

SZENT ISTVÁN UNIVERSITY
DOCTORAL SCHOOL OF ENVIRONMENTAL SCIENCES

Examination of spatial use of natural potentials and territorial cohesion

Doctoral (PhD) Thesis Statements

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1. ANTECEDENTS AND OBJECTIVES

Today, in the age of climate change and the accompanying climate disasters, the natural environment, whose existence, extent and beyond, has economic, social, and welfare effects, is becoming more and more valued. The aim of the European Union's cohesion policy is to ensure the harmonious development of the Member States and their regions, and to reduce the economic and social disparities between them.

I have been working as a regional and urban development expert since 1999, of which I spent the first ten years preparing, monitoring and evaluating development programs in Budapest and Pest County. During my work, I found that economically and socially underdeveloped settlements received extra points in the tendering system of EU funds from the beginning to gain a smaller advantage in accessing the funds, and there were and there are tenders which were targeted to these settlements and regions. At the same time, support for underdeveloped areas did not take into account the fact that there are economically and socially underdeveloped settlements and areas that are better than the national average in terms of natural and close to natural land cover. Knowing and studying domestic spatial development plans and programs, in most cases I still find that natural features are only dealt with as inclusions, and economic and social aspects are given higher priority. This is not surprising, since the official indicator of the state of the natural environment is not included in the complex indicator (officially the complex indicator) measuring the socio-economic and infrastructural development of the regions. In the way in which a settlement or district is classified as developmental, this factor (natural environment), which is increasingly important today and which is the basis of our existence, does not appear.

Therefore, the topic of my research is how to differentiate between deprived areas and settlements depending on their natural environment, because this would provide more targeted opportunities for the subsidies and could help to preserve the natural state, and contribute to the more accurate implementation of territorial cohesion My research has the following goals:

- My primary objective is to collect the topics that are present in the relationship between the natural environment and regional development. This is a rather diverse area, so I draw the boundaries along the main topics.
- My goal is to identify areas (districts) that have high natural capital compared to the national level, but which are disadvantageous due to their economic, social and infrastructural conditions.
- I would like to use natural indicators that are available and easily accessible in Hungary today.
- Using these indicators, I intend to develop a natural capital indicator, which I can use to determine the target areas of my research.
- I would like to analyze my demarcated areas in terms of how the plans and programs made at the national development policy level and at sub-levels relate to these areas, and if so, in what context. I analyze whether the uniqueness of their situation appears in the plans and programs at the settlement level.
- My aim is to examine from a practical point of view how the developments made in the studied areas during a closed EU development period compared to the natural capital available as a resource in these areas.
- I am particularly concerned with the situation of NGOs dealing with nature conservation in these special areas. I mainly want to collect and analyze the projects they have carried out.
- I directly address the leaders of the settlements in my area to assess how they are taking advantage of the high quality and quantity of the natural environment. I am interested in their related awareness of how they are taking advantage of the natural environment and how their future developments will adapt to the conditions.
- My aim is to compare the use of natural capital between developments within the structure of national and regional programs and those supported by other community-led (CLLD, LEADER) programs. From this I would like to draw conclusions on the realization of territorial cohesion.

- In order to study the selected regions, my aim is to study the territorial cohesion of the European Union from the point of view of natural capital, to show the connections and to draw conclusions on the development of territorial cohesion by analyzing the specific development projects of my examined regions.

2. MATERIALS AND METHODS

I consider it important to highlight my initial ideas, which I treat as my own personal experience:

- I do not consider development to be a factor solely measured by economic, social and infrastructural indicators. I regard the state of the natural environment of a region as one of the defining criteria of development.
- In order to increase "development", I do not consider sacrificing a natural, landscape environment as a forward-looking development.
- Within renewable energy, solar and wind projects are not considered site-specific natural capital developments, so I do not count on them in my research.
- During the development of the index, I consider the deviation from the mean value to be high and the deviation from the mean value to be low.

2.1. Ranking of districts by quantitative and qualitative indicators of natural environment

In my research I use databases that are currently available and nationwide. For delimitation of the districts, I use the CORINE surface map database combined with the hemerobia category system, and on the other hand I used the Hungarian Habitat Mapping Database (MÉTA) as a control for narrowing the target areas.

