





SCOPE AND AIMS

The review is concerned with a multi-disciplinary approach to regional and urban planning and architecture, as well as with different aspects of land use, including housing, environment, etc. It attempts to contribute to better theoretical understanding of a new spatial development processes and to improve the practice in the field.

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LIVABLE HUMAN COMMUNITIES

A Sustainability Narrative

Douglas M. Cotner

This paper will explore the subject of "Livable Human Communities" as the product of "Sustainable Development", which is rooted in the "Science of Sustainability". Public policy to facilitate Livable Human Communities will also be examined, with recommendations proffered, which are science based, within the context of a sustainable development paradigm, which is reliant upon the "Ecological Footprint" and "A Unified Field Theory of Adapted Space", for policy formation purposes.

Key words: Ecological Footprint, Livable Human Communities, Paradigm, Public Policy, Science of Sustainability, Sustainable Development

INTRODUCTION

All men by nature desire to know.

Aristotle, *Metaphysics*

Livable Human Communities, Sustainable and Public Policy Development, are inextricably linked. Linkage flows from Sustainable-Development-Science. This science informs the Public Policy Environment. where all stakeholders exercise input rights. Policy makers use stakeholder input, which forms feedback loops to establish, and then adjust development laws, rules, and regulations. From complex feedback loops policy officials learn how they can help to make available, development funding, and other assistance to stakeholders. Funding then creates an opportunity-environment, which then encourages the develop-ment of Livable Human Communities.

Theory and practical thinking suggests that, for a human community to be livable, certain fundamentals must first be in place. These include a mix of both tangible and intangible elements. However, human communities that are experienced as livable are firstly places where people feel safe in their persons and their property. Secondly, livable places feature a civil society that is open and transparent, where there is a significant level of local autonomy in decision-making. Finally, there must be access to the opportunities of education, leisure, housing, and employment, within a context of equity, and fairness.

Livable Human Communities must meet myriad human needs on a daily basis. Some physical, and some based in the individuals' perception of the quality of the physical environment within which daily life unfolds.

A good example of this sensibility is the Village Green, formerly Baldwin Hills Village. This was the signature housing and multipleuse project designed for the City of Los Angeles by the great American Architect and Towne Planner, Clarence Stein (1935-1942). It featured a "Superblock" within which a variety of housing was built. Motor vehicles were kept at the periphery. This was a design feature, created to protect pedestrians and children from vehicular conflicts. Daily shopping, entertainment, public schools, recreation, and leisure opportunities were developed within and along the edges of the Superblock.

The significance of Baldwin Hills Village is, that prior to World War II, Los Angeles City officials, architects, and towne planners, determined that this concept of Clarence Stein would guide future urban develop for the City Los Angeles. However, the war intervened and plans were shelved for the duration, 1941-1945. By 1946, the model for city and regional development (automobile-based sprawl) was set, and would become the template for the "Built-Environment" from 1946 onward. The development paradigm, as expressed by Baldwin Hills Village of 1942, would be rapidly marginalized by government officials and private sector development interests, and just as quickly forgotten in the post-war years. Figure 1 will give the reader a sense of both the design and appearance of this livable human community.

The Transit Village is a densely populated mixed use community, which is well served by high quality transit and rail systems. This type of "village" makes it convenient to work, live, and pursue leisure, without the burden of automobile ownership. Absent the automobile in one's life, a person is liberated to ride transit and take up leisurely walking in order to enjoy pleasantly designed visual environments. Transit Villages also have active, stimulating, and strong neighborhood centers that focus around transit and local businesses.

Transit Villages are becoming more popular, because they offer the prospect of richer quality of life for all, making this form of urbanspatial organization, a livable human community-type The examples cited represent human communities that are designed and built to a livable scale, with regard to the everyday needs of its users.

The Village Green-Formerly Baldwin Hills Village



Figure 1: Baldwin Hills Village as it exists today. The Superblock contrasts sharply with the surrounding area. To the right, a portion of this livable community, as seen from ground level. The white arrows mark the "Superblock".

The Contemporary European-Style Transit Village



Figure 2: America takes a page from European City and Transportation Planning. These images are of a transit village project, which is located in Portland, Oregon, USA.

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SUSTAINABLE DEVELOPMENT SCIENCE

Science is but a perversion of itself unless it has as its ultimate goal the betterment of humanity.

Nikola Tesla

In the rush by many, to put sustainable development solutions into place, the scienceof-sustainability was pushed to the margins of their thinking. The term sustainable development was appropriated, minus what the science was telling them. The need for sustainable development became clouded in many minds, forgetting the concept of Sustainable Development. It should be restated, that the concept of Sustainable Development was born of a pervasive awareness that national-failures to sustain economic development and manage natural and human-made environments threaten to overwhelm all of our communities. Further, that development cannot subsist on a deteriorating resource base. The resource base cannot be improved or protected when growth leaves out of account the costs of environmental degradation, destruction, and misappropriation.

The overarching goal of sustainable development is to maintain our community populations and institutions across future generations without degrading the carrying capacity and utility or our capital stocks, essential infrastructure and the human living environment. The primary measures of sustainability are structural and functional integrity, intergenerational capacity, and continuity.

The Science-of-Sustainability establishes the foundation upon which all "Sustainable Development" activities must be based. Before undertaking a Sus-tainable Development activity or initiative for a village, town, city, county, state, region, or nation, their Ecological Footprints must be calculated, and analyzed. The Ecological Footprint, therefore, is a resource accounting tool used to address underlying sustainability questions. William Rees (University of British Columbia) States in this regard that,

...resource prices are misleading, because they tell us little about the condition of essential natural capital stocks or the preferences of future generations.¹

It measures the extent to which humanity is using nature's resources faster than they can regenerate, which is known as "Overshoot". William Rees (University of British Columbia) States that, Overshoot is defined as, "growth beyond an area's ecological carrying capacity, leading to crash" (Catton). "Overshoot" is a defining factor for resource use, which is kept out of the account in mainstream free-market economic thought.

The factor of "Overshoot" informs objective analysis, in contrast to standard free-market economics, which cannot hope to cope with a progressively degraded biosphere and geosphere. Overshoot recognizes implicitly, that natural, biological systems renew in circular flows in their biophysical dynamics. Human-Made systems, on the other hand, are linear in nature, and ecologically blind to the environment.

Further, that "Overshoot" is the root cause of the most serious of environmental problems threatening life on Earth in our time. These problems include rising food prices, fisheries collapse, world climate change, diminishing forests, and the degrading of biological diversity.



Figure 3: Ecological Debt Day Representation (Courtesy of the Global Footprint Network)

The Ecological Footprint illustrates who uses how much of which ecological resource, with populations defined either geographically or socially. Moreover, it shows to what degree humans have come to dominate the biosphere, at the expense of wild species. Moreover, the Ecological Footprint clarifies the relationship of resource use to equity, by explicitly tying individuals' and a groups' activities to ecological demands. Knowina and understanding these connections help decision makers to more accurately and equitably shape policy in support of social and environmental justice.

Ecological Footprint Analysis invites citizen involvement in the develop-ment of their community, because it graphically lays out the amount of bio-physical goods each person of a particular population is consuming, expressed as a consumption-resource availability budget. This includes resources available locally, and those resources consumed from somewhere else. The question a given community then begins to ask is, "How can we all have great lives, while consuming less of nature's biophysical goods"? An example of the output of Ecological Footprint Analysis is presented in Table 1.

The calculations reflected in the numbers in the above summary table, start with a very simple equation. A great deal is owed to Professor William Rees and Dr. Mathis Wackernagel for their innovation of the idea of the Ecological Footprint at the University of British Columbia, Canada. Developed by Rees and Wackernagel, this simple but powerful

Ecological Footprint And Biocapacity Data-2003

Table 1: Ecological Footprint Tabulation, (Courtesy of Global Footprint Network 2006: Ecological Footprints and Biocapacity). Ha = hectares, 1 Hectare = 2.471 English acres.

Place	Population (Millions)	Total Ecological Footprint (Global ha/person)	Total Bio- Capacity (Global ha/person)	Ecological Deficit (-) or Reserve (+) global ha/person)
World	6,301.5	2.2	1.8	-0.5
High Income Countries	955.6	6.4	3.3	-3.1
Middle Income Countries	3,011.7	1.9	2.1	0.2
Low Income Countries	2,303.1	0.8	0.7	-0.1
Serbia & Montenegro	10.5	2.3	0.8	-1.5



Figure 3: The linear throughput of low-entropy energy and matter (upper part of diagram) sustains the economy and drive the Circular flows of exchange value, lower part of diagram), yet is invisible to conventional economic analysis, (William E. Rees, University of British Columbia).

equation can be stated as,



purchased in an annual shopping basket of consumption goods and services.

