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The main goal of the journal is to develop research and writing skills for writing article in which students at all levels of study can present the results of their research.

IMPORTANCE OF INNOVATION MANAGEMENT

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Abstract

Innovation has always been an essential tool for being competitive. It is quite unequivocal that being competitive is indispensable for each and every company. Through my writing, I inspect the lack of attention on innovation management and its affects. To study competitiveness, a research was done among companies mostly located in Hungary. The questionnaire focused on crisis and change management, innovation management, as well as on strategic management. The aim of my thesis was to measure the extent of innovation management and the changes it has caused inside different firms. I analyzed the results of the research with different methods. International academic literature as well as basic and higher statistics have been used through the processing of the questionnaire. I could draw the conclusion with the comparison of these tools. As a final statement to end my thesis I made general and concrete suggestions for the firms which are eager to improve.

Keywords: *competitive advantages, competitiveness, innovation management, survey*

1. INTRODUCTION

According to the experts of 30 countries, the definition of innovation has been widen. Innovation does not only incorporate the introduction of a new product/process or an improvement of an already existing one, but also means a new marketing-method and the introduction of a new organizational method. [1]

Product innovation means the introduction of goods or services that are new or significantly renewed. This includes the detailed technical descriptions, the ingredients and materials, the built-in software, the user-friendly features or other functional characteristics.

Process innovation includes new methods of production or logistics. This covers all the changes in techniques and in equipment or in the software.

Marketing innovation by definition is the use of new marketing-methods which are bringing significant change in product planning or packing, as well as into the introduction of new products to the market, and even in the advertisement of goods and pricing.

Organizational innovation means the implementation of new organizational methodologies in a firm's business practices, in the organization of work or in the external relationships.

As Peter Drucker implied in his book (*The Discipline of Innovation*; 1985), there is no doubt that innovation has a high importance in the competitive market, but the real question is how to innovate, how to manage innovation [12]. Ages ago innovation equaled professional development. According to Schumpeter (*Capitalism, Socialism and Democracy*; 1942), capitalism has its focus on searching for possibilities and opportunities,

while innovation aims to aggressively demolish the balance [20]. Innovation comes from a new idea which differs from the ordinary solutions. This is where most people usually mix up the definition of strategy and innovation.

While strategy covers a 1-5 year period, and it is planned previously, innovation come to be in a second. However, these two elements are indispensable for owning a competitive company, these have to be treated differently. When a change appears in the economy, the firms need to have a reaction. There are 3 types of strategic reactions to all types of change. When the company adapts to the environment it is called reactive reaction. In this case the change in the environment has taken place before the reaction from the firm was carried out. In the second case the company acts before the rules appear and that is called preactive reaction. The third type is proactive reaction when the organization influences or even forms the regulations.

The last option is very common when we are innovating. During innovation, the outcome has an effect on both the environment and the members of the competitive field. We must ask ourselves why we are innovating.

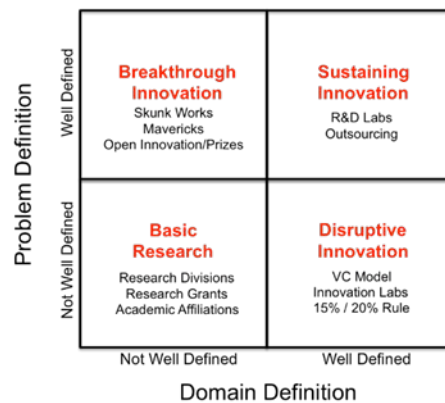


Figure 1. Innovation Matrix

(Source: <http://www.forbes.com/sites/gregsatell/2013/03/07/how-to-manage-innovation-2/#293c2c5533d9>)

Might be because we would like to be the first one to provide something new and to be the market leader of that product. In Schumpeter's study (1942) he ranks basic cases of innovation into five groups: selling the new goods or producing novel goods, introduction of new transportation practices, discovering new markets, use of new production materials, creating new market situation. Nowadays there are different groupings of innovation, for example the innovation matrix below which differs 4 groups from each other depending on the domain definition and the problem definition. [2]

In each side we can see whether the problem or the domain is well defined or not. Part of the innovation matrix is Basic Research that gains meaning when you are about to invent something completely new to which you don't have any support, previous experience. When the domain is well defined but the problem is not, it is called disruptive innovation [3]. In this case the original manufacturer is about to upgrade its products while a new company enters the market with the same product but for a lower price. Thus the previous company gives up its originally targeted consumers, by focusing on more profitable ones. The new firm entering the market concentrates on the people/consumers with lower budget for the same product before. After a while the new company gains profit and widens its product range, focusing on the mainstream products or upgrading the previous products to acquire additional profit. In this situation the innovation for the original firm is disruptive in a way, since it lets the other company enter the market.

In figure 2, it is easy to see how the incumbent has always had a higher product performance and focused on the most profitable customers with the progression of time.

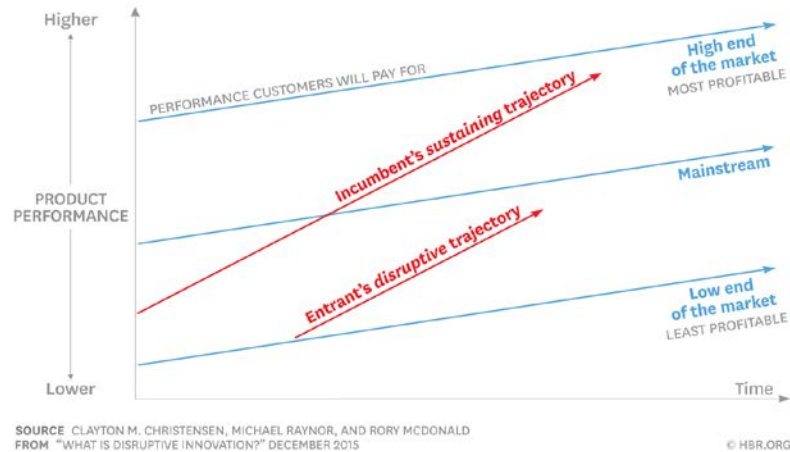


Figure 2. Disruptive Innovation

At the point where the incumbent firm serves the mainstream market, the new firm enters the market and has a disruptive trajectory.

Incumbent applies sustaining innovation which means that it is always improving and targets the high end of the market. Toyota's example is very applicable. It started to produce its first economic models then it added luxury features. Toyota still has the third biggest market share in the US [4]. Moreover in Japan it has the biggest market share [5]. Toyota improved its cars in a rapid way. They were the first in launching hybrid cars and making their cars more eco-friendly, more efficient in use. Toyota uses the well-known Japanese management behavior, Kaizen, which means continuous improvement [6].

The last type is the breakthrough innovation where the problem is well defined but the domain is not. A good example for this kind of innovation is Procter & Gamble's innovation implementation. It created a completely new market with the help of breakthrough innovations [7].

2. UNSUCCESSFUL INNOVATIONS

Having introduced some successful companies, on the other hand some bad examples can be also found. The well-known LEGO [8]. Company had some struggles back in 2003. It all started in the '90s when LEGO faced a challenging and rapidly changing market. The technology improved quickly and the themed toys gained space as well. The marketing team decided to innovate, they introduced new Harry Potter-themed toys and had an agreement with Star Wars to produce toys based on the film. The product portfolio expanded quickly, adding an amusement park, jewelry, education centers and even interactive video games. According to the forecasts, LEGO could have been the leading brand by 2005 if everything went well. The company employed plenty of marketing managers, however, it almost went bankrupt. Firstly, the toys of Harry Potter and Star Wars did not meet the expectations, hence big stocks remained unsold. The other reason why LEGO almost failed was that the marketing group made its decisions unreasonably hurriedly, not thinking enough about the consequences. They had no exact goals and just focused on more and more innovations. By managing the innovations, focusing back on its original market, from 2009 to 2012 profits have grown by 41%.

Coca Cola in 1985 had a failure with "the new coke". They introduced a new formula in taste- based on 200000 people testing it before launching the product. However the Coca Cola Company [9] whose popularity was flagging through years expected a increase which it eventually received, however not in a traditional way. Receiving 1500 complaining

phone calls a day, thousands of letters, Coca Cola set back its original product. Because loads of people realized the loss of their original coke, it got a big attention through that year and a boost in sales happened.

3. FOURTH INDUSTRIAL REVOLUTION AND THE DEMOGRAPHICAL CHANGES

After having discussed the basic types of innovations, I would like to put the emphasis on the external environment. Our life has sped up while the life cycle of the products shortened. This caused fierce competition on the market in creativity and innovation. We must focus on the future, primarily because the Fourth Industrial Revolution [10] is at the doorstep.

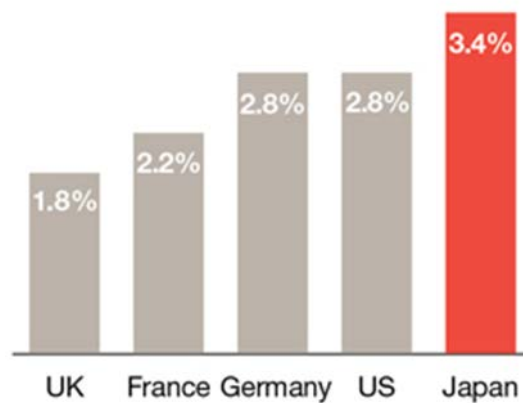


Figure 3. R&D spend as of GDP, 2010

(Source: <http://www.pwc.com/gx/en/services/advisory/consulting/revitalizing-corporate-japan/embracing-innovation.html>)

The Forth Industrial Revolution is going to put the emphasis on artificial intelligence and remotely controlled acts like booking a flight or ordering a cab. On the other hand, the new technological revolution can bring us some inequalities and widens the gap between those poor and wealthy within a given society. This can be explained by saying that the blue-collar jobs can be done by robots while the unskilled citizens are going to remain without jobs. Furthermore, the talented employees are going to earn more salary and become richer and richer. This will result in a society where the intellectual and creative or innovative minds are going to have more respect and money. The changing environment demands relentless innovation, using the combination of platforms and mobile applications. [10]

The Japanese [11] are pioneers in robotics, because they have monitored the demographic changes and paid enough attention to the forecasts saying that younger generations are about to stay in school for a longer period of time and not keen on doing minor tasks. Following the tendency where the workforce for traditional blue-collar job is about to decrease Japan solved the problem using artificial intelligence. [12]

In figure 3, we can see Japan as the forerunner of research and development according to a survey from 2010.

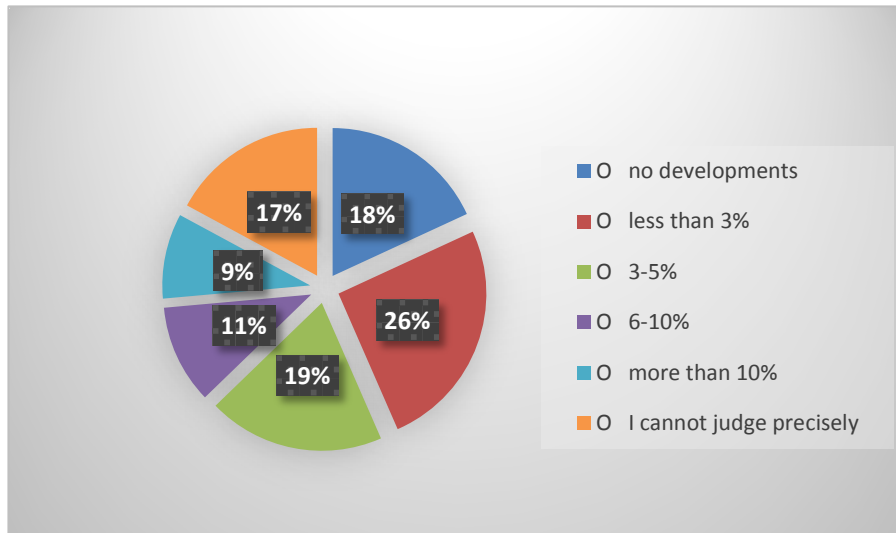


Figure 4. The % of the income spent on developmental expenditures

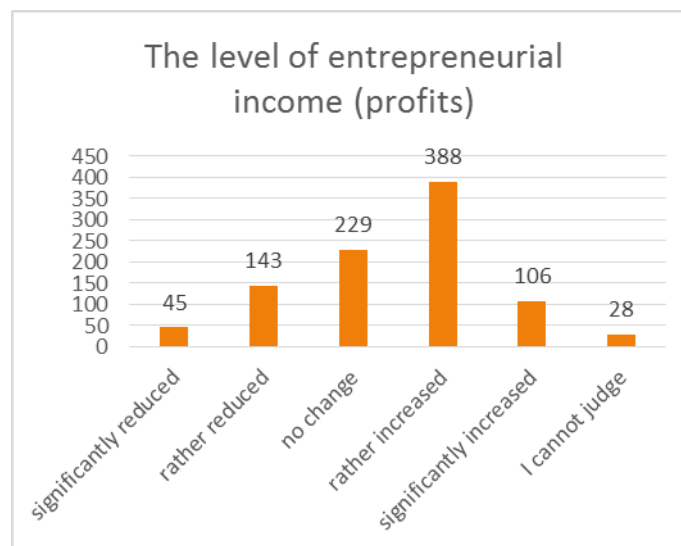


Figure 5. The level of entrepreneurial income (profits)

4. EXAMINING HUNGARY'S PLACE FROM DIFFERENT POINTS OF VIEW

In 2010, Hungary spent 1,14% of its GDP, which is less than the rate of the previous year, owing to the cut on the sources by the state [13,14].

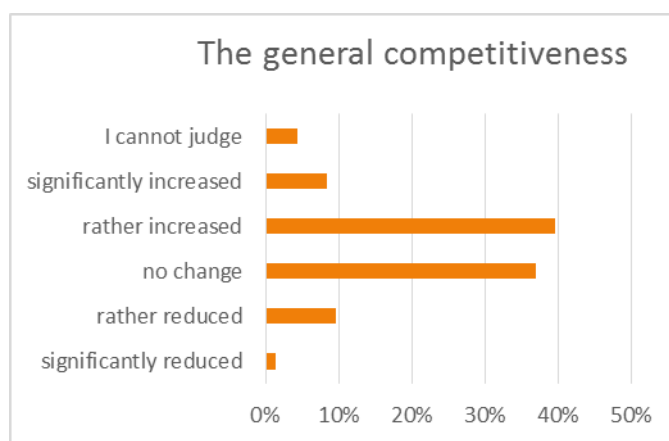


Figure 6. The general competitiveness

During a period of 10 years, the source of R&D investment has changed drastically. While in 2004, the R&D spending were mostly supported by the state, in 2014 the companies were mostly financing their own innovations [15]. At the same time an increasing tendency can be seen on how much they expend on developments. Japan is not the only country that has an outstanding result in R&D spending in the ratio of GDP. The Scandinavian countries have already realized the benefits of innovation-driven and knowledge-based economy. Spending above the EU rate for R&D and Education, Finland became a leading innovator among the EU countries. They started the new strategy before 2000 and we can see its result, how well its economy performs. Although neither Finland nor Hungary was among the most-improved countries before the change of regime, the line-up has changed. Finland is considered as the third leading innovator, at the same time Hungary is below the EU rate in the group of moderate innovators taking the 8th place.