In the first steps of my research, I grouped the districts using the proportion of natural and near-natural land cover and a complex indicator measuring the socio-economic and infrastructural development of the regions.

The CORINE surface coverage indexes used in my investigations, which are classified as oligohemerobic and mesohemerobic, are the follows:

2.3 Pastures

3.1 Forests

3.2 Shrub and/or herbaceous vegetation associations

3.2.1 Natural grassland

3.2.2 Moors and heathland

3.2.4 Transitional woodland

3.3 Open spaces with little or no vegetation

3.3.2 Bare rocks

3.3.3 Sparsely vegetated areas

4.1 Inland wetlands

5.1 Inland waters

The territorial extent data of the above categories were summarized at the district level and proportioned to the total area of the given district, which I called the CORINE based natural capital indicator, and then ranked the districts among the districts. My natural capital index describes the natural and near-natural surface coverage in which the anthropogenic potency is weak or moderate based on the categories of hemerobia. With the resulting natural capital index, I can identify areas where the natural environment is larger than the national average and the areas are poorly or moderately disturbed by human activities.

I compared the list of districts formed and ranked according to the ratio of natural and near-natural areas with the order of economic and social development determined by the complex indicator measuring the socio-economic and infrastructural development of the regions (290/2014. (XI. 26.) Government Decree).

I included the Hungarian Habitat Mapping Database (MÉTA), including the indicator, which shows all estimated areas of near-natural habitats at the regional level. Settlement data were aggregated at district level and then expressed as a proportion of the total area of the district. ArcView GIS software was used to map the study areas.

2.2. Regional development analysis of the target districts

Having determined the districts that are the target area of my researches, I sought the answer to the question whether in the case of the plans and programs concerning the examined districts the economic, social and natural state correlation appears, and if so, in what context, with statements, suggestions and measures.

With the exception of country-level policy documents, I have examined all development documents in the same way. The analysis of the programs focused on whether the document under review shows that the area has a high natural potential but low social and economic indicators. When examining the documents, I specifically observed whether local natural potentials are present and, if so, how much attention is given to the situation in the four sectors of the SWOT analysis (strengths, weaknesses, opportunities, threats), social characteristics and the importance of the contrast between them. Following the structure of the development documents, I examined what the given professional material does with the situation at the level of goals, priorities and measures, and which development area or sub-area it focuses on when defining the direction of development.

As a continuation of my research work, I analyzed the smallest operational units responsible for the implementation of development strategies and programs in the area of the examined districts. During the examination of the projects, I was interested in how the concrete developments relate to the features of the natural environment and the natural capital available locally. Are they used, or supported, to maintain and improve the natural environment, and if so, how?

Territorial cohesion is also characterized by the sustainable exploitation of the potential of site-specific conditions and territorial diversity. I consider the high proportion of natural capital as location-specific, as the economic and social indicators are the lowest in the examined regions. Projects should therefore be examined in relation to the three segments, ie the economy, society and the natural environment.

During the research I selected economic development, human resource development and human infrastructure development, as well as development projects affecting natural capital, and within it relevant projects. I compared the total funding sources of the projects using natural capital to the total funding sources of the 7-year cycle region and to the combined funding of the economic and social sector. When examining some kind of interpretation of territorial cohesion, I needed a control segment, that is, areas which, contrary to the primary type B (low economic and social potential but high natural capital) districts, have characteristics that are contrary to the economic, social and natural environment. This segment represents districts of type D (high economic and social potential but low natural capital).

2.3. The intentions of the settlements in the examined districts for future developments

During my research work I started from the level of national plans, then gradually got to the town plans. However, in order to obtain direct information on the current state of the direct settlement level and its future conceptions regarding the subject of my topic, I conducted an online questionnaire survey as a primary research method among the 373 municipalities in the districts concerned. The answers to the questions are illustrated by simple statistical methods.

2.4. Comparison of the district order of the complex indicator and the order of the territorial capital indicator

In my research, I was curious as to how the districts with high natural capital, but with low economic and social potential filtered by the method I used were ranked by the research team of the Hungarian territorial capital calculation.

I identified the districts I examined with the districts categorized and mapped by Oláh (2017) and his colleagues, and then examined the difference in the categories according to the territorial capital.