The Ecological Footprint of the average person ('ef') is calculated by adding up all of the ecosystem areas appropriated (aai) by all purchased items (n) in his or her annual shopping basket or consumption goods and services. The ecological footprint (EFp) of a study population can now be obtained by multiplying the average <u>per-capita</u> footprint by population size (N) as follows: EFp=N (ef), Wakernagel and Rees, "Our Ecological Footprint", 1996. Therefore, before sustainable development initiatives aimed at the "Built-Environment" can proceed, the Ecological Footprint of a particular population must be calculated and analyzed.

It is at this level of analysis that the birth of a sustainable and livable human community, may or may not begin. At this point, it is instructive to consider the importance "Linear Throughput as seen in Figure 3.

As the basis for a Livable Human Community, one must consider the mechanism of "Linear Throughput" This mechanism controls the throughput of low-entropy energy and matter, which sustains and drives the Circular flows of exchange value, yet is invisible to conventional economic analysis, (William E. Rees, University of British Columbia). We see in this mechanism the laws of "Thermodynamics" at work. By acknowledging and understanding the role of Linear Throughput in human settlements, the basis on which old and new human settlements must operate, provide guidance for both energy and materials use. This understanding informs what is meant by what is often referred to as Sustainable Development.

It is instructive to note, that the idea of Sustainable Development is not a new idea, as some would choose to believe. It is in fact, an idea, which can be seen, for example, in the many villages found throughout Europe and England. Such places are often cited, as comfortable and easy places in which to live. The following is a spatial organizing scheme after Chisholm, 1968.

This simplified model of sustainability, demonstrates that there are certain basics in sustainable development that must not be forgotten, as one moves up the complexity scale of the Built-Environment. In this regard, the details may change, but basic principles of Sustainable Development, leading to a livable human community remain.

To this point, Trevor Rowley states in "Villages



Figure 4: Village location. This diagram shows the five basic elements in a primitive village Economy. The numbers assigned to each of the above elements represent a notional weighting which reflects, the relative importance of each in the siting of a human settlement. Thus according to this model, it is far more important to be close to a source of potable water than a source of building material. The figures may be considered hypothetical and will vary in space and time (after Chisholm 1968).

in the Landscape",

It is not possible to examine a village in isolation from its surrounding fields, woods, commons, and streams. Thus, we should always be aware that we are examining only a part of a much larger matrix, and that we cannot hope to understand a settlement without relating it to its economic hinterland.²

Thus, the villages of which Rowley refers, were sustainable within a basic paradigm, because the people who lived, worked, and played with these places, derived their daily sustenance needs for food, fuel, and fiber from the geographical area that made up the village and its commons. Consequently, very little was imported from elsewhere to meet daily sustenance needs. However, as the world changed around them, guiding principles were abandoned, and ultimately forgotten by the leaders of the industrial age and beyond. Only in latter decades of the 20th century were these forgotten principles of organic urban design, siting, urban form, adapted space, and appropriate economics rediscovered.

A UNIFIED FIELD THEORY OF ADAPTED SPACE

As to methods, there may be a million and then some, but principles are few. The man who grasps principles can successfully select his own methods, ignoring principles, is sure to have trouble.

Ralph Waldo Emerson

A Unified Field Theory of Adapted Space is a recombinant theoretical construct, because it seeks to unify the micro and macro scales of human settlement and activity.

This construct examines afresh, the antecedent geographical and urban planning ideas of "Sequent Occupance" (Whittlesey, 1929 and Meyer, 1935), "Landscape Ecology" (Barrows, 1922), "Culture History" (Sauer, 1925), and the "Spatial Adaptation Behavior" (Whyte, 1980) of humans, as human and cultural modifiers of the humanized environments of place and of environment. A Unified Field Theory of Adapted space also seeks to cognitively capture and make intellectually apprehendable, the impact of cultural inflections of people on discrete places (people acting on space, and space acting upon people) within a regional context, which resulted in a "Unified Paradigm".

A Unified Field Theory of Adapted Space underpins the Ecological Footprint of people and their consequent importance for the sustainability of human and other biophysical communities, as interacting elements within the biosphere and geosphere. Ecological Footprints which are functions of the consumption of biophysical goods, and represent the dynamics of how, why, and the means by with people adapt or modify real space on Earth, to meet their physical, emotional, and intellectual needs. These needs, it is known, lead to the consumption of many things; among them are the basics of food, fuel, and fiber. Thus, an understanding of how real people adapt real space in real time begins to emerge.

A Unified Field Theory of Adapted Space is a recombinant theoretical construct because it unifies the micro and macro scales of human settlement and spatial modification activity.

Ultimately, A Unified Field Theory of Adapted Space suggests that we must go beyond just the Ecological Footprint, if there is to be a successful understanding of complex manland interactions. Thus, this analysis, leads to solutions of the great human and associated environmental problems, now confronting us. These problems include those of population (its growth and distribution), natural resources adequacy, livable living space, transportation, clean air and water, genetically modified foods, and sustainable energy availability and its use.

The notion of "Adapted Space" and the theory to support such an idea, evolved over a number of years from 1989 onwards. The goal of this research was to explore and test such an idea. The fieldwork for this research took place principally in the United States, with additional research that was carried out in Southern Mexico and Central Asia. This research basic endeavored to answer questions concerning how and why people (environmental-users) and groups of people (institutions) modified space for personal and collective purposes, and at what scale, and the consequent environmental impacts.

The work of William H. Whyte was most helpful in the visual documenta-tion of real people in

real time, adapting and modifying real space for both individual and group purposes in meeting specific user-needs. Before Whyte's seminal work, "The Social Life of Small Urban Spaces" (1980), an understanding of the mechanisms of spatial adaptation was not widely known or understood.

Whyte demonstrated with his unique research method that people are constantly adapting small spaces and the functional linkages between them to meet their needs for a livable environment. Time-lapse photography was utilized through-out New York City to visually confirm complex human activity on a daily basis. Study of thousands of rolls of film revealed answers to questions about spatial use that city planners had sought for many years. A careful study of Whyte's work was contributory influence on the development of "A Unified Field Theory of Adapted Space".

PUBLIC POLICY

It is difficult to get a man to understand something when his job depends on not understanding it.

Upton Sinclair

The schematic in Figure 5 can be likened to a wiring diagram. It makes concrete the process by which sustainable and livable human communities meet the needs of people and environment. It specifically addresses public policy within the context of alternative scenarios for sustainable development.

This schematic has been designed to facilitate the concrete exploration of planning, implementation, and public policy formation.

Axiomatically, Science must precede public policy formation. However, it often proceeds in the reverse order. Public policy concerning Sustainable Development and Livable Human Communities must be in accord. Policy if properly formulated benefits all stakeholders with regard to a particular problem or issue. However, for effective policy to become reality, it requires of a given society, openness, transparency, and democratic institutions. There must, therefore, be a balance between the public good and private greed, concerning the use of space, resources, and the application of economics.



A Suggested Sustainable Development Functional-Relational

Figure 5: Theory, Mechanics, Applications, and Public Policy for Sustainability.

We, you and I, live in the world, which is a truth that each of us must confront, concerning important auestions facing the our communities, and whether or not to attempt change. Once this mind-set is engaged, then practical policies can be informed, based on empirical evidence, scientifically assessed. Abstraction must be eschewed in the cause of practical public decision-making. Likewise, public policy formation should not make a fetish of the practical aspects of the policy formation process, but enfold within its corpus of thought, well reasoned arguments, with a suitable ethical foundation.

To this point, Christian Barry and Sanjay Reddy in "Public Policy Analysis Today and Tomorrow", August 25th, 2005 state that:

If we adequately appreciate the simple truth, we will be led to deliberate differently about public policy and institutional design. We will insist equally on the necessity of practicality and the importance of morality in practical reasoning. The reasoning style of deliberation is nothing other that public policy analysis correctly done.²

Regardless the school of public policy analysis to which one subscribes, the first requirement,

as previously indicated, is a civil society that values openness and transparency. A Policy-Formation "Milieu" must be created, which is non-threatening. This will be a milieu, designed to draw into the policy-formation environment, all relevant stakeholders. This will assure that grassroots, practical policies, designed promote the implementation of Sustainable Development, and which, will lead to insightful design and development decisions, in the cause of "Livable Human Communities".

CONCLUSION

We must not be afraid of dreaming the seemingly impossible if we want the seemingly impossible to become a reality.

Vaclav Havel

Sustainable Development and Livable Human Communities, as proffered is this paper are inextricably linked. Ecological Footprint Analysis and A Unified Field Theory of Adapted Space offer a dynamically powerful analytical suite for assessing and solving Sustainable Development Problems.

It recognizes that the overarching goal of Sustainable Development is to maintain our

community populations and institutions across future generations, without degrading the carrying capacity and utility or our capital stocks, essential infrastructure and the human living environment.