Between the innovation leaders and the moderate innovators the strong innovators can be found mostly above the EU rate. Some countries which belong to this group are: France, the Netherlands, Belgium, and United Kingdom.

Hungary could improve its economical accomplishment only by 3 percentage points through 8 years. In 2004 Hungary's GDP reached the 63% of the average EU rate, while in 2012 it reached 66%. For 2011 Sweden [16] had its GDP 126% more than the average EU GDP rate, Finland's GDP is quite close as Sweden's with its 115% performance, while the Norwegian GDP in 2011 was 189% higher than the EU rate.

There is a connection between the educational program, the expenditures on innovations and the GDP of the countries. The spending on innovations [17] has increased in the last 5 years. Indeed, between 2013 and 2015 it stood at the same value (1,40%; 1,37%; 1,39%). Since 2010 it increased by 0,25 percentage points.

The survey on the very matter was conducted among 944 companies and contained several questions of innovation, R&D, competitiveness through many aspects.

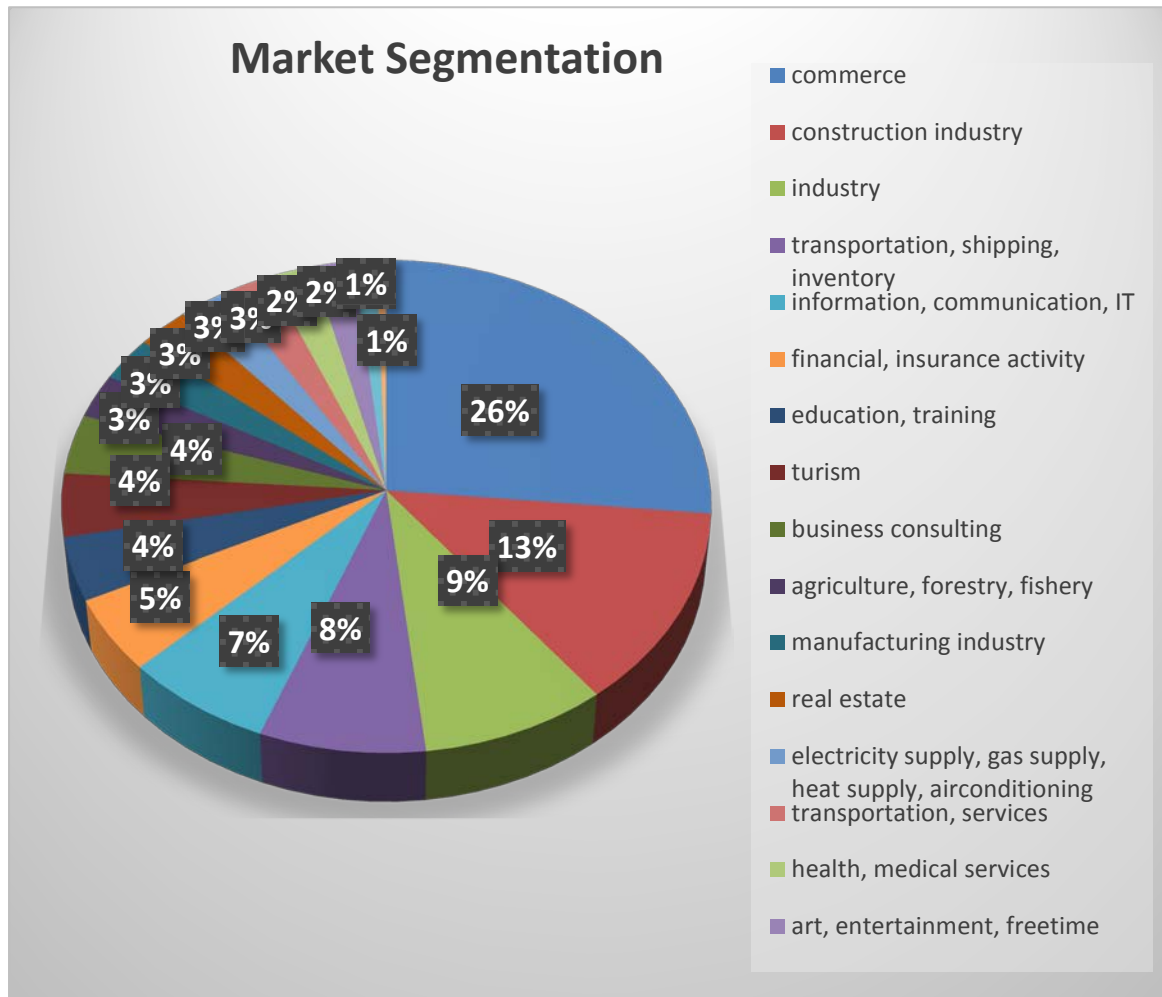


Figure 7. Market Segmentation

The firms which filled in the survey, mostly were involved in commerce (27%), on the second place they operated in the construction industry (13%), on the third place, firms were operation in heavy industry (9%). From the 944 firms, some indicated more than one field on which they operate, thus the answers sums up to 1306. Throughout 5 years the level of income slightly increased among 41,3% of the firms that filled in this part of the survey. Despite the fact that the level of income increased, the national market share has not changed for 39% of the firms, however for 31% it rather increased. The correlation coefficient is 0,91515 which implies that there is a strong connection between the income and the internal market share. 39% of the respondents have given the reply that the number of employees during the last 5 years have not changed. The general competitiveness – like the previous indicators say – has rather increased or not changed at all.

The statement “The enterprise implements several innovations every year, gradually increasing innovation performance.” to which 32% of the repliers said it was rather not significant, should also be stressed.

The amount of firms that think that the environment is changeable is only 36%, while 32% of them are not paying sufficient attention to innovation. Among other things, it is also shocking that 59% of the responders had not paid great attention to R&D, which means they were not paying any attention at all or they rather not paid attention. The correlation coefficient is 0,206173 between the R&D and the consumer satisfaction indicators. This is a merely a weak connection between these factors. Precisely among the 944 firms who

replied, 26% of them spends less than 3% on developmental expenditures such as Research and Development or innovations or on other improvements. This allows me to suppose that the leader/manager of 2016 does not follow the researches and does not draw conclusions e.g. how much importance innovation has when talking about improvements and sustainability.

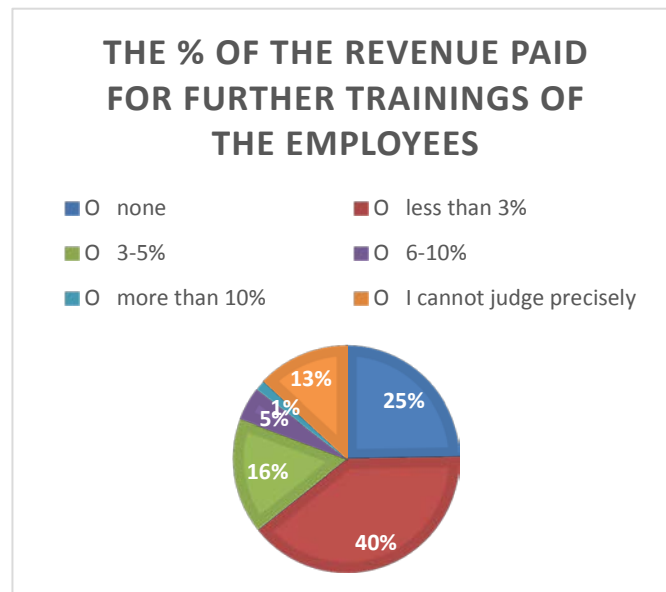


Figure 8. The % of the revenue paid for further trainings of the employees

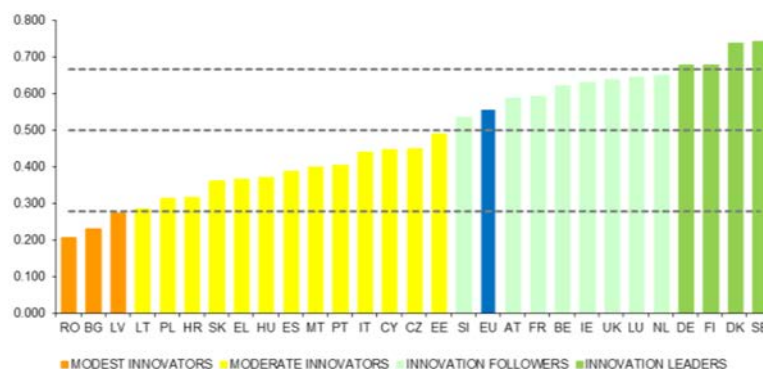


Figure 9. European Innovation Rank List 2015

8 years have passed since the depression in 2008 when there were many dismissals. On the figure 8 from the survey which shows the percentage of the revenue paid for further trainings of the employees it can be clearly seen that almost two third of the corporations have spent less than 3% of their revenue or no money on trainings. The attitude of the labor force has changed with the new generation. The Y generation loves challenges and novelties, does not like to stuck in the same situation, same job. This generation makes the HR managers' job challenging to not only choose a good work force but making them want to stay in the company. Even today, young labor force appreciate trainings because it adds value to the company and themselves as well, and also enables them to get higher on the career ladder. Generation Y requires more than remuneration, they demand involvement as well. Based on the study of the improvement in Finland, there is a strong connection between knowledge and competitiveness. Hence, if the Hungarian corporations

had invested more to human resources it would be able to present a faster development [18].

In the research of the World Economic Forum from 2015-2016 Hungary is at the 63rd place among 140 countries at the world ranking list of competitiveness [19]. What remarkable is that Romania (which country was considered as a modest innovator while Hungary as a moderate innovator) got ranked 10 place above Hungary.

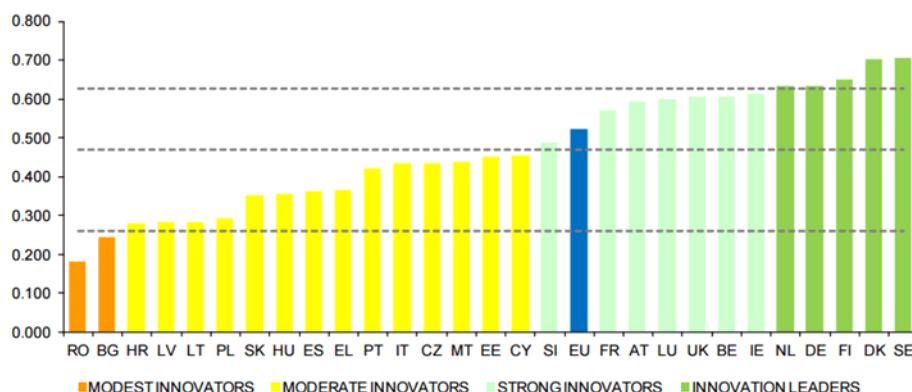


Figure 10. European Innovation Rank List 2016

Bulgaria which was also considered as a modest innovator and has not owned a well-developed industry in the past years, now have been ranked to the 54th place on the scale of the competitiveness. Latvia from the same group is at the 44th place. All the modest innovators could improve fast.

Comparing this to the research of 2014-2015, Hungary has lost 3 places, while Romania, Bulgaria have improved since last year.

5. CONCLUSION

Examining the answers of Hungarian firms, it can be stated that Hungary still has not realized the significance of the Human Resources and the demographical changes. Investing in knowledge and experience rather than saving money on further education of the employees would foster innovation. The organizational changes have rather not been initiated by the ideas of the employees (43%). To concentrate on the inspiration of employees to have more ideas and not to keep them for themselves would also be advisable. If the employees are more open, they will be more creative and have more ideas on how to innovate.

Every government should increase the amount spent on developmental expenditures and put the emphasis on education and motivate the corporations to innovate more at their respective field.

To draw a conclusion, Hungary has a lot to change for example in its cultural attitude at the business field. We have to let good innovations from abroad enter and – as through the years in history we have already proved – we are also capable to invent new things, make the processes better and improve the competitiveness.

The companies have to spend more on R&D and trainings, while the state has to make efforts to have the country competitive against others to attract the workforce. At the same time, we have to deal with the lack of labor force, in a way that educating more engineers to develop the field of robotics. Now we do not have to examine the present but focus on the future, and face up with the competitors successfully.

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IMPLEMENTATION OF THE ECOTOURISM CONCEPT IN THE NATIONAL PARK DJERDAP – CREATING A NEW BRAND

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Abstract

This paper represents the basic results of research conducted with the aim to enable sustainable development and improve living standard in Southern and Eastern part of Serbia. The main objective of this article is to define possibilities for business improvement in the National park Djerdap (NP Djerdap) through the analysis of the current state in the NP Djerdap and potentials that could contribute to a better business and further sustainable development. In this article, NP Djerdap is considered as a possible development basis of the municipalities Kladovo, Majdanpek and Golubac. The current and further position of NP Djerdap is analyzed using SWOT analysis. On the basis of the result obtained using the SWOT analysis, ecotourism brand of the NP Djerdap, as well as activities that contribute to its establishment which are in accordance with the available resources, are created. Implementation of the activities leads to the enriched tourist offer of the NP Djerdap through the simultaneous introduction of the ecotourism concept. As a result, there is a long-term sustainable development of the aforementioned municipalities as well as the region.

Keywords: *National park, Djerdap, ecotourism, natural resources, sustainable development*

1. NATIONAL PARKS

A national park is a place where human activity is restricted of strictly monitored with the aim to reduce, or even minimise, the human influence on the natural environment, as well as endangered animal or plant species.

In Serbia, by the Law on Nature Protection in the article 30 national park is defined as “area with a large number of different natural ecosystems of the national importance, esteemed characteristics of the area and cultural heritage in which man lives in harmony with nature, all meant for conservation of the existing natural values, and for satisfying the scientific, educational, spiritual, aesthetic, cultural, touristic, health-recreational needs and other activities according to the grounds of the protection of the nature and maintainable development”. [1]

Although Serbia is a small country, it is very rich in natural beauties, so it has 5 national parks, 10 nature reserves, 12 caves [2], and so on. Some of the most important characteristics of Serbian national parks are given in Table 1.

Table 1. Characteristics of national parks in Serbia [3]

National park	Area (ha)	Manager-Public enterprise national park	Region of Serbia	Year of Establishment	Year of establishment of the current position	IUCN category
Fruska gora	25393	PENP "Fruska gora"	AP Vojvodina	1960	1993	V
Djerdap	63608,45	PENP "Djerdap"	Central Serbia	1974	1993	IV
Tara	19175	PENP "Tara"	Central Serbia	1981	1993	II
Kopaonik	11809,91	PENP "Kopaonik"	Central Serbia	1981	1993	V
Sar planina	39000	PENP "Sar planina"	AP Kosovo i Metohija	1986	1993	II

Biodiversity could be identified as one of the most significant characteristic of each ecosystem. Biodiversity is the variability among living organisms from all sources, including terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems. [2] [4]

In order to preserve life on the planet Earth, it is necessary to give special attention to the preservation of biodiversity. This is one of reasons because three zones of protections are established in the National park Djerdap. The first zone of protection includes 18 units which represent the most valuable and well preserved part of the national park. The second zone of protection includes 14 units on the total surface of 130 km² and it represents beauties of the tributary of the Danube valley. The third zone represents the rest surface of the National park Djerdap, around 449 km². [5]

The main reason for this is to ensure protections of many varieties of animal and plant species.

