

Geothermal energy - one of the resources of tourism expansion in Slovakia

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The development of tourism in Slovakia in recent years is chaotic, uncoordinated, fragmented and without strategic direction. This is the main reason for unstable performance in terms of statistical indicators on an economical level, at the regional level stagnation and uncertainty about the business environment. Lack of strategy, undeveloped marketing efforts are not always successful privatisation, and poor quality of services is mainly influenced by the current state of tourism. Košice region in the evaluation of the regions of Slovakia among the worst rated area in terms of revenue from tourism. At the same time, there is a large potential for geothermal energy is suitable for recreational purposes and Spa in this region. One of the ways to raise the level of the region and the whole of Slovakia, is the support and development activities focused on the potential use just mentioned. However, as we point out, it is an innovative idea. In the past (period before 1948), there were thermal and mineral, respectively climatic, spa in almost every town in eastern Slovakia. In this paper, we compare two neighbouring regions with similar potential, geothermal energy, but with the different success of its use in tourism.

Key words: geothermal energy, tourism, balneology, spa

Introduction

Contemporary tourism is remarkable for its continuing growth and internationalisation and its increasing economic significance, particularly in less developed countries (Sharpley, 2014). The tourism industry, in fact, is comprised of places and activities that are scattered in nature, time and space, which need to be combined and assembled dynamically and gather together, like the arriving to the destination, hotel accommodation, and experience of attractiveness at the tourist destination. (Aldebert et al., 2011) European Union promotes the tourism industry since it is represented by small and medium enterprises that provide the community underpinnings for entrepreneurship and job creation (Wanhill, 2000).

According to Prayag & Ryan (2011), there is namely the relationship between destination and influence of nationality. Destination marketing organisation is then responsible for the competitiveness of the destination (Pike et al. 2014). On the other hand, simple managers of tourist organisations must improve their economic performance, since as (Cvelbar et al., 2013) said, it's neglecting could threaten the long-term survival of tourist organisation. In the area of research solving lays possibility to mitigate consequences of the crisis, where Smeral (2009) made some proposals of strategies.

Given the untapped geothermal potential and the anticipated growth in demand for health and spa tourism, increased use of geothermal waters for this purpose can be expected (Borovič et al., 2015).

This potential, at the same time, represents the basis for the development of various activities in the fields of medicine, tourism, sport and recreation, water bottling industry, as well as in the processing of various minerals, agriculture, etc. (Radivojevic et al., 2012).

The authors have devised a benchmarking concept to learn from best practices of how to study the market, create a proper infrastructure, use the Japanese Onsen principles of hot springs balneology and practice hot springs management as eco-tourism. Implementing such a system, there is a hope that we can assist in developing some of the new and those unmaintained hot springs in West Malaysia to become successful tourism destinations (Wagner et al., 2012).

The spa industry gains the importance in the context of changing lifestyles, development so-called health tourism and finally with a dynamically increasing rate of population ageing. Using of geothermal or mineral springs for therapeutic purposes is possible to see today in the territory of the present Czech Republic since the 12th century (Kraftová et al., 2011).

These springs differ according to the generosity, water temperature, chemical structure, and according to the way of therapy effect it has on the human organism. Their medicinal effect has been noticed long ago. That is why special settlements named with different terms have emerged close to them, today we use exclusively the term – spa (Košíč, 2011).

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1. Tourism in Slovakia

Tourism is a strategic economic activity in the European Union, and its importance to the EU economy in the coming years is likely to continue to grow.

Tourism is an interdepartmental sector that directly affects the sphere of economy, industry, trade and services, finance, transport, regional development, culture, health, education, sports, environmental protection, forestry and water management, agriculture, employment, creating new jobs and the scope of the local governments. For tourism, it is typical that while most of the other industries are dealing with a relatively narrow segment of its competence on the vertical axis, the nature of tourism is that it links various industries along the horizontal axis as well.