Therefore, before sustainable development initiatives aimed at the built-environment can proceed, the Ecological Footprint of a particular population must be calculated and analyzed. It is at this level of analysis that the birth of a sustainable and livable human community begins. Consequently, the public policies that flow from this understanding make livable human communities a practical reality. Finally, the following, admittedly, homespun maxim of the author is offered as follows: "If the project, initiative or development project will not improve the lives of ordinary people by a single crust of bread, the proposed project or development initiative must be returned to the drawingboard".

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FIGURES:

Figure 1: Village Green, formerly Baldwin Hills Village.

Figure 2: Transit Village, Portland, Oregon USA.

Figure 3: Linear Ecological Throughput by Dr. William Rees.

Figure 4: Basic Village Spatial Scheme, After Chisholm, 1968.

Figure 5: A Suggested Sustainable Development Functional Relational Schematic for Sustainability.

TABLES

Table 1: Ecological Footprint AndBiocapacity Data-2003.

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SELF-REPLICATING SYSTEMS IN SPATIAL FORM GENERATION - THE CONCEPT OF CELLULAR AUTOMATA¹

Ljiljana Petruševski, Mirjana Devetaković, Bojan Mitrović

The self-replicating systems introduced theoretically by von Neumann, are widely examined in biology, computing, geometry, engineering sciences etc. In this study the authors are focused on the concept of cellular automata (CA) and its possible application in processes of spatial form generation. The study has been realized with participation of 60 senior architecture students, creating various spatial forms by using the CA concept, within the series of elective courses titled Generic Explorations. The experimental activity is supported by the software Fun3D, i.e. its CA module, which has been created at the University of Belgrade, Faculty of Architecture, to support generative processes in the field of architecture.

After introducing a general idea of the self-replicating systems, the authors explain the major principles of CA, particularly the issues of layered 2D automata, discussing possible approaches to spatial form creation. The study examines CA based on a cubic cell, evolving to a rectangular cuboid where width/height/length ratio can differ, as well as the gap between cells and some of the visual features, like color, transparency, texture etc. Creators of various spatial forms can set a pattern of initial cells, and define a rule for a self-reproduction of a single cell. Combinations of multiple CA systems have been introduced, as an entirely original approach to the problem of form generation in general.

A variety of approaches to the generation of spatial form, resulted from the experimental activity, indicate a significant potential of the CA concept application in many areas of spatial design. The authors suggest a range of interpretations of a resulted generic form, such as architectural, urban, product design, exhibition systems etc.

Key words: cellular automata, spatial, form, architecture, generic

INTRODUCTION

The self-replicating systems, introduced theoretically by von Neumann, are defined as systems in which a thing (cell, piece of software, machine...) can make a copy of itself². In this research, the idea of self-replication has been represented by the

cellular automata³, popularized in John Conway's Game of Life in 70s, but widely investigated by Wolfram from mid 80s⁴.

Examining this problem and its application in architectural design, the concept of cellular automata is used as a context in which a form can be, not just created, but finely tuned with the aim to achieve a controlled architectonics and spatial quality.

CELLULAR AUTOMATA

A cellular automaton is a discrete dynamical system. Space, time, and the states of the system are discrete. Each point in a regular spatial lattice, called a cell, can have any one of a finite number of states. The states of the cells in the lattice are updated according to a local rule. That is, the state of a cell at a given time depends only on its own state one time step previously, and the states of its nearby neighbors at the previous time step. All cells on the lattice are updated synchronously. Thus the state of the entire lattice advances in discrete time steps.

Conway's Game of Life - The GAME OF LIFE is a CELLULAR AUTOMATON devised by the British mathematician John Horton Conway in 1970. It is the best-known example of a

¹ The paper is completed as a part of the project"Sustainable development and organisation of spa and tourist settlements in Serbia"wich has been financed by the Serbian Ministry of Science and Technological Development

² Von Neumann, J.: The Theory of Self-reproducing Automata, A. Burks, ed., Univ. of Illinois Press, Urbana, 1966., (An online version available at: <u>http://www.walenz.org/vonNeumann/index.html</u>, accessed January 2009)

³ Frame, M.; Mandelbrot, B.; Neger, N.: Fractal geometry: Cellular Automata and Fractal Evolution, Yale University, 2009, <u>http://classes.yale.edu/fractals/</u> (accessed January 2009)

⁴ Wolfram, S.: **A New Kind of Science**, Wolfram Media Press, Champaign, 2002

cellular automaton. The universe of the Game of Life is an infinite two-dimensional grid of cells, each of which is either ALIVE (populated) or DEAD (unpopulated or empty). Cells interact with their eight NEIGHBORS, the cells that are directly horizontally, vertically, or diagonally adjacent.

At each step in time, the following effects occur:

LONELINESS: any live cell with fewer than two neighbors dies.¤	•
OVERCROWDING: any live cell with more than three neighbors-dies. [®]	•
STASIS: any live cell with two or three neighbors lives, unchanged, to the next generation.*	
REPRODUCTION: any dead cell with exactly three- neighbors-comesto-life.*	

Figure 1 – The rules of the Game of Life, 2D



Figure 2 – The rules of the Game of Life, 3D Layers



Figure 3 Typical CA spatial forms based on the rules of the Game of Life

The "game" is actually a zero-player game, meaning that its EVOLUTION is determined by its INITIAL STATE, needing no input from human players. One interacts with the Game of Life by creating an initial configuration and observing how it evolves.

The INITIAL PATTERN constitutes the first generation of the system. The second generation is created by applying the above rules simultaneously to every cell in the first generation -- births and deaths happen simultaneously, and the discrete moment at which this happens is called a TICK. The rules continue to be applied repeatedly to create further generations.

3D Layers Evolution View of the Game of

Life - Considering a generative process as a set of layers instead of a change of a system single state, the flat cellular automata context becomes a spatial one, with a significant third dimension. The simple rectangular cell becomes a cubic block, reproducing itself in every following generation according to spatially interpreted rules of the Game of Life (Figure 2).

The layers of a single CA system, as shown on the Figure 3, define a spatial form that could be interpreted in different ways, depending of its own geometric characteristics and on a wider context.

PREVIOUS RESEARCH IN FORM GENERATION AND EXAMINING TOOLS

Distinguishing the CA computational method from other generative concepts, Krawczyk highlights its underlying recursive method that makes difficult to anticipate the future spatial form⁵. The series of spatial compositions (Figure 4) indicates a significant potential of the CA concept to be applied in early stages of architectural design.

Few years after Krawczyk's study, searching for efficient explorative tools, Martel has created the Form Generator based on Mathematica

⁵ Krawczyk, R. J.: Architectural Interpretation of Cellular Automata, Generative Art Conference, Milano, 2002, http://www.iit.edu/čkrawczyk/rjkga02.pdf (accessed January 2009)



Figure 4 – The form series created by Krawczyk, 2002



Figure 5 – The Form Generator by Maurice Martel, NKS Summer School 2007



Figure 6 – A layered growth of spatial forms based on the CA concept; The Wolfram Demonstrations

software. The series of spatial forms on the Figure 5 represent his research within the NKS Summer School in 2007⁶. The generated spatial forms are based on a simple cubic cell,

http://blog.wolfram.com/2007/07/ January 2009) but the tool he proposes, seems to be more explorative in terms of the character of the resulting spatial forms.

None of the presented researches, however, offer a tool, that might be used for further examinations and research in other contexts.

Exploration of the CA concept has been supported by a range of stand-alone software, as well as Java based applets available online. The purpose of all these software is rather to visually explain the concept, than to produce some outputs, be it digital graphics, 3D model, or other kind of results.

One of the simplest and most inspiring tools that examine spatial growth of CA systems is certainly a freely accessible CA generator titled: Algorithmic Architecture with Cellular Automata⁷, contributed by Jason Cawley and Stephen Wolfram within the Wolfram Demonstration project.

Within a range of educational demonstrations developed in Mathematica environment, there are examples of CA generators, visualizing spatial forms based on previously assigned rules. There's however a lack of software supporting generative process of 3D forms that could be exchanged with other CAD platforms, and therefore documented and fabricated.

The authors initiated creation of a software solution that could generate a spatial form.

THE SOFTWARE DEVELOPMENT

Fun3D (the name derived from "Function 3D") is a software developed by B. Mitrovic, within the "Generic explorations" project. Its development begun with a module supporting creation of parametric curves and surfaces, continuing with another module aimed at creation of 3D L-systems.

