A thesis submitted to the Department of Environmental Sciences and Policy of Central European University in part fulfilment of the Degree of Master of Science

The role of scenario development in environmental decision making

Sustainable development in the Lake Balaton region in Hungary

Case study: Environmental Protection Cooperation Model of Gyenesdiás

Master's thesis

Photos: Andrea Mag and Ágnes Kiss

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July, 2011

Budapest

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(3) For bibliographic and reference purposes this thesis should be referred to as:

Horvath, L. 2011. *The role of scenario development in strategic environmental decision making. Sustainable development in the Lake Balaton Region in Hungary. Case study: Environmental Protection Cooperation Model of Gyenesdiás.* Master of Science thesis, Central European University, Budapest.

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ABSTRACT OF THESIS submitted by:
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Month and Year of submission: July, 2011.

ABSTRACT

'Sustainable development' has been defined as a type of development that do not compromises the life of future generations while the needs of present ones are fullfilled. This however appeals to long-term thinking and responsible decision-making, neither being the strength of today's political agenda in Hungary. It is not only inherently challenging to think about the future and take steps today to achieve changes decades later, but it is also often against dominant political and economic interests and perspectives.

Recognizing the need to reform and inform policy making processes, scenario development has become a wide-spread tool for strategic environmental decision making. While traditional scenario methods appeal to the expertise of policy makers and scientists, there is an emerging trend to involve a wider range of stakeholders into scenario analysis, referred to as participatory scenario development. This emerging trend suggests that civil society representatives are a key factor in decision making processes. Although scenario development is not yet a widespread planning tool in Hungary, it is gradually gathering ground, especially at a micro level.

The primary aim of this work is to demonstrate that stakeholder involvment in decision making processes is necessary to achieve a paradigm shift in ecosystem management and to step on a sustainability pathway. The Lake Balaton Region – environmentally one of the most diverse, economically the most productive, and socially the most complex regions in Hungary – was identified as a suitable pilot area for the scope of the research since it has become a pioneer in the process of transition to sustainability. The secondary aim of this paper is to assess sustainable development challenges of the Lake Balaton Region and to explore the applicability of scenario methods to answer these challenges.

Besides a comprehensive literature review, a series of interviews were conducted with a number of experts and decision makers that helped to unveil the central finding of this work: the recent development of an Environmental Protection Cooperation Model by the civil society of the town of Gyenesdiás. This fully participatory inititiative has the potential to advance the creation of a Balaton-wide sustainability network recognized and supported by decision makers.

Key words: *sustainable development, scenario development, participatory backcasting, Lake Balaton Region, Environmental Protection Cooperation Model*

ACKNOWLEDGMENTS

I would like to thank Professor László Pintér for being an excellent supervisor, Tom Van de Voorn for providing valuable guidance in my research, my interviewees for sharing their time and knowledge, and Sarah Czunyi for her help in editing this work.

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"My interest is in the future because I am going to spend the rest of my life there."

- C.F. Kettering

1. Introduction

Mankind has always been obsessed with its future. From the consultation of oracles, through designing utopias, to scenario development, looking to the future has historically been part of human thinking.

Utopias can be imaginary, remote places with ideal social conditions, but they can also be the extension of what present societies might become within 50-100 years. While Plato, Thomas More, Rabelais or Fourier dreamed their beaming utopias in response to the decadence of their societies, from the 19th Century a new wave of utopists, such as Zamyatin, Huxley and Orwell, started to depict undesirable futures as a reaction to the unsustainable and destructive governance that took the lead over the contemporary world. In both cases the motive was similar: the anxious will to know and control the future (Mannheim 1996).

The cult of the future and faith in development are the two pillars of todays societies. The mythology of development closely relates to the world of utopias since it builds upon the belief that development is the path towards a happier and wealthier world (Taguieff 2001). Development is in fact the utopia of well-being, humans' marching towards better and quicker fullfillment of their needs. Development however does not only affect societies and economies, but the natural environment as well. As Teilhard de Chardin pointed out, the question is not whether development has grounds or not, but rather for how long it can continue without compromising life standards on Earth and the Earth itself (Taguieff 2001). De Chardin's thought is even more pertinent at a time when the world is facing a global ecomonic and environmental crisis. The questions is whether humans are able "to manage their activities in ways that address outstanding environmental and social threats, and avoid new ones" (Robinson 1990, 821).

This appeal for increased consciousness grew deep roots in contemporary environmental thinking and lead to the development of the term 'sustainable development' in 1987 by the World Commission on Environment and Development. It is referred to as a "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED 1987). Twenty years later however it was stated in the IPCC report (2007) that human activities are very likely to be responsible for causing severe changes in the climate patterns of the Earth resulting in global environmental challenges (e.g. water scarcity and abundance problems, severe pollution problems, increasing biodiversity loss) within a foreseeable future.

Despite blinking caution lights, most of the changes foreseen by IPCC can barely be noticed so far, sustainable development therefore remains the ploy of a small group of people. The reason for this is twofold: on the one hand it is inherently challenging to think about the future and take steps today to achieve a change decades later. On the other hand forward looking is often against dominant political will and economic interest, since it would call us to rethink our relationship to the world and to transform our social, political and economic institutions (Boda 2004). Such institutional changes however would imply a thorough assessment of future prospects that take into consideration long-term social, economic and environmental processes, and address the need for developing appropiate response mechanisms to them (Robinson 1990, 821).

Recognizing the need to incorporate forward-looking mechanisms into policy making, scenario analysis has become an increasingly acknowledged decision making tool given its potential to describe how the future might unfold under a certain set of present circumstances (Jager *et al.* 2007). These scenario methods are therefore well positioned to play a fundamental role in the transition to sustainability, since they allow forward looking decision making to be the basis of sustainable development.

A key question remains, however: how can scenario development lead to actions? Depicting possible futures is not enough, on the contrary it can backfire in certain cases and may invite decision makers to follow their current 'ostrich' policies. According to the findings of the 4th Global Environmental Outlook, "one of the major policy lessons from the scenarios is that there can be significant delays between changes in human behaviour, including policy choices, and their environmental impacts" (UNEP 2007). It is in fact one of the biggest challenges of scenario analysis, namely that scenarios developed by experts serve often as background documents only, rather than as solid frameworks for concrete actions.

There is however a growing trend in scenario research emerged as a response to the above described challenges, where not only scenarios, but the scenario development process as well is an integral part of the procedure, referred to as participatory scenario development (Bizikova *et al.* 2010). While traditional scenario methods appeal to the expertise of policy makers and scientists only, scenarios developed on a participatory basis involve a wide range of stakeholders. This method suggests that civil society representatives are a key factor in decision making processes, since their active participation and knowledge are necessary to reach sustainability in the long-term.

Although participatory scenario development is not yet a widespread planning tool in Hungary, it is gradually gathering ground, especially at a micro level. To offer a closer analysis of the problem, the research area was narrowed down to the Lake Balaton Region, a suitable pilot area for the applicability of participatory scenario methods to be tested versus traditional decision making practices.

As most natural environments, Lake Balaton, one of the richest ecosystems of Hungary, is also subject to the disruption of the equilibrium between nature and society caused mainly by the prevalence of short-sighted economic and political decisions. Lake Balaton and its surrounding ecosystem is increasingly sensitive to environmental changes and

external pressures. Changing weather patterns, low waste water treatment ratio, few renewable energy sources, ageing society, economic seasonality, and inadequate water management are all factors that contributed to the negative water balance occurred between 2000 and 2004, drawing to the attention of decision makers and the public that one of the most valuable ecosystems in Hungary is endangered (BFT 2010). As a response, the Balaton Adaptation Project was launched in 2004 in cooporation of the Lake Balaton Development Coordination Agency and the International Insitute for Sustainable Development in order to advance the understanding of the social and economic factors stressing the Lake Balaton Region and to strengthen adaptation measures (Pintér *et al.* 2008). It was found that those scenario methods are more likely to trigger policy level changes, that involve experts, decision makers and local stakeholders (Bizikova *et al.* 2010).

By virtue of the above findings, it is assumed that with top-down approaches only, the adaptation needs of the Lake Balaton Region in the face of environmental, economic and social instabilities cannot be fulfilled. It is particularly important that deep system-level adaptive solutions are created. The purpose of this work is to demonstrate that a local committment has to rise first, which will by its nature strengthen the decision-making side, and balance national policies with local adaptation needs. In order to substantiate this claim, this thesis work will attempt to do the following:

After presenting the challenges and opportunities of sustainable development from a scenario perspective focusing on the Lake Balaton Region, the knowledge on scenario development will be reviewed with an emphasis on participatory methods such as backcasting. To support the central arguments, the outcomes of a backcasting exercise conducted through a series of interviews with local, national and international decision-makers and experts will be presented. Finally, the applicability of scenario development methods to the Lake Balaton Region policy agenda will be analysed, focusing on local best-

practices. The recently developed Environmental Protection Cooperation Model – a grass-root initiative emegerged from the town of Gyenesdiás aiming to build a Balaton-wide sustainability network – form the backbone of this paper and will be subject to a closer analysis.

2. Sustainable development and the Lake Balaton Region

Water ecosystems are particularly vulnerable to even moderate external impacts, let them be changes in weather patterns or athropogenic factors. Due to its specific ecological, economic and social conditions, Lake Balaton[1] is considered highly sensitive to climatic variability or ill-managed developoment plans (Bizikova *et al.* 2009, BIFÜ 2007, BFT and BIK 2010). Hence, the Lake Balaton Region serves as an instructive pilot project, especially in terms of emerging changing environmental trends, and sustainbale development efforts in ecosystem management.

After a short introduction to sustainable development, the Lake Balaton Region will be presented from a sustainability point of view. Following this, the sustainability discourse will be engaged from a scenario perspective.

2.1 Introduction to sustainable development

It is said that 'the present is pregnant with the future'. This literary metaphor expresses exactly what sustainable development calls for: to understand that every single act today has a repercussion in the future. This fundamental truth is not recent; on the contrary it is the basis of traditional Eastern philosophy and of indigenous peoples' wisdom, namely the universal law of interrelatedness (György 2005). This philosophy took time, however, to gain ground in the western history of ideas. Until very recently, the Global North was yielding to the ideology of development – as described in the introduction – and it is only in the second half

[1] Lake Balaton is situated in the western part of Hungary and is recorded as the largest lake in Central Europe with a surface area of 593 km². With an average water level of 3-3.5m it is considered a shallow lake therefore it is increasingly vulnerable to natural and human impacts (BFT and BIK 2010).

of the 20 th century that alternative opinions started to be voiced. It is not in the scope of this work to closely analyse the development of environmental discourses, however it is important to mention some of the milestones marking the evolution of sustainable development.