The share of income in the tourism sector on the EU GDP of the European Union reaches more than 4 %, with about two million companies employing around 4 % of the total labour force (representing approximately eight million jobs). Taking into account related industry sectors, the estimated share of tourism on the GDP is much higher, since it indirectly generates 11 % of EU GDP and employs about 12 % of the workforce. Slovakia is lagging behind within European tourism. The importance of the tourism in our country is greatly underrated, and part of the public considers it unnecessary, or even as a harmful phenomenon. The prestige of professionals in the tourism sector is low. In Slovakia, the share of tourism in the GDP reached the value of 2.5 %, fluctuating in recent years (Fig. 1).

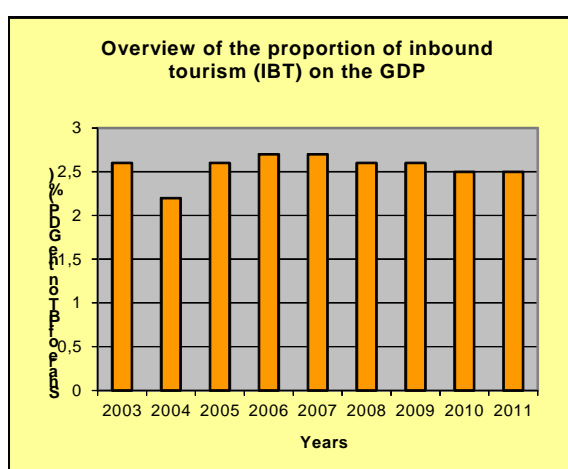


Fig. 1. Share of inbound tourism to GDP in Slovakia in the years 2003-2011 (source SO SR).

Foreign exchange earnings from foreign inbound tourism (IBT) tend to have a growing trend, but since 2006 the growth index decreased from 1.29 to 1.11 in 2008. 2009 was a critical year, which saw a decline in foreign exchange earnings.

On the contrary, foreign exchange expenditures for outbound tourism (OBT) are increasing rapidly. In 2006, the chain index was 1.09, and in 2008 already amounting to 1.22 (Tab. 1), there was a fundamental change in 2009 where the chain index decreased to 0.99.

Tab. 1. Development of income from tourism and its impact on the shaping of GDP for years 2005 to 2011 (source SO SR).

Indicator	Years						
	2005	2006	2007	2008	2009	2010	2011
Foreign exchange income of IBT (million SKK)	37529	44985	49751	55153	50446	50753	52561
Chain index	1,29	1,20	1,11	1,11	0,91	1,01	1,04
Foreign exchange expenses of OBT (million SKK)	26235	31349	37721	45913	45313	44306	47201
Chain index	1,09	1,19	1,20	1,22	0,99	0,98	1,07
Balance of foreign tourism (million SKK)	11294	13636	12030	9240	5134	6447	5359
Chain index	2,24	1,21	0,88	0,77	0,56	1,26	0,83
Share of IBT on the GDP (%)	2,6	2,7	2,7	2,6	2,6	2,5	2,5
Share in export of services (%)	27,5	28	28,7	30,5	30,7	38,3	36,7
Share in exports of goods and services (%)	3,3	3,2	3,2	3,3	3,3	3,2	2,9

In 2009, there was a lowered interest in domestic and foreign destinations, which can be somewhat attributed to the increased caution of the population in the consumption of funds under the effect of the crisis. The results in 2011 gave the possibility of a brighter outlook on the future development of tourism, because of an increased interest in domestic and foreign tourism. Interest in foreign destinations is growing faster (chain index

1.07) at the expense of domestic (chain index 1.04), which forces us to look for possible reserves for tourism development in Slovakia (see Figure 2).

