Spatial Planning for the Sustainable Development of Particular Types of European Areas: Mountains, Coastal Zones, Rural Zones, Flood-plains and Alluvial Valleys

Aménagement du territoire pour le développement durable des espaces européens particuliers : montagnes, zones côtières et rurales, bassins fluviaux et vallées alluviales

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Sustainable Development in the Danube Region and the Role of European Frameworks for Water and Landscape

Presentation to Council of Europe Seminar

Spatial planning
for the sustainable development
of PARTICULAR types of European areas:
mountains, coastal zones, rural zones,
flood-plains and water meadows

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by

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Abstract

Neglected landscapes or polluted waters are indicators of a non sustainable development. Ecological, social and economic criteria have to be considered together if we aim a sustainable development throughout the Danube region with 18 European countries involved. There is a public consensus on ecological principles like in the Danube Protection Convention of 1994 but economic and social standards differ dramatically.

Some basic figures related to water and the use of water on the Danube basin scale conducted from different sources are presented to provide a basic understanding why a regional sustainability is not in view in the near future. However, regional sustainability will alter if we succeed to narrow the existing gaps of today in a continuous process.

Beside the heterogeneity of this region, a major issue is the scale of intervention. Recent European frameworks from the year 2000, the water framework directive on the overall scale and landscape convention on the community scale can develop commonly to an efficient public instrument, if they set common priorities for interventions.

Introduction

Within the framework of the Council of Europe and in particular the activities of the European Conference of Ministers responsible for Regional Planning – CEMAT, we came to Sofia to discuss the possibilities for a more sustainable development with a better land management in Europe. Four different types of land were figured out from the organisers: mountains, coastal,

rural and flood planes. For me these four types are sufficient to describe any area in Europe including urban ones. The differences can be analysed by the patterns of flow and shape of water bodies. Without mentioning it explicitly by the organisers of this meeting, these types of classification refer to a smaller scale within the territory of a local authority. My intention is to combine this approach with larger scale approaches of the European water directive.

The European Union agreed on the Water Framework Directive in 2000 and certain procedures became obligatory for all EU countries. The ecological and chemical states of European rivers have to be described until 2006 with the aim to preserve a good and to improve a bad state by water management plans. Until 2015 a harmonised approach should be on the way. So far, the efforts concentrated to involve the national and provincial authorities into this process. Others should follow later on.

One of the recent elaborates of the Council of Europe was the European landscape convention, which was signed by 24 Council of Europe member countries in Florence in October 2000. Natural and cultural aspects are equally important. The contextual embedding of several factors is in centre and water is a most important one under them. The landscape convention resembles the local Agenda 21 approaches initiated by several European countries after the World Summit in Rio in 1992. The landscape convention is directed to the smallest public authority scale, the communal councils. Until October 2002, Ireland, Moldova and Norway have ratified the European landscape convention. It is expected that others will follow soon.

I will follow the idea of combining the water framework directive and the landscape convention in two ways. First, I consider the extension of planning scales and position regional sustainability within a range of spatial scales. Second, I describe the Danube region to illustrate the peculiarities of this region.

Extension of planning scales and sustainable development over spatial scales.

Since the Stockholm Conference in 1972 and more distinct since the Rio Conference in 1992, sustainable development with economic, social and ecologic sound development is promoted everywhere in the world. The Agenda 21 program became a major concern all over the globe with the basic question: “Under what conditions economic growth is not harmful for the ecosystem?” All recent international agreements of environmental quality are related to sustainable development. In practical terms this means the common definition of environmental thresholds or procedures.

From a planning point of view, sustainable development is a process. It will not end in a steady state. Periodically, there is a need to reformulate the meaning and interests of sustainable development as continuously new issues are entering the debate.

