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Geoatractiveness of UNESCO geoparks in Poland and Finland (comparative analysis)

Abstract: Geotourism is relatively new form of sustainable tourism, which is nowadays developing as an idea for protecting valuable geological and geomorphological landscape elements. However, places recognized as geoparks should have been marked as areas with special geological and geomorphological significance. This study presents comparative analysis of two UNESCO geoparks (Rokua Geopark in Finland, Muskau Bend Geopark in Germany and Poland) attractiveness which have different perspectives of development, as they are localized in two dissimilar regions of Europe. Paper considers how geoattractivness differences affected on geoparks popularity and functioning. It also considers the role of geotourism in sustaibnable development and sustainable tourism.

Keywords: geoparks, Rokua Geopark, Muskau Bend Geopark, geotourism, sustainable development, sustainable tourism, geoatractiveness

1. Introduction

Activities related to environmental protection are directly connected with growing anthropopressure, which has reached unimaginable dimensions from the times of industrial revolution. Since then, legal regulations related to the topic of nature preservation had become more and more important (Machowski, 2003), while the foreground was initially the protection of biotic nature, and only recently, activities aimed at preserving abiotic part of it, began to be implemented. Their tasks include protection and conservation, as well as providing tourist information and sustainable use of its geological, geomorphological and cultural richness. Currently, the conservation of inanimate nature (geological and geomorphological heritage) in most cases takes place in combination with elements of animate nature. In the areas of national or landscape parks, forms of abiotic nature protection can be often found (Symonides, 2007). According to Gray (2004), in many countries around the world, activities to protect the geological and geomorphological heritage of the Earth are organized according to similar schemes.

One of the forms of Earth's heritage protection is geoparks. Geopark is a "single, unified geographical area, where landscapes of international geological importance are managed in the spirit of a holistic concept of protection, education and sustainable development" (Global Geoparks Network; www.globalgeopark.org/aboutGGN/6398.htm, 2018) .

Creation of geoparks was related to the idea of nature protection under UNESCO's patronage, which has been developing since the 1960s, including the UNESCO World Heritage List of World Cultural and Natural Heritage. In the 1970s, the idea to create zones whose main purpose would be to show human cooperation with nature and processes occurring in the environment was invented (a project called "Man and the biosphere"). Later, attention was paid to areas with great geological and geomorphological values, which were called geoparks (Alexandrowicz, 2006). The first initiative to create geoparks was taken in the 1990s, and already in 2000, a European Geoparks Network (EGN, http://www.europeangeoparks.org), including Haute Provence, Petrified Forest, Vulkaneifel

and Maestraze Cultural Park, was established. The geoparks were included in UNESCO program in 2004, when the guidelines for submitting a geopark (Migoń, 2012) were outlined in the "Operational Guidelines for national Geoparks seeking UNESCO assistance 2004". The main objective of the EGN is to advertise and increase activities that prioritize sustainable development, by promoting geotourism on a continental scale, as a high-quality tourist brand. Global Geoparks Network currently has 141 members all around the world including EGN 72 geoparks in 23 European countries (UNESCO; www.unesco.org/new/en/natural-sciences/environment/earth-sciences/unesco-global-geoparks/list-of-unesco-global-geoparks/; GGN; www.globalgeopark.org/aboutGGN/list/index.htm). The idea of introducing geotourism is getting more and more popular (especially in Europe and China), and the list of GGN members grows faster year by year. It should be emphasized that the areas on the UNESCO list are prestigious and are often chosen as a tourist destination (Migoń, 2012).

Geotourism publications cover general issues regarding the definition of geotourism and projects of creating new geoparks (Alexandrowicz, 2003; Kozłowska-Adamczak and Krupa, 2013), as well as geo-attractiveness of various areas (Rybár, 2010; Yuliawati et al., 2016), and also attractiveness of selected geoparks (Łach, 2017).

The aim of present research is a comparative analysis of two UNESCO geoparks, located in Finland (Geopark Rokua) and Poland (Geopark Muscau Bend, In Polish: Łuk Mużakowa, partly also located in Germany) (Fig. 1).