The intellectual pedigree of sustainable development goes back as far as the nature conservationist movement at the end of the 19th century (Cohen *et al.* 1998). However, the first most significant work on the harmful effects of human interference with the natural environment was probably „Silent spring" by Rachel Carson (1962) who drew the attention of the public on the devastating impact of pesticides on the environment.

Ten years later came to light the reputed „Limits to growth" commissoned by the Club of Rome and written by Donella and Denis Meadows, Jorgen Randers and William W. Behrens III (1972) that was the first real slap in the face of economic development. The authors argued that the prevalent economic model did not take into account the carrying capacity of the planet, and that the growing global population and food production, heavy industrialization and pollution, coupled with the depletion of resources will only lead the world to a dead-end. The authors therefore called to the revision of these economic and social patterns and to the incorporation of sustainability values into economic processes.

In the same year, United Nations experts gathered in Stockholm for the Conference on the Human Environment[2]. They agreed that it is crucial to shape all actions with regard to their environmental consequences otherwise we might irreversibly harm our life-support system. The Stockholm Declaration (1972) was the first to call on the responsibility of current actions towards future generations, a concept that was later famously formulated in the 1987 Brundtland Report, and commonly called 'sustainable development'.

Sustainable development broadly means that human development can no longer be separated from environmental problems (Cohen *et al.* 1998), that is to say that the economy,

[2] As a result of the Conference the United Nations Environmental Program (UNEP) was funded to ensure environmental mainstreaming at a global level (Source: www.unep.org).

the society and the environment (the three pillars of sustainability) are closely interconnected. It also calls to the adoption of development strategies that allow the present generations to meet their needs today, while protecting and sustaining those resources that will be needed in the future.

In fact, major threats to the environment not only stand over the well-functioning of the ecosystems but also affect the societies and the economies depending on them. The recognized need for a holistic approach was incorporated into the Rio Declaration released in 1992, aiming to elaborate strategies to assess and possibly reverse environmental degradation, while also emphasizing the need to encourage public participation in the management of environmental problems. The Millennium Declaration in 2000 pointed to the future again by inviting the signatory nations to revise their current unsustainable patterns of consumption and production in the interest of the welfare of future generations. Today, however, it is the climate change discourse that is most obviously signaling that current economic and social trends are unsustainable, and calls for the consideration of alternative future directions (Cohen *et al.* 1998).

It is clear from the above mentioned milestones that global environmental governance has been increasingly recognizing the need for a more compound vision of today's problems and possible solutions. This however necessitates adequate tools "to help society translate sustainability from theory into practice" (Pintér et al. 2008). While it also requires decision making processes to be opened to innovative problem solving, as it will be presented later in this work.

2.2 Adaptive water management: development history of the Lake Balaton Region

Before becoming a popular tourist destination, Lake Balaton was not more than a water resevoir used for fishing and agricultural practices. It is only in the 19th century, with the introduction of steam navigation by Count Istán Széchényi that alternative use patterns started to develop. The first touristic boom occurred after the Treaty of Trianon in 1920 when Hungary's borders were greatly redefined and the previously geographically sparse tourism was suddenly concentrated to a unique location, the Lake Balaton (Oláh 2011). Visitors arrived from all around the country in quest of recreational activitites, while an increasing number of service providers and entrepreneurs covered the region with a variety of businesses. It is still noticeable that a large share of profitable businesses are not run by local people but rather by investors coming from the capital city or even abroad. Similarly a large number of houses are owned by vacationers complementing the relatively low number of local population (Oláh 2011). While these circumstances might seem favourable at a first sight, they are rather destructive from an evironmental perspective since they strengthen the seasonality of the Region, being one of the greatest threats to its sustainability[3].

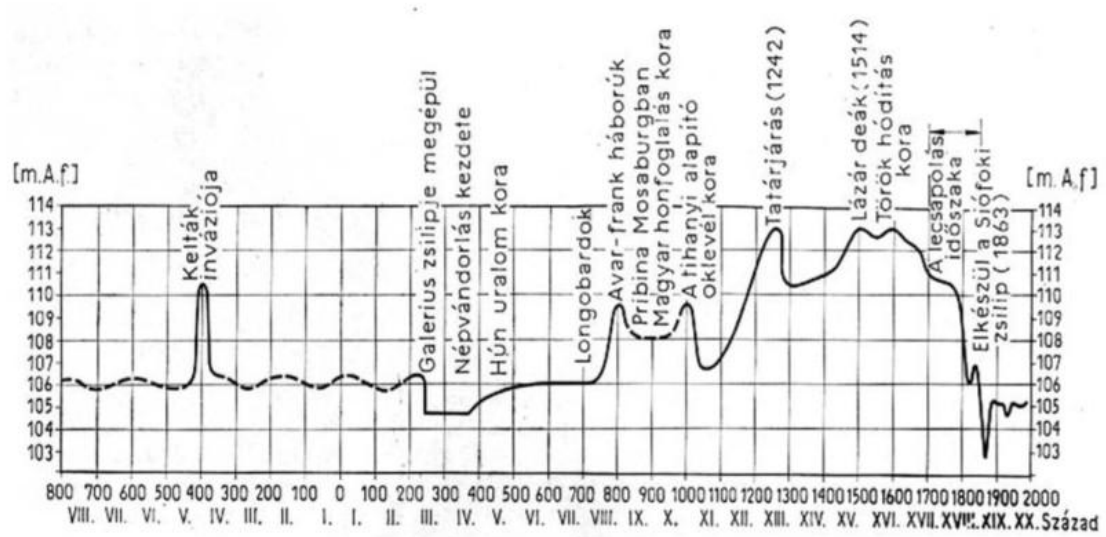
A series of measures were taken over the past forty years as a response to environmental and economic challenges of the Region. With the construction of a concentric sewage treatment plant around the lake, eutrophic inflows were minimized, while the protection of the shoreline has gradually become secured by construction moratoriums (Oláh 2011). In 2000 the Balaton Law came into force, a landmark in the sustainability of the Region, since it provides a comprehensive development plan for the 'Lake Balaton

[3] This question will be further elaborated upon in Chapter 5, however some of the main threats are the following: seasonality of economic activities, ageing population, water and urban management problems, climate change and lack of awareness and cooperation.

Recreational Area'[4], with regard to environmental aspects. Moreover, the Balaton Law can also be considered as a forward looking background document, encouraging socially responsible and environmentally sustainable political decisions.

As mentioned in the beginning of this chapter, water ecosystems are very sensitive to climatic changes, particularly to temperature variations and changes in precipitation patterns, which affect the quality and quantity of a water body. In parallel with global changes, the climate in Hungary is also expected to change and to become a Mediterranean-like climate, with milder, rainy winters, and hotter, drier summers. However an increase in winter precipitation is not likely to balance the summer aridity, therefore the overall precipitation is expected to decrease affecting the natural evolution of our water bodies (Nováky 2007).

Climatic variations however are not unknown to the Hungarian history: the below graph represents the fluctuations of the water level of the Lake Balaton from 800 B.C., which occurred in response to environmental circumstances.



Graph 1: Fluctuation of the water level of the Lake Balaton from 800 B.C. Data compiled by: Bendefy, L. 1965
Source: Nováky, 2007.

The water level[5] in the Balaton however was not only sensitive to natural variations, but also to human intereferences (Oláh 2011). Romans, for example, built an entire drainage

[4] 'Lake Balaton Recreational Area' is the name of the official development region.

system where the town of Siófok lays today, in order to protect their military roads from possible floods. Another example was the aim of Maria-Theresa to fully drain the Lake Balaton at the end of the 18th century because she wanted to extend agricultural fields, while constructing a ship-canal linked to the Danube (Oláh 2011). Fortunately this latter plan was aborted and the Balaton remained intact. It is only in 1863 that a wooden, then in 1891 an iron, sluice gate was built in the estuary of the Sió canal with the aim to regulate the fluctutation of the water level in the Lake Balaton and avoid extreme floods and droughts situations hindering the development of the shorelines and of shipping activities.

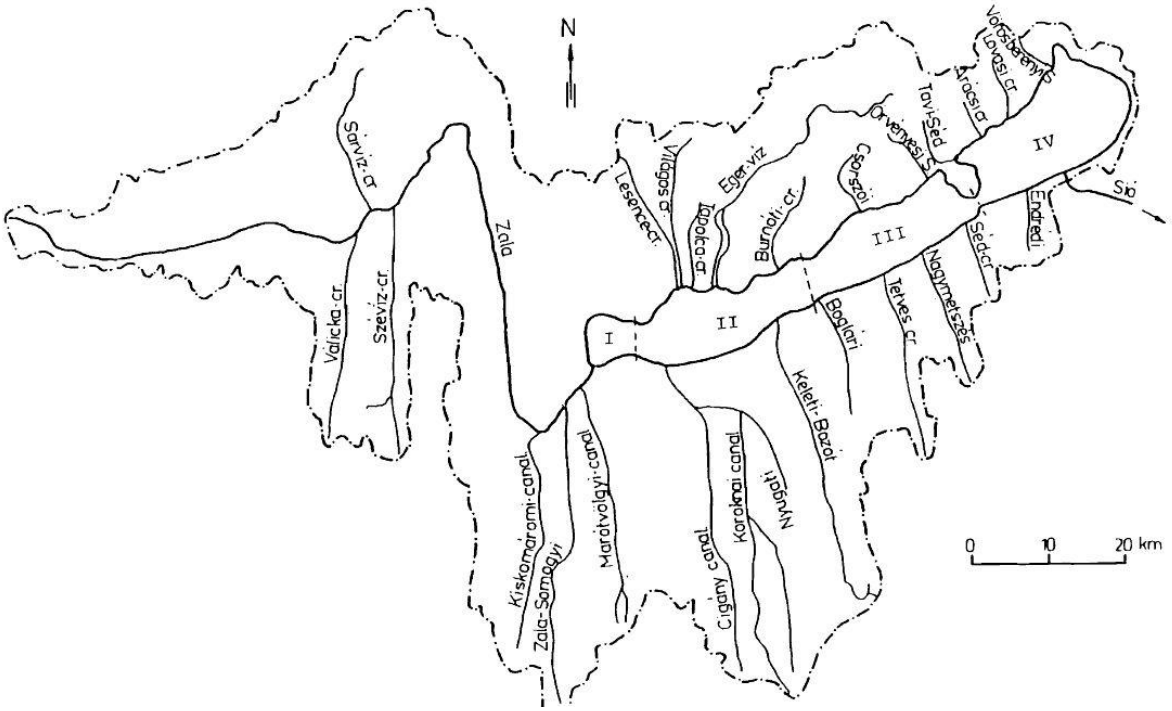


Figure 2: Catchment area and river system of the Lake Balaton, covering an area of 5200 km² **Source:** Straten *et al.* 1980, BFT and BIK 2010.

