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**A SPATIAL PLANNING SYSTEM
BASED ON THE PRINCIPLE OF SUSTAINABILITY**

Theses

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1. Introduction

The concept of sustainability has been widely known and accepted among planners, policymakers and the public for almost two decades. The term sustainability has become a compulsory formal element of all types of planning activities. In spite of this favourable, wide acceptance of the term, plans frequently fail to define the real meaning of sustainability under the circumstances of a given region or a sector, and they rarely go beyond the compulsory mentioning of the expression itself. The same can be observed in the field of spatial/regional planning¹ as well. Therefore, the increasing importance of public planning causes increasing risk of the regions' unsustainable development. In case of Hungary, the regional planning is especially critical, because of the significant amount of regional development resources coming from the European Union in the near future. The Hungarian regional planning system is not ready for a sound integration of principles of sustainability instead of applying the old planning approaches that were unable to prevent or directly contributed to the devastation of Hungarian spatial structures' sustainability.

In the dissertation I aim to survey the principles of verifying sustainability, to catalogue the relevant planning procedures and their experiences abroad and in Hungary and to explore the opportunities of this field. At the end I provide suggestions to form a spatial/regional planning system based on the principle of sustainability.

The introductory theoretical studies of the dissertation explored the connections between the environmental and regional sciences as well as the connections between the different professions and public planning activities based on these sciences. I argue that environmental and spatial planning apply a unique integrative approach that is different from all other public planning activities. Research about the theoretical background of the two planning activities and about the evolution of their relations shows a prospective deepening of the environmental integration of spatial/regional planning.

Theoretical research was followed by practice-oriented research surveying numerous current environmental integration planning procedures. On the basis of the mentioned theoretical relations and their evolvement opportunities, it could also be pointed out that spatial/regional planning may be the most significant public planning platform for verifying

¹ The term *spatial/regional* planning is used as a translation of the Hungarian term *territorial planning*. The latter term in Hungary comprises two activities. One is similar to the British term *spatial planning*, but it is only about physical planning, it concentrates on building restrictions. The other is similar to the EU term of *regional development*, and it concentrates on social and economic development of a region.

environmental integration, and (even more) sustainability. The literature analyses were followed by empirical research in Hungary and abroad. I identified elements of current advanced environmental integration procedures which ought to be followed. I also identified their deficiencies in functioning as a sustainability-based spatial/regional planning system. After that I explored the deficiencies of the Hungarian spatial/regional planning system which also suffers from several general methodological problems. On the basis of these results I drafted an optimal spatial/regional planning system based on the principal of sustainability.

The most important possible further development direction of my research is to plan a regional sustainable framework that can serve as the basis of a spatial/regional planning based on the principle of sustainability. The most reasonable scene for this pilot is the Lake Balaton region. The Lake Balaton region was also a case study of my dissertation. The region has a very characteristic and unified territorial system. The Lake Balaton region is highly environment sensitive and its environmental problems ruined the sustainability of all of its territorial structures (also its economical and social structures). In view of further development of my research it would also be possible to develop a practical and routine-like methodology and to define the needs of data, human resources and applied research for compiling of regional sustainable frameworks.

2. Methods

The dissertation presents some particular methods different from the usual empirical, natural or social scientific methods of geography. This can be explained by the needs of theoretical studies based on analyses of literature. The analyses of literature are comprehensive in the case of all sub-studies. This is needed because the theme of the dissertation has just began to get into the focus of Hungarian professional interest. Except for some advanced schools similar situations can be experienced internationally as well. This theme, therefore, still lacks the structured introduction of the Hungarian and international literatures. The dissertation endeavours to make up for these deficiencies, primarily in the field of those European procedures that are similar to a sustainability based spatial/regional planning and that are most relevant for Hungarian professional circles.

2.1. Methods of theoretical studies

The method of the dissertation's theoretical studies is based on the systematic processing of (primarily) international and Hungarian literature. The aim of literature analysis is on the

one hand to clarify the terms used, and on the other hand, to explore the relations between planning (spatial/regional and environmental) and sustainability.

The literature analysis proceeds along predefined categories. Planning (spatial/regional and environmental) is examined as a profession and as an applied science, but the related basic sciences are also analysed. As the scientific theories are beyond the scope of the dissertation, the latter analysis is concerned only with those fields that are relevant and essential for understanding the research that follows.