Figure 1: Extension of planning scales

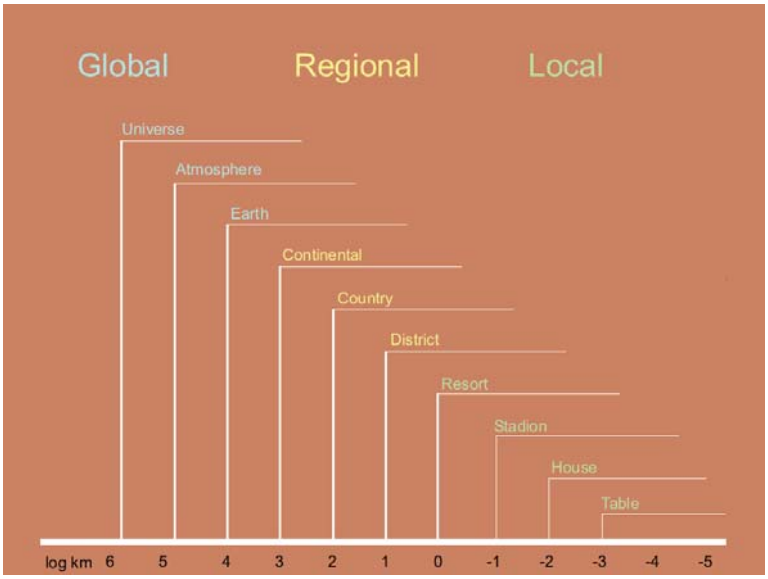

Figure1 Global, regional and local planning scales. The bottom line shows diameters of spatial extensions in log km scale. 2 corresponds to a diameter of 100km length or 10^2 km, 1 to 10^1 km or 10km, 0 to 10^0 km or 1km, -1 to 10^{-1} km or 100m and so on. The advantage of this presentation is that we see global and private scale phenomena on one chart. The Danube region extends approximately at 3 (10^3 or 1000km length) and includes 1 million km² if we anticipate the form of a square. It is situated in an international regional scale, the largest of the regional scales. The atmosphere is global and stretches over 100,000 km. The local scale starts with 1 km in diameter and private scale starts with 100m and goes down to the diameter of 10 cm at the point -4. When I sit on my desk, I am within any scale at the same time.

The interaction of spatial scales, global, regional, and local ones are obvious. Sustainable development on the global scale builds on a sustainable development within regional scales. A sustainable regional development builds on local sustainability. In homogenous parts of the scale there is a higher likelihood to foresee development. In heterogeneous parts there is a higher likelihood to discover surprises, often the reason for major changes and innovations. Gaps should neither become too large nor should they disappear.

Still the actors in planning concentrate on a few scales and integrating larger scale developments into local plans are just at the beginning. The issues of sustainability are mixed and depend on the spatial scale we address.

Reducing greenhouse gases is one interest of a sustainable development on the global scale. The Kyoto protocol to protect the atmosphere with the stabilization and reduction of greenhouse gases is an important international agreement. Despite the recent draw back from obligations by some countries the issue never received so much attention before. This issue pulls all other issues that are in focus on the smaller scales

Water becomes a key interest on the international regional scale. The European water framework directive was established to enforce concerted actions all over Europe. Physical, chemical, zoo- and phytoplankton and bacteriological indicators describe the quantity and the quality of water.

The use and shape of water bodies need adequate attention and for this the smaller regional scale is more appropriate. Landscape and the composition of water as landscape element with diverse water bodies providing habitats for all kind of organism are an interest on a much smaller regional scale related to communities.

We can regard sustainable development as a continuous process to improve planning by enlarging the range of topics from all spatial scales. Any new framework addressed on a particular scale of relevance that is taken seriously by a critical mass of decision makers will contribute to more sustainability. The smooth interaction from global, regional and local scales will lead to more overall sustainability.

Figure 2. Regional sustainability and the range of the water framework directive and landscape convention.

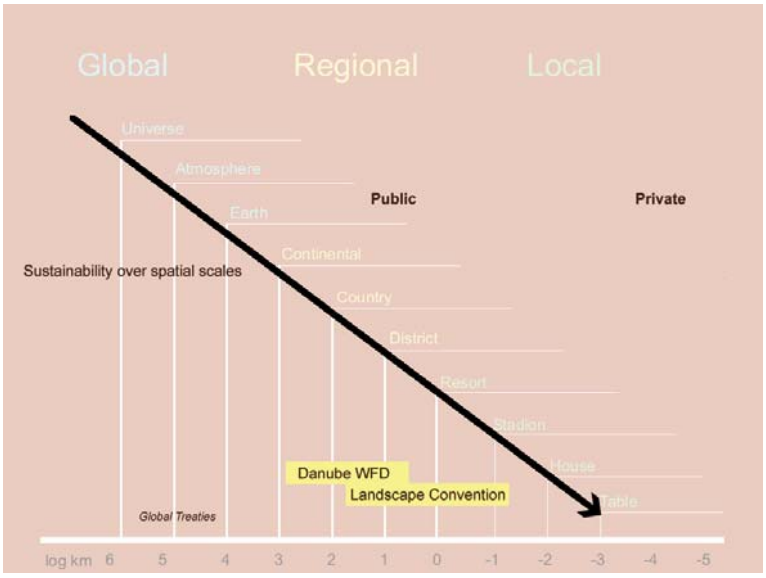

Figure 2 explains the idea of sustainability over many spatial scales. The line from global to local is the ideal that we want: sustainability from large scale to small scale. The water framework directive and the landscape convention support spatial planning efforts of the public sector within regional scales. While the water directive covers the larger scale, the landscape convention covers the smaller regional scale. In combination both frameworks cover what we generally consider as regional and public.

