SUMMARY OF THE ECONOMY WORKGROUP OF THE KÉP PROJECT ABOUT THE AIMS OF THE RESEARCH CONDUCTED BY THE WORKGROUP AND THE RESULTS OF THE PILOT PROJECT (KIS-BALATON SUBREGION) DESIGNED TO TEST THE WORKGROUP'S RECOMMENDATIONS

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The methodology of environmental assessment

The key question of environmental assessment is how to quantify the initial status and the later changes.

The conceptual sphere of sustainability includes components of the material world and human relations that are quite diverse in nature, therefore, comparing them and demonstrating the quality and the extent of changes poses a serious problem.

The Economiy Workgroup, part of the KÉP Economy and Society Workgroup, aimed at systematizing the methods of economic evaluation and enumeration. Our conception has been worked out keeping sustainability in mind and knowing that on the one hand, according to the principle of sustainability, natural capital (stock) must be preserved, and on the other hand, income from the utilization of natural capital must be maintained ("flow" in economic sense).

The planned model is based on the PSR–DPSIR method of examination of the OECD, as it is an alternative well adaptable to local conditions and at the same time suited for international connection points.

The PSR model follows the processes from the effects on nature to seeking solutions. The indicators used belong to the following categories:
- The effects of human impact on nature (P – pressure). These include anthropogenic emissions and the other element of the „pull-pressure" effect, that is exploitation and consumption of natural resources.
- The state of the environment (S – State) in physical quantities, objective, measurable indicators.
- The responses of society aimed at reducing environmental impacts and negative environmental effects (R – Response).

The DPSIR model

The UNEP used the extended version of the PSR model, called DPSIR, for its State of the Environment Reports. The two additional categories are:
− Sectoral driving forces (D – Driving force), that trigger the processes creating pressure on the environment (human activities, production, consumption, transport, etc).
− Impacts created by the (changed) state of the environment (I – Impact).
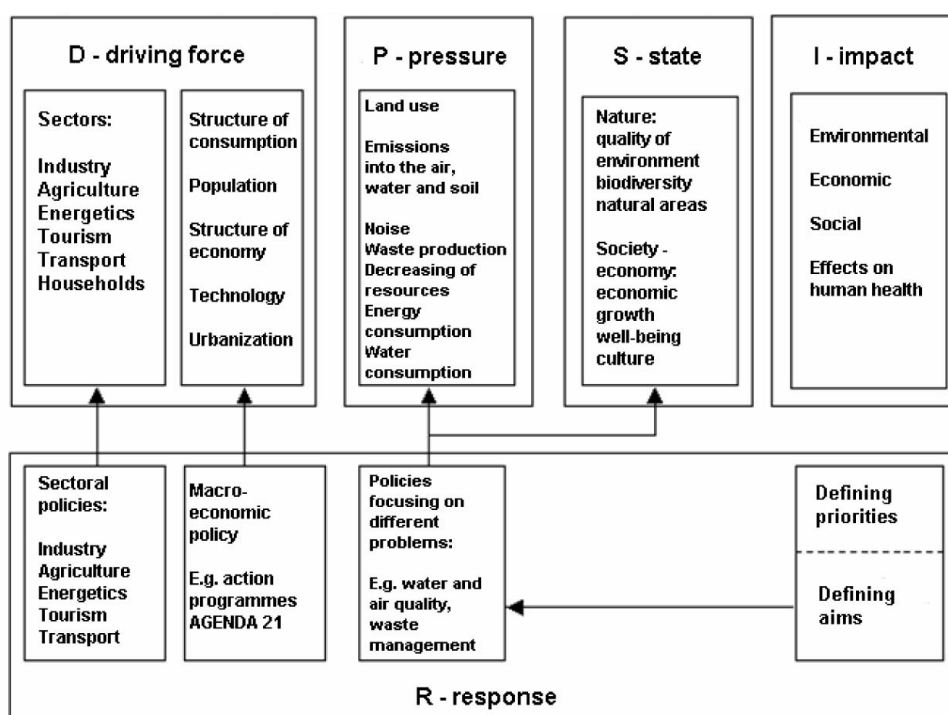

Figure 1. The DPSIR model (Szlávik, 2005)
1. ábra A DPSIR modell (Szlávik, 2005)

The DPSIR model is a more analytic approach than PSR, as it examines the causes and effects that bring about Pressure as „driving forces", since conventional „end of pipe" methods are not sufficient for implementing appropriate responsive measures.