3. RESULTS

3.1. Ranking of districts with the help of natural and near-natural land cover and a complex indicator measuring the socio-economic and infrastructural development of the regions

I was able to classify districts into four categories based on the value of CORINE-based natural capital and their economic and social development.

The naturalness rate of districts from the CORINE land cover categories at district level is 37% on average for the 174 districts (excluding Budapest districts). I consider this value as the limit point for the low and high definition of the natural surface ratio. In the case of the complex indicator, I considered the range below and above the boundary line drawn by the KSH to be low and high, respectively.

The four categories are as follows:

- A.) the proportion of natural surfaces is low (below average (below 37%)) and the value of the complex indicator is also low (below 46.68) (beneficiary districts)
- B.) the proportion of natural surfaces is high (above average (37%)) but the value of the complex indicator is low (below 46.68) (beneficiary districts)
- C.) the proportion of natural surfaces is high (above average (37%)) and the value of the complex indicator is high (above 46.68) (non-beneficiary districts)
- D.) the proportion of natural surfaces is low (below average (37%)) but the value of the complex indicator is high (above 46.68) (non-beneficiary districts)

From the category B districts I have chosen those which are to be developed with a complex program according to the Government Decree of 2014 (XI. 26.), that is, they are the most disadvantaged within the beneficiary districts. This reduced the number of category B districts from 47 districts to 17 districts.

The average of CORINE-based natural capital calculated for districts is 19%. After that, I selected from the 17 districts of B2 category, where the proportion of habitats near- nature is over 19%. Thus I got the 10 districts (category B3) which show the most unfavorable conditions from the economic and social point of view, however, their natural abilities, the ratio of the habitats near- nature and thus their natural capital is above the national average. I continued to work with these ten districts: Gönci, Encsi, Ózdi, Edelényi, Devecseri, Vásárosnaményi, Hegyháti, Putnoki, Barcsi, Szécsényi (Figure 1.)

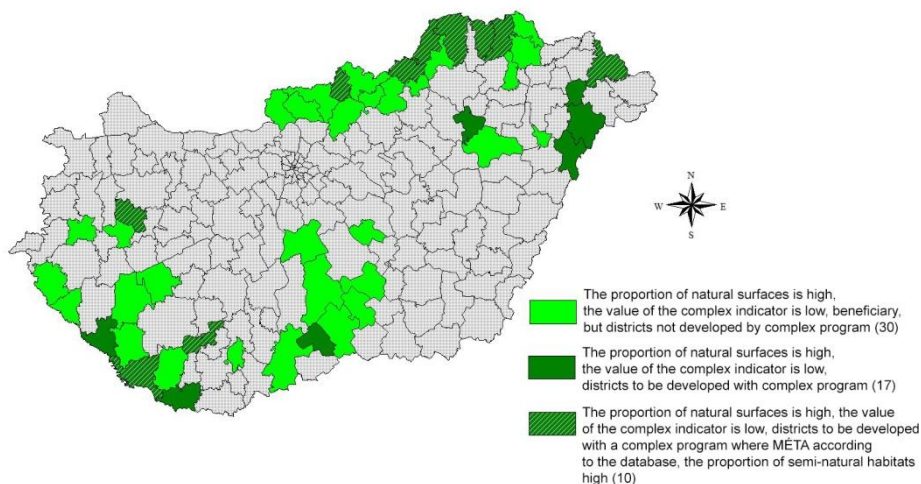


Figure 1.: Districts with a high natural surface ratio and a low complexity index (Category B), custom edited with ArcView GIS

3.2. Appearance of the 10 districts examined (B3) in national development policy documents

I examined the situation, appearance and the recommendations and objectives of the districts, which were the result of the previous chapter, and

which were classified in category B3, in the highest level Hungarian regional development policy documents. Based on these, the main conclusions are:

- The National Spatial Development Concept, in force between 2005 and 2013, emphasizes the importance of a higher-average natural environment in its recommendations for the catching-up of underdeveloped areas, external and internal, peripheral and rural areas.
- In the National Development and Spatial Development Concept, both the situation description and the suggestion part of my work reflect the fact that in the districts of the target area the economic and social indicators have values well below the national average and at the same time , but they have more and better quality natural environments than the national average.
- The developmental plans of the national level recognize the special situation of the examined districts, although they do not show the joint connection of the socio-economic and natural features, that is, the categorization I use, but the examined districts can be arranged according to different national target areas.
- From the sectoral operational programs, the Environment and Energy Operational Program and the Economic Development Operational Program are of interest to my research. It can be stated that both programs mention territorial cohesion as a horizontal principle, but do not name areas, only types of areas.