The Sió sluice gate largely determines the water balance of the Lake Balaton and has proven to be indispensable in managing it vis á vis changing weather patterns. In fact, in more recent history, the Lake Balaton has experienced both very humid and very arid seasons, when the water level had to be severely controlled. In 1965 for example 1.08 billion m^3 of

[5] The water level of the Lake Balaton is measured in correlation to the point '0' of the water gauge of Siófok. This latter is set to the minimum required water level in Balaton being 70 cm which is equivalent to an avarage water depth of 3.13 m. The maximum allowed water level is 110 cm. (Source: http://www.krudy-siofok.hu/balaton_vizszint.html)

water had to be sluiced through the Sió canal to avoid floods, while due to the extremely arid weather occurred in the beginning of the 21st century, the sluice gate was kept closed for more than five years to keep the water in the Balaton (Oláh 2011 and Bizikova *et al.* 2009).

The negative water balance that occurred in the period of 2000-2004 was a dramatic issue in the history of the Lake Balaton ecologically speaking. It also drew the attention of decision makers and stakeholders that one of the most valuable ecosytems in Hungary, the second largest lake in Europe is endangered. Facing these unexpected water management challenges, the question was raised whether the governance of the Lake Balaton Region is ready to cope with climate change and to develop adaptation pathways (Pintér *et al.* 2008).

In fact, the climate change discourse has recently called for greater attention to the impacts of extreme weather events, and to the need to review current management practices and develop new ones that allow long-term sustainability of natural resources (Pahl-Wostl *et al.* 2009). According to Pahl-Wostl *et al.* (2009) largely irreducable uncertainties associated with climate change and the overall complexity of water ecosystems call for adaptive strategy development that enhance their adaptive capacity, while also allowing human development in the long run. For adaptive strategy development, it requires stakeholders and decision makers to learn about the complexities and uncertainties with regard to the ecosystems to be managed. Such a 'learning-by-doing' approach would be a way to reduce complexity as source of uncertainty. At the same time, adaptive strategy development implies to constantly evaluate and refine the strategy according to new insights into the effectiveness of implemented actions and newly produced information about these systems.

It became clear that a paradigm shift has to occur in the field of water resource management to allow the substitution of the current "prediction-and-control approach dominated by technical end-of-pipe solutions" (Pahl-Wostl *et al.* 2008) with long-term but resilient management practices able to answer to unpredictable changes. As a result of

increasing uncertainties and the urging need for adaptive responses, a new governance style has emerged recognizing the need to match policies with local adaptation needs (Pintér *et al* 2008).

This reformed governance appeals for a less hierarchical, and more integrated approach allowing local stakeholders to be involved in the decision making processes (Bizikova *et al.* 2010 and Pahl-Wostl *et al.* 2008). It is becoming widely acknowledged that with the participation of non-state and civil actors, more adaptive and sustainable plans can be developed since they rely on local knowledge and commitment which are not replaceable with any policy level engagement, while through their improved quality of life, the quality of their natural environment will also raise (Bizikova *et al.* 2009).[6]

2.3 The Balaton Adaptation project (BAP)

As a response to the above stated water shortage and water quality problems occurred from 2000-2004, the Lake Balaton Development Coordination Agency together with the International Institute for Sustainable Development and the United Nations Environmental Program developed a project – the Balaton Adaptation Project (BAP) – aiming to improve knowledge on the ecology, the economy and the society of the Lake Balaton Region. It also aimed to contribute to the development of adaptation measures and improved policies (Pintér *et al.* 2008).

[6] The necessity to involve local stakeholders in water management was recognized at the EU level too with the adoption of the"Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy" or EU Water Framwork Directive (WFD) in 2000 which calls, amongst all, for the involvment of citizens in water management programs.
(Source: http://ec.europa.eu/environment/water/water-framework/index_en.html)

Besides strengthening decision making processes by merging local needs within national policies, the project has several peculiarities that make it unique in the development history of the Lake Balaton.

Firstly, the BAP aimed to identify local trends and to translate them into measurable terms. For this purpose a set of sustainability indicators (ecological, economic and social) were developed in order to assess progress at a local level, while identifying future goals, formulate sustainable solutions, and invite local stakeholders to take action (Pintér *et al.* 2008). Secondly, a series of scenarios – based on the existing global scenarios of UNEP and IPCC reports – were created in order to demonstrate how the future of the Balaton might unfold under a set of given circumstances. Thirdly and most importantly, adaptation pilot projects were conducted through a series of workshops with the participation of the civil society, local government representatives and experts of the Lake Balaton Region, where the above scenarios where discussed and possible adaptation and mitigation schemes were identified.

Two of the main findings of the workshops relate closely to the central question of this paper:

- "Promote sustainable development through projects that reintroduce traditional local knowledge and practices"
- "Promote education, training and information dissemination between local populations, non-governmental organizations, decision-makers and businesses on how to integrate responses to climate change into their development decisions." (Bizikova *et al.* 2009)

The initial hypothesis of this work is that the integration of local knowledge, local networks, and local stakeholders in decision making processes is what is required to achieve

the necessary paradigm shift in ecosystem management and to step towards a sustainable future. Moreover it is also hypothesized that scenario analysis is an adequate tool to advance the sustainability of these participatory measures, since while they provoke thinking about the future, they also point to necessary actions to be taken in the present in order to realize the most desirable future scenario (Creech *et al.* 2009).

In order to demonstrate the viability of this hypothesis, the knowledge on scenario development will be reviewed in the next section, with a special focus on participatory methods. Then, the outcomes of a series of interviews – conducted with Hungarian and international experts and decision makers – will be presented to support the applicability of the hypothesis to the Lake Balaton Region. Finally, two local best practises will be subject to a closer analysis whereby it is shown that their success lays in their ability to adapt policy decisions to local needs through the active involvment of civil society.

3. Scenario analysis: focus on participatory methods

Growing evidence on the disruptions that humans cause to the environment and on increasing social disparities has shown that 'business as usual' scenarios have become a risky choice. In order to pull the world through the environmental break-down, unprecedented innovative approaches emerged, aiming to rethink mainstream economic theories and to foster a transition to sustainability. The biggest challenge is in fact not the collection of further data, but the development and implementation of new policies and practices that are based on a collective commitment to a sustainable future (NEAA 2009).

As presented in the previous chapter, sustainability presupposes a systems approach, and calls for the protection of present conditions with respect of future generations. Thinking in the future and shaping consumer decisions accordingly is however an inherently challenging excercise that demands external guidance. It is therefore necessary to develop new perspectives, alternative futures that are acceptable and accessible.

Recognizing the need to reform decision making processes, forward looking analysis of economic, social and environmental trends has become a widely acknowledged decision making tool given its ability to picture how the future might unfold under a set of present circumstances. Scenarios are however not predictions, they are rather descriptions of possible futures and of factors playing a role in the formation of these futures (Jager *et al.* 2007). Scenario methods are therefore well positioned to play a fundamental role in the transition to sustainability, since they allow forward looking decision making to be the basis of sustainable development.

In the present chapter a short introduction to scenario development will be given, followed by the presentation of two mainstream scenario methods: forecasting and

backcasting. Finally a close-up will be made on participatory scenario development with respect to the Lake Balaton context and the hypothesis of this paper.

3.1 Introduction to scenario development

Life is characterized by a plethora of uncertainties which by their nature are impossible to predict. It is impossible to predict with 100 per cent of certainty future weather patterns, agricultural yields, population growth or energy use. It is however possible to make assumptions about the evolution of these systems based on their previous results and to draw conclusions in form of future scenarios. This is exactly what scenario analysis stand for: to explore possible development paths and their future consequences (NEAA 2009).

Mortsch *et al.* (1996) argues that scenarios are not simple forecasts, they are rather pictures of possible futures, 'what if' situations, to explore the future implications of our present life and to understand the sensitivity of our environment to these implications. Due the many uncertainties however, it is difficult to determine which scenario best suits the development needs of a Region, nor can be determined their probability of occurrence. However through scenarios, thinking can be provoked about the future, and about how the most desired scenario can be reached. (Mortsch *et al.* 1996)

3.2 Forecasting vs. Backcasting

According to Robinson (1988) future studies are based on the following axioms: (1) "predictions can be made about the future with a varying degree of confidence" by studying past and present data, (2) "the future is to a large degree a function of choice and behaviour in

the present, both of which may be influenced one way or another by predictions and other thinking about the future." In fact, future events greatly depend on present conditions and decisions, and the understanding of this cause and effect relation is essential in future studies.

Based on the above, we can assume that the future is not yet written but remains to be designed, a distinction between probability and desirability however has to be made. In fact, taking for granted that we cannot foresee the future, we can only make predictions and assumptions about what might happen. Moreover we can also depict desirable futures, independently from probabilities, and then define the path that will lead us there. This difference draws the basic distinction between forecasting and backcasting. As a matter of fact, "the most likely future may not the most desirable one" (Robinson 1988) however both techniques are essential in decision making processes since it is indispensable to know both the likeliness and feasibility of future prospects.