Highlighting the impacts is important, because increasing pressure does not always mean that the increase in impacts will be proportionate. In addition, decreasing impacts does not necessarily improve the state of the environment.

During our research – also considering restricting factors – we extended our analysis to "Impact" (I), since the KÉP project aims to help in forming a basis for environmental policy responses by investigating the economic consequences resulting from changes in the state of the environment.

The economic analysis contained testing a model suitable for use in Hungary in connection with a regional pilot project. After negotiations between the workgroups, the Kis-Balaton region has been chosen as the sample area to present the method.

Investigating the connection between economy and environment, we have distinguished three types of regions that require the use of different methodologies:

1. Valuable natural areas.
2. Conventional rural areas.
3. Urban areas.

Valuable natural areas can be found in places characterised by high biodiversity. (In the region included in the pilot project, the valuable and strictly protected zone of the Kis-Balaton is such an area). Natural capital is valuable. Sustainable development of this area makes it necessary to preserve natural capital by enforcing the aspects of sustainability. Generating the income that is crucial for sustainable social development is also possible. (Sustainable tourism – ecotourism, or strictly controlled economic activity resulting from the National Agri-Environmental Program can contribute to this aim).

The entire economic conception of environmental capital must be taken into account while creating indicators.

There are several methods available for evaluating environmental capital (e.g. conditional evaluation, conditional ranking, restoration cost method, benefit transfer). These methods, however, require individual assessment, and their implementation is costly.

Based on the above, we have suggested an income-based evaluation that measures the change in environmental capital through its ability to produce recreational income. (This method is more simple and less expensive, but can only be used in conjunction with environmental capital evaluation.)

Conventional rural areas. The aspects of sustainable agriculture can only partly be enforced. These areas (in our case surrounding agricultural areas, holiday villages along the shore of Lake Balaton) are characterised by conventional agriculture and mass tourism. (Areas like Hévíz are in a special situation since they combine impacts characteristic for valuable natural areas and urban areas.)

Among the components of total economic value, recreation is dominant in case of direct in situ use, while ex situ use makes certain agricultural activities prevalent.

While developing agriculture, we must strive to create programs that point towards sustainability. (Changes of this type can be followed by subprograms, e.g. the indicator set of the National Agri-Environmental Program).

Urban areas. Industrialized areas, small towns can be found in the studied region (e.g. Keszthely). During economic analysis that is conducted from an environmental standpoint, the most important aspect is the classic issue of pollution (industrial, transport, commerce, infrastructural effects). The emphasis, therefore, must be placed on environmental damage and within that, on human health and the effects on the built environment. During the evaluation of natural capital, we have used the methods known from the literature, methods we have already used in previous research.

The pilot project – Kis-Balaton

During the research in the valuable natural areas of the studied region demonstrated through the example of Kis-Balaton we have undertaken to follow how income is generated in the form of recreational capital gains. We could not undertake to survey conventional rural and urban areas.

The examined region is one of Hungary's unique natural values. It needs to be emphasized that the point of our investigation was not to conduct an evaluation of the total economic value, but to develop an indicator system for valuable natural areas that fits into the KÉP project.

Historical overview

Until the end of the 18th century, no distinction was made between the Balaton and the Kis-Balaton, as the latter was part of the former. The flow of good quality water from the river Zala to Lake Balaton was made possible by the filtering effect of the marshlands in between. The change in water level of Lake Balaton can partly be attributed to the constuction of the Sió floodgate. Different water regulation works also contributed to the change by drying out even more areas. After the construction of the dams on River Zala the area remained dry even during floods. To provide the suitable conditions for the planned agricultural activity, a sewer system was constructed to decrease groundwater levels. This went on until the 1960's with no success. In the 1970's, the accelerated eutrophication of Lake Balaton reinforced the need for creating and reconstructing the Kis-Balaton Water Protection System.