2. POTENTIALS FOR DEVELOPMENT

Area of National park Djerdap is aligned with a border of Romania, or, to be exact, it is occupying parts of the following municipalities: Kladovo, Majdanpek and Golubac. Complete surface area of National park Djerdap is 63 786, 48 ha, and it is also the biggest National park in the Republic of Serbia. [6]

National park Djerdap is rich with natural beauty and scenery. On its territory, you can see an exquisite canyon that originated with perforation of Danube river through Carpathians. Besides Danube river, National park Djerdap is enriched with Dobranska river, Boljetinska, Zlatica, Kosovica and Brnjicka river. Within this National park, you can find tremendous number of animal species and plants: 736 types of insects, 13 types of amphibians, and 65 types of fish. 187 types of birds and around 60 types of mammals are documented. 70% of park's surface is covered with trees, and there are identified 50 types of forest community from which 35 are relict and 6 are developing vegetative series, and that is unique in Europe. Along variety of plants and animals, National park Djerdap, contains valuable historical and archaeological sites from which you can single out Trajan's table (I century), remains of Trajan's bridge, Golubac fortress (XIV century) and prehistoric settlement Lepenski Vir (7000-6000 BC). [6] Favorable position of National park Djerdap represents another advantage, because it is near Pan- European corridor VII,

as well as vicinity of international airports in Belgrade and Nish, and a smaller airport in Bor, which can be used for charter flights.

In order to increase awareness of importance of saving environment and promoting mentioned potential of protected areas, as initiator of regional sustainable development, from management of National park Djerdap, it is expected advancement of quality and more efficient use of all available resources. Towards that purpose, in January 2017, management of National park Djerdap presented new proposal of Plans to manage National park Djerdap for period 2017-2026. [7] As support to realization of mentioned plans, basic motive for making this research is to ensure systematic approach to accomplishing following developing goals of National park Djerdap:

1. Saving biodiversity and cultural heritage,
2. Increasing employment and population living standard,
3. Responsible behavior of population, tourists and economy towards NP,
4. Developing sector of small and medium sized companies,
5. Sustainable use of resources,
6. Enrichment of tourist offers and increased number of tourists,
7. International cooperation.

To accomplish mentioned goals and to achieve sustainable development of tourism in this region, the need for implementation of the concept of ecotourism in NP Djerdap is imposing, modeled by the most developed national parks in the world. [6] Unique and untouched nature and rich historical and cultural heritage, in conjunction with implementation of concept of eco-tourism, will enable dynamic improvement in this region, which would have far-reaching effects on economic development, most of all municipalities Kladovo, Majdanpek and Golubac, but also development of whole region of Southern and Eastern Serbia. Tourism development and enrichment of offer for tourists creates conditions for development of small and medium sized companies in areas of catering, traffic and manufacturing and processing of organic food, craftsmanship (for souvenirs production), and other complementary activity. Additional option for development in this region is presented in re-building marina in Kladovo, which would provide better use of potential for transportation on Danube river.

Danube river is natural border between Serbia and Romania, where, with cooperation with partners from the other side of Danube river, National park Djerdap can expand tourist offer, whereby a much bigger number of tourists can be attracted. This cooperation would be conceived on organization of tourist journeys which would be contained of visitation of natural and cultural - historical locations on both sides of Danube river, which would provide much better differentiation and far better market competitiveness. [7] Having in mind that Romania is fully accepted member of European Union, cooperation on international level would provide opportunity for using European funds, and that would further accelerate development of tourism and it would provide sustainability of defined project idea in this research.

3. ACHIEVED LEVEL OF DEVELOPMENT OF MUNICIPALITIES IN NP DJERDAP

Southern and Eastern region in Serbia is the least developed region, which is confirmed by the latest available data from the Republic Institute for Statistics, [9] by which this is the region participated in the creation of the national GDP in 2014 with only 14.1%, and the GDP per capita in the same year was for even the 35.8% lower than the national.

This has led to significant migration to more developed parts of the country or abroad, so in this region, and especially in the above mentioned municipalities, the population was continually decreasing a number of years (Table 2).

Table 2. Number of population and natural population growth in the municipalities covered by the National Park Djerdap and the Region of Eastern and Southern Serbia. [8]

	2011		2012		2013		2014		2015	
	Number of population	Natural population growth	Number of population	Natural population growth	Number of population	Natural population growth	Number of population	Natural population growth	Number of population	Natural population growth
Kladovo	21142	-12.3	20416	-12.6	20136	-13.6	19834	-15.0	19532	-14.6
Majdanpek	19854	-7.0	18454	-8.0	18127	-10.6	17775	-10.9	17431	-9.7
Golubac	8654	-12.2	8210	-12.1	8091	-17.7	7940	-15.4	7795	-16.2
Region of Southern and Eastern Serbia	164167	-7.6	1594594	-8.0	1579367	-7.4	1567010	-7.7	1551604	-8.3

One of the main causes of such unfavorable situation is the poor result of privatization and restructuring and the slow development of the SME sector. The former economic giants in the region are closed or working at reduced capacity after the privatization process and restructuring. The number of new business entities is relatively small too.

Natural growth was negative in all monitored areas, but also at the level of the whole region. The worst situation is in the municipalities of Golubac and Kladovo, where over the past five years is recorded a negative rate of natural increase. The situation in the municipality of Majdanpek is better, but even in this municipality since 2013, negative population growth rate was above the regional average. In addition to significant migration, in the territory of the municipality of NP Đerdap have unfavorable age structure of the population (Figure 1).

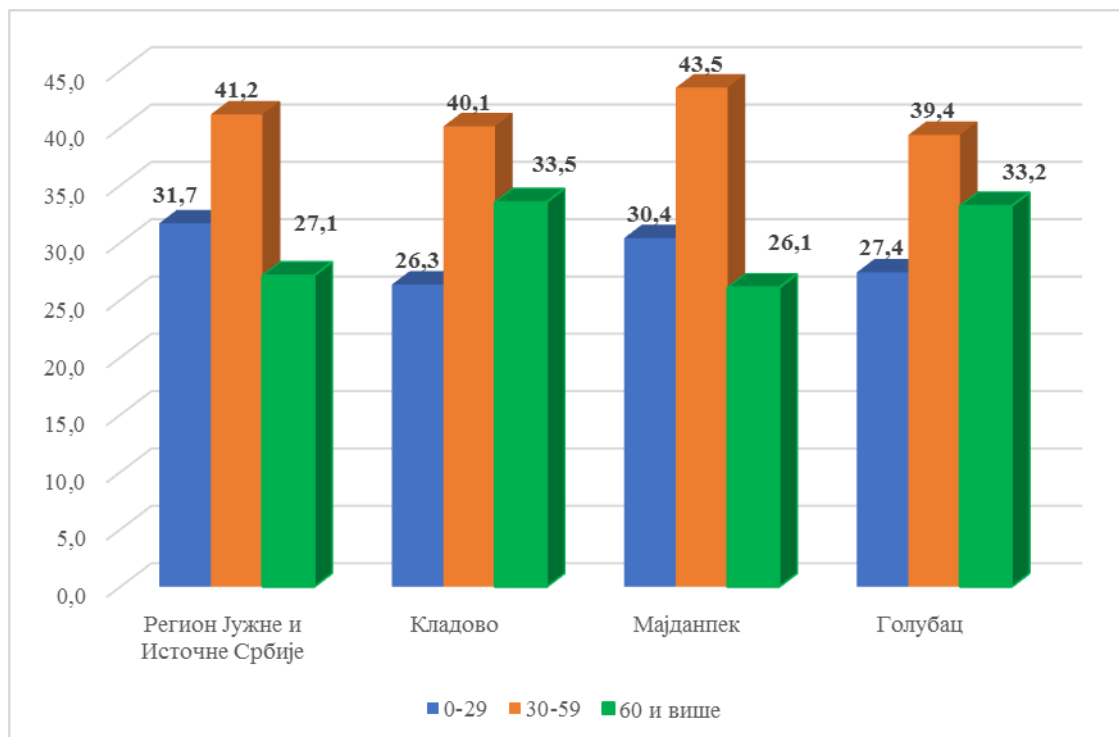


Figure 1. Age structure of the population in municipalities covered by the National Park Djerdap and the Region of Eastern and Southern Serbia [8]

This is particularly the case in the municipalities of Golubac and Kladovo, where the population aged over 60 years has significantly higher share of the total population in relation to the participation of young people aged up to 29 years. Having in mind that a large number of young leaves this region, and that this was mainly residents with higher degree, in the qualification structure of the population in the region and territory municipal NP Iron Gate: the share of the population to the mean primary and incomplete degree (Figure 2).

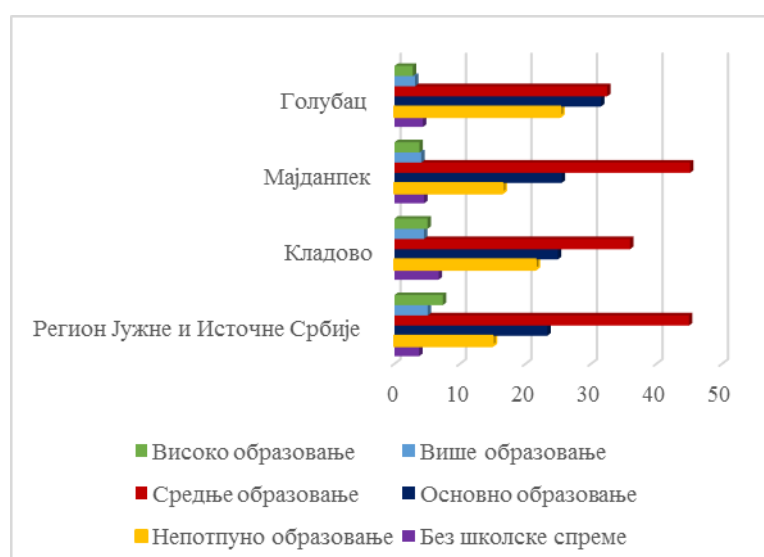


Figure 2. The qualification structure of the population in the municipalities covered by the National Park Djerdap and the Region of Eastern and Southern Serbia according to the 2011 [8]

Unemployment is also one of the major problems in this region which can be seen in the Table 3.

Table 3. Changes in the number of unemployed and the share of those seeking their first job in the overall unemployment rate in municipalities situated in the territory of NP Djerdap and Southern and Eastern Serbia in the period 2011-2015 [8]

	2011		2012		2013		2014		2015	
	Number of unemployed	Number of those seeking their first job (%)	Number of unemployed	Number of those seeking their first job (%)	Number of unemployed	Number of those seeking their first job (%)	Number of unemployed	Number of those seeking their first job (%)	Number of unemployed	Number of those seeking their first job (%)
Kladovo	2065	31.2	2132	31	2100	30.8	2076	31.2	1942	31.3
Majdanpek	1949	28.9	2055	26.4	2022	27.1	2029	28.4	2006	29.2
Golubac	648	28.4	786	28.9	700	27.7	640	30.3	637	31.1
Region of Southern and Eastern Serbia	197690	38.6	203287	36.7	202798	36.1	192773	35.1	185926	34.2

Even it is noted a decrease in unemployment since 2014. (at the regional level and by the observed municipalities), it should be mentioned that it is partly a result of migration of the population, especially young people, in the Western European countries in search of work. The worse is the fact that almost a third of the unemployed are those who are looking for their first job. This situation is present for a longer period of time and if economic activity doesn't revive in this part of the country soon the situation will aggravate further.

The above-mentioned negative tendencies can be stopped by development of tourism in the NP Djerdap, based on the concept of ecotourism. It will provide an integrated approach to development (having in mind that generates all the available resources and increase the efficiency of their use), this type of tourism will enable long-term sustainable development of the municipalities in the national park, and also to whole region. The realization of this project through a public-private partnership with an experienced private company in this field, should provide improving the infrastructure necessary for the development of tourism, but also to involve all interested stakeholders in the process of implementing the standards of ecotourism.

Taking into the account that tourism is characterized by a heterogenous set of accompanying jobs and activities, such as: hospitality, agriculture, traditional crafts and retail sales, a number of possibilities for further development of existing as well as forming new traditional crafts and retail sales could be identified.

It could be assessed that the faster economic development of this area, as well as the entire region, could be achieved on the basis further usage of reasonable and controlled usage of natural beauties.

It could be especially interesting for the municipality of Kladovo where the percentage of entrepreneurs in the total amount of employed are below 15%, as it is shown in Figure 3.

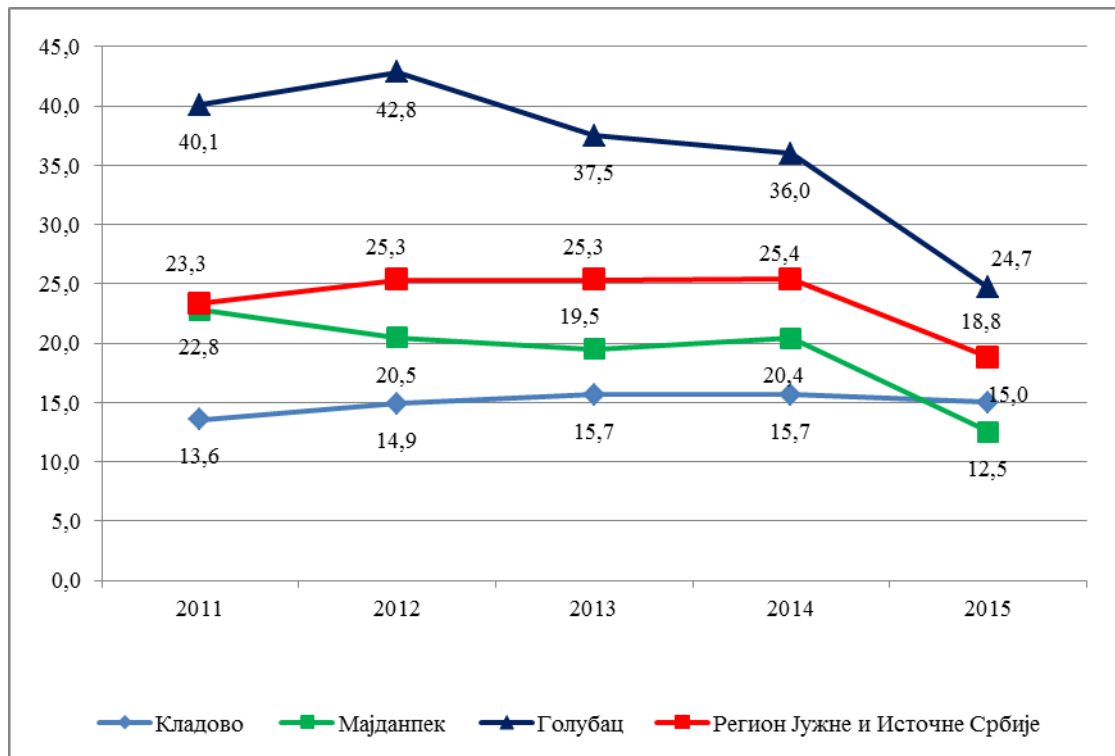


Figure 3. The percentage of entrepreneurs, and its employee, in total number of employees in municipalities on which surfaces the NP Djerdap is located [8]

The realization of this project should increase the number of tourists, which could have an impact on higher number of entrepreneurs, as well as the higher number of employed in related business. It could be assessed that the majority of these activities will be based on the selling on national specialties, souvenirs and other products with characteristics of NP Djerdap. The forming of SMEs, primarily in craft and agricultural production, could be identified as a reasonable solution for reaching such goals.

