

LANDSCAPE AS TRANSBOUNDARY PHENOMENON: EUROPEAN TRANSFRONTIER LANDSCAPES

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Abstract: The paper deals with the topic of transfrontier landscapes in Europe. The importance of transfrontier landscapes and their investigation was stressed and stimulated by the adoption of the European Landscape Convention in 2000. Transfrontier landscapes are special in terms of their economic, social and environmental characteristics. These special characteristics include both positive as well as negative aspects and compose together a specific peripheral character of transfrontier landscapes. In the framework of the European ELCAI (European Landscape Character Assessment Initiative) project, 14 selected examples of transfrontier landscapes were investigated and briefly presented. New European Landscape Typology and Map (Mücher et al., 2003) was used to compare key attributes of the landscapes such as topography, soils and land cover. Each transfrontier landscape was briefly described using SWOT analysis. SWOT stands for Strengths (S), Weaknesses (W), Opportunities (O) and Threats (T). Strengths and Weaknesses relate to the own characteristics of the landscape, which are seen as internal factors. Opportunities and Threats deal with the competitive external factors of the landscape. 14 case studies of European transfrontier landscapes show their remarkable heterogeneity as to geographical location, landscape types and environmental conditions. As a case study from the Czech Republic, the trilateral transfrontier landscape of the Šumava Mountains on boundaries between the Czech Republic, Germany and Austria is presented in the paper. Summarising results of the case studies make possible to find special issues and characteristics to be intrinsic for transfrontier landscapes.

Key words: SWOT analysis, European Landscape Character Assessment Initiative, European Landscape Typology

1. INTRODUCTION

The European Landscape Convention (ELC) adopted by the Council of Europe in October 2000 aims to encourage public authorities to adopt policies and measures at local, regional, national and international level for protecting, managing and planning landscapes and to support European co-operation on landscape issues. It covers all landscapes, outstanding as well as ordinary or degraded, that determine the quality of the environment. While several international policies suggest the need for reliable and

targeted information on the state and trends of European landscapes, it is chiefly the European Landscape Convention that requires Parties to carry out research and studies in order to identify landscapes and analyse their characteristics and the dynamics and pressures which affect them.

Another important requirement is the need for transfrontier programmes. According to the Explanatory Report of the ELC (Council of Europe, 2000), Article 65 states: „The Parties are requested to set up transfrontier programmes for the identification, evaluation, protection, management and planning of landscapes which straddle borders“.

In order to explore practical approaches for management and conservation, but also to stimulate cooperation between national experts, the Dutch Ministry of Agriculture, Fisheries and Environment decided to provide a contribution in kind of the practical implementation of the Convention's Article 9 on Transfrontier Landscapes. National and international experts from different European countries were asked to contribute to the compilation of case studies on European transfrontier landscapes. On the basis of 14 case studies across Europe, the report (Wascher and Pérez-Soba, eds., 2004) seeks to highlight the Strengths, Weaknesses, Opportunities and Threats (SWOT) related to the specific landscape characteristics and land use trends in transfrontier landscapes.

2. COMMON FEATURES OF TRANSFRONTIER LANDSCAPES

The European Union is taking a major step towards widening its territory and overcoming traditional state national boundaries. After successfully growing from six to 15 Member States, the European Union has now (2004) carried out its biggest enlargement ever in terms of scope and diversity. The common goal of achieving sustainability in managing the Earth's resources cannot be limited to specific places or regions, but requires the recognition of a borderless world.

Though much has been achieved already, Europe's recent social, economic and political developments demonstrate that despite legal or political decisions, traditions and stereotypes as well as regions and borderlines will continue to exist for next decades and centuries. Numerous achievements in the field of economic, environmental and social co-operation cannot hide the fact that national and sub-national administrative borders still have tremendous impact on the way land is being managed and planned, cities being built and the environment being maintained and protected. (Wascher and Pérez-Soba, eds., 2004).

As national and regional capitals are generally located, with the exception of coastlines, in the centre of their administrative territory, it seems that peripheral borderzones are usually less developed, less populated and less accessible in comparison with central regions. Location at the national or regional periphery as well as at the border to other territorial entities makes many transfrontier landscapes special in terms of their economic, social and environmental characteristics. These special characteristics include both positive as well as negative aspects and compose together a special landscape character of transfrontier landscapes. Box 1 lists some typical characteristics, especially difficulties associated with transfrontier landscapes.

