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New Models for Innovative Management and Urban Dynamics | Editor Thomas Panagopoulos | Land Management

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New Models for Innovative Management and Urban Dynamics

Editor
Thomas Panagopoulos

Research Center for Spatial
and Organizational Dynamics

University of Algarve
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New Models for Innovative Management and Urban Dynamics

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This book collects the contributions of speakers and participants (Reviewed papers) at the COST Action TU0602 Conference, 12-14 October 2009, Universidade do Algarve, Faro, Portugal.

COST- the acronym for European COoperation in Science and Technology - is the oldest and widest European intergovernmental network for cooperation in research. Established by the Ministerial Conference in November 1971, COST is presently used by the scientific communities of 35 European countries to cooperate in common research projects supported by national funds.

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CIEO - the acronym for Centro de Investigação sobre Espaço e Organizações (Centre of Spatial Research and Organizations). The CIEO represents a link between the various components of management organizations in the area and fits in a theoretical line linked to the decentralisation and the regional or local systems of innovation, which is based on learning and social responsibility and maintains the basis for the development of the territories and places.

The location of this centre at the University of the Algarve responds to some structural shortcomings in the process of development of the southern region of the Iberian Peninsula. These include a marked economic growth, determined by a high tourism pressure, with a strong environmental and urban impact. This is a region subjected to external growing constraints and whose accelerated growth has generated positive and negative externalities that require an evaluation and consideration at the level of European and national policies of local and regional development.
Following this strong growth, there is a business structure with a small dimension, geared to the dominant activity, tourism, with little aptitude for technological innovation. It is important, if not essential to find a way to interact with such a business context, integrating it into the concerns of current scientific research.
The CIEO is also concerned with the disciplinary interaction with the i) science and products of the sea and the environment, as well as the agricultural sciences, biotechnology and agri-food technology, ii) alternative energies, given the unique circumstances in terms of energy resources available in the south of the Iberian Peninsula. The CIEO also incorporates concerns at the level of the environmental effects resulting from the pressure of economic and natural activities.

Website: http://www.cieo.ualg.pt

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TABLE OF CONTENTS

Introduction on New Models for Innovative Management and Urban Dynamics

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At a time of rapid economic change where the capacity of European cities to control their development towards a globally more sustainable development is at stake, it seems of utmost importance to identify the regimes, policies and tools that best suit land management strategies for urban dynamics within a general context characterized by globalization, fierce economic competitiveness, territorial competition and the strong need to conceive urban planning actions under the auspice of, for example, public-private partnerships or other innovative cooperative forms.

Previous studies in urban development show the decisive importance of the public actor's ability to mobilize the required land resources for the success of urban projects. European cities largely differ from each other in their land ownership situation, building industry and real estate configurations, mortgage system, planning culture, policies, and management tools. However, the actual impacts of those differences on the success of urban development are poorly known, in spite of their utmost importance for European long term economic growth, especially for new Eastern EU members.

The main objective of the conference "New models for innovative management and urban dynamics" was to discuss and develop tools for a comparative framework of land management regimes and policies and to produce recommendations for land mobilization methods and tools in order to foster urban dynamics within a knowledge based society.

Target issues:

- Discuss land management regimes and land policies prevailing in European cities and others across the world;
- Present urban allocation and reallocation tools;
- Present mobilization capabilities of cities and promote cases of sustainable development best practices; if possible promoting comparative framework and discussions;
- Discuss promotion and development of prevailing land management regimes, land policies and reallocation tools as well as long term monitoring procedures;
- Produce recommendations for further, funded research on land management for urban dynamics;

> Special emphasis was given to urban development related with tourism and golf related resorts.

This book contains the proceedings of the International Conference "*New models for innovative management and urban dynamics*", which was held in the University of Algarve, Research Centre on Spatial Research and Organizations, Faro, Portugal on October 12-14, 2009, for the COST action TU0602-Land Management for Urban Dynamics. Forty delegates from 18 countries participated and local authorities, journalists and 60 pos-graduate students and professors of the University of Algarve follow up the sessions during the meeting. The Conference was opened by **Maurizio Tira** (University of Brescia, Italy) chair of the action, **Thomas Panagopoulos**, convenor of the conference, **Macario Correia** (President of Association of Municipalities of Algarve) and **Eric Britton** (New mobility Agenda, Paris) who was the KEYNOTE SPEAKER of the conference and the session was moderated from Professor **Teresa Noronha** (Director of Research Centre on Spatial Research and Organizations) which made an excellent work preparing and co-ordinating these events. Professor **Andre Leitão** (Research Centre for Landscape, Territory and Urbanism, University of Algarve) who was PLENARY SPEAKER also described some of his research projects currently being carried out by his team. Professor **Jon Burley** (Michigan State University, USA) with his speech "New Ecologies: Emergence of the Urban Savannas and Cliff Detritus in a Post Post-modern Era" provoked long discussion between delegates. During the field visit, we show Brownfield and Greenfield development and we discussed the ecological, cultural, economic and legal aspects of sustainable urban development. Parallel sessions were chaired from the Working Group leaders **Bruno Zanon** (Dip. di Ingegneria Civile e Ambientale, University of Trento, Italy) and **Erwin Van Der Krabben** (Radboud University Nijmegen, Netherlands).

Finally, we cordially thank all the participants for their efforts to maintain the high scientific level of conference and of this book.

Brief biography:

Thomas Panagopoulos born in Larissa, Greece, has M.Sc. in Renewable Natural Resources and PhD in Forestry and Natural Environment from the Aristotle University of Thessaloniki, Greece. His main research fields are "landscape reclamation" and "sustainable development". He has been Department Head and Director of the Master Landscape Architecture at the University of Algarve, Portugal. He is vice-director of the Centre of Spatial Research and Organizations (CIEO). Invited Academic Lecturer of various Universities and Research Organizations like: Michigan Sate University, USA, Huelva University, Spain, Latvia University of Agriculture and Aristotle University of Thessaloniki, Greece. Author of more than 100 publications, he teaches Landscape reclamation, Environmental impact assessment and Computer assisted design. He is at the editorial board of various national and international scientific journals: "WSEAS Transactions on Environment and Development", "Revista Ibérica de Sistemas e Tecnologias de Informação", "Spatial and Organizational Dynamics

- Discussion Papers", "International Journal of Systems Applications, Engineering & Development" and representative of the University at the European Network of Universities for the implementation of the European Landscape Convention (UNISCAPE).

Plenary Lecture

The Politics of Transportation: New Thinking & World-Wide Collaborative Problem-Solving

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Abstract:

Unconstrained by bureaucracy, economic interests or schedules, New Mobility was launched in 1988 as an open international platform for critical discussion, exchanges of materials and views, and diverse forms of cross-border collaboration on the challenging, necessarily conflicted topic of "sustainable transportation and social justice".

Virtually all of the necessary preconditions are now in place for far-reaching, rapid, low cost improvements in the ways that people get around in our cites. The needs are there, they are increasingly understood and we now know what to do and how to get the job done. The challenge is to find the vision, political will, and leadership to get the job done, step by deliberate step: But we have to have a coherent, ethical, publicly announced, checkable, overarching strategy. Without it we are destined to play at the edges of the problems, and while we may be able to announce a success or improvement here or there, the overall impact that your city needs to break the old patterns will not be there. We really need that clear, consistent, omnipresent strategy.

The Agenda provides a free public platform for new thinking and open collaborative group problem solving, bringing together more than a thousand leading thinkers and actors in the field from more than fifty counties world-wide, sharing information and considering together the full range of problems and eventual solution paths that constitute the global challenge of sustainable transport in cities.

Brief biography of the speaker:

Born in Mississippi and educated in New England and Europe, Eric Britton studied science at Amherst and Columbia College, and later the PhD program of the Graduate Faculty of Economics at Columbia University. In 1967 he co-founded EcoPlan International, a cross-disciplinary think tank and consultancy. He has served as high level consultant to the OECD,

European Commission, United Nations, and a long list of national and regional government agencies, and as a visiting lecturer at a number of US and European universities.

In all his work he is strongly committed to the goal of immediately and without delay bringing larger numbers of women into leadership positions and, often to the annoyance of his colleagues and clients, insists that each project give special emphasis to this key sustainability vector. His 1993 report for the European Commission "Rethinking Work: New Ways to Work in an Information Society", was later re-issued as a widely read and cited 'thinking exercise' for managers and policy makers. In 1996 his collection "The Information Society and Sustainable Development" was published by the European Commission. Communications, 'distance work' and aggressive use of the internet are important components of my work practices.

In June 2002 he was awarded the prestigious World Technology Network Prize for outstanding achievement in the intersect of technology and the environment. Over 2001-2002 he served as chair of the international jury of the Stockholm Partnerships for Sustainable Cities, a program with which he maintains a long term interest. In 2000 he and Enrique Peñalosa, then mayor of Bogota Colombia, were co-awarded the Stockholm Challenge Prize for 'outstanding socio-technical innovation'.

New Ecologies: Emergence of the Urban Savanna and Cliff Detritus in a Post Post-modern Era

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Abstract:

Planners, designers, governmental authorities, citizens, and non-governmental organizations are interested in the composition and structure of the environment, including the transformation of the landscape from one type of environment to another. Urban sprawl with the creation of the noosphere containing vast urban savannas and extensive cliff detritus communities are transformations that concern many stakeholders. However, research suggests that comparatively, urban savanna is one of the most diverse, productive, and ecologically rich environments in the world. As the world's ecological environment changes, the rise of the urban savanna represents a new ecological setting in which vegetation, animals, soils, water, and human habitat are integrated in a new manner. The urban savanna is often quantitatively visually pleasing, culturally diverse, economically productive, and more robust to change than many biospheric environments. In many respects, ecology, aesthetics, and economics are merging to form this new ecological setting. With the emergence of post post-modernism (alternatively context sensitive design - CSD), these new settings respect cultural diversity and counter-balance some negative trends in globalization. To illustrate the evolution of the urban savanna, examples selected from the American Upper Mid-West, Algarve Portugal, and Jiangsu Province P. R. of China are presented.

Key-Words:
landscape ecology, landscape planning, urban ecology, landscape architecture, environmental history

1 Introduction

Planners, designers, governmental authorities, citizens, and non-governmental organizations are interested in the composition and structure of the environment, including the transformation of the landscape from one type of environment to another. There is concern that as the transformation occurs the positive attributes of past environments will be lost and that the new environments will contain attributes that are not desirable. Concerns

about urban sprawl and land transformation have been recently illustrated by investigators such as Jacquin *et al.* (2008), Catalan *et al.* (2008), Compas (2007) and Weng (2007).

In the case of agricultural and wild lands transformed into urban land (sprawl), there is a concern that urban land will be less desirable than the land it replaced. Critics of urban sprawl state that it destroys wildlife habitat, degrades water quality, pollutes the air, and a variety of other negative attributes (Figure 1).

Figure 1. This image illustrates the condition of the pre-urban savanna complex, where vegetation has been removed and soils exposed. Site erosion is high and the environmental quality of the pre-urban savanna complex is poor. Such an environment causes great concern in landscape transformation to urban areas. (Photograph courtesy of North Dakota State University, undated).

In some cases this may be true. However, research over the last 30 years suggests that the transformation of land into urban environments may also contain some special opportunities and some very positive attributes. In the same manner as the biospheric environment has been explored and assessed, scientific investigations are required to evaluate the attributes of the built environment. Inquiries such as McDonnell, Hahs, and Breuste (2009) illustrate the nature of such investigations and facilitate the construction of the built environment to accommodate man and other organisms. The intent of this discourse is to illustrate the emerging special classification, spatial character and physical properties of urban land in comparison to other landscape types by selecting examples from the American Midwest, the Algarve, Portugal, and Jiangsu Pronvince, P. R. of China.

2 Pertinent Literature

In the literature, there are three topics of current interest that together create an emerging image concerning the built environment. These three topics are: urban ecology, landscape aesthetics, contemporary planning and design philosophy.

2.1 Urban Ecology

In the last quarter of the 20th century, scientists and landscape architects began to examine and describe urban environments (nooshpere) in the same descriptive manner as the undisturbed environments (biosphere) (Forman and Godron 1986 and Naveh and Lieberman 1984). At first the descriptions were simply cultural geographic stories, as illustrated by the late J. B. Jackson (1984), but a more scientific approach was quickly adopted by others.

These scientists could illustrate a classification continuum from biospheric environments to noospheric environments, based upon the amount of human disturbance. In many respects, all of the environments can be conceived as natural phenomena of the planet, with some environments evolving and existing with little human interaction and others requiring extensive human involvement. Nassauer (1997) discusses these various perspectives concerning nature and people. At times there have been strong advocates and biases in favour biospheric conditions, precedents, and properties as illustrated by Carson (1962) and McHarg (1969). However, a group of Canadians led by the late Robert Dorney began to study the noosphere in the same manner as the bioshperic environments (Brady *et al*. 1979). Robert Dorney's team was able to classify urban environments into several types. Of particular importance were the urban savanna and cliff detritus configurations. A savanna is a landscape with at least one tree per acre and less than 50% canopy (Fig. 2). Urban savanna has buildings typically no taller than two stories and is surrounded by a matrix of trees and forbs/grasses.

Figure 2. Urban savanna in Vancouver, Canada containing multiple layers of vegetation. (Used by permission, © 2006 Jon Bryan Burley, all rights reserved.)

Cliff detritus (Figures 3 and 4) is an environment with buildings equal to or greater than three stories and surrounded by a matrix dominated by hardscape materials (paving). They discovered some interesting attributes of the urban savanna. Biologically, especially concerning plants and avifauna, these were some of the most productive and diverse environments in the region (Brady *et al.* 1979). In contrast, the cliff detritus was far less diverse. Although the cliff detritus has substantial avian biomass in the form of rock doves (*Columba livia* Gmelin), this environment was viewed as quite detrimental, whereas the urban savanna was viewed as biologically quite acceptable, even favourable. Thus the team was able to determine that the built environment was a mixed blessing containing high quality environments and poor quality environments.

Figure 3. Cliff detritus in Vancouver, Canada. (Used by permission, © 2006 Jon Bryan Burley, all rights reserved.)

Figure 4. Detail of cliff detritus in Vancouver, Canada, with low biological diversity. (Used by permission, © 2006 Jon Bryan Burley, all rights reserved.)

2.2 Landscape Aesthetics

In addition to the biological quality, scientists have been investigating the aesthetic quality of the built environment. Several interesting principles have been discovered (Burley 2006 and 1997):

1. The more people, cars, power lines, signs, buildings, utility pedestals, bridges, retaining walls, fences, eroding soil, and pavement in the landscape, the landscape quality decreases. Even the most highly prized buildings score poorly when there is nothing to view but structure.
2. Flowers (wild and cultivated) and animals (wild and domestic) significantly increase visual quality.
3. Buttes, rock-faced cliffs, rocky hills, and distant mountains in the landscape scene significantly increase visual quality.
4. Landscapes with a degree of refuge, prospect, and mystery significantly increase visual quality. Design professionals have suspected this for a long time, but it is only recently that constructs for these variables have been developed, tested, and applied. This means that there must be some vegetation in the foreground (refuge), and something to look at (prospect), connected by a (preferably winding) circulation system, resulting in mystery.
5. Visual quality and environmental quality are strongly linked together, as Burley (1997) discovered that a simple environmental health index is a significant predictor of visual quality. This means that pollution and energy consumption negatively affect visual quality. In contrast, landscapes which support cultural diversity, contribute to the economy, and support biological diversity, have a positive effect on the visual quality of the landscape.

6. Placing vegetation into urban landscapes does make a significant improvement in the visual quality of the environment. Vegetation does make a real difference.
7. Placing more vegetation into rural landscapes with views of mountains, wildlife, and wildflowers can obstruct views of these features and actually decreases the visual quality. Thus vegetation can also make a negative difference.
8. The more green vegetation, sky, clouds, snow, and water viewed in an image, the more neutral (neither high nor low) the image becomes.
9. Variables such as fire and dead vegetation are not directly significant predictors of a broad general visual quality model.
10. Images can be numerically compared statistically; the two compared images can be evaluated to see if they are significantly different.

Thus one can have a degree of certainty that the images of interest are perceptually different or similar. Computing imaging technology can then be employed to study the placement and design of landscape features to improve or adjust the score (see references listed at the end of this article).

It is actually possible to numerically quantify the contribution that various landscape management treatments and designs can make to improve environmental quality (Mazure and Burley 2009).

Based upon the work in 1997, Burley (2006) also notes:

[T]he "Theory of Human Intrusion,"… postulates that humans behave in ways that intrude upon other humans and that these intrusions can be viewed in the landscape.

Furthermore, humans' intruding upon one another is not a constructive social activity. The visual quality equations suggest what types of landscape features may be considered intrusions. For example, according to the research, buildings are intrusions. Thus buildings, no matter how highly acclaimed, are intrusions from one person to another. This does not mean that we should dislike buildings or that architects do a poor job designing buildings, but rather, an environment consisting of nothing but buildings will not be well received by the general population.

In addition, an abundance of people, cars, pavement, eroding soil, and related features are signs of people intruding upon each other. Landscapes which contain these features are not highly appreciated by the public.

The second theory is the "Theory of Landscape Enhancements." This theory suggests that people prefer those events from nature that are special and temporal (not easily seen as they exist in a location for a short duration), such as an animal in a scene or flowers on display. Animals move and flowers have a limited time for blooming. So when these features are present, they are appreciated and enhance the quality of the landscape. Potentially, there could be other variables in the landscape that could be tested as enhancers, such as special atmospheric effects like the northern lights. In addition, other landscape attributes such as fall color, or possibly landscape features such as sculpture may have a positive enhancement quality.

The third theory is the "Theory of Neutral Modifiers." This theory suggests that the common spatial elements (pre-civilization features) found in the natural and even rural landscape such

as sky, clouds, green vegetation, and water comprise the neutral environment from which a landscape can be enhanced or de-valued. Landscapes that contain an abundance of neutral modifiers result in visual quality scores that are neither high or low. They are significantly different from those landscapes with an abundance of intrusions and landscapes with an abundance of enhancements.

With these principles and theories in mind, for the cliff detritus environment, the visual quality is often quite poor, with many human intrusions (Figure 3). Conversely, the urban savanna fairs quite well (Figures 4 and 5) because vegetation can mask the intrusions imbedded in the landscape. It is relatively easy to understand that the urban savanna landscapes with an abundance of birds, wild mammals, domesticated pets, flowers, and diverse vegetation will be perceived as somewhat beautiful, often as beautiful as the best of biospheric landscape settings.

2.3 Contemporary Planning and Design Philosophy

Besides, biological and aesthetic investigations, the literature is noting changes concerning trends related to the built environment. Recently Burley (2007) described the various historical phases in landscape architectural design:

'Over the last 160 years, landscape architecture has evolved along several somewhat distinct phases. Distinguished scholars such as Tom Turner from the University of Greenwich, UK suggest that landscape architecture is currently in a post post-modern period (Turner 1996).'

Some designers call this post post-modern era the age of context sensitive design. Context sensitive design means that each design must be respective of the local culture, history, wildlife, economics, and other existing attributes of the environment (Westphal *et al*. 2005). In the United States this approach started with transportation designers and planners having to train the engineering community to be more respective of site context in their transportation projects. In addition this approach is being embraced by citizens who are reacting against the homogeneous environments of globalization. Culture and context do matter.

These three topic areas comprise a set of science based beliefs and theoretical positions concerning the built environment.

The green environments of the savanna are biological complex, aesthetically beautiful, and have potential to be culturally sensitive. In contrast, the stark grey environments of the cliff detritus are less biologically complex, aesthetically intrusive, and a challenge to make culturally responsible.

3 Case Studies

To illustrate the emerging perspectives concerning the built environment, three case studies are presented. The case studies are from the United States of America, Portugal, and the People's Republic of China.

3.1 Red River Valley, USA

In 2008, Burley published a study where he compared the vegetation diversity of the native forests and the urban landscapes in Fargo, North Dakota and Moorhead, Minnesota of the Red River Valley of the North (Figure 5). The river is the border between North Dakota and Minnesota.

Three measures of diversity were calculated for each stand: floristic list, Shannon Weiner Index, and Simpson Index (Smith 1974). The study revealed that the urban savanna was indeed more diverse than the local woodland landscape. Even the cliff detritus fared well.

Figure 5. An oblique aerial view looking west of the Red River Valley of the North illustrating urban savanna (top) and gallery forest along the river (bottom). (Used by permission, © 2009 Jon Bryan Burley, all rights reserved.)

Figure 6. A view looking northwest from Faro, Portugal, containing urban savanna, cliff detritus, and preserved natural areas. Eventually much of the Algarve will look similar to this image. (Used by permission, © 2003 Jon Bryan Burley, all rights reserved.)

3.2 Algarve, Portugal

In 2006, Burley *et al.* reported upon the various landscape transformations of the Algarve, Portugal (Figure 6).

'The landscape of the Algarve, Portugal is the story of a highly altered environment, creating a landscape that has been almost totally disturbed and contains a few indigenous remnants. With the assistance of EU support, this agrarian landscape is being transformed from a self-sufficient fishing and farming region into an integrated, globally connected urban savanna of second homes and cliff detritus dwellings with pockets of preserved agrarian, historic, wildlife habitat, and wetland environments.' (Burley *et al.,* 2006). Across historical time, Jorge (2006) Marques and Mabberly et al. (1993), and Rocha, (1988) present additional information concerning the progression of changes in the Algarve.

3.3 Haian County, Jiangsu Province, P. R. of China

Haian County resides upon the Yangtze River delta in east central China (Haian County Annals Editorial Board 1997). At one time, this area was an extensive wetland, but through the use of canals, the land was drained and became agricultural. Villages from this area are over 5,000 years old. The area is famous for rice production and riverine fish. Currently this agricultural landscape is being transformed into urban savanna (Figures 7 and 8).

A network of roadways with adjacent

houses and shops surround small patches of agriculture. This landscape is rich in avifauna, amphibians, and fish, along with croplands composed of rice, cotton, winter wheat, gingko orchards, peanut, corn, squash, soybeans, mulberry groves for silkworm production, and bok choy.

3.4 Significance of the Three Case Studies

Each of these three sites have a history of transformation and change. In addition, each site is still evolving. Each area contains a combination of natural-like features with an expanse of urban savanna and thus the landscapes are biologically quite diverse. Yet each landscape is representative of a different culture, unique in identity and special in character. The settings also contain economic features to sustain these places.

Figure 7. A view of the lineal streetscape network in Haian County. (Used by permission, © 2009 Jon Bryan Burley, all rights reserved.)

Figure 8. Rice fields behind an urban savanna. (Used by permission, © 2009 Jon Bryan Burley, all rights reserved.)

4 Conclusion

Built environments have physical characteristics that can be studied in the same manner as biospheric landscapes. Investigators have determined that cliff detritus environments may contain features less sympathetic to other organisms on the planet; yet the urban savanna may be a landscape setting that contains features with desirable characteristics ecologically, aesthetically, and economically-culturally. During the post post-modern age, planners and designers are faced with creating and protecting environments the are ecologically, aesthetically, functionally, culturally, and economically thoughtful. The characteristics of the urban savanna may be one type of landscape where such thoughtfulness can be accomplished. Further research may facilitate the fine-tuning of these potentially positive environments.

Acknowledgements

Portions of this document are reproduced from Burley (2008) and from the 2007 International Landscape Architecture Exchange Conference, Chinese Society of Landscape Architecture(CHSLA), International Federation of Landscape Architects(IFLA), Wuxi, China: 138-149.

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Land Use Planning in Portugal: Brief History and Emergent Challenges. The Case of Faro, Algarve Region, Portugal

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Abstract:

The first section of this paper provides a brief historical review on land use planning in Portugal. Land use planning (LUP) in Portugal only recently covers the entire national territory. Until the 1970's planning in Portugal was mainly focused on economic development, at the national level and occasionally on urban planning at a more local level. Only after 1974 the planning legislation begins to extend its reach beyond urban areas to include the entire territory, and to address regional and local planning levels. Many regional plans (PROT) started in the end of the 1980's. In 1990 local land use plans (PDM) started nationwide, the majority being published over this decade. Strategic plans were produced for a large number of average-size cities 1994 onward. In 1998 it was implemented the Portuguese Land Use Planning System (LUPS). The first national territorial plan was published in 2007. Currently the first generation of PROT is almost all concluded. Some are already under revision. Similarly the first generation of PDM is under revision. The second section provides for a case-study focusing on land use change (1990-2000), based on Corine Land Cover data, of a peri-urban landscape in the region of the Algarve including four urban areas: Faro, Loulé, Olhão and S. Braz de Alportel. Following ESDP guidelines the newly approved Regional Plan for the Algarve (PROTAL) for the urban system proposes for this landscape to evolve towards a polycentric urban agglomeration. The hinterland located between the four urban areas should, in our perspective, assure a multifunctional character, providing for production (agriculture mainly), recreation, protection of the fundamental ecological systems, and the landscape quality overall. If these functions are assured, we should be proactive. New challenges for LUP in Portugal emerged within ESDP and LUPS contexts, continuing urban sprawl and the new paradigm on energy and its effects on urban planning and design. Accordingly the third section explores emergent paradigms in land use planning, urbanism, landscape architecture and related disciplines to address these new challenges posed either by PROTAL proposals for a urban polycentric system, the need of extending traditional scope of city planning in built areas to include the outer landscape, or the need of alternative urban planning strategies to counteract for urban sprawl, and or simultaneously promote concentration of built-areas and allow for multifunction cities and metropolis.

Key-Words:

land use planning, historical review, polycentric system, strategic planning, governance, peri-urban areas, land use change, landscape metrics, Portugal, Algarve.

1 A brief historical review on land use planning in Portugal

1.1 The beginning

Until the 1970's planning in Portugal was mainly focused on economic development mainly at the national level and on urban planning at a more local level. With higher concentration of human population and its activities in urban areas these demanded immediate resolution of several problems, e.g. those related with human comfort, sanitary and security issues, and building's aesthetics. Similarly in Europe, e.g. in the United Kingdom planners were mainly concentrated with managing urban sprawl and less with non-urban areas, e.g. the countryside (Botequilha-Leitão and Ahern 2002). The City-Region concept proposed by Patrick Geddes and others related revolutionary ideas about city planning in the XIX century were gradually lost. Only later these were resumed, notably by Abercrombie and Borshaw in the London Plan of 1943 advocating for the newly concepts of "green belt" and "new cities" (Magalhães 2001). In Portugal there were exceptions also, some identified below.

According to Saraiva (1999) during the 30's and 40's the land use planning system in Portugal was slowly being developed. In this period plans were produced only for those areas in Portugal that revealed stronger urban pressure, e.g. the General Plans for Improvement (Planos Gerais de Melhoramento or PGM) for Lisboa and Porto. In 1934 the PGM were replaced by Urbanization Plans (UP) (Condessa 1995 cited in IGEO, s.d.). In 1948 a Director Plan was produced for the city of Lisboa, the nation's capital, and later another one in 1958 (Figure 1).

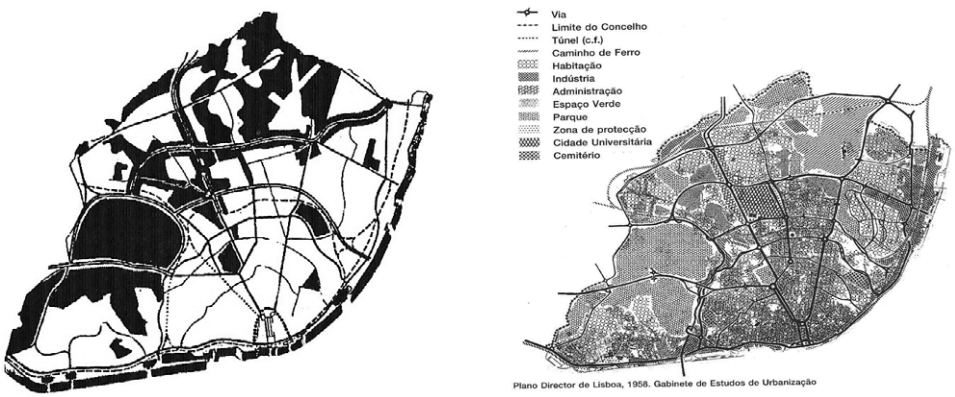

Figure 1. Masters Plans for Lisboa: 1) by DeGroer (1948) (in Magalhães 2001, p. 126); 2) by Guimarães Lobato (1958).

The first regional plan was produced for the coastal area "Costa do Sol", that was in a steady development process due to increasing tourism attracted by its natural beauty and overall charm. The "Costa do Sol" is located along the north bank of the River Tejo estuary, stretching between Lisboa and Estoril and Cascais. These were both selective tourist resort

small towns, located adjacent to each other and circa 30 kms of Lisbon. The UP for the Costa do Sol (PUCS) was initiated in 1935 and published in 1948. Later two Regional Director Plans were produced, namely for Lisboa in 1958, and for Porto in 1968.

According to Mateus (1998) the period between 1950 and 1973 was the golden years for economic growth in Portugal. In this period Portugal adopted four 5-year national plans (Planos de Fomento), and between those one intermediate plan (1965-66). Based on the Economical Development Theory these plans followed the tradition in Western Europe (Mateus 1998). Rather than being physical plans per se these were essentially socio-economical development plans, without a territorial component. Originally these were oriented to the construction of major productive infra-structures, e.g. dams for irrigation.

The Lisbon Master Plan of 1958, coordinated by Guimarães Lobato had, for the first time ever, the participation of two landscape architects – Francisco Caldeira Cabral and Gonçalo Ribeiro Telles, that developed an important and major environmental analysis (Magalhães 2001), which was quite innovative. As the London Plan, rural areas surrounding Lisbon were protected for their environmental and landscape value (Magalhães 2001). Planning was slowly encompassing not only cities and built-areas but the entire territory, including rural and natural areas. However the planning focus shift from cities to the entire landscape would take a while to become the general approach in Portugal. In 1959 it was produced the Development Plan for the Region of Lisbon (Saraiva 1999), which had a larger scope than urban areas per se.

The second 5-year national plan (1959-64) aimed mainly at economic growth and the role that industry could play. Note that in 1960 Portugal entered the EFTA.

In 1963 the Italian architect and planner Luigi Dodi was invited to design the so-called "Dodi Plan" for the region of the Algarve (Palma Brito 2006), that was finished in 1966. In 1969 agronomic engineers / landscape architects Viana Barreto, Dentinho and Castelo Branco, with the collaboration of the agronomic engineers Malato Beliz and Bessa designed the "Regional Landscape Plan for the Algarve" (Magalhães 2001). This plan applied several techniques similar to those applied and published in 1969 by Ian McHarg, e.g. the overlay technique.

Notably the third 5-year plan (1967-73) mention the need of a general scheme for land use planning. Studies in this direction were developed in the 1970's by the Technical Secretariat of the Presidency's Council, which proposed a national strategy for land use planning in Portugal (Amaro Alves 1999). This strategy was resumed within the fourth 5-year plan (1973-(1978)), but interrupted by the Carnation Revolution in April, 24th 1974 that implemented a democratic regime after forty years of dictatorship in Portugal.

1.2 After the Revolution of April, 1974

In the beginning of the 1960's the European countries started to implement the regional planning commissions (Mendes 2004, p.3). The Portuguese Regional Planning Boards were implemented in 1969, replaced in 1979 by the Regional Coordination Commissions (CCR), and in 2004 by the Regional Coordination and Development Commissions (CCDR). These are bodies of the planning ministries for the 5 planning regions in Continental Portugal (from

north to south): North, Centre, Lisbon and the Tejo Valley, Alentejo, and Algarve. Presently these 5 CCDR provide for the implementation of the government's planning policies at the regional level and the development and management of the land use regional plans. They provide assistance to local authorities in preparing local and regional development plans, and manage funds coming from the European Union for regional development (FEDER) for municipal projects. They also monitor the implementation of regional development plans and co-ordinate, at the regional level, the activities of ministries in fields such as land use planning, regional development and the environment. These are regionally de-centralized bodies and thus do not have political nor financial autonomy.

Only after the revolution and the creation of the first State Secretary for the Environment (SEA), the planning legislation begins to extend its reach beyond urban areas to the entire territory. In 1975 a Decree-Law (D.L.) protects the soils of high agricultural productivity (D.L. 356/75), that later in 1982 would originate the National Agricultural Reserve (RAN) (D.L. 451/82). The National Network of Protected Areas was established in 1976 (D.L. 613/76). The first set of rules establishing the National Ecological Reserve was introduced in Portugal in the 1980's with the D.R. nr. 321/83. In 1987 it is created the General Law for the Environment (Lei de Bases do Ambiente - Law nr. 11/87).

The General Law for the Environment was very innovative and introduced into the planning legislation such important concepts such as land use planning as an integrated planning process covering both urban and non-urban areas, considering the natural capacity of the landscape as the basis for the spatial organization of human uses and activities. It also introduced among many others the concept of "landscape" as a geographical, ecological and aesthetic unit, and of "natural continuum" (continuum naturale) as a continuous natural system as the life support systems that enables a balanced and stable territory. This concept, originally introduced in Portugal by the work of F. Caldeira Cabral and later of G. Ribeiro Telles mentioned earlier for its contribution for the Lisbon Plan of 1958, corresponds to the concept of "connectivity", a buzzword for quite some time in ecological and landscape based planning (Botequilha-Leitão and Ahern 2002), and recently in emerging movements such as "landscape urbanism" (Corner 1996, Waldheim 2006, and Almy 2007).