Figure 1. Location of research areas (source: prepared based on ASTER Global Digital Elevation Map Announcement The Ministry of Economy, 2011 and Natural Earth. Free vector and raster map data@naturalearthdata.com)

This paper presents the creation and development of functioning of geoparks, as a form of sustainable development in tourism and abiotic nature protection, on the example

of selected objects in Poland and Finland, as well as further perspectives of its evolution. The choice of research areas was dictated by various legal conditions of Poland and Finland, different socio-economic determinants, different traditions in the field of nature protection, as well as a different approach to the method of nature education. In case of the Muskau Bend situated at the Polish-German border, only Polish part of this area was discussed.

2. Methods

Main research questions of this paper are: What is the level of geotourism attractiveness of Rokua and Muskau Bend geoparks, for various types of recipients and what are they characterized by? At what level are marketing and promotional activities of both areas? How does the management of geoparks affect the sustainable tourism popularity idea? How to improve the application of sustainable tourism in the realities of chosen research areas? Are geoparks a sustainable development success?

Paper uses the method of geotourism attractiveness valorization proposed by Doktor et al. (2015). Authors distinguished four valorization criteria that are important for geotourism and their rank for tourists (accidental, conscious and enthusiasts), educators (teachers, guides, organizers) and investors (owners and managers). In accordance with this method, valorization criteria are divided into primary and secondary ones, which include visual, cognitive, utilitarian attractiveness and investment needs. Visual attractiveness is based on distinctive features of landscape of the geopark, in relation to the surrounding areas, and the presence of dominant elements in the landscape. The level of cognitive attractiveness is most influenced by geodiversity, which is one of the necessary elements to create areas of abiotic nature conservation. In addition, the second important thing referring to its state is cultural links that play an important role in the creation and functioning of geotourism areas. Utilitarian attractiveness is the level of land development in the geotouristic sphere. It is directly related to investment needs in a given area.

Based on the characteristics of given criteria (visual, utilitarian, cognitive, investment needs), two geoparks have been assigned the level of attractiveness in a 5-point scale from very low to very high. The assessment of geo-attractiveness according to the above criteria illustrates the state of functioning of a given geopark. Based on the analysis results, conclusions can be drawn regarding the further development prospects of the geopark and address its role as a tool for sustainable development in a given region and country (Doktor et al., 2015).

3. Geographical background of Rokua and Muskau Band geoparks

Geoparks compared in this paper are located in different regions of Europe (Fig. 1), thus they operate in different climatic and plant zones and in other socio-economic conditions.

Rokua Geopark (Fig. 1) was added to the UNESCO geoparks list in 2000. It became the first and so far the only Finnish UNESCO range geopark (Jurvelin and Okkonen, 2007). It is also the world's largest geopark (1326 km^2). Geopark is located in three municipalities: Vaala, Utäjärvi and Muhos, which lie within borders of provinces of Northern Ostrobothnia and Kainuu, between the cities of Oulu and Kajaani. Geopark is located near the Arctic Circle (about 64° N), and about 60 km away from the Gulf of Bothnia's coast. Rokua lies in the taiga zone and is characterized by typical boreal vegetation. Oulujoki valley, Oulujärvi lake, also known as the Sea of Kainuu, and inland dunes of Rokua National Park are characteristic features of the area. Geo-attractiveness is also influenced by cultural heritage, which was shaped depending on geological and geomorphological conditions. Traces of human activity in Rokua geopark, date back to the Neolithic period (around 6000 years ago) (www.rokua.fi). In Niemisjärvi, on the Oulujärvi lake, traces of former settlement and remains of ceramics from the Bronze and Copper Age were found.