A close look at Europe's transfrontier landscapes demonstrates that despite the great biogeographical and cultural differences that exist among European countries from south to north and from west to east, there are many common and similar features associated

with the peripheral character of these landscapes. This is why transfrontier landscapes put national and international policies to the test and why they challenge planners and scientists to develop specific tools and concepts.

BOX 1. Difficulties associated with transfrontier landscapes management and co-operation (after Hamilton et al., 1996, Wascher and Pérez-Soba, eds., 2004)

1. Difficult terrain, inaccessibility, lack of roads and/or rails across national frontiers impede interchange
2. Different (sometimes conflicting) laws may reduce the effectiveness of transboundary co-operation
3. The need for co-operation may slow the response to emergency situations calling for rapid decision
4. Religious or cultural differences can cause misunderstandings
5. Language barriers may have to be overcome
6. Differential commitment and resources on each side of border can lead to a dominant/weak situation (position ?)
7. The different levels of professional standards for corresponding staff may impede real equal partner twinning
8. Differences in the authority given to designated area management staff may produce difficulties in transboundary co-operation
9. A lack of parity with regard to the ratification of international protocols or conventions may prevent their being used for transboundary co-operation
10. Two or more countries/regions may be at different stages of economic development and have incompatible policies related to resource utilisation, versus resource protection
11. Armed conflict, hostility of political tension can make transboundary co-operation difficult, even impossible
12. Technical incompatibility in communication, fire suppression, equipment, GIS systems etc. may impede transboundary co-operation

3. BRIEF HISTORY OF THE EUROPEAN TRANSFRONTIER LANDSCAPES INITIATIVES

Origins of transfrontier European landscapes are closely connected with the development of cultural landscapes, colonisation as well as formation of national states and their boundaries in Europe. This brief review will mainly concern recent political and institutional developments following World War II and focusing especially on the period after the fall of the Iron Curtain in 1989 and the European integration process thereafter.

Early transfrontier initiatives were of a bilateral nature. Nature conservationists in Hungary developed a long time ago, deep in the "Cold War" times, friendly relations and collaboration with Austrian colleagues, particularly in the area of the greatest Central European steppe lake – Fertő/Neusiedler See. The lake, divided artificially by the state boundary between Austria and Hungary, is now a bilateral National Park and Biosphere

Reserve. The area of the Fertő/Neusiedler See was historically the first place, where the Iron Curtain was abolished and the fence removed. This happened in the spring of 1989 – and for nature conservation reasons (Čeřovský, 1998).

More protected areas both on the Eastern and Western sides of the Iron Curtain were established – like the Šumava/Bohemian Forest Landscape Protected Area (1963), later National Park (1991) in the Czech Republic and the Bayrischer Wald/Bavarian Forest (1972 ?) in Germany.

In the IUCN/WCPA Programme "Parks for Life: Action for Protected Areas in Europe", frontier parks along the former Iron Curtain have been considered to play an important role in bridging socio-cultural and environmental gaps. Transfrontier cooperation has been one of the priority items in this initiative (Brunner et al., 1999). A major international workshop held in Australia in 1995 focused on transboundary protected area co-operation in mountain areas and provided further impuls for following initiatives such as the Transboundary Protected Areas for Peace and Cooperation.

In 1993, the "Ecological Bricks for Our Common House Europe" initiative identified 26 potential sites for protected areas – mainly along the former Iron Curtain. Though this initiative supported by WWF Austria never fully materialised, it was crucial in attracting the attention of European institutions and the wider public (Wascher and Pérez-Soba, eds., 2004).

In 1998, a major international conference on the European integration process held in Krakow made strong reference to the former East-West-divide by using the title "The Green Backbone of Central and Eastern Europe" (Nowicki, ed., 1998). The participants confirmed that at the European instrumental level, NATURA 2000 and the Bern Convention Emerald initiative are the two principal European instruments at the present time to realise the basic structure of the network in practice.

It should be noted that the earlier transfrontier initiatives were mainly concerned with nature conservation and biodiversity issues and that the wider socio-economic and cultural aspects of landscapes were mainly seen in their nature conservation and management functions rather than values in their own right (Wascher and Pérez-Soba, eds., 2004).

On 20 October 2000, the Council of Europe adopted the European Landscape Convention and decided to open it for signature during the ministerial conference on landscape protection in Firenze. The convention proposes legal and financial measures at national and international levels, aimed at shaping landscape policies and promoting interaction between local and central authorities as well as transfrontier cooperation in protected areas. According to the Article 9 of the Convention (on Transfrontier Landscapes), the Parties are asked to encourage transfrontier co-operation on local and regional level and, where is necessary, prepare and implement joint landscape programmes.

