The greenest county of Hungary

Service Science & Knowledge Economy Research Methods

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Tartalom

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## Abstract:

In this research the aim to rank Hungarian counties according to their “greenness” and raise environmental awareness. The main task to collect information and merge it into a ranking. When the ranking already exist the swot analysis comes out and the following conclusions are representing the authors point of view.

## Keywords:

* Greenest
* County
* Development
* Improvement
* Naïve
* Optimized
* Rank
* Rating

## Introduction

This research shows two ways of conclusions on behalf of the statement “greenest” county of Hungary. I acknowledged by clauses the counties and made a ranking to see the answer. I got two answers for my question, and I collected which and how shows us the ranking.

### Aim:

The aim of my research was to find which is the “greenest county” in Hungary.

### Tasks:

* Collecting data
* Analysing data
* Conclude data
* Write down the solutions
* Make a conclusion

### Motivation:

My motivation was that I would like to work in sustainable tourism, and I wanted to see which the “greenest” county is, to see what developments happened in the last 15 to 20 years in the counties of Hungary. With this research I would like to see clearer where and what should be developed so in this case I can make advice to governments and stakeholders.

### Target groups:

My target groups are the governments and the stakeholders and even the publicity.

### Usefulness:

I can see what changes happened, conclude them, and present it to people who can make decisions about the new developments.

## History of the problem / phenomenon

There were some researches on this topic, but the other publication what can be found online is about the “green counties index” according to their infrastructural and environmental quality and level of environmental awareness. “The aim of the study was to rank and classify Hungarian cities and counties according to their infrastructural and environmental quality and level of environmental awareness. An objective classification of the cities and counties examined was based on similarity in infrastructural and environmental conditions. The principle of the classification was maximizing the homogeneity of cities and counties within the clusters and maximizing the heterogeneity among them.”   
-*Author(s): LÁSZLÓ, MAKRA; ZOLTÁN, SÜMEGHY*

## The current state of the problem / phenomenon

Currently there are two kinds of views. One of them represents the old structure, measure the goodness by one current activity, the second one is a more modern point of view it shows the progress at counties and make more valid conclusions after all.

## The data asset of the problem phenomenon

The data is originated from KSH.com, TEIR.hu, Google Scholar, topographic releases.

## Methodology for interpreting the problem / phenomenon

From the collected data a robot can calculate the average, the minimum, the maximum, the slope, and the differences. With the data what there are optional two kinds of conclusions.

From collected data about the Hungarian counties there is an ability to make research about which is the “greenest” county according to the ideal conditions. In this case, conditions where measure the settlement area in km2 and the population to rank first. For this collection of data contains three years, 2006, 2012 and 2018.

From these calculations show how the numbers change at each given statement. The consideration of the size of the green areas, the forest and mixed forest reservations, and sport-leisure areas can take place at this kind of calculations. Basic measurements are necessary as well, some cases a measured year, 2017/2018 can be used to all calculations because the amount do not change, these are the number of the national parks, the natural monuments and hiking trails. After concluding all these information about the counties, the rankings are ready.

## Potential solution alternatives

From this study there is a possible conclusion that there should be new possibilities to open green areas or national parks. A new option could be to open new national parks.

## Data assets and methodology

My main task was to make research about the “greenness” of the counties. I structured the facts what I think can help to make a county greener and obligate them. My preference was to get data about the opportunities of counties how they can be greener. For this I used data’s the size of the area, population, protected nature area, etc. I mostly used three years to make a compare.

With these numbers I was able to form an order in two different ways. One of them writes down which is the greenest county currently (according to my conditions), the second shows how the counties developed or regressed during years, with this calculation it can be more measured where and how to make a change.



1. Figure: The collected data in a ranked form. Source: https://miau.my-x.hu/miau/281/green.xlsx, sheet: Calculations, Range: C23-X66

*With zooming into details of the photo, the information can be seen.*

I used some web pages to find information like KSH.hu and Teir.hu and from these collection of data with the help of my teacher we made the calculations to observe the order of the counties by greenness. I observed the counties in 2006, 2012 and 2018 by different topics. The main topics which I concluded were population, settlement area, protected nature area, green area, mixed forest areas and sport and leisure areas in the nature. In the research I also monitored the forest reservations, natural monuments, hiking trails and national parks (see Fig. Nr.1).



2. Figure: Calculation process, Source: https://miau.my-x.hu/miau/281/green.xlsx, Sheet: Solutions, Range: A2-AG23

*With zooming into details of the photo, the information can be seen.*

There are two alternative solutions (see Fig. Nr.2). The first solution was when I concluded which county have the best average.

The second alternative solution was to observe which counties developed since 2006 to 2018. The main observation was to find the greenest county, but I would like to reflect the two ways how I checked them. Firs of all in case of NAIVE calculation I got the result from the average of the collected data. The second solution is the OPTIMIZED ranking where the I could rate them acknowledged what they could reach on their own level.