Muskau Bend Geopark (Fig. 1), created in 2011, is the first Polish geopark. Geopark is located on the Polish-German border, between the cities of Żary and Spremberg, therefore it is administered by both countries. Polish part of the geopark is located in the Lubuskie Voivodeship, in five municipalities: Tuplice, Łęknica, Brody, Trzebiel and Przewóz. The most important element that determines areas geology and geomorphology is front moraine, created during Pleistocene glaciation. It is relatively small area, but nevertheless its shape is clearly outlined, which can be described in detail by the glacier stop line (Koźma, 2012). In terms of climate, it lies in the temperate climate zone. The most visible element related to the culture in the Muskau Bend is the Puckler Park (or Park Mużakowski), located at the Nysa Łużycka River bank, on the Polish-German border at the Łęknica-Bad Muskau border cross point. The area is a flagship example of 19th-century garden art. In addition, numerous traces of brown coal deposits exploitation and the relief itself, reveal relationship between geology and geomorphology of the area, and human activity.

4. Geoatractiveness assessment of research areas

The visual attractiveness of Rokua territory is very high. Fields of inland dunes, eskers, surface waters, in particular Oulujoki and Oulujärvi, or numerous peat lands, on the geoparks edge, are very well preserved and stand out from surrounding flat areas. Oulujärvi is one of the biggest and most important lakes in Finland, both in environmental and cultural case. Local dunes are famous not only because of its geomorphology and geology, but also because of flora and fauna which can be found in Rokua. This terrain is characterized by a high degree of naturalness. Figures 2 and 3 present Rokua Geoparks main features.

Figure 2. Rokua Geopark, Rokuanvaara dunes, view at Oulujärvi from Manamansalo (source: the author's personal archive)

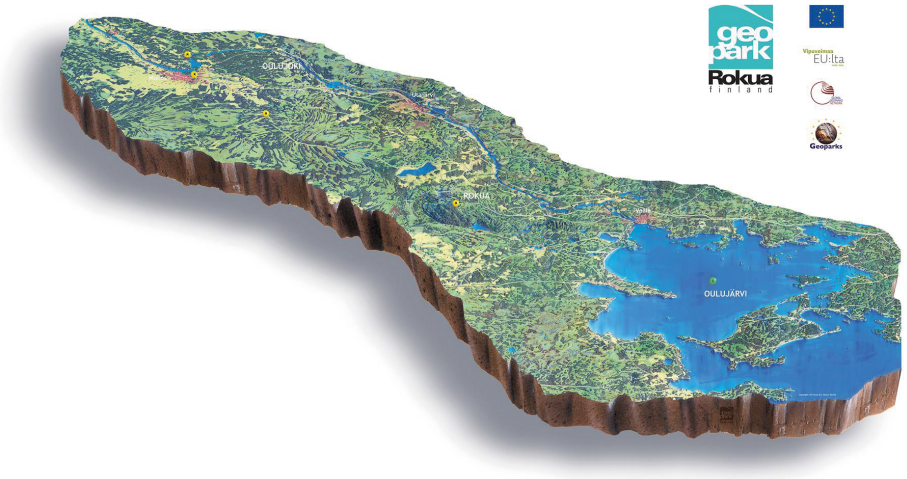

Figure 3. 3-D model of Rokua Geopark (source: http://www.panoraama.com/rokua_geopark/eng.html, available on 14.10.2018)

Muskau Bend also stands out from the surrounding area. The anthropogenic lake land is very visible. The area of the geopark is strongly transformed. Landscape is covered with flooded excavations, which form quite an extensive anthropogenic lake district, acquired an original and rare character. New interesting geomorphological forms are revealing itself step by step. It is possible to follow the development of new formations. The visual attractiveness of the geopark is anyway high. It's most important features are presented in Fig. 4 and 5.

Tourist attractiveness assessment of the studied parks is presented in Figure 6. Level of cognitive attractiveness for both geoparks is very high. Rokua as well as Muskau Bend are characterized by geomorphological, hydrological and mineralogical diversity. Both areas are very interesting in terms of culture. The history of human activity in those areas is different, however, intense.

The main differences between geoparks are in utilitarian and investment sphere. This situation has a large impact on the perception of both areas by tourists, educators, local residents and investors.