At the level of the European Union cross-border co-operation also became a key policy issue. In order to advance with the European integration process, the European Commission launched in 1989 the Community Initiative INTERREG aiming at a borderless economic and social development. In 1995 the INTERREG Initiative was supplemented by the Phare Cross-Border Cooperation Programme for Central and Eastern Europe promoting cross-border co-operation with and between Accession Countries. Austria and the Czech Republic participated in the INTERREG IIA-PHARE-CBC Programmes 1995 – 1999.

Within the scope of the negotiations on AGENDA 2000, the European Council passed the resolution to continue the Community Initiative INTERREG especially with a

view to EU enlargement. EU enlargement is one of the most important integration measures on the way to an economically and socially stable Europe. The border regions will be the areas mainly affected by the opportunities and risks of the enlargement process. The creation of integrated, socially compatible economic areas across historical borders is considered a major prerequisite for successfully coping with these challenges.

The most recent European action dealing with transfrontier landscapes has been initiated in the framework of the European ELCAI (European Landscape Character Assessment Initiative) project in 2003 and published as a brief report (Wascher and Pérez-Soba, eds., 2004). This report is meant as a contribution to the preparatory work for the implementation of the European Landscape Convention.

4. OBJECTIVES AND APPROACH FOR TRANSFRONTIER LANDSCAPE ASSESSMENT

4.1. Project objectives

The general objective of the most recent report (Wascher and Pérez-Soba, eds., 2004) is to illustrate a variety of examples as well as the overall character, management, planning and conservation of transfrontier landscapes in Europe. According to this report, transfrontier landscapes are defined as follows:

"A transfrontier landscape is a piece of land where natural and cultural characteristics form recognisable coherent entities which are divided by national or sub-national administrative boundaries, resulting in two or more areas of sovereignty or jurisdiction."

In order to qualify for a transfrontier landscape according to this definition it is not necessary that countries or regions have (already) entered a certain form of cross-border cooperation. However some of the identified transfrontier landscapes have been a subject of former initiatives like "Parks for Life" or "Ecological Bricks for Europe".

Though the 14 selected examples represent only a small part of all European transfrontier landscapes, they can be considered to serve as test areas for future policy and research programmes in order to:

- identify and describe European transfrontier landscapes as special areas requiring international and national proactive support in terms of socioeconomic and environmental development
- initiate long-term cooperation between governmental authorities, resource managers and scientific experts across national or sub-national borders
- promote sustainability strategies on the basis of landscape-ecological principles and land use planning techniques
- build trust, understanding, reconciliation and cooperation between and among countries, communities, agencies and other stakeholders
- prevent and/or resolve conflicts over use of and access to landscape values such as recreation, cultural goods, scenery and biodiversity
- seek synergy between agencies and funding organisations for research, planning and management of transfrontier landscapes
- increase communication through the dissemination and exchange of international or inter-regional documents

The analysis and presentation of 14 case studies is meant to initiate a critical discussion among policymakers, scientists and stakeholders on the future development of transfrontier landscapes in the context of sustainability principles, new forms of institutional cooperation and advanced data management capacities including the availability of landscape indicators and typologies.

4.2. Methodological approach

The identification and selection of case studies for the assessment of transfrontier landscapes in Pan-Europe has been guided by the geographic distribution of the expert network LANDSCAPE EUROPE. At the Kick-off-Meeting of the EU Accompanying Measure Project "European Landscape Character Assessment Initiative" (ELCAI) in Utrecht (May 2003), Project partners were asked for volunteer contributions to the transfrontier landscape project. More national experts have been consulted, resulting in a total of 14 case studies distributed over Europe. While Mediterranean and Atlantic regions are rather well represented, East European landscapes are less well covered and Scandinavian landscapes not at all.

The identified transfrontier landscapes were supposed to be limited in size, in order to facilitate data collection and reporting. The question of which area to select depended largely on the availability of existing data. This meant that only landscapes for which information in the form of reports, field studies, inventories, descriptions or other sources was already available could be selected. One of the prerequisites for making this selection was the need to identify the tangible area with clearly recognisable boundaries from the point of view of landscape expertise. This meant that it was necessary to refer to national or regional landscape typologies when identifying the landscape at the boundary. Since it could be expected that there are differences in the way how two countries or regions classify or map landscapes, this was not to be considered as a problem but as a part of the research interest.