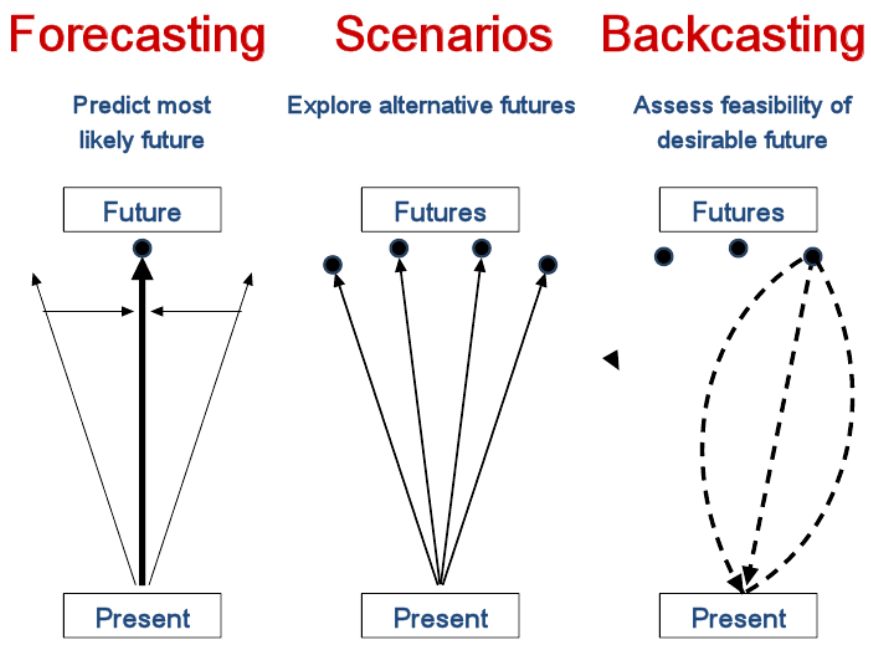
Forecasts however has to be dealt with precaution in decision making since by their predicitive and scientific nature invite policy makers to fully rely on them. This however opens a catch 22 and secures the perpetuation of a range of ill-considered decisions. Decision making has therefore to be coupled with backcasting techniques allowing the consideration of alternative development paths as well (Robinson 1988). In contrast to forecasting that develops futures based on present conditions on a medium term, backcasting invites us to design a future scenario based on our values and overall goals on a longer term. Moreover it gives a framework of understanding about what might happen tomorrow (Monbiot 2006).

In any case, the feasibility of backcasting scenarios has to be tested by coupling it with the necessary steps to be taken from now on in order to reach the desired future outcome. Backcasting therefore relies on choices rather than on predefined actions (Robinson 1988). This freedom of action is the greatest challenge and opportunity of mankind, since it allows

the full determination of its the future, which in an era of environmental uncertainties, is not only a great possibility, but a necessity.

In fact, the main question today remains wether humans are able to manage their activities in a way that do not aggravate the present environmental and social threats or create new ones, but rather mitigate them (Robinson 1990). In this sense, backcasting exercises are helpful tools that allow a better appreciation of future prospects in terms of their desirability and feasibility, as well as in terms of the necessary measure to be taken to achieve the desired goals. In this sense, backcasting is a suitable decision making tool since it fosters the formulation of policies that are better adapted to current trends and needs.

It is clear at this point that scenario development, forecasting and backcasting are all useful in different ways and can effectively complement each other. Scenarios for instance are well-suited to foster the understanding on the future of a system by studying a range of possible futures and associated risks. Forecasting allows the prediction of the most likely future based on available data and knowledge. While through backcasting the path towards the most desirable future can be explored. These differences are indicated on Graph 1 below.



Graph 1: The purpose of backcasting, forecasting and scenario development. **Source:** John Robinson

As per the outcomes of an expert workshop[7] on backcasting held in Budapest, Hungary, in March 2011, it can be concluded that the various scenario exercises have become central tools of environmental decision making. By their nature of providing a systems approach to environmental problems, scenarios can foster the transition to sustainability.

The below table summarizes the basic roles of backcasting and forecasting methods.

FORECASTING	BACKCASTING
Do not fully account for the complexity of systems and uncertainties.	Well-suited for a systems approach.
Projective by nature, using trend extrapolation, i.e. forecasts possible futures.	Normative by nature, design desirable futures.
Reliability secured in the short-term and in case of well defined and relatively stable systems.	Works on a long-term time horizon, identify priority actions to reach desired goals.
Relies on dominant trends, therefore unlikely to generate solutions that break these trends.	Emphasises the importance of 'unlearning' about existing dominant views, that current trend are broken.
	Effective communication tool in addressing uncertainties and mobilize public opinion, opens windows of opportunities for improved policies and decision-making processes.

Table 1: Main distinctive characteristics of forecasting and backcasting

3.3 An emerging trend: participatory scenario development

There is an emerging field in scenario analysis that besides expert participation suggests the involvement of a variety of stakeholders in the scenario process. It is considered

[7] "Building Bridges from the Present to Desired Futures: Evaluating Approaches for Visioning and Backcasting" Workshop organized by The Integrated Assessment Society with the participation of a wide range of international backcasting experts. [http://www.tias.uni-osnabrueck.de/backcasting/workshop.php]

to have a huge potential in fostering the transition to sustainability by its participatory nature harmonizing socioeconomic and environmental goals (Kok *et al.* 2007). Referred to as second order backcasting (Robinson *et al.* 2011) or participatory scenario development (Bizikova *et al.* 2008) it is based on collective development of desirable futures scenarios and their joint appreciation leading to increased social learning and increased ownership by participants (Robinson *et al.* 2011).

Moreover participatory processes also enhance legitimacy and accountability, while expanding the issues with a wide range of local aspects and values. In addition participatory methods can strengthen cohesion within a community by defining shared visions and goals, while providing decision makers with guidance in the development of their future policies. Finally common thinking can inspire stakeholders to take actions and forge the future of their environment. Which, if successfully done, may lead to the institutionalization of best-practices (Quist 2008).

In fact since environmental challenges are commonly created, a sense of ownership should be developed in each and every stakeholder. Therefore involving non-state actors and individuals is a key in problem solving and might be rewarding at a long-term. It is able to challenge the mainstream perceptions of problems and to focus on solutions better adapted to local needs (Kok *et al.* 2007). Environmental policy has therefore to enter the domestic sphere, and decision makers should provide the necessary action framework for citizens to become active actors of the transition to sustainability (Söderholm 2010). However local stakeholders should not be used for the only sake of legitimizing externally defined priorities. On the contrary there is a need for shared responsibilities achieved through the development of genuine participatory processes where local stakeholders are provided the opportunity to influence decision making (Robinson et al. 2011). Such participatory processes should outline

the right and duties of all stakeholders at the various levels of involvement, as outlined in Figure 2 below.

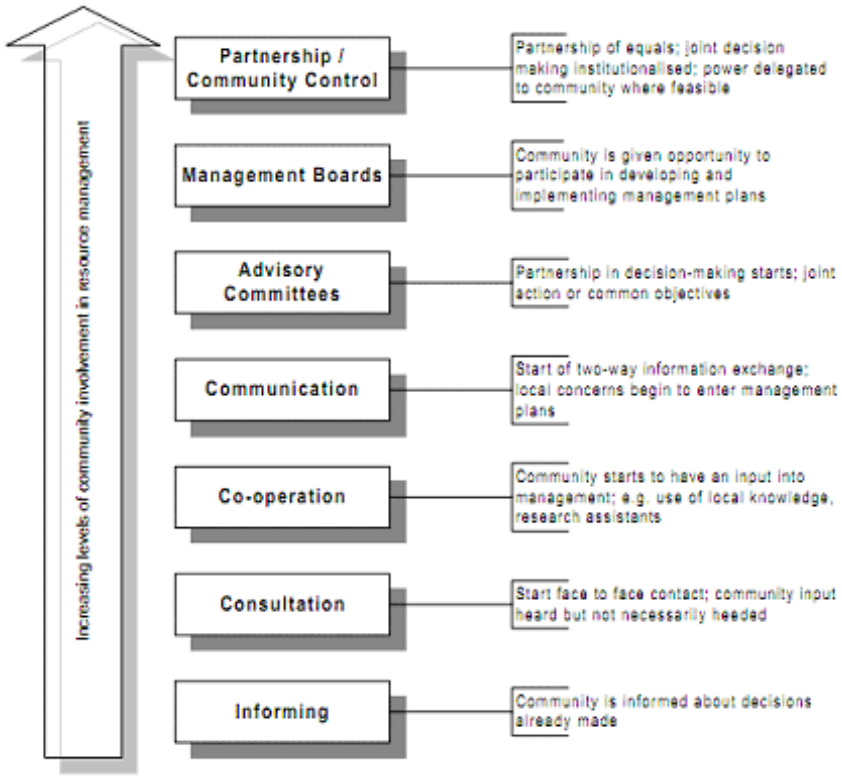


Table 2: Levels of community involvement in decision making. **Source:** Murphee 2000.

Stakeholder participation in decision making processes can therefore generate great rewards on the long run. It allows the formulation of more relevant and effective policies and foster more successful implementation (Tansey *et al.* 2002). Although participatory scenario methods are not yet widely used in the Lake Balaton context, they are increasingly recognized among policy makers. Before presenting two successful projects implemented through participatory methods, an attempt will be made to explore the perception of Hungarian experts and decision makers on scenario methods and their applicability to the Lake Balaton policy agenda.

4. Scenario development in the Lake Balaton Region

To support the central arguments of this paper presented above, a series of interviews were conducted between May-July 2011 with a variety of experts. The primary aim of this exercise was to assess the knowledge of Hungarian decision makers and environmental policy experts on scenario methods and their applicability to the Lake Balaton Region, while gathering data and up-to-date information on the development of the focus area. A secondary goal of the interviewing process was to reach out to key national and international experts on the field of backcasting, in order to back up the findings of this research with best practices.

Prior to the interviews, a series of basic questions were developed (Appendix 1) that were adapted to the interviewees' background and knowledge. In total, 13 experts were interviewed (Appendix 2) with the following distribution:

LOCAL DECISION MAKERS	LOCAL EXPERTS	NATIONAL DECISION MAKERS	NATIONAL EXPERTS	INTERNATIONAL EXPERTS	**TOTAL**
2	4	2	2	3	**13**

Table 1: Composition and number of interviewees

In general, the questions aimed: (1) to develop a deeper understanding of short-term versus long-term political thinking; (2) to improve the knowledge and understanding of the development history of the Lake Balaton Region; and (3) to draw the interviewees' attention to scenario development, with a special focus on participatory methods. The interview process also aimed to open the floor to discussion of the potentials and limitations of the use of scenario methods in the Lake Balaton context, and to set the stage for futher research in this field.

It is important to mention that it is through the interviews that the main finding of this paper came to light: the Environmental Protection Cooperation Model of Gyenesdiás –

developed through civil participation and with the support of local stakeholders – that will be presented in more details in the next chapter.