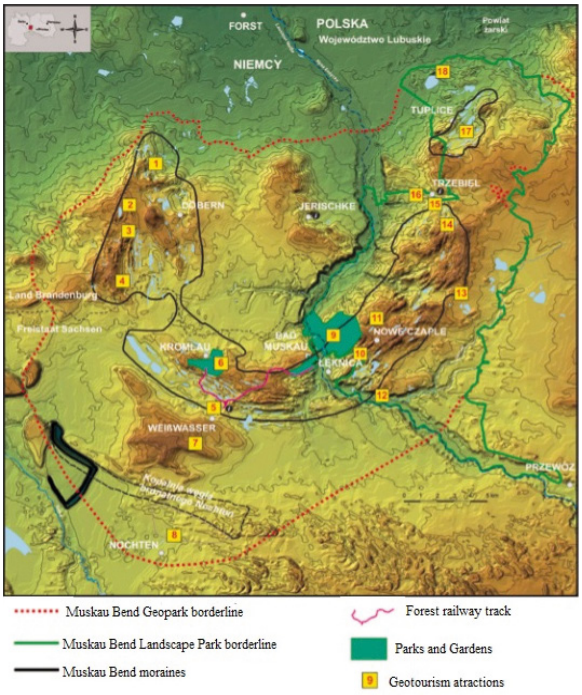

Figure 4. Muskau Bend area map (source: Koźma and Leszkowicz-Koźma, 2015)

In case of utilitarian attractiveness, the areas of researched geoparks are very different. In Rokua there are many hiking and cycling paths, and also good roads for car communication. The great advantage of

Figure 5. Muskau Band Geoparks attractions, Pucklers Park, Africa lake and its formations (the author's personal archive)

this geopark is accessibility for non-motorized visitors, through well-organized public transport from the closest major cities: Oulu and Kajaani. Tourist infrastructure is extensive. In larger towns of the geopark an accommodation, restaurants, grocery stores or souvenir shops can be found. Campsites for tourists are also available. Information about sightseeing in the geopark can be read from frequently occurring information boards, or from headquarters of Rokua Park, which is available for visitors throughout the year. In addition, the residents of the area are aware of geoparks importance and are happy to help tourists. The level of utilitarian attractiveness of Rokua is very high.

In case of Muskau Bend Geopark, the situation is reversed. Network of hiking and cycling routes could be more developed. The road network is extensive, but their quality is not the best. Getting to the geopark by public transport is very difficult. Geotourism facilities are hardly available. The geotouristic path near the old "Babina" mine is well marked, but getting to it is not easy, due to the lack of information signs. Tourist infrastructure is poor. Accommodation offers in the area of the Muskau Bend are not the best quality. The largest city within the geopark – Łęknica is a gray, aesthetically repulsive and unadorned city. Its residents are mainly focused on cross-border trade and do not see the opportunities that tourism creates, as an element of sustainable development. For these reasons, the level of utilitarian attractiveness of the Muskau Bend is very low.

Investment needs are directly related to usage of the terrain. Rokua Geopark is equipped with the most important elements of technical and tourist infrastructure. Therefore, the level of investment needs in this area is very low, which does not mean that the geopark has no further development opportunities. There are conditions for the development of the area for festivals, family picnics and other events, in direct connection to geotourism. As for the investment needs in the Polish part of the Muskau Bend, they are very high. There is lack of tourist infrastructure, introducing changes in the development of the area, and above all: awareness of local community, about possibilities of development through geotourism promotion.