The CA module of the software allows creation of CA based spatial form, as well as control of the following CA elements:

- Initial configuration (controlled by a graphic interface)
- Rule definition (totalistic)
- Total number of layers
- Position of a system (x, y and z coordinates)
- Rotation of the system (along x, y and z axes)
- Proportion of the cell (height, width and length)
- · Color range of the cell layers
- Transparency
- · Gap between cells of the system

⁷ The demonstration is available at:

http://demonstrations.wolfram.com/AlgorithmicAr chitectureWithCellularAutomata/ (accessed January 2009). The title Algorithmic Architecture with Cellular Automata relates to the famous title by Kostas Terzidis

⁶ Meinberg, F.: A New Kind of Building, The Wolfram Blog, July 26, 2007,



Figure 7 – Fun3D (created by B. Mitrovic, within the "Generic Explorations" project)

possibility to chose particular segments of a CA space (universe), both vertically (along generations) and horizontally (in the initial cell layout).

The Fun3D software is protected by the Creative Commons license⁹, which means that it could be freely used and redistributed, with mentioning its author (B. Mitrovic) and the context in which it has been developed (Generic Explorations project, Faculty of Architecture, University of Belgrade).

THE EXPERIMENT

The CA module of the Fun3D software was experimentally offered to the group of 60 students of architecture, within the elective course "Generic Explorations". After being introduced with a theoretical basis of the CA concept, the students used the Fun3D software to examine possibilities of a spatial form creation. The main methodology in this experimental activity was the so called



Figure 8 - Variations of the CA system based on the same rules

- Lighting
- Shadows

Variation of mentioned parameters, especially the ones affecting geometry, results in a range of spatial forms. A sequence on the Figure 8 represents variations of the CA system based on the same generative rule. As resulted forms have surprisingly different spatial characteristics, the Authors suggest a need for deep exploration in the field of geometry of 3D cellular automata.

The presented module can generate and visualize several CA systems within the same scene, each with different geometric parameters, and based on different rules. It also permits copying of an entire system and pasting it within the scene. Combination of various CA systems within the same scene,

results in a spatial form of a significant complexity that needs to be additionally examined and interpreted.

One of the most important features of the CA module is export of dxf⁷ file formats that makes the software fully compatible with a range of CAD programs.

Further development of the CA module, within the Fun3D software, includes some additional features both geometric and explorative. The geometric features that need to be improved are related to definition of a basic cell. The additional explorative features presume a "research by design", the common methodology in architectural research¹⁰.

⁸ dxf – data exchange format also known as drawing exchange format , widely used for exchange of 3D vector graphics.

⁹ The Creative Commons Attribution license - this license lets others distribute, remix, tweak, and build upon a licensed work, even commercially, as long as they credit the author for the original creation. This is the most accommodating of licenses offered, in terms of what others can do with works licensed under Attribution. <u>http://creativecommons.org/</u> (accessed January 2009)

¹⁰ Foque, R.: Research in Design Sciences, in ADSC, No. 10-11, Department of Design Sciences, University College Antwerp, Antwerp 2003; according to Savic, M.: Istrazivanje pristupa reformi visokoskolskih kurikuluma, u kontekstu stvaranja Evropskog prostora visokog obrazovanja, (Research on approach to reforms of the high school curriculum in context of creating the European space for high education), PhD thesis, Faculty of Architecture, University of Belgrade, Belgrade 2007



Figure 9 – Genesis of a CA based spatial form (Generic explorations 01/02, student Stanislava Predojevic)



Figure 10 - Spatial forms generated with a simple cubic cell

The presented experiment consisted of three stages:

- The basic generation
- Combination of CA systems
- · Contextualization

In each stage the students were asked to create an original spatial form or a composition, and to briefly present the main issues that occurred. Results from each stage are systematized and analyzed, according to some regularity that has been noticed.

The basic generation stage

The basic generation stage was the exploratory one, in which the participating students acquired the basic understanding of the potential of spatial form generation, based on a layered generations of planar (2D) cellular automata. Figure 9, a) illustrates this stage with a sequence of generative steps consisting of layers of cells, growing from the ground level.

This stage resulted in a variety of spatial forms which could be systematized in two

characteristic groups. The groups are distinguished by the basic system cell which reproduces itself according to the rule of the chosen automatism.

The first group is created with a simple cubic cell and has an easily recognizable cellular structure (Figure 10). Spatial forms of this group are similar to the results of Maurice Martel (Figure 5). Their architectural interpretation would lead towards skyscraper structures or mega-blocks.

The second group of results in the basic generation stage consists of more sophisticated results (Figure 11). In the examples of this group some additional features of the software were applied, as well as some modifications in other visualization programs.

The combination stage

An original feature of the Fun3D software, allowing combination of multiple CA systems, resulted in the stage of the experiment, where students were asked to create a spatial composition consisting of several different systems.

The results from this stage (Figure 12) could be divided in two groups, the ones resembling mega-complexes, and the others indicating structural complexity of a single form. While the first group of the results appears in majority of cases, based on contrasts between the skyscraper-like systems and flat structures (Figure 12, a, b, c), the second group is incomparably more interesting. The second group of results combines multiple CA systems within a single complex form, indicating a possibility of structural interpretation of architectural form using the CA concept. The Authors here suggest that certain CA systems might be treated as a system of structural elements (such as slabs, columns, walls, etc.).



Figure 11 - Spatial forms generated with a modified cell



The contextualization stage and the major contextual references

Despite a remarkable architectonics of a spatial form based on the CA concept, some contextual references are needed to explain it scale, a possible function, a further signification in the wider environment etc., so that the form could be interpreted architecturally.

The final stage of the presented experiment is dedicated to the contextualization of a generated form, i.e. to the consideration of a context during the generative process. The context of interest in this study was a balneal touristic area, with its functional, social, geomorphologic, climatic, aesthetic and other characteristics.

The contextual references that have appeared in the presented experimental results could be systematized in the following groups:

- Human figure
- Greenery (various trees, plants, etc.)
- Landscape references
- Functional indications
- Built environment

While the physical references (i.e. human body, plant, other buildings etc.) explain the scale of the object, its monumentality and formal character, the function needs to be pointed out more explicitly, indicated by color, assigned material or textually explained.

Examples on the Figure represent the CA based spatial compositions in an imaginary balneal context: a playground structure, a leisure area and a hotel complex, respectively. For each of the examples, and every single CA system, it is possible to make an architectural interpretation of the main elements such as the basic cell, the generative rule, and the generative structure.

CONCLUSION

The self-replication as a generative principle, represented in this research with the CA



Figure 13 – Contextualization of spatial compositions based on the CA concept

concept, could efficiently be applied in early stages of spatial form creation. Results of previous research activity in the field, obtained both theoretically and as a "research by design", indicate the significant potential that requires deeper explorations from a variety of view points. The presented research integrates mathematical basis related to the CA concept with an architectural point of view, offering some original approaches to the problem.

Creation of the software supporting the CA based spatial form generation, allows control of a range of geometric parameters within a single system, a combination of multiple CA systems, as well as data exchange with the CAD platforms. These features, together with its availability to the academic and professional community, make it a valuable exploration tool in the field of cellular automata applied in architecture. Its experimental use within the elective course "Generic Explorations", with participation of 60 senior students of architecture at the Belgrade University, resulted in a variety of approaches divided into the stages of initial generation, combination of CA systems and contextualization of the CA based spatial compositions.

The results presented in this paper are the base for some additional examinations of a possible architectural interpretation of all the elements of a CA system. Among the issues for further research, the authors also recognize the issues of prototyping of the CA based spatial form that should considerably differ from the fabrication of the spatial systems created with other generic concepts.

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POSSIBILITIES FOR TRANSFORMATION OF THE URBAN LAND MANAGEMENT IN SERBIA¹

Slavka Zeković

The paper presents possibilities for establishment of a new market-based concept of the urban land management in Serbia in the period of transition. Urban land system and land policy are very important factors for competitiveness of cities in Serbia and initiating changes in this field is a necessity. The article discusses an option for privatization of urban public land and possible establishment and inclusion of leasehold land. Some open questions concerning the choice of the urban land system concept are considered, the possibility of urban land privatization and possibility for the establishment of leasehold of urban public land in Serbia. The paper concludes that there is a lack of political will to fairly solve problems of urban land reforms under the new market conditions. Some current research options suggested a reform based on privatization of public urban land, but there was no research on other options (leasehold for the majority of public land).

Key words: urban land management, market-based urban land system, privatization, leasehold

INTRODUCTION

Although quite a period passed from the introduction of market-based system in many fields, the current system and practice of managing urban land in Serbia have not been harmonized with the main courses in transitional reforms and changes. A great number of basic, conceptual problems have not yet been solved, which indicates the necessity to outline the reforms in this field as soon as possible, considering the fact that the realization of the policy of sustainable spatial and urban development and the policy of organizing, developing and using space considerably depends on its organization. The urban land market is undeveloped, therefore basic regulatory mechanisms and institutions and updated means of financing the urban land development are necessary. In conditions of an undeveloped market, the mechanism of urban land rent seems incomplete and distorted, and it does not contribute to a rational use of urban land and to private and socially acceptable distribution of costs and profits among various parties. For example, as a result of unauthorized and uncontrolled parcelization of agricultural land, for the best city locations, in zones of heavy infrastructure, enormous rents from land use go to private owners, various intermediaries in this business, investors et al. There are numerous speculations with land, illegal constructions, substandard urbanization et al. In Serbia, this rent is not adequately taxed (property sales tax covers only 2% of the market value). In a situation where spatial and urban planning are underdeveloped, and there are radical changes in the ownership relations and structure, the current solutions cannot have an adequate impact on the sectoral and spatial structure of intensifying investment, which should be one of the main roles of a sound future policy of urban land management.