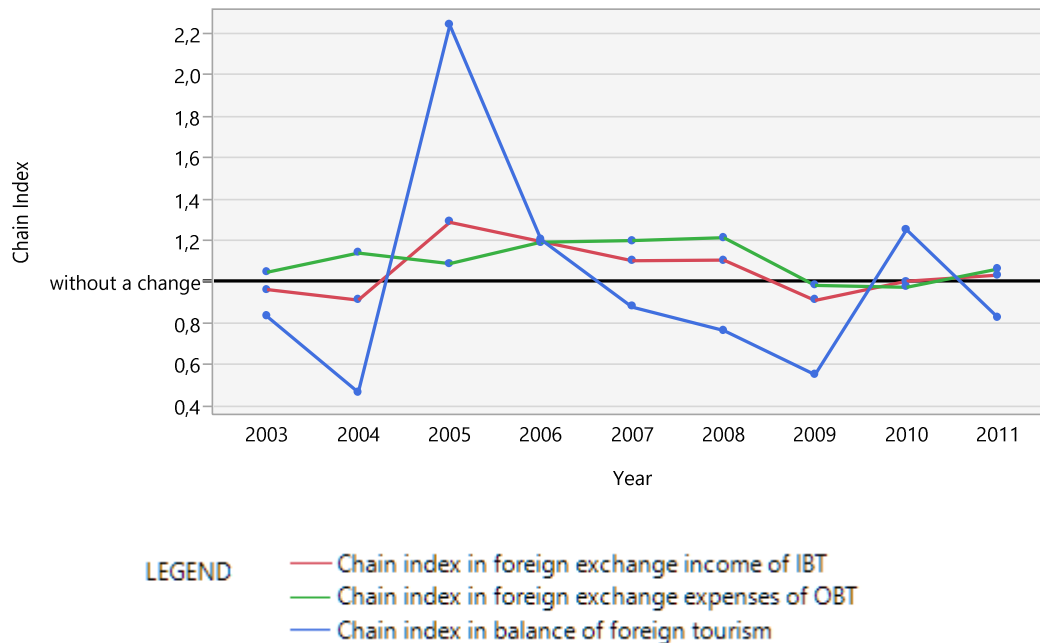


Fig. 2. Comparison of changes in income and expenses of foreign tourism in the years 2003 to 2011 using a chain index.

This trend is also confirmed by the condition of accommodation in Slovakia (Tab. 2), in which we can see the processed number of guests for years 2005-2011, wherein 2009 we can again observe a significant change in the trend.

Tab. 2. Tourism in Slovakia for years 2005-2011 - according to accommodation (Source SO SR).

Indicator	Years						
	2005	2006	2007	2008	2009	2010	2011
Total number of guests	3 428 083	3 583 879	3 778 000	4 082 645	3 381 354	3 392 361	3 571 093
therefrom							
foreign guests	1 514 980	1 611 808	1 685 000	1 766 529	1 298 075	1 326 639	1 460 361
domestic guests	1 913 103	1 972 071	2 093 000	2 316 116	2 083 279	2 065 722	2 110 732
Total number of nights spent (days)	10 732 754	11 137 565	11 566 632	12 464 104	10 391 069	10 367 330	10 524 738
therefrom							
foreign guests	4 872 042	5 133 533	5 198 696	5 261 476	3 769 136	3 806 609	4 038 635
domestic guests	5 860 712	6 004 032	6 367 936	7 202 628	6 621 933	6 560 721	6 486 103
The average number of nights spent per guest	3,1	3,1	3,1	3,1	4,1	3,1	2,9
therefrom							
foreign guests	3,2	3,2	3,1	3	4,2	2,9	2,8
domestic guests	3,1	3	3	3,1	3,9	3,2	3,1

1.1. Comparison of the V4 countries, Ukraine and Austria

Tourism in Slovakia has potential due to natural and human-made facilities, an opportunity to grow in the national economy and the society to a strategic position. In comparison to other V4 countries, that the Slovakia happens to be standing on the starting line after opening to the world, it can be said, that Slovakia lags behind in its use of natural and cultural competencies that it has. We can see from the number of foreign tourists coming to our country (see Figure 3) and income from inbound tourism (see Table 3), that we are in the last place in both of these indicators.