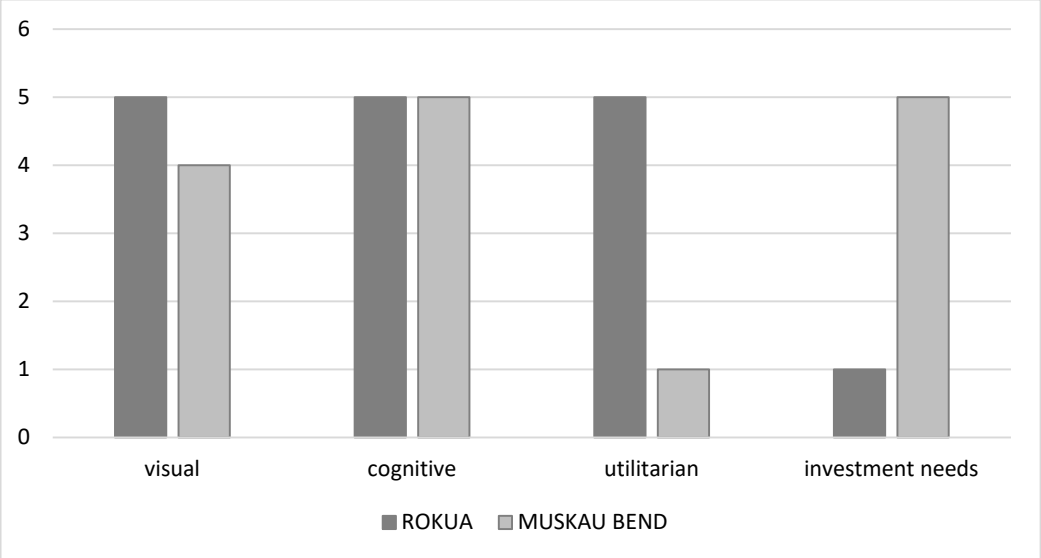

Figure 6. Geoatractiveness and investment needs in Rokua and Muskau Bend Geoparks (based on the Author's own study)

For accidental tourists, visual and utilitarian attractiveness is primary important, while cognitive attractiveness is on the background (Doktor et al., 2015). The conscious tourist puts the cognitive and utilitarian attractiveness on the first place, whereas the visual one is of secondary importance to him. In turn, the enthusiast are interested mostly

about cognitive conditions, and the utilitarian attractiveness is on the side plan. Rokua has very highly developed levels of visual, cognitive and usable attractiveness. This creates ideal conditions for all types of tourists. However, when it comes to tourists visiting Muskau Bend, problems may be caused by low level of utilitarian conditions.

In case of tourists, Rokua Geopark has developed all elements of geotourism attractiveness, needed for free work of educators in its area. However, in case of Muskau Bend Geopark, low level of functional elements development is problematic.

5. Geoparks promotion as an element of tourism development

In case of the Muskau Bend Geopark promotion, the main institutions involved in the park's advertising are local government units and the NGOs (like Łuk Mużakowa Geopark Association in Łęknica) cooperating with them (Biuletyn Informacji Publicznej Urzędu Miasta Łęknica; http://bip.umleknica.pl/110/224/Stowarzyszenie_Geopark__22Luk_Muzakowa_22). Geopark is located on the border with Germany, so promotion of the area is a tool both for pursuing tourist goals and for publicizing international cooperation. Currently, the promotion of the geopark is based primarily on organizing events related to the cultural aspect of the geopark. The main elements promoting the idea of geotourism are school activities or educational cycling trips.

Promotional actions of Rokua Geopark are reaching the international scale. Geopark representatives advertise the area at international tourism fairs, for example in Berlin. Events related to education, tourism, geography or other related fields, organized in the closest Finnish cities of Oulu and Kajaani, are used by the geopark to promote its offer. Geopark participates in various types of projects and programmes. In 2018 Rokuanvaara area won the "Finnish Outdoor Destination of the Year" plebiscite. At geotouristic facilities there are information boards with characteristics and explanation of the origin of the form usually in 2 or 3 languages (Finnish, English and German or French). Geotouristic attractions are well marked, and on the main roads might be seen advertising banners with directions to geotourism facilities. What's the most important, local population seems to be aware of the benefits from geotourism actions. Table 1 presents comparison of promotion activities in both research areas.

Table 1. Comparison of promotion activities in research areas (based on the Author's own study)

	Muskau Bend	Rokua
Tourist information	No tourism information on Polish side	Tourism information open whole year
Geopark promotion in local events	Easter Festival in Kromlau, European Geopark Days, Independence race	Carina Nordlund and Mikko Oikarinen - awaited concert, After Work-concert; Musapiknik; GneissiRock Festival 2018,
Geopark promotion in international events	German-Polish winter holidays: games and workshop for children; Easter festival in Weißwasser; German-Polish spring festival, etc.	ITB in Berlin 2014
Advertising	Local posters, webpage of the geopark	Posters, brochures, webpage of the geopark, youtube promotional videos
Local communities knowledge about geopark	Very small level of knowledge about geotourism	High level of knowledge, enthusiastic approach for geotourism activities.