## SWOT Analysis:



3. Figure: SWOT analysis, Source: https://miau.my-x.hu/miau/281/green.xlsx, Sheet: Solutions, Range: A28-F47

During SWOT-analysis (see Fig. Nr.3.) I calculated from the yearly average scores what counties reached. Those counties which have more than 1000 scores are having strength, which are under 1000 they are weak.

On behalf of the opportunities and threats the slope was used, if the county improved during the years, it has opportunities but when the measured numbers decreased year by year it is a treat.

Only to counties are both weak and treat, Győr-Moson-Sopron and Pest. The first one stayed on the same level every year but did not decrease, the other decreased according to the data with -1.3% during 12 years. This swot analysis shows that Pest County is the worth county on the scale of greenness.

Four counties improved, showed strength, and have shown opportunity in developments. These counties already been on a high level of greenness, but they even improved by the years. Tolna made a small development during the first six years but after it kept on its already high level, that’s how it can stayed strong and still have opportunities but to stop lowering on the rate there will be necessary developments. Vas County had a slope of rise with half percent which means they have new protected areas or more green zones.

Veszprém was special because between 2006 and 2012 it had a small decrease but from 2012 to 2018 the county had a massive development which leads to good opportunities. Zala was ranked fourth place in 2006 and made a small development until 2012. Then until 2018 they made the biggest development which leads to countless opportunities and drove to the first place on ranking. This county made the second biggest improvements during these years. In Bács-Kiskun there was a bigger increase in the first 6 years of the measurements but after it only kept its own level.

There are two counties which developed from 2006 to 2012, but they started from the lowest level. Jász-Nagykun-Szolnok have fewer green areas than the rest of the counties and do not even have mixed forest areas, they also have the less national monuments and hiking trails as well. Szabolcs-Szatmár-Bereg have much more green areas but there are weak opportunities about natural monuments, mixed-forest areas, and sport-leisure areas. This county does not have a national park.

Baranya and Fejér county had a rise for 2012 but they are still on the same level in 2018 which could still develop. Somogy and Csongrád-Csanád are in the middle in ratings, but Somogy have the lowest population rate and green area, but they have various forest areas, hiking trails and a beautiful national park. However, Csongrád-Csanád have almost double the population than Somogy, they are rich in green areas but not in forest areas. These two counties still can develop.

There are four other counties which shown small developments during these years; however, they have grown, they were in the middle of the ratings and did not rise that much to reach to top of it. Still have opportunity to develop them, the tendency is great. These counties are Békés, Borsod-Abaúj-Zemplén, Hajdú-Bihar and Komárom-Esztergom.

Heves and Nógrád County are weak when it comes about green areas, but they have high rate in forest reservations. They both show in growth in developments during years but because they do not have a high score, they seem weak, but they have the opportunity in them.

To highlight the results there the governments should improve Győr-Moson-Sopron and Pest in case of the green reserves which can be hard because these are the most developed counties but there must be solutions.

## Rating representative map

A képen térkép látható

Automatikusan generált leírás

4. Figure: Naïve ranking on map, Source KSH map, own ranking

A képen térkép látható

Automatikusan generált leírás

5. Figure: Optimized ranking on a map, Source KSH map, own ranking

There are two solutions for the question of the ranking the counties by greenness.

## Solutions:

Naïve ranking is concluding from all the information from 2006, 2012 and 2018 and make an average measurement for each county. This way I can see which is the current greenest county but I can not tell which have a developing tendency or which needs some extra support.

Optimized ranking makes it possible to conclude information from the past regarding to future while I analyse the way of progress. With this solution I not only understand which is the greenest county but also what developments are necessary in each county.

On the naïve ranking the calculation was about the average of the reached numbers. On this kind of ranking the problem is in my opinion that it doesn’t matter if one of the counties improved a lot during these twelve years, because if they started with smaller points or units they can grow more, than those counties which were already on a good rating. In this case we can not give a fair advice to any of the referent company because this ranking does not contain future predictions. This data still can be important, because in this way we can see the average rates of the Hungarian counties, but we have to use this carefully. From this ranking we can figure which is the current greenest county according to the average measurements.

On the naïve ranking Zala County is on the top of the ranking because it has the highest points on the average counting. In 2006 and 2012 Zala was on a lower position, it was only on the 3rd position. Between 2006 and 2012 there was a bigger development than in Vas and Veszprém County which were on the first and second place but still could not reach the first place. Until 2018 in Zala they developed more green areas and sport-leisure areas for public as well and this improvement raised the county to the first place in ratings.

The second county on a scale of average greenness is Vas County according to my data. Between 2006 and 2012 this was the greenest county of all, but it had only small decreasing and growth in the field of green areas. Because this part of Hungary was already developed by green areas it could not make that much improvement like Zala, this is how they ranked into the second place by 2018.

