, also the direction of their movement. Automatic counters are discreet and invisible, permanently installed in given census point, or they are mobile and census point shall be installed temporarily. Its construction is resistant to weather conditions and vandalism, does not need the electricity supply.

Advantages of automatic counting:

- monitoring throughout the tourist season
- measured data are send via the GSM network, therefore is not necessary to manually download the data
- measured data are in digital form – there is no need to digitize

The best solution of monitoring in the Geoparks is a combination above mentioned methods and use of their advantages. Automatic counters will

provide detailed statistical information's regarding the numbers and movement of visitors throughout the season. Personal counting will completed the non-statistical data monitoring, such as visitor's satisfaction, geosites attractiveness, availability of the geosites and perception of security risks. Monitoring data are an important indicator for evaluating of the investments to the geological sites, hiking and biking trails, for their marketing and maintenance, as well as for the overall management of the Geopark.

## **GEOPARK FORMATIONA ON THE BASE OF CREATION FROM THE LOCAL LEVEL**

### **Case Study - Katla Geopark in Iceland**

Katla Geopark is the first and actually only Geopark in Iceland, which was becoming a member of the European Geopark Network. Its name originates from the volcano Katla which lies under the the Mýrdalsjökull Icecap. The Katla region also includes the infamous Eyjafjallajökull volcano which upset air traffic around the globe when it erupted in 2010. The Geopark is in every sence the land of ice and fire. It is located in the southern part of Iceland and follows the borders of three municipalities, Skaftárhreppur, Mýrdalshreppur and Rangárþing-eystra (Fig. 2).

The Geopark project developed started in the year 2008 by the University Centre of South Iceland and later partly funded by the Growth agreement project for the South region of Iceland. This part of South Iceland was a focus for study because of negative population trends and the need for new employment opportunities for young people in the area. The Icelanders realized that the Geopark philosophy could be a powerful tool in reversing these trends. From the start municipalities included in geopark participated in the project both by providing finance and lots of time. Moreover, companies, organisations and

individuals have participated in the project from the start. The mission of the Katla Geopark was to enhance co-operation between all three municipalities with the aim of promoting sustainable development within the territory in the field of geotourism together with the preservation of natural and cultural values.

Since 2008 a working committee has met regularly in order to coordinate strategies of the municipalities and the vision for the area. The committee consists of one government official from each municipality and each has one representative of the tourist industry. Moreover there were representatives of the University Centre, regional development centre, the marketing centre and of the University of Iceland's Institute of regional research centres.

The Katla Geopark Project was formally established in 2010 and handed in its application for membership in the European Geoparks Network in November the same year.

Katla Geopark became a member of the EGN and GGN in September 2011.

In the geopark are eight founding partners; the three municipalities of Skaftárhreppur, Mýrdalshreppur and

Rangárþing eystra, University Centre of South Iceland, Development Centre of South Iceland, University of Iceland's Institute of regional research centres, Skógar museum, Katla centre and Kirkjubæjarstofa. The membership is open to associations, corporations, individuals and others following an application and payment of the membership fee. The committee is the administration Board, a statutory organ of the association, in fact the management of the Geopark. It has five members, who are elected for four years. It has to decide on all of the matters concerning the association activities, prepares the budget, submits the financial audit, negotiates the agreements with other subjects, submits the plan of the functioning of the association. It contacts the potential partners of the Geopark, is responsible for fundraising and is the source of project financing, and communicates with other partners in the area. The committee hires a professional manager for all of the organisational and coordinating work (Sveinbjarnardóttir, Ásbjörnsdóttir, 2010).

The revenues of the association come from the sources as:



**Fig. 2** Black pebble beach and basalt formations close to Dyrhólaey in Katla Geopark (photo by Lucia Hlaváčová)



**Fig. 3** Skógarfoss - lovely waterfall on Skóga River in Katla Geopark, 62 m high and 15 m wide, it is possible to walk on the top of the waterfall and have a beautiful view (photo by Lucia Hlaváčová)



**Fig. 4** Dyrhólaey – cliffs are the most southerly part of Iceland, important bird nesting site, during the summer there are many Puffins – symbol of Iceland (photos by Lucia Hlaváčová)

Membership contributions - financial means obtained from the members of the association (municipalities, micro regional associations of municipalities, entrepreneurs, expert organisations, non-governmental organisations, schools)

- Financial means from various programmes, funds (EU funds, community programs, cross-border cooperation, euro-regional activities) or

foundations. The financing is realised through Katla Geopark association or through projects realised separately in each municipality, or through small particular projects concerning the Comprehensive Strategy of the territory.

- Sponsorship  
- Direct revenues from souvenirs, advertising, admissions fee.

Except mentioned active volcanoes and glaciers has the Katla Geopark many other attractions, some of the beautiful waterfalls (Fig. 3, 5), black sandy and pebble beaches (Fig. 2), lakes, glacial rivers, awesome mountains (Fig. 6) and green meadows. Everyone should be able to find accommodation to their taste from hotels, hostels, guesthouses and farm holidays, to camping grounds, summer cabins, mountain lodges or community halls. Restaurants and cafés offer gastronomic pleasures using local products which have

appeared increasingly on menus in the last few years. For those not well exhausted after visiting the geological sites of the Geopark, the area offers three open air swimming pools and fitness centres. There are five riding companies that offer tours or lessons, associations for hiking, ice climbing, caving, angling, shore fishing and mountaineering. Tourists can enjoy the jeep safaris, quad bike tours, snowmobile tours and golf. During winter the snow activities include skiing, snowmobiling and glacier walking or climbing.