6. Discussion

6.1. Countries politics supporting geoparks development

Geotourism is a great tool for educating in a relatively easy way about abiotic environment and its cultural and biological links (Patzak, 2009). The idea of creating geoparks was based on their future evolution in the spirit of the sustainable development idea. Sustainable development is a combination of satisfying economic, social and environmental needs based on equality (justice) principles, futurism and holism (Saarinen, 2006). Geotourism lends itself not only to geoconservation, protection of nature and ecology, but also to improving social and economic conditions in the region.

Differences in activities in case of tourism promotion and its functioning, including geotourism, in Poland and Finland, are results of many factors, including different legislations, traditions, funds, socio-economic problems and others. In Poland, the main organ affecting the organization of tourist activities promotion is the Polish Tourist Organization (POT) (Law act from 25th of June 1999 about Polish Tourism Organization), which operates mainly through cooperation with regional and local tourist organizations, creating a three-tier tourism promotion system. These tourism organizations usually operate within territorial self-government units (municipalities), however, the minister of tourism may delegate them to the competent voivodes (Law act from 25th of June 1999 about Polish Tourism Organization, chapter 1, article 3, point 3, paragraph 4). In Finland, the Ministry of Economic Affairs and Employment is responsible for tourism, which has set up a government organization Visit Finland for advertising purposes. The development of tourism is coordinated by the tourism development strategy called "Achieving more together. Road for the development and renewal of Finnish tourism for years 2015-2025" (in Finnish: "Suomen matkailun kasvun ja uudistumisen tiekartta 2015-2025") (Finnish tourism strategy: Achieving more together. Road for the development and renewal of Finnish tourism for years 2015-2025). Its main goals are to strengthen thematic cooperation between tourist centers and tourist enterprises networks, as well as to create new projects in the field of product development, sales and marketing, increasing effectiveness of marketing activities and competitive tourist services, which support growth and renewal of tourism in Finland, as well as easy access to information about tourism products (Ministry of Economic Affairs and Employment - TEM, 2018).

Visit Finland in cooperation with other centers, eg. local administration units, Metsähallitus Finnish Forest Administration, Business Finland, organizes plans for the promotion of specific areas. Enterprises operating in tourism market are oriented on growth and connected in a network. Those with growing international reach take precedence in the case of receiving public subsidies (Työ ja elinkeinoministeriö; http://tem.fi/en/public-subsidies-for-developing-tourism). Similar cooperation exists in other countries of northern Europe: Sweden or Norway.

6.2. Geoparks as tools of sustainable development

The key to maximize the chances of economic success is to minimize the adverse effects of investment activities, thanks to planning and development with respect for the environment (Dowling, 2009). Observation of business development in the area of the Rokua Geopark gives an impression that geotourism has a very positive effect on sustainable development in the region. Based on the collected materials about the park we could note that introduced conservation activities, promotion, approach of local communities and investors to the idea of geotourism is on high level.

In case of the Muskau Bend Geopark, the realities of understanding and respecting the environment are completely different. Current state of affairs does not accelerate the implementation of sustainable development in geoparks area. Investments carried out in sustainable way, also have a powerful effect of attracting tourists. Muskau Bend Geopark should start using its potential, especially at

the time when the possibility of co-financing from the European Union is high.

Above all, in order for the geotourism mechanisms, as a tool of sustainable tourism, to function faster and better, educational activities should be implemented for the local population, not only as part of protecting the Earth's heritage, but also in terms of entrepreneurial activity, investor initiatives and understanding, that geotourism is not a form of protection which prohibits business activities. Local community should first of all learn about it, trying to understand the concept of sustainable development and geotourism as its tool. Perhaps it would help in the development of geopark and related initiatives. One of the biggest challenges of geotourism is the involvement of local people in its functioning (Dowling, 2009). Inhabitants cooperation of areas included in a given geopark, can only help in further stages of geoparks promotion and increase profits through increased competition (Marques, 2009). Organization of workshops, education and assistance in creating facilities that attract tourists should be a priority for local authorities. Muskau Bend Geopark was created to develop sustainability and cooperation in this cross border area. However, so far, this area stucks in the 1990s in term of low regional promotion of not only geotourism but also in economic and social affairs.