4.1 Barriers to long-term political thinking

As already mentioned in the previous sections, global environmental challenges call us towards long-term thinking, however in the field of everyday politics, short-term and medium-term plans are dominant. This section summarizes how the main drivers of political decision are perceived and how they relate to sustainable development goals according to the interviewed experts.

According to Horváth (2011) the main reason for prevailing short-term thinking is the dominant social model. He argues that consumerist and prosperous societies can be realized in the long-term only in a handful countries due to the limited amount of available environmental resources. However, most of the nations consider these few economies as exemplary, leading to short-sighted decisions and huge environmental burdens at a global level. Oláh (2011) also argues that it is crucial to think with a systems approach understanding that social, economic and environmental processes are strongly interconnected. So argues Robinson (2011), and adds that the human factor of this equation is the strongest one, since people's decisions are fully able to make a difference.

Bizikova (2011) comes to this conclusion from a historical point of view. She argues that one of the major barriers to long term thinking in Hungary was elevated by the communist regime, since people were indoctrinated to believe that the political elite will take care of their future, therefore they have not developed the necessary skills for forward looking. Bizikova believes that the past twenty years were necessary in order for people to

develop a sense of ownership for their social and natural environment, and that substantial changes can occur only after going through this social evolutionary process.

Both Jávor (2011) and Illés (2011) highlight the sad truth that the power of economic interests remains stronger than environmental ones, and that although most of the decision makers agree in theory that environmental issues should prevail over economic profits, short-term financial opportunities take usually the lead. Illés also points to a fundamental deficiency of politics, namely the lack of visions. Policy makers might not have developed a visioning ability, or might lack the necessary information and knowledge that allows forward looking. The lack of knowledge coupled with the prevalence of political and/or economic interests together lead to biased and shortsighted political decisions, Illés also argues. Jávor goes further by questioning the functoning of decision making mechanisms and says that Hungary is not ready yet to formulate policies along long-term visions.

Ruzsics (2011) gives a financial explanation to the prevalence of short-term decisions. He points out rightly that green policies often have a huge financial implication that prevents their achievement since usually a relatively small share of the national budget is allocated to environmental purposes, thus hampering even the best environmental development plans. Moreover, he also recalls that the environment is in constant change and there is a huge uncertainty about how the future might unfold. Therefore even the most precise long-term scenarios need to be readjusted from time to time, which invites decision makers to aim for the achievement of smaller, foreseeable goals.

A similar argument was presented by Herodek (2011) who said that it is very difficult to predict what will happen in the next decades. Forecast are by definition projective since they rely on historical data extrapolated into the future (Quist, 2008). They have to account however for a very compex set of circumstances which makes forecasting problematic. While according to Novaky (2011), it is unfortunate that future studies are not well recognized in

Hungary since it is also one of the reasons why people are not able to develop long term, responsible and sustainable goals.

Egerszegi (2011) believes that one of the main reasons for short term political thinking is the length of political cycles, since policy makers usually take responsibility only to the extent of the actual cycle and not further. So too argues Zlinszky (2011), and they both emphasize the lack of cooperation, as one of the main handicaps of the Hungarian society.

In conclusion, the barriers to long term political thinking identified by the experts can be categorized as follows (Table 2):

- *social barriers* (due to the dominant social model, uncertainty, lack of information and knowledge, lack of willingness to cooperate)
- *economic barriers* (due to economic interests prevailing over sustainability needs, disproportionate budget allocation)
- *political barriers* (due to historical determinism, lack of visions, decisions made according to political cycles, dominant management paradigms).
- *institutional barriers* ('institutional inertia', existing institutions may not be effective to overcome present or future challenges)

BARRIERS TO LONG-TERM THINKING	- dominant social model - correlation between economy, society and the environment not recognized - prevailing political and economic interests - lack of visions - lack of information and knowledge - inappropriate budget allocation - uncertainty - length of political cycles and decisions made according to them - lack of cooperation among stakeholders - historical determinism - institutional inertia - lack of knowledge on and recognition of future studies

Table 2: Summary of the barriers to long-term thinking as stated by the interviewees

Above all, the main barrier remains the lack of understanding that the economy, the society and the environment cannot be treated in isolation; on the contrary, they are deeply interrelated and are mutually affecting one another. Interrelatedness is the very basis for long-term thinking and sustainable development, however this requires a deep, system-level change in order to be realized.

4.2 Sustainable development challenges

As water ecosystems in general, and lakes in particular, the Lake Balaton is also very susceptible to external impacts, let them be human induced or natural ones. One of the biggest threats to a lake ecosystem is eutrophication caused by excessive input of organic materials. The Lake Balaton went through a severe eutrophication process beginning in the 1970s, which demanded long lasting and focused efforts to save this valuable water body from fatal human interference. It took 30 years of endeavor by a dedicated expert team to prevent further degradation and reverse the vicious cycle (Herodek 2011). The eutrophication of the Lake Balaton however is a well defined problem for which concrete solutions can be designed. Unfortunately, not all environmental challenges are so well-defined and managable. In fact, many of the contemporary problems emerging in the Lake Balaton Region are more complex and would therefore require more complex problem solving as well.

According to the majority of the interviewees, the biggest threats to sustainable development in the Lake Balaton Region do not directly origin from the environment, but rather from human presence. Horvath (2011) argues that it would be crucial to achieve a radical change in the recreational culture of visitors to achieve any semblance of 'sustainability'. He suggests that the currently dominant 'party culture' should be fully replaced by services and development policies in line with environmental standards. It is in

fact a huge problem today that the Balaton is overexploited both environmentally and economically during the summer months, and is then left aside for the rest of the year. The tourist and service provider invasion inflicts a huge temporal burden on the Region in the high season, and leaves an economic vacuum behind in the low tourist season with a weakened ecosystem waiting for renewal (Oláh 2011). This is not an economic problem only, however, but a social one too. Due to the lack of long-term working opportunities in the Lake Balaton, young people desert the region in quest of better prospects, while the remaining population is ageing at an alarming rate (Oláh 2011). The seasonality of tourism and employment opportunities is therefore one of the greatest problems in the Lake Balaton context. It is however very challenging to break this trend, since in order to achieve this, the whole image of the Region should be reshaped, giving place to more environmentally-friendly services offered throughout the year.

Another significant problem is the division of the Lake Balaton Region between three official development regions of Hungary, which not only inflicts huge administrative burdens, but also hinders the willingness of stakeholders to cooperate (Egerszegi 2011). According to Egerszegi it would make a real difference if the Lake Balaton Resort Area would be uniformly managed and if one regional institution would be responsible for the distribution of funds and approval of development plans. Such an institutional background would foster the cohesion of the Region. Bizikova (2011) however argues that a unified Balaton Region would not necessarily solve these problems, since the main challenge remains the unwillingness of stakeholders to act together. She brings the example of Lake Garda in Italy, where the catchment area also belongs to three regions, however thanks to effective cooperation, the landscape is perfectly uniform and the local economy sustainable. She therefore suggests that as a first step, communication and cooperation between the different stakeholders should be improved, along jointly agreed priorities.

In addition to social and economic unsustainability, Gál (2011), together with Jávor (2011), Egerszegi (2011) and Ruzsics (2011) identify water management as a core problem. Lake Balaton is currently mainly used for touristic purposes, while also being a unique ecosystem and water reservoir in Hungary. Ruzsics (2011) therefore suggests that a more conscious and humble use of this precious water resource should be developed if we want to preserve it for future generations. The management of rainwater runoff and the treatment of sewage waters are both huge challenges as well in terms of water management, says Egerszegi (2011). Although the coastal towns and cities are close to the 100 per cent objective in terms of sewage water treatment, background communities barely reach a 60 per cent rate.

Further, due to poor conservation and urban planning efforts, the problem of surface runnoffs has not been effectively mitigated in the past years either (Egerszegi 2011). Urban planning is in fact a crucial point in the development of the Lake Balaton Region. Bizikova (2011) argues that an integral development plan should be worked out aiming to preserve the shoreline of the Balaton, to prevent the privatization of the coastal lands and the development of incongruous resorts and buildings. Jávor (2011) goes further by saying that there should be a unified decision upon the real value of the Balaton and further development plans should be evaluated accordingly. Two overall choices are outlined here. The first is to say that we consider the Balaton as a service provider facility and in this case the maximization of economic profits will prevail with the full understanding that this kind of decision will not preserve the lake in its present condition. Or, he suggests that we can also consider the Balaton as a living ecosystem in which case a more nature-centric development plan should be adopted that does not allow the total occupation of the shorelines and the seasonal exploitation of the Region.

Regardless of which option will prevail, people should understand that they are the ones who shape the future of the Region; it is in fact their everyday consumer choices (and

not climate change) that will determine the development path of the Lake Balaton. However, as Herodek (2011) added with a touch of sarcasm, the real problem today is that there is no real problem. This might be the greatest challenge in the development of the Region and relates to a fundamental question of scenario methods already described above: namely human's incapacity to think about the future, while breaking with the past and present. These challenges however can be partly overcome by well planned and monitored participatory methods, as it will presented later in this paper.

Before turning towards scenarios, a summary of sustainable development challenges and suggested mitigation measure is presented in Table 3.

SUSTAINABLE DEVELOPMENT CHALLENGES IN THE LAKE BALATON REGION	- human interference, prevailing party culture - seasonality, overuse in a short time period - division between 3 development regions - ageing population, lack of year-round job opportunities - poor water management - poor ecosystem services management - poor rainwater/surface runoff management - incomplete sewage treatment - poor recycling schemes - inadequate management of green areas and shorelines - lower development indices in background communities - heavy road traffic on the North and related air pollution - outdated railway system - climate change - poorly managed fisheries - non uniform urban development - lack of communication and cooperation
SUGGESTED MITIGATION MEASURES	- environmental friendly services and policies - development of an integral Balaton Region - improvement of R+D - environmental friendly industrial activities - improved information flow and awareness raising - jointly agreed development priorities - commonly managed sustainability fund - diversification of economic acitivities - improvement of health tourism, ecotourism

	and active tourism - turn the settlements around the Balaton into "satellite cities" where people can live and work from home - paradigm shift in recreational habits

Table 3: Summary of sustainable development challenges and suggested mitigation measures

4.3 Scenarios for sustainability

As described above, today's political agenda on the environment seems to serve short-term interests. However, when talking about development, it is crucial to have visions of a desirable future yet to be reached. The third aim of the interviews was therefore to unveil these visions for the Lake Balaton Region and to discuss their feasibility.