The two European frameworks of water and landscape cover each a particular range, where they intend to get the attention of the relevant actors in scale. In Figure 2, the range of the water framework directive for the Danube basin covers 3 to 2 or an overall area of about 1 million km² including smaller units with an average size of 10,000 km². The landscape convention deals with overall areas of several 10,000 km² - the size of nations undersigning it – consisting of smaller scale administrative units with a size of approximately 100 km² covering objects of the private scales.

Regional sustainability in the Danube River Basin

The aim is to assess the question of regional sustainability. The mental picture of sustainability is larger in scale than the practical effort. The frameworks designed for public scales management collect or stimulate wanted initiatives from the private scales. Best practice approaches from viewpoint of the water and landscape directive get more value in a program. What is considered as sustainable in the local scale can multiply in the regional scale. The framework of the larger scale is the water framework directive. The framework of the smaller scale is the landscape convention.

The issue of regional sustainability started long before in a period of cold war in 1980 with the Bucharest declaration for protecting the Danube River. The situation changed spectacularly after the break down of the communist block in 1989. The Danube Protection Convention was signed in Sofia in 1994. It led to the establishment of an international agency in 1997, the International Commission for the Protection of the Danube River, ICPDR. The European water framework directive from 2000 gave a legal basis for setting up water management plans. Those plans are expected for 2006.

The second half of the last century was characterised by rapid transformations and accelerated change. Inside the Danube region, we find modifications with land use changes, increase of overbuilt areas for settlements and traffic, construction of large river reservoirs with transformations of river beds, intensified agricultural land management practices with irrigation, drainage systems and multiplication of chemical inputs, growth of urban sewage, increasing demands in water supply in industries and services combined with an increase in waste water.

The Danube river basin contains 0.2% of the Earth surface or 0.5% of the global landscape. With 817,000 km² it is the 22nd largest river basin in the world and the second largest in Europe. With a length of 2857 km it is globally the 27th longest river. From the source in Germany up to Budapest, the Danube flows through mountainous and hilly terrain, from Budapest downwards to the Danube Delta, there are primarily lowlands. The highest point in the Danube basin is in the Swiss Alps with 4047m altitude (Biz Bernina). Beside parts of the Alps, we find fractions of Carpathian and Balkan mountains. The central parts of the Danube river basin consist of fertile planes and the delta.

A geo-physical division (IHP UNESCO, 1999) divides the Danube into three segments, the upper Danube from the source to the castle of Devin/Bratislava, where the river Morava flows into the Danube, the central Danube from Devin to the Iron Gate at the border Yugoslavia and Romania, and the lower Danube covers the Danube after the Iron Gate until the Danube Delta.

The Danube basin lies in a favourable climate zone of the world. The average annual temperature is about 9º C. The longitudinal range for temperature is ±1°C within the basin and about -1°C for 200m increase in altitude. Monthly temperature differences stretch over 20° C

along the year. Annual precipitation is varying from a maximum of 2000mm in mountainous elevations to a minimum of 300mm in lowlands, in average some 680mm a year.

Some 0.5% of the world precipitation amounting for 550 km³ water is raining or snowing within the Danube river basin. About 0.7% of global river runoff or 270 km³ derive from the Danube and 0.4% of the global evaporation or 280 km³ (own estimate based on global and European estimates of L´vovich and White, 1990) happen over the land cover of the Danube river basin. The Danube has a mean discharge of 6,400 m^3s^{-1}. The estimated mean sediment load is 19 million tons per year and the mean dissolved load is 60 million tons per year (Douglas 1990).

Around 1.5% of the global population with 83 million people (ICPDR 2002) are living in the Danube river basin. With about 100 inhabitants per km² the Danube river basin is about three times more populated than the world average. Compared to other European regions, e.g. the Rhine region, the Danube region can still be considered as scarcely populated. The inhabitants have in general good access to water resources. Assuming a high average daily demand of 600l freshwater per inhabitant, some 20 km³ are annually converted into waste water. While it seems that the quantity of freshwater can easily be supplied, the seasonal availability of water can be a problem. In some years there can be drought, in other flooding.