Usage of tourist potential of the Rokua and Muska Bend areas is the main difference in their functioning. Rokua was created much earlier than the Muskau Bend Geopark. Nevertheless, the pace of its development was much more dynamic than in the case of Polish geopark. Creation of an appropriate geotouristic infrastructure, intensive promotional activities, cooperation between authorities responsible for the development of Finnish tourism and the activity of population living in areas surrounding the geopark, have brought rapid positive effects. Muskau Bend has shorter history and the realities of its location are definitely different from the North European ones.

Element that distinguishes both geoparks is their location. Muskau Bend Geopark as a cross-border area, apart from the development of geotourism, has also another task: integrating Polish and German populations, by creating common geotourism facility, which in the future may lead to the creation of consolidated European region. Polish part of geopark, as it is located in the Lubusz voivodeship (Polish: województwo lubuskie), may play one of the main roles in projecting of regional development of the European Union INTERREG Poland-Germany/Saxony, for years 2015-2020. Programme has huge funds which can contribute to the development of Muskau Bend area.

6.3. Promotion of geoparks

Geoparks promotion is very important in the context of spreading their popularity. Geotourism is a young initiative and promotional activities are the main tool for diffussing it worldwide. As shown by the results of the research presented in this paper, Rokua Geopark fully meets its goals and it's an example of sustainable development through its activities. The main promotional and informational means at larger spaces are virtual materials (mostly geoparks web sites). Popularity of the Muskau Bend Geopark is not outstanding. As mentioned earlier, in some cases even the inhabitants of this area are not able to say a word about it. It is difficult to determine the popularity of geotourism idea, due to its novelty, especially in Poland. According to a report from research conducted by Kozłowska-Adamczak and Krupa (2013), knowledge of local population about geotourism concept is small. Report presents the results of the questionnaire survey, which aim was to assess the local population's response to the idea of creating a geopark and their potential for possible tourism-related economic activities. Only 28% of all questionnaires was filled in and unfortunately ¼ of them was rejected due to its unreliable character. It seems that, it is necessary to promote geotourism, not only for tourists, but to familiarize it for local communities. For distribution of such actions local government authorities and tourist organizations are responsible.

7. Summary and conclusions

Rokua and Muskau Bend combines extraordinary geological and geomorphological heritage. These areas are unique in a regional, European and global scale. Both were appreciated by UNESCO and the World GGN Geopark Association (http://www.globalgeopark.org/about-GGN/51.htm), becoming part of the international geoparks network.

The studied areas - Rokua Geopark in Finland and Muskau Bend Geopark in Poland, stand out from the areas surrounding them by an extraordinary level of geodiversity. Their visual and cognitive attractiveness is very high. The main differences between them are noticeable in the field of land development, quality of tourist infrastructure, promotion and marketing, and involvement of the local community in their functioning. Rokua Geopark is definitely more adapted to the effective implementation of geotourism success in life. Its infrastructure is developed and it's in good condition. Population of the surrounding areas is aware of goods that might gain by geoparks sustainable development. Muskau Bend Geopark is in the initial phase of geotourism development. Infrastructure is rather poor, and the biggest problem is lack of awareness of Muskauer region inhabitants, about the potential of improving their status, thanks to sustainable development. Low activity of the geoparks authorities, as to the education and approximation of the geotourism idea to the inhabitants, does not help in its development. Sustainable development implementation through geotourism should be adapted to the level of knowledge, spatial development conditions of the area which meant to become a geopark. If knowledge of geotourism terms by the local community is not well known, workshops and lessons should be organized to familiarize the inhabitants with the benefits of geoconservation and creation of tourist infrastructure in this area. Geoparks can undoubtedly stand behind the success of sustainable development in the region. However, without time, active authorities and associations that are willing to take action on various development stages, not only protective, but also economic and social, nothing positive can be done.

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