However after 1975 the rural exodus to cities by people looking for better work conditions continued. Also there was an influx of Portuguese living in the ancient colonies (Angola, Mozambique, etc.) that returned to Portugal due to the de-colonization process started after the Revolution. Both of these phenomena resulted in a higher pressure to urban growth around the larger cities, such as Lisboa and Porto. In this period local plans such as the Land Use Master Plans at the municipality level (PDM) were very few (circa 4 or 5 among the 308 municipalities existent in continental Portugal). For example the PDM of Sintra (a well known and quite large municipality located within the Metropolitan Area of Lisboa) initiated its studies in 1982 but was only published in 1999 (Carvalho 2005).

In the 1970's the governmental Service for Environmental Studies produced a innovative plan for Sesimbra, a municipality near Lisbon – "The Biophysical Planning of Sesimbra". The

methodology was based on McHarg's method modified by Max Falque to be applied into a Mediterranean context. It used computer based techniques with matrices that combined both the several land uses and land covers and its aptitudes and constraints into an integrated approach (Rôxo 1982).

The government authorities for the municipalities (local level) are created in 1977 by the Law 79/77. Before 1982 the only instruments of local planning were the Urbanization Plans. Thus the municipalities did not have any legal instruments to manage the non-urban areas of their territory. The D.L. nr. 208/82 introduced land use master plans at the local level (PDM). For the first time a plan (the PDM) covers the entire territory of a municipality and not only the urban areas as in the UP. This PDM had a strong socio-economic planning component rather than territorial. In 1983 it is created the National Directorate for Land Use Planning (DGO) which was reformulated three years later (DGOT).

The D.L. 338/83 established the general principles for regional land use plans (PROT). However it was only in 1988 that the first two PROT were launched, namely for the region along the Douro river (PROZED), located north of Portugal near the Metropolitan Area of Porto, where the famous Port wine is produced; and for the Algarve (PROTAL), the most southern region in Portugal. One year later an additional three were launched (Saraiva 1999).

From 1986 to 1990 a national wide plan for socio-economic development (the Program for Regional Development or PDR) is developed, and implemented from 1989 through 1993. The PDR aggregate at the national level the actions programmed by each "region", supporting the QCA - "European Support Framework" (Quadros Comunitários de Apoio) that framed the application of the European Community Structural Funds for Portugal. Recently the QCA were renamed as QREN (National Strategic Framework Reference). Currently the QREN 2007-2013 is in execution.

1.3 The 1990's

In 1990 the D.L. 69/90 provided a new planning framework to design the PDM. All the municipalities were "forced" to produce the first generation of PDM, as a pre-requisite to municipalities be eligible to receive European structural funds. Although a 1982 law (D.L. 208/82) already established the general guidelines for PDM except for a very few municipalities (Évora, Mora, Ponte de Sôr, Portalegre, and Vila Real de Santo António) that had previously produced these plans quasi-all the municipalities in Portugal (298) started to design their PDM in this period. This new legal framework for PDM also changed its socio-economic predominant nature reducing it to a minimum and enhancing its territorial or physical planning component. Indeed there was a gap between the socio-economic goals foreseen in the previous legislation (D.L. 208/82) and the effective power municipalities had to develop and attain those goals (Carvalho 2005).

In 1990 was also established the law that enforced Environmental Impact Assessments (EIA) of large projects (D.L. 186/90). Recently it was published the law that complements this first law by enforcing also the environmental assessment of plans and programs, the so-called Strategic Environmental Assessment (D.L. 232/2007).

The first PROT started to be enforced in Portugal was the "Regional Plan for the Algarve"

(PROTAL) in 1991, thus providing guidelines for the local plans (the PDM). However this was not the general situation for the entire Portuguese territory and most of the PDM were produced without the regional references that were to be produced by the PROT once they were ready. In 1991 it was also established the General Planning Law (Lei Quadro do Planeamento - Law 43/91), and created the Metropolitan Areas of Lisboa and Porto.

In 1993 it was approved a law that enforced all the protected areas classified under the National Network of Protected Areas to produce a zoning plan. The Coastal Land Use Plans (POOC) were also created in this year. Presently these are all published and cover the entire Portuguese coast.

In 1994 a new planning instrument was introduced in the Portuguese legislation – the Strategic Plans (SP) by the "Despacho" nr. 6/94. The SP were targeted for the medium-size towns, linked with the PDR of 1994-1999. Basically they were designed to support the application of municipalities to the EC structural funds. The municipalities developed their SP under a quasi-corporate nature to frame their investment decisions and the management of the municipality. Therefore its nature was the one of a socio-economic planning instrument. Some municipalities deliberated after 2000-2001 that SP would produce explicit guidelines to feed into the PDM, once they were revised. Therefore SP were filling the gap existent at the local level of a socio-economic development tool that complemented the territorial planning tool comprised by the PDM. Unfortunately there are few good examples for a close, intertwined relationship between those two planning instruments.

In 1995 it was published the first National Plan for Environmental Policy (Resolution of the Ministers Counsel 38/95).

1.4 After 1998

In 1998 a crucial piece of the planning legislation in Portugal was published – the General Law for Land Use Planning and Urbanism (LBOTU) (Law 48/98). In 1999 this law was complemented by the D.R. 380/99. These two laws implemented the Land Use Planning System (LUPS) for Portugal. The LUPS defines a hierarchy based on three levels; national, regional and local. The national level includes the National Land Use Plan (PNPOT), the National Sector Plans (for water, energy, transportation, nature conservation, tourism, etc.) and the Special Plans - Coastal Plans (POOC), Protected Areas (POAP), and Public Dams (POAAP). Ten years after the D.L. 316/2007 extends the original scope of the previous legislation as to include in the Special Plans the Estuaries (POE). The regional Level includes the Regional Plans (PROT). Finally the local (Municipal) level includes the Inter-municipal Plans (PIOT), the PDM, the UP, and the Detail Plans (Planos de Pormenor).

Presently almost all the municipalities have an approved PDM. Most of the PROT are in conclusion (North, Centre, West/Lisbon and Tejo Valley, Alentejo, and Azores), the one for the Metropolitan Area of Lisbon (PROTAML) is under revision, and the PROTAL is in its second generation. The POOC cover the entire coastal area of Portugal. The POAP are also either concluded or in conclusion. The PNPOT was published in 2007.

Due to its importance for the present chapter, below we briefly present the regional plan for the Algarve region or PROTAL'07 (CCDR Algarve 2007). As mentioned above (section

1.3) this was the first regional plan to be enforced in Portugal. Accordingly it was also the first to be revised after 10 years period as required by law. Note that the 1991 plan had a different orientation – it had a stronger territorial component, stated by a zoning plan and a regulation.

The present plan has a clear strategic orientation rather than territorial, following the guidelines provided by the LBOTU. Instead of a zoning plan and a regulation it defines a territorial model formed by five systems expressed by a specific spatial concept: 1) the Urban System, 2) the System for Tourism, 3), the Coastal System 4) the Environmental System, and 5) the Transportation System.

The PROTAL (CCDR Algarve 2007) proposes a polycentric urban system for the region of Algarve (Figure 2), and stresses the need to develop fruitful relationships with the rural areas and the inland. In section 2 we will provide for further detail on this area.

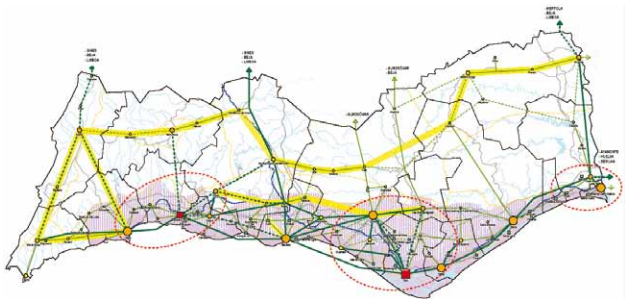

Figure 2. The spatial concept for the urban system proposed by the Regional Master Plan for the Algarve (CCDR Algarve 2007); the red ellipses represent the proposal to implement three polycentric urban systems, the middle one being for Faro, the region's capital (the bigger red square), together with Loulé (orange circle; Northwest) and Olhão (orange circle; East), complemented by S. Braz de Alportel (see also Figure 3).

1.5 Conclusion

A comprehensive system of land use planning, including a multi-level approach (national, regional, and local) is quite recent in Portugal. After 10 years of their completion the first generation of PDM for almost all of the municipalities in Portugal is presently under revision. In the meanwhile new challenges emerged for land use planning and urbanism, namely those put forward by the polycentric paradigm adopted in the EU and National and Regional land use policies. The recently revised PROTAL '07 proposes a new approach to be implemented by aggregating several medium- to small-size towns and cities into urban agglomerations. The revision of the PDM creates an opportunity to implement the PROTAL guidelines in implementing the proposed urban agglomerations. In the followings sections we will zoom in a particular case-study to illustrate the potential need and adequacy for a polycentric solution (Section 2), and discuss possible concepts to implement it (Section 3).

2 The Case-Study

2.1 Introduction

The study area is located in the region of Algarve and includes the polycentric urban system formed by the cities of Faro, Loulé, Olhão, and São Brás de Alportel, its connections

by road (A22, EN125, IC 4, N396, N2 and R270) and railroad infrastructures, as well as the rural hinterland (Figure 3).

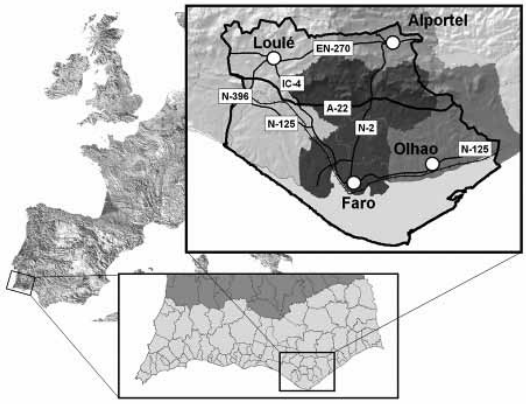

Figure 3. The study area formed by the cities of Faro, Loulé, Olhão, and São Brás de Alportel, its connections by road (A22, EN125, IC 4, N396, N2 and R270) and railroad infrastructures, as well as the rural hinterland.

The frame for this system was designed based on the hydrological basins on which it is established. Such basins define a hydrological system founded on a set of streams flowing North-South, from the Serra do Caldeirão mountains to the Atlantic coast, to a wide lagoon system combined with salt marshes named "Ria Formosa". The final end of this system resembles a delta.

The basins of seven streams (Carcava, Corgo da Gondra, S. Lourenço, Biogal, Rio Seco, Bela Mandil and Marim) were considered. Their limits were defined processing a Digital Elevation Model (DEM) with 100m of cell resolution (Earth Resources Observation and Science Center, 2007) using the Geographic Information System (GIS) ArcGIS v.9.2. Finally, they were aggregated in one polygon to define the study area. This study area is located within two of the three landscape units that we can identify in the Algarve region: the "Litoral" (coastal areas) and the "Barrocal" (calcareous rolling hills).

This hinterland is presently characterized by the dominance of agricultural uses. Gradually these uses are being substituted by urban, industrial, and commercial uses, of variable dimension, and by transportation corridors (roads and highways, and railroads). These dynamics present a larger expression around the consolidated urban areas of Faro, Olhão and Loulé, and along the main transportations axis (A22, IC4, EN 125, etc.).

Landscapes as these peri-urban are perceived as exceptional values for the sustainable development of the Mediterranean region. It is important not only for the regional cultural identity and its collective memory, for its ecological dimension, for the quality of life it provides for urban populations, but also as key factor attracting and distinguishing when compared with other regions. Therefore landscapes are perceived as territorial capital and soft location factor in order to attract companies of new economic areas, such as knowledge-based companies), qualified and creative working forces ("talents") and tourism.

The general objective was to analyze the importance of peri-urban agriculture for the

landscape and environmental overall quality of this area. The specific objectives reside in the identification of the dominant land use dynamics.

2.2 Material and Methods

Digital cartography from CORINE (Coordination of Information on the Environment) Land Cover (CLC) Project (EEA, 2007) was used to represent the land cover typologies in a categorical map (Figure 4). We believe that the use of European level, highly available spatial data would ease the replication of the methodology. It also makes the results comparable with other works developed at national level using CLC data (Pinto-Correia et al., 2006). Raster datasets with 100 m of cell resolution, 25 ha of Minimum Mapping Unit (MMU), from years 1990 and 2000 were used. We performed the analysis using the third level (maximum data disaggregated), resulting in a total of 22 land cover classes for 1990, plus three new ones in 2000. We constructed also a digital terrain model using ArcGIS v9.2 for ancillary analysis (slope, aspect, etc.). Finally we used the software FRAGSTATS (McGarigal et al. 2002) to compute landscape metrics (Botequilha-Leitão et al. 2006).

We analyzed the structure and changes of land cover as an indicator of land use evolution in the period 1990-2000. To do so, we performed a comparative analysis of the evolution in land uses in the area combining the use of a contingence table between the datasets corresponding to both years, and landscape metrics in each of the datasets. The metrics selected were Percentage of Landscape (PLAND); Number of Patches (NP); Mean Patch Area (AREA_MN); Contagion (CONTAG); Mean Radius of Gyration (GYRATE_MN); and Shannon's Diversity Index (SHDI).

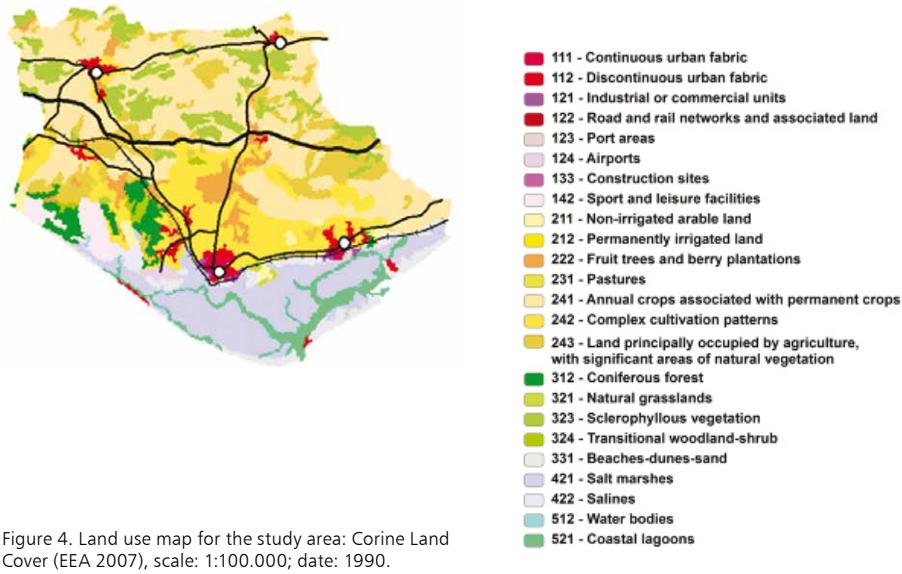

Figure 4. Land use map for the study area: Corine Land Cover (EEA 2007), scale: 1:100.000; date: 1990.

2.3 Results and Discussion

Interpretations of results lead us to the detection of three main types of urban development. The first type is constituted by the development in areas surrounding consolidated urban fabric, following an expansive dynamic which can adopt the form of residential (NW of Faro), or industrial (S. of Loulé) areas. This growth was established mainly on suburban agricultural areas.

A second type is constituted by the urban growth associated to golf areas. The development strategy, common in the area, in this case differs from the former: it is no based in the expansion of the urban fabric, but once the golf course is established, construction of residential dwellings start in the gaps, resulting in diffuse urbanization (Vale de Lobo, Quinta do Lago, SW Faro). In such cases, urban development is produced by continuation of previously established structures of the same kind.

The third kind of urban growth is represented by the discontinuous, non-planned expansion of urban areas from the road network into the "hinterland". This type of growth cannot be detected by analysis of CLC data, as occur in parcels far smaller than the MMU of the maps, and in fact was detected in field work and in the visual analysis of high-resolution images.

Agricultural areas show a dynamic transformation linked to the relationships between three main land cover classes. These transformations points to an increasing intensification of the agricultural uses, where traditional dry fruit orchards of the regions (almonds, figs, etc) are being substituted by greenhouses, and irrigated crops. Finally we identified two areas with distinct dynamics: one, mainly North of the highway A22, more stable, and the second to the South, namely along highway IC4 and national road EN125, along the coast, with a higher transformation dynamic.

2.4 Conclusion

According to the proposals of the PROTAL (CCDR Algarve 2007) for the urban system, the study area could become in the future a polycentric urban agglomeration. The hinterland located between the four urban areas of Faro, Loulé, Olhão and S. Braz de Alportel should, in our perspective, assure a multifunctional character, providing for production (agriculture mainly), recreation opportunities, protection of the fundamental ecological systems, and the landscape quality overall.

Additionally, it is necessary to highlight that a large portion of the tourist arrives the Algarve region by airplane. Since the airport is located in the study area, this area is the Algarve gateway. Their first impression of the region is largely influenced by these first moments were they head for their final destination across the Algarve and is marked by passing through this peri-urban agricultural landscape being degraded so rapidly.

In this context, it is crucial that this peri-urban agricultural landscape is preserved and put to use, for the benefit of all. It can not only contribute to the production of food and fibres, but act also as recreation areas for the urban populations of these areas, and as a city regional competitiveness factor.

However the results of this research points to trends on local urban dynamics that

doesn't shows signs to change. Therefore, if these values are to protect, it is urgent to be proactive to assure a better future for its development. In Section 3 we will explore possible ways to achieve it.

3 Emergent challenges and paradigms in land use planning

The European Spatial Development Perspective (ESDP) was adopted in 1999 by the European Union (EU) as the policy document for EU countries spatial development (EC 1999). Two interconnected challenges rise from its guidelines: "development of a polycentric and balanced urban system and strengthening of the partnership between urban and rural areas. This involves overcoming the outdated dualism between city and countryside" (EC 1999, p. 19).

In order to address these challenges one can identify three main tasks, reflected into the following three questions related with polycentric urban systems: 1) "How to design them?" 2) "How to build them?" and 3) "How to maintain them?" The following section does not intend to fully answer these questions but rather to contribute for its ongoing discussion.

3.1 On the Design of Polycentric Urban Systems

A possible simple model for Polycentric Urban Systems (PUS) is composed of 1) a n number of urban areas, e.g. towns, cities, etc; and b) its hinterland, i.e. the territory that is framed by those n cities and is under its influence. A challenge posed by the ESDP is the integration of rural spaces located around towns and cities, in a joint logic of development of the human habitat versus urban development per se.

Traditionally there is a polarized image for this ensemble where city is opposed to landscape, the city being its interior and the landscape the open space (Khun 2002). However new forms are emerging - mix-forms, hybrids, the middle landscape (Peter Rowe), or the intermediate city (Thomas Sieverts) where the landscape must become the actual connecting link (last two authors cited in Khun 2002).

In the last decade or so a 19th century concept – the "city region" has been incrementally "reclaimed" by advocating for a broader concept of the city, to include its "influence" zone. Indeed cities are not independent, i.e. self-sustained. Their metabolism relies on heavy inputs, e.g. water, energy, food, etc that are imported not only from the surrounding landscape but also from far distant regions (Rees 2003). The city of Lisboa alone depends for its biological metabolism on an area almost three times the Lisboa Metropolitan Area (LMA) per se, i.e. 8.000 km2 (Ribeiro Telles et al. 1997). For example its main water supply comes from a dam (Castelo de Bode) located 120 miles northeast of Lisboa. This is similar for Boston and its Quabbin Reservoir, New York City, San Francisco, and many other cities. A noteworthy aspect is that the LMA has a wide reserve of underground water under explored, namely in the Setúbal Peninsula located nearby the city of Lisbon.

In the above context it is important to acknowledge the important contribution of several spatial concepts in territorial planning throughout the last two centuries. A spatial

concept expresses through words and images an understanding of a planning/design issue and the actions considered necessary to address it (Botequilha-Leitão and Ahern 2002). The spatial concepts of the "Green Heart" and its counterpart the "Randstadt" introduced in the 1930's in the Netherlands were used as major land use planning concepts for the large territory located between Amsterdam-The Hague-Rotterdam-Utrecht. According to Khun (2002) these translate the organic urban architecture perspective of the 1950's, interpreting cities as living organisms. These spatial concepts have also close relationships with those of the "Garden City" and the "Green Belt" introduced at the end of the 19th century by city planners. These proven to be very powerful and effective and some endure still until today. For example the Green Belt it is a major instrument of land use and urban planning in the U.K. Not surprisingly the ideas behind these concepts have been revisited and re-used under the new perspectives of urban ecology, where cities are approached as living organisms, with strong relationships with the surrounding landscape (Rees 2003). Here urban metabolism plays a central role to understand those co-dependencies and is modelled to understand the fluxes of energy, materials and organisms that flow between built-areas and the hinterland that permeates between those.

As a more recent example, derived from landscape ecology, consider the Patch-Corridor-Matrix model and the four indispensable patterns for sustainable planning (Forman 1995, pp.452). A spatial concept for a particular landscape can start to be drawn by applying these concepts: (1) maintain large patches of native vegetation, (2) maintain wide riparian corridors, (3) maintain connectivity for movement of key species among the large patches, and (4) maintain heterogeneous bits of nature throughout human-developed areas (Botequilha-Leitão and Ahern 2002).

Inspired on landscape ecology Botequilha-Leitão (2001) proposed a spatial concept based on the idea that a cultural landscape needs to be supported by an "ecological backbone", an ecological infrastructure that supports the overall functioning of the landscape. According to Botequilha-Leitão et al. (2006, p. 179 and 182) "this idea asserts that for sustainable human development, planning must recognize those ecological structures that are most fundamental to assure overall ecological sustainability, including abiotic, biotic, and cultural functions and processes, and to provide the capacity for the landscape to compensate for impacts caused by human uses and activities". A similar approach was proposed under the "casco" or framework concept (Van Buuren and Kerkstra 1993; Ahern and Kerkstra 1994; Sijmons 2002 cited in Botequilha-Leitão et al. 2006, p. 182) representing a systematic decoupling of functions, where low-dynamic functions (i.e., long-term ecological processes, such as groundwater recharge or soil formation) are combined into a coherent spatial framework, and the high-dynamic functions (i.e., production agriculture, extraction industries) are located in other spaces providing them with the essential spatial flexibility and freedom they operate under (Sijmons 2002). From an operational perspective Botequilha-Leitão et al. (2006) argues for complementing the "ecological backbone" concept with the approach of differential prioritization proposed by von Haaren (2002); stricter, mandatory goals for the areas where to implement the ecological backbone, and flexible rules for the remaining areas.

A close related concept is that of "green infrastructure". According to Ahern (2007) it is an emerging planning and design concept that applies landscape ecology principles to urban environments. Its main structure is supported by hybrid hydrological/drainage network, complementing and linking relict green areas with built infrastructure that provides ecological functions.

An interdisciplinary paradigm is emerging from the fields of landscape planning, architecture, and urbanism in the USA and in Europe encapsulated by the term "landscape urbanism". Significant contributions from many academics and professionals from a range of institutions from both continents can be found in the books edited by Corner (1999), Waldheim (2006) and Almy (2007). In an attempt to deal with the dualism of nature and city, science and art, and planning and design in the context of landscape architecture axiom of bilateral crisis (Weller 2006) landscape urbanism looks at ecology as a meta-science that allows the integration of culture and art, and where the landscape is seen as a "hybridization of natural and cultural systems". This emergent notion views landscape as model for urban / metropolitan processes, as a service matrix (Waldheim 2006, p.6). The landscape forms the "background" of the urban agglomerations, i.e. the matrix where the city is embedded. It is conceived as the infra-structure for the development of the human habitat; it is no longer the city sensu stritu (the built space) but a broader concept – the built space and the surrounding areas, much as the city-region concept. It allows for the integration of infrastructures (water, energy, transportation, etc.) and public spaces (Waldheim 2006).

Weller (2006, p. 71) does not claim for landscape urbanism to identify new problems but rather to "explore some new ways of getting at the old". Indeed the notion of the landscape as a nature-culture construct can be traced far way back (Botequilha-Leitão 2001, Tress and Tress 2001). Landscape ecology, a branch of ecology since the 1930's, considers human activities as integral parts of ecological systems and has been used successfully as a conceptual background to landscape design and planning, including cities and urbanized landscapes (Botequilha-Leitão and Ahern 2002, Botequilha-Leitão et al. 2006). Finally the integration of landscape ecology and culture has been also approached in the past decade, e.g. as in Nassauer (1997). Not surprisingly both green infrastructure and landscape urbanism, share its common interest on human habitat and man-nature integration, and to do so they more or less explicitly draw from landscape ecology its interest not solely on landscape structures per se, but also and foremost on processes and functions, its reciprocal relationship, and its dynamic nature.

The concepts briefly explored above build on closely related concepts proposed in a more recent or distant past, acknowledging both the present and possible futures human habitat can evolve. It does so to envision alternative solutions to accommodate the need for a more efficient design for cities and metropolis where Man can find a truly satisfying habitat to live. These concepts hold per se a large potential to attain this purpose. We argue that they can have a significant contribution when associated which other and with others such as the polycentric urban system.

Other issues equally relevant and closely linked but not explicitly addressed above are those related with the discussion on the pro's and con's of urban concentration, dispersal,

and sprawl in Europe (ESDP - EC 1999; White Paper "Our Town and Cities" co-ordinated by Peter Hall cited in Hildenbrand Scheid 2006), and particularly in the Algarve (CCDR Algarve 2007). Another relevant issue lies in the role of transportation infrastructures in providing for spatial mobility of people, goods, and services in the context of polycentric urban agglomerations (Khun 2002).

The new planning legal framework in Portugal contemplates already some legal instruments that could be adequate to develop these concepts. For example Inter-municipals Land Use Plans (PIOT) can be developed to address urban agglomerations joint planning initiatives. A hypothetic example is the implementation of inter-municipal ecological networks across the hinterland of polycentric urban agglomerations. As stated before in Section 1 existent PDM need to be revised in a near future and a second generation of PDM produced. According to the new general law for land use planning PDM have to incorporate a municipal ecological structure (MES). The continuity of MES within urban environments should be provided by an urban ecological structure (UES). MES and UES are newly introduced elements in PDM since the previous PDM legal framework does not contemplate for those. The several municipalities that form an urban agglomeration could share a common MES. Since it will be new for all PDM it could be planned and designed right from the beginning as such. This could be also true not only for ecological functions, but also to implement production and recreational functions for the hinterland.

A complementary solution is to adopt informal land use planning instruments e.g. "Regional Park" – Metro Areas of Berlin-Bradenburg, Rhein-Main (Frankfurt), Stuttgart, and IBA-Emscher Park (Rhur Watershed) (Hildenbrand 2006).

For the particular case-study in the Algarve presented in section 2, these planning initiatives and the spatial concepts such as those explored in this chapter could be helpful in supporting new planning and design strategies. These could contribute to counteract for those issues identified in the case-study presented in Section 2, including urban sprawl and landscape quality decay. They could also useful to promote a multifunctional landscape in the peri-urban agricultural landscape of the Faro urban agglomeration, and to support both the goals of the ESDP in overcoming the duality of urban and rural areas and the PROTAL to implement a polycentric urban system.

3.2 On the Construction of Polycentric Urban Systems

For an urban agglomeration to become a reality is crucial to raise awareness for the importance of sharing goals across the n urban areas that forms it. It is also needed for a planning instrument that helps identifying shared interests, building a common strategy, recognizing a specific functional profile for each city that together complement each other, and to build consensus on the role that each will play in the future agglomeration.

We believe that strategic planning can play this role in Portugal by mediating the several interests working separately within each municipality, town or city. Indeed is needed to involve all actors and finding solutions to form "One Community", instead of an amalgam of several communities (which traditionally compete fiercely with each other…).

Co-operation is always a challenge when there is competition for the same resources.

In Portugal it represents a major challenge recognised at large (Ferrão 2003). The National Program for Land Use Planning (PNPOT) identified co-operation as one of the 24 problems for land use planning to tackle in Portugal (DGOTDU 2006, p. 76, issues 20and 23). The Algarve region and the Faro agglomeration is no exception. One of the PNPOT Territorial Strategic Options is exactly to structure a regional polycentric urban agglomeration system and the reinforcement of inter-urban co-operation (DGOTDU 2006, p. 109). Faro, Olhão, Loulé and S. Braz de Alportel are small cities and towns, with a history of mutual competition. Particularly Faro and Olhão are historical contenders. Note that Faro is the region's capital, and it is only natural that its central role in the Algarve and the concentration of numerous urban functions does raise some issues to other towns, especially to Olhão which is located almost adjacent (10 kms). Additionally, according to Ferrão (2003) there are difficulties to turn compatible municipal and sub-regional levels goals.

Nevertheless there are positive signs for increasing co-operation. The report of the OECD on governance identifies in Portugal "a growing interest in inter-municipal co-operation" and "a growing use of municipal co-operation through associations set up for specific sectors and services such as water supply and data processing" (OECD 1997, p. 377, 385).

3.3 On the Management of Polycentric Urban Systems

Once we succeed in building an urban agglomeration another challenge rises from the ESDP guidelines stated above, namely how to maintain them, i.e. how to manage them. New governance models are needed for those co-operation experiences between towns and cities forming an urban agglomeration (Ferrão 2003).

Capra (1996) argues for a change in the XXI century of the competition paradigm, one that rules mankind since early times, where it is replaced or complemented by co-operation. Co-operation between urban areas is at the very core of the polycentric approach, which is argued by ESDP to constitute a competiveness factor for its intervenients. "Promoting complementarity between cities and regions means simultaneously building on the advantages and overcoming the disadvantages of economic competition between them" (EC 1999, p. 21). Complementarity is seen in a broad perspective and should not be focused solely on economic issues but also on other urban functions such as environmental quality and social well-being. For example co-operation should be built on common interests of all participants. To make it socially viable one has to re-integrate the n cities of the urban ensemble into one single community (Khun 2002).

Therefore to maintain PUS it is essential not only "construction/territorial building" but also "community building". The city is seen not only as a physical form but as a social form (Khun 2002). Additionally the public spaces the hinterland potentially offers to the agglomeration can serve as the "glue" of the city joining the different urban areas together into a new whole (Khun 2002). The landscape forming the agglomeration's hinterland can constitute a binding element that can contribute to hold the new community emerging from the n smaller communities residing in each urban area. By providing a sense of place the hinterland territory evolves to a landscape.

In the present case-study of the peri-urban landscape of Faro there is still a large potential

to provide for those functions. The overall quality of this landscape still holds both cultural and production values for the resident population.

4 Conclusion

Portugal has a very young land use planning system. It shares planning issues with other European and US countries such as urban sprawl. It has a lack of co-operation between municipalities, institutions and other land use planning agents at large. However there is a growing interest in inter-municipal co-operation. However it is in a fast track to cover the entire territory with a system of multi-level, multi-sector planning instruments, although it as much to learn and implement.

The Algarve region faces emergent challenges posed by European, national and regional guidelines for spatial planning, specifically to implement polycentric urban systems and overcome the urban-rural duality. As an example we have seen a case-study where it is proposed a polycentric urban system (PUS). This landscape hinterland is experiencing urban pressure around major urban areas and along transportation axes. Its future multifunctional role is at risk, although much potential is still preserved.

We have explored several concepts and emergent paradigms in order to discuss possible solutions to design, build and manage PUS. Additional planning issues were identified that are required to make this possible, namely to promote a "culture of the territory" (Ferrão 2009), the respect for planning laws and instruments, to allow for flexibility that should be accompanied by monitoring and accountability (Ferrão 2009), to provide for legal and technical simplification of the planning regime (Nunes da Silva 2009), and to urgently publish a general land ordnance (National law establishing the legal regime for land use) (Ferrão 2009; Nunes da Silva 2009).

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Dynamics of Bratislava Urban and Housing Development

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Abstract:

Bratislava, the capital of Slovakia, is one of the quickly developing cities of the Central Europe. The advantageous geographic position on Danube River, as well as on the crossroads of roads going from East to West, from North to South and location on border with Austria and Hungary provides the important stimuli for the urban development. During this decade the Slovakia experienced fast economic growth, and this growth was to the large extent attained thanks to the economic activity of its capital Bratislava as well as adjacent regions of Western Slovakia. The logic of globalization as well as the domestic demand triggered the demand for real estate, better transportation, housing etc. The City of Bratislava had to take care of the pressure of developers, citizens, to satisfy the transport needs and demand for the overall modernization of the facilities. The changing income structure of the population changed the demand for the housing. At the same time the clashes between market forces and planning requirements had occurred.

Key-Words:

Bratislava, housing, border area, urban planning, real estate market, financial crises, administrative spaces

1 Introduction

The city of Bratislava provides one of the most interesting examples of urban growth in the globalization era. It is the most dynamic city in Slovak Republic. The geographic position in the center of a fast developing European region with removed political frontiers and the rapid growing prosperity of the population opens new perspectives for its development in a broader international context. This happens in the turbulent domestic political and socio-economic environment characterised by the profound legislative changes and institutionalization of the market economy.

2 The international position of Bratislava as one of its growth factors

Bratislava benefits from good transportation links (an expressway to Western Europe and the free movement of capital, goods within the enlarged EU. Being on the border with Austria, it benefits from the opportunities of trans-border cooperation that were inaccessible before the year 1990. In fact the strong points of this area are the intersection of the important transport corridors, such as E75 (Helsinki- Athenes), E 65 (Malmö – Athenes IV corridor (Dresden – Arad), V corridor Venezia - Uzgorod). The railway corridor for high speed trains from Paris to Budapest via Vienna, with connection to Bratislava TEN – T 17, should be funded from European money. The construction of the railway branch to Bratislava supposes the building of the six km tunnel under the town, which could eventually be used for the public transport as well, which may influence the development of the city around the new transport axis.