The transfrontier landscapes are discussed in the context of the new European Landscape Typology and Map (Mücher et al., 2003) allowing comparisons of key attributes such as topography, soils and land cover. The selected transfrontier landscapes differ in terms of their character, status, trends and changes from country to country. Since each landscape is unique it was deemed useful to describe them individually as completely as possible and in a simple way. This should be achieved by help of SWOT analyses. The SWOT analysis is intended to highlight the key issues and the links between them in the landscapes described. In addition, changes that may need to be made in their planning and management can be recognised.

SWOT stands for Strengths (S), Weaknesses (W), Opportunities (O) and Threats (T). Strengths and Weaknesses relate to the own characteristics of the landscape, which are seen as internal factors. Opportunities and Threats deal with the competitive external factors of the landscape.

Strengths

- ♦ What are the advantages intrinsic to the landscape, e.g. environmental, geographical, reputation in the country, uses? What makes it special for those surroundings?
- ♦ What is well organised? What is doing well?
- ♦ What are the best characteristics?

Weaknesses

- ♦ What should be improved?
- ♦ What is done poorly or inconsistently?
- ♦ What should be avoided?

Opportunities

What interesting trends or good opportunities are emerging? These may come from:

- ♦ changes in government policy related to the landscape described
- ♦ changes in cultural and social trends (lifestyle trends, education, recreation, ...)
- ♦ changes in markets (agrobusiness, tourism, commercialisation of regional products)
- ♦ local events

Threats

What obstacles does the landscape face? The most significant problems may be in the areas of:

- ♦ the environment: e.g. air and water pollution
- ♦ land development: e.g. insufficient job opportunities, land use conflicts, uncontrolled countryside urbanisation
- ♦ transport/communication infrastructure
- ♦ general infrastructure e.g. water, health care, social and cultural facilities
- ♦ management issues e.g. lack of vision or imagination, prescriptive regulations
- ♦ unfavourable demographic characteristics like population income, older age profile, low professional base

SWOT analysis was first used in the 1970s as a tool for business management. Recently SWOT analysis has reached wider fields of application and is commonly used to identify features and to solve conflicts in the territory. The most common approach is to make a qualitative SWOT analysis, describing Strengths, Weaknesses, Opportunities and Threats identified in the territory. This approach has been used to identify development strategies in European regional policy and also in other management projects (Sanó and Fierro, 2002).

4.3. European Landscape Typology

A great variety of regional and national landscapes within Europe have been developed and created as a result of long-term interactions between nature and culture. The particular richness and diversity of cultural landscapes in Europe is a distinctive feature of the continent. The first attempt to develop a Pan-European classification of present cultural landscapes is represented by Meeus (1995). Because of the increasing demand for a more detailed and high-accuracy landscape typology for the whole Europe, a new approach has been developed in the international research centre Alterra, Wageningen (Mücher et al., 2003). Due to recent advances in the availability and accuracy of internationally harmonised geographic data, this project applies state-of-the-art GIS techniques and data of Pan-European coverage to produce a new stratification of European landscape types. After a critical review of the main European

environmental data sets, 3 core layers were selected and combined to delineate landscape types:

- ◆ Topography (GTOPO30, grid data, 1 km resolution)
- ◆ Soil and geological substrate/Parent material (European Soil Data Base, vector data)
- ◆ Land use/land cover (CORINE Land Cover database, vector data, 1:100 000)

These 3 data layers chosen as key parameters and available at the European level reflect the fact that present European landscapes are a product of natural and cultural driving forces. Three core data sets determine the matrix for a European Landscape Map. The final typology resulted in a digital map consisting of 202 types of the present cultural landscapes in Europe. Each landscape type has got a 3-digit code: the first capital letter is used for the topographic class, the second capital letter for the parent material and the third letter (undercast) for the land use/land cover class. As an extra attribute the environmental zone (e.g. Alpine, Atlantic, Continental, Pannonian, Mediterranean etc.) has been attached to each landscape mapping unit.

The new European landscape typology and map represent a progress in landscape classification done during last 10 years from the Meeus'és typology, especially as to scientific database and exact GIS methods used to select landscape types and their boundaries. All transfrontier landscapes are assessed in the context of this new European typology.

4.4. Landscape Indicators (for European Landscapes)

Obtaining a record of the landscape character should be considered the necessary prerequisite for identifying state or quality indicators for landscapes and for identifying the most relevant pressure indicators, that affect this state. Mainly driven by the critical discussion about the strategic perspectives for the future of Europe's Common Agricultural Policy (CAP), the development of landscape indicators at the European level has become both the political and research issue. The following two definitions of indicators might guide the analysis:

"An indicator is a means devised to reduce a large quantity of data down to its simplest form retaining essential meaning for the questions that are being asked of the data" (Ott, 1978).