The following text considered a comparative analysis of some open questions of the market systems with different ownerships and possibilities for urban land privatization or the establishment of leasehold for urban public land in Serbia.

REFORM FRAMEWORK FOR URBAN LAND MANAGEMENT IN SERBIA

Transformation of urban land system should rest on a greater, complete expertise, where all key problems would be analyzed and strategic solutions offered, as long-term bases for management of urban land policy in the future organization and spatial planning and urban development policy of Serbia. The formulation of a new land policy is a result of political will and implies the understanding of the land market business. The government needs a defined land policy with clear aims in order to assure an efficient land market, social equality and ecological sustainability. Considering that the regulation of relations in this field presents one of the most complex and socially, economically and politically most delicate fields of social regulation (social management), it is necessary to urgently establish the most widespread social dialogue about all key problems and by social compromise and consensus to arrive to the mainstream solutions.

Reformed and transparent urban land system and policy should be, on one hand, a powerful leverage for competitive national space policy, competitive economy, an instrument for

¹ This paper was completed as a part of the project "Aproach and the concept of development for the Strategy of spatial development of Serbia" which has been financed by the Serbian Ministry of Science and Technologycal development

securing better fiscal effects, as well as an important leverage in the prevention of the corruption process, speculations with urban land, elimination of possible stock market manipulations, prevention of potential activities of the so-called "urban mafia"; and on the other suppress and limit illegal construction etc,.

As far back as in 1992, the World Bank pointed out to the frameworks of institution and urban land policy reform in developing countries (including countries with economies and societies undergoing transition), among which of particular importance are the following: [1] 1) General problems of urban land system (market, analysis of the current land policy system - what "works" and what "doesn't", the political dimension in the land regulation field, possible improvement of the current system etc). 2) Overcoming a long, confusing and difficult road to legal status of land (establishing (cadastre?) registration/urban land records and the development of land system and policy etc.) 3) Determining the reasons for obstruction of the land management process (what is bad in the current system of land management, who are the losers and winners, the problems and trends in the main institutions). 4) Overview of the innefficient operation in the urban land management process and instruments of policy, especially in the domain: a) ownership rights, legislative framework, leasehold policy problems, availability of freehold (of land) and leasehold. model of landlord-tenant, limitations for land transaction, leasehold reform techniques et. al.); b) registration of transaction and titular of land; c) Regulation framework of land use (influence of various factors, pressures, force on the land market, land purchase, costs of development, questions of ways of de/regulation, the role of planners etc.); d) direct public/state intervention in land purchase; e) nationalization of land; f) forced land purchase and purchase of other real estate (expropriation); g) the need to form land banks for development; h) reconstructions and resettlement of certain settlements, zones, objects; i) readjustment of land. 5) Determining the framework and course of reform (priorities and principles, main questions and problems in urban land management, strategy and activities, institution reforms, administrative procedures, activities and the role of legal institutions, reform of land policy instruments, introduction of various forms of leaseholds, enforcement of land/real estate registration, better regulation of land use, public/state intervention, assessment of projected results and profits, etc) The World Bank has approved 200 million euros to Serbia for organizing the cadastre and has given the following recommendations for its land policy: [2].

- Introduction of legislative ammendments as a framework for improving ownership security, financing the real estate market and attracting FDI, change in the urban land concept – a conversion into a modern lease system or private ownership.
- Writing and adopting *the law on* denationalization,
- Preparation of the study for improving the administrative procedure in the process of obtaining urban land and suggested measures of improvement; removing administrative barriers in questions concerning land and its assessment,
- Evaluation of the current law on planning and construction and the suggested changes and improvements; improvement of the land and real estate registration system (cadastre),
- Legalization of objects.

The key courses of reform in urban land management should include: a) aims and possible concepts of the urban land system, b) ownership problems (restitution and development of new ownership forms of public ownership - for example municipal land. cooperative land, condominium institute for multi-storey buildings - land as common property, institute of partnership, limited leasehold for commercial and highly profitable purposes and freehold for living, control of land transactions etc), c) organizing land books (cadastres. land reaisters). d) improvement of urban and spatial-planning regulative and planning in the period of transition, e) state intervention in land market, f) transformation of urban land system (selection of approaches and models).

General strategic aims of urban land policy in the conditions of transition are rational use of urban land (1) and establishing an efficient system of urban land management (2). This includes the establishment of adequate regulatory mechanisms and institutions, the formation of a new way of financing land and instruments of land policy (introducing a stock market, mortgage loans, mortgage bonds, concessions, donorships etc.) taxing land rent, solving open questions about privatization of urban land in state ownership, as well as dilemmas regarding the way urban land is managed in state/public ownership (leasing or sale) and assessing the consequences of pursuing an urban policy, planning and expanding the urban area, equipping and developing urban and other spaces, policy of local public funds, policy of developing local economy etc.

Open Questions Concerning the Choice of the Urban Land System Concept

The reform of the urban land management should consider different solutions within the present dominant models: a) liberal approach, with the emphasis on the main role of the market and private property domination, with attendant mechanisms, instruments; b) the Scandinavian- type land market model, with equality of all forms of property (public, private and joint etc.), with attendant mechanisms and instruments; and c) various combined modalities.

The key open questions and dilemmas are concerned with the selection, evaluation and definition of the new possible concept for the urban land system i.e, alternative options of model ownerships and land management. As a basic step in the choice of the concept of the urban land system (method of privatization of public urban land and method of retaining public urban land and introducing leaseholds of public urban land) there should be a comprehensive analysis of the effects of the suggested alternative options (above all from the public interest point of view, development and regulation of spaces and settlements, numerous private legitimite interests). There was a preference for privatizing public urban land in Serbia in the past two decades. During that period, several study documents and the

Law on urban land privatization have been written, whereas the possibility of system reform of urban land in public ownership by introducing leaseholds has never made the agenda.. In other words, the question whether urban land in state ownership should be privatized has not vet been asserted, but discussions and researches have been directed towards examining the privatization model of urban land. The neoliberal approach of public land privatization implies the dominance of private ownership and free market activity with as little as possible regulation by the state and local authorities in this segment. The followers of this concept of land privatization in Serbia have identified more than 10 types of land parcels and methods for privatization of each, which are all complex and heterogenous and therefore they demand more than one method of privatization [3] [4]. Natural restitution is one of the methods for privatization (for undeveloped urban land, which has a very limited scope of use). Natural restitution cannot meet the principles of efficient and just restitution due to the many confronting legitimate interests (vested rights), without an effective mechanism for solving these conflicts. Denationalization of one part of the town urban land is possible as well, by compensating the previous owners and taking into consideration the value of the property at the time of nationalization. It is also necessary to enable direct sale of urban land to local and foreign investors in order to enhance the legal security of the transactions. Conditions for treating urban land as part of the property of entreprises undergoing privatization that will finish in 2009, should be created in order to stimulate new investments.

From the landlord's interest point of view, leaseholder/tenant and potential investors, the main principles of transparency in the transition towards a market system of urban land management are: leasing a state-owned lot to an investor like in the other market economies; collecting rent in the form acceptable to both parties involved (periodically, one-off or combined); rent for land use should be paid in reasonable amounts, for which the different lease modalities have to be elaborated, and the institutions. mechanisms and arrangements should be established as well.

One of the conditions of transition in exsocialist countries is the change in property relations, planning systems, with introduction of market institutional mechanisms. Changes to the area (due to investments/new construction) imply the regulation of social relations for urban land development, through rules, legal norms, urban legal norms and acts. Investments in towns unite the real estate/land market and capital and labour market, i.e, transformation of money/capital into investments. Land/real estate market is one of the main factors and guarantees of secure investment and crediting (mortgage loans and rights et. al) of town construction, which has been partly deflated by the global financial crisis.

One of the weakest links in the urban land system of Serbia is registering land (cadastre, land register). The land market has a stratified demand (according to purpose – commercial purposes, industrial production, residential, according to allocation – in certain towns, local environments. Investing into new urban land intended for economic activity, living and services has an institutional-legal framework, which exists, among other things, in urban legislation, local community and public finance regulation et al.