Bratislava and its immediate surrounding area appear to have an excellent research base and innovation potential, very good accessibility and infrastructure, flexible services, coupled by outstanding conditions for networking. These advantages are enhanced by an excellent regional location in the so-called Golden Triangle, formed by the regions which came first, third, and tenth in the EMPIRIKA analysis (Bratislava, Györ - Sopron, and Burgenland) (Ivanička sr. and Ivanička jr., 2007). Foreign investors find this area attractive also due to the fact that the business climate is similar to that the entrepreneurs are used to in Western Europe, but without the high prices. The Prague and Brno agglomerations, which are closely connected with Bratislava, are showing similar positive characteristics.

The important cities of the Central European territory are Vienna, Bratislava, Brno, Trnava, Györ Moson - Sopron, Eisenstadt, St. Pölten. In this territory there is high density of research and educational institutions, 25 public universities and Art Academies, great number of research institutions, polytechnics, private research and educational institutions and innovations centers. Here the synergic effect of several levels and type of innovation can occur, e.g. Emscherpark or agglomeration Bratislava – Vienna – Györ (Finka, 2001). The concept of Twin cities (see the development axes on Fig. 1) and Centrope (see Fig. 2) (scans from promotional leaflet) envision that the cities of Vienna and Bratislava will in future form the common urban area, profiting from synergies of well educated population and concentration of population, research and development institutions and attractive geographic positioning (Bratislava, 2007). The distance between the city centers of Bratislava and Vienna is around 60 km, making them the closest capitals of Europe situated on the same river Danube. And there are also common historical liens between the both cities. It can be only mentioned the fact that several Austrian kings, such as Maria Theresia, were coroneted in Bratislava, and Bratislava was for 250 years the capital of Hungary during the Turkish occupation of Hungary.

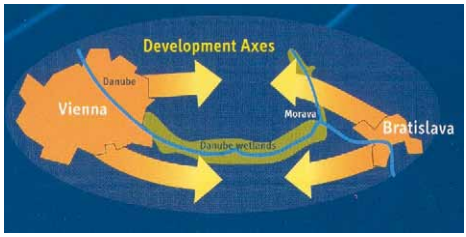

Figure 1. Development of axes between Vienna and Bratislava in the concept of Twin cities

Figure 2. Nucleus of Centrope region

3 Transport problems

Transport in Bratislava is the growing problem. From 160,000 to 200,000 people commute to Bratislava each day to workplaces, educational and governmental institutions. Catchment's area is the entire region of Bratislava, part of Trnava region, but now also the border area of Austria and Hungary. The transport problem has aggravated the last years with the construction boom, which caused the increase in freight traffic in the city center. Another major problem is the transit traffic that rose significantly with the development of the trade relation with Western European countries. The city also was not ready for the opening of borders and the consequent increase in foreign traffic (Fábor, 2009).

As in other cities of the Eastern Europe, there is the very large growth of individual transport in Bratislava. The modal split was changed to detriment of public transport, and also the subsidies to public transport were reduced. The quality of public transport was thus further reduced. The ratio between public transport and the individual transport has changed from 80: 20 to 50: 50. Such situation profoundly augmented the intensity of traffic as well as the static transport, while the development of the communication network was lagging behind because of the insufficient public finance mechanisms.

The long-term persistent shortcomings and distortions of the current situation were addressed in the Bratislava Master Plan (approved in 2007). The implementation of the plan should bring in future the construction of the ring road that would also mean the additional connection to Vienna and the relief of the transport congestion in the centre, the development of the connections to the newly urbanized areas etc. Certainly the ring road may also give the impulse to additional urbanization but also urban sprawl (Fábor, 2009). The question is how the implementation of the transport measures (both the investment to the new roads and public transport) will be financed. Co-financing by state subsidies for public transportation ended in 2004. The forthcoming new Act Bratislava does not provide a transparent subsidy model for the tasks arising from the status of the capital or the participation in the financing of transport infrastructure.

4 Housing development in Bratislava

The contemporary state of the housing stock in Bratislava is the result of complex development of the city. The location of the housing areas was determined by the following important factors (Halás and Džupinova, 2007):

The natural territorial conditions and especially

- Morph geography – The location of the city on the plain Záhorie, Danube plain and Small Carpathian Mountains;
- Hydro geography – location of the Danube River and Morava River in the Western part.

The social and political conditions represented

- By addition of villages to the city (Fig. 3);
- By positioning of the city on the border with Austria;
- By political influences to the urban planning resulting into unclear concept of urban development of the city.

Economic conditions, that has significantly influenced the spatial development of the city, its functions and spatial structures (establishment of the industrial zones in the East and Northeast, such as the oil refinery Slovnaft, the cargo railway station – East) but also the cultivation of wine yards on the Southeastern slope of Small Carpathian Mountains, etc.

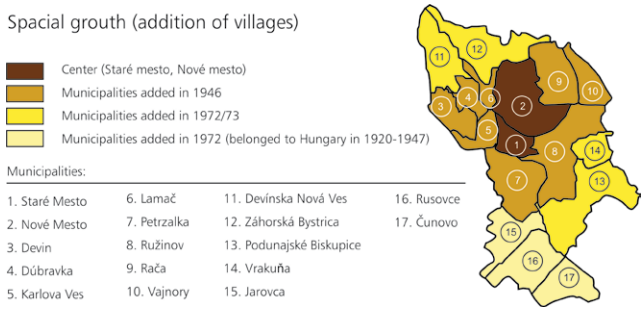

Figure 3. Spatial development of Bratislava after World War 2 (Halás and Džupinová, 2007)

Until the establishment of Czechoslovakia, Bratislava was part of the Hungary, but in 1918 it became the capital of Slovakia. The new administrative position and foundation of the new factories attracted the population outside of the town. In this period also many representative buildings have been constructed. In 1929 the first regulation plan was approved, unfortunately it was not implemented for the political and economic reasons. From 1900 till the 1946 the population of Bratislava more than tripled (from 61,500 to 191,400 inhabitants). Until 1984 the population again doubled attaining 400,000 inhabitants. The city of Bratislava grew like the mushroom, especially when we take into account that Slovakia is relatively small country having 5.3 millions of inhabitants.

Later the population growth was much slower. In 2001 the number of inhabitants achieved 428,700 inhabitants. However after the year 1990 we are witnessing the growth of smaller surrounding villages and creation of suburban villages. Urban sprawl may influence in future not only the Slovak territory (especially villages and small towns on East, Northeast and North West from Bratislava), but also in adjacent countries. For instance in Hungarian border village Rajka the growing number of people from Bratislava bought their houses, but the people commute also from Hungarian villages, such as Bezenyie, Dunakiliti and others.

The similar situation is in Austria. For instance the village Wolfstahl is located not more than 10 km from the center of Bratislava. The Slovaks also buy the property in other Austrian municipalities, such as Kitsee, Potzneusiedl, Berg, and even in Neusiedl near the large lake with the same name, that is more than 30 km from Bratislava. They commute to Bratislava. The prices of property are lower than in Bratislava, and they are also attracted by higher quality of life. The development in adjacent villages in Austria is however restricted, since the municipalities would like to preserve its rural character.

5 Phases of the development of housing stock in Bratislava

Pre-war development: For housing construction before World War 2 is typical the construction of social houses with an integrated core and balconies. They represent the functionalist town planning concept. The rental housing units have been built in the city center. Most typical example is 12-storeyed building in the center of Bratislava - the famous "Manderlák" (Halás and Džupinová, 2007).

The next milestone was the Second World War during which the refurbishment of the housing stock was neglected. During the post-war after war industrialization there was the need to build the houses for the new industrial enterprises and the mass housing construction was realized on the outskirts of the city (Rača).

The housing development in the post-war period could be described by 5 phases (Špirková et. al, 2009):

I. Phase 1946 – 1955. After 1948 the communists in power expropriated the private housing stock that was then administered by the municipalities. The houses have been distributed to population according to social and political criteria. The housing development was then either organized by state or by the individuals (mostly in rural areas).

II. Phase 1956 – 1963. In 1955 the program of building industry industrialization was launched. This led to the introduction of assembly building technologies, however the traditional construction continued as well. The new urban neighborhoods are being created. Beginning from 1959 two other forms of housing development have been introduced, i. e. cooperative and enterprise. Individual construction is realized also in the urban areas. The new housing standard is three room housing unit.

III. Phase 1964 – 1970. The changes in the construction standards and housing management brought the introduction to the new technologies such as prefab buildings and cast concrete. The legislation concerning the housing pricing and utilities have been introduced. The

legislative barriers for building the family houses were removed. Unfortunately the relaxed control brought also reduction of aesthetics of the single-family housing neighborhoods, problems with the infrastructure.

IV. Phase 1971 – 1980. The very fast and strong housing development took place in whole former Czechoslovakia. The mass production of the prefab housing was typical for the towns. The state also supported the construction of the family houses. The mass housing production was funded in the large part from national budget. This was the extreme load for the public finance. There was a strong tendency to produce cheaper, using less expensive technologies and materials. As a result of this the quality of building was gradually reduced.

V. Phase 1981 – 1989. The housing construction declines. The largest part of the housing development is managed by the housing cooperatives. For the economic reasons the enterprise housing production is practically stopped. The housing construction organized by state or state controlled cooperatives brought the uniformity in the new neighborhoods. The higher housing standard was available only to the narrow population group.

Socialist system of planning refused the role of housing market, and at the first glance it looked that the new housing units were relatively cheap. In fact the existing pricing was quite distorted. The real housing costs were not reflected into the rent level. Since it was not possible to recover by rent the full cost of housing, the refurbishment was neglected. Moreover the state often used the construction technologies that were cheap, but their application led to faster decay of the new housing stock. Addressing housing issues until 1989 was based on the greatly simplified philosophy, according to which the housing shortage can be solved only by increasing supply and administrative allocation of public housing authorities on the basis of social criteria. The role of the land prices and market conditions were mostly ignored. As a result of that most of the new development had the standard of the social housing.

During the period of 1990 – 1997 the housing construction took place mostly in Northwestern part of Bratislava (82% of the new housing stock). This area has been more attractive for the people because of higher quality of life, while the Eastern part is even today more industrialized and more polluted. Although the level of pollution was reduced substantially, because of the introduction of the new technologies, as well as relocation or closing of factories, the large and unattractive brownfield areas emerged. The volume of the new construction was not very high, the popular way of obtaining the new housing units were the rooftop extensions and in-fill development (Špirková and Ivanička, 2008). The city of Bratislava preferred this way of development because there was lot of unused space because of demolitions. The period from 1990 – 1997 was also characteristic by the deep and painful restructuring of the economy, and reduction of the life standard of some layers of population. The new housing units were therefore built almost only for well-to-do families. Moreover the housing policy and the solution of the housing problems were not considered to be a political priority. The market system was gradually restored; the real banking system was emerging etc.

Before 1990 the value of property was determined according to the administrative regulations that did not reveal the real value of the property. The real estate market practically

did not exist. The economic laws of course functioned, but setting of prices according to the demand and supply was illegal and realized only on „black market". After 1990 the restitutions had returned the property to its former owners or their heirs. The market was reestablished and market institutions gradually revived. The grey and neglected city centre partly inhabited by the marginal groups of the population that could not take care of their property, obtained for their relocation interesting payments and they moved out. In the relatively short time the city centre was refurbished attracting the tourist to the numerous restaurants and cafes that were opened rapidly. The peaceful separation Slovakia from Czechoslovakia had brought the necessity to develop the governmental structures, provide the space for embassies, etc. Many of these institutions moved into city centers, and that also meant that more money was invested into the redevelopment.

The transformation of housing economics to the conditions of the market economy from 1990-2000 was however slow, the population could not take care of the full housing costs, because of the typical structures of the consumer basket of that time where the cost of alimentary products dominated. The reforms in Nineties brought high inflation and erosion of the real incomes of the major part of the population. The situation was ameliorated only in the present century. Thus, in Nineties the new housing construction was reduced in Slovakia to its historical minimum.

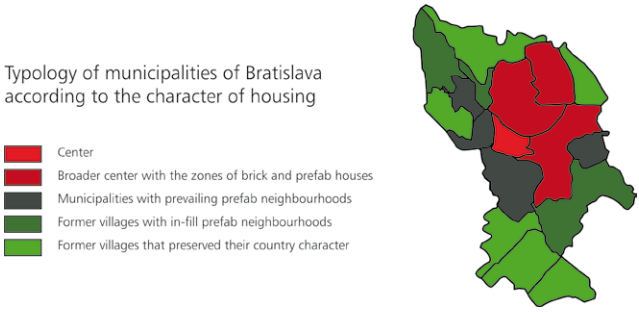

Figure 4. Typology of municipalities in Bratislava (Halás and Džupinová, 2007)

6 The problems of residential construction after year 1990 in the context of urban planning

The change of the socio-economic system brought also very negative attitude toward the planning. Socialism was considered to be a planned system, that enables to prevent the economic crises, provides the full employment and balanced growth. In reality it brought hidden unemployment, ineffective use of resources, and low quality of production that were produced for inventory, while many products were missing. Social programs enabled to augment the quality of life of the poorest layers of the population, but destroyed economic incentives for the productive and innovative people. The stigma of central planning was extended to urban planning, which was neglected in Nineties. This could be partly justified

by the need to provide the freedom to the market forces that were gradually released by the implementation of market reforms. The other problem was then the weakened ability of city governments to regulate the development of the cities. This happened because of the low capacity of the public administration to understand the market forces, some degree of corruption, political pressures etc. As one Hungarian economist wrote at that time: The dictatorship of the central planning was replaced by the dictatorship of the market (here we must add that not by mature but by the emerging market with its strange peculiarities).

In such a situation the existing residential development often substantially differs from the conceptual objectives and optimal principles of urban planning. Perhaps most problematic is the random placing of the new residential buildings. Such situation is determined by the ownership of land, and not by the suitability of sites for housing development. The character of surrounding built-up areas is often ignored. Thus the placing of the new houses is often inappropriate, since it does not fit to the existing urban environment. It also means that it loses part of its potential value. This is the pity because the buildings can improve the quality of the built-up area and provide higher value to its tenants. The long term perspective in the period of construction boom was not however interesting for the developers, rather they preferred large margins coming from unsatisfied demand (Vítková, 2009).

Hopefully the situation will change in future. The basic building blocks for the creation of residential zones in Slovakia should include:

- Comprehensive program for basic residential units, integration of housing with amenities;
- Adequate social population mix and creation of good living environment;
- Natural relationship between residential houses and green spaces;
- Concept of neighborhood friendly to pedestrians;
- Emphasis on quality of residential external environment, the application of architectural quality and garden design and accessibility;
- The average size of the area of the development designed for habitation should respect the type of the development (open, closed and integrated layout (Korytárová et. al, 2008)

In the context of new development the former functional areas reserved for housing are often reduced, the relationship to landscape and existing build-up territory are neglected. There is the serious problem of absence of the urban plans on zone level, which should determine the urban concept and it basic rules, regulations for the creation of complex, valuable residential development.

Urbanism in the current housing development in Slovakia can thus be characterized as addition to the existing urban structure transformation. Compared to the period of construction of large areas, the current residential housing is substantially atomized focused on residential building, residential apartment buildings, or the construction of mix used buildings, which also includes housing. In the future, however, we may expect the return to the development of more integrated residential complexes.

7 What made the boom in the sector of real estate market after year 2000?

The housing reforms realized in the last years enabled to introduce several new forms of housing finance, and in such a way to make the housing more affordable. Also the government had to pursue the reforms in order to be included into European Union

After the year 2000 the economic results of Slovakia thanks to the reforms were stabilized because of healthy economic growth, privatization, development of healthy financial sector, substantial reduction of unemployment and inflation. As the result of that the consumption of the households grew, the growth of the fixed capital can be observed, the interest rates are reduced, the investment activities are revived.

Slovakia in comparison with other Visegrad countries obtained only limited foreign direct investments during Nineties, however the year 2000 represented the turning point, when the influx of FDI represented € 5.9 billion. The positive influx of FDI continued also the next years. The most important investment came from ENEL, Peugeot-Citroen, Kia, Samsung, etc. The international rating of Slovakia grew substantially, which enabled to reduce the interest rates provided for Slovakia on international money markets.

The positive development was moreover strengthened by the reform of economic system, that came to power on 1 January 2004. Slovakia introduced 19 % flat income tax, 19 % VAT for all services and products (before 10/23 %), eliminated almost all tax relieves. The idea behind the reform was to shift the tax burden from direct to indirect taxes, i.e. taxing consumption rather than production, elimination of all exceptions, exemptions and special regimes, introduction of flat tax rate on personal income, elimination of tax instruments aimed at achieving non-fiscal goals, and elimination of double taxation of income (such as tax on dividend) (Goliaš and Kičina 2005). The reform was quite successful, and together with the introduction of the investment incentives, it attracted the companies from abroad to be located in Slovakia and mostly in its capital Bratislava. Thus this was the important impulse for construction of administrative spaces, and it attracted the new employees.

The strong economic growth in the second half of the Nineties was one of the highest in Europe. Under these conditions Slovakia was capable to meet the Maastricht criteria, and to introduce EURO from 1 January 2009. The time of introduction of EURO coincided, however, with the full impact of the World economic crises and thus the economic results of Slovakia has been profoundly worsened. It is expected that the overall economic growth in 2009 will be negative.

The amelioration of market environment had influenced the housing construction. The number of started housing has risen to its historic maximum. The peak of the completed housing units we can observe in 2006. The development of housing market was positively influenced by the introduction of such financial instruments as are the project financing, real estate leasing, mortgage funding, as well as the new forms of retail funding.

The affordability of credits was augmented by the advantageous interest rates that were declining from the year 2000.

We must also mention the positive changes in the legislation that fixed the responsibility of munici¬palities to develop the strategic development plans.

The important driver of the housing development was the lack of the housing units, affected by migratory processes, and reduced average size of the households. For instance in 2005 9,140 people migrated to Bratislava while 6,525 people have left the town. The disequilibrium between demand and supply resulted in the growth of prices.

The high margins in real estate have attracted many investors and developers, as well as the international players, such as for instance Trigránit, Ballymore Properties, Orco and Parker Green etc. These developers were actively acquiring land in the attractive localities and they are developing the residential, logistic, commercial and administrative buildings.

8 The most important development investment in Bratislava comes from abroad

In the past several years the demand for residential real estate was driven by Dutch, Irish and English investors, who were interested to buy the expensive properties in the city center as well as the new housing units of medium standard.

Their behavior was also determined by the fact that according to the estimates, only in Bratislava is missing about 55 thousand dwellings. According to unofficial data, it could be up to 80 thousand dwellings. It is necessary to keep in mind that Bratislava has in fact almost a quarter of the population more than in official statistics. It is clear that investment in residential property in Slovakia is one of the most popular and in terms of market developments and the most reliable and best. Since 1990 the price of housing was almost continuous growing and only during the last about three years increased by 50 to 70 %, in some cases up to 100 % (see Fig.5).

Such disproportion between the housing needs, demand and offer triggered the residential construction boom in Bratislava. In some cases the price of 1 m2 of the dwelling has risen to € 3,300. The developers were able to obtain very good access to credits from Slovak financial institutions. The buyers of the real estate often obtained the mortgage credit up 120% of the value of housing unit, and in some cases without the declaring the income, that can be considered to be hazardous decision.

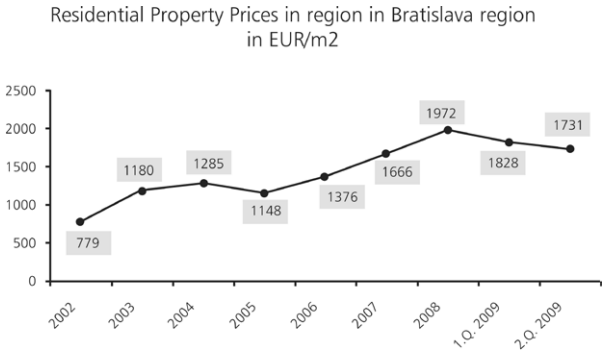

Figure 5. Developments in property prices in Bratislava region (NBS Slovakia 2009)

The developers were mostly interested to develop the segment of high quality expensive housing units. This segment of the housing market was underdeveloped in past because of the different social stratification of the population. During the socialism the high income population group was very thin. After the introduction of the private sector, privatization, and better paid jobs in some professions, the higher income population group became broader. The developers were not interested to build the housing for medium income population group, for young families and rental housing units. The tenancy structure of the housing sector is also not ideal. After the housing privatization, only 4 % of the housing stock was the rental housing stock. Although some people bought the houses for the rental purposes, the rents in these housing units are not very affordable. The segment of the luxurious housing units is today saturated, and the fancy margins for the developers are probably represent the past.

Fancy margins in the residential and administrative real estate have attracted not only the responsible developers, but also the developers with inadequate experience in the sector. As the result of that, some of the new buildings have the inadequate quality.

9 Residential projects

Very attractive area for the developers was Záhorska Bystrica, located on the slopes of Small Carpathian Mountains on the southern part of Záhorie plaine, well connected by highway to the neighboring countries. The completion of the tunnel of Sitiny in Bratislava in 2007 has enabled to speed up the connection to the centre of the city by the automobile transport.

The luxurious and higher standard residential houses are built here by the Slovakian, Israeli and Island developers, e.g. KGS. As the result of the new construction, number of inhabitants in the area grows. It is expected that in five year period, the number of inhabitants in Záhorská Bystrica will grow from 3,000 inhabitants by 80%. The urban-architectonic concept supposes the creation of the dense row residential structures that are well integrated into the rural structure of settlement Záhorská Bystrica. In such a way the municipality wants to avoid the creation of the residential satellites.

One of such satellite however already exists. It was built in the locality of Strmé vršky soon after 1990. It received the nickname „The Slovak Beverly Hills„. In this gated community the very large family houses were built. There are not much green spaces; the architectonic style is often very strange reflecting the taste of the owners. The owner wanted to attract to the locality also the foreigners, but for many of them the area was not interesting.

Next project of this area is "BORY MALL". Among the unique investment projects in Central Europe in the near future can be classified as "BORY MALL" in Bratislava, which will be built in an area of 220 hectares and provide a wide range of possible uses in relation to the market. Construction of this huge complex was supposed to be started in 2009 and will be divided into two stages. In the first stage the investments will represent approximately € 330 mil. According to the plan, the commercial entertainment centers and leisure facilities,

would prevail and will be supplemented by the administration and apartments. Also the University campus will be gradually built in the area, and the period of construction is expected to attain approximately ten years. The development is however being postponed, because of the problems with the acquiring the land, and of course because of the crises. Infrastructure currently is in the process of approval. Developer is financial group PENTA INVESTMENTS from Slovakia.

In the broader centre of city, three important projects will soon be completed EUROVEA, TRI VEŽE, RIVER PARK.

EUROVEA – is the commercial-cultural center that is being complete on the riverfront of Danube River and is located on the former industrial Brownfield area. The project covers 230 thousand meters, comprises several mixed used buildings (commercial, residential and shopping areas), the urban plaza and park. The construction is realized by Irish developer Ballymore Sean Mulryan (Fig. 6) with the total investments of € 350 mil. The project represents also one of the largest area redevelopment in the Central Europe.

TRI VEŽE (Three towers) – represent the mixed used complex that was started in 2006 in the broader center of the city. In the 24 floors buildings 633 housing units are available with the surface from 40 to 220 m2. On the lower floors the commercial passage is under the construction with services and cafes. Project also includes 836 parking places. The overall costs are € 66 mil. The construction of mixed used complex began in 2006 and is developed by Tricorp Development, the consortium of renowned foreign and domestic real estate development companies. Cresco Group, Quinlan Private a GE Capital Golub – subsidiary General Electric Capital Corporation. (Fig. 7).

RIVER PARK - complex is an ambitious project from the works of world-renowned Dutch architect Erick van Egeraat developed by J&T Real Estate. The modern building will revive the long neglected riverfront, while removing the barrier between the city and the river. The new dominant feature of Bratislava will be not only a popular place for business meetings but primarily an attractive zone for leisure-time activities for all residents and visitors to the capital. The project offers such a wide range of premises that everybody will find what they want there - from office space to a shopping zone to a 5-star Kempinski hotel, which will include a top-quality wellness centre. The project is planned to include the construction of 208 luxurious flats and suites with a view of the Danube. The River Park will welcome its first residents and visitors as early as in 2009

Figure 6. Eurovea project (www.eurovea.sk, 2009)

There are also the plans to build the South

city in the locality of Petržalka on the right bank of the river on the surface of 90,000 m^2 with the completion date in 2017. In this project it is expected that the developers will take care also the construction roads, public space, greenery, and the playgrounds etc. Such approach is not always typical for the work of developers in Bratislava. The project is prepared by the Slovak developer CRESCO Group in the partnership with the international developer Quinlan Private Golub. Project should be integrated into Bratislava public transport network, since it expected that the station of fast tram will be located in the area. The project was not yet started and we have to wait how the situation is going to be changed during the crises.

Figure 7. Visualization of the project Three Towers. (www.triveze.sk, 2009)

The substantial development is going on also in the North Eastern part of Bratislava where the new family houses are being constructed on the slopes of the Small Carpathian Mountains on the former agricultural wine yards.

10 Administrative space, business centers and shopping centers

An important aspect of current globalization processes is that they concentrate the command and control function in a small number of metropolitan areas. Such areas attract transnational corporations, international organizations, important events, as well as real estate developers and investors (Sykora 2002). Some cities in Central Europe are effectively performing these gateway functions. Prague, Warsaw, and Budapest have become major entry points for foreign companies seeking to expand their operations. The growing attraction of investment flows to these cities is strongly influenced by the comparative advantage of city markets. Lowering national barriers, developing the global networks and interregional alliances was a great challenge for these cities, which they have successfully met.

The development of administrative spaces in Slovakia after 1990 was rather slow, because of the transformation problems, unclear political situation (Slovakia was established as the independent country in 1993, the political direction of Slovakia was not clear at the beginning - some western observers has characterized it as the crony capitalism, many important reforms came to existence only on the turn of century). The new construction of

the non-residential spaces was thus accelerated after the year 2000. Global division of work channeled production and services into these countries characterized by low labor costs, and so a number of call-centers, car production plants, back-offices of large corporations, and bank institutions sprung up in and around their main metropolitan regions.

Many of the administrative spaces were later bought by the foreign investors. The most important deals that took place on the real estate investment markets in the period of 2005 – 2006 were for instance:

- Sale of hotel Radisson SAS Carlton by Belgium Tractabel (Suez group) to consortium composed from Nautical 1, Patron Capital a Trutheim Invest;
- The Israeli investor bought Business Centers BBC III. and BBC IV. And later built together with the local partners BBC V. Later the majority share was sold to American investor Heitman;
- Slovak company HB Reavis sold to Dutch investor Rodamco Europe half of the 50% of shares of the commercial centre AuPark;
- Hannover Leasing bought Apollo Business Center;
- Immofinanz Immobilien bought large business entertainment centre Polus from Central European developer TriGránit;
- The Israeli companies, such as Alon Investments Ltd., Ilanot Discount, ISEMI, Infinity Investments House, Altscholer Sacham Investment House, Pioneer Investment Funds a Sterling Lazar & Co are trying to acquire the other commercial spaces in Bratislava.

At the end of year 2008 Bratislava had available office spaces in whole area 1,162 million square meters. From the beginning of the year 2008 the administrative spaces uptake represented 176,700,000 square meters of new office spaces. In the last quarter of the last transactions were made about the area of 63,700,000 square meters which shows increase in 46,600,000 square meters in comparison to last quarter. Straight transactions represented 60% of all transactions, where the largest share of the central Slovakian savings. In the market dominates transactions of the financial sector and banking sector followed by manufacturing and construction services and professional services sector. The financial crises however stopped some new promising projects in 2009 (Ivanička and Špirkova, 2009).

The most interesting projects currently in Bratislava is DIGITAL PARK Einsteinova, is an exceptional administrative complex of buildings for modern and progressive companies requiring flexibility, comfort working environment and that will appreciate original eye-catching, generally valid design in the strategic locality with good transport connection (see Fig. 8).

Figure 8. Visualization of the project Dgital Park (Digital park 2009)

Specific feature of DPE is represented by unusual low coefficient of land coverage and high portion of relaxation

zones completed with the natural environment of green and water areas. A complex of administrative buildings strategically positioned on the Einsteinova Street. With excellent accessibility to the most important city arteries in the immediate vicinity to the highway section D61 Viedenská cesta – Apollo Bridge and the key intersection Einsteinova Street and SNP Bridge. Direct highway connection to Vienna, Prague, Budapest and to the main Slovak cities. The Author of the project is the well-known architectonic atelier CMA (Cgler Marani Architects) from Prague the successful similar project of Park Chodov in Prague.

11 The urban renewal of prefabricated housing neighbourhoods

Urban renewal of prefabricated housing neighbourhood is the important problem in Bratislava. At least half of the population of the city lives in such houses. This segment of housing stock was built mostly in 30-year time span (1960 - 1990), and so the deferred maintenance may cause substantial social and economic problems in the housing markets in future. The problem is not related only to the deferred maintenance, it is also the quality of urban spaces, availability of playgrounds, humanization, green spaces, the solution of the static transport, lighting etc.

The size of high-rise neighborhoods is often comparable to independent villages or towns, however growing decay make these „towns" less attractive and the social problems have the tendency to cumulate. This is not so much problem yet in Bratislava as is in the Western countries; however the situation can change in future. There is the danger that the middle class would not like to live these neighborhoods. So the fast urban renewal is quite important problem to be solved (Ivanička, 2006; Špirková, 2006).

The large housing estates in Bratislava were from larger part privatized. But even after the privatization there is often absent clear title on the property. The housing privatization often did not solve the problem of the land property on which the buildings stand. That land often belongs to the third party (municipality, company, individual landlord, or even the unknown owners). And the property rights are the basis of the good governance. Unclear ownership relations then complicate the care for the public space, such as green spaces parking lots etc. The existing situation is the legacy of the socialist past, when the land records were not kept properly.

Since the renewal of the large estate is not only the domain of the housing management companies, owners, but also the municipalities, financial institutions and local businessmen and citizens, efficient partnerships are the necessary prerequisite of the successful implementation of the large scale projects. In addition additional subsidies from the state and EU may be needed. Moreover there is the urgent need of the citizen participation that is not however without problems in former socialist countries. Major urban renewal initiatives in last 40 years were scarce in Bratislava. The only exceptions are the development of high-rise areas that very often connected with total demolition of the urban areas where the new high-rise buildings were supposed to be built. Such approach stopped in Nineties. The initiatives on this field are still absent (Ivanička, 2007).

12 Conclusions

Bratislava that is located in the heart of Europe was quickly developing during last 100 years in the historically and politically very distinct frameworks. The rapid modernization of the city started only in the last decades thanks to fast economic growth and advantageous economic position. The existing development is not without contradiction. Although the reforms enabled the housing boom, attracted foreign direct investments, the sound urban planning principles were often neglected. As a result of that we are sometimes witnessing of the radical changes in modal split, congestion, lowering of the aesthetic values in some areas. At the same time many new projects enabled to raise the quality of life of the citizens and made the city more interesting for the citizens and entrepreneurs. The new opportunities for the city development came from the opening of the borders, and they are gradually seized. There is however more demand for the quality transport infrastructure, housing and the refurbishment of the whole neighborhoods. And the urban sprawl is progressing. There is definite lack of public finance for that purposes, which is certainly the dilemma for future.

The world economic crises put to the end the speculation on the real estate market, and maybe it is the time when city government and the developers will have more time for rethinking the future development of the city, while the role of the real estate speculators with low ability to satisfy the complex city needs, including provision of the social and aesthetic values for the citizens, would be eliminated.

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Slovenian Experience in Public-Private Partnership Case studies: Tehnopolis, Šmartinska Partnership, Stožice Sports Park

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Abstract:

The Republic of Slovenia is in transition from a socialist system to a market economy. The legislation framework governing the public-private partnership has been recently shaped. The contemporary brownfield redevelopment procedure in Slovenia is analyzed, taking as basis case studies of current Slovenian redevelopment projects, including the urban planning projects of the Tehnopolis, Šmartinska Partnership and Stožice Sports Park.

Key-Words:

Public-private partnership, Brownfiels, City regeneration, Slovenia.

1 Introduction

The Republic of Slovenia is still in transition from a socialist system to market economy, which also reflects in the development of spatial planning and land management. In the light of the equality of public and private property rights on land, a new system of spatial planning, as well as new land use policy instruments need to be created. In these sectors, relevant legislation has been developed for more than one decade, and new acts have recently been passed. An essential land policy issue concerns the acquisition of appropriate building land in time, and that, as regards its location, area and value, taking into account all other interests. The most crucial of the instruments is perhaps reallocation, which is being reintroduced into the Slovenian legal order after a 70-year period. Although in practice it showed poor results in the past, it is nevertheless the most adequate land policy instrument in ownership regulation and, in particular, for urban redevelopment purposes. Major urban projects in major town and their city suburbs are closely linked with the public-private partnerships. On account of the specificity of spatial planning, land policy and financing, the urban redevelopment process has assumed a unique form in Slovenia.

This paper focuses on the specificity of legislation governing the public-private partnership (PPP), which represent the foundations of contemporary brownfield redevelopment procedure in Slovenia, and analyses the process of urban dynamics in practice, taking as basis the three case studies of current Slovenian redevelopment projects, including the urban planning projects of the Tehnopolis, Šmartinska Partnership and Stožice Sports Park.

2 Legislation Framework of PPP in Slovenia

The Construction Land Act (2004) and Spatial Planning Act (2002) newly defined land policy instruments, which are most appropriate for acquiring land in the public interest, while it was not before the Public-Private Partnership Act (2006) that Slovenia started to legally regulate this area as well. Prior to that the majority of PPP cases were implemented in the area of infrastructural projects, particularly purification plants, sewage networks and water supply.

The Public-Private Partnership Act specifies two basic forms of public-private partnership: the contractual and the equity partnership, and regulates the substance of three legal areas: PPP as a special legal institution in contractual and equity forms, PPP as a legal institution of building concessions, and PPP as a subsequent regulation governing the transformation of the existing public companies, public institutions and public commercial institutions into more transparent forms of ownership.