"The indicators show changes over time for each criterion and demonstrate the progress made towards their specified objective" (MCPFE, 1998).

Many countries have taken a rather proactive approach towards the implementation of indicator-based landscape assessments. In recent years, more countries have developed refined methodologies in terms of spatial resolution and policy orientation, resulting in monitoring and reporting products at the national level. A substantial advance in terms of cross-national comparisons requires a systematic approach when identifying the main types of management schemes.

Landscape structure is the indicator that is most commonly in use and where an increasing number of techniques (e.g. GIS) are being developed. The analysis of landscape structures is most commonly performed in countries that are undertaking the process of Landscape Character Assessment (LCA) and where national landscape typologies as references for indicator assessments and interpretation are being developed. Landscape Character Assessment based on landscape typologies represents a more region-specific approach than pure structure-analytical techniques. National activities are now supported by international projects such as the European Landscape Character

Assessment Initiative (ELCAI), the Environmental Risk Assessment for European Agriculture (ENRISK) and the Land Use and Land Cover Area Sampling (LUCAS). Satellite images and methods of statistical analysis are used to select and calculate the indicators of landscape structure (see Table 1).

Table 1 Categories of landscape structure indicators (after Wascher and Pérez-Soba, 2004)

Category	Indicator
1. Patch Density, Patch Size and Variability Metrics	Number of Patches (NUMP) Mean Patch Size (MPS) Median Patch Size (MedPS) Patch Size Standard Deviation (PSSD) Patch Size Coefficient of Variance (PSCOV)
2. Edge Metrics	Total Edge (TE) Edge Density (ED) Mean Patch Edge (MPE)
3. Shape Metrics	Mean Perimeter /Area Ratio (MPAR) Mean Shape Index (MSI) Area Weighted Mean Shape Index (AWMSI) Mean Patch Fractal Dimension (MPFD) Area Weighted Mean Patch Fractal Dimension (AWMPFD)
4. Diversity and Interspersion Metrics	Mean Nearest Neighbour (MNN) Interspersion Juxtaposition Index (IJI) Shannon's Diversity Index (SDI) Shannon's Evenness Index (SEI)

5. REVIEW AND RESULTS OF CASE STUDIES

5.1. Review of the case studies. Case study Šumava

Location of the Transfrontier Landscape Case Studies is given in the Figure 1. As mentioned above, the selection of transfrontier landscapes for case studies has been guided by the geographic distribution of the expert network LANDSCAPE EUROPE and ELCAI project. 14 case studies are a result of a volunteer collaboration by a large group of national and international experts. They show remarkable heterogeneity and are located in very different geographical areas, landscape types and environmental conditions. They cover the Mediterranean, Atlantic and Central (Continental) European regions with distinct differences in climate, parent material, altitude and land use. Basic geographical and landscape-ecological characteristics are presented in the introduction to each case study. While Mediterranean and Atlantic regions are rather well represented, Continental (Central and Eastern European) landscapes are less well covered and Scandinavian landscapes not at all.

As an example, Case Study VII: Šumava Mountains/Böhmerwald/Bavarian Forest is briefly described.

This trilateral transboundary landscape in the continental part of Europe is located on both sides of the main European watershed between the rivers Elbe and Donau, on boundaries between the Czech Republic, Germany (Bavaria) and Austria. It represents the largest forest complex (cca 2000 sq. km) in Central Europe with dominant spruce

cover. Typical Hercynian relief is slightly undulated with elevations up to 1,000 m above sea level. The Grosser Arber (1,456 m) on the bavarian side is the highest peak, reaching up to the climatic forest limit. Large spruce monocultures are typical and prevail for the most of the territory, especially on the Czech side. Mountain peatbogs with dwarf pine and eight glacial lakes with alpine and boreal elements of biota are among other characteristic features of the natural landscape. Mountain plains typical for altitudes of 1,000 – 1,200 m are partly deforested and covered by semi-natural grasslands as remnants of former agricultural and pastoral use. These non-forest areas have increased biodiversity and have become an attraction for visitors.

The main mountain ridge forms a watershed and has been the historical boundary of the Czechia (Czech Kingdom) for 1,000 years. The continuous historical development of the region on both sides of the state boundary, and traditional crossing of the boundary for local people from both nations came to a dramatic end after WWII. Germans were transferred out of the Czech area, while the Iron Curtain closed the boundary and divided the mountains into two separate parts. The border was reopened after the Czech "Velvet Revolution" in 1989. In comparison to other landscapes in Central Europe, the area is sparsely populated containing the highest proportion of forests.