3.3. Appearance of the districts examined in regional development policy documents

In the five regional operational programs examined for the period 2007-2013, the emergence of territoriality is clearly perceptible, unlike the sectoral operational programs, where the principle of territoriality is much less widely understood as only the elimination of internal disparities within the territorial cohesion objective. The overall objective of each of the regional operational programs examined is to strengthen territorial cohesion. The priorities of each program are the same, but sometimes differ in wording. In their content, however, different regional preferences appear.

The Operational Program for Territorial and Urban Development was adopted in 2014, which previously replaced autonomous regional operational programs in the six regions of the country, with the exception of the Central Hungarian Region, which is being developed by a separate operational program. In the framework of the Program, the counties received special funding to prepare their own integrated territorial programs, which are responsible for channeling the county level into national planning documents and thus managing the financing of municipal applications from the Program. The county integrated territorial programs were completed in 2015. It is clear that these programs are in line with the priorities of Operational Program for Territorial and Urban Development, with mandatory guidance.

3.4. The appearance of the examined districts in the county level development policy documents

The county-level development programs deal with the natural environment as a local potential, which can be linked to the economic development opportunities of the county. However, these strategies and development programs, in the absence of resources, can only partially enforce their development ideas.

The documents examined can be divided into two types: concepts and strategies and situational documents that support the strategies. The latter and the concepts, according to their place in the regional development system, do not come to a concrete proposal, but contain a description of the situation, an analysis and possibly the setting of objectives. Each of the county development documents examined deals with the natural environment of the area and the state of the local economy. The focus of the analyzes is based on economic and social factors and their approach is material. There is no linkage analysis. We mainly see condition descriptions, but deeper causal relationships are less prominent. A similar conclusion was reached by the authors of the Territorial Capital and the Hungarian Dimension Volume (Oláh *et al.*, 2016) examining the appearance of territorial capital in the case of county development plans. The county programs prepared before 2014 are more specific, more detailed and more

diverse than the integrated strategies. Each of the county programs provides a sub-area for sustainable development directions based on the natural environment and with different emphasis, but also includes conservation objectives and measures. Integrated strategies, on the other hand, channel the developments relevant to the spatial use of the natural environment in question under the Operational Program for Territorial and Urban Development measure 'Socially and environmentally sustainable tourism development', and may include energy upgrades if they are based on locally available renewable resources.

3.5. Development programs for Leader micro-regions

Analyzing the LEADER strategies (19) in force in the study area it can be stated that all the examined documents deal with the high quality status of the natural environment and the under-representation of the local economy. The orientation of rural development policy presupposes a thematic concentration, so the above statement fits in. It is clear from the measures that tourism as a theme and local products represent the main target areas within the research theme. Each of the LEADER strategies relevant to the districts studied addresses the high quality of the natural environment and the problems of the local economy. In Leader programs, local knowledge is perhaps best understood. The proposed development directions are also more sophisticated and natural capital appears as a sustainable resource in the examined regions.

3.6. Settlement development concepts, programs, plans

It is clear from the plans examined that the natural environment is in many cases a subject which is obligatory for the maker and the maker, but does not represent a substantial part of the materials. In most cases, the topic is only a compulsory chapter and no relationship between natural conditions and economic and social factors is presented. This is often reinforced by the fact that the description of the natural environment contains only dry facts, such as the description of the bedrock, the climate, the cultivation area of the

production areas or the designation of protected areas. But communicating these dry facts is a dead end for strategic planning. Most of the examined municipal and micro-regional development documents already deal with the outstanding state of the natural environment in the analysis part of the situation, and the low level of the local economic conditions also appears. Almost all of the relevant documents provide nature-based tourism development as a solution proposal. On the whole, it can be stated that there is a preponderance of the development ideas which suggest the utilization of the positive natural environmental conditions, and relatively fewer the names of the development aimed at the rehabilitation and maintenance of this natural milieu. The development plans examined at the settlement level mainly focus on the utilization of the conditions and to a lesser extent and not uniformly on the protection and renewal of the natural environment.