The third place goes to Veszprém, it was already a nice area however during 2012 it regressed a little bit, but after all it could develop and reach the podium at the end.

These three counties had the same result on the optimized solution as well, which means these are the top greenest counties in Hungary by all the point of view of mine. This standard kept its form until 6th place. Still on both naïve and optimized ranking these stayed on its place, there is no difference in these cases.

Bács-Kiskun County have a lot of hiking trails, beautiful and huge forests and its rich by green areas as well. On the naive scale it’s on the fourth place but since it only developed between 2006 to 2012 and then stagnant.

Borsod-Abaúj-Zemplén is on the fifth place in both rankings, it started on the fourteenth place in 2006 but soon there were improvements, new parks and this County jumped up to the top.

Heves on the sixth place also had a bigger infrastructure development including sport and leisure areas. This county was only on in the middle field of this competition, but they were able to make changes and make their living space to a far more structured and greener place.

Fejér County is worth to mention because this is the first region which have a negative difference between the naïve ranking and the optimized. In this situation, this part of the country has less opportunity to have protected areas, and this causes the vision of this region. However, between 2006 and 2012 there were some ameliorations but it stagnant later, therefore on the optimized scale it has -1 rating which takes it to the eight places.

Somogy is a small county and because of this it could not have high ratings in the beginning but because it developed a little it earned the eight places on the naïve calculation. In case of slope, it did not improve enough so when we see the actions optimized only at the twelfth places which is a huge fall. According to the overall estimation it could not develop enough.

Győr-Moson-Sopron County is interesting by both calculations. Firs of all on the average scale this county could reach the ninth rank, but it did not improve. From the data we can see that without any improvement or regression it could lost some places because other counties developed. On the optimized scale there is a range of getting worse positions year by year arriving to fourteenth place. Still because it does not regress there can be opportunities to improve this county with development of sport and leisure areas, more opportunities to visit both its national parks.

Csongrád-Csanád County is on the tenth position on the naïve scale however both in 2006 and 2018 it was only on the eleventh but in case of the year 2012 they improved themselves to the sixth place. It could happen because they improved their hiking trails. In case of optimized ranking, it is on the eleventh place it is because it regressed between 2012 and 2018.

Nógrád County could not start with high rates but did improve 2% on the slope. Because of the bad start it is only on the eleventh place on naïve rating but on the optimized scale we can reward this county with seventh place which means that on the rating of how much improvement happened in the counties it has a great position. It worth to have eye on this place because there can be underrated natural monuments.

Békés county did a small improvement during the years and reached on the naïve scale the twelfth post. We can not underestimate this part of the country because on the rank of developments it could reach the tenth place even if in 2012 there was a small relapse.

Tolna County never been on the thirteenth place itself but in case of the average measurements it could only get that place. In this county there was a small improvement between 2006 and 2012 but it only stagnant after that. Because of this it is only ranked on the sixteenth place in case of optimized measures.

At Pest County sadly there is a decrease year by year. The capital is more focus of building so there are untouched, sometimes green areas which limits the opportunity of improvements. On the naïve rating it is on the fourteenth place and this county has the most negative slope of all.

Hajdú-Bihar County could develop during the years, but it could only reach the fifteenth place equally at naïve and optimized measurements. The main area where they had improvement were sport and leisure areas.

In case of Baranya County, I can say that between 2006 and 2012 there were improvements but after that it only stagnated. This county already started from the bottom of the list and could not develop enough so it got into the sixteenth place on both scales.

Komárom-Esztergom County had the smallest development yearly, and it haven’t led the list before 2018. On the naïve scale where we only measure the average data it could reach the seventeenth place but on the scale of optimized ranking it is the worst. Conclusion of that this county could develop the least.

Jász-Nagykun-Szolnok was the biggest improvement. On the naïve scale it could get one place before the last on average, but it started from the lowest rate of points in 2006. This county could come to the ninth position in case of optimized numbers. This different shows that from the worst performance with patience and energy investment we can make a huge impact on development.

Last but not least comes Szabolcs-Szatmár-Bereg County. This county is not full of green resources and areas this the reason of the ranking. It could not develop much so it stayed at the end of the list.

## Conclusion

As a conclusion in my point of view optimized ranking is more informative and valid way to understand the ratings of counties. This kind of calculation leads to a fairer and more appreciative on the development. This ranking what I summed up shows which counties could have some development and which one needs a reward for their achieves.

The greenest county in Hungary is Zala County.

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Own excel

## Catalogue of figures:

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## Abbreviations:

KSH - Központi Statisztikai Hivatal - Central Statistics Office

TeIR - Országos Területfejlesztési és Területrendezési Információs Rendszer - National Spatial Development and Spatial Planning Information System

COCO - component based object comparison for objectivity

Y0: No real consequence

km2: square kilometer

SWOT: strength, weakness, opportunities, treats.