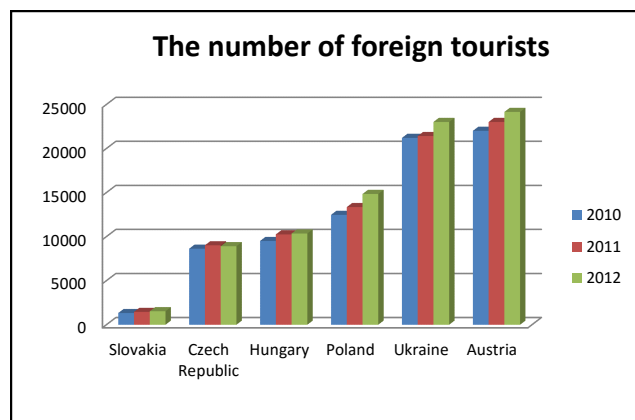


Fig. 3. Comparison of the number of foreign tourists in the V4 countries for years 2010, 2011, 2012.

Tab. 3. Overview of income from inbound tourism in the V4 countries for years 2010-2012.

Income from IBT in millions USD	Years		
	2010	2011	2012
Slovakia	2233	2429	2299
Ukraine	3788	4294	4842
Hungary	5381	5580	4845
Czech Republic	7121	7628	7035
Poland	9526	10683	10936
Austria	18596	19860	18894

1.2. Comparison of the Slovak regions

At a deeper analysis of the Slovak tourism in 2014, according to the results of individual regions, it needs to draw attention to the disparity. The analysed indicators were:

- Revenues from inbound tourism,
- Revenues from outbound tourism,
- Revenues from domestic tourism.

In all three monitored indicators, the Bratislava region ranked in the first place, which in comparison with other regions and in most cases has a level of sales several times higher than other regions (Fig. 4). Yet the lagging regions have a significant, if not greater potential for tourism development, which is however at present only utilised minimally.