The development of existing, as well as opening new entrepreneurial firms, based on the tourism, could lead to its high impact on the total market, from approximately 5% in 2015 to the expected 20%.

By using this approach, the tourism, and activity based on the tourism in the NP Djerdap, could become the main initiator of the economic activities, as it is shown in Figure 4.

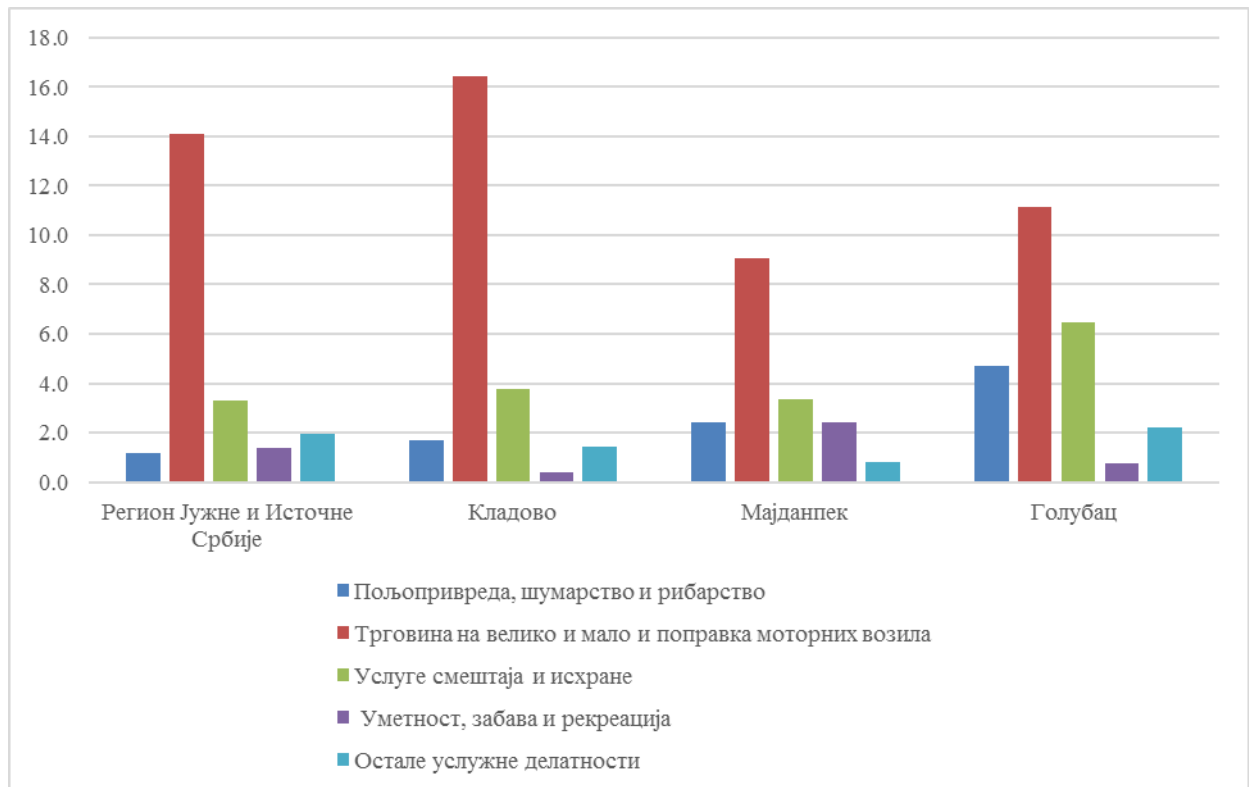


Figure 4. The influence of particular economic activities in employment in municipalities on which surfaces the NP Djerdap is located [8]

At the end of this project, it is important to highlight that successful realisation of this project could be achieved by using public-private partnership model, which could obtain necessary funds for further investments.

It can be mentioned that in 2011-2015 there are no new investments in tourism and following sub activities in the municipalities of Majdanpek and Golubac, while similar investments in municipality of Kladovo are minor. As one proof for the above could be mentioned that funds available in 2011, in the amount of 27.390.000 RSD are reduced to 1.352.000 RSD, in 2015, which is 20 times less.

Development of any, as well as this economic activity, cannot be done without new investments. As evidence for that can be found in evident decreasing of visitors of NP Djerdap, local visitors as well as visitors from other countries, as it can be seen from Table 4.

Table 4. Overall presentation of trends of overnight stays of local and foreign tourist in NP Djerdap in a period of 2011-2015. [8]

Number of tourists						
Year	Kladovo		Majdanpek		Golubac	
	Local	Foreign	Local	Foreign	Local	Foreign
2011.	28230	3336	22940	4329	4251	569
2012.	22875	2649	28200	4077	4706	710
2013.	20610	3136	20979	4583	4426	536
2014.	13293	2757	17795	4728	2152	614
2015.	18791	3556	16876	4631	1953	966

Number of overnight stays						
Year	Kladovo		Majdanpek		Golubac	
	<i>Local</i>	<i>Foreign</i>	<i>Local</i>	<i>Foreign</i>	<i>Local</i>	<i>Foreign</i>
2011.	79526	8111	46901	9095	6229	5627
2012.	60657	6315	62426	7204	6787	6056
2013.	55715	7862	42838	9086	8878	8120
2014.	30757	8345	34874	8722	4000	3258
2015.	40810	8516	31910	9841	3857	2739

In order to increase the number of overnight stays, it is necessary to make a systematic research about further development of this area based on its nature resources and beauties. The eventual realization of proposed strategies and activities could lead to breathtaking and extraordinary tourist experiences of natural, cultural and historical heritage of NP Djerdap. In addition, the previously proposed activities should lead to the increasing number of overnight stays and increasing the overall enjoyment of tourists without any compromising of protected ecosystems.

4. METHODOLOGY

The aim of this paper is to show different potentials in National park Djerdap and to define new ecotourism brand. Previously mentioned goals of National park Djerdap are considered from different aspect such as preservation of natural resources, living standards of local inhabitants, sustainable development and increase of profit. All considered goals are defined in such a way that contribute to the implementation of ecotourism concept in National park Djerdap.

In the first step, the most important goals of National park Djerdap are defined. Next step includes detailed SWOT analysis. On the base of SWOT analysis, adequate brand and promotion activities are defined for further development of National park Djerdap.

Based on analysis of current position of the National park Djerdap and its potentials, strengths and weaknesses were defined. In the following table, all considered internal advantages and disadvantages are described. The most important opportunities and threats from external sources for National park Djerdap are showed in the next part of the table.

Table 5. SWOT analysis [9]

Strengths	Weaknesses
<ul style="list-style-type: none"> - Unique ecosystems and the international character of the protected value of bio and geological diversity - The rich cultural and historical legacy of world importance - The favorable geographical position in the pan-European corridor VII and good connection with the airport in Belgrade - Rich by forest resources - The hydropower potential of the Danube river 	<ul style="list-style-type: none"> - Insufficient knowledge in the field of tourism and promotion potential of the NP - Underdeveloped infrastructure in the wider territory of NP - Poor cooperation of the NP Administration and the most important stakeholders from the surrounding municipalities - Degradation of biodiversity - There is no plan about managing the visitors - The low level of economic development of

- Favorable conditions for organic production	municipalities - Unsuitable system for waste water treatment and municipal landfills - Unfavorable demographic situation - Insufficient education of the population on the development of environmental awareness
<i>Opportunities</i> - Creating the unique tourist product (brand) - The potential of the Danube river which is an integral part of NP - Development of partnerships with SMEs in the region - Cross-border cooperation in order to implement projects from EU funds - Products of local character (organic food) - Foreign investment - Development of the production of energy from renewable sources	<i>Threats</i> - Slow Serbia's EU accession and disrespect of EU standards - The unfavorable economic situation in the country - Failure to comply with regulations to protect sensitive sites and biodiversity in NP - Lack of an effective fight against the gray economy - The creation of a bad image due to poor visitor experience with infrastructure NP - Unplanned resource use NP - Lack of interest of investors to invest in this region

Based on the results of the SWOT analysis and comparing SWOT factors (strengths, weaknesses, opportunities and threats), possible ecotourism brand of the National park Djerdap is showed in the next section.

5. A NEW ECOTOURISM BRAND OF THE NP DJERDAP

In order to define a new ecotourism brand for the National park Djerdap it is necessary to take a look at the following guide lines which are shown in the Figure 5. The same principle for developing a brand is applied in Croatia by the Institute for tourism in 2016 [10].

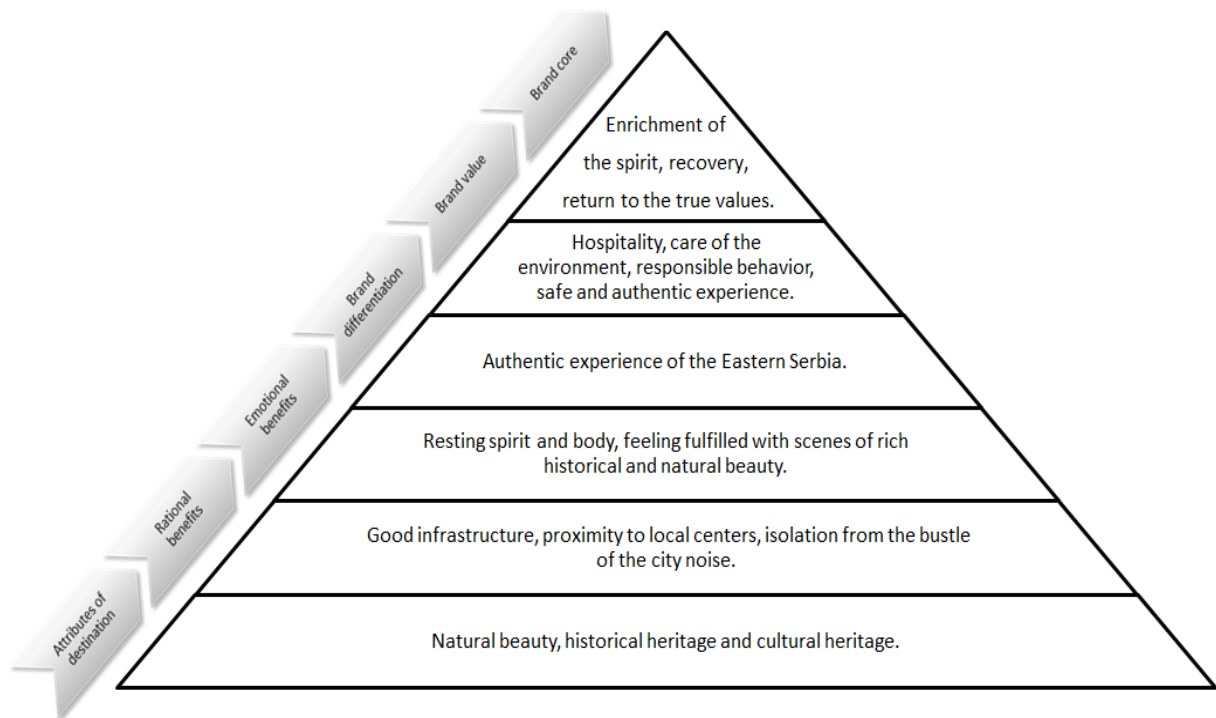


Figure 5. The process of generating brand concept for the National park Djerdap

In general: Djerdap National Park is an ideal combination of natural beauty, diverse flora and fauna and rich cultural heritage.

Natural Heritage: A unique natural ambience created by crossing the Danube and the natural beauty of Serbia, forests, basins and gorges as well as the largest artificial lake in Serbia. Rich forests, where you can meet all of the bears, wolf and jackals to the owl and black owl, as well as a diverse fauna with over 11,000 plant species [7].

Historical heritage: Rich cultural heritage, scenes like Lepenski Vir, Golubacki grad, Trajan's plaque and remains of Trajan's Bridge [7], as well as preserved examples of medieval Serbian architecture - an indication of the rich history of the Serbian state.

Cultural heritage: Quality and diverse Serbian and Vlach national cuisine, authentic Serbian and Vlach buildings, the old fashioned way and the culture of life that is present today.

Cultural Institutions: Local cultural institutions of the surrounding settlements of the Bor District, which during the tourist season maintain a lot of interesting events.

Manifestations: Sailing and Rowing Regatta ("Djerdap Cup"), hunting of the catfish "on the flask" ("The Golden Bucket of Djerdap - Tekija"), fishing boilers ("Zlatni kotlić" - Golubac), folklore festivals ("Jorgovan fest", "Olympiad") [11] and others.

Tourist infrastructure: Numerous pedestrian and biking trails, sightseeing spots, beautiful Danube coast, well organized pedestrian paths of local settlements, tourist info center located in Donji Milanovac.

Catering: Accommodation capacities are located in the hotel "Lepenski Vir" in Donji Milanovac, hotel "Golubacki grad" in Golubac, hotel "Djerdap" in Kladovo, youth camp Karataš, motels in Dobra and Tekija and accommodation in domestic work [11]. Accommodation facilities in domestic work certainly provide tourists with an authentic feeling, in accordance with environmental standards, a large number of them are preserved

examples of Serbian architecture, while they are newly built in accordance with local architecture and the way of construction.

The rational benefits that Djerdap National Park offers to the guests: The magnificent nature - rich forests that abound with flora and fauna; Danube with all its beauties; Numerous events during the tourist season; Good infrastructure; Close to centers in eastern Serbia and at the same time isolation from noise; Easy access from the main road.

The emotional benefits that Djerdap National Park offers to the guests: The hospitality of the local population as well as unreal natural beauty gives the user complete rest of the spirit and body. Holiday in a national park can be active as well as a passive holiday. Numerous pedestrians, bicycle trails as well as sightseeing spots will satisfy every tourist who needs an active holiday, and if you do not need a lot of excitement for a quality holiday, magnificent scenes, light walks and excellent local cuisine will definitely be a good charge for the batteries. Rich cultural heritage, scenes, such as Lepenski Vir, Golubacki grad, Trajan's plaque and remains of Trajan's Bridge [7], as well as preserved examples of medieval Serbian architecture - an indication of the rich history of the Serbian state, are sufficient reason to step into the great Roman Empire, for a moment, Neolithic period or a magnificent medieval Serbian state.

In addition, National Djerdap offers the possibility of nautical and hunting, i.e. fishing tourism in the picturesque canyon of the Danube River.

Brand concepts of competitors and differentiations of the National Park Djerdap: Tara National Park: Tara National Park is based on most of its natural beauty and is proud to stand side by side with the national park Djerdap. From activities, tourists can enjoy hiking, biking, canyoning and enjoying natural beauties. The advantage of the Djerdap National Park is exactly the complete offer, besides the natural beauty, it offers rich cultural and historical heritage as well as an authentic experience of eastern Serbia [12].