Particularly important for the development of urban-planning projects in the Republic of Slovenia is the adoption of the Resolution on National Development Projects. This is a strategic document representing, at the national level, the framework for development priorities and projects, which are promoted by the state or whose implementation is supported by the state.

The first priority set out in this Resolution, which defines competitive economy and accelerated economic growth, is the planned and already implemented establishment of nine regional economic centres, which provide for the concentration of capital, knowledge and technology to achieve the Resolution goals. PPP models are foreseen to be formed in the framework of these economic centres.

3 The Case Studies of Urban development projects: Stožice Sports Park, Techonopolis, and Partnership Šmartinska

Three important urban-planning projects with different functions are presented in the scope of PPP implementation in Slovenia in order to show them as examples of good practice in different regions and under different operating conditions of PPP, with different roles of the public and private partners.

A characteristic feature of all three projects is that the public partner as the initiator enters the partnership with either land or investment in primary infrastructure. In the Zgornja Savinjska region, this is the Tehnopolis Celje project.

The Osrednjeslovenska region (Central Slovenia) has several PPP projects planned, two of which are currently active: the Šmartinska Partnership and the Stožice Sports Park. The Šmartinska Partnership is an urban redevelopment project in which the function of the public partner is to interconnect, direct and invest in the public infrastructure. The first visible result of the partnership activities is the completed international urban planning competition which has brought a new vision of redevelopment of a former industrial area.

The components of the winning idea are included in the Municipal Detailed Spatial Plan of the Municipality of Ljubljana.

The project of the Leon Štukelj Sports Park in Stožice, on the other hand, involves the construction of a combination of commercial, sports and recreational facilities on the last large unoccupied piece of land on the inside of the city's ring road, and is also based on an international urban-planning competition.

3.1 Technopolis

The Tehnopolis (fig. 1) is an integrated project of seven sub-projects in the Municipality of Celje, incorporating the economic development of the Savinjska region.

The key objective of this project is to generate an accelerated economic development to achieve a 7-percent economic growth per year through branches of economy and environment-friendly technologies with a higher added value.

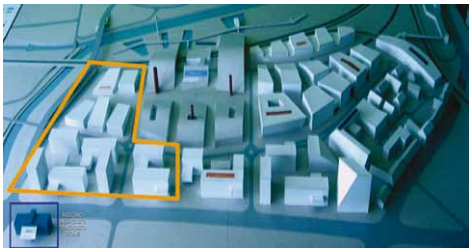

Figure 1. Tehnopolis Project

The project is expected to create at least 2000 new jobs, increase the level of education from the present 12% of regional population with college or university degree to 20% by 2013, create the environment for the "brain" inflow into the region, and at the same time stop the flight of the most creative people from this region to Ljubljana and to the neighboring European regions.

For this purpose it is planned to construct facilities for advanced and high-tech companies and educational organizations. The entire development of the construction project called Technology City takes place in the framework of PPP.

3.2 Šmartinska Partnership

The master plan area of the Šmartinska Partnership, located between the newly planned central public transport terminal and the motorway ring, is, however, a unique model of how the city's future urban identity can be created. Such a scenario resulted from a winner project of an international competition, which had aimed at determining the urban development planning guidelines and had been commissioned by the public-private partnership of the Municipality of Ljubljana and a group of private landowners within the area (fig. 2).

The main idea behind the transformation of a degraded former industrial district into a modern and vibrant urban and public axis was to interlink the existing City Centre with the New Centre, created next to the already existent 'BTC' retail park. This is the largest project

Figure 2. Masterplan of the Šmartinska Partnership: Competition-winning project by Hosoya Schaefer Architects AG, Zurich.

of the regeneration of a part of the City of Ljubljana, whose main objective is to encourage restructuring and moving of secondary economic activities to more suitable locations. Services and central activities (financial, consulting, health-care services, service workshops, etc.) are foreseen in this area.

3.3 Stožice Sports Park

The basic intention of the Municipality of Ljubljana was to develop the sports park in Stožice in order to obtain the necessary stadium. The Stožice Sports Park (fig. 3) integrates a football stadium and a multi-purpose sports hall with a big shopping centre, covered by an artificial landscape of the recreational park. As a result 182,000m2 Stožice Sports Park shall become one of the major focal points of Ljubljana's urban life, attracting people of different interests and generations both during the daytime and in the evenings. The urban-planning competition took place simultaneously with the selection of the most favourable investor.

Figure 3. Stožice Sports Park: Competition-winning project by Sadar Vuga Arhitekti d.o.o., Ljubljana.

The public partner is entering the Technopolis project with land, promoting the project and taking part in the acceleration of administrative procedures. The Technopolis is a project, which consists of several phases and is strongly dependent on financing from the European Structural Funds. The access to funds depends on the originality and adaptability of the private partner in competing for public funds for the promotion of regional development, innovation, development of human resources, etc.

The Šmartinska Partnership project cannot be compared to the other two projects since the role of the public partner in this project is completely different. In addition to entering

the ownership structure with land, the local community as the public partner also acts as an integrator and conductor of private partners. Using the land policy instruments and adopting spatial planning acts, the public partner directs the course of events.

The Stožice Sports Park is a project consisting of two phases. The first phase involving the Municipality of Ljubljana as the only public partner comprises the construction of a football stadium and shopping centre, while the second phase involves the construction of sports facilities of national significance, in which co-financing by the state is anticipated. The public partner organizes and conducts a dialogue among all the participants, provides for public support and promotes the project development.

4 Conclusions

In view of the experiences in the development of the presented PPP projects we believe that their success largely depends on the public partner, since the public partner bears most of the responsibility, particularly at the beginning.

The case of the Technopolis project has shown that the local community is not immune to the influence of private capital wishing to have a majority share in the project and more power in the enforcement of private interests. It is difficult to protect the project against such hazards. Conversely, the public partner in the Šmartinska Partnership project has played its role well, but the financial capacity of the local community, on which the advancement of reurbanization most strongly depends, presents an obstacle.

The Stožice Sports Park project is faced with the greatest deviations from the planned course. An important private partner, company Grep, which manages the project execution, is not fulfilling its obligations. The local community declares that the contract is well insured and the project will be executed as planned.

We can conclude that Slovenia lacks long-term experience in the field of development of urban-planning projects in the framework of PPP. We anticipate that during recession the initial enthusiasm will be complemented in particular with increased prudence of both the public and private partners concerning the investment of capital in the project. We also consider as distinctly problematic the drawing up of the Municipal Detailed Spatial Plan as an implementing document which should – in the areas owned by numerous landowners – satisfy both the private interests of each individual landowner and the public interest.

Table 1. Basic Characteristics of individual cases from the PPP point of view

Project name	Tehnopolis	Šmartinska Partnership	Stožice Sports Park
Area	Economic development, infrastructure construction, promotion of innovations	Urban regeneration, moving of industry, placement of new activities	Provision of sports facilities of regional and national significance
Use of PPP	Foreseen; there are no official models and contracts as yet	Foreseen; there are no official models as yet	Equity partnership
Estimated value	160 million €	Not known	357 million €
Sources of finance	Public partner 45 %: private partner (companies) 55 %.	Not known	Public partner 49 %: private partner 51 %
Public partner's role	Entry in ownership structure with land, project promotion, acceleration of administrative procedures	Entry in ownership structure with land, project promotion, acceleration of administrative procedures	Organization and conducting a dialogue among all interested parties, public support, promotion of restructuring
Time frame	2001 – 2015	2004 – 2009	2007 –

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Masterplan of the Šmartinska Partnership: Competition-winning project by Hosoya Schaefer Architects AG, Zurich. http://www.hosoyaschaefer.com/

Post-Industrial Landscapes - The Case of the Arade River Left Margin

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Abstract:

Historic areas are progressively coming under threat of new development. The impact of new construction is noticed not only at nationally important sites, but also in local areas, where small changes can be very significant, diminishing landscape character and local distinctiveness. The idea of sustainable development is more frequently associated with protecting the natural environment than with preserving the built and cultural heritage. This fact added to the necessity of reusing abandoned industrial landscapes in detriment of consuming new ones, increases the need to enlarge the interpretation of the term "cultural heritage", to analyse and interpret the value and significance of post-industrial landscapes and to develop new mechanisms to preserve it. This paper presents a set of design principles that might be applied to a specific post-industrial landscape with cultural and social value (the left margin to the Arade River, Portugal). These principles describe the ways in which relevant resources created and later dumped by the industrial society and now in the post-industrial era how they can be enhanced and how they can best be reclaimed and reused.

Key-words:

Sustainable Development, Industrial Heritage, Arade River, Urban Redevelopment.

1 Introduction

However it is widely acknowledged that the values connected with sustainable development are significant for people's daily environment and the built and cultural heritage are an integral part of it. Cultural values need to be determined, meaning given to elements of the city, its importance identified and exceptional sites highlighted.

The concept of cultural heritage has clearly meant different things to different groups of scholars and the public interested in reclaiming traditions – and landscapes – presented as part of shared, remembered pasts (Carr, 2003). In 1949, the Statute of the Council of Europe, adopted in London, quotes that: "to achieve a greater unity it is imperious to safeguard cultural heritage and to facilitate economic and social progress" (SCE, 1949). The years ahead proved that the conservation and safeguard of the natural and cultural environment (people's common heritage) was one of the major confronting issues. Since then, several basic legal instruments were adopted in order to protect this heritage: the Bern, Granada,

Valetta, Lugano, Strasbourg, and Florence conventions are good examples of this purpose (ICOMOS, 2008 and references therein).

For this reason, the history behind the birth and development of a city should be traced and features revealed in order to retain, amend and transform implicit values (Strike, 2003). This analysis of society and this understanding of an area lead to a social perception of the kind of place people wish to live in, and to the recognition that the whole city is our 'heritage' (Storelli, 2003), regardless of whether it is large, small, historic, industrial, old or new. Cultural landscapes are places that contain aspects of our origin and progress through their forms, features, and land use history, they give us a sense of place and reveal our relationship with the land over time (Telles, 1956; Telles, 1992; Cabral, 1993; Carapinha, 1995; Magalhães, 2001; Drury, 2002).

Considering that industrial heritage is an integral part of our culture, and that the member states of the Council of Europe which have adhered to the European Cultural Convention on the 19th of December of 1954 committed themselves – under Article 1 of that Convention – to take appropriate measures to safeguard and to encourage the development of their national contributions to the common cultural heritage of Europe; They recognised that heritage, regardless of being architectural, vernacular, industrial, etc., is an irreplaceable expression of the wealth and diversity of common culture. It is an "entity" shared by several people, which every country must show real solidarity in preserving.

2 Post-industrial Landscapes as redevelopment opportunities

Industrialisation promoted significant changes in the landscape: greater densities in urban areas and the urbanisation of the natural and rural environment. The city acquired a new – industrial – face, and a new order (Aguilar, 1990). This new landscape was defined by the concentration of industries and by the needs of a growing population, often new workers in a new society who demanded new public services and infra-structures, thus contributing to the image of the typical 20th century settlement.

However, over the past decades globalization, deindustrialization, industrial relocation and economic (re)conversion has had a profound effect on traditional industrial areas all over the world and produced a vast array of obsolete industrial facilities and the various impacts, which are generated from them (Loures and Panagopoulos, 2007). The formal products of the modernist movement have become obsolete, forcing this generation to decide on the disposition of the last generation's industrial environment. In recent years, several researchers have contributed to evaluating, documenting and developing remnants of the industrial society (Bergeron, 1996), in order to emphasise the need of taking post-industrial landscapes into consideration in the city planning, considering industrial heritage as a resource and as an integral part of collective identity. The classification of the landscape as industrial implied a qualitative perception in which territory and industrial infrastructures were analyzed from a functional, cultural and historic perspective (Tandy, 1979).

According to Borsi (1975), the industrial landscape may be defined as "the landscape resultant from a thoughtful and systematic activity of man in the natural or agricultural landscape with the aim of developing industrial activities". This definition enabled the recognition of an entire landscape as a single industrial space, as opposed to simply recognizing a building, or a group of buildings of an industrial site, allowing the expansion of the conception of industrial preservation to accommodate "recognized patterns of activity in time and place" (Meinig, 1979).

The concept of industrial landscape is, in this sense, used to describe and classify the "remnant" materials of the industrial culture in order to attribute them a new meaning (Hudson, 1979 and references therein), with the objective of creating a theoretical basis and a practical methodology both for the study and for the intervention in these landscapes, to adapt them to new production systems and new cultural uses. The fact that several countries are now facing various problems produced by landscapes constructed during the modern period [e.g. industrial revolution], currently in physical and functional decadency, contributed to enlarge the negative public perception about those spaces.

Even so, the meaning and the relevance of industrial landscapes is now larger than ever, especially because of the creation of the Nizhny Tagil Charter for the Industrial Heritage in 2003. This charter specified clearly that the buildings and structures built for industrial activities, the processes and artefacts used within them and the towns and landscapes in which they are located, along with all their other tangible and intangible manifestations are of fundamental importance (NTCIH, 2003). In accordance with the spirit of the Venice Charter (1964), they should be studied, their history should be taught, their meaning and significance should be probed and made clear for everyone and the most significant and characteristic examples should be identified, protected and maintained.

However, the spaces that have been recognised and defined as industrial heritage, still face inappropriate appraisal of material and cultural resources and stereotyped ideas of industry, once the way in which they were designed do not satisfy the aesthetic, ecological, and functional requirements and standards (Alanen and Melnick, 2000). Appearance in assessment of the industrial heritage was and continues to be the most important factor rather than to any other consideration of function or history (Smith, 1974). Additionally, the interventions developed to post-industrial landscapes are frequently reprehensible, contributing to the disappearance of various buildings with significant meaning [e.g. figures 1 and 2].

Figures 1. and 2. Examples of industrial building symbolic preservation in Algarve.

As industrial building symbolic preservation in Algarve during the last decade the architects opt to leave the

chimneys as if they represented the entire value of the building (which is a mistake according to Aguilar, 1998), as the analysis and intervention in these landscapes should not be directed to a single building, but to the entire industrial landscape.

Analyzing and re-developing these landscapes, landscape architects, architects, designers and other planning professionals need to realise that post-industrial, typically part of ordinary or vernacular landscapes, incorporate the passage of time, representing multiple layers of time and cultural activity therefore being part of the identity of a people and a place.

In this sense, these landscapes should be seen as assets, once as historic sites they enhances the possibilities of creative practice in preservation, design, and planning, given that they are by definition: unique, resulting from the combination of natural landforms and buildings defining a particular place or region. These changes in perception contributed to increase the relevance of industrial landscapes and to highlight the need to study and protect the material and immaterial remains of our industry from a different perspective (Casella and Symonds, 2005; Stratton and Trinder, 2000).

3 Industrial heritage an asset that needs to be considered

The concept of Industrial heritage was only introduced in England in the middle of the twentieth century, during a period when several industrial buildings and landscapes were destroyed (Kuhl, 2004). By this time the concept of heritage crossed the boundaries of the industrial era, moving to a past much closer to the present (Choay, 1992). Since then several efforts have been made in order to define what should and should not be considered as industrial heritage. According to the Nizhny Tagil Charter the "industrial heritage consists of the remains of industrial culture which are of historical, technological, social, architectural or scientific value". It is necessary to recognize that landscape and architectural heritage are a capital of unique spiritual, cultural, social and economic value and that the destruction of any part of it leaves us poorer, since nothing new that we create will substitute that loss (ECAH, 1975).

Nowadays it is common to hear such phrases as "landscape architecture must be sensitive to its surroundings" or "it is essential to develop a sustainable sensitive approach". The problem is that many times, technicians or local authorities do not really understand what these phrases mean, allowing the use of some design techniques and strategies that modify the spirit of the place.

In this sense, before starting to develop a reclamation or rehabilitation project for a post-industrial landscape it is important to find the answer for two different questions: 'why' and 'how' to reclaim and protect the industrial landscape?

The answer to the 'why' is often very clear. Industrial landscapes describe an important part of the history of a place, thus, constituting a testimony of cultural, social and economic conception and evolution which documents and interprets considerable values for urban heritage. Furthermore, the analysis and recovery of these landscapes constitute an

opportunity that tends to be lost in time, considering the growing urban pressure that, especially in pleasant and valuable landscapes, had several times led to the disappearance of various industrial infrastructures, some with high heritage value and significant relevance.

The answer to the 'how' is relatively more complex, once, even if there are several possible answers to this question; each one includes generally several restrictions enabled by the search for profit maximization by private and public sectors. Although it is recognized that the economic and social dimensions of the rehabilitation process cannot be dissociated from the environmental and cultural dimensions, and that the cultural heritage has become a key factor in improving people's surroundings, addressing issues of social cohesion and encouraging economic development, little has been done in order to rehabilitate the industrial buildings and surrounding landscapes. In addition to that design professionals tend to highlight 'how' to manage cultural landscapes (heritage management plans, redevelopment proposals, cultural landscape reports etc.) but not 'why' should we be concerned with historic sites and places or 'what' are the expectations and 'which' are the objectives we seek to accomplish by working with them. "Now" that the post-industrial landscape is [more than ever] considered an asset and as a catalyst for urban redevelopment by being a relevant element of the genetic code of the city, according to which rebuilding from degradation should be performed (Bielecki, 1996), the answers to these questions should be formulated in order to maximize the benefits that may arise from its (re)development.

4 The post-industrial landscape of the left margin to the Arade River

The post-industrial landscape to the left margin of the Arade River is located in the municipality of Lagoa, Algarve, which is characterized by the presence of Mediterranean landscapes.

As Loures and Panagopoulos (2007) mentioned the relevance of the Arade River and its surroundings in the local, regional and national context is attested by numerous archaeological evidences found submerged and around it. In the beginning of the twentieth century the implantation of an industrial center in the river margins promoted a significant development of that area, which was enhanced during the First World War. The whole process was one of great dynamism which would completely transform the existing landscape. At those times almost two thirds of the population worked on industry (Martins, 1990).

Nonetheless, during the late sixties the industrial activity collapsed and numerous industrial structures were left abandoned. This post-industrial landscape represents nowadays a historic and cultural environment, which can tell the story of how people have interacted with the landscape during the industrial era, the period of massive socio-economic change that influences our life till today at the post-fordist era of globalization.

Figure 3 represents a panoramic view of the left margin to the Arade River, in which each number is located right above a visible chimney from a former industrial building associated with the fish cannery industry. The evidenced of unity at this landscape is notorious, as well as the impact that the un-thoughtful de-characterizing interventions might have in it. In

order to address the problematic described above this paper presents three case studies (figure 4) that positive contemplation might have had a considerably higher impact on the quality of present and future life of the local inhabitants.

Figure 3. Panoramic view of the post-industrial landscape of the left margin to the Arade River

Figure 4. Localization of the selected case studies (Sourse: adapted from Google earth)

4.1 Boca do Rio Resort – From a former fish cannery industry to a 5 star resort.

The resort Boca do Rio (figure 5) constitutes a good example of post-industrial redevelopment, the conversion of a former industrial building (brownfield) into a hotel located right in the margin of the Arade River was significantly useful to the municipality. However the fact that the chimney was the only element that lasts from the former structure was criticized by many. Because, even if one can argue that this project was beneficial to the municipality (what is true), those that knew the former site, consider the approach too belligerent, once it changed completely not only the site (applying what may be called a tabua raza strategy), but also its connections with the surroundings.

As it was argued by Loures (2006), turning an underused site into something new and useful, is beneficial, however, people's needs and desires need to be take into consideration in order to assure that the new development may be a resilient and sustainable one.

4.2 Pavilhão do Arade – From a former fish cannery industry to a cultural multi-use pavilion.

This redevelopment project is the result of a public private partnership (PPP), which

Figure 5. Boca do Rio Hotel Resort – used by permission © Luís Loures, all rights reserved.

Figure 6. Pavilhão do Arade during construction - used by permission © Luís Loures, all rights reserved.

main objective was the creation of a new cultural and service centre. In this specific project designers argued that the reutilization of this former historic industrial building will improve the quality of life in the surrounding neighbourhoods and build-up areas as well as maintaining an important part of people's collective memory. However, the magnitude of the design proposal, (based in the direct application of the Athens' Charter) left few residues (the chimney) from the original building (figure 6).

It is noticed that the iconography and modernity of such a design coupled with the reutilization of a building in response to the scarcity of floor space and the difficulty of towns in spreading outwards was considered an important achievement by local authorities, nonetheless, local inhabitants considered, not only, that the construction did not match the surrounding landscape but also that an important piece of their collective memory was being erased from the urban palimpsest.

4.3 Marina de Ferragudo – From an artificial sand dune with some post-industrial buildings into a marina with mixed use development.

The site where the new Marina of Ferragudo is going to be developed is an artificial sand dune that was constructed over the last decades by successive deposits of sedimentary materials dragged from the river.

The proclaimed development project, intents to create an excellence area for tourism, transforming an underused site, with very low aesthetic beauty into a multifunctional landscape with a strong high income residential area associated with the marina and with leisure and commercial facilities.

At a first glance, the project seems to be really thoughtful, but if one looks closer, it is clear that there were several constraints that were not taken into consideration by the private developers (e.g. the fact that the project is being implemented in an area that was no long ago part of the river's water body). Even if, as it was said before, redeveloping an underused site is always an opportunity that should be considered (instead of expanding and

consuming new green areas), developers have to assure that cultural, social, environmental assets are a constituent of the design.

The presented examples showed that it could be useful to set up a common language among the different interventions so that the projects represent a general public benefit, given that, even if, only a few industrial buildings are of true importance to national and regional heritage, its conservation and reutilization represents an important environmental, economic and socio-cultural advantage, towards the establishment of a true sustainable development.

For this reason it is argued that the design solutions developed for this landscape, failed in the point that they do not take into consideration several design principles that are believed to be helpful to this type of intervention, as for example:

-make explicit provision for public participation to ensure that the community can play a role in shaping the re-development proposals;

-ensure that development responds both to site and context, reinforcing the sense of place and local distinctiveness;

-promote adaptability and diversity through development that can respond to changing social, technological and economic conditions;

-promote the continuity of multifunctional spaces associated with industrial buildings and street frontages, encouraging the utilization of reclaimed spaces and promoting accessibility and local permeability;

-reuse previously developed sites or unused buildings and ensure more compact development that enhances accessibility, affordability, and conviviality;

-promote legibility through redevelopment that provides recognisable ways, intersections and landmarks;

-ensure that design creates places that have variety and choice through a mixture of different uses, functions and activities;

-ensure that all redevelopment of industrial buildings and spaces is of a human scale, well detailed and landscaped;

-locates development to protect environmental quality by avoiding areas of ecological and cultural value.

5 Final remarks

After the analysis of the presented case studies, all located at the same post-industrial landscape, (nowadays directly focus to tourism developments), the main conclusions that might be produced are that, even though, the reclamation and reutilization of post-industrial areas are actions which are increasingly accepted and necessary not only in individual but also in collective level, the essential notions behind the necessity to protect the industrial heritage need to be taken into consideration once the enlargement of the industrial heritage concept showed that those landmarks are not only connected with history, which is narratological, they are also connected with memory, which according to Moore and Whelan (2007) is

larger, or something more, than history and in order to maintain the uniqueness of a place, its memory must be protected.

In this sense, it is essential to continue studying the city as an evolutionary 'object', by looking at culture and heritage, without forgetting that the values and the history of the city do not end in the eighteenth century (Custodio, 1991), they continue right to the twenty first century and as Dolores Hayden (2000) mention: "cultural landscapes [including industrial ones] tell us who we are, far more effectively than most architecture or exhibits in museums ever can".

The recovery of post-industrial landscapes should be seen as part of larger, ongoing processes of architectural preservation and urban design, once, it is not confined to the most symbolic factories. It includes, also, all the additional elements and structures associated with the industrial activity (Edelblutte, 2006). Urban planners, politicians, developers and stakeholders should understand that the maintenance of the urban heritage is one of the most important features for the identity of a city, and that the industrial landscape is important part of it. In this way, industrial preservation and reclamation becomes more than the conservation of the past, as important as that is; it becomes part of reconstructing the future. Thus, industrial preservation that connects people, place, and history fosters a sense of place and the power for community renewal (Allen, 1999). "working with and not against the site, something new is produced by registering the complexity of the given" Stan Allen (1999).

To conclude we think it is clear that the redevelopment of post-industrial landscapes is inevitable, but social and cultural values (as it is the case of industrial heritage) need to be considered in urban planning and design so that our urban areas do not end the day poorer than they were the day before.

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The Role of Urban Waterfront in Modern City Land Management

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Abstract:

Water is an important element of city green structure and ecosystem. Urban waterfront has aesthetic and functional values due to their proximity to water and the city core. Water included in natural and cultural elements of the landscape, attracts and bewitches human, together with meeting their basic needs. This paper illustrates multifunctional approach to the development of the urban waterfront and adjacent areas as reindustrialized and abandoned territories in the inner city. According to Latvia legislation, areas of urban waterfront mostly must be kept as natural areas. A lot of examples in the world demonstrate how through the different land management regimes to develop and renovate these areas, how to get economical, social and other effects and to ensure the city's sustainability and urban dynamic.

Key-Words:
Urban waterfront, flood hazard, recreation, urban woodland, landscape planning, Latvia

1 Introduction

Water is always essential in urban planning, due to its partly opposite properties – water is a refreshing element of life in green areas, but it is also a restraint for urban functions (Jormola, 1998).

The history of urban development is associated with the degradation of rivers - the deterioration of water quality, increased flooding, and the loss of ecological resources. The story of urban streams and rivers is as much a social history as it is a technological one. The control of nature and exploitation of natural resources was at the heart of the industrialization process (Petts et al., 2002).

The predominant condition of urban waterfront before the late 1950s shows that the city harbors was a central place for business relating. In additional to the central location, industry was also planned along rivers due to an availability of hydropower and easy waste disposal. Furthermore, in the 1960s and 1970s the urban waterfront existed as something of an industrial wasteland because of its low economic and social conditions (Hubbard, 1994).

Rivers and other waterbodies of towns and cities had serious problems with their water areas: high level of water pollution, there was no allowed to swim and steep, highly eroded, dirty and

unmaintained banks. The worse visually quality could be observed mainly on small rivers in towns (Urtane, 1998). A lot of urban rivers and streams in urban green space had often been highly engineered, canalized or culverted (Fig. 1).

At the middle of the 20th century it was produced a new approach to urban waterfront areas - deindustrialization ecological restoration and rejuvenation. Many other developments could make use of the waterfront - not just for industrial use, but for commercial, residential, and public access space as well (Hubbard, 1994). Following that movement, many cities started to rehabilitate rivers streams where engineering in the past had removed the natural course and banks and they start to develop urban parks, green corridors, marginal vegetation and riparian trees (Fig. 2).

Figure 1. Canalized/culverted urban habitats, Leicester, UK.

Figure 2. After dismantling of the elevated highway and structures covering the Cheonggyecheon in Seoul, Korea, the river was restored as a human-oriented, environment-friendly urban space with a waterfront and walks along the banks (Lee, 2004).

According to some other countries experience, at the urban waterfront territory can be identified at least four waterfront functional areas – public, natural, working and redeveloping (NYCDCP, 2002).

In Latvia the process of urban waterfront development and deindustrialization is started just few years ago. It is important to find the right solution for this process, according to the experience of other countries.

The main legislation papers in Latvia those definite the urban waterfront using are The Law on Protected Belts of 05.02.1997 (Likumi, 2008a) and The Method for Determining of Protected Belts of Overground Water Bodies of 03.06.2008 (Likumi, 2008b). According

to this papers, in areas where flooding hazard is 10%, there are forbidden to built buildings and dams, besides temporary buildings, rejuvenation of existing buildings, restoration of objects of cultural heritage, some engineering buildings, bathing-places and places for quayside of boats and yacht. Existing building areas in this territory must be protected from flooding. In Riga these area takes approximately 30% of the city.

2 Problem Formulation

Urban waterfront areas have aesthetic and functional values due to their proximity to water and the city core. Today, new approaches to the management of urban waterfront are response to advances in scientific knowledge and technology, and of a new concern for quality of life. Development, environmental improvement and ecological restoration demonstrate confidence in urban waterfront area.

Urban rivers provide an illustrated overview of the effects of urbanization on the aquatic environment, potential solutions to the resulting problems, and new opportunities for the regeneration of urban streams and rivers, and of land along their corridors and of adjacent urban areas (Petts et al., 2002).

In Latvia, according to legislation, urban waterfront with flooding hazard 10%, takes huge areas of cities and towns and mostly must be kept as a natural area. The problems with the development of these areas are identified as follows:

- to find optimal solutions to include urban waterfront and adjacent areas in the city life, to get economical and social benefit from urban waterfront;
- to improve the land management regime and maintenance methods of urban waterfront and adjacent areas;
- to improve the visual impact of the waterfront landscape, to reestablish the recreational resources and public connection to the waterfront;
- to maximize the benefits derived from economic development, environmental preservation, and public use of waterfront while minimizing the conflicts among these objectives.

3 Solutions

Many countries have different solutions in development and enhancement of urban waterfront and adjacent areas. There is wide using of methods: from comprehensive planning programs to using the natural processes as a management tool.

3.1 The urban waterfront management programs

One of examples how to choose the suitable management regimes for development of urban waterfronts in municipality, is to create waterfront management program. The New York City Waterfront revitalization program (WRP) is the city's principal coastal zone management tool. As originally adopted in 1982, the WRP establishes the city's policies

for development and use of the waterfront and provides the framework for evaluating the consistency of all actions in the coastal zone with those policies (NRC, 1980). The most important and influential of these studies is the New York City Comprehensive Waterfront Plan (CWP) (1992) who identifies four principal waterfront functional areas (natural, public, working and redeveloping) and promotes natural resources protection, public access and landmark preservation, water-dependent and other working waterfront uses, and new residential or commercial development in appropriate waterfront areas (NYCDCP, 2002). The waterfront vision expressed by the CWP has been incorporated in the Ney York City's waterfront zoning regulations. There are at least five distinct development strategies that are presently being utilized to provide new recreation space on urban waterfronts.

First, urban renewal is used to acquire and raze obsolete forms of development and replace them with recreation and open space. This strategy is often used in a situation where a waterfront is blighted and both functionally and economically obsolete.

A second strategy involves the adaptive reuse of structures and/or areas to transform obsolete or dysfunctional elements of the waterfront into vital working ones. This strategy is often used where the waterfront contain significant historical resources or where a goal is to protect the waterfront's heritage.

A third strategy involves waterfront expansion where land and water space needed for recreation are developed thought some type of environmental modification. This strategy is often used where the available waterfront land is limited and its acquisition for recreational usage appears infeasible.

A fourth strategy involves the development of multipurpose or shared facilities where some waterfront recreational objective is met while some other development purpose is server as well. This strategy is used where space is limited and demand is great.

A fifth strategy involves the provision of public access to the waterfront and public open space as part of commercial development. This strategy of providing easements is often used as a stipulation of approval for private development adjacent to public resources (NYCDCP, 2002).

3.2 Urban waterfront development for tourism, nature reservation and public access

In towns and cities the waterfront area is an important place that can impact the growing of tourism. For example, the distinctive geographical location of Gdansk (Poland) requires a new strategic urban planning approach to the shape of its public urban spaces with particular emphasis on centrally located waterfront areas. These areas have huge potential for the development of tourism in the city.

In Gdansk the development of the infrastructure of the waterfront edge and make use of such important, stimulating factors as qualified maritime tourism (yachting, yacht-race). According to Ruczynski (1998) the main issues includes: recognition of the existing potential of tourist interests within the city area and characteristic of the waterfront structures in urban composition (axes, landmarks, scenic points, scenic routes, panoramas, silhouettes; analysis of emotional values, specific places, monuments, analysis of evaluation of relation

between the tourist potential of urban structure and waterfront location of the town, etc).

In most Latvia towns can be found in the urban waterfront a lot of objects or symbols of natural resources and cultural heritage. Using this potential can enhance the city landscape diversity, improve the recreational and educational opportunities and attract more tourists. In Riga city, close to Daugava River, there are a lot of significant historical objects and natural protection areas – Old City, natural parks, fort buildings and others. In another towns of Latvia - Jelgava on the island of the River Lielupe - Pilssala in the centre of town there are two different objects – the palace of Kurland dutcy (18th century) and the territory of Natura 2000 – an the important place of bird nesting and the pasture of of wild horses (Fig. 3).

The maintenance of Natura 2000 territory is managed by natural way and shows that the dealing with natural processes and ecosystems leads to reducing of investments. The palace today is Latvia University of Agriculture – students, inhabitants and tourists use this island for recreation, bird watching and education. In the same time the island is a remarkable sign of the town for tourists.

Figure 3. Wild horses and palace on the island Pilssala in the centre of Jelgava

There is a new opportunity to build sport facilities in urban waterfront area with flooding hazard in Latvia. This kind of territory using is not in contradiction to Law on Protected Belts and is very successful. Ozo Golf Club in Riga is very well known among golfers from Northern Europe. The location of club is on the waterfront of Lake Kisezers (Fig. 4).

Figure 4. Ozo Golf Club on the waterfront of Lake Kisezers, Riga, Latvia.

As a result of this strategy, in many places and mostly in the periphery of the city, the urban waterfront remained as natural landscape. Woods and urban parks of the waterfront are the successful example on how to solve the land management problem of the territory affected by floods and maintain the balance of the ecological, social, biological, etc. services of the environment.

In Britain, for example, urban forests often include golf courses, while cycling is very popular in the Netherlands and Denmark. In the Nordic and Eastern European countries in particular, skiing is a main use in winter, and the collection of berries and mushrooms in

summer and autumn. Nature-oriented forms of recreation seem to be preferred, although this trend is stronger in some countries than in others (Hunter, 2001).