Due to the unique natural and landscape qualities, two national parks were established in the region: the Bavarian Forest (131 sq. km) in Germany and Šumava (683 sq. km) in the Czech Republic. However, conflicts and misunderstandings have arisen from the different methods of park management and nature conservation practised in the Czech, German and Austrian parts of the mountains. For example, opinions differ concerning the cutting of trees affected by bark-beetle in the first zones of the national parks (Lipský, 2004).

Landscape profile (after Múcher et al., 2003): MTf (Mountainous soft loamy rocks with forest cover), MGf (Mountainous crystalline/magmatite grounds with forest cover)

SWOT Analysis (after Lipský, 2004)

Strengths

- ♦ an attractive and unique natural area with remnants of wilderness, virgin forests, peat bogs and glacial lakes
- ♦ two national parks and biosphere reserve; the area is well studied, much biological, geographical and environmental data are available
- ♦ mostly healthy environmental conditions, good air and water quality
- ♦ great potential for eco-tourism, agro-tourism and environmental education of visitors

Weaknesses

- ♦ difference of opinion concerning landscape management in national parks in Germany and in the Czech Republic and insufficient international cooperation
- ♦ state environmental and nature protection policy is not harmonised with sectoral policies in agriculture, forestry and local development
- ♦ unhealthy conditions of spruce monocultures in some parts of the mountains; heavy machinery used in forestry in protected areas
- ♦ cultural identity was damaged on the Czech side after WWII and is still lacking
- ♦ few job opportunities so people tend to leave the countryside for the city

Opportunities

- ♦ potential to develop eco-tourism and non-destructive forms of rural and environmental recreation, summer and winter sports and to attract foreign visitors for holidays
- ♦ to protect the large forest complex and increase its ecological stability by improving species composition and health conditions of the forest stands
- ♦ development of transboundary collaboration on joint projects, environmental education and development plans for the whole region

Threats

- ♦ abandoning agricultural lands due to marginalisation brings a danger of decreasing biodiversity and scenic landscape qualities
- ♦ pressures of local authorities to reduce the area of the national park (on the Czech side)
- ♦ uncontrolled development and construction of new sport facilities, ski lifts and large hotel capacities in protected zones
- ♦ cutting old forest stands due to economic reasons for export of rough woods

5.2. Summarising results of the case studies on transfrontier landscapes

These geographical differences result in distinct economic, socio-cultural and environmental key-issues, as shown in Table 2. Most of these issues are common to other types of landscapes. However, the following issues appear to be intrinsic for transfrontier landscapes:

1. Rivers, water bodies and mountain chains play an extremely significant role as essential landscape features in transfrontier landscapes. Examples from presented case studies: rivers Douro, Ticino, Elbe, Donau, Emm/Dollart, Rijn, Waal, Meeuse; lakes: Fertő/Neusiedler See, Koronia Lake, lowland lakes in Ireland; mountains: Alps, Appenines, Šumava/Bayerischer Wald/Böhmerwald, Breifne Mountains
2. The crucial impact of past history (civil wars, invasions) and the consequent political changes in frontier areas underlines the divisive effect of natural borders. Originally, natural borders such as lakes, rivers, mountains and forests are used as frontiers between regions. However, their real role as borders to separate regions with different economic, socio-cultural and environmental perspectives is finally determined by political reasons. The examples of the Šumava Mountains and the Białowieżhska Pushcha show the dramatic impacts of the World War II and the communist régime on the different development on both sides of the state boundaries. Consequently, landscape policy at national and European levels play an essential role in the future development of these areas.
3. These landscapes are highly heterogeneous, mainly due to their very diverse geographical features and intense historical heritage. This heterogeneity results in a highly multifunctional potential for rural tourism, nature conservation and exploitation of regional products.
4. The important role of regional identities as a barrier or bridge, depending on historical development

5. The crucial role of integral development initiatives between the cross-border regions, e.g. nature conservation, recreation and sports, water management, education
6. Water appears as a key issue in threats due to the role of rivers and lakes as border features, e.g. water pollution, increasing river dynamics which may result in flooding and fragmentation. Therefore, international cooperation concerning water management is vital.
7. The lack of linear features and infrastructure in the border regions, as a result of different land use development. Planning of linear features should be a priority for spatial planning. The lack of adequate infrastructure often results in poor communication and public transport network having negative impact on the complex development of the regions.