Other national parks, although they represent competition, attract tourists looking for a different type of vacation and recreation.

The basic values of the National Park Djerdap: Hospitality, environmental care, responsible business, safe and authentic experience.

Market Identity of the National Park Djerdap: Enriching the spirit, recovery, returning to true values, providing a unique experience. The mere presence at a place such as the Djerdap National Park, which offers so many natural beauties combined with the hospitality of authentic Serbian hosts and the legacy of great civilizations, is a sufficient reason for someone who once experiences it to return again.

The slogan of the proposed project idea is: "**Return to the pure nature**".

In order to promote the proposed brand, the following activities should be carried out:

- To promote the tourist offer of the National park Djerdap on the national and international market;
- Establish cooperation with travel agencies and tour operators;
- Intensive promotion using social networks (Facebook, Twitter, Instagram), targeted promotion;
- Publication of articles about the natural beauties and potentials of the National park Djerdap in specialized journals and on websites promoting the tourist offers;
- Organization of prize games in the form of simple quizzes in certain programs on television and radio, with the aim of promoting the national park Djerdap;
- Redesigning the site of the National park Djerdap and creating opportunities for visitors to post their comments and pictures, as well as creating opportunities for rural households to show their tourist offer;

- Create tourist map of the National park Djerdap;
- Organization of events promoting the National park Djerdap tourist offer, as well as promotion of organic products, with the aim of making these manifestations traditional.

6. DISCUSSION AND CONCLUSION

Having in mind that National park Djerdap is an area under the government protection, its competitive disadvantage position in Europe and low investment rating of the country, reduced inflow of direct foreign investments, as well as the lack of government investments aimed for development of national parks, development opportunity of the National park Djerdap can be seen through application of specific forms of public-private partnerships and creating an environment for its implementation, based on examples of good world practice.

Through public-private partnerships can be arranged abandoned and ruined infrastructure and build capacity gaps for the purpose of the ecotourism as an important prerequisite for long-term sustainable development of the National park Djerdap. Propose actions for implementation of the ecotourism concept require high amount of investments. Therefore, through cooperation of the public and private sectors, all necessary resources will be generated, and operation of all key stakeholders will be focused on initiating concept of ecotourism and long-term sustainability. In order to achieve this, it is necessary that private sectors companies are socially responsible, having on mind that realization of this project acquires numerous types of local community support through raising awareness about importance of ecotourism, environmental protection and cultural heritage conservation, education of population and other aspects of socially responsible behavior.

In addition, significant role for realization of these activities can have educational institutions (schools, universities, NGOs), by raising awareness of young generation with its own educational programs, about importance of conservation and responsible use of the resources of the national parks.

As a result of the implementation of the project ideas it is primarily expected to increase employment and the standard of the population in the studied region, with the fulfillment of the above and other objectives of this paper.

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PROVIDING ENERGY STABILITY OF THE STRPCE MUNICIPALITY BY SELECTION AND IMPLEMENTATION OF THE BEST TECHNOLOGIES FOR THE UTILIZATION OF RENEWABLE ENERGY SOURCES

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Abstract

The territory of the municipality of Strpce, which extends to the south and south - eastern part of Kosovo, has been facing very frequent power cuts since the year 1999. This has a detrimental effect on the local population and on the undeveloped economy of the region. On the other hand, this municipality possesses vast resources of renewable energy in the form of biomass, wind energy and especially solar and hydro energy. Therefore one of the possible solutions for the production of electricity is the construction of power plants which utilize renewable sources of energy. In order to analyze the current position of the Strpce municipality regarding these issues, a SWOT analysis was conducted. Furthermore, Analytic Hierarchy Process (AHP) method was used for the selection of an appropriate technology which utilizes the following alternative renewable energy sources: solar, wind, biomass and hydropower. The criteria based on which the ranking was carried out were: investments, environmental impact, number of employees and maintenance costs. Results obtained using this methodology gave a priority to the solar power plant and then to the biomass plant. Based on these results a multi-project was developed which describes the implementation of these two technologies in practical terms. The development of the energy sector and focus on renewable energy sources provides an eminent improvement of the quality of life of the local population and promotes the rational utilization of natural resources.

Keywords: *Renewable energy, SWOT, production of electricity, AHP, multi-project*

1. INTRODUCTION

Serbia has considerable energy potential in renewable energy sources, but it is not sufficiently exploited, especially when it comes to certain sources of energy such as glass, biomass or solar radiation. Energy Law was adopted in July 2011. defined the energy policy of Serbia and was a mandatory step that Serbia had to take because of membership in the Energy Community in South East Europe as a framework for the integration into the EU energy market. This law encourages investment in renewable energy, by simplifying procedures for investment and the introduction of privileged producers of energy from biomass, water, wind, solar and geothermal energy.

The municipality of Strpce has a reasonable potential of biomass, wind energy, particularly solar and hydro energy. Currently in the municipality of Strpce There is not a plant for the production of electricity from RES. However, during the construction of two mini hydroelectric power plants.

The very idea of this paper is the presentation of multiple ideas, which aims to combine the two alternatives for better utilization of available resources. The first project idea relates to the utilization of solar energy, that is, to the installation of solar panels. After a certain amount of time, if there is a need to increase capacity and absorb sufficient funds, another project idea could be developed for the installation of a biomass plant.

2. POTENTIAL UTILIZATION OF RENEWABLE ENERGY SOURCES IN THE MUNICIPALITY OF STRPCE

Strpce Municipality extends to southern, and south – eastern part of Kosovo, about 72 km south of Pristina. It borders the municipalities of Prizren, Suva Reka, Ferizaj, Kacanik and with Macedonia. Surface area of Strpce is 247,36 km², with a population about a 13.900 residents. The territory of the municipality of Strpce has exceptional conditions for the development of winter and summer tourism.

Brezovica represents tourist-recreation center and very promising ski center even at the European level, where there are a number of hotels, resorts, mild to attractive ski slopes in winter, as well as the green slopes suitable for recreation during the summer. With its tourist very valuable geomorphological (high tops Sare, steep cut, the valley of glacial origin, etc.) and hydrological (numerous springs and streams that are active during the year) phenomena, is one of the most valuable tourist sites in the region.

Regardless of the existing potentials, regional prosperity and development of the economy is inconceivable without regular power supply. Unfortunately, residents of the municipality of Strpce from 1999 until today are exposed to very frequent power cuts. Of course, one must take into account that Kosovo after the war in 1999 had major problems with the production and supply of electricity in the whole territory, but nevertheless it is evident that the Serbian middle were often subjected to power cuts. Undoubtedly, and as a form of political pressure.

Main production capacity of electricity in Kosovo are two thermal power plants (Kosovo A i Kosovo B), while brown coal used to produce 97% of the total electricity produced in Kosovo. This is a great dependence on one source of electricity generation speaks about energy security of Kosovo. Strpce with the environment is supplied from the transmission line of 110 KW which reaches from the substation at Pristina via substation in Ferizaj continues to Strpce. The main problem of the current situation of energy supply in Strpce, as indeed in all of Kosovo and Metohija, the lack of production of sufficient quantities of electricity. [1]

3. SWOT

Table 1. SWOT analysis of this project

Strength	Weakness
Availability of renewable energy sources in the municipality of Strpce Guaranteed placement produced electricity	- Taking a large area of land for the development of some renewable energy project

<p>Political and Logistic Support to Local Self-Government</p> <p>Lifespan of technology</p> <p>The utilization of agricultural, forest and municipal waste</p> <p>The possibility of installing plants near the place where there is the greatest need for it</p> <p>The possibility of using different raw materials to produce energy</p> <p>Increase the energy efficiency of the existing network</p>	<ul style="list-style-type: none"> - Potential distance from the existing network (transmission line, substation ...) and consequently the need for additional investment - Costs of exploitation and maintenance of different RES technologies - Periodicity of availability of resources, - Increased costs due to resource allocation for energy production - Observation of supply through different RES technologies - Low level of economic development of society and the region - Lack of local knowledge and experience in the renewable energy field
<p style="text-align: center;">Opportunities</p> <ul style="list-style-type: none"> - Contribution to the energy security of the municipality - Employing a large number of people for the purpose of supplying the necessary resources - favorable feed-in tariffs - Encouraging local infrastructure and economy <ul style="list-style-type: none"> - Generating revenue into the municipal budget - Reduction or elimination of restrictions of electricity for the population of the municipality <ul style="list-style-type: none"> - Increasing political stability of the region - The availability of cheap and skilled labor force - Existence of municipal land for RES projects - Competitiveness in relation to other electricity suppliers - Political support of the Republic of Serbia and local self-government - Large quantities of waste resulting from unplanned felling forest - Bringing the municipality of Strpce in the group of 'green and sustainable' cities 	<p style="text-align: center;">Threats</p> <ul style="list-style-type: none"> - Incomplete research on renewable energy resources in the municipality of Strpce - Insufficient cooperation of the local population during waste collection - Poor and outdated power grid - Possible terrorist attacks - Prohibition of licensing and execution of works by certain Kosovo institutions - A lack of investors due to the high risk of investing in this territory - The difficulty or impossibility of financing projects RES <ul style="list-style-type: none"> - Political instability in the region - Non-compliance of legal regulations between the Serbian and Albanian institutions - Potential negative attitude to the project by the Albanian community in the municipality - The political deadlock by existing institutions in Kosovo - Lack of funds for development and improvement of infrastructure - Duality law (whether the project was implemented by Serbian and Kosovo law)

4. SELECTION OF APPROPRIATE RENEWABLE ENERGY TECHNOLOGIES

To select the appropriate technology of obtaining electricity from renewable sources was used Analytic Hierarchy Process (AHP) method. Here are ranked four alternatives solar, biomass, small hydro power plants and wind turbines. The criteria for the ranking made investments, environmental impact, number of employees and maintenance costs. The goal

is that by comparing pairs of criteria and total alternative to the criteria given weight coefficients on the basis of which it is possible to make a ranking of technologies for electricity generation from renewable energy sources and choose the best technology.

The results presented in Figure 1 show that the weight criteria in determining the focus is on investment volume (weight coefficient is 0.483) and the number of employees (0.272 weight ratio). The results obtained using this methodology to give priority to the first place in solar technology which is having a coefficient of 0.43 by weight and the biomass with weight coefficient 0.241. [2]

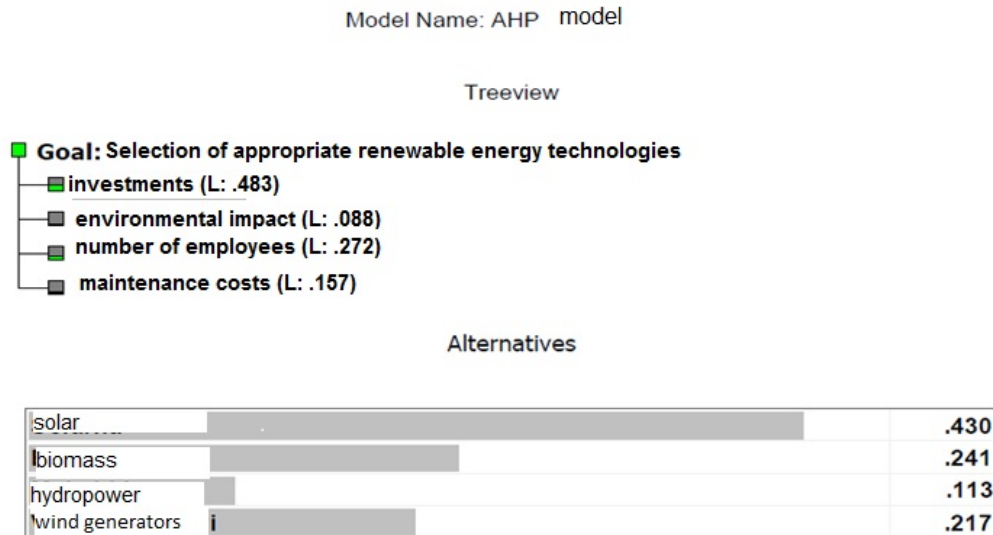


Figure 1. Selection of appropriate renewable energy technologies- AHP process

5. THE POTENTIAL USE OF SOLAR ENERGY IN THE MUNICIPALITY OF STRPCE

The municipality of Strpce has relatively good climate with enough sunny days there is a possibility of electricity produced by photovoltaic panels. In this regard, the use of the roof or similar surface for the purpose of saving the free land area (stimulation of those who build facilities and use solar energy for heating as a percentage of release of the fees and charges for building permits). Figure 2 shows that the territory of Southern Serbia has great potential when it comes to solar energy, suggesting that solar energy can be used to produce energy.[3]

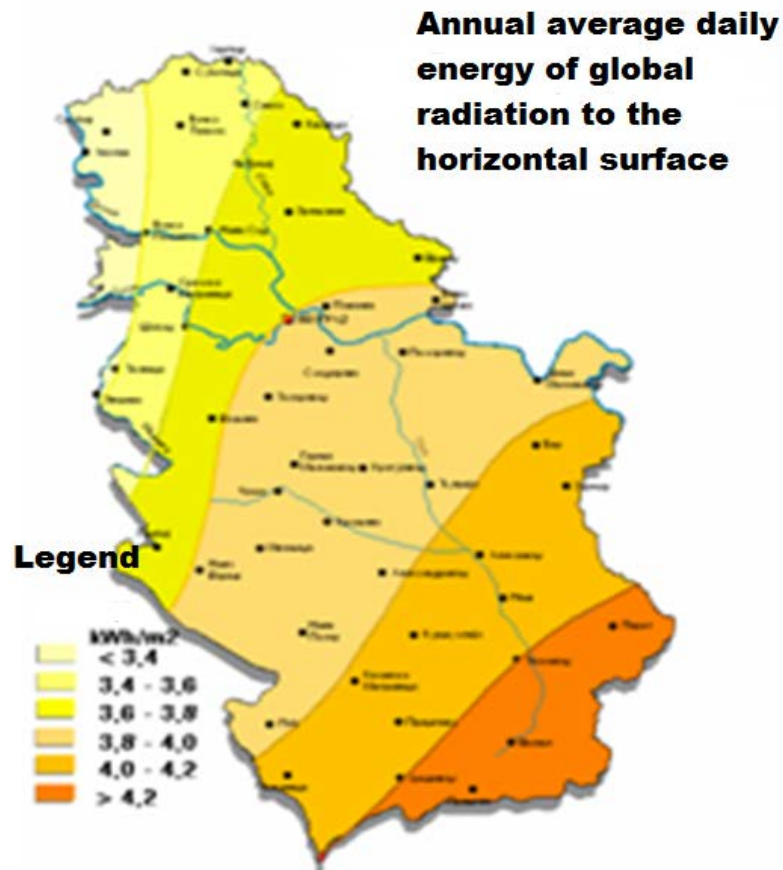


Figure 2. Annual average daily energy of global radiation for Serbia (kWh/m²)[3]

To meet the needs, 160 panels with a power of 40 kW are to be installed, which will be installed under a 60 ° angle, which will produce 48 MWh / year energy. The required surface for the installation of the panel is 40 ares. Figure 3 shows the electricity production by solar panels in a shaded manner. [4]