According to a recent trend of deindustrialization, Riga Free Port regenerate territories close to Riga Old City, rationalizing some of the old river port in the heart of the historic city and transforming the area into a 21st Century lifestyle centre combining art and culture, bars and restaurants, entertainment, shopping, housing and, offices. The reindustrialized peninsulas in River Daugava are developed as a public space for art performances and maritime passenger terminals.

3.3 Landscape planning as a tool for urban waterfront management

Landscape had been formatted by nature and man and it is the product of permanent interaction of both these forces. Landscape is not just the visual image of place, but also the body of ecological conditions and the functional system (Melluma, 2004). In this way the urban waterfront is a self–support ecological system and processes inside occur independently from the human activities. It is important to keep the urban waterfront as a stable naturally functional system and to use natural processes to ensure the sustainability of the city.

In a city planning where land use planning is integrated with landscape planning and urban hydrology, the possibilities of water and hydrological conditions must be considered. In landscape planning the water conditions have always been an essential part of the planning process (Jormola, 1998).

Water overwhelms everything in the city landscape, even at the built areas, because the rainfall and ground water flows on every square meter. The rainwater must be lead from house roofs and hard surfaces to non-built areas (Jormola, 1998). Urban waterfront areas have an imperative role in handling the rainwater and creating the visual appearance for different water images in the city.

Urban forestry is generally defined as the art, science and technology of managing trees and forest resources in and around urban community ecosystems for the physiological, sociological, economic, and aesthetic benefits trees provide society (Konijnendijk et al. 2006).

The other way to use natural forces for renewal of ecological balance of urban landscape is the succession (a fundamental concept in ecology refers to more-or-less predictable and orderly changes in the composition or structure of an ecological community). The creation of urban woodland based on the principle of management succession has been pioneered by the Dutch and has been developed in Britain for housing and land reclamation.

This experiment has demonstrated now this approach to the landscape enhances environmental and social values. Socially they provide a diverse environment of open and closed space that has immediate and long-term benefits in forest cover, diversity of wildlife, tough and creative play environments and amenity. The preservation and inclusion into new developments would do much to enrich these places (Hough, 1984).

According to Nielsen and Jensen (2007) urban forestation models that use succession and variation in species, age and tree spacing offer an extended experience of diversity

and naturalness increasing the visual quality of the landscape. These naturally reclaimed landscapes often have an ecological, historic and topographic diversity that is infinitely richer than the land reclamation programs aimed at their rehabilitation have created. In many cities the sheer cost of effecting such improvements is an important factor that has saved many significant habitats. It is, maybe, the most telling argument for thesis under discussion that the diversity, vigor, beauty and wonder of natural process are available at little cost to enrich urban design (Hough, 1984).

Figure 5. Example of using of method of landscape visual perception. Current situation (top) and development sceneries on River Lielupe waterfront (middle, bottom).

3.4 Involvement of innovative methods in urban waterfront's landscape researching

One of the methods that can be used in planning the urban waterfront is to apply the method of landscape visual perception (Thorne and Huang, 1991; USDA Forest Service, 1995; Clay and Daniel, 2000; Daniel, T.C., 2001; Yamashita, S., 2002; Tyrväinen, 2003, Arriaza et al., 2004; UK Forestry Commission. 2004; Panagopoulos, 2009).

The research project "The Models of Landscape Visual Quality" made by Latvia University of Agriculture in 2006 surveyed the waterfront in the administrative territory of town Jelgava and made the data base of different expressions of urbanization. There were chosen 7 urban waterfront landscape models, which mainly characterize the present situation in the town (Jankovska, 2006).

Respondents were proposed to look at the different situations in the urban waterfront and to define influence of different landscape formative components in the enclosed questionnaire. Respondents were given 2-3 situations that show different landscape development sceneries and the urbanization influence of various intensities in urban waterfront (Fig.5).

The goals of the questionnaire were to clarify:
1. Are the respondents satisfied with the present situation of the urban waterfront in the Jelgava town?

2. Which scenery of the city development is the most optimal on the urban waterfront and adjacent areas in Jelgava?
3. What landscape elements and types promote the urban waterfront alignment with the urbanized environment?

Summarizing the acquired answers it can be concluded that:

- buildings are the main objects in the town which prevents from the visual access to the waterfront. The waterfront territories are maximally used for building, but not kept as open public spaces in whole Latvia;
- physical accessibility of the urban waterfront is limited by the private property, disorder and pollution;
- the main goal of visiting the urban waterfront is recreation;
- the main role of the urban waterfront in modern town is to enrich the urban landscape structures, insurance of the city uniqueness and identification, as well as creation of the recreation opportunities.

Analyzing the acquired data it can be concluded that the most are valued situations when the water urbanization features (improvement, buildings, artificial surfaces) and the natural landscape features (trees, tortuous banks, lawns, etc.) are in balance. Besides:

- all features of urbanization are received as environment degrading;
- predomination of the nature elements in foreground of the landscape create sense of relax;
- predomination of the urbanization elements create alarming and frightening feelings;
- perception of landscape mostly is influenced by foreground of the view and by the middle plan;
- perception of landscape is not influenced by background of the view.

4 Conclusion

Recently abandoned urban waterfront nowadays becomes the important element of open space in the cities of Latvia. Such area has a huge ecological, social, biological and economical potential. The challenge for landscape planners is to use this potential as an important land management tool that can enhances the diversity of city landscape and improve the recreational and educational opportunities and augment tourist attractions.

In the urban waterfront there are identified four principal functional areas - natural, public, working and redeveloping. The development strategy for different urban waterfront functional areas determines the range of activities and is the principal management tool for municipalities.

The creation of parks, sport and recreation facilities, the maintenance of cultural heritage and natural territories of urban woodland are a successful example on how to solve the problem of the territories affected by flood.

The landscape of urban waterfront is the self–support ecological system and processes inside occur independently from human activities. It is important to keep the urban waterfront as a stable and naturally functional system, to use natural processes for rainwater purification and urban woodland development, for the maintenance of the city's hydrological and ecological balance and to ensure the long term sustainability of the city.

One of the methods that can be used in urban waterfront planning is to apply the technique of landscape visual perception. According to the results of research project "The Models of Landscape Visual Quality", the buildings are the main objects in Latvia towns which frustrate the visual access to the waterfront. Also it can be concluded that the main role of the urban waterfront in a modern town is to enrich the urban landscape structure, insurance of the city uniqueness and identification, as well as creation of the recreation opportunities.

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The Relation of City and Nature

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Abstract:

The role of nature and cities is a complex issue because of the many types of cities and the different management and planning relation given to nature in each. There are cities that lack green areas, whereas others are garden cities with ample green areas and include large forest areas into their urban structure. The city has to align its future growth with sustainable development and nature in its urban and peri-urban space.

Key-Words:
Landscape, Urban nature, Parks, Urban forest, City Planning.

1 Introduction

The study of the city is very attractive and complex. A city can be studied from different approaches: historical, economic, political, artistic, architectural, etc. To face the issue, first, we should define what a city is. Many definitions have been developed, some of them contradictory. It should be kept in mind that the definitions correspond to different concepts or cities. Many factors should be considered at diachronic and synchronic level. Medieval cities (usually not conceived without defenses, walls) or garden cities or modern cities like Brasilia, or mega cities as New York or capital cities which focus the roles of a nation, have clearly different characteristics.

It should be kept in mind that in a city a citizen takes part in two aspects: the individual (their home, their territory) and the common territory (public space) allowing them to exercise their social functions. Today cities require money, harmony, non-polluted, green areas, and a compromise between sustainability and aesthetics.

Public participation in forest management decisions will allow the landscape and acknowledge forest sustainability. People begin to understand the dynamic nature of the landscape and do not view it as a static scene, start taking into account the ecological sustainability and host the new ecological aesthetic idea (Panagopoulos, 2009).

With rapid urban growth worldwide and the proximity of urban areas will be made cities to become the common habitat for mankind and increase the need of protected natural areas (Ruiz-Jaen, 2006; Sandström et al., 2006). Urbanization has profoundly transformed many landscapes worldwide, and the ecological consequences of this transformation are still

not fully understood (Berling and Wu, 2004). There is an increasing recognition that more sustainable approaches are required for planning and landscape management worldwide. New tools are needed to effectively implement the principles of sustainability in planning and management. The space dimension of sustainability involves processes and relationships between different land uses, ecosystems and habitats at different scales and time (Botequilha and Ahern, 2002). The analysis, in time and space characteristic changes in the use of land, is essential to understand and assess the ecological consequences of urbanization. (Deng, Jin et al, 2009).

2 Formulation of the problem

Are cities ready for the new demands? There is a number of factors that has to be taken into account to avoid future problems in cities. Therefore, different aspects should be considered due to the number of scenarios that can appear and are constantly changing.

In this paper we consider some large blocks that currently employ researchers and concerned citizens in the relationship between nature in the city and the urban environment. They have been considered some major issues such as: ecology and biodiversity, soil, thermal environment, emissions, urban planning, landscape, forests, health and landscape relationship in cities.

2.1 Ecology and Biodiversity.

If we formulate the potential problems of this block in the relationship between nature and city the following questions arise:

Are urban protected areas protected from the rapidly global increase urban growth?

Is it fully appreciated the extent of biodiversity conservation in urban habitats?

Is urban landscape referred to in terms of biodiversity?

Are ecological studies considered to quantify the characteristics of urbanization?

Is it necessary to quantify the space and time patterns of urbanization to understand the ecology of urban systems?

Are there certain species that are selected for habitat protection?

What ecological consequences are brought about by rapid urbanization in relation to landscape structure?

Can airports affect wildlife populations?

2.2 Soils. Thermal Environment. Emissions.

If we formulate the potential problems of this aspect in the relationship between nature and city the following questions arise:

Is it normally effected an assessment of soil quality to the landscape and urban management?

Should one assess the quality of urban land to support public services for a good quality management of the environment?

Do trees in urban settings save energy?

Is it feasible to use urban trees to reduce greenhouse gases?

Can we change the thermal environment within the urban area according to land use and surface characteristics?

Do urban trees help mitigate the effect of urban heat island?

Is it feasible outdoor cooling in a hot-arid region, taking into account the efficiency of water use and using different combinations of trees, grass, and a mesh shade?

2.3 Urban planning, landscapes and forests.

If we formulate the potential problems of this aspect in the relationship between nature and city the following questions arise:

Has landscape architecture and urban planning become more conceptual?

Is the reassessment of the factors contributing to the sustainability of urban environments?

Are the contradictory views in urban forest planning and management frequent?

Does the city restore degraded patches of vegetation in areas of rapid urban growth?

Are the social aspect of urban forests making decisions on urban land and planning for green spaces sufficiently taken into account?

Are there strategies to create new forests on the outskirts of cities in grown to provide green space for entertaiment near home?

Is there a pan-European interest in increasing the amount of forest, especially in areas close to urban populations?

Is it an important aim of forest science to better serve today's cultural and recreational needs of a growing urban population with the help of woods?

By managing the urban forest, can we provide integration of the environmental visual qualities?

2.4 The relationship between health and landscape in cities.

If we pose the possible problems and improvements of this aspect in the relationship between nature and the city the following questions arise:

Do natural areas and forests provide opportunities to improve urban harmful factors, such as air pollution and mental stress?

Has stress increased in urban areas various diseases related to city life?

Can we alleviate environmental stress by improving urban environments by means of providing access to green areas nearby?

Does stress reduce when increasing the nature and landscape quality?

Does landscape aesthetic appreciation have therapeutic value?

Can public health improve the availability and use of urban green areas?

3 Possible solutions to problems.

The problems of the areas that will be referred in relation to the city and nature are:

ecology and biodiversity, soil, thermal environment, emissions, urban planning, landscape, forests, health and their relationship with city landscapes.

3.1 Ecology and Biodiversity.

With rapid urban growth worldwide, the proximity of urban areas are increasingly protected. Researchers Mcdonald et al, (2009), recognize four categories of nations based on the number of people in urban areas, the number of protected areas. In 1995 and 2030 it was estimated the distance between cities and protected areas: urbanized nations (> 60% urban) with high population density (>40 inhabitants per km2) and the proximity between urban and protected areas (eg Europe).

Efforts to reduce the loss of global biodiversity have focused on the general preservative of intact natural habitats. However, keeping biodiversity should also be an important aim in the urban environment, especially in highly urbanized areas where there is little natural habitat (Alvey, 2006).

As urbanization is increasing worldwide, towns and cities are becoming a more and main common habitat of mankind. Consequently, the urban landscape is increasingly important to maintain biodiversity on the site and to understand the concept of biological diversity in general and their maintenance in urban landscapes (Sandström et al., 2006).

A wide variety of metric used to quantify the characteristics of urbanization on ecological studies. The selection of statistically independent measures of urbanization depends on the nature and strength of correlations between urban indicators (Tavernier and Reed, 2009).

Urbanization has profoundly transformed the landscape around the world, and the ecological consequences of this transformation is not yet fully understood. To understand the ecology of urban systems, it is necessary to quantify the space and time patterns of urbanization that often requires dynamic modeling and space analysis (Berling and Wu, 2004).

The management of the ecosystem often focuses on specific species chosen for their demand for housing, public resources, or threat levels. Space processes are important for three reasons: the maintenance, re-organization, and restoration of ecological values (Lundberg et al., 2008).

The importance of the space and time structure of the patches of habitat fragments for urban biodiversity has been recognized but rarely quantified. Urban planning should incorporate the dynamics of land use in the management of urban biodiversity. (Kattwinkel et al., 2009).

The analysis of space and time characteristics of change in land is essential to understand and evaluate the ecological consequences of urbanization. The rapid urbanization process has brought about enormous changes in land use and urban growth on an unprecedented scale and pace, thus giving rise to significant impacts on landscape structure (Deng et al, 2009).

There is danger to wildlife in terms of airports. The increasing reliance of civil aviation on global trade may require increases in capacity at airports that affect land use, wildlife populations, and the outlook for aviation security. Blackwell et al. (2009) studied the role of an airport in the matrix of the landscape in terms of their effects on species richness and abundance of wildlife, and space and time requirements of wildlife species

3.2 Soils. Thermal Environment. Emissions.

Soil quality is the integration of physical, biological, and chemical aspects of soils. Limited attention is given to the comprehensive assessment of soil quality in the landscape and urban planning, as they are typically referred to only through chemical analysis (Schindelbeck et al. 2008).

The role of soil and soil quality in the urban environment differ because of the different needs and functions of soils within the variety of urban land use. The quality of urban land should be assessed to support public services for good quality management of the environment. Planners should also adjust their decisions toward more sustainable urban design by simple and applicable to soil quality and assessment methods, accompanied by a set of operation tools that can be used by non-specialists (Vrščaj, et al. 2008).

The analysis of the landscape is about the analysis of the space distribution of vegetation cover or land use. However, biological organisms perceive the landscape not only as a ground cover or land use, but use all their senses, to know and react to its environment (Mazaris, et al. 2009). The canopy cover data from air photographs and building energy simulations of the building were used to estimate energy saving with respect to the trees existing and new plantations (McPherson and Simpson, 2003).

The emission trading is considered to reduce concentrations of greenhouse gases, particularly carbon dioxide in the atmosphere. McHale et al. (2007) discussed the feasibility of using urban tree planting in economically sensible markets.

The thermal environment of cities varies not only from their rural environment, but also within the urban area because of differences in intra-urban land use and surface characteristics. Understanding the causes of intra-urban variety is a first step in improving urban planning and development (Hart and Sailor, 2009).

The effect of urban heat island (UHIE, urban heat island effect) has been documented in many towns in the temperate region. One of the causes of UHIE is the replacement of green areas with impermeable materials at the onset of urbanization, and city growth in the summer, high temperatures urban increase electricity use, which increases pollution levels, and the inhabitants are disturbed because of it. Through evapotranspiration and interception of solar radiation, increasing the canopy of urban trees can help mitigate the UHIE (Hardin and Jensen, 2007).

Different combinations of trees, grass, and a mesh shade and the effects of these treatments were tested during the summer season in two semi-enclosed courtyards located in an urban settlement in the arid mountains of southern Israel's Negev with promising results (Shashua et al, 2009).

3.3 Planning urban landscapes and forests.

The landscape architecture, and to a lesser degree in urban planning, has become much more conceptual. The theoretical debates about how to develop their art and how to describe the urban environment are the rule. The environment is more than just a text or speech, and writing about the sustainability of cities (Downton, 2009).

In recent years the social, economic and environmental conscience led to a reassessment

of the factors contributing to the sustainability of urban environments. Increasingly, urban green space is seen as an integral part of cities that offer a range of services to people and to wildlife living in urban areas (James et al., 2009). In the planning of urban forests there are often contradictory opinions on the degree to which forests should be managed. On the one hand, management is required to face the intensive use of forests, as well as unfavorable growing conditions, safety factors and aesthetic variables. Moreover, there is an increasing demand for areas that are not based primarily on ecological arguments (Price, 2003).

Rapid urban growth has increased the importance of restoring degraded patches of vegetation in these areas. The change in the structure of woody vegetation provides habitat for more species diversity and improving ecosystem processes of the reforested area (Ruiz and Aide, 2006). The social values of urban forests are not always sufficiently taken into account in decision making on urban land and green space planning, new methods of collecting the values experienced in urban green areas and integrating this information into the planning processes are needed. The most important characteristics associated with favourite places are calm, the feeling of being in a forest, and naturalness. The results suggest that the communicative approach is relatively easy to use in planning and green area planning (Tyrväinen et al. 2007).

The goal of current strategies for the creation of new forests on the outskirts of the cities is to provide as many people as possible with recreational green areas near where they live (Van Herzele et al. 2005). There is an European interest in increasing the amount of forest cover, particularly in areas close to urban populations. The visual aspects vary considerably between planting designs and silvicultural systems (Busse and Anders, 2007).

It is an important objective of forest science to better serve the cultural and recreational needs of a growing urban population. Forests are complex open systems with multiple functions and are to maintain credibility with the public. Those responsible for the management of urban forests should build on the experience of a variety of scientific disciplines, not just arts, but also increasingly in forestry and forest biological science. The multidisciplinary nature of forestry research can be used to achieve a more efficient relationship between science and politics (Von Gadow, 2002).

The visual aspects are studied in managing the urban forest. The use of visual concept can provide a focus for better integration of visual qualities in urban woodland management. Different levels of abstraction are the basis to justify the importance of the visual qualities in urban woodland management (Ode and Fry, 2002). Urban forests provide environmental, social and economic values to the modern society. A prototype decision support system for sustainable urban tree planting programs was developed recently from Kirnbauer et al. (2009).

3.4 The relationship between health and landscape in cities

The factors contributing to poor health are: an increasingly sedentary population, increasing levels of mental stress associated with modern urban life, work practices and hazardous environments, such as air polluted. The natural areas and natural features like forests and trees are recognized as capable of providing conditions to improve those negative

factors (Nilsson, 2006). Stress and related conditions, as reflected in medical records, have increased dramatically among adults and children in Western societies. A growing share of the budget for medical service in Sweden is used for people suffering from different stress-related illnesses such as burnout syndrome, insomnia and fatigue, depression, feelings of panic, and so on (Grahn and Stigsdotter, 2003). In the process of health planning and improvement of urban environments, it is essential to facilitate the access to local green areas that can relief environmental stress and provide conditions for rest and relaxation, as well as seeking to reduce levels of traffic noise and develop a "the noise free" design inner and outer sections (Gidlöf and Ohrstrom, 2007).

There has been a rapid increase in knowledge about the importance of the external environment to our health and wellbeing. The stress is significantly reduced when people interact with natural areas and scenic values (Skärbäck, 2007). The landscape affects humans in many ways including aesthetic appreciation, health and welfare. There are a range of landscapes used in studies of environmental psychology, and there is evidence of health effects related to the watching of these landscapes. Most representations of the landscape have been classified as "natural" or "urban". In general, watching of natural landscapes gives a positive impact with respect to health compared to urban landscapes (Velarde, 2007). Since most people in many countries live in urban areas, the availability and use of urban green areas are of increasing importance to public health. According to studies in Norway from Bjerke et al. (2006), the preference for relatively dense vegetation in urban parks has implications for the urban parks design.

3.5 The study of the major current issues

Today, with the rapid changes in economic structures, European and world cities are moving towards more sustainable development. Therefore systems, policies and instruments should be studied that are best suited to the planning and management strategies of urban and suburban land. Also urban planning should be conceived at both public and private reaching of new partnerships.

Previous studies (fig.1) in urban development show the critical importance of public opinion in order to manage urban projects in a sustainable and innovative. Then European cities are quite different from each other regarding land ownership, industry, real estate, planning and policy management tools in general. Therefore, it is necessary for a strategic assessment to diagnose the condition of the city and the aims of different policies, plans, programs and projects aimed at achieving a sustainable and innovative urban dynamics.

This study proposes a perceptual way in central and peripheral urban areas in a city. (fig.2). In this figure a number of categories are defined that can be obtained with a prior evaluation for future plans, programs and projects. It should be used if we want to build sustainable cities and consider the demands of the future.

4 Conclusions

The relationship of nature with the city The relationship of nature with the city involves natural phenomena, policy and management of urban and suburban lands. Their analysis is based on the strengths and possibilities of the city promoting their sustainable development. The starting point will consider the current scenario and discuss possible future scenarios. Urban development has to be marked by urban dynamics compatible with the actual characteristics of the city, with nature (environment) and with the emerging needs of the city as an organism and its citizens as individual components. The city has to be aware of its strengths in order to grow on base of new models consistent with nature and environment.

Figure 1. Model of the General Urban Plan from previous studies of the city of Huelva (Spain).

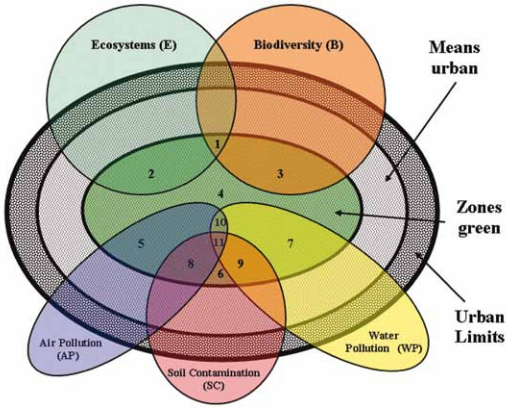

Figure 2. Categories of green areas in urban areas: where 1. Urban green areas with mature ecosystems and biodiversity; 2. Urban green areas with low biodiversity and ecosystems; 3. Green areas with mature ecosystems biodiversity; 4. Green areas without ecosystems and biodiversity, 5. Green spaces in areas with air pollution; 6. Green spaces in areas with soil contamination; 7. Green spaces in areas of water pollution; 8. Green spaces in areas with air and soil pollution ; 9. Green spaces in areas with soil and water contaminated; 10. Green spaces in areas with air and water pollution; 11. Green spaces in areas with air, soil and water pollution.

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Changes in Poland Land Prices at the Early 21st Century

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Abstract:

Few years after the sudden collapse of the socialist system half of the central and eastern European countries announced their successful transition to market oriented democratic societies. In the 1990s and later, after Poland's accession to the European Union. Poles realized that rising land values make land a profitable investment, both in cities and in the countryside. Today, Polish property market is not much different from Western markets. As a result of the absence of spatial development plans, the potential investor does not know the land use allowed on the plot he wants to buy and therefore has to apply to the local authority for decision on terms of development. Change of land use to non-agricultural also is a major problem. Agricultural land constitutes the greatest unbuilt land resource in the country and in cities, where it makes up 30–40% on average. This land, however, is not allowed for non-agricultural uses. One of the proposals for resolving this problem is statutory re-classification of all land in cities and their fringes as building land. For each re-classified site a special payment should be charged (up to 50% of increase in the value of site) and a planning rent (up to 30% of value increase). The amount of both charges is determined by the local council in the municipality in which re-classification has caused land price increase. In spite of these obstacles land prices both in town and in the country are growing steadily.

Key-Words:
Poland, Real estate, Land price, post-socialism.

1 Introduction

The tendency for land prices to grow is a universal phenomenon occurring all over the world, which is mainly due to land shortage. Land is a good that is relatively fixed in supply. In certain countries and regions which are highly urbanized and densely populated land shortage has become very acute. Land shortage is closely related to population increase and economic development.

All over the world, and particularly in developed countries, land is a good long-term capital investment. In developing countries, apart from being a capital investment, it sometimes is the only possession, a source of prestige, or evidence of being established in a given place for generations.

In the 1990s and later, after Poland's accession to the European Union. Poles realized that rising land values make land a profitable investment, both in cities and in the countryside. Land prices in urban areas in 2006 – 2007 grew about 100%. In rural areas there was considerable growth, too.

Another factor influencing land prices is the process of change in lifestyles, involving suburbanization, going on not only in developed Western countries but also, though to a lesser extent, in the rest of the world, including Poland.

2 Trends in Poland

Poland in the Early 21st Century is in the shift from the old mass-production Fordist economy to a new, more flexible, post-Fordist order based on new technologies. As a result of the political and socio-economic transformation that took place in Poland after 1989, land market has become an element of a normally functioning market economy. Today, Polish property market is not much different from Western markets, although its development had been impeded for half a century. The difference is seen in land prices (table 1), which are several times lower in Poland than in older EU member states.

In Poland there are four types of land ownership: state, local government, social and private. Under an act of 2001, all land in Poland is classified into 15 different register groups (Law Gazette nr 38, item 454, Appendix 2).

1. Generally speaking, land in Poland belongs to:
2. State Treasury, including the State Treasury Agricultural Property Agency, State Forests and Military Property Agency.
3. Local government units – communes, associations of communes, districts (powiat) and voivodships.
4. Cooperatives and their associations, churches and religions groups, land communities, commercial companies, political parties and associations.
5. Private owners.

In the case of private ownership the owners are natural persons.

The largest group of land in Poland are natural persons (private owners), holding 52% of total area, followed by the State Treasury (41,6%) and local governments (communes) a mere 3% share of the land. In cities, accounting for only 7% of Poland's area, this figures look differently: 41,3% is state property, 38% belongs to private owners, and 13% to local government (fig.1).

Predominance of private ownership is particularly striking in the case of agricultural land. This is due to the fact that after the Second World War, despite the socialist rule, more than 80% of land (both in town and in the country) remained in private hands (Jakóbczyk-Gryszkiewicz, 2005).

There are some cases and aspects of land ownership in Poland that are not regulated by law. The main cause for concern is the fact that so far there is no adequate legislation addressing the issue of reprivatization. Except for churches and religions groups, which have

Table 1. Average prices per 1 ha of agricultural land in 2004

Country	Price in 1000 zl*/1 ha
Poland	**6.6**
Netherlands	117,5
Ireland	65,4
Germany	64,3
Great Britain	45,9
Spain	36,3
France	15,5
Sweden	9,9

Source: Eurostat, Agricultural Property Agency
*1euro = 4,8 zl

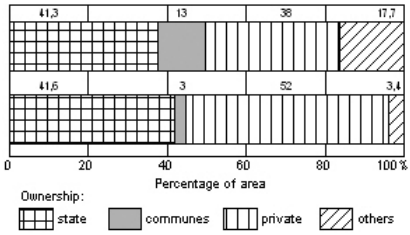

Figure 1. Land ownership structure in towns (upper graph) and hole Poland (lower) by the biggest owners

already regained their property starting from 1989, all other former owners or their heirs, who lost their land and other real property after 1945, do not have to date any legal basis to apply for the return of seized property.

Steady increase of land prices is a global tendency, which is a result of the shrinking land reserves. In Poland, due to specific conditions, especially at the beginning of the 21st century,

land prices growth was particularly fast.

After 1989, land prices in Poland started to grow, first slowly and later, after Poland's entry to the European Union in 2004, the growth accelerated considerably, which was due to the following factors:

- Contracting land reserves
- Expansion of cities to rural areas as a result of suburbanization processes – suburban land becomes attractive both to migrating city-dwellers and to investors (including foreign investors)
- Purchase of land in urban and rural areas as a profitable capital investment
- After Poland's accession to the EU: increased interest in land on the part of foreigners and favourable subsidizing of rural land by the EU (Pawlak& Bernaciak,2003)
- Possibility of cheap social insurance for owners of agricultural land
- Lack of adequate laws regulating spatial planning and fast re-classification of weaker soil-class land as non-agricultural (in towns and in the country).

Land supply in Poland, as in the world, is diminishing, which is due to population increase (especially in post-war years) and progressing urbanization. In 1946 there were 1.3 ha of the country's area to one statistical Pole, while in 2006 it was only 0.8 ha.

3 Land prices in suburban zones

Research carried out by CBOS (Center for Public Opinion Research) shows that in the period 1998 – 2006 the number of Poles who declared willingness to live in the country

grew from 30% in 1998 (with 26% wishing to live in a big city) to 41% in 2006 (with only 21% interested in living in a city).

During the year 2007 prices of flats in cities grew rapidly. In some cities there even was a few dozen per cent growth, which took prices of 1m^2 of apartment (e.g. Warsaw about 3 000 euro/m^2, Łódz: about 2 000 euro/m^2) to a level twice as high as the price of 1m^2 of a house – a situation quite unusual in other developed countries. Naturally, this created demand for residential building land in rural areas, where it is in greater supply, which entailed increase in land prices. Migration to suburban zones is possible due to, among other things, construction of new roads and ring roads around cities, which is very important for people commuting daily from their new houses in the country to places of work in towns.

With the aid of EU funding, 80 billion zl has been allocated for road construction in Poland in the period 2007 – 2013. Polish Parliament has passed a law to resolve the urgent problem of land expropriation for road construction – the new law provides for expropriation with immediate effect. Problems remain, however, in the case of protected areas where roads are planned.

Land prices in suburban zones have risen rapidly over the last few years as a result of greatly increased demand, also from foreign investors building not only residential buildings but also commercial facilities. A particularly strong increase has been in the suburban zone of Warsaw - in 2000 land prices were between 14 and over 100 zl/m^2 (table 2), while in 2007 they rose to between several hundred and 1 000 zl/m^2 (1 euro in 2007 = 3,5 zl).

Table 2. Land price increase in the suburban zone of Warsaw in 2000 -2007.

Location	Price in zl/m^2 in 2000	Location	Price in zl*/m^2 in 2006-2007
Raszyn	180,0	Izabelin	1 000,0
Piaseczno	125,0	Konstancin- Jezi-oma	1 000,0
Józefów	90,0	Otwock	470,0
Wiązowna	41,0	Stare Babice	400,0
Wołomin	29,0	Łomianki	300,0
Zakroczym	14,0	Zakroczym	100,0

Source: Property Values 2001, Gazeta Wyborcza
*1euro = 3,5 zl in 2007.

Land prices both in suburban zones and in other locations mainly depends on where a given site is situated. The locations in Table 3 are ordered according to their distance from Warsaw. Raszyn is closest to the administrative boundary of Warsaw, Zakroczym is the farthest away (48 km). Land prices were found to be reversely proportional to distance from the capital. Another important factor influencing land prices is transport accessibility. In 2006 – 2007 high land values in locations situated north of Warsaw were due to planned construction of bridges and a subway. For instance, land prices in Izabelin rose in 2007 from

700 to 1000 zl/m^2, and in Zakroczym (farther away from Warsaw but also to the north) prices grew seven times compared to 2000.

4 Land prices in rural areas

Land prices are growing not only in suburban zones but also in other rural areas purchase of land in the country, much cheaper than in urban areas or in their vicinity, as well as being a good capital investment, entitles the owner to apply for EU financial aid. The level of subsidies varies depending on the crops grown. In 2006 the amount of financial assistance was from 225zl/ha to e.g. 870 zl/ha of hop or 1800zl/ha in the case of special crops (fruit farming or berries growing). Polish farmers received in 2007, on account of owning and farming land, a total of 1.1billion euros of untaxed EU financial support.

Agricultural land in rural areas makes up nearly 60% of Poland's territory, thus constituting the largest supply of non-built-up land in the country. The amount of land available in different parts of Poland varies, as do land values.

Changes in land prices in non-urban areas are not so spectacular as in cities, but nevertheless they are steadily growing (fig. 1). In the period 1992 – 2007 prices increased eighteen-fold. The prices quoted by the governmental Agricultural Property Agency are lower than in private transactions and the disparity is increasing.

Land is becoming an increasingly profitable capital investment in Poland. Since 1990 land values are growing steadily – on average by 10 – 20 % a year (fig. 2).In 2006 – 2007 there was a record growth – 100% or even greater in some regions (fig.2). For owners of land it is important that land tax (higher in town than in the country) is not assessed on its market value but on its area.

The ownership and farming of land is profitable not only because of EU subsidies but also because of much lower social security charges. In 1990 the Agricultural Social Security Fund (KRUS) was established in Poland, with very low insurance premiums. Each person who owns land may choose this form of insurance instead of paying high premiums under the National Insurance System. In 2007 a farmer had to pay 179 zl per month for the retirement/ health insurance, while all others in non-agricultural occupations paid over 700 zl monthly. Agricultural insurance covers the farmer, spouse and houshold members working on the farm as regular occupation. There are 1.6 million persons under those conditions in Poland.

Agricultural land prices, which are much lower than in other European countries, are growing steadily (table 1). The price increase varies depending on the part of Poland (table 4). Even a short time interval (2002–2006) makes possible a comparison of the situation before and after Poland's accession to the EU.

In 2002 the average price of 1 ha of agricultural land was 4800 zl (then a little over 1 000 euros). In more than half of the provinces the price was below average (7 provinces) or equal to it (2 provinces). The cheapest land was in the west (Lubuskie – 2000 zl/ha), north (Warmińsko-Mazurskie – 3200 zl/ha) and east (Podkarpackie – 3800 zl/ha). The highest land values were in Małopolskie Province (7200 zl/ha) and Wielkopolskie Province (6200 zl/ha) – table 3.