Table 2 Review of the SWOT analyses presented in the case studies (after Wascher and Pérez-Soba, eds., 2004)

	Strengths	Weaknesses	Opportunities	Threats
E C O N O M I C	Outdoor recreation activities Local products with high quality Summer houses	Low profitability in farms Deficient tourism infrastructure Weak market development Deficient communication system Conflicting land use Too large properties: lack of innovation and low investment from landowners	Use image of local products to sustain production Potential multifunctionality Increasing consumer demand for quality food products Integrated eco-tourism Potential exploitation of natural resources Local development initiatives between both regions/countries	Over-exploitation of natural resources Growing recreational use without planning Agrobusiness may decrease quality of local products Wild urbanisation (second houses) Land abandonment
S O C I O L O G Y	Rich cultural landscape heritage Traditional rural settlements well maintained with little urban development Regional identity Network of volunteer organisations Low density of population Well studied areas	Aging population Emigration to urban areas Differences in regional identity Tourism development in conflict with cultural values Poor environmental education Impact of past history (civil wars, invasions)	Growing regional identity Development of research	Loss of cultural heritage Decrease of accessibility to rural areas Increased pressure from society to build in natural areas Loss of architectural tradition Little job opportunities for local population Low professional base in the regions
E N V I R O N M E N T A L	Landscape of outstanding value due to unique features Heterogeneity in landscape with aesthetic value High biodiversity Low human influence Environmental tourism Good spatial organisation in restricted and public areas Integrated ecological monitoring	Sensitive ecosystem Heterogeneity and biodiversity mainly depend on linear features No corridors in landscape Loss of river naturalness due to dam construction Unbalanced temporal and spatial grazing	Dynamic features that may shape landscape in the future (e.g. rivers) Landscape management will keep cultural values and rich flora Conservation activities related with natural parks	Growing air, water, soil and noise pollution Water conflicts: increasing river fragmentation, flooding, irrigation, water use Intensive use of natural resources Climate change Increase in plant diseases Land use changes Decrease in landscape management Uncontrolled tourism

	Strengths	Weaknesses	Opportunities	Threats
L A N D S C A P E P O L I C Y	Bilateral agreement on nature conservation Commitment for international co-operation on highest political level Well-established organisation Demonstration of integrated projects Protection through legislation on both sides of the border	Slow process of international co-operation Different management between regions involved Different legislation Lack of integrated plan to manage the region and its sustainable development Frontier zones are sometimes forbidden to study and visit	Creation of transboundary parks International co-operation regarding rivers and water management New orientation of CAP, especially rural development regulation World Heritage Diploma More co-operation with bordering accession countries	CAP accelerates land cover changes Uncertainty about complete execution of planned projects

8. Agriculture and forestry play an essential role in shaping of transfrontier landscapes and in maintaining local communities. It is essential to keep these sectors sustainable in order to preserve the environment of the regions.
9. Nature parks and other kinds of nature and landscape protected areas are common to all the case studies. They offer new possibilities to promote co-operation between the cross-border regions.

6. CONCLUSION

A great variety of national and regional landscapes have been developed and created as a result of long-term interactions between nature and society. A particular richness of cultural landscapes in Europe is a distinctive feature of the continent (after Meeus, 1995). The transfrontier landscapes have got a unique added value which stems from their specific position on boundaries between two different regions, nations and cultures. Exchange of information and experience between the bordering nations and/or communities particularly through joint research projects, common management of natural areas and educational programmes will avoid isolation and promote integration. This co-operation should take place on different levels ranging from local municipalities to Pan-European (Wascher and Pérez-Soba, eds., 2004).

Common environmental legislation is vital to protect the environment of the transfrontier areas, which strongly supports the coming into force of the European Landscape Convention. Existing successful examples of cross-border co-operation such as the river and water management between Belgium and The Netherlands should be stimulated and supported at a European level.

The new Pan-European Landscape Typology (Mücher et al., 2003) might be used to analyse and compare landscapes at the European level. The development of Less Favoured Areas and agri-environmental schemes play a crucial role in transfrontier landscapes where rural development is a key issue. Tourism is also extremely important in the development of border regions. A balance must be found between economic interests of local and regional people and authorities and nature and landscape conservation.

The separating role that many transfrontier landscapes are playing at present might be turned into making connections between bordering regions through common spatial planning.