The analysis of relations between environmental and spatial/regional planning also proceeds along predefined categories: searching for similarities, interactions and overlaps. The overlaps and similarities of the activities make it possible to form formalised integration procedures for planning professionals. The interactions represent those already existent integration without formalisation that have to be taken into consideration in good professional and scientific practice.

The scientific objects and dimensions of research were studied in terms of the relation between scientific activities (geography/regional and environmental sciences). In the case of professional activities (spatial/regional and environmental planning), the methodology was also examined besides the objects and dimensions. Professions should obviously follow methodologies formed for a given planning situation. Nevertheless, these methods can be categorised as they always fit the planning paradigm of a given era and they use a standardised set of tools.

2.2. The methods of analysing planning procedures

In order to analyse planning procedures, the application of a mixed methodology was needed.

The analysis of literature also has a significant role in this research: it is part of the methodology. The literature analysis of the research explores the current environmental integration procedures. An important motivation factor of this analysis is to identify the best international practices. One type of environmental integration procedure, the strategic environmental assessment (SEA) is in the focus of the analyses.

The second methodological element of the research is the professional interviews. Their function is to get to know the practical experiences of the already explored environmental integration procedures. The interviews also support important information to select the subject of case studies about advanced practices. The interviews were conducted according to a unified structure.

The different case studies form the third methodological element. The selection of case studies was completed according to the results of the literature analysis and the interviews. The case studies from abroad represent samples for advanced environmental integration. The aim of introducing Hungarian case studies is to point out the deficiencies of the Hungarian practice. The Hungarian studies make it possible to adjust the proposition of the dissertation (drafting a spatial/regional planning system) to Hungarian planning activities.

The case studies applied mostly document analysis. This meant the systematic qualified and quantified analyses of chosen planning documents.

Utilising the author's own planning practices can be also regarded as part of the methodology. This also helps to adjust the suggestions of the dissertation to Hungarian planning circumstances. It also helps to introduce those Hungarian initiatives that were realised under the author's professional leadership or with his cooperation and can be regarded as advanced environmental integration procedure initiatives internationally as well.

3. Results

In the dissertation the author has come to the following main conclusions:

1. Environmental and spatial/regional planning show similarity in the following fields:
 - Environmental, spatial/regional planning exhibit a significant set of similarities. Both of them can be understood only as public activities. Both are in the focus of public interest nowadays. The public interest in environmental planning is stronger, and this activity is becoming a basic state function. In the meanwhile the significance of spatial/regional planning is bound to change due to frequent changes of paradigm.
 - Unlike other public planning activities, environmental planning and spatial/regional planning apply a unique integrative and synthesizing approach. Both activities are focused on comprehensive, multi-sector understandings of reality. The direction of integration, however, is different in the case of these two activities: environmental planning integrates into the different spatial and sector policies, while spatial/regional planning integrates the different policies on a territorial base. Current spatial and regional policies endeavour to establish a new integration direction in the field of spatial/regional planning which would be the same as the integration direction of environmental planning (see figure 1).