During four years, i.e. by 2006, prices of rural land rose by 60%, up to 7 900 zl/ha on average (then equivalent to about 2000 euros). In most provinces the growth was nearly or more than twofold. The highest prices were in Kujawsko-Pomorskie (12700zl/ha), Wielkopolskie (102000zl/ha), and also in Dolnośląskie, Małopolskie, Opolskie, Mazowieckie, Łódzkie and Pomorskie.

Cheapest land was found in Podlaskie and Świętokrzyskie (6000zl/ha). It is interesting to note that the greatest price increase was in all three western provinces, which "opened up" to the West after Poland joined the EU (table 3, fig.3).

5 Land prices in cities

Land prices growth is particularly strong in cities, which is due to the fact that supply of undeveloped land in urban areas is incomparably more limited than in the country. Total urban areas in Poland make up less than 7% of the country's territory, of which undeveloped land constitutes 5.16%. In recent years urban land values have increased between several and several dozen times, depending on the city (table 4). Table 4 shows that the highest land prices at different points in time were, naturally, in Warsaw and Cracow province in 2002 – 2006.

In 1998 urban land prices were under 400zl/m2, even in Warsaw. Besides the capital, the highest prices were several times higher than the lowest price recorded (minimal price). In Warsaw and Cracow the differences between minimal and maximal prices were small.

In 2007 land values and their ranges changed significantly. Over the nine years (1998 – 2007) the minimal price fell, but the maximal price recorded in cities grew enormously. The strongest rise in maximal price was in Warsaw (70 times), and relatively weakest – in Poznań (table 4). Land was most expensive in city centers. The sites were mostly small, well serviced and located close to public transport lines. Their prices also grew immensely over the nine years, particularly so in Warsaw and Cracow (fig.4). The problem of drastic shortage of unbuilt plots in city centers is solved by local governments in a variety of ways. In Łodź, for instance, attractive building plots are offered together with old tenement houses standing on them. The tenants are offered new flats and the investor can demolish the existing buildings, which often are in a very bad condition. In this way new flats are given in payment for real estate.

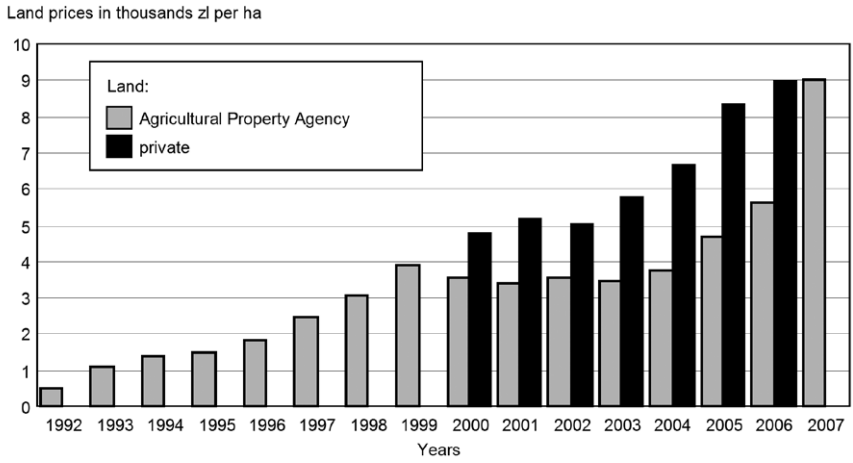

Figure 2. Agricultural land prices increase in 1992 – 2007

* 1 euro =3,5 zl

Table 3. Agricultural land prices by province in 2002 – 2006

Province	Prices in thousands zl/ha in 2002	Prices in thousands zl*/ha in 2006
Dolnośląskie	4,1	9,9
Kujawsko-pomorskie	5,6	12,7
Lubelskie	4,2	6,0
Lubuskie	2,9	6,4
Łódzkie	4,7	8,3
Małopolskie	7,2	9,2
Mazowieckie	5,5	8,4
Opolskie	5,6	7,6
Podkarpackie	3,8	6,1
Podlaskie	5,1	5,8
Pomorskie	4,8	8,0
Śląskie	5,2	8,9
Świętokrzyskie	4,8	5,6
Warmińsko-mazurskie	3,2	6,6
Wielkopolskie	6,2	10,2
Zachodniopomorskie	3,6	6,3

Source: Central Statistical Office, Agricultural Property Agency

* 1 euro =3,5 zl

Table 4. Land prices increase in selected Polish cities.

City	Low cst land prices in 1998 in zl/m²	Low cst land prices in 2007 in zl*/m²	High cst land prices in 1998 in zl/m²	High cst land prices in 2007 in zl/m²	City center land price in 2000 in zl/m²	City center land price in 2007 in zl*/m²
Warszaw	340	50	400	28 500	375	25 725
Kraków	270	38	350	10 466	355	10 466
Łódź	50	10	220	6 700	285	6 738
Wrocław	80	52	320	5 700	360	5 370
Pornań	90	50	370	5 500	460	5 500

Source: Data for 1998 and 2000 after Kształtowanie cen nieruchomości w regionach, 2001;
data for 2007 from www.domiporta.pl
* 1 euro =3,5zl in 2007

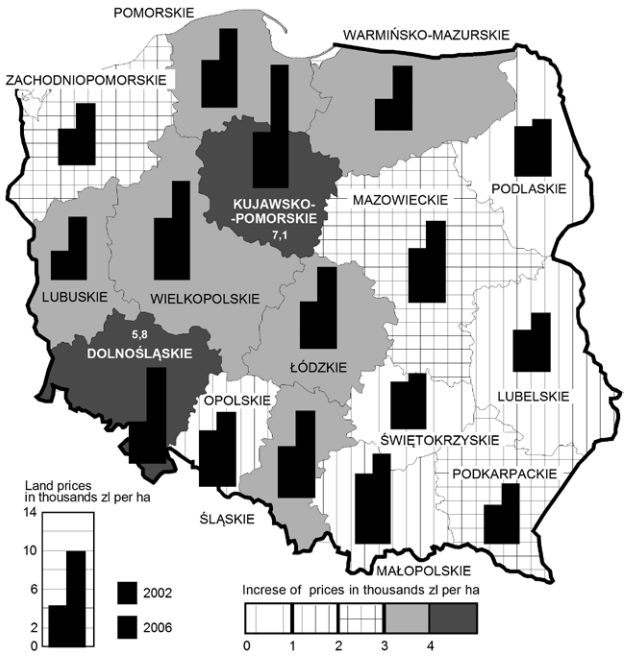

Figure 3. Agricultural land prices increase by
* 1 euro =3,5zl in 2007

Although the free market in Poland is functioning increasingly well, land turnover is impeded by such factors as lack of actual spatial development plans, complicated procedures for change of land use to non-agricultural, unregulated land ownership matters (notarial, inheritance, lack of privatization law) and conflicts related to nature conservation areas.

As a result of the absence of spatial development plans (due to lack of amendment to planning law), the potential investor does not know the land use allowed on the plot he wants to buy and therefore has to apply to the local authority for decision on terms of development.

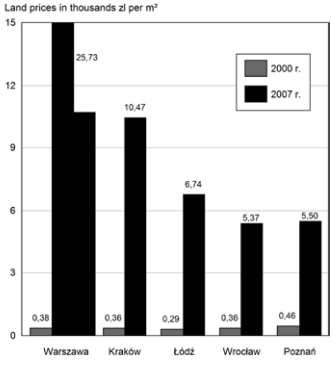

Figure 4. Land prices increase in centers of selected cities in 1998 – 2007

Only then does he know that the particular development project can be planned on this site.

Change of land use to non-agricultural also is a major problem. Agricultural land constitutes the greatest unbuilt land resource in the country and in cities, where it makes up 30 – 40 % on average.

This land, however, is not allowed for non-agricultural uses. High-class land can be re-classified as non-agricultural only by the Minister of Agriculture, and lower-class land – by the voivode, which results in a rise of frequent conflicts.

One of the proposals for resolving this problem is statutory re-classification of all land in cities and their fringes as building land. Naturally, it only would apply to lowest-class land – V and VI class. For each re-classified site a special payment should be charged (up to 50% of increase in the value of site) and a planning rent (up to 30% of value increase). The amount of both charges is determined by the local council in the municipality in which re-classification has caused land price increase.

In spite of these obstacles land prices both in town and in the country (especially in suburban zones) are growing steadily.

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Environmental Issues and Land Management: Evolution of the French System

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Abstract:

The paper presents the evolutions of the last decade, achieved in order to take into account environmental issues in the administrative management process and land use regulation. It focuses on the new urban network increasing the size of communities and on new land use plans based on sustainable development strategies. However, according to the last census, the flight of families towards suburban areas or country sites is not finished. The new frame seems to be more ambitious than the sociological acceptance and evolved several times. In spite of a new range of measures recently decided, it is not sure that "rebuilding the city on the city" is a concept easy to implement.

Key-words:
land management, regulation, environment, urban containment, social acceptance.

1 Introduction

Two important components of the French system have recently evolved. The goals were, first, to adapt the legal frame to the context and, then, to take into account the different targets linked with climate change and environmental issues. The main concerns are the organization of the urban structure and planning regulation.

1.1 Reducing the number of communities

One of the characteristics of the French situation is the huge number of local power centres (more than 36000 "communes"). This organisation, very difficult to deal with at the national level, was, in addition, not compatible with the European scheme and had to be reformed. The implementation of a new urban network was an opportunity to make things evolve in many fields, to create new tools, and specially in order to boost environmental issues.

1.2 Refunding land use regulation

The land-use and land management regime, defined and implemented 40 years ago, is well known and inspired the legal frame of several countries.

This early organisation, which was a good basis for the spatial development of the years 1970/1980, became obsolete when the goals of land management turned into quality more than quantity, in a context of interest for environmental concerns. In 2000, an important law opened the evolution process on a new foundation.

2 Evolution of the administrative structure

Created by Napoleon 1°, the hierarchy of territories ("départements, cantons, communes") described a rural world organized around small towns and villages and could not adapt to the process of concentration.

The goal of a law voted in 1971 was to urge on merging cities which had a common border. Few of them were interested (Table 1). In many cases, small cities brought together to receive a grant from the state, separated some years after.

Table 1. Result of policies led by three European countries from 1965 to 1975

Country	Year of reform	N° of cities before	N° of cities after
France	1971	**37 708**	**36 394**
G. B.	1974-75	1 549	522
R.F.A.	1968-70	24 438	8 414

Source : «Vademecum des collectivités locales et territoriales» Arnauld Franel Editions – 2000

2.1 Number of French communes before 2000

In France, there is only one metropolis: Ile de France (Paris Region with 11M people). The other large urban areas count about one or two million people (Lyon, Marseille, Lille, Bordeaux).

Half of the population lives in small cities or villages; a quarter of the population lives in mid size cities (Table 2). According to 1990 census, France counted 60 186 184 inhabitants living in 36 551 communes. The average number of inhabitants per commune was 1 647 inhabitants.

In Switzerland, there are about 7 milion inhabitants within circa 2900 cities: the average number of inhabitants per commune is approximately 2400.

Regions, as new administrative entities, have been created in 1982 by laws of "Decentralization" and reinforced progressively, referring to "länder" and Swiss "cantons".

Table 2. France Census of 1990.

Size of cities	Nb. of cities	Population
0 to 699	25 249	6 897 540
700 to 1999	6 908	7 933 928
2000 to 4999	2 655	8 062 265
5000 to 9999	898	6 168 826
10000 to 19999	445	6 231 927
20000 to 49999	293	4 443 077
50000 to 99999	67	4 077 443
100000 to 299999	31	4 745 423
more than 300000	5	4 116 977
TOTAL	**36 551**	**60 186 184**
less than 10 000	35 710	29 062 559
more than 10 000	841	28 622 165

Source: INSEE

2.2 Three types of community organisation created in 1999

To face the failure of previous reforms, new possibilities to put together several "communes" to create a stronger local entity have been proposed with financial incentives.

A law, voted in 1999, abolished the former forms of groups of "communes", which were unsuccessful attempts in most cases, and created three new "intercommunalités", able to decide in a collective way in specific fields.

- "Comunautés de Communes" have to manage economic development and spatial planning;
- "Communautés d'Agglomération" have to manage economic development, spatial planning, housing and social neighbourhoods;
- "Communautés Urbaines" have to manage economic, social and cultural development, spatial and transport planning, housing, social neighbourhoods, public services and environment.

However in many cases, elected representative teams decide to gather on political grounds more than according to geographical or economical reasons, which can induce management problems.

2.3 A significant evolution

Ten years after the law of 1999, and 30 years after some other European countries, the French situation is very different (Dupres, 2009).

In 2009

- 93% of the French "communes" are put together in 2601 "intercommunalités"
- 87% of the French population live there (56.4 M inhabitants)

the split is :

- 16 Communautés Urbaines,
- 174 Communautés d'Agglomération,
- 2406 Communautés de Communes.

In many cases, however, the body of the state had to use authority to apply the law.

2.4 Planning at a good scale

This new organisation, in many cases, is a relevant scale to face problems of housing, activities and transports, which are linked with geographical and sociological issues more than local political points of view. Groups of "communes" are in charge of planning. The more important plans, compulsory according to the number of inhabitants, are the followings.

- "Schema de Coherence Territorial" (SCOT), looks like former master plans but is more strategy oriented. This general study aims to give a coherence to the different local policies and to define major orientations for the whole territory, in different fields and, for example, in terms of environment and transport,
- "Plan Local de l'Habitat" (PLH) diagnoses needs and opportunities and estimates how many dwellings have to be built or refurbished and where in the whole territory,
- "Plan de Déplacements Urbains" (PDU), mobility plan which defines new projects and decides to improve the existing networks of every modes and especially for environment friendly ones (walking, cycling and public transport).

The "intercommunalités" can also write an "Agenda 21" and different other plans and charters to federate willingness and policies. A planning team can be integrated to their services ("Etablissements Publics de Coopération Intercommunale"-EPCI), which are more or less important according to the sites.

In the new frame, taxes paid by firms (the more important part of taxes) to the different "communes" are put together. Each mayor knows that, if 300 jobs are created in one of the villages, the whole group will profit of it. This is a very important issue, in terms of planning: if taxes are not centralized, each mayor tries to obtain the establishment of new firms on his own territory, even if it is not the right place regarding transport or environment. This can contribute to make prospective studies and planning decisions to be respected in the long term.

In terms of land management, a new tool has been created: "Etablissements Publics Fonciers" (EPF) can help the new communities to buy brown fields, or profit of land opportunities, and to bear the cost during the development process.

This new scale of decision can contribute to turn the territory into sustainable cities and villages:

- rationalized use of the income,
- relevant territory to develop a public transport network, or a cycle path network,
- more funds and land opportunities to build social housing,
- better conditions to deal with environment issues, because a river, a forest or a cloud of pollution do not stop at the border of a commune.

3 Land use planning evolution

The former legal frame of planning had been settled in 1967 (Loi d'Orientation Foncière). Many authors observed that, from this date till 2000, few important changes happened while, in the same time, the urban management had to face new and numerous challenges

3.1 A new context

One hand, urbanization spreading out in the outskirts of cities, consuming natural grounds (Vilmin et al. 2005), increasing individual motorized mobility and pollution, and spoiling the landscape, had to be controlled.

On the other hand, in cities, neighbourhoods specialize and produce a social and spatial segregation. The goal was to give back coherence and attractivity to existing urban poles. It was necessary to enlarge the purpose of land management towards a project process and a city design approach.

The law voted in December 2000 ("Solidarite et Renouvellement Urbains"- SRU) had some main objectives:

- to reinforce the coherence of urban policies lead in different fields,
- to strengthen integration policies in the suburbs,
- to implement mobility plans contributing to a sustainable development,
- to offer more diverse and quality housing.

In terms of urban containment, the SRU law obliged to build inside existing urban areas and abolished some taxes to facilitate a back-to-centres movement.

3.2 From POS to PLU

The former POS (Plans d'Occupation des Sols) have been replaced by PLU (Plans Locaux d'Urbanisme). These new documents have to translate at a local level the impact of decisions taken by the group of "communes", to take into account the sustainable development strategy (social, economic and environmental) and to include city design projects of neighbourhoods or public space.

The implementation of new buildings must be compatible with the PLU, when approved by the community. The financial and land management system for new developments, ZAC (Zones d'Aménagement Concerté) created in 1967 as a dispensation, is now included in the land use plan, designed on the map and ruled like a regular zone (Demeure, 2004). This is very useful to give to elected and users a global vision of the future of the community territory.

The file of the new land use plan is composed of:

- a report explaining the urban policy orientations and projects,
- a report justifying the decisions, which must be organized like an impact study,
- a zoning map and the regulation of each zone (which will value or not the land),
- details of constraints in the field of environment (maps, official texts and reports).

The renewed land use plan, PLU, can be designed at the scale of a group of "communes". At the moment, examples are still rare because the feeling of identity of the commune is strong and history based.

3.3 A new range of tools

Different types of land management tools have been created or renewed (Faure A. et al., 2008), for example:

- a procedure which can freeze the cost of land, in a defined zone, when the decision to develop is taken long before the implementation of a project,
- the priority to buy given to a city when a piece of land is declared for sale,
- long term leases, when the city has led a land reserve policy, which are appreciated by developers and make possible to build or rehabilitate dwellings, in spite of the level of land market (Tixier, 2006).

Renewed operating tools used are:

- building permit which became the same procedure for a single house or for a development of several houses, in the frame of a reform ruled in 2007,
- ZAC which can make communities benefit of the financial help of the developer to build schools or public facilities.

The financial tools recently created are:

- a contribution paid by owners when a road serving their plot is created or repaired,
- a contribution paid by the owners of a future development when the creation of a sanitation network is needed (Landot, 2005).

4 Impacts on urban containment

After ten years, the new frame seems to be more ambitious than the sociological acceptance of the population and evolved in contradictory ways.

4.1 A difficult balance

Texts have been modified several times. For example, three years after the implementation of SRU, the next government made the regulation more tolerant to take into account the claims of the mayors of small cities and villages. The strict urban growth boundary principle was giving them an impression to loose their power. The developers argued that the price of land was increasing (Helluin, 2006). The law was changed into a less strict regulation.

In 2007, on the contrary, the housing problem was the origin of measures to enhance density (Wiel, 2006). The authorization to increase the building possibilities, without a new procedure, was given to communities, in areas defined by them, to build housing developments when half of the number of flats was social housing.

4.2 Few results

According to the three last censuses, the flight of families towards suburban areas, or villages, was significant and goes on. In 1999, maps made by INSEE showed that cities were progressively surrounded by a third or a fourth belt which did not exist before. In addition:

- for twenty years, the surface of cities has been increasing with 25%,
- suburban territories represented 22% in 1990 and 33% in 1999,

- between 1990 and 1999, 5000 rural towns and villages have been integrated in the administrative limits of urban communities.

In 2009, 35% of the French population lives in suburbs. Some data seem to show that villages and small rural towns are reinforcing. Other sources seem to assess that urban sprawl is going on at the same rhythm.

Several factors can be reminded:

- housing is expensive where city life is enjoyable, in city centres and close to transport and services,
- residential buildings in city centres are often old and offer small flats,
- developers try to catch the custom of young couples, who cannot afford their first purchase, by reducing the surfaces of flats (which are historically small in France)
- the large number of heritage buildings makes rehabilitation expensive and new developments difficult in city centres…

5 A new range of measures

In order to define a new environmental policy, the French government, elected in 2007, launched a range of workshops and conferences to discuss the measures to be taken at the national level. Participants were coming from different social and professional origins: elected representatives, civil servants, professionals, citizen and advocacy groups and other stake-holders.

The first law, voted in July 2009 according to the conclusions of workshops, conferences and the following debates in the two chambers, has a status of program. The next law will describe the tools which will be used to reach the objectives.

The general objectives of the recent law are to improve by 20% energy efficiency, to reduce by 20% carbon production and increase the part of green energy by 23% in the final consumption.

An important part of the measures is related with energy saving in building and defines norms and standards to be applied. These measures are well accepted by dwellers, who expect to save money and can profit of special mortgages, and by building firms which expect new markets.

The other measures are linked with:

- planning (preservation of natural and agricultural land, urban containment, density around public transport, new sustainable developments…),
- transports (redeveloping freight transport by rail and by boat on sea, rivers and canals, enhancing public transport, walking and cycling, car sharing…),
- biodiversity (quality of water, bio-agriculture, protection of sea and sea shore…),
- health and waste policy,
- education and research on the different subjects.

Though this ambitious program is supposed to create new jobs, it seems that few results can be expected in the short term, except in the field of public transport and energy saving

in building, where some grants have been decided. But at the same time, the financial crisis made useful to help car and road industry, in a contradictory way with many orientations of the first law.

The debates aiming to define operating means, previous to the vote of the second law, can be controversial and long. Urban containment and density, especially, are misunderstood and refused by the population. On that account, elected representatives consider such decisions as dangerous for their political carrier.

6 Rebuilding the city on the city: a utopia?

Long before 2000 however, the consequences of urban sprawl was an important issue, well known by professionals and elected representatives of big cities.

For example, the problem of the cost of technical networks in estates of houses compared to condominium developments was a theme of debate since years 70.

The master plan for Paris Region of 1994 (SDRIF) recommended to design the more dense parts of city zonings into existing centres, close to shops, services and public facilities, and to define lower parking rates around the train stations. This is still now difficult to be applied.

6.1 A cultural reject

The slogan "rebuilding the city on the city" has been spread out for years. Everybody agrees with the principle but few people think it is their own problem: NIMBY effect, myth of "the small house in the country", rural origins of many people living in cities…

Inhabitants, but also numerous stakeholders, confuse frequently density and urban form.

France is traditionally a rural country where cities are still considered by some people as bad places, polluted and dangerous. A large part of the territory, (mountain regions of Massif Central, Alps and Pyrenees) is little or none populated which gives to many people the feeling that there is a huge potential for building and that urban sprawl is not a problem.

The word "density", in France, is linked in people's minds to the developments of the 60s–70s, so called "grands ensembles" (which are in fact low density areas). Press and TV are partly responsible for the confusion between density and social problems: they enjoy reporting violence and crime happening in these neighbourhoods, more than informing against poverty, unemployment or enhancing positive actions like creation of jobs or citizen groups' initiatives.

6.2 Communication, more than regulation, to accept environmental constraints

Rules facilitating environmental improvements in land management are linked with several fields. Regulation seems to be few efficient if other measures, in different fields and at different scales, are not implemented in order to bring coherence between land management, land use and other policies.

In terms of planning, for example, the pattern of the "polycentric city", organizing urban

poles around the transport network, is a useful scheme to achieve the objective to reduce individual car practice. Quality of life in city centres can be enhanced by new architectural forms, dense and attractive, including large apartments for families. Large green spaces, parks and sport facilities, have to be planned close to dwellings.

In terms of behaviour, one of the key points is to make people aware that it is possible to distinguish car use and car ownership.

Education is necessary to make behaviours change and people discover that walking and cycling are enjoyable and good for health, that car sharing, car pooling, car renting are cheap and friendly solutions.

Communication, dialogue with citizen groups, elected representatives, advocacy planning, press campaigns, seem as necessary as regulation to convince people that, for example, density is not crime but an opportunity to profit of public facilities of urban centres.

More generally, the content of laws has to be explained and advertised towards population and not only among professionals.

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The Importance of Natural Risks in Urban Dynamics

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Abstract:

In the last decades it has been observed a growing amount of damages and deaths caused by natural disasters. This becomes more worrisome when we thought that cities are bigger and more and more people live there. Greater concentrations of peoples and assets contribute to increase disasters' impacts. The main purpose of this work is to contribute to a better integration between risks and occupation and transformation of territory. In the first part of this work it is our purpose to point out the need for a relationship between natural risks and land use management. In the next part it is aimed to study an area that may be considered an example of the existing gap between the referred disciplines. The last part will be focused on the presentation of proposals of intervention that will contribute to make urban dynamics more sustainable and a safer territory for its residents.

Key-Words:
stakeholders, hazard, vulnerability, natural risks, urban growth, land management

1 Introduction

According to the Portuguese Law of Policy Planning and Urbanism, one of the objectives of planning and urban policy is to ensure protection of population by preventing effects of natural disasters or human activity. Nevertheless PNPOT (National Planning and Management of the Territory Project, 2007) pointed the insufficient consideration of risks in occupation and transformation of the territory as one of the greatest problems of Portuguese land management.

Spatial planning plays an important role in the reduction of risks and avoidance of new ones, in the distribution of land uses and the regulation of building areas. It is necessary to pay attention to the impacts of the urbanization in areas, for example, with a high slope or in wetlands. Risk management in urban planning is of increasing importance to mitigate the growing amount of damage and the increasing number of casualties caused by natural disasters (Ebert, 2009). Spatial planning has to take into account people's security; the territory must be a safe place to live, with particular concern to dense settlements, industry and commerce, infrastructure facilities (schools, hospitals, streets, rail lines).

This work has two aims: first is to show the importance of risks in urban dynamics; second to promote a bigger integration between risk and land management. Concerning this matter, we

believe that the insufficiency of tools integrating natural risk and spatial planning contributes to the existing gap holding back dialogue among the technicians of different areas.

The case study presented in this work concerns peripheral area located on the East side of the city of Coimbra, in Centre Region of Portugal (figure 1).

It is an area that has most expanded between 1985 and 2005; an area of urban rural interface, characterized by a mixture of land uses (Figure 2).

Its urban structure is very heterogeneous, as well as its physical characteristics, what increases the possibility of testing several work hypotheses, like the relation between the definitions of risk management strategies and the characteristics of the territory, as well as the public's aims and perceptions of risk.

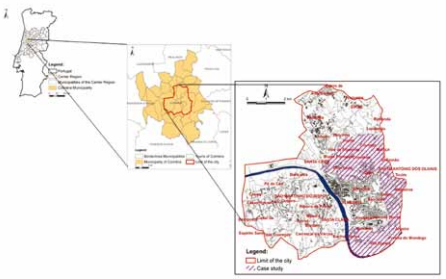

Figure 1. Geographic location

2 Methodology

As said before, one aim of this paper is to show the importance of urban dynamics in risk management. The methodology was designed taking into account the following phases: urban dynamics analysis; landslide risk assessment; identification of the areas with higher levels of risk; identification of the biggest problems in the more problematic areas; risk mitigation proposals in order to reduce its impact.

The first phase consisted in the analysis of the city of Coimbra's urban growth between 1985 and 2005, as well as its future trends, according Municipal Master Plan (PDM).

The urban growth rate was assessed through overlay mapping of cartography dated from 2005, published by the Portuguese Geographic Institute, at 1:10000, and cartography dated from 1985 published by Coimbra's City Hall, at 1:5000. From GIS data we assessed the urban space variation rate between 1985 and 2005. Census data and field work was also taken into account. Beyond past urban dynamics we also studied future urban

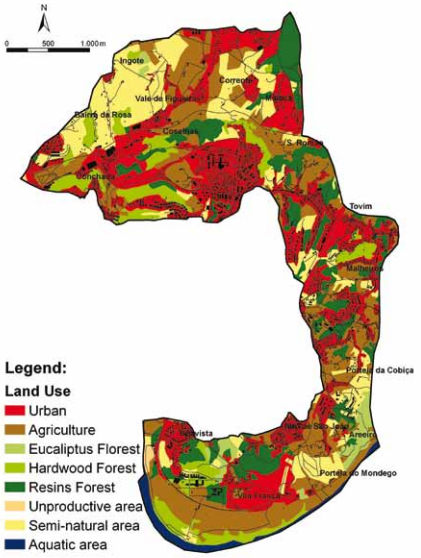

Figure 2. Land use

dynamics based on the Master Plan's zoning and Census data.

The second phase of work is focused on **risk assessment**, according to the equation: Risk = Hazard * Vulnerability. **Hazard** can be defined as a dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage (UNISDRa, 2009). Hazard can be seen as the source of risk. **Vulnerability** can be defined as the inherent characteristics or qualities of social systems that create the potential for harm. It is a function of the exposure (who or what is at risk) and sensitivity of system (the degree to which people and places can be harmed) (Cutter et al, 2008). Thus, risk depends from natural or human-induced hazards and vulnerable conditions.

In the development of the methodology the landslide example was used, since the case study is a landslide prone area and where accidents have happened, damaging buildings, cars and roads. The temporal data concerning landslides were assessed, in the period 1975 and 2005, through newspapers, City Hall records and precipitation. A. Tavares (2004) considers precipitation the main triggering factor regarding the instability of hillsides.

Concerning the variable selection for hazard assessment, we analysed several models designed by authors like L. Cunha et al (2002), A. Tavares (2004), J.L. Zêzere et al (2004), P. Federici et al (2007), and Van Westen et al (2008). From that analysis, it was concluded that slopes, exposure, morphology of the hillsides, surface deposits, hydrology, geology and land use are the main factors in landslide hazard assessment.

In respect to evaluation methodologies, we tested quantitative methodologies (factorial analysis), qualitative (heuristic qualitative) and a combination of quantitative with qualitative (Analytical Hierarchy Process - AHP methodology). This last one proved the most adequate to the case study.

The methodology for vulnerability evaluation it was based on AHP methodology and Social Vulnerability Index (SOV), designed by Susan Cutter (2003).

As was referred before, risk is the result of the multiplication of hazard for vulnerability.

Concerning risk and land management the biggest concerns go to high landslide risk area.

3 Urban territory in risk

In urban growth analysis the case study reveal a space that has been growing and where, according with PDM, it is possible to construct even more buildings. It is a space where the urban area increased 46% in the period studied.

In spite of having just 12 km2 it is possible to identify in the case study different kinds of urban growth (figure 3). There are situations of filling in interstitial spaces as well as big condominiums constructed in wilderness areas.

We observe in the North area a linear growth along the main roads. It is a kind of growth sparser than that observed in the South. Moreover, generally speaking, the North area has less expression regarding economic issues, equipments as well as population density.

Another relevant issue is the kind of buildings that is constructed, which is going to have consequences on the pressure above the soil. In Mainça (North region) we have mainly houses for one family; on the other hand there are places like Alto de São João where we can see buildings up to 7 floors.

This analysis allowed the identification of differences between the communities of the case study. Nevertheless the question remains how these differences are important to risk management.

In the landslide risk assessment are noted three places, due to the high level of risk: Conchada, Tovim and Alto de São João. Before long in a first analysis, it is not hard to see how different these three places are. Conchada presents a **high** urban density; Tovim has a **low** urban density. Besides that, we have Alto de São João, which has a **high** urban density and is **on construction**. So, all three areas present a high landslide risk, but have different characteristics (figure 4).

Probably the reasons why these places present high levels of landslide risk are different.

In table 1 it can be seen that levels presented by Conchada are due to high levels of hazard and social vulnerability. Alto de São João is an interesting case, for in landslide hazard it possesses a medium level, however it has a high level of infrastructural vulnerability, resulting in a high risk. Related to this, it is important to note that in spite the fact all these areas present a high level of landslide risk, they have different problems which demands different strategies.

The study area is one of the areas of great expansion between 1985 and 2005 and presents a high level of landslide risk,

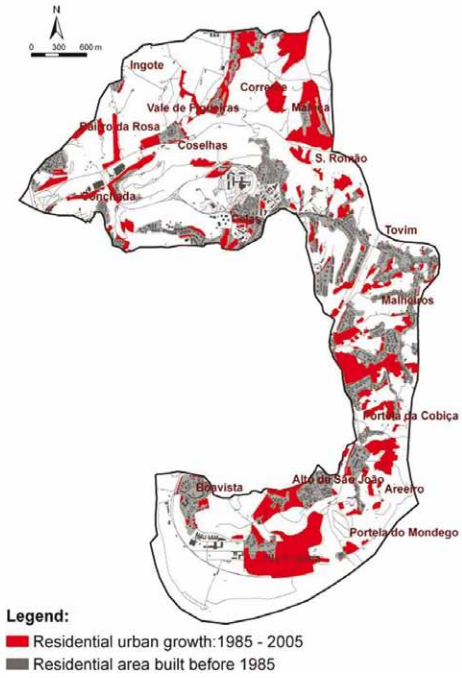

Figure 3. Residential urban growth 1985–2005

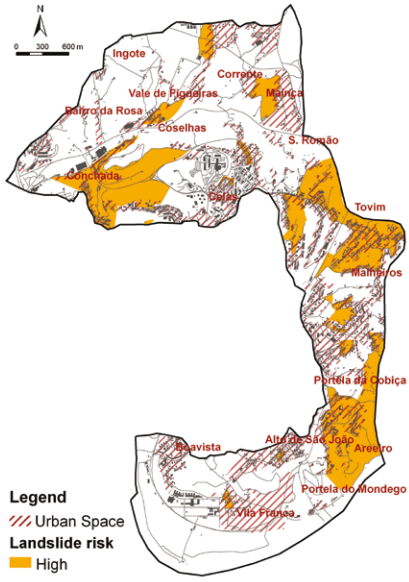

Figure 4. Urban space and landslide risk

	Areas with high levels		
Areas with high risk	Hazard	Social Vulnerability	Infrastructural Vulnerability
Conchada	X	X	
Tovim	X		
Alto de São João			X

Table 1. Areas with high landslide risk

particularly in some parcels. Data analysis revealed that areas with high levels of landslide risk were also areas with high population density and where accidents were registered between 1975 and 2005, damaging buildings and roads. Moreover, it is possible to identify situations with a high landslide risk where the Master Plan allows the further construction of buildings. All of these points to a lack of integration between risk and land use management.

Alexandre Tavares and Lúcio Cunha (2008) state that in Coimbra's case, despite the long history of losses and damages associated with hazardous processes and the existence of a large body of analysis and reflection on the subject, its translation into development and planning tools has been limited.