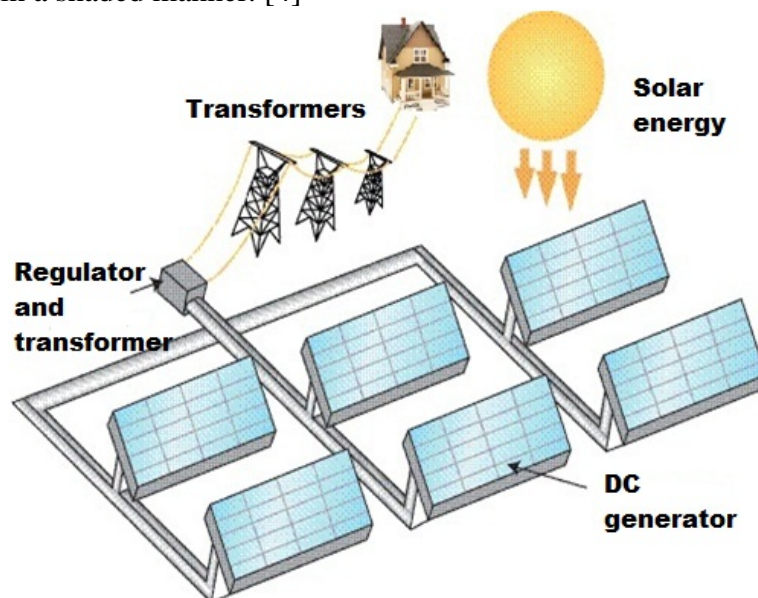


Figure 3. Solar pannels [10]

6. THE POTENTIAL USE OF BIOMASS IN THE MUNICIPALITY OF STRPCE

In rural areas that have a high level of agricultural and forestry production should encourage the use of biomass in order to increase opportunities for energy production. In this direction is very often count on the energy that can be extracted from municipal waste, which is the amount, when it comes to this municipality, on a monthly basis and significant amounts to about 150 tons. The use of forest waste that could be used for electricity generation stands out as one of the best options. Based on the research leads to the data that the municipality of Strpce has 5000-5500 m³ of forest waste, which can be regarded as sufficient input for the sustainable production of electricity using biomass. One of the principles of energy production using biomass is long-term sustainability and benefits in terms of environmental and wood resource conservation, given that scrap wood waste is exclusively used. The amount of energy that could be produced by this input capacity is approximately 12, 9 gWh per year. [7]

For now, forests are mostly (in a large number of cases unsympathetic) for sale without any prior processing, which, in the long term, has no major economic impact for this municipality.

For agricultural production in the municipality of Strpce (according to the Surveying and Mapping Authority) used a total of 13,649.7 ha. From these surfaces the social sector benefits 7,019.0 ha (51.4%), and private 6633.7 ha, therefore, there is the additional possibility of using agricultural residues.[3]

Is seen and the possibility of utilization cuts fast growing trees in a short period of time can provide a sufficient amount of inputs for continuous energy production. According to an analysis of available data, the energy plant that will best meet local conditions is *Miscanthus giganteus* or energy cane. The plants to be planted in plots after harvest of plants on one plot, immediately committed to new planting, which would allow a continuous flow of inputs (Figure 4). The first cut is possible after only two years. Another advantage of cultivated forests in relation to those that have occurred naturally lies in the fact that in the cultivated forest trees that are less developed can cut and immediately use, allowing other trees that faster progress, as opposed to natural forests in which less tree trunks 'strangled' by advanced and dying. [3]

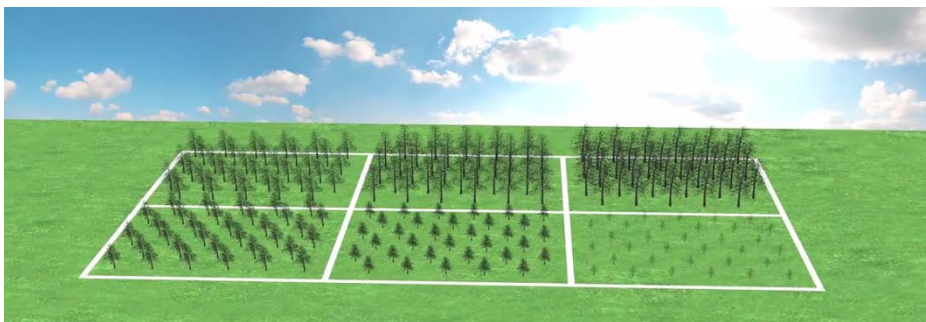


Figure 4. Cyclically cutting energy forests to ensure the sustainable production [11]

Miscanthus giganteus, wood that is considered the most efficient, cleanest and cheapest in the world, can be used in cake or briquette. By one hectare, the plant gives 20 to 40 tons of genus which is most commonly used to convey the briquette without any bark and has extremely high heat energy.

For example, for the purpose of settlement of 15,000 inhabitants (Strpce municipality has 13 900) should be planted around 7-8 hectares which is an investment of EUR 12,000 to 13,000, which brings the net income of 6400 euros or 800-900 EUR per hectare. Plants per hectare give 20-40 tonnes of fruit which is mostly used for briquetting / pelleting, while briquettes have extremely high heat. One hectare planted plants gives enough briquettes / pellets for 7-8 flats, while the amount of released carbon monoxide 0. In addition to the favorable environmental dimension, the possibility of planting energy crops would enable the recruitment of large number of workers who work on matters of growing plants and collecting biomass.[3]

7. PRESENTING PROJECTS TO LOCAL SELF-GOVERNMENT

Local self-government should first of all be emphasized that the benefits this project will bring the municipality of Strpce, the local Serbian and Albanian population, which is primarily related to an increase in energy stability and eliminate the need for restrictions which have very negative effects on the local population. In a conversation with representatives of local self-government, the results of the research have to be demonstrated, suggesting that solar energy is very favorable in the territory of southern Serbia and the municipality itself, and presented to them the plan to use solar energy as an inexhaustible source for energy production. In addition they should be presented to specific resources when it comes to the possibility of using large amounts of available forest waste as a sustainable resource for the plant which will operate a biomass which will certainly suit a large number of residents who own forest areas, as well as a large number of those who will find employment when the maintenance of the plant and the collection and biomass. [5]

8. PRESENTATION OF THE PROSPECTIVE OWNERS OF FOREST AND AGRICULTURAL LAND

At this stage of the promotional campaign, it is necessary to animate as many forest owners as possible and to clearly justify the great benefits of using this natural wealth for new purposes, instead of the usual dense forests and the use or sale of the woodcock.[5]

The potential for the production of electricity and thermal energy in biomass is huge, so that with a higher felling trees and could get more sources of renewable energy. One of the most important benefits is the improvement of forest roads and infrastructure in the underdeveloped region, which will provide permanent access to daylight wooden biomass resources. Given the very low level of utilization of forests in the municipality of Strpce, those forest owners who perhaps had never had any financial benefit from them to acquire new sources of income in the long period of time. [5]

In addition, launching a drive to biomass opens up the possibility of hiring a large number of workers who will be engaged on plantations of energy plants, on the affairs of growing plants, collection and processing of biomass. Land owners who are not able to cultivate the cultivated varieties of vegetables and fruits that require intense maintenance, can take advantage of their agricultural land for planting energy plants with minimal involvement give huge returns from about 800 to 900 EUR per hectare. [5]

The development of the energy sector by relying on renewable energy means eminently improve the quality of life of local people, which is one of the key social dimension, especially in the municipality of Strpce in which there is an obvious polarity between the

two communities, as well as rational use of natural resources and reduce pressure on the environment which is a dimension environment. [5]

The significance of this project was recognized and supported by the municipality of Strpce. Support of the municipality of Strpce will greatly contribute to the successful implementation of the project. [5]

The realization of this project would contribute to achieving the goal which refers to the efforts of the Republic of Serbia that by 2020 the participation of RES in gross final energy reaches 27%. Also, the project is also in line with the goals of the so-called. Republic of Kosovo regarding the use of renewable energy.[5]

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9. BENCHMARKING PARTNERS

One of the possible benchmarking partners is the solar power plant in Velesnica village in Kladovo municipality, built on 4.5 hectares of land, with a total area of solar panels of 13,600 m². Miloš Kostić, Director and co-owner of the company Solaris Energy that is the wearer of this investment, stated that the construction of the first and second blocks were engaged by 30 people and as significant number of domestic companies, subcontractors, and stated that the four professional workers be permanently employed in this solar plant. The Municipality of Kladovo is quickly reacted and recognized the importance of this project and allow investors to quickly finish the job. We hope that the municipality of Strpce realize all the positive effects of this project.[10]

For the realization of a biomass power plant project, a possible biomarking partner is a biomass power plant, which was commissioned in the village of Dragacica, near Guca. This construction project was run by engineers Milan Filipović.[8]

10. GANTT CHART ACTIVITY

It is anticipated that the project to build solar power plants realized for 14.5 months after which they will be put into operation. The projected payback period of investment is 5.5 years. After expiration of this period will be the second phase of the project that involves the construction of a biomass. This phase of the project is planned to last for 20 months. Due to the fact of doing two separate projects that have a common goal of electricity production, and increasing the energy security of the municipality of Strpce, in Figure 5 shows a Gantt chart of activities for realization of the project on the principle multi project management.

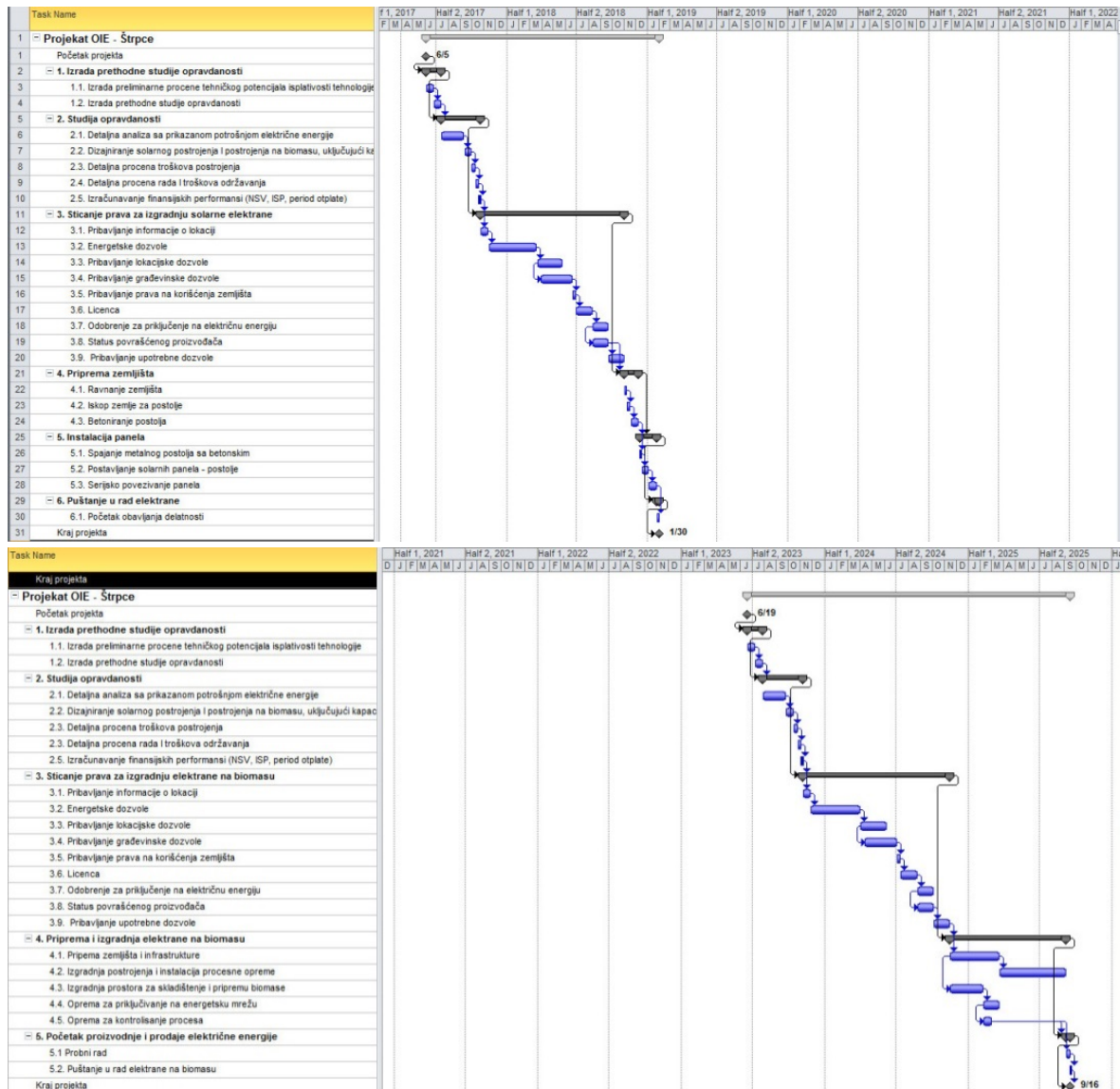


Figure 5. Gantt Chart activity- multi project [6]

11. CONCLUSION

For the successful realization of this idea to be addressed to the population of the municipality itself in the fact that the potential realization of the project has a very positive impact on local economic development. Promotion of the project will be carried out by the mass media (TV, print, Internet, radio). The focus of the campaign will be emphasizing the benefits that will bring the potential realization of this project, which will primarily achieved by creating new jobs, the decentralization of the energy sector, scientific and technical innovation, reducing macroeconomic instability, increasing social solidarity, etc. Local self-government should first of all be emphasized that the benefits this project will bring the municipality of Štrpce, the local Serbian and Albanian population, which is primarily related to an increase in energy stability and eliminate the need for restrictions which have very negative effects on the local population.

It is necessary to demonstrate the results indicate its research that suggests that solar energy is very favorable in the territory of southern Serbia and the Municipality itself and present a plan for using solar energy as an inexhaustible source of energy production. In

addition to this should be presented to specific resources when it comes to the possibility of using large amounts of available forest waste as a sustainable resource for the plant which will operate a biomass which will certainly suit a large number of residents who own forest areas, as well as a large number of those who will find employment when maintenance of the plant concerned and the collection and biomass.

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THE IMPLEMENTATION OF THE PROMETHEE-GAIA METHOD IN THE PROCESS OF DETERMINING THE BENCHMARKING PARTNER IN BUILDING A CHP PLANT

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Abstract

This paper presents the multi-criteria analysis conducted with the aim of selecting the benchmarking partner in the process of defining the project idea for building the CHP plant for biomass processing. PROMETHEE-GAIA analysis of previously collected data on potential benchmarking partners was used as a method for multi-criteria decision making and, on the basis of this analysis, their ranking was carried out according to the clearly determined criteria and the appropriate weight coefficients. In fact, this paper was prepared as a part of the project idea of building a plant for biomass processing, for which an example of good practice should be determined and an alternative, that would be defined as the best, should be found, according to all criteria.