The Kis-Balaton Landscape Protection Area (KBTK), founded in 1986 (currently part of Balaton National Park), has an area of 14745.3 ha of which 1403 is strictly protected (LÁNG, 2002). The protection was introduced mainly because of the rare and protected migratory birds, but its flora is also very rich. The primary objective is to preserve the fauna and to provide its conditions for survival. This is not always compatible with water-based professional activities (FENYVESI, 2005). The setup of the Kis-Balaton Water Protection System, that is seriously affecting the hydroecological system as a whole, started in 1992. The Kis-Balaton Environmental Protection Monitoring Program, which aims to examine and monitor the effects of water conservancy related investment on the ecological system, is operating in the area.

The methodology used in the analysis

During the analysis it was our goal to explore the changes in income and profitability related to the changes in the state of the environment – either in numeric form, or in trends (positive or negative) – in a valuable natural area, the Kis-Balaton region. To analyze the economic impact it is necessary to continuously collect and define measurable indicators. By comparing the time series of the information carried by the indicators collected at the right intervals it is possible to trace the effects of changes in the state of the environment on cash flow generated by using environmental capital.

The indicators must be chosen carefully (HARDI and ZDAN, 1997). It must also be made sure that the indicator:

– Carries relevant information
– Carries information that applies to current conditions
– Can help to compare the current situation with the original one (before the change)
– Can be collected continuously

The basic requirement is to meet these conditions. The content of the collected information is appropriate if it can be brought into connection with the natural area under survey. This can be achieved by defining system boundaries.

System boundaries, indicator groups

As mentioned before, the Kis-Balaton Landscape Protection Area (KBTK) covers a rather large area. Selecting the appropriate indicators cannot follow the geographical boundaries, their connection with the region under survey is much more important. The aim is to find indicators that provide relevant information about the income and profitability conditions that are based on the natural values.

The chosen indicators – based on their connection with the region – belong to one of three main categories, as shown in Table 1.

Table 1. The structure of the indicator system used in the analysis
1. táblázat Az elemzés során használt indikátor rendszer szerkezete

Direct indicators	Indicators in direct connection with the Kis-Balaton as a natural environment
Transitional indicators	Indicators in connection with the close environment of the Kis-Balaton
Indirect indicators	Indicators in connection with the extended environment of the Kis-Balaton or with its indirect effects

Direct indicators assign numbers to properties that can be brought into direct connection with the Kis-Balaton's natural values that is expressible by cash flow. With these properties the connections between the Kis-Balaton's natural values and the profitability conditions based on natural values can be expressed.

Indicators in direct connection with the Kis-Balaton Landscape Protection Area assign numbers to activities and properties that are directly connected to the lake system and the services it provides. These properties are the following:

– Income from reed harvesting (ex situ)
– Income related to fishing (ex situ)
– Cash flows in connection with collecting herbs in the territory of Kis-Balaton Landscape Protection Area (ex situ)
– Incomes of the researcher house (in situ)
– The value of the lake system's services (e.g. water for irrigation) (in situ)
– The value of the recreation provided by the lake system (in situ, proceeds of recreation)
– The incomes connected to angling (in situ, proceeds of recreation).

Direct index numbers supply the most accurate and valuable information about how the possible changes in natural capital can influence the incomes of local stakeholders and thereby their benefits as well.

Members of the transitional index number group mostly describe the close environment of Kis-Balaton, and are connected with the changes of natural capital indirectly.

The index numbers of tourism build up most of this group. Their indicator is the Kis-Balaton's natural attractiveness, though it is possible that the origin of the cash flows do not correspond with Kis-Balaton Landscape Protection Area (KBTK). Thus, these indicators can characterise the development of and changes in natural capital in an indirect way: through the effects on the tourism attractiveness.

The following indicators can be placed into this group:
– Income from tourism
– Products in connection with tourism (postcards, souvenirs), income related to selling them
– Other incomes coming from natural capital related economic activity

The third, and least specific kind of index numbers used for Kis-Balaton Landscape Protection Area (KBTK) natural assessment is the indirect indicator group.

The characteristics belonging to this group either have a weaker relation to the Kis-Balaton or the cash flows in connection with them can be presented only indirectly.

The most important indicators of the above mentioned group are:
– Benefits rising from the filtering function of Kis-Balaton Water Protection System,
– Incomes arise from the silt up handling in Keszthelyi-bay,
– Other indirect demand increasing effects.

As it can be seen from these facts, all of the selected indicators – according to the concept of total economic value – are aimed to quantify the information in relation to the personal use values of the natural resource. Between the index numbers information can be found in relation to the direct, as well as to the indirect use of natural resources.