In short, comparing the areas with high levels of landslide risk and the building capacity provided by the Master Plan, it is possible to distinguish two kinds of situations (figure 5):

- Areas with a high level of landslide risk where more buildings were constructed that was provided for by the Master Plan, causing more pressure on land and infrastructures than what was provided;
- Areas with a high level of landslide risk where it is possible to construct further buildings which can have 4 floors;

These two kinds of problems demand different strategies.

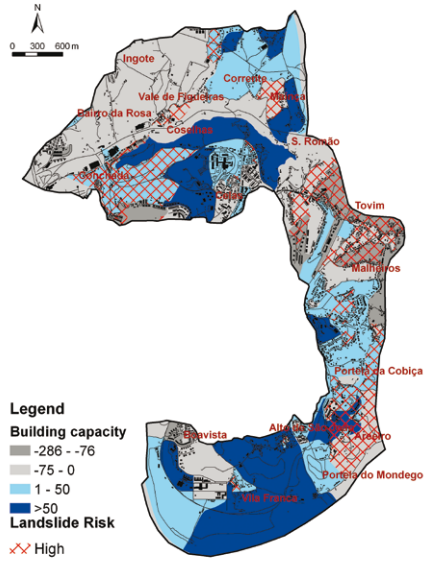

Figure 5. Building capacity (number of houses) provided by PDM and areas with a high level of landslide risk

4 What can be done?

The mitigation and prevention of the risk posed by natural hazards have not attracted widespread and effective public support in

cities during recent decades (Lacasse et al, 2009), which means it is necessary to build a new approach. Besides that, unlike many other EU countries, the Portuguese legislation includes the prevention of natural, technological and environmental hazards in a very limited way (Zêzere et al, 2008). This reinforces the need for further research concerning measures of mitigation and prevention of risks.

In this paper, the proposals are organized in four groups: land-use planning, slope stabilization, public participation and stakeholders' participation.

Land-use Planning: Land-use planning can help to mitigate disasters and reduce risks by discouraging settlements and construction for key installations in hazard-prone areas, including considerations of service routes for transport, power, water, sewage and other critical facilities (UNISDRb, 2009). Concerning land-use planning tools, the most important in the case study is the Master Plan. As it has already been referred, the case study has areas with a high level of landslide risk in two kinds of situations: where, according to Master Plan, is possible to construct more buildings; and situations where the building capacity has been overreached. Regarding the first situation, it would be better to decrease the utilization rate, taking into account comparing with other less problematic areas. It is wondered if it makes sense to construct more buildings, up to 4 floors high, in areas that present high landslide susceptibility as well as a high social vulnerability.

Another suggestion concerns the construction of heavy infrastructures, namely those important ones for the normal operation of the territorial system, which should be diverted to less dangerous areas. It is known that the number of parcels available to build social equipments is not very wide. However, it is important to possess a profound awareness and conscience of possible consequences of urbanising a parcel with, for instance, a school. Recognizing and avoiding hazards, conscious dealing with risks, and safety reviews are important principles in coping with natural hazards (Federal Office for Spatial Development et al, 2006). Moreover, it can't be forgotten that the placement of public infrastructure plays a crucial role in shaping development patterns.

In the situations where the building capacity has been overreached, the first priority should be regular inspections of the built area in order to protect people and their goods. However, spatial planning is usually focused in future developments, which render difficult the legal intervention over existing land uses. Moreover, it shouldn't be forgotten that most times we are dealing with private property. Anyway it would desirable not to construct more buildings, and if so, only under rigorous technical conditions.

Slope stabilization: This solution is very expensive, nevertheless, in some cases, like areas of high density population and value, it is the more obvious one. There are several methods, like earth retention systems, slope modification, surface and subsurface drainage. The high costs of this kind of operations demands good landslide hazard and vulnerability cartography in order to better define the priorities.

Public participation: It should be noted that areas with high landslide hazard aren't occupied only by the poorer social classes. Through the analysis of the building's taxable value it could be seen that some areas with a high level of hazard are also very valuable, with a cost per square meter up to 1500€ (figure 6), which means that the urbanization of

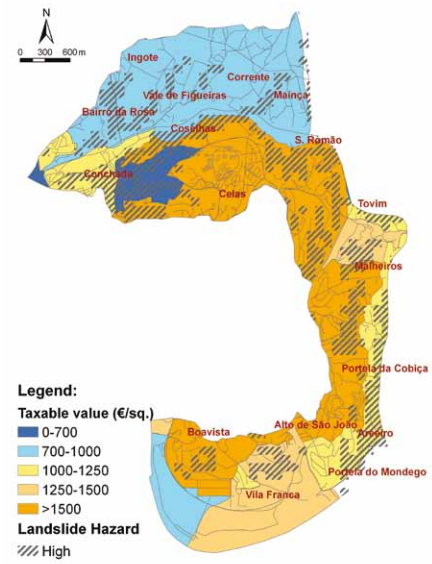

Figure 6. Taxable value and high levels of landslide hazard

areas of high landslide hazard can be a very profitable business. This means that in some cases persons live in these areas by option, we must not forget the beautiful views sights that a home located in the hillside can have. This option can constitute an indicator of a lack of non-regulatory measures: awareness actions that may be intended to discourage people from purchasing homes in areas of high susceptibility. If, in spite of all risks, they decide to build in hazard areas, it is important they know the mitigation measures. This kind of actions can also be useful as community training in technical skills, such as improved construction methods or the best ways of draining water.

It is important to increase the hazard awareness of the community, to promote community participation in the development of risk mitigation plans, and to know local needs in order to enhance community wills and aims.

One of the problems that must be stressed is that along with the development of homes in residential subdivisions comes the entire fabric of infrastructure, such as streets, sidewalks, water and sewer lines and utility lines (Schwab et al. 2005). The construction of these infrastructures requires actions like excavation and vegetation clearance, contributing for slope's destabilization. Besides that, when the municipal governments provide infrastructure, they might be encouraging the construction of more buildings. R. Schuster and L. Highland (2007) point the possibility of municipal governments prohibiting construction of public facilities, such as water and sewer systems, streets and sidewalks, in landslide-prone areas, which will prevent or restrict development in such areas. Once it is allowed to construct in these areas, citizens have the right of access to necessary facilities.

In this case the main solution shouldn't be financial burdens, like limiting public investment or prohibiting insurance costs, but betting in public awareness of risk. It might be a long process that takes more time than financial taxes, but it more sustainable. R. Schuster and L. Highland (2007) considerer that the most effective, and often the most economical, means of reducing urban slope failure losses is to discourage new development on landslide-prone hillsides.

Comparing figure 6 and figure 7 it is possible to identify situations with high hazard and a very low level concerning vulnerability.

It can't be forgotten that risk is the multiplication of susceptibility by vulnerability, which means that the level of susceptibility can be high, but if the community's vulnerability is low,

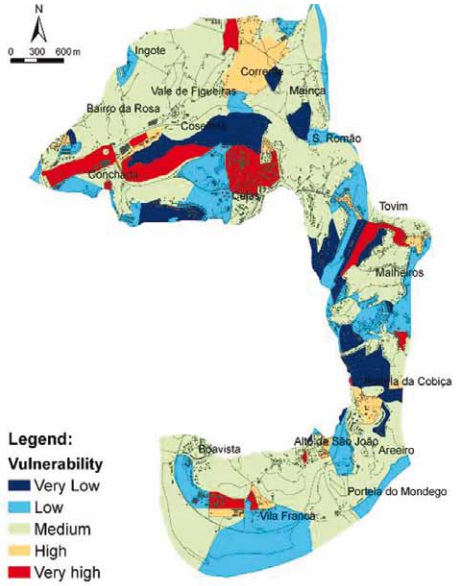

Figure 7. Landslide vulnerability in case study

it can concur to decrease the overall level of risk, once the community has resources to overcome a possible accident.

Stakeholders: One factor that widens the gap between spatial planning and risk management is when the first seeks the economy sustainability, whereas the second seeks the environmental sustainability. It is important to find commitment solutions between the different stakeholders. It is useless to create directives that aren't adapted to reality, devoid of cross- sector understanding and cooperation. It is very important to involve the different stakeholders in the decision-making process, in the exploration of different options. In land urbanization there are several actors like architects, engineers, constructors and real - estate agents. It is advantageous that all actors understand and agree with the plans, that they feel part of the decision-making process. Top-down interventions and command-and-control approaches to deal with large scale emergencies and disasters are outmoded, and a participatory mode of approach should be at the forefront of public safety (Haque and Etkin, 2007). One way to improve dialogue between stakeholders is the consolidation of methodologies and the development of the tools that integrate spatial planning and risk management. The more this happens, the easier will it be to reach to commitment solutions more effectively.

It is difficult to say that one solution is better than the other. That depends on the case. Nevertheless, a combination of technical analysis and community participation could be a good solution. Interventions involving stakeholders and community participation seem to be more economic, sustainable and easier to put into practice. So, when possible, it is preferable to avoid risk (not proceeding with the activity likely to generate risk) than betting in the reduction of harmful consequences occurring due to the modification of the source of risk.

Unfortunately, in some areas of Conchada (high urban density) it is no longer possible to avoid risk, so there is the need for measures like slope stabilization as well as periodic evaluations. On the other hand, where it is possible to construct more buildings, like some areas of Alto de São João, land use planning can play an important role.

5 Conclusion

In the case study, the landslide risk isn't at an acceptable level. Through the analysis of landslides occurred between 1975 and 2005, consequences like the damaging, and even, in some cases, destruction of buildings and cars were observed. Besides that, several times the roads were obstructed due to landslides.

This reinforces the idea that something has to be done.

During the analysis it was confirmed lack of instruments working to bridge spatial planning and natural risks. Geographic Information Systems (GIS) can perform an important role in the solution of the problem, in the several phases of work. They are useful in the risk assessment phase, and also because they allow the identification of the most problematic areas, through the overlapping of data from different sources. Besides that, it is possible the simulation of different scenarios, in order to find better solutions. GIS is a tool that favours the communication among the different stakeholders regardless of their skills. The hazard and risk maps, if presented in a clear, colourful format, are a good way of explaining threats to communities and stimulating actions (World Bank, 2009).

A problem that it is considered important to evince is that, concerning risks, land management tools like Master Plan and RMUE (Municipal Regulation of Urbanization and Construction) are focused on natural hazard, neglecting the social context of the territory. The focus on physical domains yields an incomplete understanding of natural hazards and often results in ineffective or even counter-productive solutions (Haque and Etkin, 2007). As it was said before, risk is equal to the multiplication of susceptibility by vulnerability. It is important to give attention to peoples' vulnerability, in other words, to their capacity to resist the impact of an accident. Moreover, individuals can also play the role of an active agent, there are situations where they contribute to trigger the accident, for instance, when they urbanize an area with a high slope.

Since natural hazard is related to physical constraints and vulnerability is more related to human activity, wouldn't it be more feasible to adopt strategies focused on reducing vulnerability? Physical space may be more difficult and expensive to change than human action.

Risk management shouldn't be shortened in interventions to control physical environment. One of the most common ways to regulate human action is through planning instruments. However it was observed a mismatch between Master Plan and risk management. Master Plan has a very long time period of effectiveness very long; possibly more than 10 years, which can cause a dissemblance between what is planned and reality.

We considerer that planning should be more strategic, this is, more participative, more flexible, in order to incorporate the changes of reality. It is also important to design scenarios to predict possible impacts of planning regulations. Besides that, the planning process should be a discussion platform which allows to stakeholders to reach a consensus on goals and actions. It can't be forgotten that planners make a major contribution to the process but don't control all of it.

It may seem hard work to find commitment solutions among several and so different actors, seeking to conciliate planning instruments and risk management principles.

Nevertheless, we think it is worth it in order to get a more sustainable and a safer territory.

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GIS: a New Tool in the Monitoring of Land Use Management

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Abstract:

One of the most important tasks of the Municipal Authorities (MA) is monitoring the rules of land use, which has its difficulties considering the gaps in the planning management of urban expansion areas. These areas are characterized by low densities in terms of population and housing, and are considered for future urban growth, which register a greater dynamic of territory transformations, especially as a result of a strong private initiative. We could say as a result, that is important to have a management model providing information of the rules of land use, whether it is in the sight of the municipality in its private enterprise in the territory, or in its technical role to enforce the keeping of the rules, making more efficient the process of building the city. Are these models, a new cartography and the manner of making available to the citizen the rules of land use, including the facilities to build and urbanize as well as the conditioning factors which limit and rights of the owner in the use of the land, originating from the conceptual contents of the urban plans? Might be GIS used in the management of territory on a municipal level, able to expose with greater ease and efficiency a growing quantity and complexity of information, in the land use domain? This article presents a model of land use applied to the expansion areas of Belmonte Municipality, resorting to a data base and to the GIS that intends to serve as a new tool and support the land use monitoring.

Key-Words:

Land use, planning management, urban expansion areas, plans, geographic information system, monitoring

1 Introduction to the concept of urban expansion areas

The urban expansion areas are the parts in the city for urbanization, localized inside the urban perimeters, near to the consolidated areas of the compact city and they are understood as places for urban growth. Currently they are also for non-urban activities and of low densities. We can say that the concept of suburb or periphery is also linked to the urban expansion areas and it will be able to be understood as a given built-up territory that surrounds a city centre. It reflects inferiority or dependence relative to the city centre, it has

the possibility of achieving in the formation of itself of the suburban word and it can stand out for its progressive densification, dominant type of the constructions, social stratification of its inhabitants or in the way of integration in the city.

In Portugal, it is responsibility of the MA to delimit the urban expansion areas in function of the necessities of urbanization and of the balance of the land use market, which will manifest itself in the opportune exchange or buying of lands with the foresight to make easy the predicted undertakings or the integration of the proposals of the plans such as Municipal Main Plan (MMP).

This article presents how GIS was used as a tool to support the land use monitoring of the expansion areas of Belmonte Municipality.

2 Experiences and challenges in land use domain using GIS tool capacities

The development of urban expansion areas could be justified because of many reasons, such as the natural need of new urban areas, given the saturation of the old urban spaces; the search for the balance between the distance to the urbane centre and the increase in value of the environmental quality; and the existence of a culturally taken root tendency that considers the possession of the ground as desirable, associating it with power and prestige.

The recent experience in the planning management of urban expansion areas can be analyzed in its positive and negative aspects. One of the main positive aspects is the great dynamic in the preparation of plans from the 90's and the growing offer of private plots and urbanizations. The whole country, with a total of 308 municipalities, is covered by MMP, even with lack of more detailed plans that define the land use, who, how and when the urbanization process. This intense practice with MMP resulted in the Portuguese familiarity with the planning rules. Regarding the main negative aspects of planning domain, we can talk about the stereotypical formulation of the contents of the plans or their slow, inoperative preparation in the planning management and in the framing of private enterprise. Problems still arise on the level of urban perimeters that are oversized, 40 million compared to the current 10 million Portuguese citizens. Therefore, it leads to a waste of infrastructure, an urban void that will never be urbanized, dispersion of the building and urbanization within the large urban perimeters. Also the cartography that emanates from the plans of the 90's has been of bad quality causing ambiguities and doubts in the interpretation, principally in zones of limit, besides the non-existence of the register, of the disagreements between maps of land use and maps of restrictions. These gaps are aggravated in urban expansion areas, with a big dynamic in the alteration of land use. The rapid urbane expansion has been coming to threaten the environmental, social and economical balance. Therefore urban sprawl has a direct impact on the quality of life of people living in cities and their surroundings. The increased demand for housing, food, transport and tourism are factors that place demands on the ground.

GIS; Geographical Information System; consists of a system with capacity for acquisition, storage, treatment, integration, processing, recuperation, transformation, handling,

modelling, updating, analysis and showing of digital information with geo-references, topologically-structured, associate or not with a bank of alphanumeric data. This tool is a system which supports the decision maker where the main purpose is to analyze the characteristic of a geographic data, with the possibility of working with a range of scientific disciplines such as geography, cartography, planning, photogrammetric and remote sensing.

The GIS often developed and introduced into the planning processes applications for characterization, whose purpose is to address the issues and conflicts in the planning management of cases in this area, and constitute a basic element integrated in the MA that presents challenges, new methodologies and processes of decision. Given that MA have skills in planning management, the state GIS is increasingly a tool of analysis and information management, ensuring the effectiveness of the organizational models behind it, contributing to becoming closer to the citizen, allowing the correct use of information and legal aspects, disclose and disseminate the planning information. Any claim to build, urbanize or implement any other operation planning, requires the prior control of the MA, demanding in the appreciation of the case the compilation of numerous documents, maps and drawings. It is precisely in the appreciation of these processes that the prior knowledge of the rules of the construction and of the urbanization for the consultation to a base of data, on the part of the citizen who takes the initiative of carrying out such a planning operation, might make the action easy.

3 GIS contributions for planning decisions

The GIS database guarantees bigger satisfaction of the MA with the following contributions, for clarify the relationship between the local authorities and the citizen in the domain of planning management decisions. We can say that agility, timescale and equity are three of the main important procedures in the land use domain.

The agility is the capacity to respond in good time to the external solicitations for a service, namely: specification of the procedural path, of form to avoid the devolution of the process for lack of documents; emission of maps of location automatically and prior indication of the existent of land use restrictions.

The timescale is the capacity to answer in the evaluation of building viability in determined land use in time, fitted in a system that allows: to register and computer science monitors the circuit of an administrative-technical process in an application; to define correctly all the circuits through which the process goes internally; to define terms in all these circuits and alerts for the failure of the same terms and to modernize and to automate the possible services, like in emission of maps and MA extern consultations of the processes. Finally the professional equity is the guarantee of which the process of evaluation is equitable for all.

4 GIS application as a new tool in land use

4.1 Methodology

The methodology used for the application of GIS as a new tool in the management of the land use was based on the following four steps: software, database, maps and land use categories.

The first step; software; started with the application tool GIS of the program ArcGIS (ESRI) which was chosen in this case study, because ArcGIS 9.3 makes possible the geo-processing and mapping. What is claimed is the creation of a model that could contribute for monitoring the land use, in the urban expansion areas. So we divided the work into two main parts: the preparation of maps for the urban, industrial and for urbanization land use and the urbanization operations (maps of land use) using ortophotomaps, military maps and maps from the digital MMP.

For the second step; database; the gathering of data was based essentially on two sources of information in terms of land use: the MMP of Belmonte and the urbanization operations. As for the MMP it was necessary to obtain the military maps (scale 1:25000), as well as the ortophotomaps of the municipality, for a full observation and characterization of the places. Then, it was necessary to scan the maps of MMP, so that it was possible to use this digital format as a of work base, in the definition of the classes of space and of the land use in ArcGIS – the urban, industrial and for urbanization spaces. As for the urbanization operations, in addition to the gathering all the necessary data and to choose the appropriate maps of each urbanization, there was inevitably the passage of all maps fin to digital format.

In the third step; maps; was introduced in a file of ArcGIS were military maps (scale 1:25000) and the ortophotomaps that were already geo-referenced in the system of coordinates "Lisbon Hayford Gauss IGeoE", which started to be the system adopted for all the images and maps inserted to leave from there. In the introduction of the digitalized image of the map of land use of the MMP, it was necessary to proceed to the geo-referenciation. The next step was centred on the creation of files on which the maps are worked. The type of shape file defined, as much for the classes of land use, as for the allotments it is the polygon, in order that outlines are able to be created.

The fourth step; land use categories; started with the process of creating maps of the area that define classes of the different land use for the urban area of Belmonte where there are a small percentage of the urban perimeters. With the help of the scanned image of the MMP, the overlapped ortophotomaps of the county began to draw up the polygon layer "Spaces – Urban".

The delimitation of each polygon is associated with a line in the table of that layer. The layer "Urban" has in its table as many lines as polygons drawn. In this table it is possible to add several attributes to characterize the polygons, such as a name, size or the dimension. This type of functions is extremely useful for the classification of space, storage of information that can import to meet the defined space. The characterization of urban space is defined as attributes that make the parameters of the land use regulation of the MMP, referring to the

land use, i.e.: space: urban, maximum building height (m): the dominant in the place < 10 m; minimum area of the plot (m2): 300 m^2; minimum width of the plot (m): 10 m; maximum rate of construction: urbanizations 1 = 0,40; urbanization 2 = 0,55; Isolated plots = 0,55 and area: variable. We can conclude that the urban perimeter of Belmonte has 968.492 m^2. We followed this methodology for the industrial and urbanize land use.

4.2 The Case Study: Urbanization of "Quinta do Conde"

In the Belmonte Municipality there are 9 urbanizations; case studies; of private initiative. So, after the digitalization of all maps of these urbanizations, just like we explained before, this information was put in ArcGIS, without consideration of the entrance coordinates.

In this way it was indispensable to go on with the geo-referenciation of the urbanizations, from the ortophotomaps coordinates (Fig. 1). In each urbanization layer there are 4 layers: "Map", which correspond to the synthesis map of the digitalized urbanization; "Urbanization" with the delimitation; "Plot" with the set of plots and "Building area" the layer of the building area of each building of each plot.

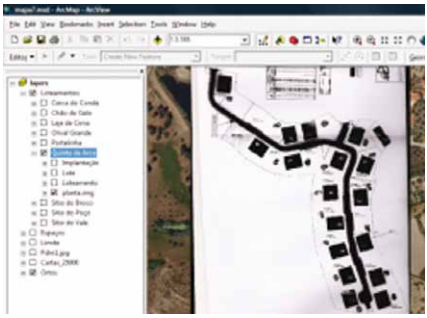

Figure 1. Urbanization Map over an Ortophotomap. (Authors on a Belmonte Municipality maps)

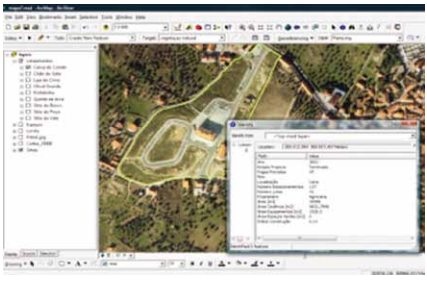

Figure 2. "Identify" tool of ArcGIS. (Authors on a Belmonte Municipality maps)

The case study "Cerca do Conde" in the village of Caria approved in 2002 is the second biggest in Belmonte Municipality. It has about 35456 m^2 and 41 plots (39 for housing and 2 for commerce). The first stage for the characterization of this case study in ArcGIS passed by its definition according to the urbanization map geo-referenced; over it to the ortophotomap of the municipality; drawing the limit of the urbanization in the layer blending.

The table of attributes of the layer "Urbanization" was filled out by the whole general information on the urbanization, which could interest the technicians and could have interest in the optics of the user, in order to know the potential in terms of land use of the urbanization and the building restrictions (year, area, state of the project, number of plots, number of houses, photo, localization, number of car park places, owners identity, collective spaces area, equipment, green areas or index of building). Through the button "Identify" of ArcGIS it is possible to have a list of all details of the urbanization, very fast and simple, how to interface any contact with the common user (Fig. 2). Then, draw up all the plots on the same map in the synthesis of blend layer "Plot", as in the previous procedure.

The table of attributes for the layer "Plot" (Fig. 3) was filled with information on each specific lot, with more significance given to characterize the urbanization under several perspectives (plot number, area [m^2], current situation and type of occupation). As well as for the "Urbanization" also in case of the plots it is possible to know the characteristics that were given them in the table of the attributes, for the tool "Identify" (Fig. 4). After this stage, we can conclude the analysis of each case study referring to the polygon of each building.

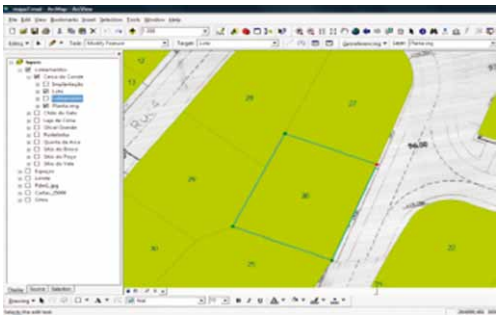

Figure 3. Plots limits of Urbanization of "Quinta do Conde". (Authors on a Belmonte Municipality maps)

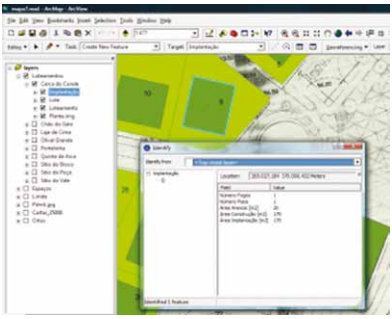

Figure 4. "Identify" tool of ArcGIS. (Authors on a Belmonte Municipality maps)

Finally, set up the attributes to give polygons of buildings, which are more specific than those of the plots and filled to the table of attributes properly, according to the data that the synthesis map provides (buildings area, construction area, annexes area, number of levels or number of dwellings). As was explained to urbanization in general and for their plots, with the tool "Identify" there becomes possible in this model of land use management quick and easy access to the characteristics defined for each polygon of buildings.

5 Conclusion

We can conclude that with this type of models we may make a little more progress in transparency that should characterize the technical action of the MA as a convergence of their geographical (plans and urbanizations maps) and political dimensions (as a controller) in the land use. On the other hand, this model will facilitate the action of citizens in their active role of intervenient in the territory, providing them with information on the rules of land use, legal aspects of building, urbanization and planning processes. This application of GIS in land use management defined in the urban expansion areas is a new tool to clarify the relationship between the MA and the citizen. This tool will help to address two major challenges that now face MA: for the citizen, to whom it allows conformance to a database with the rules of land use management, in his action of intervenient in the territory; for the MA, whom it allows to have a database of rules for the land use management and to carry out the monitoring.

Acknowledgements

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Integrating Strategic Environmental Assessment into Land -Use Planning: A Case Study on Urban Development Plan of Adana in Turkey

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Abstract:

Strategic Environmental Assessment (SEA) is developed as a more comprehensive evaluation system as a result of arising concerns related with the insufficiency of Environmental Impact Assessment (EIA) carried at project level and it became more prevalent in 1990s. SEA especially legal in developed countries became widespread after SEA Directive of EU. Within the accession process to EU, the preparations of Turkey about legal frame of the subject are going on. The draft SEA regulation was prepared in 2005 depending on the directive of EU about the subject.

The practices of SEA are closely related to the administration system and decision making procedure in the countries. For this reason, practices in the SEA scope and practice procedures may change from country to country. The subjects that required strategic decision-making process have been gathered in five groups for Turkey by taking into consideration national and international SEA systems and SEA Directive by the European Union on 27 June 2001.

This research project aims at analyzing the possible practice opportunities of SEA in Turkey and the practicability of SEA into Urban Development Plans which determine decisions of land uses. The research is conducted on two sections. In the first section, procedural approaches to SEA on environment plans are investigated and a framework for these approaches is adapted at the institutional level. In the second section, SEA practice form is investigated for urban development plans in case of Adana. In this article, the findings related to the project are given.

Key-Words:

SEA (Strategic Environmental Assessment), urban development plan, Turkey, planning system

1 Introduction

Strategic Environmental Assessment (SEA) can be defined as a systematic process, evaluating the environmental, economic and social results of any suggested policy, plan or programme (Sadler and Verheem, 1996; Goodland, 1998; Bukley, 1998). Therefore; it has more advantages than project-level environmental assessment (EIA-Environmental Impact Assessment). Also, it provides a more holistic approach towards sustainable development.

SEA can be defined as a legal means of decision making for competent corporations responsible for approving the plans, EIA projects. As seen in Fig. 1, EIA and SEA are forming the main stages of Integrated Environmental Management (IEM) as two affect evaluation system implemented in different stages of development process and completing each other.

SEA is developed as a more comprehensive evaluation system as a result of arising concerns related with the insufficiency of EIA. SEA especially is used legally in the developed countries. The Turkish draft SEA regulation was prepared in 2005, depending on the EU directive about SEA (2001/42/EC).

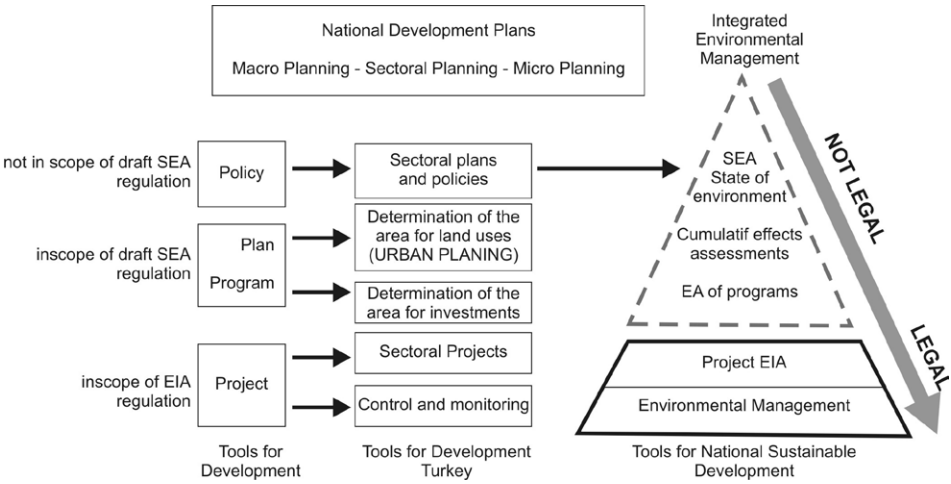

Figure 1. The Relationship of Development Tools with Integrated Environment Management in Turkey (Say et al, 2005; Say and Yücel, 2006).

SEA practices have mostly been observed in the developed countries; however, the practice of this subject is more important for the developing countries aiming sustainable development (Barrow, 1998; Say, 2000; World Bank, 1999; Abaza, 2000; Wood, 2003; Abaza et al., 2004; Dalal-Clayton and Sadler, 2005). In these countries, the development process till now has been followed with an approach which aims economic income in the short term. This approach has often caused the environmental factors to be ignored. The evolving problems have been tried to be solved by policies which intend to decrease current pollution. The international relationships, organizations, the external financial sources for

investments, nongovernmental organizations and the public impact have been effective in order to form "Preventive policy tools" such as EIA, SEA.

The practices of SEA are closely related to the administration system and decision making procedure in the countries. For this reason, practices in the SEA scope and practice procedures may change from country to country. The subjects that required strategic decision-making process have been gathered in five groups for Turkey by taking into consideration national and international SEA systems explained by Sadler and Verheem (1996) and the SEA practice fields determined by Partidario (1996), Bukley (1998), Goodland (1998), Say (2000) and SEA Directive by the European Union on 27 June 2001.

1. National Five-Year Development Plans
2. (FYDPs) and Sectoral Plans: socioeconomic plans including macro-economic targets and sectoral development policies prepared by Prime Ministry State Planning Organization (SPO).
3. Regional Development Plans: plans, aiming to improve the socioeconomically underdeveloped regions, to provide the effective use of sources in the region and to improve income distribution in the country such as Southeastern Anatolia Project—SAP and Eastern Anatolia Project—EAP.
4. Legal Regulations: laws and international convention for especially effective uses of natural sources such as the Forest Law, Tourism Encouragement Law, Coast Law etc.
5. Privatization Policies: privatization activities have been in progress with the effect of laissez-faire economy since 1985 in Turkey. Especially privatization policy in the energy and tourism sectors has great impact on environment.
6. Physical Plans: urban and rural developmental plans and other land use plans, environmental plans prepared by the Ministry of Environment and Forestry and municipalities, urban master plans by municipalities, Infrastructure plans, and tourism plans.

This research project aims at analyzing the possible practice opportunities of SEA in Turkey and the practicability of SEA into Urban Development Plans which determine decisions of land uses. The research is conducted on two sections. In the first section, procedural approaches to SEA on development plans are investigated and a framework for these approaches is adapted at the institutional level. In the second section, SEA practice form is investigated for development plans in case of Adana.

2 Characteristics of Turkish Spatial Planning System

Planning that is described as a process to solve current and forthcoming problems can be an effective instrument only equipment with total approaches. A total planning approach directed to areas and locations can be realized only in a hiererchic system. Planning grades in Turkey have been defined with different laws. In the relevant laws, primarily in the Building Law, No.3194, plans have been described in a certain hiererchic range from upper scale to lower scale (Table 1).

According to the Building Law, No.3194, the phases of processes of preparation and approval for urban development plans are listed in below.

1. Determination of Boundary Area
2. Data Collection and Comments Receiving Preliminary Study
3. Determination of The Development Plan Examinating Format
4. Stage: Analysis-Synthesis and Planning
   4.2 Synthesis - Combining Knowledge, Interpretation and Evaluation of Results
   4.3 Planning
5. Approval and Announcement

In the first step of development plan preparation studies in regard with the area limitations on which planning to be made by Municipal Council are realized. The second step is called "Preparatory Study". In this step present situation is investigated and current maps are developed. In the third step of planning process approximate size and planning price are defined and the kind of development plan is determined according to the characteristics of the settlement and the state of the current development plan. In the fourth step of planning "Data Acquisition-Analysis-Synthesis and Planning" studies are made. In the first section of the fourth step all informations and documents in respect with the area are gathered. In the next section all informationes gathered are assessed. In the fifth step of the development plan "Approval and Announcement" are realized. In this step plans that have been developped by municipality, governorship and relevant institution are sent to municipality council with an official letter. The said plan is assessed according to the regional plan and environmental plan -if ever- at the municipality council.

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2.1 SEA and Development Plans in Turkey

For a systematic application of SEA, firstly need to find answers to the following basic questions.

In which stage SEA? SEA of how?

When taken into consideration the process of preparing developments plans for in Turkey, the difficulty and complexity of SEA's implementation is clear.