According to Oláh (2011), some researchers say that the Lake Balaton may totally disappear within two centuries. However, this is unlikely to happen, he argues, unless we explicitly work towards this goal. If we continue to recognize the Lake Balaton as a fragile ecosystem to be protected from unsustainable practices, we should not worry too much about its future as a natural entity. However its social stability and economic sustainability is less certain and will depend greatly on future development plans. As a best case scenario, Oláh foresees a unified Region, where decisions are taken jointly by local stakeholders, experts and policy makers with an improved subsidy system. He remains sceptical about the use of scenario methods in the Lake Balaton context, however believes in the power of community-based conservation efforts. So does Egerszegi (2011) according to whom the only chance for the Lake Balaton to become an environmentally, economically and socially sustainable Region is through grass-root initiatives. She envisions a Region where both local people and visitors encounter their expectations through attractive living conditions for inhabitants and competitive recreational activities for tourists throughout the year.

From a purely scientific point of view, Herodek (2011) is not worried about the future of the Balaton and foresees a living lake within 50-100 years, despite possible drops in the water level due to a changing climate. Ruzsics (2011) however believes that the effects of climate change will reach the Lake Balaton, and will induce a raise in average temperatures leading to longer draught periods. Nevertheless he absolutely believes in the wisdom of the Hungarian nation and is not pessimistic about the future of the area. He envisions a Region where sustainable economic practices prevail over unsustainable ones, through the development of an environmentally friendly tourism sector in parallel with the emergence of a more conscious and more cooperative society.

Bizikova (2011) views the Lake Balaton Region as a destination attracting people in all seasons through diversified tourism and working opportunities and with a cooperative governance that relies on local forces. Gál (2011), on the other hand, envisions institutional reforms where decision making processes would rely on three pillars: the civil society, the business and the government. He forsees a strengthened civil will, and businesses and policy makers willing to commit themselves to sustainable practices throughout the year.

Besides positive and optimistic scenarios, the interviewees depicted less encouraging visions as well, where the development of the Lake Balaton Region would continue along purely economic interests. In this case, they envision a Region harnessed by visitors in the high summer season and deserted by locals because of unattractive living conditions and lacking working opportunities. This process would ultimately lead to the total exploitation of the Region's natural resources becoming a left-aside area, with an ageing and decreasing population alongside an overused and polluted natural environment.

In conclusion, Nováky (2011) and Oláh (2011) argue that in such an unstable situation as the world is in today, there are no most likely scenarios; on the contrary, the probability of a very positive or of a very negative future prospect is both strong. The final outcome will

depend on the power of the society and on its capacity for renewal. This argument is the common point of the above described visions: they all picture a unified Lake Balaton Region where diversified economic activities secure the sustainability of the Region, while decision making processes rely on co-operative governance (Table 4).

A summary of the visions for the Lake Balaton Region is presented below in Table 4.

SCENARIOS FOR THE LAKE BALATON REGION	POSITIVE: - unified Region where decisions are made in cooperation with local stakeholders, experts and policy makers - attractive living conditions for inhabitants and a competitive recreational area for visitors throughout the year - spread of sustainable economic practices, development of an environmentally friendly tourism sector, conscious and cooperative society - diversified economy and cooperative governance relying on local forces - a sustainable region where decision making has 3 pillars: civil society, business, municipality NEGATIVE: - exploitation of the Region's natural resources, ageing and dicreasing population due to economic seasonality, development of unattractive living conditions - drops in the water level due to changing climate, lake fed from alternative water sources

Table 4: Summary of scenarios for the Lake Balaton Region as stated by the interviewees.

The next section aims to describe a growing grass-root initiative that is becoming a Balaton-wide trend, a cooperation model for the protection of the environment based on participatory methods. But before, an overview of particiaptory decision making in the Lake Balaton Region will be given.

5. Participatory scenario development in the Lake Balaton Region

Despite a number of positive policy decisions described in Chapter 2, the development of the Lake Balaton Region lags behind its European peers, due to a series of ill-considered, short-term decisions lead by individual interests (Oláh 2011). As mentioned above, Hungarian experts fully acknowledge the importance of scenario exercises, however they believe that the Hungarian political agenda is not mature enough yet to incorporate scenario analysis into decision making processes.

Scenario methods however can be equally successful and effective at a local level, according to Egerszegi (2011) and Oláh (2011), particularly where the civil activity is high, as is the case in the Lake Balaton Region[8]. According to the findings of Bizikova *et al.* (2010) participatory initiatives are widely recognized decision making tools for being effective in bringing together various stakeholders at a local level, while inviting decision makers to understand local needs and make use of local knowledge in policy making.[9] It is also in governments' interest to support grass-root initiatives, as they fullfill the need that governments fail to meet because of a lack of competencies and resources.

[8] Civil activity in the Lake Balaton Region is the second highest in Hungary after Budapest (Oláh 2011)

[9] The importance of stakeholders' involvment into decision making processes was stated as early as in the Rio Declaration almost 20 years ago, and later also formulated in the Aarhus Convention.
Principle 10 of the Rio Declaration on Environment and Development (United Nations, 1992):
„Environmental issues are best handled with participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public wareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided."

5.1 Growing civil committment to make the Lake Balaton sustainable

Although the interviewees were generally pessimistic about a policy level paradigm shift, they were very positive regarding the future of the Lake Balaton Region thanks to a growing civil committment. There are several existing examples of grassroots initiatives that point towards this positive trend.

A first boom of local committment started in 2003 with the adaptation of the Tourism Destination Management (TDM) Model (developed in South-Tirol, Germany) by the stakeholders of the tourism industry of the Lake Balaton Region. Recognizing the challenges caused by the seasonality of the economy in the Region and by fear of being superseded by non-local and foreign investors, they joined forces. The collaboration took place firstly at a micro level, later at a micro-regional level, with possible future expansion to the regional level to protect and strengthen their market share (Oláh 2011).

The town of Gyenesdiás, a small settlement in North-West Balaton with a population of 3624 (Ballabás 2011), was a pioneer in the recognition of this grass-root potential. It is with the help of local experts and decision makers that the first TDM initiative was launched aiming to stimulate local economies and to foster sustainable development of the Lake Balaton Region. In fact, the real success of the TDM model lays in its ability to unite local stakeholders, improving their competitiveness and channeling local knowledge back into the decision making processes (Gál 2011).

It is along the same idea as TDM that the Environmental Protection Cooperation Model, to be presented later in this chapter, was recently developed again in Gyenesdiás. Both models show how effective community based efforts can be in sustaining a region both economically and environmentally.

5.2 Introduction to the Tourism Destination Management model

As presented in the previous chapter, a series of challenges were identified in the interviews that hinder the sustainable development of the Lake Balaton Region. These challenges all relate to the misuse of the Lake Balaton and its surroundings, leading to an environmentally and economically challenged Region. The common point of these problems is a large inflow of visitors and foreign investors, and the concentration of economic profitability only during the summer months. While the Lake Balaton Region is not a leading destination globally speaking, in the Hungarian context it is the second most attractive one. The population of the Region is 250 000 people, the same amount own a property there, and about 3-4 million guest nights are spent in the Region every year (BIFÜ 2007). Furthermore the Lake Balaton Region has also the second best tourism infrastrucure in Hungary (Pintér et al. 2008). However, since the development of the Region could not keep abreast with the demands of the visitors, the local tourism industry started to lose its competetivity against more attractive destinations. This situation has induced numerous challenges affecting both the health of the natural environment and the sustainability of the local economy (BIFÜ 2007).

Recognizing these unfavourable trends, local stakeholders have understood that the only chance to revive the tourism industry in the Lake Balaton Region, without being constrained to yield to powerful economic actors, is to build a strong local committment based on co-operation and information sharing, commonly known as Tourism Destination Management (TDM). The basic principle of the TDM model is the transfer of municipal tasks to local stakeholders and the interconnection of these stakeholders with the aim of creating business partnerships instead of competitors (Oláh 2011).

Such a paradigm shift should start with the common recognition that it is easier to achieve a change through cooperation, and the reason for this appeals to the common sense: local municipalities do not have the technical or financial capacities to implement large scale development projects, local entrepreneurs have innovative ideas, however it is beyond their scope of influence to implement them, and finally there is an active civil society who neither has technical, nor financial capacities, however it has a strong will to achieve a change. The recognition of this complementarity is the very basis of a successful development plan and recalls the principles of green economy[10] relying on a holistic approach, which in the case of new tourism strategies calls for the cooperation of businesses, local governments, and communities in all relevant areas (UNEP 2011).

According to UNEP (2011, 438), "all forms of tourism can contribute towards a green economy transition through investments, leading to energy and water efficiency, climate-change mitigation, waste reduction, biodiversity and cultural heritage conservation, and the strengthening of linkages with local communities". In fact, a growth in sustainable tourism will multiply the positive effects of tourism in all related fields, generating work opportunities, fostering local development, creating higher investment returns, reducing environmental impacts, and ultimately raising awareness on more sustainable lifestyles (UNEP 2011).

What was formulated by the UNEP has become practice in the Lake Balaton Region. After the first TDM association created in the town of Gyenesdiás in 2003, several others have followed. There are currently 24 local TDM associations around the Lake Balaton, and

[10] Green economy can be generally defined as one that fosters changes to low carbon and resource efficient lifestyles, while improving human wellbeing and equity, and reducing environmental pressures. To achieve these goals there is a need to increase green investments on the one hand, while abating the further expansion of ecologically and socially unsustainable patterns on the other hand. Such changes in investment measures within economic sectors that have a potential to adhere to sustainability values, should be supported by overarching policy reforms and the reshaping of market infrastructures both locally and globally. Not only the protection but also the rebuilt of the natural capital should be among the primary targets, since local people rely heavily on their natural environment, often ruined by the unsustainable and unfair economic practices (UNEP 2010).

micro-regional assocations[11] are emerging too. Ultimately, a Region-wide TDM association will be developed that aims to primarily serve as a TDM marketing center (Oláh 2011).

According to Oláh (2011), the TDM network is a real success story in the development history of the Lake Balaton Region, since after eight years of activity it is now a widely recognized development model acknowledged by decision makers. In fact, from a policy perspective, the transition to green economy should involve the reform of subsidies, incentives and market mechanisms along sustainability values (UNEP 2011). The TDM is today mentioned in Regional Operative Programs of Hungary and is subsidized through tenders, which allows the initiative to stay financially sustainable. In the meantime, to further the transition to the green economy in the Lake Balaton Region, the business sector should foster green investment and innovation, while the civil society should continue to back this up with grass-root initiatives and the spread of sustainable tourism.