The concept of the different indicator groups can be seen in Table 2 according to the facts mentioned.

Hereafter, the present paper summarizes one of the proposed indicators as a case study example, namely the analysis of the indicators measuring touristic activity.

Indicators of the examined area (example)

Cash flows of the tourism at Kis-Balaton

Activities that have got properly measurable material and cash flows (e.g. reed harvesting, fishing, angling) and the changes in the natural capital of the examined territory can be the best monetarised by applying the indicators related to tourism. However, these indicators – due to the fact that they are not directly connected to the Kis-Balaton, but rather to the services provided by it – already belong to the group of transitional index numbers.

Table 2. The concept of the applied measuring szstem
2. táblázat Az alkalmazott mérési rendszer koncepciója

Direct indicators	Transitional indicators	Indirect indicators
Incomes coming from the harvest	Incomes coming from tourism	Benefits coming from the pre-cleaning mechanism of the Kis-Balaton Water Protection System
Incomes in relation to fishing	Incomes arise form the selling of products strictly related to tourism	Indirect demand increasing effects
Angling	Other incomes coming from natural capital related economic activities	Incomes arise form silt up handling
Hunting		
Collecting and selling herbs		
Tourist incomes directly connected with the area of Kis-Balaton		

The attractiveness of a destination is related to the value of its natural capital that is shown by the number of visitors. In the methodology of environmental evaluation there are methods that try to evaluate the natural capital of destinations based on the idea mentioned above (e.g. travel cost method). This method was not applied during this examination because of its high demand on data and time. (The travel cost method has serious background and tradition in the US. Using foreign data from the travel cost method and quantifying it with the benefit transfer method is cheaper and requires less data).

Several tourist attractions and accommodations can be found close to the Kis-Balaton that make a living based on the close proximity and attractiveness of Kis-Balaton. Some sights among these: Csillagvár in Balatonszentgyörgy, regional historical exhibition and fire department museum in Vörs and the so-called Kis-Balaton House in Zalavár.

Naturally, it is quite hard to allocate those sights or institutes that owe their existence and functioning to Kis-Balaton, because e.g. it is not very simple to decide the exact rate of the incomes of a museum or other tourist attractions that are results of the existence of the Kis-Balaton. (Experts believe this to be one of the imperfections of the travel cost method, but this uncertainty can be decreased with the help of adequate correction.) The geographical marking (e.g. maximum x km from Kis-Balaton) is not enough either for selecting the establishments to consider.

The selection of accommodations strictly connected with Kis-Balaton Landscape Protection Area is problematic as well. In this case, the Hungarian Tourism Office or the Internet (e.g. in which accommodations can brochures be found on the Kis-Balaton, or the use of databases concerning this area intentionally etc.) may provide significant help.

The relevant information can be available (the number of accommodations, the working staff numbers on accommodations, or annual income) partly from the relevant data of Hungarian Central Statistical Office and partly from the personal pursuit of single accommodations, institutions. Problems may arise with availability of the elaboration data from Hungarian Central Statistical Office (understand it on a regional level), or the single institutions' attitude (the question of trade secret etc.), too.

The suggested data to examine and relying upon these facts the calculated indicators are the following ones:
– Accommodations at Kis-Balaton, the number of tourist attractions in the examined area
– The number of employees in the field of tourism in connection with the above-mentioned places or activities
– Annual income related to the above-mentioned facts

First, in connection with the pilot project the tourist attractions worth mentioning are:
1. Subregional historical exhibition – provincial house in Vörs (the so called talpasház ("footed house"): ticket prices (in 2007.) are the followings: adults 300 HUF/person, with discount 200 HUF/person, children (4–14 years) 100 HUF/person, with tickets from other exhibition attraction of the national park the entry is free. Traditional fishing tools being attached mainly to the folk piscatorial methods, the folk architecture of the landscape and the lifestyle of the marsh-dwellers in the moorland are shown in the exhibition open during summer time.
2. Kis-Balaton Visitor Centre in Zalavár: ticket prices (in 2007.) are the following: adults 250 HUF/person, students 100 HUF/person, adult groups 150 HUF/person, student groups 70 HUF/person
3. Csillagvár in Balatonszentgyörgy: formerly a hunting castle of counts Festetics, than functioned as prison, its star-like ground plan is unique.
4. Subregional historical exhibition – provincial house in Balatonszentgyörgy: besides the old building furnished with antique furniture, the collection of agricultural tools and a regional historical exhibition presents the history, past of the village.