In Serbia, obtaining urban land in state ownership (by leasing or purchasing), as the investor's first step, is extremely insecure legally nowadays. The most attractive town locations became state-owned having been forcefully taken away from previous owners (nationalization, confiscation et al). Due to such legal origins of the greater part of urban land, there is no reliable legal security guarantee for investors concerning such land. Public tenders for the leasing or selling stateowned land do not have reliable data about whether the previous owners and their heirs have a right to the land or not, because the Law on restitution has not been passed yet. The absence of data and the current ones not updated in the public records (cadastre, land register) have led this country to feel legal insecurity in managing its land, which legitimately belongs to it, as well as to investor (as the leaseholder or landlord).

In the market system of urban land, there are two concepts: (a) a neoliberal market system of urban land with dominant private ownership and (b) a market system of urban land with dominant public ownership. The first concept is characterized by a dominant private ownership of urban land, free urban land market, modern market, financial and legal institutions and mechanisms in urban land usage, minimized role of state in urban land use et al. Private owners of urban land must adhere to urbanistic norms and acts of law. which leads to the conclusion that there is no predominance of private ownership. The other concept is characterized by a dominance of public ownership of land, land leasing, market system and mechanisms of managing land, well-developed institutional and organizational mechanisms, arrangements, instruments of land and urban policy, aspiration towards an ideal balance of natural, economic, sociopolitical and eco-spatial demands. Preliminary evaluation of the listed systems and the current urban land system in Serbia isn't made in Serbia [5].

The Possibilities of Urban Land Privatization

The aims of urban land privatization are changes in the management of this resource, i.e, changes in the property relations of the land, abandoning the current administrative manner of the local authorities giving land to the investor (eliminating the nontransparent and quasi-market manner of choosing the investor/user of land; disappearance of the practise of determining the land development fee and charging it via a contract with the local authorities, i.e, the possibility for charging the fee exclusively for urban land equipping or introducina a fee for infrastructure): introducing market mechanisms and instruments in land management, increasing the role of the local authorities.

The expert opinions about the concept and dynamics of urban land privatization are conflicted. Milićević G. [6] finds that it is "better to omit at least the central town areas from the program of total reprivatization, in order not to interrupt the process of transforming social into private property in all the fields of economy." The advocates of neoliberal discourse and the creators of several studies of urban land privatization in Serbia promote the privatization of the greatest part of urban land [3]. In Serbia, there are two official models of urban land privatization which are in collision regarding the approach and dynamics of this process. The Ministry of Economy and Regional Development supports the approach – privatization after restitution, whereas CLDS (Center for Liberal Democratic Studies) promote the approach – privatization now and denationalization in the course of the process, as one of the models of privatization [7,8].

Strategy of urban land privatization implies the political will and decision to start land privatization - land identification, defining principles, models and privatization policies, necessary regulation changes, institutional and human resource capacities, post privatization regulation (registers, rights, real property records, urban and spatial planning et al). Article 87 of the Constitution of the RS envisages that urban land privatization can be performed in accordance with the law. This means that there is a political will to begin with privatization of urban land and to pass laws on privatization of town urban land which entails the following elements: 1) model, 2) methods, 3) volume and dynamics of privatization and 4) delegation of authorities between the central and local governments. The key open questions in this process are establishing the role of the state in privatization, managing and distributing the processes of privatization, adopting decisions regarding privatization and its implementation, the role of local authorities etc. CLDS [7] suggests several methods of urban land privatization:

1 – Restitution of urban land (physical return of the same plots which the state had confiscated or nationalized to previous landlords),

2 – Giving urban land to users (physical and legal persons),

3 – Public sale-auction/tender (principle "who gives more"),

4 – Public sale to current users (at simulated market prices – through agencies),

5 – Time–limited lease of land (it is treated as an "assisting" method and a transitional solution).

Leasehold of Urban land

Leasehold is a form of leasing /renting land and property where one party purchases the right to lease land or an object for a defined period of time (up to 99 years). A leasehold implies a selection of five diferrent parameters: time-length of leasehold; value of time; market value of land that is being leased; annual rent payment; market value of property at the end of the leasehold. The ratios between these parameters are conditioned by the market or policy of public decision-making, which is why the contract can have a number of particulars for some of the parameter variations. In other words, leasing is the right to hold and use land that belongs to another proprietor (the state, private owner). In all land transactions the landlords keep the property rights over the objects, but allow the trade of rights and interests to use urban land. There are a number of legal-economic mechanisms that allow the transfer/transaction of land and other property (objects) ownership. Renart, V. [9] points out that from the economic philosophy viewpoint leasing is more a form of land co-ownership, because the leaseholder pays annually to the lessor. The key question refers to the legal nature of the contract due to the acceptance of the leashold right as a "real property right" which implies that it can be mortgaged. The development of the leasehold as a "real property right" is opposed to "individual rights", which is essential for development of this type of instrument.

Leasing land enables a correspondence of interests of the landlord, lessee and municipality. The landlord's aim is to have value for the land in use, the aim of the owner of capital is to capitalize it at a favourable rate of return, the aim of the municipality/town is to collect rent (as a landlord) and by taxing the rent to improve its financial situation. In other words, the landlord's interest is for the leaseholder to use the land as efficiently as possible in order to give the landlord a higher rent. Leasing land requires greater investment from the public funds into urban land, i.e, for the municipality to obtain land and to adapt its land policy to urban and socio-economic changes. Leasing requires efficient property and tax legislation and enables the municipality to, based on a feasibility study,

assess the effects of leasing or sale and to pass decisions. Leasing land and property of objects is an important practice in many countries in different parts of the world, which apply it significantly or in a limited way [10] [11]. The local authority establishes clear rules for the use of land, which in the cities of North Europe [12] [13] [14], Hong Kong, China, Korea, Israel etc, is mainly in its ownership [10] [14].

CONCLUSION

The analysis of the urban land system in Serbia estimated that it is necessary to change the current system towards the urban land market system. Main courses of change should include the introduction of urban land use and market system management, to increase the role of the local authority, as well as the use of measures and instruments of urban planning as the main corrective [16]. New marked-based models are: 1) liberal market approach with dominance of private ownership of urban land, 2) market model of urban land with dominance of public ownership of urban land (with introduction leasehold of public land), and other 'hybrid' models. Both models have many positive and some negative effects. Because of delay in transformation of urban land system we, it can be concluded that there is a lack of political will to fairly solve problems of urban land reforms under the new market conditions. Therefore it is suggested that comparative analyses or research of both market-based models of transformation urban land in Serbia is conducted.

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PROBLEMS OF SPATIAL-FUNCTIONAL ORGANIZATION

OF JUŽNO POMORAVLJE REGION'S NETWORK OF SETTLEMENTS¹

Nikola Krunić, Dragutin Tošić, Saša Milijić

During the elaboration of the Regional spatial plan of the municipalities of Južno Pomoravlje (Region Južno Pomoravlje) a special attention was paid to its network of settlements. Demographical and functional determinants of this network were analyzed based on the relevant theoretical-methodological concepts and qualitative-quantitative indicators. Settlement network of Južno Pomoravlje was considered as a subsystem of the Republic of Serbia's settlements' system. Correlation and causality between processes of spatial and socio-economic migration of population and functional transformation of settlements have been highlighted, which caused differentiation of the Region's municipalities to: urban cores – peri-urban rings – suburban more or less urbanized villages and rural surroundings. Models of decentralized concentration and micro-developing nuclei are proposed as instruments for decentralization of the Region or its municipalities. Based on the level of spatial-functional integration of settlements, regional as well as municipal and micro-functional – micro-regional structures have been identified. This paper gives conceptual and strategic proposals of spatial-functional organization of Južno Pomoravlje, which are based on settlements' determinants. Authors suggest that functional premises define determinants for the Regional spatial plan and steer the sectoral and strategic decisions.

Key words: spatial-functional organization, network of settlements of Južno Pomoravlje, decentralized concentration, microdeveloping nuclei.

BASIC GEOGRAPHICAL AND SOCIO-ECONOMIC CHARACTERISTICS OF THE REGION

Under the term Region, this paper will consider 13 municipalities of the south-east part of the Republic of Serbia; the subject for elaboration of the Regional spatial plan of Južno Pomoravlje municipalities. The Regional spatial plan, total area of 6,289 km² (about 7% of the territory of the Republic of Serbia) covers the whole territories of municipalities: Leskovac, Lebane, Crna Trava, Vlasotince, Bojnik and Medveđa in the Jablanički district (3,520 km²), and Vranje, Bosilegrad, Trgovište, Surdulica, Vladičin Han, Bujanovac and Preševo in the Pčinjski district (2,769 km²). The size of municipalities varies from 264 km² for Preševo and Bojnik, to 1,024 km² for the municipality of Leskovac, which according the area size belongs to the largest municipalities in Serbia. Region has over 468,500 inhabitants living in 699 settlements (Census 2002).