3.7. Completed development projects

In the 17 districts, I analyzed projects implemented by the EU ERDF and ESF as well as Cohesion Fund, Leader and domestic sources in 373 municipalities in 17 districts.

Main conclusions:

- **Improvements to the B2 districts under review from the European Regional Development Fund, the European Social Fund and the Cohesion Fund for the period 2007-2013:**

As a result of the study, I was able to identify 139 projects out of 3,223 that directly supported the preservation of natural capital and found 51 investments that were made to exploit the existing natural environment. Almost one-third of the projects have been implemented to utilize the capabilities that serve to improve and maintain the quality of the capabilities. In the case of the resources used, the cost of implementing investments that maintain or increase natural capital is four times the amount of support for projects based on natural capital.

In districts where the value of natural capital is high, their utilization was higher than in districts where the value of this type of capital is lower. In those districts where the value of the complex indicator is high, that is, the economic and social conditions are more favorable, these resources have been used the most. In non-beneficiary areas with higher economic potential, the number and capital strength of economic operators is also higher than in the most disadvantaged districts to be developed with a complex program. Territorial cohesion thus prevailed in the interpretation of whether space-specific features and the potential of territorial diversity are exploited in a given area. In the case of developments supported by the ERDF and ESF and the Cohesion Fund, the 17 areas examined, both in terms of the number of projects implemented and the sources of funding used, were economic and social projects, while they were dominated by natural capital developments. These results show the achievement of development policy goals, as the economic, social and infrastructural factors in these districts result in low development status of the regions, most of the resources had to be spent on these issues.

– **Improvements of the type B2 districts examined under the LEADER axis of the European Union Rural Development Program for the period 2007-2013:**

In my research, I categorized a total of 1,561 projects of 10 LAGs, of which 404 projects, or 26% of projects, were classified as development projects that are clearly based on some form of utilization of natural capital. The same figure was 4% for Structural Fund projects discussed in the previous section. The result shows that community-led (CLLD) developments are more built on local capabilities and contribute more to territorial cohesion in the sense that the regions base their development on local capabilities. The analysis of projects from the Leader source has shown that community-led (CLLD) developments are more local-based and contribute more to territorial cohesion in terms of how the regions base their development on local conditions. Experience from projects funded by NGO nature conservation organizations has shown that these

organizations play an important role in maintaining and rehabilitating the state of the natural environment, which is what strengthens the site that the National Park Directorates also provide.

– **Projects of NGOs dealing with nature and environment protection in the districts under study:**

The proportion of "green" NGOs operating locally is 3.3% of all NGOs nationwide. In the 17 districts examined, this is 2.8%. Thus, the data show that in areas with higher natural potential in the country, the number of social organizations dealing with nature conservation is lower.

– **Examining territorial cohesion**

In districts where the value of natural capital is high, their utilization was higher than in districts where the value of this type of capital is lower. On the other hand, in those districts where the value of the complex indicator is high, that is, the economic and social conditions are more favorable, these resources have been used the most. In non-beneficiary districts with higher economic potential, the number and capital strength of economic operators is also higher than in the most disadvantaged districts to be developed with a complex program. Territorial cohesion thus prevailed in the interpretation of whether space-specific features and the potential of territorial diversity are exploited in a given area.

3.8. A survey of the present state and future intentions at the settlement level based on a questionnaire survey

Based on the questionnaire survey, it can be stated that most of the examined settlements do not prepare or use settlement development programs, and their developments are not implemented in a planned way, based on strategic aspects. At the same time, three quarters of municipalities have invested in EU funds over the last ten years. Part of this was done with the involvement of LEADER funds, based on the strategic plans of the LEADER micro-regions. The municipalities are aware of the positive features of the existence of the natural environment and are also building on their ideas for future

settlement development, particularly in the field of tourism. They want to make the natural environment more accessible to tourists by creating hiking trails, and expanding accommodations to encourage visitors to stay overnight, because that is the only way to realize the economic benefits. It is typical of the present state that most of the businesses based on the natural environment tend to operate accommodation, while investing in attractions that offer programs is much less frequent.