Number of accommodations in the Kis-Balaton area

It is possible to find several accommodation opportunities in this area, but naturally according to the above-mentioned facts it cannot be declared that the arrival of visitors, guests due to only the natural beauty of Kis-Balaton (www.vendegvaro.hu, www.iranymagyarorszag.hu).
In Alsópáhok: 13 private accommodations + 3 hotels
In Galambok: 1 tourist hotel
In Garabonc: 9 private accommodations
In Zalaapáti: 10 private accommodations
In Zalavár: 2 accommodations

Additional data collection is needed to determine the number of employees and the incomes related to the tourism sector, the proposed indicators.

Incomes related to selling touristic products (e.g. postcards, souvenirs)

It is possible to meet several brochures and handouts about the Kis-Balaton area in different places in the examined territory, such as exhibitions or accommodations. For example: West-Balaton – Kis-Balaton map (Hungarian-German) 500 HUF/piece.
Subregional historical exhibition – provincial house in Vörs – "Tájak Korok Múzeum" series 200 HUF/piece.
Water Buffalo Reservation Centre in Kápolnapuszta – information brochure (in Hungarian) 200 HUF/piece, (in English and German) – 250 HUF/piece
Postcards: Kis-Balaton, Kápolnapuszta – Buffalo Reservation Centre 60 HUF/piece.
   The proposed index numbers are the following ones:
– number of sold touristic products
– incomes due to the sale of the above mentioned products.

Summary statements, conclusions, suggestions

In our examination, we came to the conclusion that the assessment of the adaptability of the proposed indicator, measuring system is reasonable from several points of view:

– It is reasonable to distinguish a subregion from two aspects: firstly the natural-environmental values, secondly the economic sector.
– It has been found that the applied measuring system, the categories of indicators are usable in the examination and evaluation of any significant natural area.
– It seems obvious that the set of indicators can only be applied in a limited way, and this fact was indicated, mentioned in the present paper. However, in case of wetland territories it is possible to apply without further ado. Based on our analysis it is recommended to classify the different significant natural territories and define different kinds of territories and, in relation to these, implement the adequate set of indicators in the future. Furthermore, verify beyond the examined examples the specific evaluation methodologies of different territories.

The applied indicator system can basically serve two aims:
– On the one hand, it can help to evaluate a territory on different time scale that can help us to follow the possible changes in its condition.
– On the other hand, this indicator system can be very useful to compare different territories, but in this case the development of an aggregated evaluation method may be needed.

This indicator system makes in fact sense, if it will be applied in every related project in the future, naturally after further improvement, particularising and refining. It is recommended to implement beyond the indicator system another group as well. This group can take into consideration all of the special characteristics of the examined local area; of course this group of indicators will mean the most subjective part of the evaluation.

In our examination, mainly the defining of different indicators and in case of qualitative or quantitative (the question if monetising is needed or not) indicators were problematic. Moreover, the difficulties of data collection (incomplete statistics, classified company data etc.) and the resistance offered to data collection are worth mentioning.

As a conclusion, it may be stated that the indicator system proved to fill up with data (obviously applicable for wetlands) and in case of implementing our suggestions for further development may be adapted for the evaluation of the change of conditions in every kind of significant natural territory, and furthermore the following up of economic consequences, incomes, earnings and benefits in relation with the examined natural area.

References

Besleme K., Maser E., Silverstein J. 1999: A Community Indicators Case Study: Addressing the Quality of Life in Two Communities. Redifining Progress, San Francisco.

Fenyvesi N. 2005: Egyedülálló vizes élőhelyünk, a Kis-Balaton bemutatása és környezeti értékelése. Diplomamunka. BME Környezetgazdaságtan Tanszék, Budapest

Hardi P., Zdan T. (eds.) 1997: Assessing Sustainable Development: Principles in Practice. IISD, Winnipeg.

Hart Environmental Data 1998: Sustainable Community Indicaators – Trainers' Workshop. Hart Environmental Data, North Andover MA.

HMSO 1955: First Steps: Local Agenda 21 in Practice: HMSO, Manchaster.