The Region is in the central part of the Balkan Peninsula, situated between Niški, Toplički and Pirotski districts at the north, Autonomous Province of Kosovo and Metohija at the west, Republic of Macedonia at the south and Republic of Bulgaria at the east. The relief is mostly represented by mountains and valleys – dominated by Leskovac valley (2,250 km²) and the valley of Vranje (900 km²), which are connected by the Grdelica gorge (30 km long and 550 m deep), and the high mountain massive of Krajište with Vlasina (1,275 km² within the altitude zone between 1,000 – 1,500 m). The territory of the Spatial plan covers the altitude zones of about 195 m (at the north part of the Leskovac valley where South Morava leaves Jablanički district) up to 1923 m (in the eastern part towards Besna Kobila). The Region is insufficiently developed in the socioeconomic sense, and in demographic terms it shows depopulation.

The Region is characterized by numerous features, among which are both potentials and limitations. Comparative advantage of the Region is a specific transport position which

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gives it the primacy in connecting the northern and southern parts of the Balkan Peninsula. This is recognized by development of the European Multimodal Corridor X, which represents the main axis of interregional transport for the Southeast Europe. Corridor X connects Južno Pomoravlie with Niš and Belgrade to the north and Skopje to the south. At the broader view, this corridor is, with its sections and links, relatively concomitant to the secondary corridors and major roads, and it provides contacts with important centers in its surroundings (Sofia, Thessaloniki and Priština). Region is the part of Morava development axis which integrates functional and gravity areas of Požarevac. Smederevo. three-city agglomeration (Jagodina, Cuprija and Paracin), Niš, Leskovac and Vranje. Nevertheless, in the South Morava part of this axis, its influences to the local urban centers of Gornja Toplica, Jablanica, Vlasina, Krajište and Pčinja are barely visible (since their settlements are with the continuous demographic exodus, even on the verge of extinction).

The main road connections between the district, regional and municipality centers, together with the energy and communication infrastructure generally exist but they are of inadequate quality. Important natural resources are: agricultural land, geothermal and mineral springs, hydro-potentials, forests and mineral resources. Educational structure of inhabitants in the regional and municipality centers is relatively good. Skilled workforce, who represents a significant comparative advantage, is concentrated in the regional centers, and partly in the municipal centers. In addition to that, favorable natural conditions, rich culturalhistoric heritage and multiculturalism enable development of all-season tourism, which is an important driving force for the economic development and solution for other development problems, especially in the border parts of the Region (Dabić, D. 2005.).

Development of the Region is constrained by many factors: the unsolved status of Kosovo and Metohija, which is especially reflected on the Land Security Zone at the territory of municipalities Medveđa, Vranje, Bujanovac and Preševo; peripheral geographic position in relation to the rest of the Republic; bad condition of the local infrastructure, especially roads, as well as inadequate number of the national border crossings towards the Republic of Bulgaria and the Republic of Macedonia; poor demographic potentials and demographic situation - negative natural population growth makes the matters worse in combination with negative migratory balance in the majority of municipalities; depopulation in the rural and border line areas, concentration of population in the district-regional and municipality centers, emigration of young and educated population from cities to the centers with developed work functions (Belgrade, Niš, Kraqujevac, Kruševac, etc.); social downfall and abandoned agricultural land; fragmentized agricultural assets; inadequate presentation and valorization of tourist attractions; inadequate number of stationary capacities and undeveloped tourist-recreational offer; etc.

The Region is economically underdeveloped part of the Republic of Serbia (from the total of 13 municipalities, 10 belong to the most undeveloped municipalities in Serbia), and it has lower level of foreign investments in comparison to other parts of the Republic. Human Development Index (HDI) for Jablanički district is 0,735 and for Pčinjski district is 0,730 (Republic of Serbia average is 0,821). The core-periphery dichotomy is noticeable at the regional, as well as on the sub-regional levels.

NETWORK OF SETTLEMENTS

Starting from the fact that settlements are the most distinctive elements of the cultural landscape and that they are the bearers of functional organization as well as the hubs of transformation in the geo-space, here the special emphasis will be placed on their network and the analysis of its determinants. Namely, the effective evaluation of potentials for development and spatial management of the south part of Serbia, where Vranje and Leskovac take eminent positions, should be based on better understanding of historical-geographic development and contemporary situation in its network of settlements.

Demographic determinants of the network of settlements

Settlements of Južno Pomoravlje have a long standing continuity. Although there are some

indications that this area has been inhabited ever since the pre-history period, according to remains of the material and spiritual culture, it is mostly relevant to follow the changes in development of Južno Pomoravlje's network of settlements from the time of its inclusion in the core of medieval Serbia (numerous remains of material culture, written data about settlements that still exist, etc.), through the period of the Ottoman empire, up to the present days. The initial layout for the modern network of settlements was formed in the 13th, 19th and the 20th century, when the demographic changes happened due to population in- and out- migrations. During that time, the network of rural settlements of the scattered and semiclustered anthropological-geographical and morphological types had been formed, characterized by division of settlements to bigger or smaller hamlets, groups of houses based on kinship, established by occupation of the free land and the clearance of forests, on the slopes and smaller plateaus of the mountain massive, and clustered settlements in the valley of Južna Morava and the lower river courses of Vlasina and Jablanica. In the period from 1960 until today, under the conditions of intensive urbanization, the process of compaction of the suburban and valley villages took place, whereas the mountain settlements were demographically and morphologically scattered.

The settlements of the Region were changed in the process of socio-economic transformation of Serbia based on dynamic changes in the natural movement and in spatial and social redistribution of inhabitants, from rural to urban settlements, and from undeveloped or less developed into more developed regions of the country and partially abroad, as well as from primary to secondary and tertiary activities. The main driving force behind these processes was urbanization initiated by industrialization, where phases successively changed and were differently manifested in time and space, resulting in rapid changes of the network of settlements.

Until the 1970s, the majority of rural settlements had positive natural population growth, which later received a negative presign, due to the emigration of part of the young group of people in the reproductive age. The

combination of natural growth and migration balance conditioned the demographic exodus in rural areas and brought to smaller or bigger polarization in urban centers or in their surroundings.

The majority of rural settlements permanently lost inhabitants, while municipality centers and suburban villages demographically grew. Dispersal of urban influences from the city cores to villages and their surrounding started in the 1980s. Due to the lack of land for construction. as well as because of insufficiently developed public-social. technical infrastructure and communal, suprastructure in the city core, suburban villages became migrant's destinations. As a consequence, their demographic growth was followed by more intensive housing construction and socio-economic transformation expressed in decreasing participation of the agricultural inhabitants in the total and active population, and in increment of a number of non-agricultural households and households with mixed sources of income. Daily commuting of population on the relation between suburban villages - municipality centers was initiated and it triggered the formation of urban agglomerations with elements of daily commuter urban systems (Tošić D., Nevenić M., 2007.). This is typical for Vranje agglomeration, even more so for Leskovac agglomeration which is functionally and in physiognomically connected to agglomeration of Vlasotince and partly to Bojnik. The analogy is noticeable in development of these agglomerations with development of other urban agglomerations in Serbia which are of similar functions and demographic sizes. Development of agglomerations encourages the planned and partially spontaneous relocation of industry from urban centers to suburban villages, where new industrial enterprises and services have been gradually developed.

The urban concentration of inhabitants and functions in municipality centers and demographic exhaustion of rural regions caused by emigration or drop in the natural growth, but mostly due to the combination of the mentioned two, contributed to changes in demographic sizes of settlements: undersized

(dwarf) villages with less than 250 inhabitants (388 villages with 40,871 inhabitants); small villages with 250 to 500 inhabitants (129 villages with 45,480 inhabitants); mediumsized villages which appear as two types: average smaller settlements with 500 to 750 inhabitants (68 with 39,976 inhabitants) and average bigger settlements with 750 to 1,000 inhabitants (44 with 38.518 inhabitants); and big rural settlements with 1,000 or more inhabitants (56 villages with 93.054 inhabitants).

Functional determinants of the network settlements

The functional determinants make a group of significant factors for development of the network of settlements. During the industrial phase of urbanization and concentration of inhabitants and functions in the municipality centers, in the geo-space of Južno Pomoravlje, likewise in the major part of Serbia, the process of functional transformation of settlements occurred individually and in the network as a whole. Until the 1970s, the municipality centers only had more or less poly-functional character, while all other settlements were mono-functional, with domination of active population employed in the primary services, mostly within their own husbandries. There were no villages with external, i.e. central functions. Within the domain of public-social infrastructure, primary education was developed, with relatively scattered distribution of schools according to distribution of the contingent of children who should compulsory attain the school. From that time until today, the villages have been functionally transformed under direct or indirect influences of development and municipality diversification of center's functions (Tošić, D., Krunić, N. (2004.). Functional differentiation of the municipalities' territories and diversification of settlement's functions have been carried out under the conditions of inhabitants' employment in nonagricultural activities, and upon gradual development or slightly more dispersive distribution of the public-social infrastructure facilities in rural areas. (Grčić, M., 1999.)