3.9. The relationship of territorial capital with the subject of my research

I wondered if the classification equivalence would change if I extended my category B districts to those districts where the proportion of natural surfaces is higher than the national average and the value of the complex indicator is low, but the districts should not be developed with a complex program. This means 30 districts, for which I also examined the regional capital based classification. In this case, the result shows a completely different picture, because the categories of territorial capital have been extended to the category of better than average and in the case of room walking the best position. Differences in territorial capital should be sought in economic, social and infrastructural (except for natural capital indicators). The four natural environment indicators used are negligible compared to the 77 indicators. All four indicators describing the natural environment are material in nature. The intangible, less tangible elements and services of the natural environment will be channeled into the territorial capital system from current research on ecosystem services. The result of my research is that the territorial capital values differ from the complex indicator measuring the socio-economic and infrastructural development of the regions. In some districts, their classification is higher. Territorial capital calculations count almost three times as many as the complex one, so we can expect more dimensional results.

3.10. New scientific results

T1. The regions (settlements) of Hungary can be ranked according to the complex indicator measuring the social, economic and infrastructural development of the regions (settlements). By matching the hemerobia categories to the CORINE land cover database, a natural capital index derived from the area's natural and near-natural land cover can be generated.

T2. By placing the natural capital indicator derived from CORINE data next to the complex indicator, a system can be constructed which divides the regions into four sectors based on my analysis:

- A.) the proportion of natural surfaces is low (below average (below 37%)) and the value of the complex indicator is also low (below 46.68) (beneficiary districts)
- B.) the proportion of natural surfaces is high (above average (37%)) but the value of the complex indicator is low (below 46.68) (beneficiary districts)
- C.) the proportion of natural surfaces is high (above average (37%)) and the value of the complex indicator is high (above 46.68) (non-beneficiary districts)
- D.) the proportion of natural surfaces is low (below average (37%)) but the value of the complex indicator is high (above 46.68) (non-beneficiary districts)

Landscape and natural indicators need not be included in the complex index, but in addition to the region-specific complex index, the CORINE-based nature index should also be displayed as a reference (categories A, B, C, D).

T3. The above categories can be further narrowed down by the Natural Capital Index indicator based on the Habitats Map Database of Hungary, so that besides the amount of the natural environment we can include the quality of the habitats as an aspect. When using the MÉTA database, it should be taken into account that the data show and measure the state of 2008.

T4. In the development plans of the regions and settlements to be developed with high natural capital, but with a complex program of social, economic

and infrastructural development, the description of this state, the natural environment and the economic and social conditions are usually included, but the connection is not usually emphasized. In the plans, the natural environment is dealt with separately and segregated. The relationship between the natural environment and other topics, which should be interdisciplinary, is superficial or not at all. Ecosystem services are not included in the programs, so they do not need to know the directions of development or specific developments. In these areas, natural potential is present as hidden natural capital. Currently, spatial development takes these areas into the view of others and expects them to be of the same type of development and provides them through tendering systems. At the same time, developments and support systems in these areas should be implemented and applied in a manner that takes full account of the protection and preservation of the natural environment and that economic development is based on the cultural segment of ecosystem services and renewable forms of production and supply.

T5. The objective of territorial cohesion is to ensure harmonious development throughout the EU and to enable its inhabitants to make the most of the potential of these areas. Territorial cohesion is interpreted in a way that harnesses the potential of space in a specific and in a sustainable way. My investigations have shown that in the 2007-2013 implementation cycle, in those districts where the value of natural capital is high, their utilization was higher than in those districts where the value of this type of capital is lower. As a result of my control research it can also be stated that in those districts where the value of the complex indicator is high, that is, the economic, infrastructural and social conditions are the most favorable, these resources were used the most. Local natural capital has thus contributed to territorial cohesion.

T6. So far, natural capital has not been involved in the perception of cohesion, only its quantifiable economic benefits, although it is a major segment of territorial cohesion that contributes to the well-being of people living in the area through its quality and quantity, expressed in ecosystem services. To emphasize natural capital, I propose to include the concept of

natural capital in the interpretation of territorial cohesion. Its place can be interpreted as the territorial dimension of sustainability and can be placed in the category of territorial quality as one of the factors determining the development of the territories. The other two units of Territorial Cohesion, interpreted in the dimension of sustainability, depend on territorial efficiency and territorial identity for the natural capital involved in territorial quality. Natural capital will strengthen territorial cohesion if research into the measurability of ecosystem services adds concrete results and indicators.