ICLEI 1996: The Local Agenda Planning Guide. ICLEI, Toronto.

ICLEI 2000: Measuring Progress – Cities21 Pilot Project final Report. ICLEI, Toronto.

KÉP Kutatási jelentések, szakanyagok, MTA-KvVM 2004-2007, Budapest MTA TAKI;

Lafferty W. M., Eckerber K. (eds.) 1998: From the Earth Summit to Local Agenda 21. Earthscan Publications, London.

Láng I. (ed.) 2002: Környezet- és Természetvédelmi Lexikon I. kötet, Akadémiai Kiadó, Budapest, p. 582.

OECD 2000: Frameworks to Measure Sustainable Development, OECD, Paris.

OECD 2000: Towards Sustainable Development: Indicators to Measure Progress. OECD, Paris.

Scott M., Colin M. (eds.) 1995: Sustainable Community Indicators: Guideposts for Local Planning. Community Enviromental Council, Santa Barbara.

Sustainable Measures 2001: Indicators of Sustainability. <http://www.sustainablemeasures. com/>

Szlávik J. 2005: Fenntartható környezet- és erőforrásgazdálkodás. KJK-Kerszöv, Budapest

A KÉP POROJEKT GAZDASÁGI MUNKACSOPORTJÁNAK ÖSSZEFOGLALÓJA
A MUNKACSOPORT ÁLTAL VÉGZETT KUTATÁS CÉLJAIRÓL ÉS A MUNKACSOPORT
JAVASLATAINAK TESZTELÉSÉRE LÉTREHOZOTT KÍSÉRLETI PROJECT
(KIS-BALATON SZUBRÉGIÓ) EREDMÉNYEIRŐL

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Kulcsszavak: környezetértékelés, teljes gazdasági érték, természeti tőke jövedelmezősége, DPSIR modell, értékes természeti területek, rurális területek, urbánus területek

Összefoglalás: A Közgazdasági Munkacsoport alapvető célja a KÉP projekt keretében olyan módszertan kidolgozása, amely alkalmas a természeti tőke elemeinek gazdasági szempontú értékelésére és ezen keresztül a természeti erőforrásokkal való fenntartható gazdálkodás megalapozására. A tervezett modell alapját az OECD PSR-DPSR típusú vizsgálati módszere jelenti, mint a helyi viszonyokra jól adaptálható, ugyanakkor nemzetközi kapcsolódási pontokra is alkalmas alternatíva.

A Gazdaság és Társadalom Csoporton belül a Közgazdasági Munkacsoport elemzései során a gazdasági értékelési és számbavételi módszerek rendszerbefoglalását tűzte ki célul, valamint a kiválasztott mintaterületen elvégzendő próbaszámítások elemzését. Elképzelésüket alapvetően a fenntarthatóság szem előtt tartásával dolgozták ki, mégpedig annak megfelelően, hogy egyrészt a szigorú fenntarthatóság elvének megfelelően a természeti tőkeállományt kell megőrizni, másrészt a területen élők megélhetésének biztosítása céljából fenn kell tartani a természeti tőke hasznosításából származó bevételeket. A gazdaság és a környezet kapcsolatát vizsgálva három területtípust különböztettek meg, melyek a következők:

1. Értékes természeti területek
2. Hagyományos rurális területek
3. Urbánus területek

Cél: a jövedelmezőségre gyakorolt hatás értékelése. (Az állapotváltozások milyen jövedelmezőségi módosulást eredményeznek a környezeti tőke használatában? A vizsgált jövedelmezőség változás a fenntartható jólét irányába mutat?)aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa

A vizsgálatok célja egy olyan indikátorrendszer kidolgozása, mely lehetővé teszi az értékes természeti területekhez, természeti értékekhez köthető bevételek, jövedelmezőségi tényezők feltérképezését, figyelembe véve a természeti tőke mérésének sajátosságaiból adódó körülményeket is.

A vizsgált terület a Kis-Balaton térsége, mely egyedülálló természeti értékeink közé tartozik. Hangsúlyozandó, hogy kutatásainknak célja nem egy teljes gazdasági érték elemzés elvégzése volt, hanem a KÉP programba illeszthető indikátor rendszer kidolgozása az értékes természeti terület kategóriáira vonatkoztatva.