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Krajina jako přeshraniční fenomén: přeshraniční krajiny v Evropě

Resume

Evropská úmluva o krajině schválená Radou Evropy v roce 2000 vyzývá k přijetí opatření k ochraně, managementu a plánování krajin na lokální, regionální, národní i mezinárodní úrovni. Článek 9 Úmluvy je speciálně věnován přeshraničním krajinám a potřebě přeshraniční spolupráce v oblasti péče o krajinu. Přes nespornou integraci v rámci Evropské Unie je zřejmé, že tradiční hranice mezi regiony a státy hrají stále důležitou roli a mají vliv na management, plánování a ochranu krajiny. Přeshraniční krajiny na národní nebo i regionální úrovni se vyznačují celou řadou ekonomických, sociálních a environmentálních specifik, v nichž najdeme negativní i pozitivní rysy a které dohromady utvářejí jejich charakteristický krajinný ráz.

V roce 2004 byla zpracována studie o přeshraničních krajinách v Evropě, jejímž cílem je přispět k praktickému naplňování požadavků Evropské úmluvy o krajině. Přehledná publikace vychází z 14 jednoduchých případových studií přeshraničních krajin v Evropě. Přeshraniční krajiny jsou zde definovány jako „krajiny, části země, kde přírodní a kulturní charakteristiky utvářejí zřetelně rozeznatelné jednotky, které jsou rozdělené

státními, národními nebo regionálními hranicemi na dvě nebo více částí podléhajících různé jurisdikci" (Wascher et Pérez-Soba, 2004). Ve všech 14 případech byl použit stejný metodický postup: stručný popis přeshraniční krajiny s využitím nově vytvořené panevropské typologie krajín (Mücher et al., 2003) a její SWOT analýza. Cílem SWOT analýzy je objasnit klíčové rysy uvedených krajín. Silné stránky (Strengths) a slabé stránky (Weaknesses) se vztahují k vnitřním geografickým, sociokulturním a environmentálním vlastnostem krajín. Příležitosti (Opportunities) a ohrožení (Threats) se týkají vnějších faktorů a vlivů působících na krajinu s ohledem na očekávané trendy vývoje, změny v nárocích obyvatel a jejich životním stylu apod.

Přes velmi rozdílné geografické podmínky, politické a ekonomické odlišnosti, vyplývá z analýzy a následné syntézy zvolených případových studií celá řada společných rysů, které jsou přeshraničním krajinám vlastní:

1. Mimořádně důležitou úlohu jako podstatné rysy přeshraničních krajín hrají řeky, vodní plochy a horská pásma.
2. Mnohdy klíčový význam představuje nedávná historie (občanské války, invaze, odsuny obyvatel) a následně politické změny v pohraničních územích, jež podtrhují bariérový efekt přírodních hranic.
3. Přeshraniční krajiny jsou značně heterogenní, většinou v důsledku jejich geografické rozmanitosti a historického dědictví; tato heterogenita má za následek vysoce multifunkční potenciál pro rozvoj turistiky, ochrany krajiny a ekonomické využívání regionálních produktů.
4. Regionální identita může hrát důležitou roli, ať už bariér nebo mostů, v závislosti na historickém vývoji a souvislostech.
5. Pohraniční oblasti se vyznačují nedostatkem komunikací a další dopravní a obslužné infrastruktury jako důsledek rozdělení území přírodními a politickými bariérami a celkové marginalizace těchto oblastí.
6. Zemědělství a lesnictví hrají nejdůležitější úlohu v utváření přeshraničních krajín a udržování jejich osídlení. V zájmu ochrany prostředí a kulturní krajiny těchto regionů je důležité udržet tyto sektory životaschopné.
7. Národní parky, přírodní parky a jiné formy chráněných území se často vyskytují v přeshraničních krajinách po obou stranách hranic. Poskytují možnost rozvíjení spolupráce mezi regiony.
8. Další důležitou roli v rozvoji přeshraničních krajín hraje rekreace a cestovní ruch, ale i spolupráce ve vzdělávání apod.

Existující příklady úspěšné přeshraniční spolupráce v Evropě jsou např. mezi Belgií a Nizozemskem při managementu krajiny a řešení vodohospodářských problémů a zaplavových území podél pohraniční řeky Meuse. Ještě v první polovině 90. let minulého století byly názory na úpravu toku v obou zemích značně rozdílné, ale během 10 let zde došlo k významnému sblížení. Při řešení problémů rozvoje a managementu přeshraničních krajín je třeba trpělivě nacházet citlivou rovnováhu mezi ryze ekonomickými zájmy místních obyvatel a místních nebo regionálních institucí a mezi zájmy ochrany přírody a prostředí z pohledu národního i celoevropského. Bariérový efekt, který mnohé přeshraniční krajiny v současnosti způsobují, se může změnit na spojující roli mezi pohraničními regiony prostřednictvím integrovaného plánování.