**Fig. 5** Seljalandsfoss – it is possible to walk around the waterfall (photos by Lucia Hlaváčová)



**Fig. 6** Pétursey – tuff mountain 275 m high, rises from the plains around it (photo by Lucia Hlaváčová)

## Case study – Reykjanes Geopark in Iceland

Reykjanes Geopark is situated in SW Iceland on the Reykjanes peninsula. Peninsula is young section of the Iceland where the Mid Atlantic Ridge axis comes ashore. Here two tectonic plates part at an average rate 2,5 cm/yr. Geopark is well located because in the area is Keflavik International Airport where visitors arrive and many airlines using its strategic location in the mid-Atlantic. Directs flights are available from Europe and North America. It is close to capital city and in the Geopark is famous Icelandic Geothermal Spa – Blue Lagoon. The Reykjanes Geopark covers five municipalities Grindavík, Reykjanesbær, Sandgerðisbær, Sveitarfélagið Garður and Sveitarfélagið Vogar, area of 875 km<sup>2</sup>. Reykjanes peninsula offers many natural attractions, lava fields, crater rows, faults, high-temperature geothermal fields (Fig. 7).

The establishment of a Geopark in the Reykjanes region at the end of 2012 is part of a long process. For decades, people in the region have discussed how to promote and raise public awareness of the region's geological heritage. The idea has always been to establish some kind of a park for that purpose, often referred to as "Volcano Park".

In 2008 Grindavíkurbær, one of the municipalities, started working on a policy regarding the use and protection of natural resources. The idea of Reykjanes Geopark was conceived at the same time and the municipality published a report on the idea. The idea was well received by the other municipalities in the region, the local community and other partners. It is now part of the Regional Plans for Reykjanes 2008-2024. The plans state that the Reykjanes region should be eligible as a Geopark due to its geological history, formation, resource utilization and culture. The emphasis for the Reykjanes region is to illustrate the diverse conjunction of nature and culture (Fig. 8), to inform and educate

and to create jobs that are based on the uniqueness of the area (Jönsson, Guðmundsson, 2012).

Reykjanes Geopark Project was formally established in autumn 2012 and in the same time Project applied to join European Geopark Network and UNESCO Global Geopark Network. However, while the Geopark is not a member of the EGN and GGN. During the summer 2013 evaluators visited the Geopark and they recommended to make some corrections in geotourism and interpretation strategies, management and geoconservation. According to them, the project has a good potential but the application was submitted to soon. The management team is at an initial stage of development, there is lack of activities related with geotourism and there is no assessment of the geosite geotourism potential. Geopark has been also criticized for insufficient interpretation of the geosites. Much need to be done in order to reach the standards of the operation of EGN and GGN member.

The preparations for the Geopark have been led by the municipalities and later funded partly by Iceland 2020 – governmental policy statement for the economy and community. A working committee, consisting of one governor from each municipality, has met regularly since then to form a shared vision and strategy for the proposed Geopark. It consists of one government official from each municipality. There are also representatives from Heklan regional development centre, Reykjanes Tourist Board, Keilir - Atlantic Center of Excellence, geothermal power company HS Orka Ltd. and Blue Lagoon Ltd. Other organizations, companies and individuals have also participated in the project.

Management of the Reykjanes Geopark is working on the deficiencies and continue to seek membership of EGN and GGN. EGN and GGN agreed to continue to work towards membership.

Visit of the Katla Geopark or Reykjanes Geopark is possible to plan in every season,

there are many options and each season has a special charm (Fig. 10).



**Fig. 7** Krýsuvík – Seltún – high temperature geothermal area with mud pots and steam vents, belongs to one of the four volcanic systems on Reykjanes peninsula (photo by Lucia Hlaváčová)



**Fig. 8** Reykjanesviti lighthouse – Iceland's oldest lighthouse, on the south-western edge of the Reykjanes peninsula (photo by Lucia Hlaváčová)



**Fig. 9** The Bridge between two continents at Sandvík –the Eurasian and North American tectonic plates continuously drifting apart (photo by Lucia Hlaváčová)



**Fig. 10** Northern lights on Icelandic winter sky (photo by Lucia Hlaváčová)

## CONCLUSION

Due to the position of Slovakia within the geological structure of the Carpathians, the extensive historic mining activity in Slovakia, the presence of the greats of European importance in the development of mining technology, the presence of the first technical university type (mining) in the world in Slovakia, the presence of numerous cultural and professional institutions professionally engaged in mining and geology, is a state in the establishment and operation of Geoparks in Slovakia incomprehensible. It turns out that particular journey Slovakia Geoparks support from the republican level hinders their development. For example, in times of crisis and belt-tightening cannot be a priority for state support Geoparks and preferential financing. Monitoring data from the geological attractions is an

important indicator for the Geopark management. The data indicate where future investment should be directed to the development and advancement of the Geopark. As mentioned in the case study from Iceland, related interests at the local level and subsequently targeted fulfilment of the conditions of entry into the EGN from the beginning of its formation, leads to its rapid inclusion into the international Geoparks structures. On the other hand, as is shown in the Case study Reykjanes Geopark, early submission of application for inclusion to the EGN, may lead to the non-inclusion to the Geoparks network.

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