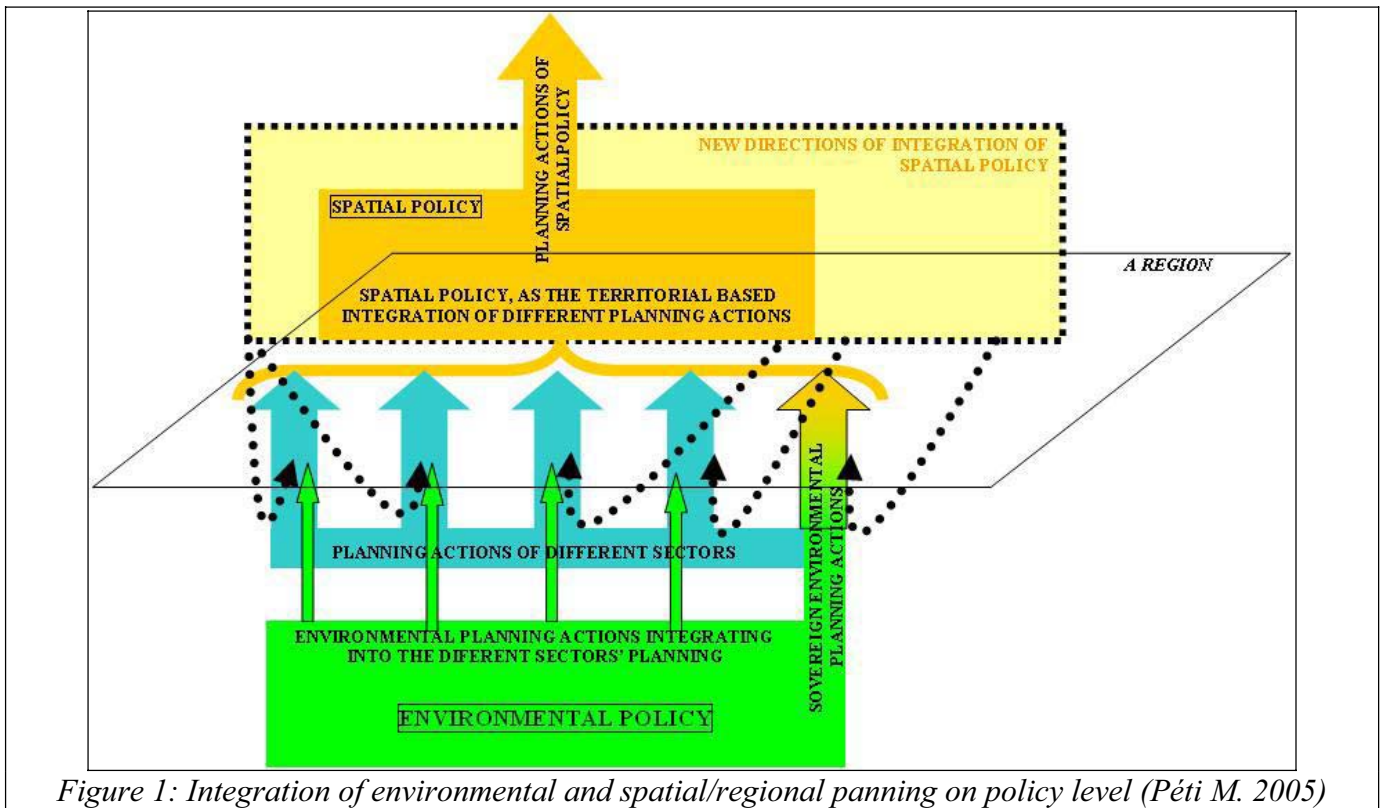


Figure 1: Integration of environmental and spatial/regional planning on policy level (Péti M. 2005)

2. The environmental planning and spatial/regional planning overlap:

- The objects of environmental planning and spatial/regional planning overlap. The object of spatial/regional planning, i.e. the territorial structures, contains, among other things, environmental structure, which in this case appears as local environment, that is, landscape. This means that necessarily integrated into spatial/regional planning of a region.
- The applied methods and tools of environmental planning and spatial/regional planning also overlap. This is because both of them are systematic and communal planning activity.

3. The similarities, overlaps and relations of environmental planning and spatial and regional planning trigger necessary and strong interactions between the two analysed activities. The development tendencies point towards further deepening of the relations between the two activities. This deepening can be detected first of all in the field of environmental integration of spatial and regional planning.

4. By surveying literature the author pointed out the types of environmental integration procedures of public planning activities:
 - In case of external integration only minor modifications can be realised on an already complete plan, for instance by taking mitigation measures.
 - Internal integration can verify environmental considerations in an early phase of the planning process, for instance during setting up objectives. It focuses on influencing the whole planning process, not only on the reduction of harmful environmental effects.
 - Total environmental integration can be realised on local levels. In this case it is hard to decide whether the planning process concerned is spatial/regional or environmental (e.g. sustainable rural region development).
5. The author has come to the conclusion that nowadays the current and widely-accepted environmental integration procedure of the planning processes beyond the project level is the strategic environmental assessment (SEA). SEA comprises so many possible approaches that can be used as a synonym of environmental integration procedures (in case of regional/spatial planning this statement is valid for the European Union's regional level planning).
6. Different perspectives on SEA are provided by summarising the literature of current SEA procedures, on the basis of which the author introduces typologies and provides descriptions of these several types. The following types can be distinguished:
 - SEAs applying internal or external integration (according to the main approaches);
 - SEAs of different decision making level (policy, plan, programme);
 - SEA for a plan of a single sector, or SEA for an inter-sectoral/spatial/regional plan (according to the scope of planning).
 - Non-formalised and formalised SEA categories can also be created; their standards may concern reporting, procedure and even methodology.
 - There is no significant coincidence between the different classes of different approaches. Some sector SEA (e.g. energy, transport, spatial physical planning) works with standard quantitative models or geographical information system methods. SEAs of regional development frequently use predefined complex multi-sector checklists in a qualitative way.
7. The author can pointed out theoretically that among the planning activities of a community, spatial/regional planning is the main guarantee of environmental integration.