Table 1. The planning hierarchy in Turkey

PLANNING TYPE				Frame - Scale /Responsible Authority	Scope
SOCIAL-ECONOMIC PLANS	NATIONAL LEVEL	National development Plan		Written statements -country plan / Prime Ministry State Planning Organization	Macro-economic targets, Sectoral aims, objectives and policies, Social development aims
	REGIONAL LEVEL	Regional Plan		Written statements -country plan / Prime Ministry State Planning Organization	Resource management, Preparation of sectoral plans and programmes so as to attain determined economic, social and physical aims
PHISICAL PLAN	LOCAL LEVEL	Environment Plan		Sub region, province -1/100000,1/25000 Local Governments	Land uses decisions for sectors Managing or orientating urbal and rural developments Ensuring the consideration of ecological, economical, cultural, social and physical values integrally Determiningthe utilization decisions for protection of natural sources
		Urban Master Plan		Urban - 1/2000, 1/5000 Local Governments	Local land uses decision Local land use density Dense built-up areas Road and technical infrastructure
		Implementation Plan		Urban - 1/1000 Local Governments	
		Special aimed plans	Tourism development plan	Subregion 1/1000, 1/5000 Culture and Tourism Ministry	
			Reclamation development plan	Urban - 1/5000 Local Governments	
			Rural development plan	Rural - 1/1000- Special Provincial Administration	
			Special Protected Area Plan	Protected area - Environment and Foresty Ministry	

Preparing urban plans begins with the stage of determination the border to be covered the plan. SEA should be a process which starts with this stage and continuing with laboring

the preparation of plan. Table 2 includes an overview of the principles for integration of SEA in the planning process.

Table 2. Principles for an integration of SEA in planning process (Elling, 2000).

a) Integrated assessment in planning process (and integration of assessment documentation, see e.)
b) Use of scoping processes to define the scope of the plan and of the environmental assessment
c) Identification of environmental criteria which are compatible with the scope of environmental assessment
d) Assessments of planning objectives, strategies and guidelines
e) Integrated statements on guidelines, including their environmental effects and likely alternatives
f) Qualitative methods explicating both positive and negative effects, and conflicting guidelines
g) Summing up assessments for each planning section and the plan in total
h) Public participation

3 The practice of SEA into Urban Development Plan -Case study

3.1 Project Area

Adana City has been selected as a sample Strategic Environmental Assessment (SEA) model that can be applied to developments plans in the scope of Project. Adana province is located in Mediterranian Region. The surface area of the province, that is limited by the Mediterranian coasts of 160 km in South, is 1403000 ha. With the boundaries of urban development area, which is placed in the latest development plan prepared by the Metropolitan Municipality of Adana, the urban area is about 32500 ha (Fig. 2). Total population of Adana is about 2006650. Urban population is 1611262 which is increased in every year and village population is 395388, which is decreased in every year (TUIK, 2008). Urban area of Adana, which is selected as study field in this work situated over the fertile land. The development plan prepared by the municipality in 2008 is 32500 ha

Figure 2. Project Area (Border of development plan)

3.2 Method

This research project aims at analyzing the possible practice opportunities of SEA in Turkey and the practicability of SEA into Urban Development Plans which determine decisions of land uses. The research is conducted on two sections. In the first section, procedural approaches to SEA on urban development plans are investigated and a framework for these approaches is adapted at the institutional level. In the second section, SEA practice form is investigated for urban development plans in case of Adana.
Section 1- Procedural approaches to SEA on urban development plans
Section 2- SEA practice model for urban development plans

In this article, the findings related to section 2 of the project are given.
As seen in Fig. 3. method used in this section is based on 3 phases.

1-Determination of the Present Situation
2-Proposed Scenarios for the Future
3-Evaluation applicability

4 Results

As a result of the findings received at the first part of the study, the legal framework of SEA on the urban development plans has been established for the administrative system in Turkey.

Our findings related to this part are presented as follows;

- The phases of the SEA process on Urban Plans
- the issues to be solved for SEA process
- tools to be used on SEA process

The main issues taken into account to reach these results:

- The theoretical frame of SEA
- The administrative system in Turkey
- Planning hierarchy
- The perspectives of the institutions responsible for the planning (questionnaire-interview)
- The content of the development plans
- The SEA Directive of the European Union

Different findings have been found in different steps according to the method used in the study. For example, one of findings that are obtained in the first step is risk map for urban usage. Risk map can be used as a scale in particularly defining development plan boundaries. Different tools and techniques are benefitted in every step of the study. Geographic Information Systems (GIS) Technique is used in developing risk maps. Risk map is presented as a sample in this article.

Risky areas are defined in surrounding of Adana in terms of the factors that can effect urban usage or can be effected by them. For this reason first of all risk factors and Sub

factors depending on then have been defined. "Effect levels" have been defined depending on effecting and effected levels. Later "risk graduation" have been performed depending on the factors. By the aid of ArView 9.2 that is one of Geographical Information System tools weighting risk pointing has been realized according to each effect level and risk degree. Big land groups and land ability classes have been taken into consideration in order to develop land risk map and by superposing method a land risk map has been made. Similarly, gradient and elevation maps have been benefitted fort he risk mapa bot topograhy. In the developping of risk map in respect with hydrology streams and the shores of dam lakes have been taken into consideration and risk points have been given according to the distances in shore law. The four risk maps relating with natural factors have been overlapped and "natural risk map" has been realized. The agricultural areas beside the natural structure, some forested lands and the highway passing through the town have been assessed and "current land use risk map" have been made (Fig.4).

In conclusion, the risk maps of natural structure (soil, topography and hydrology) overlapped with the risk map of current land use and classified risk groups have revealed with helping the program ArcView 9.2. (Fig.5).

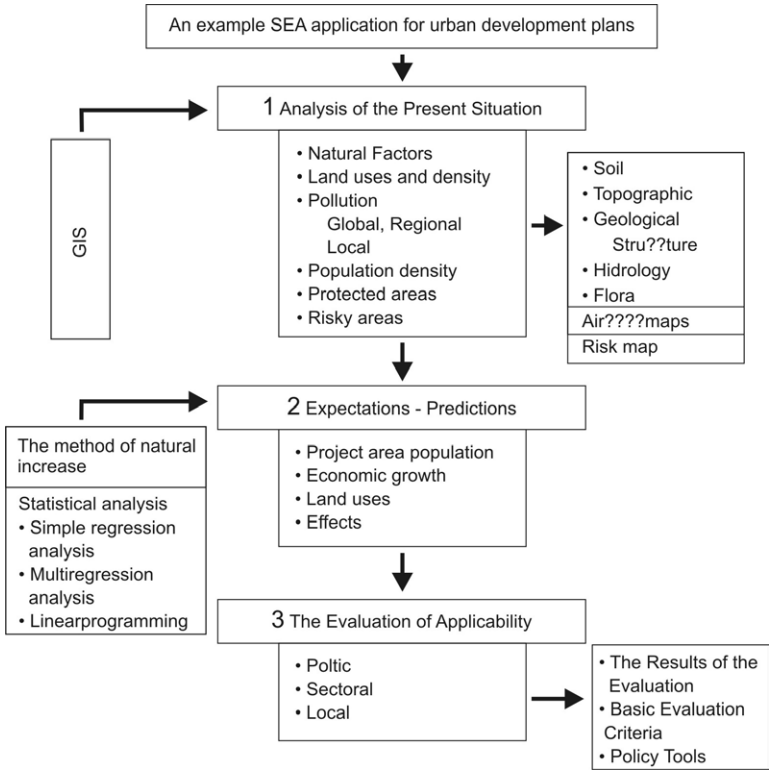
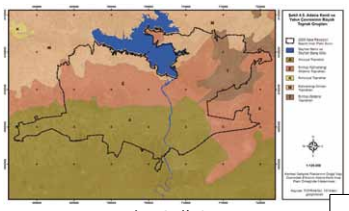
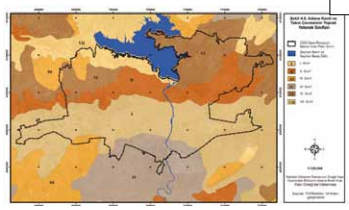


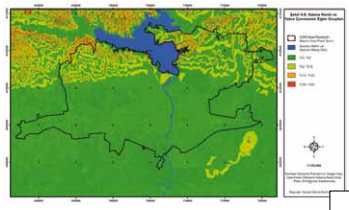
Figure 3. The Steps of Method



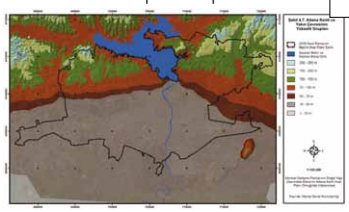
Major Soil Group



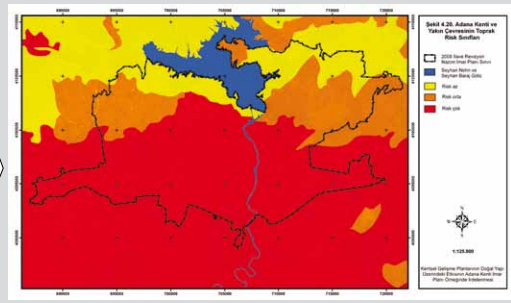
Land Capability Clases



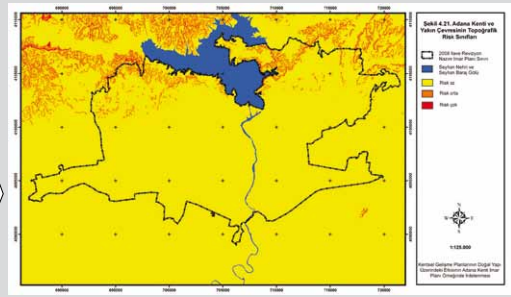
Slope Groups



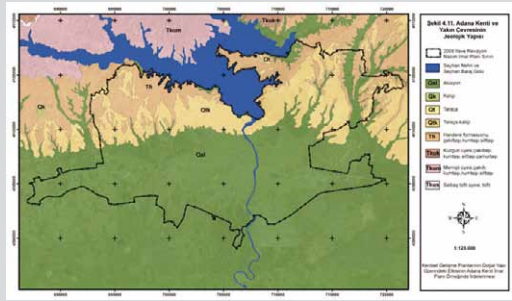
Elevation Groups



Soil Risk Classification



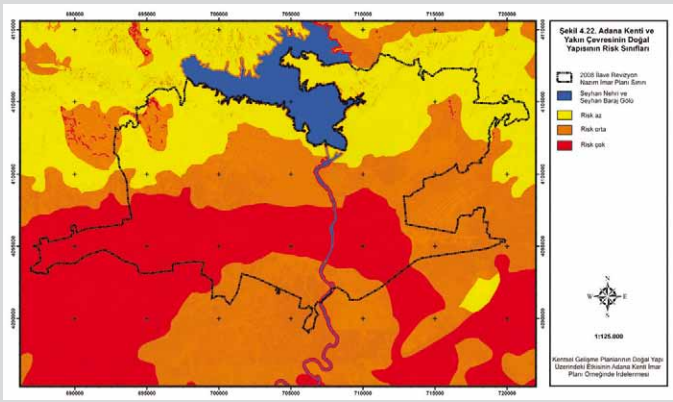
Topography Risk Classification



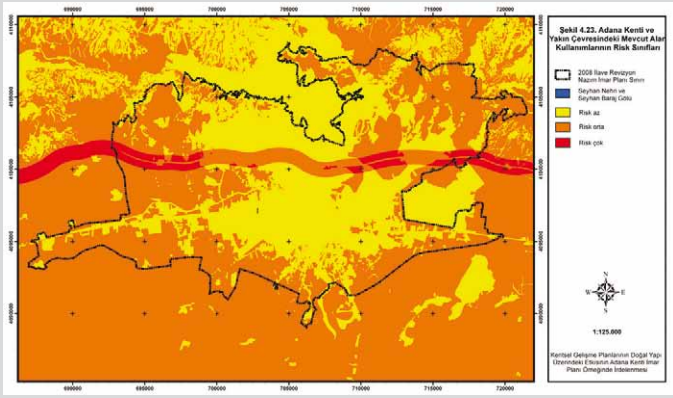
Geology

Risk Classification of Natural Structure

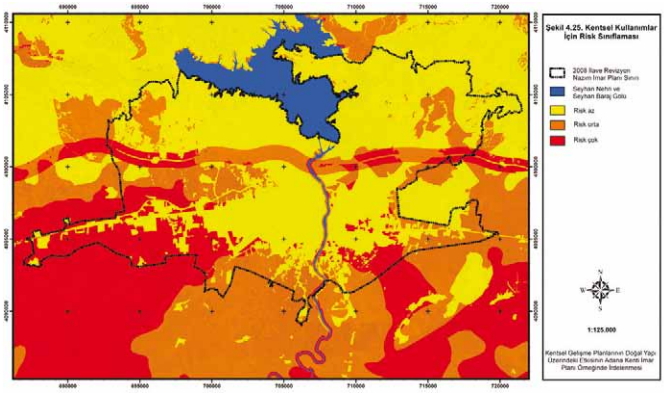
Figure 4. Risk Classification of Natural Structure



Risk Classification of Natural Structure



Current Land Use Risk Classification



Risk Classification for Urban Use –Result Map

Figure 5. Result Risk Map

5 Conclusion

In the context of this study application possibilities of SEA in Turkey have been investigated in direction of developments in recent times and their applications to urban plans have been examined.

Planning concepts and process in countries, administrative construction and differences of corporate structures give rise to different process and methods in the application of this system. In the scope of this study it has been tried to avoid the problems integration of SEA into urban plans.

As the tha essential principles of SEA and the preparation processes of urban plans in Turkey are evaluated together the legal process in regard with SEA management can be investigated in 6 steps. Within the process "investigation-assessment step" that is placed in the third step is needed to be explained. In this step primarily assessment methods must be defined. The materials that are brought about during SEA work can be used as tools in these methods.

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Urban Dynamics from Metropolization: Morphological Dimensions of the Barreiro Urban Fracture in the Transition of the Century

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Abstract:

Based on the current research for an ongoing PhD in Urbanism, (Faculty of Architecture, Technical University of Lisbon), this presentation intends to explore the morphological dimensions of urban fracture that occurred in Lisbon's metropolitan configuration in the transition of the century, referred by various authors as post-industrial or post-fordist period. This study proposes a focus on Barreiro, the city across the river from Lisbon, symbol of the industrial development until the 80's, that after that period a scenario of progressive decadence and urban disorder has taken place. In this case, different logics resulting from different dynamics with strong physical barriers have been over lied just like a 'palimpsest', turning the readability on the territory of Barreiro a difficult task.

Key-Words:

Territorial dynamics, urban morphology, Territorial and Urban Planning, Urban Project, Metropolization, Lisbon, Post-Fordist, Urban Evolution.

1 Introduction

The territory is complex, a deposit of history and is in permanent transformation, subject to many situations of fragmentation and discontinuity.

Readings from several authors confirm affinities between different metropolitan regions. An increasing regionalization of the productive structure and mobility set important transformations on spatial and functional structures, as well as in the landscape of their territories in the last three decades (Sieverts, 1997, Graham, 2001, Lang, 2003).

In what concerns the Portuguese urban landscape, some studies verify it's fragmented and extended characteristics, pointing to a presence of morphologic diversity, confirming a dilemma in the existing planning methods (Carvalho, 2003, Sá Marques, 2004, Portas, 2004, Domingues, 2006).

This presentation intends to explore the morphological dimensions of urban fracture that occurred in Lisbon's metropolitan configuration in the transition of the century, referred by various authors as post-industrial or post-fordist period.

2 Problem Formulation

In practice, in the last years, new ways of territorial intervention are being drafted, that do not employ an abstract approach. Even so, this phenomenon of morphological rupture have not been considered in the field of urban morphology, but only in very specific situations of detailed urban intervention, in the urban project point of view, enphasizing the architectural nature of their space and qualities.

Revisiting the concept of palimpsest of Corboz (1983: 14-35), is proposed as a starting point for the research, the identification, interpretation, classification and definition of these ruptures that urban tissues were subjected to in the process of metropolization. The research object is a specific urban/metropolitan territory, Lisbon Metropolitan Area, intended to relate with the different transformations patterns that happened in the process of metropolization.

As hypothesis "(…) the lack of coordination and extreme division sectorization of the various Ministries (…)" (Domingues, 2006: 42), is considered as the origin of these morphological phenomena, turning the territorial readability a difficult task. This deficiency in of synchronization is the genesis of various problems like dysfunctionality and lack of fluidity, with consequences and significant impacts on the quality of environment and urban life.

Regarding the increasing concern with the issues of metropolitan planning we consider this matter fundamental for the acknowledgment and understanding of the territory. It allows monitoring and the structuring of instruments that generate or preview scenarios of urban evolution.

3 Main objectives

Setting as study area the Lisbon Metropolitan Area, at this stage of the research the following specific objectives have been defined:

- Identify the morphological parameters;
- Identification, characterization, systematization and cataloguing, strokes from physical and natural aspects of territory itself, infrastructure, planning, cultural or other characteristics;
- Identify new mechanisms for representation and analysis of contemporary urban fabric morphological;
- Establishment of a theoretical framework with reference to international best practical cases, allowing the submission of recommendations.

4 Proposed methodology

"We cannot know things completely, but by observing their internal relationships we can find out something about them" (Poincaré, Henri, 1924).

A methodology supported in urban morphology is proposed.

Due to the metropolization process and consequent change of scale, the identification of new mechanisms for representation and analysis is proposed. The aim is to analyze and interpret of the processes that led to urban transformations through the logical production and spatial organization, continuity, genesis of or proximity to infrastructure networks. The Geographic Information System will permit an automated, or semi-automated, identification of urban tissues by their morphological character.

4.1 Analysis scale

This project plans to establish the assessment using the most relevant moments in terms of the urban land use, as so it will also depend on the existent cartography, that has frozen urban forms in time.

The scale of the analysis will depend on the territorial dimension of the dynamics, with the adoption of the case studies (with territorial analysis from 1:100.000 to 1:25.000 and case studies between 1:500 and 1:2.000).

4.2 Barreiro in the selection of the case studies

The case study selection will be preceded by the definition of criteria which consider areas with different genesis in terms of use, places which have been requested by several and distinct dynamics.

Considering the territory in analysis, the Lisbon Metropolitan Area, at this stage some areas of interest are identified - Almada, Cacém and Vila Franca de Xira - places that have undergone profound changes with the development of the road network, and Barreiro, considering the specificity of the industrial-urban morphology.

The focus will be Barreiro, the city across the river from Lisbon, symbol of the industrial development until the 80's. After this period a scenario of progressive decadence has taken place.

Urban disorder and several expected transformations like the third bridge across the Tagus river, the development of Quimiparque, and now the planned new Lisbon airport have all contributed to this turmoil. In this case, different logics resulting from different dynamics with strong physical barriers have been over lied just like a 'palimpsest' as referred by Corboz (2004) turning the readability on the territory of Barreiro a difficult task.

At this initial stage of the study the parameters which are expected to be considered are: scale, continuity, centrality/nuclearity, proximity, diversity, compactness, density, functionality and built space configuration.

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Land Use Regime in Latvia. Problems and Perspectives.

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Abstract:

Land policy is a policy of land use and protection to ensure sustainable development and Land Policy Guidelines in Latvia is a medium-term policy planning document. According to the Spatial Planning Act spatial planning has to take place in four areas of planning levels - national, regional planning, county and local level. After independency, Latvian land policy implementation began with the Laws of agrarian reform, land reform in rural areas and Low of land reform in the cities. Land policies worked out to implement specific reforms and it was implemented as a set of measures to change the land-related legal and economic relations and ensure that private ownership of land. We conclude that the economic crisis in Latvia influenced policy and change of the land tenure in projections and scenarios of land use.

Key-Words:
Land policy, spatial planning, regional development, Latvia

1 Introduction

Land Policy Guidelines for 2008 to 2014 (LPG, 2008), which was approved by the Cabinet of Ministers Nr.613 Order 2008 13 October, is a medium-term policy planning document, which is formulated

- Land policy objectives
- Challenges
- Results of using the basic principles and policies,
- The direction of actions to achieve policy goals.

Land policy is a policy of land use and protection to ensure sustainable development. "Land" within the meaning of these Guidelines is any area of the surface and underground, the area occupied by forests and waters, with or without improvements. Land Policy Guidelines in the context of land mainly been discussed:

- As resource for use and development,
- As the object of rights
- The value of the object.

These aspects of land policy are interconnected, and significant changes in any of these aspects can affect the other (Fig. 1 and 2). For example, land value can greatly affect land use and vice versa, the areas permitted use of land affect the value or the property rights

registration may affect property tax administration. Analyzing the land policies the public and private interests and needs are taken into account.

Land policy aspect from a resource perspective:

- Land as a capital asset function, which include land use and protection of the land
- The location (space) development, including its use and planning, construction and landscaping.
- Land policy aspect as the object of rights:
- Registration of rights
- Information about the land and its processes
- Land policy implementation and monitoring institutional system.

Aspects of the policy of the land as the object of the creation of tax and value,

- the real estate market development
- tax effects on land use.

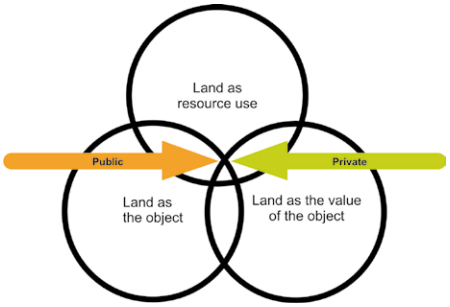

Figure 1. Land Policy Framework – HORIZONTAL
(source – LPG, 2008)

NAP: National Development Plan
PK: Planning Region development and land use plan
NOVADI: District development and land use plan
DP: Local Development Master Plan

Figure 2. Land Policy Framework – VERTICAL
(source- LPG, 2008)

2 Land policy legislative base

After getting independency Latvian land policy implementation began with the Law of agrarian reform, Low of the land reform in rural areas of the Latvian Republic, Low of land reform in the cities. Land policies worked out to implement specific reforms and, above all, it was implemented as a set of measures to change the land-related legal and economic relations and ensure that private ownership of land.

Latvian Rural Development National Strategy Plan 2007 - 2013 (Ministry of Agriculture, 2006) in order of priority provide access for natural resource management and sustainable rural living area, as well as environmental and landscape improvements. Strategic Plan provide for support afforestation, forest, agriculture, and other no appropriate uses, and forestry land.

National Environmental Policy Plan for 2004 to 2008 (Ministry of Environment, 2004) intended to preserve forest biodiversity and ecological function of the quality of climate and water regime regulation, soil protection, the increase in carbon dioxide capture in support of unused agricultural land afforestation.

Latvian Sustainable Development Guidelines (Ministry of Environment, 2002) as objectives are the conservation of biodiversity, decline in forest cover.

Latvian forest policy (Ministry of Agriculture, 2009) is a forest and forestlands sustainable management, ensuring no decrease existing forest areas, biodiversity conservation

National Biodiversity Program (Ministry of Environment, 2000) identifies the following strategic objectives - to promote the maintenance of traditional landscape structures, to provide wildlife resources in a balanced and sustainable use.

Climate change mitigation program for 2005 to 2010 (Simonis, 2009) identify that the softening of a climate change acquires measures for the effective clamp CO2: forest and forest lands for the sustainable management of forest productivity increases in agriculture and afforestation of unused land.

3 General information

The total territory of Latvian Republic occupies an area of 6.46 million ha. At the State Land Service data on distribution of land uses are as follows (Fig. 3):

Forestland	45.5%
Agricultural lands	37.9%
Swamps	3.9%
The land beneath the water	3.7%
Scrub	1.8%
Roads and yards	3.4%
The rest of the country	3.8%

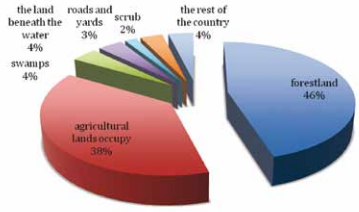

Figure 3. Distribution of the territory of Latvia accordingly the methods of the land use (source- LNS, 2009)

Since 1995 afforestation, urbanization, and overgrowing LIZ size has decreased by 1.4% while the proportion of forest areas formally increased by 0.8%. At the beginning of 2007 the forest area could be increased to 56% of the total national territory. For comparison – in the countries EU of forestland it occupies in average 30% of the territory - the area of agricultural land loss and forestland increases.

Cities and towns building occupies 119644 ha or 1.8% of the total national territory, but in recent years, there is a tendency, especially around large cities, an increase in the territory of construction due to the workable earth. Overall, building land, including road infrastructure and civil engineering construction sites, occupying 262783.7 ha, which is 4.1% of national territory.

In recent years, has rapidly increased in construction output. Residential area behind the increase of the average Latvian European Union indicators, therefore, predicts that construction output will continue to grow. Increase the traffic infrastructure occupied areas, due to a new multi-band high-speed road construction and reconstruction of existing roads.

According to the Latvian Environment Geology and Meteorology Agency, on 1 May 2007 of the total national territory 1258 thousand ha or 19.5% occupied, particularly in protected natural areas. That area rates in other European Union countries, ranging wide range - from 8.3% in Denmark to 22.6% in Spain.

Property owned by physical persons - 3.68 million ha, or 57.1% of the total national area. National and state institutions Estate occupy 1.94 million ha, or 30.1% of legal persons property - 7.5% (484417.8 ha).Local property - 4.5% (286653.2 ha).

PROBLEMS

In the possession of municipal authorities to be located the small portion of territory (Fig. 4). This limits their capacity to plan and to provide the local development of public infrastructure, as well as other marketing functions realization.

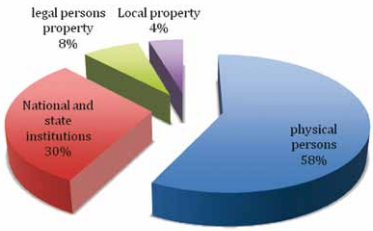

Figure 4. Distribution of the territory of Latvia accordingly to the form of the property (source- LNS, 2009)

4 Land as resource

4.1 Use of land for construction

Improvement in the economic position and solvency of population increases requirement for the new construction and demand for new housing.

PROBLEMS

Under the effect of this requirement, occurs the intensive expansion of urbanization - is built due to expansion into the rural areas, the unplanned settlements and dispersed development, cities are developed unevenly.

The places of building are created without the adequate infrastructure and the accessible service

ESPON project "Urban-rural relations in Europe" emphasized that the speculation by land sections and bad control processes of building are main reasons for the development of the settlements of the urbanization of displacement (urban sprawl)

New building is formed without the thought-out plan, in the inappropriate places (including danger zones), and without the adequate infrastructure. In majorities the cases,

building and detailed planning of the distribution of the land are drawn for one specific territory and it does not affect the development of the surrounding territory. Fragmentary building is formed and all this does not increase steady land tenure and it can present danger to the environment, or, worsening in the quality of the living space and economic losses connected with the transport, the maintenance and other expenditures.

An example of this is the development of the Village Juglasciems (Fig. 5). There has been a 67 hectare large lot selected for the implementation of this project, which is 13 kilometres or 15 minute ride away from downtown Riga, sitting at the bank of Juglas River and Juglas Lake, in the midst of the pine tree circle. The village has been given a nice-sounding name: Juglasciems.

Figure 5. Village Juglasciems
(source – www.juglasciems.lv)

With an increase in the density of building, in the cities and the villages decreases the zone of public spaces and their accessibility. In the addition, as a result the privatization of the earth in the country also decreased a quantity of publicly accessible open territories. The access of people to the public waters was complicated in many places

4.2 .The use of coastal areas

Baltic Sea and the zone of Gulf of Riga are ecologically sensitive with respect to that surrounding environment (Fig. 6).

Taking into account in recent years being increased number of storms in the Baltic sea, the process of erosion of coast was observed to 70% of the overall length of coast.

In the extensive territories of coast are observed characteristic natural formations - dune in different development stages, the rare and protected form of birds and animals in their living environment, and so was preserved the specific culture medium of stay.

Figure 6. Coastal areas near Riga.

To these sensitive natural zones in the forthcoming years they can substantially influence the growth of cities, the building of dwelling (urban areas), the tourism, the infrastructure of the transport, seaports development, wind energy interests, as well as other similar activities.

PROBLEMS

In these territories there is a conflict between the high demand for the coastal dune territories for economic activity and the law by the specific limitations

Coastal territory has great demand both for the recreational needs and for the individual building. The law of protection has there many corrections, which influence the versions of land tenure and they create confusion for the local communities, the owners and the municipalities. The incomplete privatization hampers development and control of coastal territory, although Baltic Sea and the territory of Riga bay in essence is the government ownership. For the Baltic Sea and Riga Gulf coast of Latvia would be necessary to develop common spatial development strategies.

4.3. Land use planning

According to the Spatial Planning Act spatial planning has to take place in four areas of planning levels - national, regional planning, county and local level.

As a basic principle of spatial development planning is fixed interest coherence - the development of lower-level spatial planning, takes into account the existing higher-level spatial planning that was not considered because of the absence of national planning.

The strategy of the national sustainable spatial development and the three-dimensional prospect for development is begun at the given moment, which will determine national interests and requirements for the land tenure and the development.

Figure 7.Distribution of the territory of Latvia accordingly the Administrative reform.(source- RAPLM, 2009).

For the regional planning are created 5 zones of planning -

Kurzeme, Latgale, Riga, Vidzeme and Zemgale (Fig. 7).

PROBLEMS

At present planning does not consider the principle of sequence and agreement - when the instructions of low -level consider the conditions of planning the high -level, in the form of the fact that was first begun the development of plans at the local and municipal level, then at the regional level, and at the national level still at the stage of the development (Fig. 8).

Local authorities lack the spatial planning professionals, and in some cases, competence. The procedure of planning development and assertion frequently is disrupted.

The system of territorial planning in the country does not still act entirely.

Figure 8. Latvian Planning Region development perspective (Source – LPR, 2009)

5 Land as the object

5.1 Land reform and land privatization

On September 1, 2007 still 35.2% of territory of Latvia did not determined any property rights. The users of the land have insufficient stimulus in order to redeem property to the earth. 34.5% of the entire national territory belong to state and local self-guidance. Property rights are designed to only 15,1% of these territories.

State and local government in the process of the privatization of the land were not taken into account for development over the long term for infrastructure and transport. Simultaneously with the reform, privatization passed the land and the majority of government did not have the plans of the development of territories in which would be reflected developmental trends. Also, were not developed effective mechanisms in order to realize national interests in the process land tenure, privatizations and development of spatial plans. As a result, the building of the new infrastructure of transport it became substantially more expensive because of the need for the ransom of the land.

5.2 Rights and land use restrictions

Land use is limited in the spatial planning process

PROBLEMS

At the moment, Protection Act provides by spatial plans. For the objects, which are determined in the protection it does not pay compensation and with the loss it does not compensate by the partial resets of the income tax, of the Land tax or by the decrease of cadastral of the value of land.

In many cases of limitation on the use the territory they are established by subdivisions or interests of private companies (by Latvian gas, by the Latvian passage of oil), without the agreement with the owner of the land.

In also the time the tax credits and the privileges of the value of the earth decrease the incomes of municipal budget.

The act of protection does not solve the problems assigned to it.

According to the law "on the specially protected natural regions" are determined the borders of these regions and limitation for conducting of some forms of the economic activity. According to the law "on the specially protected natural regions" are determined the borders of these regions and limitation for conducting of some forms of the economic activity

6 Land value as an object

The values of the earth and real estate characterize 2 indicators - market value or cost for which is possible to sell or to purchase real estate, and the cadastral value which is determined by specific descriptive components, tax, privatization and other needs.

The assessed property tax value of the general of cadastral of the area of the earth of the country to beginnings 2008 composes 10.62 billion lats, and the value of building and structure into cadastral composes 5.4 billion lats.

6.1 Real Property Taxes

Real estate tax is calculated and applied according to the law on the real estate tax. Currently the tax rate was 1.5% of cadastral value of the property.

7 Policy results in the long term - Land Use Scenario 2030

Latvia will face a series of global change, which will be the most important scientific and technological development process, the pace of growth, as well as natural resources, changes in relative prices.

Taking into account the results of the policy of the land and the results of economic development was developed forecast - long-term scenario for the development of land tenure under the Latvian conditions (Table 1).

Changes in climatic conditions in other regions of the world and increasing demand

for food products will increase demand for agricultural land use. Consequently, to 1% to decrease the share of that not used of the agrarian land. Part of agricultural land will be cultivated energy crops, other less-fertile land will be preserved no overgrown to ensure diversity and environmental amenities. Consequently, it will not be observed by the decrease of agricultural region by that compared to the situation at the end 2007.

Forestland area a little will increase. Deforestation will be balanced, taking into account the steady use of resources and fulfilling requirements for the protection of environment.

Table 1. Spatial distribution of the national land-use types and the forecast (as a percentage of total area)

Situation 2007		Situation 2030	
UAA	38%	UAA	35%
Forest	45.4%	Forest	47%
Urban and construction	4.1%	Urban and construction	7%
Scrub, marshes, waters	13.1%	Scrub, marshes, waters	11%
UAA unused space	14.6%	UAA unused space	1%

At present, of about 20% of the territory of the country to be found under the specific different limitations, established in accordance with the requirements for the protection of environment. With an increase by requirement for the land and the need for the more intensive land use, the place the following 10 years will occur the decrease by 5%, approaching an average value in the European Union is average.

In the process of the development of regions, increase the quality of life, improvement in the infrastructures and maintenance, to stop the internal migration of population from the rural to the urban areas instead of this, people will select as the place of residence rural areas, by such pattern of reorganized in the regions of the unused earth and will preserve traditional landscape.

The following 10 years will be observed the reconstruction of rural areas and agricultural development.

8 Conclusion

The economic crisis in Latvia influenced policy and change of the land tenure in projections and scenarios of land use. At present are liquidated small schools and hospitals in the rural locality, which gradually lead to the concentration of population in the rural areas and formation of large economies and communities.

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