T7. Analyzing the local developments implemented under the LEADER program, it became clear that the proportion of community-led local development (CLLD) relied on local capabilities was higher than the Structural and Cohesion Funds. CLLD-type local development would be needed more than at present to allow projects based on local characteristics to be implemented in a creative way and to leverage resources through more flexible mechanisms. Less-favored areas such as the ones I deal with in this dissertation are not favored with extra points needed in the applications, but must be formulated and supported through their CLLD-type support mechanism.

T8. The improvement of the natural environment and, through this, the condition of the ecosystems is linked to the National Park Directorates and the green NGOs. This is shown by the examination of the development projects implemented in the regions. This also results in the fact that the calls for proposals already name and determine the final beneficiaries for each development theme. However, the use of ecosystem services can be linked to a much broader range of people who benefit from material, cultural, physical and mental health and other benefits. The proportion of non-governmental organizations dealing with nature conservation in civil society in category B2 is lower than the national average, so my pre-research hypothesis that the high proportion of natural capital results in more NGOs did not hold true. Green NGOs have implemented projects in the field of environmentally conscious thinking, education and training, and they play an important role in shaping attitudes.

4. CONCLUSIONS AND RECOMMENDATIONS

1. The regions (settlements) of Hungary can be ranked according to the complex indicator measuring the socio-economic and infrastructural development of the regions (settlements). Adding this to the complex indicator, the CORINE-based natural capital indicator, which measures the natural state of the regions, can be used to produce a category system that divides areas into four sectors.

Landscape and natural indicators should not be included in the complex index, but in addition to a complex index specific to a region, the CORINE-based naturalness index should also be displayed as a reference (categories A, B, C, D). Developments and support systems in these areas should be implemented and applied in such a way that they focus on the protection and maintenance of the natural environment. Developments resulting from economic development should be based on the cultural segment of ecosystem services and on renewable forms of service type.

2. Alongside the district order created by the CORINE-based natural capital indicator, the districts can be categorized as described in point 1 by placing the district order created by the complex indicator measuring the socio-economic and infrastructural development of the regions.

3. My research has pointed out that the situation description part of the programs contains the state of the natural environment, but in many cases it is only described in terms of mandatory and general aspects. The SWOT analysis should explain the quantitative and qualitative status of the types of ecosystem services along the negative and positive as well as external and internal factors. The task of the analysis is to demonstrate the functioning of ecosystem services locally in the organic relationship of other topics (economy, society, culture, etc.).

The problem tree based on SWOT analysis must represent the negative factors that are perceived in the state and functioning of the natural environment at the appropriate level of the problem hierarchy. Causal relationships, which represent relationships between levels of hierarchy, can map the shortcomings of ecosystem services. The objective is that the natural

environment should appear together with the other local and regional factors to be examined and the elements of territorial capital. The target tree responds to non-functioning factors identified in the problem tree and linked to a cause and effect relationship by also defining the target states to be achieved in a hierarchical system. Here, they should appear among the target states of the other topics, as planned and expected states in the natural environment. Priorities are the areas in which we make interventions during development and spend our resources on them. Correct, well-defined, accurate description of priorities is essential. In the case of the studied areas, where the state of the natural environment is still better than the national average, the nature and environmental principles should be applied in the process of reduction in the priority setting. For example, they prefer brownfield investments over greenfields. The measures include the same type of development within a given priority. In terms of natural factors, project types can be those that support the maintenance and development of ecosystems (nature conservation projects), or those that rely on ecosystem services (for example, ecotourism, hunting, agriculture).