Beyond the integration of environment the integration of sustainability can also be realised in the most effective way in the planning of transparent regional systems, sometimes even more effectively than in global dimensions. Despite their apparently innovative elements, advanced spatial and regional planning systems have so far failed to exploit this possibility.

8. Analysis of environmental integration procedures of spatial/regional planning pointed out that the higher the decision making level is the more abstract the environmental concerns applied by planning procedures are. Planning on higher territorial hierarchy levels tends to define the concept of environment according to national and international environmental policy directions instead of real local environment, i.e. landscapes. This practice is not to be followed. It leads to the application of environmental integration as only a slogan, and to the devaluation of the concept. This unfortunate practice was also verified by the author's empirical researches.

9. The author's researches carried out abroad pointed out the most important features of an effective SEA:
 - Effective SEAs apply internal integration and start at an early phase of the planning process. In this manner an effective SEA has impact on objectives and priorities of a plan, and it does not focus exclusively on predicting environmental impacts and reporting. In this manner SEA is different from ex ante environmental evaluation (that is, an external integration).
 - Real spatial thinking is a special requirement of SEAs of spatial/regional planning (see its main features at the results of the analysis of the Hungarian planning system).
 - An effective SEA goes beyond environmental integration and realises sustainability in environmental, social and economical dimensions. Sustainability is not an exact, normative, quantifiable term, it is about values. SEAs that realise sustainability endeavour to introduce a system of values. Therefore they work primarily with communicative, qualitative tools and only secondarily with quantitative tools.
 - The research carried out abroad pointed out that SEA has to be followed by active, layered, dialogue-based communication that also makes communal learning possible. The communication of SEA also has to be sustainable: it has to be able to broadcast its sustainability values towards the actors of the development of a region even after the end of planning.

- Research carried out abroad also pointed out some advanced elements of planning procedures that – beyond the simple integration of environmental concerns – can potentially be suitable for realising sustainability. The British regional sustainable development framework can be mentioned as a significant model.
10. According to the research carried out abroad, SEA has to face numerous challenges even in countries having advanced environmental integration cultures:
- The planning background of SEA is usually not sufficiently clarified. Therefore, the relation between SEAs on different decision making levels (the tiering of SEAs) and the relations between SEA and other planning and evaluating procedures, and binding SEA statements are still questionable.
 - SEA procedures are not widely known among desk officers, professionals and the public, therefore SEA processes frequently lack expertise and persuasive force.
 - Realisation of partnership and publicity during a SEA process also involves many difficulties.
 - In the case of SEAs of spatial/regional planning, pipelining local environmental and landscape information into SEA processes is a problematic task.
11. The author pointed out by the document analysis of regional development plans (primarily) and spatial plans that Hungarian spatial/regional planning is suffering from general methodological problems and has deficiencies in realising sustainability:
- Hungarian spatial and regional planning uses mainly sector, i.e. not spatial/regional approaches. Therefore, Hungarian spatial/regional plans fail to adapt to the local conditions on the level of regions, to explore internal and external spatial structures, and to apply national spatial objectives.
 - Document analysis also pointed out that sustainability concerns in Hungarian regional planning are also underrepresented. Sustainability appears mainly only as a slogan in the text of planning documents, without real local regional understanding and messages.
 - The analysis also pointed out that the Hungarian spatial/regional planning system contains inconsistent and unrealised plans. The special Hungarian categories of *spatial planning (about building regularisations)* and the *regional development (about social and economical regional planning)* are sharply distinguished and their activities are totally independent from each other in the region.

- The Hungarian case study verified that the complex understanding of sustainability and spatial thinking are also missing from planning concerned with Lake Balaton and the region around it. The Lake Balaton region possess one the most coherent territorial structures in Hungary whose sustainability is significantly injured. The region is also a typical example of the Hungarian system of inconsistent and unrealised spatial/regional plans. The analyses also pointed out that the special Hungarian categories of *spatial planning (about physical planning, building restrictions)* and *regional development (about social and economic regional development)* are sharply distinguished and their activities are totally independent from each other in the region. In this manner the spatial and regional planning of the Lake Balaton region is not suitable for drafting a sustainable future in all the three dimensions of sustainability. The frames of defining the limits and other conditions of sustainable territorial systems are also missing in the Lake Balaton region. *Spatial planning about building restrictions* tries to fix the functions of each scene but it does not come up with general principles about the use of space. Environmental integration at the Lake Balaton region is only about single environmental factors (e.g. the quality of water) and it misses a complex landscape approach.