Keywords: *PROMETHEE-GAIA method, CHP plant, benchmarking, multi-criteria decision making, biomass.*

1. INTRODUCTION

Today's world industry operates in conditions of high risk caused by many global economic problems. Because of that, the complex character of multi-criteria decision-making in the last decade has become very large. [1]

Due to the high applicability of multi-criteria decision-making methods in many areas, in this paper the PROMETHEE-GAIA method was used as a method for decision making with the aim of finding the benchmarking partner on a project which was applied to the Development Agency of Serbia by the department of Engineering Management, Technical Faculty in Bor.

The aim of this project was the construction of the cogeneration plant for the combined production of heat and electricity from renewable sources, by using a biomass in order to achieve the energy efficiency and independence of the Pirot region. Therefore, the aim of the investment idea was based precisely on the production of the heat energy intended for the heating the town of Pirot and electricity that will be sold to EPS. The installed capacity of the CHP plant in Pirot would amount 10 MW and a potential investment framework budget would be approximately 2.31 billion dinars (18.7 million euros). These two data will be crucial in the process of prioritizing the selected CHP plants from the different

countries and finding the benchmarking partner by using the PROMETHEE-GAIA method. [2]

In the first part of this paper, there were defined theoretical and methodological aspects of this research. *In the second one*, alternatives were ranked by the PROMETHEE-GAIA method, according to defined criteria. The aim of this paper is to get the one company from different countries that may be considered as a potential benchmarking partner in the process of implementing this project idea.

2. METHODOLOGY

In the process of making the list of alternatives of the CHP plants from the different countries in order to find the benchmarking partner, the authors have used a lot of documents and business plans of these facilities, which were thoroughly reviewed. Then, the prioritization of these alternatives (CHP plants), obtained through the documents and business plans, was carried out by implementing the PROMETHEE-GAIA method. [3]

The first PROMETHEE I (partial ranking) and PROMETHEE II (complete ranking) methods were developed by J.P. Brans and presented for the first time in 1982 at a conference organized by the University of Laval, Québec, Canada [4]. The methods of PROMETHEE have successfully been applied in many fields and a lot of researchers have used them in decision-making problems. The PROMETHEE methods have some requisites of an appropriate multi-criteria method and their success is basically due to their mathematical properties and to their particular friendliness of use. [5]

The reason for the application the PROMETHEE - GAIA method (PROMETHEE II - GAIA method, to be more precise) in this research paper is in the advantage of structuring the problem, in the amount of data that can be processed, in the possibility of quantifying the qualitative variables and in a good software support and presentation of the results by the GAIA modeling. [4]

The procedure for the implementation the PROMETHEE II method for the complete ranking alternatives with the presentation of the results through the GAIA diagram is given through the following steps [4]: 1) *creating a matrix / table of decision-making*, 2) *allocating the preference functions $P(a,b)$ for each criterion*, 3) *calculating the Index of preferences $IP(a,b)$* , 4) *calculating the "outranking" flows for each alternative*, 5) *NetFlow calculating and defining the GAIA model*.

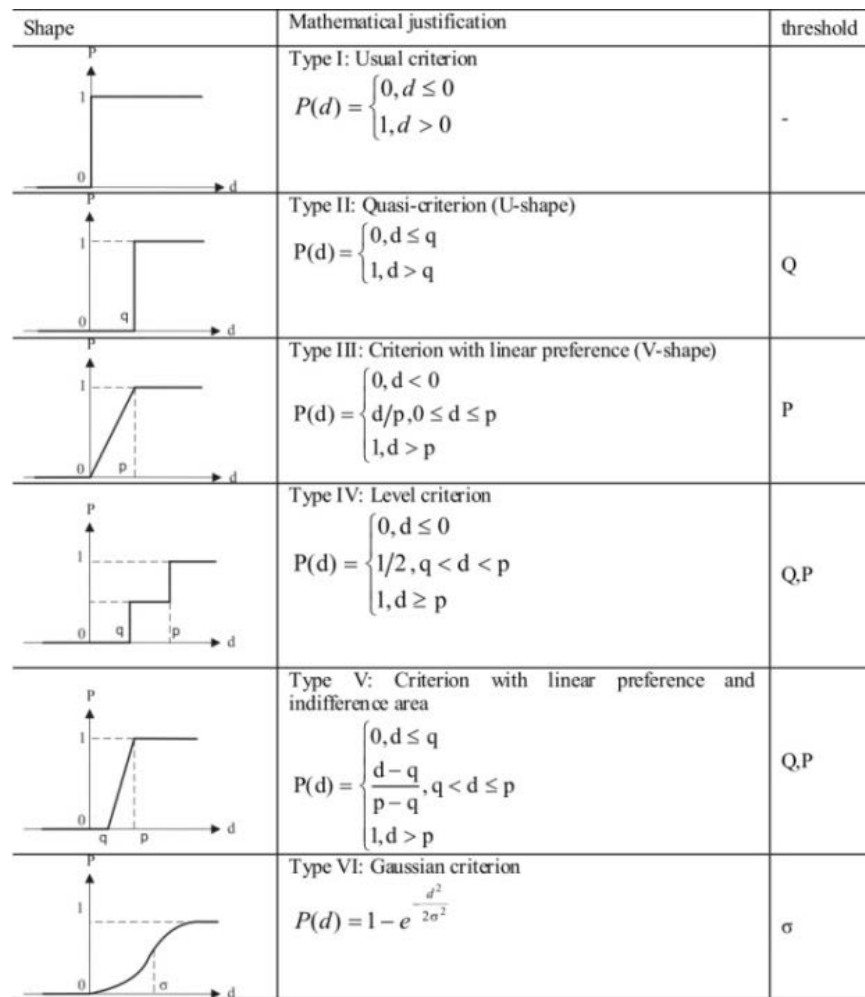


Figure 1. Forms of preference functions [6]

3. RESULTS

The appropriate data on the potential benchmarking partners, which are systematized and presented in a Table 1, are based on the market research.

Table 1. The potential benchmarking partners

	Project name	Company name	Location of building	Power of the plant (MW)	The amount of investment (€million)	Recovery time of investment (years)	Number of employees
1.	10MW – scale Biomass based Power Generation	Obayashi Corporation, EX Research Institute Ltd.	Ampara District, Eastern Province, Sri Lanka	10	26,2	5	60
2.	CHP Technical Assistance Partnerships (Woody)	Freres Lumber	Lyons, Oregon, USA	10,5	24	7,5	50

	Biomass CHP System)						
3.	Construction of bio-CHP in Ukraine with the use of biomass as a renewable energy source	Industrial and financial corporation MUST-IPRA	Kupyansk, Kharkov Region, Ukraine	9,6	19,2	3,5	43
4.	/	SC Johnson Waxdale Plant	Racine, Wisconsin, USA	6,4	12	6	30
5.	/	Evergreen Community Power Plant	Reading, PA, USA	33	140	15	100
6.	/	Kennecott Utah Copper Refinery	Salt Lake County, Utah, USA	6	10	5	30
7	/	Kuhmo Sawmill	Kuhmo, Denmark	12,9	16	7	50
8	Biomass-fired combined heat and power plant	Assens Fjernvarme Amba	Assens, Denmark	10,3	25	6	45

Basic alternatives between which will be determined the priority ranking list of the best are defined as follows: **A₁** – Obayashi Corporation, EX Research Institute Ltd, **A₂** – Freres Lumbe, **A₃** – Industrial and financial corporation MUST-IPRA, **A₄** – SC Johnson Waxdale Plant, **A₅** – Evergreen Community, **A₆** - Kennecott Utah Copper Refinery, **A₇** - Kuhmo Sawmill and **A₈** - Assens Fjernvarme Amba. The criteria by which will be carried out the comparisons are defined as follows: **C₁** – Power of the plant (MW), **C₂** - The amount of investment (€ million), **C₃** – Recovery time of investment (years) and **C₄** - Number of employees.

The PROMETHEE/GAIA method was used in the process of developing the project idea, in order of ranking and selecting the benchmarking partner. The aim of the process of choosing the benchmarking partner is the tendency to find a CHP plant which is similar to the plant that is the subject of this project idea and which can help in the process of project realization.

For the defined scenario which is consisted of eight alternatives, the ranking of the options was carried out by using the software package *Visual PROMETHEE*. On the basis of the input data, *positive, negative and network flows* of the alternatives were obtained and presented in the Table 2. The weight coefficients in the calculation were defined on the basis of subjective assessments of the authors.

Table 2. Ranking of the alternatives

Company name	Phi+	Phi-	Phi	RANK
Obayashi Corporation, EX Research Institute Ltd	0,313	0,093	0,220	2
Freres Lumbe	0,175	0,245	-0,071	6

Industrial and financial corporation MUST-IPRA	0,368	0,085	0,283	1
SC Johnson Waxdale Plant	0,154	0,246	-0,092	7
Evergreen Community	0,300	0,700	-0,400	8
Kennecott Utah Copper Refinery	0,221	0,213	0,008	5
Kuhmo Sawmill	0,207	0,184	0,023	4
Assens Fjernvarme Amba	0,176	0,147	0,029	3

Figure 2 shows the GAIA diagram, which is a projection of a set of alternatives and criteria. The diagram presents a decision-making stick (red stick) that shows the direction of the compromise solution.

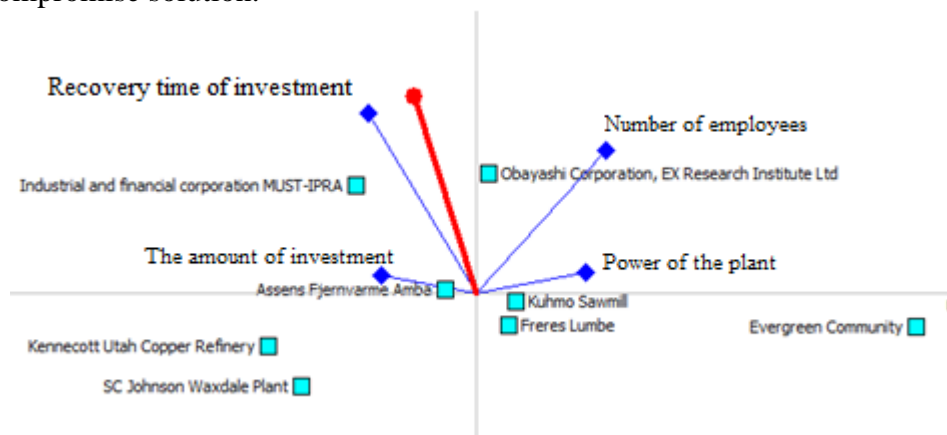


Figure 2. GAIA diagram

4. DISCUSSION

Based on the results of ranking alternatives and GAIA diagram, the project of the relevant company which was chosen for the benchmarking partner is the project of the Industrial and financial corporation MUST-IPRA, named *Construction of bio-CHP in Ukraine (9,6 MW) with the use of biomass as a renewable energy source* [7]. One of the main goals of this project is the tendency to replace the natural gas, which was constantly being imported from Russia, with the renewable energy, specifically with the biomass. To some extent, it was expected that the applied methodology will give us this result.

The project costs of Ukrainian CHP plant for biomass processing are very similar to project costs of building a plant in the town of Pirot. Also, the installed plant capacity of 9.6 MW is similar to the one which would be installed in Pirot (10 MW). It was noted that the payback time of Ukrainian project is optimal and faster than the payback times of other companies and their projects. Also, the number of employees, as well as applied technology of MUST-IPRA's project completely fit into this project idea. All these facts have been taken into account in the process of implementing the PROMETHEE/GAIA methodology. Based on the case of the Ukrainian CHP plant, the biomass processing plant in Pirot would become a driving force of the economy of Southeastern Serbia and the excellent solution of many energy problems in that town. Also, all of the above would contribute to the significant progress in the process of preserving the existing ecosystem [8] in Pirot region.

Therefore, it can be clearly concluded that the applied method with clearly defined alternatives, criteria and weight coefficients yielded an adequate result.

5. CONCLUSION

The obtained final results of the overall priorities of alternatives have enabled their prioritization in descending order: *Industrial and financial corporation MUST-IPRA* > *Obayashi Corporation*, *EX Research Institute Ltd* > *Assens Fjernvarme Amba* > *Kuhmo Sawmill* > *Kennecott Utah Copper Refinery* > *Freres Lumbe* > *SC Johnson Waxdale Plant* > *Evergreen Community*. So, it can be concluded that, through the existing model, the authors defined the ranking list of the potential benchmarking partners (projects of the different companies that are similar to this project), where the best alternative and the ones that may be considered as a project that will support the implementation of the project idea of building the CHP plant in the town of Pirot is the project of the Industrial and financial corporation MUST-IPRA from Ukraine – A_3 with the name “*Construction of bio-CHP in Ukraine (9,6 MW) with the use of biomass as a renewable energy source*”. Taking into account the different preferences in terms of defining the criteria weights, applied methodology yielded the adequate results. But, the subjectivist approach of the authors in the process of comparing criteria can be indicated as the main problem in the ranking of these alternatives. So, it would be probably obtained a slightly different ranking list if the weights were determined objectively and not subjectively - on the basis of the assessments of the authors.

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SELECTING A STRATEGY FOR INITIATING ECO INN THROUGH SWOT AND AHP METHODS

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Abstract

Eco inn is type of accommodation in ecotourism where philosophy and principles of ecotourism are included which means that in addition to accommodation and quality tourism experience eco inn had to ensure adequate protection of the environment. One of the most important activities in order to successfully implement strategy for initiating eco inn is to determine current and future opportunities and threats in the business environment of the company wherefore is necessary to use methods and techniques of strategic management. Strategic management involves identification and definition of objectives, strategy determination, process of realization of defined strategy, control of realization and obtained results. The paper describes possibility of applying SWOT analysis and Analytical Hierarchy Process (AHP method) in order to select a strategy for initiating eco inn. SWOT analysis provides a basis for decision-making by defining the internal (strengths and weaknesses) and external factors (opportunities and threats) from which derive certain strategies while the AHP method helps in prioritization of defined strategies.

Keywords: *Eco inn, Strategic management, SWOT analysis, AHP method*

1. INTRODUCTION

Concept of ecotourism includes educational and experiential perspective combined with the philosophy of environmental protection. This concept seeks to develop the principles of environmental experience, learning about the natural and cultural values, as well as the care of the local environment.

One of accommodation type in ecotourism is eco inn - this is the place where the principles of sustainable tourism meet. In addition to accommodation and quality tourism experience, which refers to the experience of tourists, eco inn must provide adequate care for the environment. Therefore, the natural beauty is a key factor of good business.

Eco inn is modest building that meets the basic needs of tourist. It must meet ethical principles, which relate to minimize the impact of visitors on the environment. That influence relates to the roads leading to eco inn, the architecture of which must be in the style of the local cultural heritage, as well as through the organization of business. If

possible, eco inn should strive to use renewable energy, wastewater treatment and recycling of waste. Another frequently mentioned criteria states that eco inn should not belong to the known hotel chains, but it is owned by the local community, which is particularly important in the development of the region and raising the standard of living. [1]

2. METHODOLOGY

The methodological procedure execute situational analysis concerning the SWOT where there are included both internal and external factors. From SWOT analysis derives TOWS matrix which gives emphasis to threats and opportunities as external factors which determine the future within the strengths and weaknesses as internal factors. TOWS matrix allows to look at alternative strategies that are the result of a combination of internal and external factors. Strategies that have emerged from the abovementioned analysis are compared with each other and determined by their relevance for initiating eco inn, using AHP method. AHP method is processed using the software tool Expert Choice.