This is exactly what the TDM model stands for: the creation of an improved tourism sector based on the cooperation of stakeholders through the share of their competencies and sustained by bottom-up efforts. It should be a voluntary, long term partnership between the different stakeholders of the tourism industry in order to optimize their services and to strengthen the competitivity of the actual destination, while taking into account environmental sustainability (Ballabás 2011).

5.3 Protecting the environment through civil committment

Local governments have a number of responsibilities and competencies regarding the protection of the environment. Among others, they are in charge of implementing national

[11] The first micro-regional TDM association was created in 2009 with the participation of Keszthely, Gyenesdiás, Balatongyörök and Vonyarcvashegy (Ballabás 2011).

regulations and adapting them to local needs if necessary. They also act as environmental authorities and are responsible for all the related responsibilities such as the protection of natural habitats, water management or air pollution control. Local governments should also develop their own environmental management plans that includes for example the municipality solid waste management and other public services, while they should constantly monitor the state of the environment and inform the population accordingly (Ballabás 2011). Despite written commitments, local municipalities are not fully able to respond to all of their environmental tasks, they therefore rely on the contribution of local stakeholders. With such a high civil activity, as exists in the Lake Balaton Region, it is obvious that local committment is a key factor in the development of the Region (Oláh 2011). It is only through full ownership by all the stakeholders that the environment can be effectively protected. The environment should be the common cause of the whole population. However, how to couple civil efforts with governmental tasks?

As demonstrated by the TDM model, cooperation is the very basis of sustainable development, since all the actors of the play have an indispensable role. The Municipality of Gyenesdiás was again the first to recognize this potential and started to develop a cooperation model based on the principles of the above described TDM program, but now with the aim to protect the natural environment.

Local stakeholders started their work in 1990 by formulating a common goal, a desired future state that they aim to reach through the development process. Their common vision included the creation of a township with large green areas and a protected shoreline used by a well-informed and environmentally conscious population (Gál 2011). However, as we have learnt from the previous chapter, historical determinism has greatly shaped Hungarian development policies. In fact, it is still relatively difficult to include innovations into policy making processes, such as the delegation of authority to local stakeholders (Ballabás 2011).

Despite these difficulties, these innovations are still necessary, since they have proven to be very successful. However, environmenal mainstreaming is still in its infancy in Hungary. The challenge is therefore huge, but not impossible.

5.4 The starting point

According to Lajos Gál (2011), Lord Mayor of Gyenesdiás, civil will was always tangible in the area, therefore it was a must to develop a model that make use of this strong local committment. The basic principle was „to make social" („társadalmasít") the common causes, he says; that is, to open the floor for discussion and cooperation with local stakeholders. This is how the process started more than ten years ago, when the local government in power placed the foundation-stone of the environmental development plan of Gyenesdiás (Ballabás 2011). It is in 1998 that the first visible result of the joint efforts was born with the establishment of the Environmental Committee acting as a preparatory and decision making body with shared competencies among delegates and civil members. In paralell, an Environmental Sustainability Fund was also created, which has allocated funds every year e.g. through municipality contributions, the transfer of environmental fines, or incomes from various rummage actions held in town (Gál 2011 and Ballabás 2011).

Civil efforts for the protection of the environment were not only concentrated around the work of the Municipality, but were operating individually as well, principally through the work of the Forrásvíz Természetbarát Egyesület (Spring Water Nature Friend Association). The Association was founded in 1998 with the aim to protect karst springs of the area and to raise the awareness of the population on environmental issues (Gál 2011). This same Association developed the Environmental Management Plan of Gyenesdiás in 2001 that has been extensively used by the Municipality, and by the Environmental Committee too (later

renamed to Environmental and Township Development Committee), both of which use the Management Plan to develop their yearly environmental programs (Ballabás 2011).

This unique partnership backed up with a continuously growing civil society formed the basis of the above described TDM model, followed by the creation of the Environmental Protection Cooperation Model.

5.5 The Environmental Protection Cooperation Model (EPCM)

The Environmental Protection Cooperation Model (EPCM) is a sustainability model aiming to foster environmental sustainability through civil participation. Similarly to the TDM model, it is based on the principle that civil will and knowledge is an asset in decision making processes, therefore policy makers should make wise use of these assets to back up their decision making duties.

The Municipality of Gyenesdiás was the first to recognize the advantages of civil participation in public affairs and developed the first draft of the EPCM in partnership with the Environmental Committee and the Spring Water Association in 1998 (Ballabás 2011).

The purpose of the partnership was to allow commonly developed answers to commonly identified problems. After the development of the basic principles of the EPCM , it was crucial to proceed to the institutional changes previously described, to improve local environmental governance. The below figure represents the three pillars of the EPCM (the Municipality, the Environmental Committee and the Civil society), their roles and responsibilities, and their connection to each other.

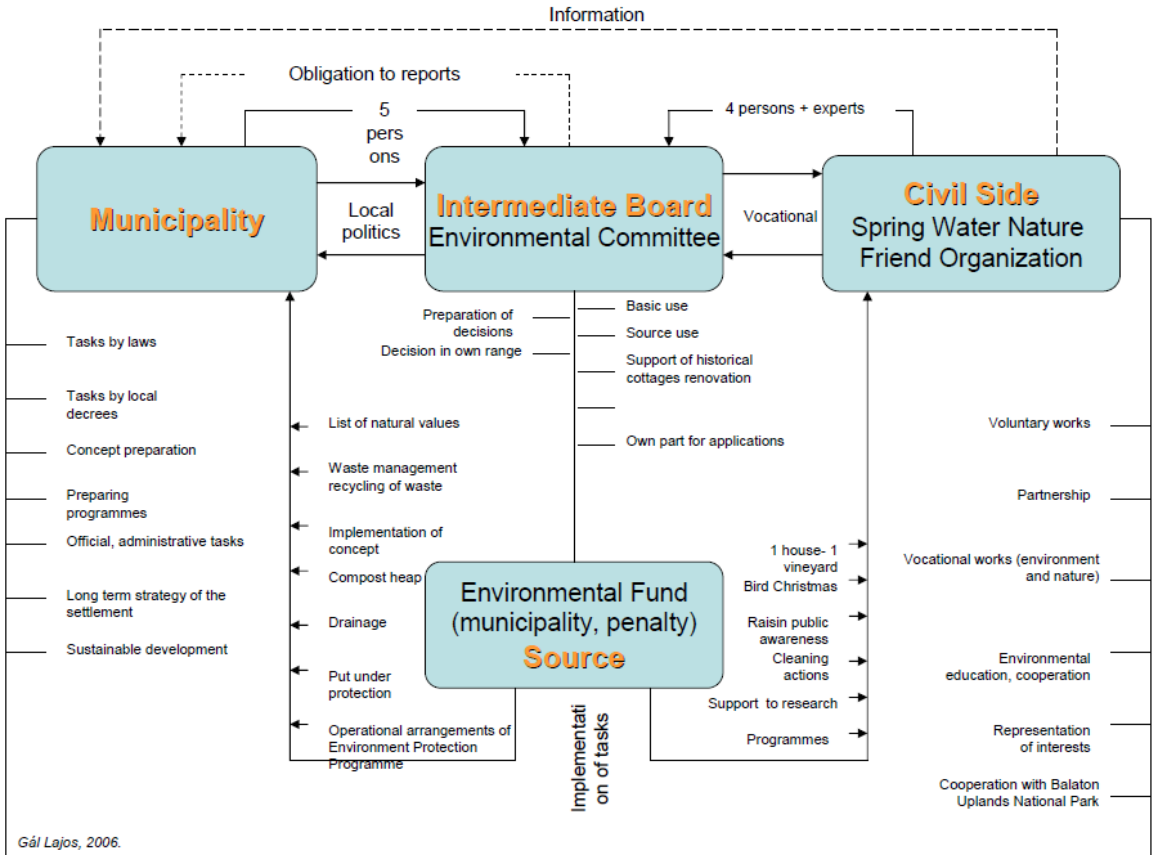


Figure 1: Environmental Protection Cooperation Model.
Source: Forrásvíz Természetbarát Egyesület

As it is shown on Figure 1, in EPCM, the tasks of the Municipality are limited to its primary responsibilities, namely the preparation of long-term strategies, programs and concepts and to foster sustainable development in general. The Environmental Committee serves as a medium or a channel between the Municipality and the civil society and is constituted by three representatives from both sides respectively, in addition to two delegated experts. More importantly, it shares some of the competencies of the Municipality making it an integral part of the decision making process. And finally, this is made financially possible by the Environmental Fund, a small fund of 600,000 - 800,000 HUF (around 3000 EUR) set apart from the central budget of the Municipality, and multiplied in a figurative sense through this intense civil participation (Gál 2011).

Based on the above, the main areas of work of the EPCM in Gyenesdiás are the following (Gál 2011 and Ballabás 2011):

- Preparation of decisions, decision making, and environmental governance
- Environmental education, awareness raising through environmental programs
- Information sharing and communication[12], environmental mainstreaming
- Incentives for civil participation in environmental management[13]
- Ecosystem monitoring
- Partnerships with stakeholders both locally and region-wide[14]
- Advocacy and fundraising

5.6 Future prospects of the EPCM

In a relatively short time period and thanks to the strong and persistent committment of the civil society of Gyenesdiás, a unique and exemplary partnership emerged with the sole purpose of fostering sustainable development of the township. The Environmental Protection Cooperation Model is today an unparalelled initiative in the development history of the Lake Balaton Region. It is still very uncommon in the Region that local partnerships can evolve so positively, creating a non-profit business case for sustainability.

Fortunately, surrounding villages and cities have recognized the importance of this „green TDM" prorgram and expressed their interest in developing respective EPCM associations as well. Moreover, greater cooperation is emerging, aiming to link the EPCM

[12] The communication and information sharing happens at various levels: besides making use of public forums, the association has the obligation to give a yearly account of its activities both towards the delegates of the Municipality and the Environmental Committee (Ballabás 2011).

[13] E.g. participation in the formulation of the Environmental Development Program and Climate Strategy of Gyenesdiás.