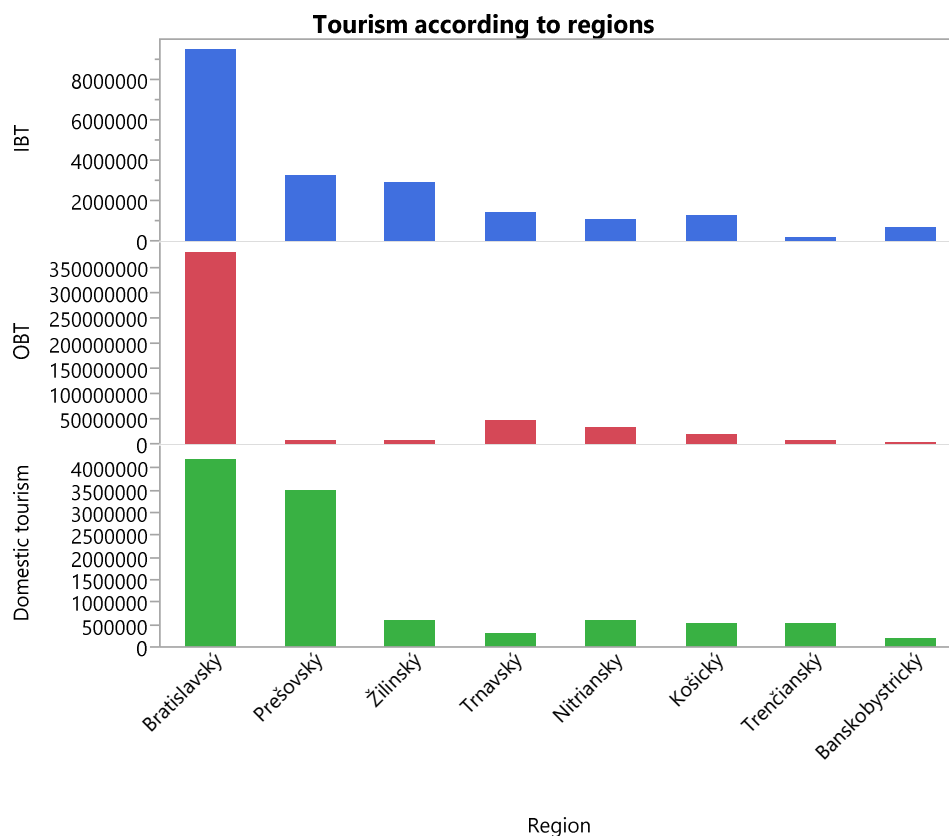


Fig. 4. Revenues from tourism in the regions of Slovakia in 2014.

One of these regions is the Košice governing region, which we will have a closer look at, belongs amongst the three weakest regions in achieving results in tourism. On the other hand, this area has a high priority on increasing the competitiveness of regions, due to the results of the indicators of tourism we can see, this region belongs at the end of the rankings in the comparison of the Slovak regions.

The Košice region has great potential for the development of spa, as it belongs to the areas with the greatest incidence of geothermal energy in the Slovak Republic - especially in the Košice Basin and Eastern Slovak Lowland (Rybár et al., 2015).

2. The use of geothermal energy in tourism in the territory of the Košice self-governing region

The Geothermal energy is an inexhaustible energy source (Braunmiller, 2009). At present, it is important to effectively use energy sources because the price of energy is more and more high (Holubcik et al., 2016). One possibility of using geothermal resources is using them for recreational and spa purposes. This principle is currently implemented in Slovakia to a minimum extent about the potential that we have. In the Košice self-governing region, the utilisation of geothermal energy for recreational purposes currently does not exist. In the past (period before 1948), there was thermal and mineral or climatic spa in almost every town.

For example, Spišská Nová Ves had Iglófüred in Novoveská Huta, Košice had Spa Gajdová, Rožňava also had its own spa near Čučma, there were also Spa Byšta, Spa Sobrance, Borda, Štós, Gelnica Thurzov. Today, however, even within the city of Košice, where the spa near the Senný Trh was located, it is impossible to find such facilities and services.

As previously mentioned, the potential of geothermal energy is tremendous in this area. One example is the geothermal borehole near the village Ďurkov (Wittenberger et al., 2015). The temperature of water at the wellhead reaches approximately 125 °C (Cehlár et al., 2011). This thermal water by its immense mineral content can only serve as a source of heat, and after the energy transfer, it needs to be re-injected back into the subsoil. There is a certain opportunity in the utilisation of the thermal water for recreational and balneotherapeutic purposes before it needs to be re-injected. However, this depends on the goodwill of the investor and the owner of a geothermal power plant. In the case of Ďurkov after so many years, it shows, that it failed to produce the expected results, which is a great pity. An even bigger mistake in Slovakia is that in the state - unutilized - are almost all geothermal resources!

There are several unused geothermal resources within the Košice region. These are locations where geothermal drilling has already been realised, but to date not being used or only partially. Although these are the much shallower boreholes, for therapeutic and recreational purposes, they are fully satisfactory and from the point of investments, less demanding. And furthermore, in our opinion, these are very interesting localities from a recreational perspective and also in terms of the lucrativeness of localities. These are the following localities (Fig. 5):