12. An advanced Hungarian sample is the environmental integration model that is applied in the Hungarian National Spatial Development Concept 2005 and the Strategy of the Lake Balaton Region 2007–13. The model of these documents was set up according to author's professional experiences. It is possible to follow this model until an optimised sustainable spatial/regional planning system (see point 13) is applied. The elements of this model:

- Sustainability is represented among the basic principles of a plan, and is tailored for the given region.
- The plan contains regional-specific principles of the use of space (see point 15.).
- Objectives of establishing regional sustainability are set up in the strategy of the plan (usually vertical environmental objectives).
- All other objectives of the strategy of the plan (besides the above explicitly environmental) also contain sustainable concerns.
- The institutional concerns and the tools in the implementation part of a plan must contain the initiation of drawing a regional sustainability framework for the region, and must also fix the needs to set up a regional environmental and sustainability management. It is also important to have region specific sustainability indicators in the

case of a regional plan (some indicators that can be collected easily mainly from statistical publications are introduced by the author in the Strategy of the Lake Balaton Region 2007–13).

13. According to the author's conclusion a spatial/regional planning system can be drafted whose basic principle is sustainability (*named sustainable spatial/regional planning*).

- According to author's analyses, only a complex conception of sustainability comprising all the environmental, economical and social structures can serve as the basic principle of a region's development (vs. other paradigms e.g. competitiveness).
- The author also defined the term *regional sustainability*. From a resource-oriented approach it means that the internal resources (in a wide use of the term resources: from human resources to raw materials) of a region have to be exploited in the most effective and versatile way, and have to have the largest possible share in a given region's use of resources. A sustainable region keeps the streaming of material, energy and information inside its territory as long as possible and endeavours to close the cycles of these streams within its borders. A sustainable region does not exploit other region's resources in an unsustainable way, does not export its environmental, social, economical problems outside of its territory, it tries to solve them inside. The latter statement shows too, that sustainability is about the choosing of values. Sustainability is not an absolute system of values, its changing borders are set up by other less general paradigms (e.g. regional competitiveness). Besides these a sustainable region is always able to innovate.
- According to the author, the drafted system named *sustainable spatial/regional planning* aims to establish a region's sustainability. Interventions initiated by this planning are built on the carrying capacity of a region, they endeavour to eliminate the environmental problems of a region, and to serve the demands of the social and economical structures within environmental limits and within limits of the social and economical capacity. Interventions may take the form of recovery or of maintaining or establishing a territorial systems' sustainability.
- This sustainable spatial/regional planning system can be applied in the Hungarian and also in the EU legislation system (see figure 2). This system does not introduce new elements, only provides new functions and approaches to existing procedures with legal background.