[14] In the scope of this paper 'Regional' is referred to as the Lake Balaton Region as a whole, while 'local' stands for individual settlements.

associations at a micro-regional level, to possibly reach a Balaton-wide green TDM network, as it is in the case of the TDM model.

Figure 2 represents the structure of a Balaton-wide EPCM where stakeholders and policy makers are linked both at a local and at a regional level. These levels define the framework of the competencies and determine the tasks to be implemented, while it also defines the basic principles of a larger cooperation model. Through such a model, a truly participatory development scheme can take root, ensuring the long-term sustainability of the Lake Balaton Region both environmentally and socially.

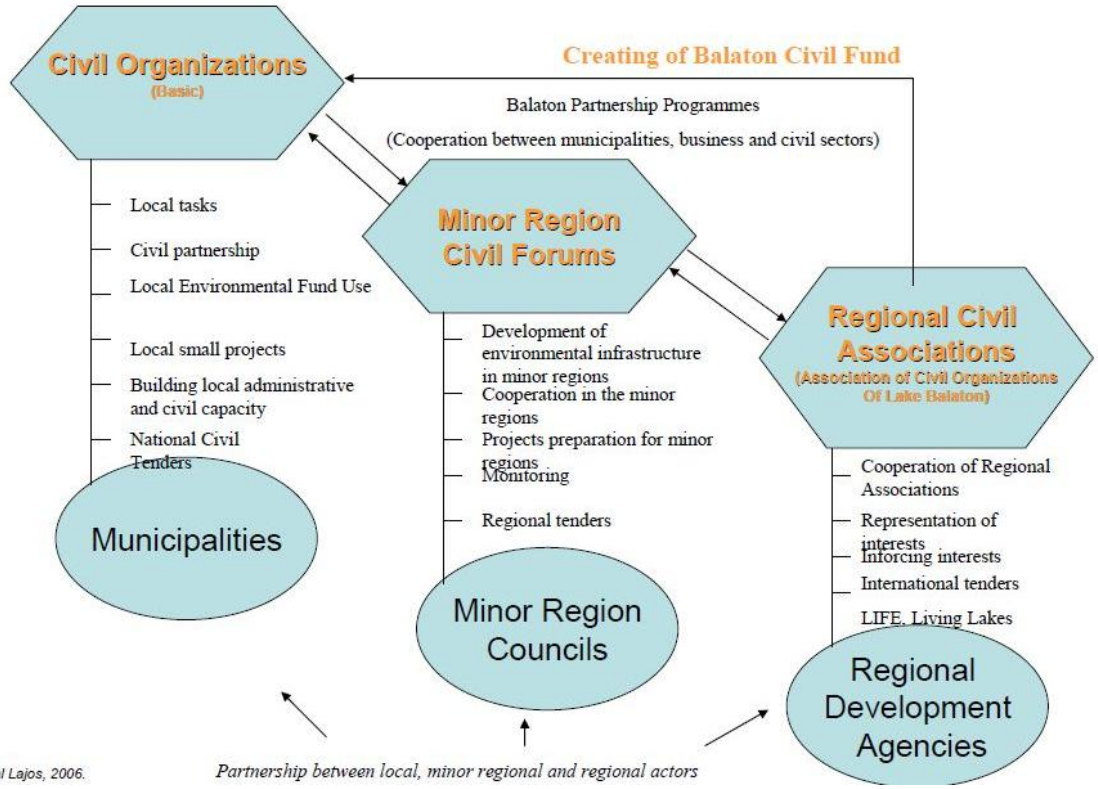


Figure 2: Future prospects of the Environmental Protection Cooperation Model.
Source: Forrásvíz Természetbarát Egyesület

6. Discussion and conclusion

In the present section, I aim to briefly comment some of the central points of this work, and to open a window on further research opportunities.

As the initial hypothesis of this work I intended to demonstrate that stakeholder involvement is key for well-informed decision making. By conducting a series of interviews, my assumption, that in the long run, stakeholder involvement creates greater levels of public support was reinforced. In fact, both the scientific literaure available in this field, and the best practices occurred in the Lake Balaton Region demonstrated that participatory methods are fully able to foster sustainability.

I opted for a methodology based on interviews for two reasons: the tight research schedule (May-July 2011) on the one hand, and the possibility to discover hidden knowledge not availble in the literature on the other hand. My anticipation was verified since one of the main findings of this paper was discovered through the interview process.

The interviewees were chosen according to their connection to: (1) the research area, (2) to environmental decision making, and/or (3) to scenario development. It was very important to find a balance between the number of local and national experts involved, as well as the international ones. Each interview progressively revealed a large potential for scenario development in Hungary, calling for further research in this field.

The interview questions were tailored to the respondents, however the overall aim of the process was to assess knowledge on: (1) prevailing decision making tools; (2) sustainable development of the Lake Balaton Region; and (3) the applicability of scenario methods to the Lake Balaton context.

The respondents generally supported the idea that it is unfortunate that forward looking is not an integral part of decision making. They also agreed upon the main development challenges of the Lake Balaton Region as outlined previously. Although in the Hungarian context the knowledge on scenario methods is of varying extent, all the interviewees mentioned long-term thinking and planning as the basis of a transition to sustainability.

Given the importance of forward looking, it is clearly integral to take into consideration the future of the Lake Balaton Region. During the interviews, all of the respondents were requested to provide a scenario about the future of the Lake Balaton. It was interesting to discover some potential conflicts between the positive and the negative points, such as the simultaneous will for high living standards and moderation in the exploitation of the Region.

Although the experts were in general positive about the future of the Region, I would like to emphasize that the Lake Balaton Region can not be protected enough. We have seen many examples of overexploited ecosystems or at least ecosystems which have faced a system collapse, and the Lake Balaton still could become one of those. Despite the lack of huge, visible problems, the possibility is there, since due to institutional hiatus, it is difficult to control all interferences.

It is true that the Lake Balaton Region has undergone very positive development measures in the past decades, such as the improvement of water management, improved waste water treatment, or the adoption of the Balaton Law. There is however an overall challenge, the one of environmental sustainability, that still needs to be addressed collectively through innovative approaches. This not only needs the reconsideration of water management, or the formulation of new policies, but it also needs to consider the ownership of all stakeholders.

All the interviewees strongly recommended stakeholder involvment in decision making processes. All of them agreed, and I join their opinion, that civil participation coupled with the involvment of experts and committment of stakeholders is a key factor in the transition to sustainability. By these criteria, what has been achieved in the town of Gyenesdiás by the development of the ECPM is a real success. I therefore invite decision makers and stakeholders to review this outstanding achievement in the development history of Lake Balaton, with the hope to see it multiplied all around the Region and beyond.

As mentioned above, the present work comprehends a much broader research possibility. As a next step, it would be very interesting to critically analyse the development of the ECPM through a series of interviews conducted with participants and explore how backcasting could improve the model. Although local cooperation has already started with settlements around Gyenesdiás, it would be interesting also to organize a series of workshop to promote EPCM among the stakeholders of the Lake Balaton Region as a whole. As part of these workshops, follow-up could be done on the work started by tha Balaton Adaptation Project and see how perceptions of environmental challenges have evolved over time. In addition, given that scenario development is still in its infancy in Hungary, the workshop could also include a module on the use of scenario methods in environmental decision making.

In the Hungarian context, pariticipatory scenarios are not primarily needed to provoke thinking about the future, or to design desirable or probable outcomes. They are rather needed to foster the evolution of the society towards a more cooperative and humble state where a common determination will emerge to foster sustainability.

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APPENDIX 1

Interview questions

Since my interviewees ranged from local decision makers, through representatives of various national institutions, to respected international experts, I have not presented the same questionnaire to all of them, I rather tailored the questions according to their background and field of interest. I however developed a set of basic questions as follows:

1. Global environmental challenges call us towards long term thinking, however on the field of everyday politics short-term and medium term plans are prevailing. What do you think is the barrier to long-term political thinking, that is the basis of sustainable development?
2. What do you think is the greatest challenge on the field of sustainable development in the Lake Balaton Region? What do you see as main barriers, and what steps should be taken to achieve substantial changes in this field?
3. Between 2000-2004 Lake Balaton experienced a negative water balance, which drew the attention of decision makers and the public that one of the most valuable ecosystems in Hungary is endangered. Numerous scientific articles construe the potential effects of climate change on the Lake Balaton Region. Some say that it is amongst the 100 places that will be the most affected by the global environmental crisis. What do you think is the most probable environmental scenario for the Lake Balaton Region? Could you give a positive and a negative scenario example?

4. How do you think the above mentioned scenarios could be incorporated into political decision making?
5. Do you think the above mentioned scenarios can affect environmental decision making and foster sustainable development? Do you see any advantages/disadvantages in using scenario development in environmental planning?
6. Are you using scenario methods in your decision making processes? Are you familiar with the term of backcasting? If yes, could you give specific examples when you planned environmental decisions through scenario methods? If not, would you consider using them in the future?
7. Could you give your definition on backcasting and participatory backcasting? How do you think „grassroot' scenarios (developed through participatory methods) can be translated into actions?

APPENDIX 2

Interviewees

1. **Bakkes, Jan**: Netherlands Environmental Assessment Agency
2. **Bizikova, Livia**: Project Manager, International Institute for Sustainable Development
3. **Egerszegi, Zita**: Environmental Officer, Lake Balaton Development Coordination Agency, Hungary
4. **Gál, Lajos**: Lord Mayor of Gyenesdiás, Hungary
5. **Herodek, Sándor**: Former Head of the Balaton Limnological Research Institute, Hungarian Academy of Sciences
6. **Horváth, Ákos**: Head of the **S**torm Warning Observatory Office of the National Meteorological Services in Siófok, Hungary
7. **Illés, Zoltán**: State Secretary for the Environment, Hungary
8. **Jávor, Benedek**: Delegate of the Politics Can be Different (LMP) political party, Hungary
9. **Nováky, Erzsébet**: Head, Futures Studies Department, Corvinus University of Budapest, Chair, Committee on Futures Research, Hungarian Academy of Sciences
10. **Oláh, Mikós**: Head of the Social Sciences Research Group, Lake Balaton Development Coordination Agency, Hungary
11. **Robinson, John**: Executive Director, UBC Sustainability Initiative; Professor, Institute of Resources, Environment and Sustainability, Department of Geography, University of British Columbia, Canada
12. **Ruzsics, Ferenc**: Lord Mayor of Keszthely, Hungary
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