The recent results in the report of the Joint Danube survey (ICPDR 2002) in particular the phytoplankton and zooplankton measurements demonstrate that general pollution levels of the Upper Danube and Lower Danube countries are generally less than the ones of central Danube countries. We find several and diverse ways of using and managing land and water in the Danube river basin, primarily based on the economic possibilities of the countries. Austrian and German cities are almost entirely built out with sewage treatment plants, while Budapest and Belgrade do not have yet a satisfying system to treat wastewater at relatively high levels of polluting substances like detergents. The downstream countries have neither a high level of polluting inputs nor sewage treatment plans.

Economic disparity is large. The average person in Switzerland – the leading country in terms of income - has some 30,000 US$ GNP per person and year, the average income of a person in Moldova – the poorest country - is 500 US$ GNP per person and year. Based on economic figures we find three sectors: a) the economically rich upstream sector with Austria, Germany, Switzerland, the b) moderate rich in between sector with Czech Republic, Slovakia, Hungary, Slovenia, Croatia and c) the less rich sector with Yugoslavia, Bosnia-Herzegovina, Bulgaria, Romania, Moldova and Ukraine (Fischer Verlag, 2001). In addition we find four more countries, Italy, Poland, Albania and Macedonia with minor shares – less than 1000km² - of their countries within the Danube river basin. Former Yugoslavia was reported to have higher income disparities within its borders than the European Union had. A sustainable regional development with so large economic differences is not possible.

In many parts of the world we find tendencies of globalisation and unifications to larger regions. In contrary to the global tendency, the Danube region is characterised by divided segments, first with the reminders of the old East-West division and second with the recent war division of former Yugoslavia. The effects of war are disturbed houses, bombed industries or bridges, mines on abandoned land and the devaluation of the land one was fighting for. Visa procedures limit the traffic of people and goods in the former unified country. From the social point of view, we are far away from a regional sustainability.

The segmentation is perhaps not bad from the viewpoint of ecology. The shortage of inputs to intensive agriculture led to a decrease of pollution levels. Measurement undertaken in irrigation channels of Voyvodina (Matavuly 2000) proof a better water quality than before the war. Without intention, wide agricultural areas would today qualify for organic food production and help to satisfy the demand on the European market that can not be supplied now. Sarcastically, the intended aims of local Agenda 21 initiatives to reduce water pollution in rich countries (Breiling 1997) - where they failed opposing economic interests - were successful in war areas.

The flow of people is against the flow of the Danube current, from poor to rich. We find Moldavians working in Romania, Romanians working in Serbia, Serbians working in Hungary and so on. Economically it makes sense to move for many people, regardless if it is legal or not. This in turn puts pressure on local labour markets in richer countries and can be a reason for animosity between locals and newcomers. Another problem is a wide-ranging lack of interest from rich countries in poor countries of the region. Here it can be a key concern to stimulate more frequent contacts to improve a general understanding.

The smaller scale of regional sustainability should be promoted by the European landscape convention. The ensemble of the landscape is in focus. The shape, functionality and beauty of water bodies are in particularly important in a landscape perspective. While the large scale of the Danube region is for many inhabitants abstract. Most inhabitants of the Danube region have not visited other parts of the basin. They lack a basic understanding for such different conditions. The small scale of their landscape is their point of understanding and identification.

Single projects are essential to move regions to more sustainability. They call for co-ordinated administration of planning and for major in depth analysis of landscape and water on the smaller regional scales. Many people should contribute and become actors to ensure the success of a program for more regional sustainability. Here waits a hard piece of work in convincing the local people, who have to carry out these projects. Sustainable projects are not suited to become rich within short time, but they can give an appropriate income in the long run and keep economic less favourable places populated.

Conclusions

A single framework like the water directive caring for harmonised environmental standards throughout the region gives visions for a sustainable regional development. A complementary framework on the smaller scale that considers the particular context of water in the overall environment is needed. We propose the landscape convention, as landscape includes nature and culture with all ecological, economic and social foundations that contribute to sustainability.

So far the development is not comparable throughout the Danube region. Primarily the economic differences are responsible for an unsustainable regional development. The economic and environmental thresholds are different in each country and district of the Danube river basin. A successful implementation of the European frameworks will contribute to a more sustainable development within the Danube region.

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