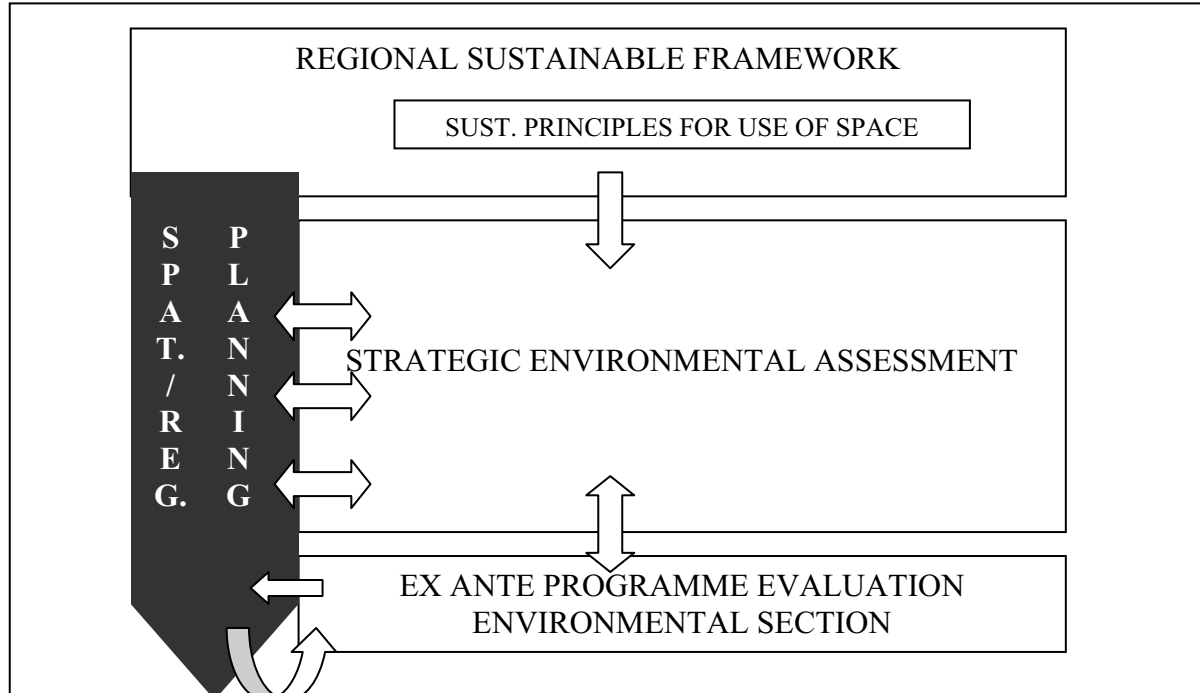


Figure 2: Relations between the elements of a sustainable spatial/regional planning system (Péti M. 2005)

14. The basis of sustainable spatial/regional planning system is the regional sustainable framework:

- Therefore, this planning process represents the longest planning cycle in a given region's planning system, however, it also needs regular monitoring and evaluation.
- The framework represents a region's sustainable values. Therefore, its planning and implementation have to be followed by wide partnership involvement, publicity and communication. In this way the framework can overtake many methodological requirements from the SEAs of single planning processes.
- The framework has no implementing system of its own, its realisation ensured through the sector and regional plans of a region. The sector and regional plans fit the frameworks' objectives and principles into their own planning documents (and into their own planning processes).
- The framework has a special way of analysis (and of setting up baseline) that is similar to landscape ecological analysis. This special analysis fixes the problems of the environmental structures of a region, the limits of the region's environmental structures against the demands of the region's social and economical systems, and finally it also defines the limits of the social and economical structures of the region against the demands of these two structures towards each other.

- The strategy of the framework sets independent (vertical) objectives for realising regional sustainability and horizontal aims (principles) for all sectors and for spatial/regional planning as well.
15. The principles of the framework for spatial planning are the principles for the use of space. Currently these principles (e.g. preferring brownfield investment, priority for non-individual or non-motorised transport development) are missing from both Hungarian *spatial planning (about building restrictions)* and regional development (*about social and economic regional development*). In case of the latter activity some positive examples have already appeared in the Hungarian Spatial Development Concept 2005 and in the Strategy of the Lake Balaton Region 2007–13. These examples were initiated by the author who has taken a leading part in both mentioned projects.
16. The second main part of a sustainable spatial/regional planning system is SEA procedure appearing in all planning processes of a given region.
- Obviously SEA methods and tools have to follow the efficient SEA solutions defined above.
 - In addition it is important that these SEAs can use the framework's relevant sustainability objectives, indicators and analyses.
17. The third main part of the sustainable regional/spatial planning system is the environmental section of the ex ante programme evaluation. This, similarly to the SEA, goes along each planning (programming) activity.
- The ex ante evaluation can serve as a quality assurance of the already complete SEA of the same plan.
 - In addition it can evaluate more precisely the possible environmental impacts identified during the formerly done SEA, and it can also define additional indicators.

4. Publications in the subject of the dissertation

- Péti, M.** (1999): Changing Approach towards Non-Native Species. [*only title published in English*]. in: ÖKO – Ökológia Környezetgazdálkodás Társadalom X/1-2. pp. 59-69
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- Péti, M.** (2005): A környezeti és fenntarthatósági megfontolások szükségessége és lehetősége a Balaton térség területi tervezésében [*no abstract published in English – Needs and Possibilities of Integrating Environment and Sustainability into the Spatial/Regional Planning System of the Lake Balaton Region*]. BALATON LIFE PROJEKT TASK 5, *Published on CD-ROM*
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