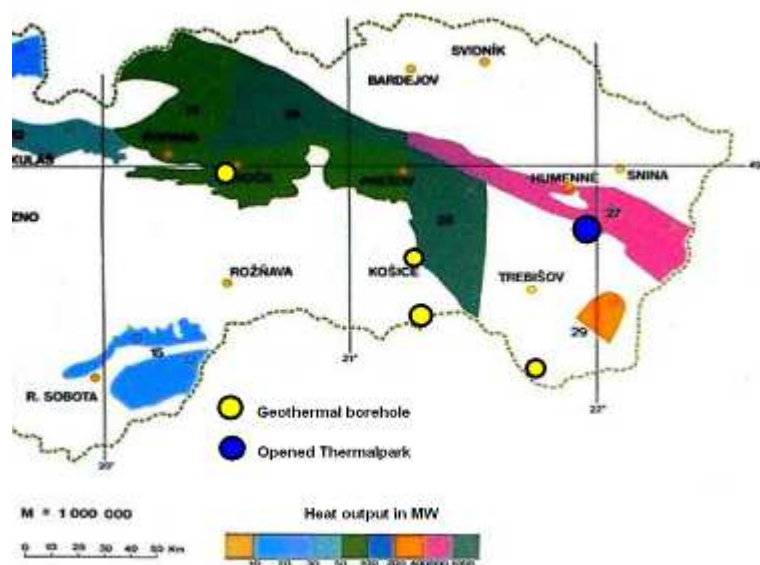


Fig. 5. Geothermal potential and reality of geothermal energy utilisation in Košice Self-governing Region.

Zemplínska Šírava – the area of Kaluža, after drilling the thermal borehole to a depth of 940 m with a water temperature of approximately 45 °C, a project was finalised to build a water park, which is today more or less successfully used (Fig. 6). It can be considered as a positive and motivating example for others. It is appropriate to add that after analysing the thermal water by the chief balneologist of the SR that confirmed the healing properties of this water, hence the suitability for balneological purposes, the municipality considers its use for energy purposes as well.



Fig. 6. Realised project of waterpark Šírava.



Fig. 7. The neglected chateau approximately 100 m away from the thermal borehole.

Borša – Tokaj region, although Borša village does not fall under the Tokaj region per se, for its advantageous position it is destined to utilise similar projects as was realised in Kaluža. There is also a chateau, birthplace of František Rákoczi II. (Fig. 7). In the years 1989 - 1993 there were conducted drilling operations, where two sources of thermal water in a depth of 400 m with a temperature of 40 °C were discovered. Unfortunately, to this day, there has been no utilisation of this thermal water.

Košice – Anička, in 1981 approximately 310 m deep borehole G4 was conducted, effusion was caused by the overflow of the mineral water at 28 °C (Fig. 8). It is a forgotten investment today. It is worth to consider a reassessment of the investment to recover one of the favourite sites in Košice and restore the past glory of spa Gajdová.



Fig. 8. The current state of Anička.

Kechnec – In 2008, a thermal borehole to a depth of approximately 1500 m with a temperature of about 50 °C was conducted. Followed by elaboration of the project for construction of a water park (Fig. 9) with a planned investment of 150 million €. Currently, it is awaiting a suitable investor. The question is whether it would be appropriate to divide the project into several sub-stages and thus alleviate initial investment demands.

Initially, it could start with the use of thermal water for swimming pools, which would start the income flow for a municipal treasury and that money could be used, among other things, on the implementation of the next project stages. In the beginning, it would be possible to get started with



Fig. 9. The project of waterpark in Kechnec.

one-tenth of the planned budget, which would make the project feasible.

Arnutovce a Letanovce – the gateway to the Slovak Paradise where in the late seventies, two boreholes were executed to a depth of approximately 1200 m or 660 m. The temperature, of nearly 30 years of this outflowing thermal water from both wells, reaches 31 °C. However, the utilisation of these resources is yet to be found. The current condition is that ownership of a borehole in Arnutovce (Fig. 10) and the surrounding land is after delimitation from the bankrupt PD Spišský Štvrtok in the hands of local landowner community, so the utilisation of this geothermal potential is financially and organizationally very complicated. A similar situation is in the case of the borehole in Letanovce (Fig. 10), where its usage is blocked by capital and financial requirements (need to deepen the borehole).



Fig. 10. Thermal water flowing out from the borehole - Arnutovce, Letanovce.

The use of geothermal energy for recreational purposes has a long history. Currently, this kind of service is increasingly sought after. In the future, it can be expected to see a further increase in demand due to the growing of musculoskeletal problems, linking in with the sedentary jobs and the static way of life of young people or children.