2.1. SWOT analysis

In order to define and select strategies for eco inn, there was a situation analysis which includes analysis of internal and external analysis, Figure 1.

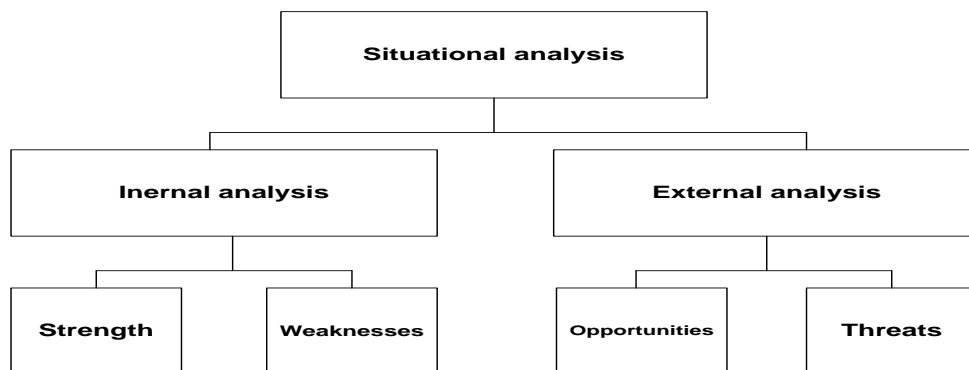


Figure 1. Situation analysis [2]

In the SWOT analysis of these factors are grouped into four parts: strengths, weaknesses, opportunities and threats. The goal of applying SWOT analysis in the strategic planning process is to develop and adopt a strategy that provides a good balance between internal and external factors. SWOT analysis can be used when an alternative strategy suddenly appears and when a decision on it must be analyzed. SWOT does not include means for the analytical determination of the significance of factors and evaluation of alternative decision with respect to factors. The result of SWOT analysis is often just a list or incomplete qualitative examination of internal and external factors. [3] Table 1 presents the most significant factors of SWOT analysis that influence on business of eco inn.

Table 1. SWOT analysis of eco inn

Strengths	Weaknesses
<ul style="list-style-type: none"> ➤ Awareness of the positive impact of ecotourism on local, economic and environmental development ➤ Openness and hospitality of the local population ➤ Culture, tradition and history of the area 	<ul style="list-style-type: none"> ➤ The lack of professional workers (staff) in ecotourism ➤ The limited financial power of citizens to launch significant activities for the development of entrepreneurship ➤ The state of general infrastructure ➤ Insufficient involvement of communal services
Opportunities	Threats
<ul style="list-style-type: none"> ➤ Increasing employment at local level ➤ The constant increase of foreign and domestic tourists in Serbia ➤ Establishment of cooperation with higher education institutions in the municipality in order to implement training of workers ➤ The possibility of many summer and winter activities on the mountain and at the base of the mountain 	<ul style="list-style-type: none"> ➤ The continued depopulation ➤ Insufficient affirmed destination ➤ Insufficient allocation of budgetary resources of local communities

2.2. Creation of the strategies (TOWS matrix)

TOWS (threats, opportunities, weaknesses, strengths) analysis is a method for strategic analysis, which includes a systematic and comprehensive assessment of the external and internal factors that determine the current competitive position and growth potential of the company. TOWS analysis is closely related to the more popular SWOT, but according to Michael Watkins, sequence of the words in the acronym SWOT represents incorrect sequencing process in serious strategic analysis. Starting from the analysis of strengths is wrong, because managers should first identify all the threats from the business environment to do the planning and preparations for protection against identified threats. [4]

There are four basic alternative strategies depending on the analyzed factors:

- SO (Strengths-Opportunities): maxi-maxi strategies - How to use the strengths to maximize and take advantage of opportunities;
- WO (Weaknesses-Opportunities): mini-maxi strategies - How to minimize weaknesses to take advantage of chances;
- ST (Strengths-Threats): maxi-mini strategies - How to use the weaknesses to minimize actual and potential threats;
- WT (Weaknesses-Threats): mini-mini strategies - How to minimize the weaknesses in order to avoid threats.

On the basis of the analyzed factors listed in Table 1, the following strategies are created, which are presented in Table 2.

Table 2. TOWS matrix on the application of external and internal factors of eco inn

	Strengths S1. Awareness of the positive impact of ecotourism on local, economic and environmental development S2. Openness and hospitality of the local population S3. Culture, tradition and history of the area	Weaknesses W1. The lack of professional workers (staff) in ecotourism W2. The limited financial power of citizens to launch significant activities for the development of entrepreneurship W3. The state of general infrastructure W4. Insufficient involvement of communal services
Opportunities O1. Increasing employment at local level O2. The constant increase of foreign and domestic tourists in Serbia O3. Establishment of cooperation with higher education institutions in the municipality in order to implement training of workers O4. The possibility of many summer and winter activities on the mountain and at the base of the mountain	SO1. The strategy of promoting destinations for ecotourism development SO2. The strategy of harmonization with external entities	WO1. The strategy of increasing employment WO2. The strategy of providing quality conditions
Threats T1. The continued depopulation T2. Insufficient affirmed destination T3. Insufficient allocation of budgetary resources of local communities	ST1. The strategy of preserving the cultural heritage and tradition ST2. The strategy of allocation of funds intended for the development of ecotourism	WT1. The strategy of low costs WT2. The strategy of investing in infrastructure

2.3. Analytical Hierarchy Process (AHP)

Analytical Hierarchy Process helps with decision-making. It was developed by Thomas Saaty. Its main use is to offer solutions for problems with multiple-criteria decision-making in business environment in which several alternatives are obtaining the given goals compared with various criteria. AHP method is establishing weights of alternatives for organizing objectives, criteria and sub-criteria in a hierarchical structure. Weights and priorities obtained by the decision makers, the assessment of each item of the problem that is compared to some other items on the same hierarchical level. [5]

Figure 2 shows the hierarchical structure of multi-criterial levels, based on four levels:

- Choosing the best strategy;
- Criteria - SWOT group;
- Sub-criteria - SWOT factors;
- Strategies.

Figure 2. The structure of the hierarchical model for prioritizing a strategy based on the TOWS matrix (Table 2) [2]

Determination of the importance of the criteria and sub-criteria is performed by comparing them using Saaty's scale (from 1 to 9). 1 represents a value equal to the value of the examined criteria/sub-criteria, while a value of 9 represent a particular preference for one criterion/sub-criterion compared to the second criterion/sub-criterion. In evaluating, it is necessary to take into account the level inconsistency, which should be less or equal to 0.1. In this way are filled the following tables: Table 3, Table 4, Table 5, Table 6, Table 7.

Table 2. Comparison of SWOT groups

SWOT	Strengths	Weaknesses	Opportunities	Threats
Strengths	1	1/4	1/6	1/3
Weaknesses	4	1	1/4	3
Opportunities	6	4	1	5
Threats	3	1/3	1/5	1
Incon.0,08				

The results of comparing SWOT groups (Table 3) provide information about the relevance of certain SWOT criteria as shown in Table 8.

Table 3. Comparison of SWOT factors (Strengths)

SWOT	S1	S2	S3
S1	1	7	6
S2	1/7	1	1/3
S3	1/6	3	1
Incon.0,03			

Table 4. Comparison of SWOT factors (Weaknesses)

SWOT	W1	W2	W3	W4
W1	1	5	5	6
W2	1/5	1	1/2	4
W3	1/5	2	1	4
W4	1/6	1/4	1/4	1
0,09				

Table 5. Comparison of SWOT factors (Opportunities)

SWOT	O1	O2	O3	O4
O1	1	4	7	6

O2	1/4	1	4	4	
O3	1/7	1/4	1	1/2	
O4	1/6	1/4	2	1	0,06

Table 6. Comparison of SWOT factors (Threats)

SWOT	T1	T2	T3	
T1	1	1/3	4	
T2	3	1	7	
T3	1/4	1/7	1	0,03

The results of the comparison of SWOT factors (Table 4, 5, 6, 7) provide information about the relevance of certain SWOT sub-criteria as shown in Table 8.

By multiplying the weighting factors obtained from the preceding steps, is obtained by the global importance of SWOT sub- criteria, it is presented in Table 8.

Table 7. Relevance of criteria and sub-criteria of SWOT analysis

SWOT factors	Relevance of SWOT criteria	SWOT sub-criteria	Local significance of SWOT analysis	Global significance of SWOT analysis
Strengths	0,093	S1	0.758	0.070
		S2	0.091	0.008
		S3	0.151	0.014
Weaknesses	0,248	W1	0.613	0.152
		W2	0.137	0.034
		W3	0.192	0.048
		W4	0.057	0.014
Opportunities	0,589	O1	0.610	0.359
		O2	0.239	0.141
		O3	0.061	0.036
		O4	0.090	0.053
Threats	0,070	T1	0.263	0.018
		T2	0.659	0.046
		T3	0.079	0.006

Figure 3 graphically shows the situation analysis SWOT results based on data from Table 8.

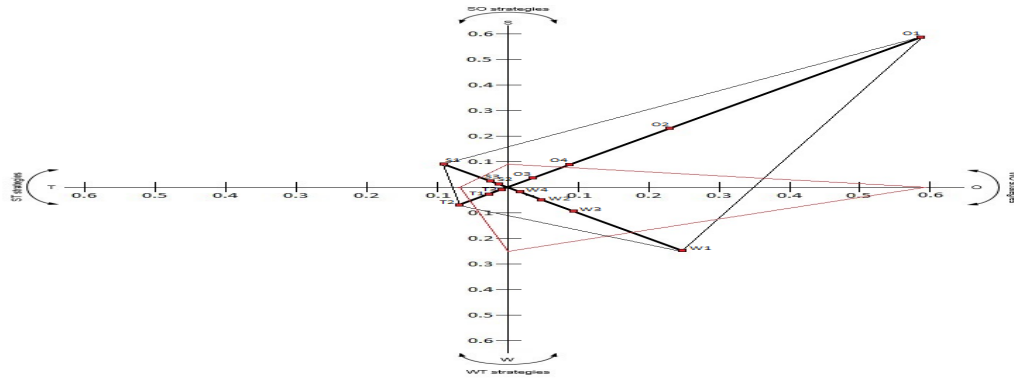


Figure 3. Situational Analysis of weight ratio of SWOT criteria and overall significance of SWOT sub-criteria

The results indicate the size of the impact of SWOT criteria in descending order $O \rightarrow W \rightarrow S \rightarrow T$. The values of the overall significance of SWOT sub-criterion to the greatest significance in the context of a single factor, also indicate same decreasing order $O1 \rightarrow W1 \rightarrow S1 \rightarrow T2$.

In the next step of this analysis, evaluating the weight of influence SWOT sub-criteria with the strategies defined in TOWS matrix (Table 2), determines the prioritization of proposed strategies in the context of all the individual mutual relations "SWOT" criteria, including different strategic solution.

In the last step, is calculated the overall priority of the considered strategies, such as:

$$W_{\text{alternatives}} = \begin{bmatrix} SO1 \\ WT2 \\ WO1 \\ WO2 \\ ST2 \\ ST1 \\ WT1 \\ SO2 \end{bmatrix} = W_3 \times W_{\text{SWOT sub-factors (global)}} = \begin{bmatrix} 0.249 \\ 0.195 \\ 0.162 \\ 0.111 \\ 0.083 \\ 0.082 \\ 0.064 \\ 0.054 \end{bmatrix}$$

The results define prioritization of proposed alternative strategies in the following descending order: $SO_1 \rightarrow WT_2 \rightarrow WO_1 \rightarrow WO_2 \rightarrow ST_2 \rightarrow ST_1 \rightarrow WT_1 \rightarrow SO_2$

SO₁ The strategy of promoting destinationsfor ecotourism development;

WT₂ The strategy of investing in infrastructure;

WO₁ The strategy of increasing employment;

WO₂ The strategy of providing quality conditions;

ST₂ The strategy of allocation of funds intended for the development of ecotourism;

ST₁ The strategy of preserving the cultural heritage and tradition;

WT₁ The strategy of low costs;

SO₂ The strategy of harmonization with external entities.

Based on the size of the obtained normalized weights is possible to define set of implementation strategies, provided that strategies with the same or approximately the same weight factors should be applied simultaneously, as shown in figure 4 and figure 5.

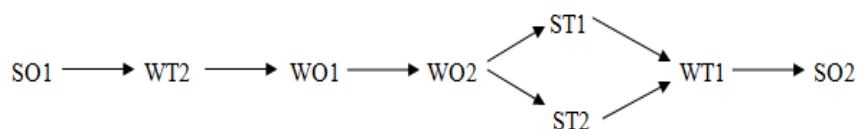


Figure 4. The order of implementation of strategies

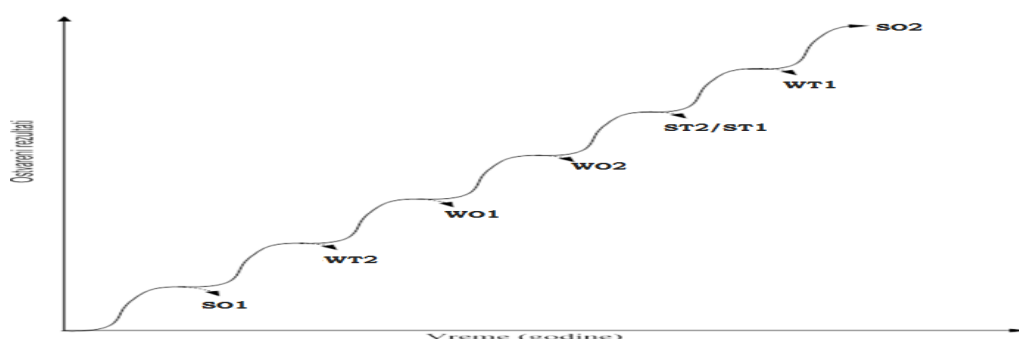


Figure 5. Lifecycle of the strategies

According to the established model for prioritizing proposed alternative strategies, the priority in application have SO1 strategy (The strategy of promoting destinations for ecotourism development).

3. CONCLUSION

The main feature of the business environment is that it constantly changing, which represent a danger, but also opportunities that can bring advantages over the competition. The basis for a successful business requires constant and long-term monitoring of changes in the environment, as well as the implementation of appropriate changes within its operations. A unique method and model for finding solutions to the changing conditions does not exist, but finding the right solutions represents a major challenge and a difficult task for any system. This paper presents the situation analysis, respectively SWOT which shows the basic external and internal factors, which combination deriving certain strategies. Also, the SWOT analysis is a useful tool which facilitates our understanding of the market, and based on that gives us the basis for a better understanding of the company's current position and potential directions in which the company can develop. SWOT analysis does not include means for determining the significance of strategies, and is therefore combined with the AHP method for improving the information base in the strategic planning. In addition, this method not only provides a solid support in the decision-making process, but provides a good framework for the training of managers in strategic management tasks.

Finally it should be noted that the example shown in this paper illustrates the possibility of using a combination of SWOT and AHP methods in the field of tourism, and the choice of strategies to launch eco inn.

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