4. The aim of territorial cohesion is to ensure harmonious development throughout the EU and to enable its inhabitants to make the most of the potential of these areas. I propose to include in the concept of territorial cohesion that we have areas where the catching-up / balancing principle does not have to be at the economic, social and infrastructural (I mean artificial infrastructure, not green infrastructure) but in maintaining and improving the quality of the natural environment to take advantage. This natural capital has not been involved in the assessment of cohesion, only its quantifiable economic benefits. To emphasize natural capital, I propose to include the concept of natural capital in the interpretation of territorial cohesion. So far, this natural capital has not been involved in the assessment of cohesion, only its quantifiable economic benefits. To emphasize natural capital, I propose to include the concept of natural capital in the interpretation of territorial cohesion.

5. The improvement of the natural environment and, through this, the condition of the ecosystems is linked to the National Park Directorates and

the green NGOs. The proportion of NGOs dealing with nature conservation in civil society is lower than the national average in category B1, so my pre-research hypothesis that the high ratio of natural capital results in more NGOs did not hold true.

6. Analyzing local developments under the LEADER program, it became clear that community-led local development (CLLD) relied more on local capabilities than the Structural Funds. In my opinion, in the case of regions with high natural capital, where the economic and social development within the country is the most unfavorable, the following options should also be considered:

a.) Silver economy ágazat felé nyitni: Európa és így Magyarország társadalma is előregszik. A társadalom idős tagjainak igényeire azonban külön gazdasági szegmensek épülnek, különböző tématerületeket megcélözva (egészségügy, táplálkozás, rekreáció, pénzügyek, közlekedés, háztartás, felnőttképzés, foglalkoztatás). A magas természeti tőkével rendelkező térségek kiváló helyszíneket biztosíthatnak az egészségügyi és rekreációs tevékenységek számára, akár idősotthonok keretében is.

b.) Opening up for retirees from Western Europe: Official statistics are not yet known, but my own experience is that the population of middle-aged and old-age settlers in Western Europe is increasing in the quiet, peaceful, nice environment of Hungary. Among other things, you can meet Dutch, German, Austrian, French pensioners who live in Hungary with a better quality of life from their retirement home, while enjoying the peace and beauty of the Hungarian landscape. I know many examples of settlers embracing their chosen settlement, financially helping to make certain small improvements, and providing smaller jobs (homework, gardening, cleaning, grooming, etc.) to the locals.

c.) Opening to teleworkers: With digitalisation, teleworking opportunities are expected to increase significantly over the next decade. Telecommuting is an opportunity for people to find their home away from their workplace, even in a quiet area close to nature in a small town. According to a 2017 KSH report, the proportion of teleworkers was only 1.5% of the total workforce, and in

2018 it was 2.3%, according to the EUROSTAT survey, and this figure does not include the number of foreigners working in Hungary but working from telework.

It is essential for development policy and local spatial and settlement development that, in the case of Hungarian settlements and regions that still have above-average natural capital, this capital should not be used for further development. The natural environment must be preserved! We have to accept that we have areas where there is no need to think and subordinate economic development at all costs. EU development policy, which was based on economic, social and territorial convergence, has shifted to a place-based approach within territorial cohesion, and it is becoming increasingly emphasized that regions and localities must develop on the basis of their existing capabilities, and in a sustainable manner.

LIST OF PUBLICATIONS IN RELATION TO THE TOPIC OF THE THESIS

Journal articles

IF papers

- Orosz György, Dr. Barczy Attila: A tájökölógiai potenciálok működése a területi kohézióban és kitekintés a természetvédelmi civil szervezetek szerepére, CIVIL SZEMLE 14 : 4 pp. 26-34., 9 p. (2018)

Non-IF papers

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- Orosz György, Emődi Andrea, Hartman Mátyás: Gazdálkodó önkormányzat kertészeti mintaprojektje Szigetmonostoron, in TÁJÖKÖLŐGIAI LAPOK 12:(1) pp. 149-156. (2014)

Conference proceedings

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- György Orosz, Gábor Ónodi, László Podmaniczky, Balázs Sipos, Dániel Molnár, Norbert Kohlheb, István Váradi: Szentendre Eco Island in the Agglomeration of Budapest, In: Agriculture in an Urbanizing Society, Second International Conference on Agriculture in an Urbanizing Society Reconnecting Agriculture and Food Chains to Societal Needs: Proceedings of the Conference. Konferencia helye, ideje: 2015.09.14-2015.09.17. Róma: [s. n.], 2015. pp. 183-184. (ISBN:978-889-089-603-3)