Slovakia should utilise the potential that it has. We don't need to look very far to find good examples, just a few km south, or north of the Slovak border. Probably the most experienced in the use of geothermal waters for recreational and therapeutic purposes in Europe, and one dare to say even in the world, are our Hungarian neighbours. By comparing a similar type of area on the southern side of the Košice region, where at least 16 of such facilities can be found, we will mention only the best known:

Vásárosnámény, Sárospatak, Polgár, Tiszaújváros, Miskolc, Miskolc – Tapolca, Mezőkovesd, Bogács, Eger, Egerszalók, Demjén...

In a relatively small area, there are more facilities than across the Slovak Republic. It is nothing new that the services of these facilities in addition to tourists from other countries are largely used by our citizens, which means a substantial outflow of money from tourism, much of which could be used domestically. We think that it could be a sufficient challenge for our politicians, whether in local government or in the public administration in shaping the strategy of tourism development. The strategy of the Košice region is also considering the use of geothermal energy for such purposes, but unfortunately so far with the only minimal realisation (in Kaluža). Yet, there is the wide range of leisure activities - one can imagine the use of these sites also for bike tours around Tokaj vineyards and historical landmarks, or in the Slovak Paradise (Tatra Mountains), after a good lunch of local specialties in the stylish restaurant, then go to relax in the thermal spas at Borša (in Arnutovce - Letanovce) and banish fatigue from the muscles and continue in the evening with a good dinner and wine tasting of Tokaj wines (local cuisine and drinks at a local restaurant, B&B), and that way spending a pleasant extended weekend. However, in fact, there is still a very long way for that to happen and therefore, we will travel once again for a similar adventure to Hungary, or Poland and support the foreign economy rather than our own.

Conclusion

The development of tourism in Slovakia in recent years is chaotic, uncoordinated, fragmented and without strategic direction. It is the leading cause of unstable development in terms of statistical indicators on an economical level, stagnation at the regional level and the uncertainty of the business environment. Lack of strategy, undeveloped marketing activities, not always successful privatisation and the poor quality of services has the main influence on the current state of tourism. The complexity of successful marketing for a region is high and finding the right combination of marketing strategies is difficult but can positively influence the development of a region, its economy and tourism (Gerner et al., 2009).

Košice region, in the evaluation of Slovak regions, has been rated among the worst areas in terms of income from tourism. At the same time, there is a large potential in this region for utilisation of geothermal energy suitable for recreational purposes and balneology. One of the ways to raise the level of the region is to support and further development of its activities, such as in Kaluža and related projects. These are mainly the construction of cycling and hiking trails, repairing broken roads, reconstruction of historical objects (for example Rákoczi mansion in Borša), etc. Experiences from various countries show that without the initial state support, it is not possible to build the basis for applying of technologies using renewable energy sources (Pavolová et al., 2015).

The paradox of this situation is the fact that the responsible persons and institutions have comprehensive information about the situation and problems as mentioned above. Nevertheless, the real implemented measures are more of an exception rather than the rule. A favourite phrase for evaluating projects is as follows, "implementation of innovative approaches, innovations, new procedures and so on." While we only need to apply procedures and approaches that already work. Thus, as it is in the rest of adjacent Eastern European countries. The intentional writing of "adjacent" is because when it works in the former Eastern bloc countries such as Poland, Hungary, Slovenia, Czech Republic, it must also work in our country. Unfortunately, we must conclude that Slovakia is failing due to the human factor. However, we can't imagine the mayor of the municipality, with the existential problems who tries to obtain investments for the construction of utility lines, or repair of local roads, into taking the interest for improvement of conditions for tourism. Without investment support, he certainly will not start to consider the development of a water park. This is so to speak "the cup of tea" of investors and the competent public authorities on a higher administrative level. But the ground for the development of tourism is not only in sufficient investments. The first step must be to change the mindset of the principle of reasoning "Why it cannot be done" to the principle of proving "How it is supposed to be done."

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