Characteristics of the contemporary hierarchy structure of the network of settlements

According to the Spatial Plan of the Republic of Serbia (SPRS), the Region of Južno Pomoravlje is divided into functional areas² of Leskovac and Vranje which coincide with Jablanički and Pčinjski districts. Leskovac and Vranje are the centers of the regional significance and their influences are felt in the central part of Southeast Serbia and in east parts of Kosovo and Metohija, as well as in parts of Toplički, Nišavski and Pirotski districts. Also, Vranje and Leskovac as regional centers more or less directly respond to trans-border cooperation with the Republic of Macedonia and the Republic of Bulgaria.

The Region's network of settlements is a complex and insufficiently coherent system of 699 settlements distributed in 681 cadastral municipalities where the urban settlement status³ have the following ones: Vladičin Han (8,338 inh.), Bosilegrad (2,702 inh.), Bujanovac (12,001 inh.), Lebane (10,004 inh.), Medveđa (2,810 inh.), Vranjska Banja (5,882 inh.), Vučje (3,090 inh.), Grdelica (1,172 inh.), Sijarinska Banja (568 inh.), and Belo Polie (545 inh.). The municipalities of Trgovište, Preševo, Crna Trava and Bojnik do not have any urban settlements. There are 193,864 inhabitants or 41.4% of the total population in the Region who live in urban settlements, and that is below the average for the Republic.

The role of Leskovac in the spatial-functional organization of the Republic of Serbia/ Jablanički district/ Leskovac functional region, and territory of its own municipality, is reflected in the following:

² The concept of functional areas is introduced in the Spatial plan of the Republic of Serbia, where it is used in sense of territorial grouping of a number of municipalities that are connected to stronger urban/regional center by gravity and by common interest. According to the Spatial plan from 1996, Serbia is divided into 34 functional areas. In the urban geography literature, the functional area is a synonym for functional-urban region.

³ According to the methodology of Statistical Office of the Republic of Serbia.

- Leskovac is a functional center for 144 settlements of the municipality which gravitate to it, and indirectly for another 336 settlements of the functional region.
- 43.8% of inhabitants in the municipality (156,252) is concentrated in Leskovac. The character of urban settlement have Vučje (3,258 or 2.08% of the municipality inhabitants) and Grdelica (2,383 or 1.5% of the municipality inhabitants). The level of urbanity of the municipality is about 9% below the Republic's level of urbanity. Leskovac is the center of regional urbanization in the area where the river valley of Južna Morava meets the valleys of Jablanica and Vlasina rivers.
- Leskovac is an important center of the South Morava development axis of Serbia which spatially-functionally integrates north-east parts of Kosovo and Metohija, basins of Jablanica, Južna and Velika Morava and Vlasina. By the river valley of Južna Morava, Leskovac is connected to Pčinjski district, whereas via Vlasotince – the sub-center of the functional area, and via Crna Trava, it is connected to Bulgaria. Leskovac is also connected to Kosovo and Metohija via Lebane and Medveđa.
- Excellent geographic position of Leskovac is not sufficiently supported by traffic, at least not to the corresponding level (there are no highways and regional roads of adequate quality that would connect Leskovac with its closer or wider regional surroundings).
- In the domain of the functional integration processes, Leskovac exceeds the territorial scope that was proposed for it by the SPRS as well as by the territorial-administrative organization of the Republic.

The role of Vranje in the spatial-functional organization of the Republic of Serbia/ Pčinjski district/ Vranje functional region, and territory of its own municipality, is reflected in the following:

- Vranje is a functional center for 105 municipality settlements which gravitate to it, and indirectly for another 363 settlements of the functional region.
- 63.1% of the municipality inhabitants is concentrated in Vranje. The character of urban settlement also has Vranjska Banja (5,882 inhabitants – 6,7% of the municipality inhabitants). The level of

urbanity is 14% above the Republic's level of urbanity.

- Vranje is the center of regional urbanization in the south east part of Central Serbia.
- Vranje is a significant center of the South Morava development axis of Serbia which spatially-functionally integrates east part of Kosovo and Metohija, basins of Južna and Velika Morava and far south-east parts of the Republic.
- Excellent geographic position of Vranje is not sufficiently supported by traffic, at least not to the corresponding level (there is no railway of adequate quality, no highways or regional roads of adequate quality that would connect Vranje with its closer or wider regional surroundings; no adequate infrastructure equipment of the Multi-modal Corridor 10, and the adjoined sub-systems).
- Similarly to Leskovac, in the domain of the functional-integration processes, Vranje exceeds the territorial coverage which was proposed for it by the SPRS as well as by the territorial-administrative organization of the Republic.

Generally, it can be concluded that Leskovac and Vranje by their position (geographical, traffic, economic and social) are ranked as the municipality centers and urban settlements of regional level which accomplish the development influences and inducements to the wide regional surrounding. Development impacts and the need for steering the development of Vranje and Leskovac, as well development of regional-functional as environment are numerous, complex and complementary and they include and refer to the whole socio-economic, technological and spatial development. The development has determined the needs for planned direction for spatial and functional systems and the integration of local and regional interest. The basic commitment of the Plan is to constitute more or less balanced development by which coordinated and rational use of space, landscape management and environmental protection will be achieved. Evenly structured, balanced and sustainable development of the municipalities of Jablanički and Pčinjski districts, i.e. Leskovac and Vranje functional areas, is the precondition for a stronger geospatial integration, which requires active and constant solving of developing disproportions, by qualitative transformation of the general spatial, economical and social structure.

As in the major part of Serbia, in the Region as well there has been established the hierarchy of urban centers around which the areals of influence have been formed based upon spatial-functional complementarities (Tošić, D., 2000.). The hierarchy relations in the network of nodal centers and areas have been influenced by their respective positions in the communal and territorial-administrative organization of the Region.

By and large, there were more forms of nodal centers and areals that have been developed:

· Small urban areals in the rural surrounding established by local concentration of inhabitants and functions in smaller municipality centers which, owing to the location of industry, were transformed from crafts, trade and management centers in settlements of urban type with developed functions of the centers of work. Until the 1980s they had grown by the migration component. The sources of migration were mostly the villages of the immediate surrounding. Typically, they were the centers of emigration municipalities because they were unable to attract by their functional capacities or nodality all inhabitants released from agriculture, thus people had to migrate to urban settlements with developed functions. Such types of urban settlements are the ones that usually have between 5,000 and 20,000 inhabitants. They are the centers of local communal integration. The majority does not have developed threshold of functions, no public or social infrastructure, neither have they had nodality that would accelerate further development. The future will depend on possibilities for diversification of functions and participation in development processes of the wider regional surrounding. Bosilegrad. Bujanovac, Vladičin Han and Surdulica belong to this type in functional region of Vranje, that is Lebane and Vlasotince in the functional region of Leskovac. Certain functions of production and services are concentrated in the municipality centers that do not have the character of urban

settlements (Preševo, Crna Trava, Bojnik) as well as in other smaller urban settlements.

- Smaller or bigger agglomerations of the urban settlements which are in the functional network with their suburbs and with moreor-less urbanized suburban villages are spatially structured as cores of the higher level of nodality for the functionally compatible settlements in the surrounding. Until the 1980s, the functional cores had the role of the growing poles, but later, some of them, acted as the development poles. They had the structure of the industrial-service activity centers which, due to recession and decrease in employment, changed the structure of service-industrial centers. They started to influence the socio-geographic transformation and functional integration of the surrounding and to create smaller or bigger functional-urban regions and daily commuting urban systems, i.e. nodal regions. In some cases, they might grow into the functional-urban areals of the European type (FUAs). Most usually they are the centers of districts. Leskovac and Vranje belong to this group. According to the SPRS they are defined as the centers of the functional areas. Their future role is determined by the position in functional integration of the Republic's territory. (Krunić, N., Tošić D. (2007).
- By combination of the spatial functional influences that are established between regional, municipality and sub-municipality centers, and municipality centers which do not have urban inhabitants, the conditions for formation of more complex regional functional-urban systems are created in Južno Pomoravlje. They comprise of a number of settlements whose integrity derives from interactions between their structural elements, settlements of various types and different hierarchy. They have a character of the functional-urban regions. This is above all the tripolar agglomeration developed between Leskovac-Bojnik, Leskovac-Vlasotince, and at the north towards Niš. It is similar with the functional polycentric networking into linear agglomeration which develops on the line Surdulica-Vladičin Han-Vranje-Bujanovac-Preševo, although it is discontinuous due to physical-geographical limitations. During the last two decades their functions have been in the continuous recession. A radical.

Table 1. Conditions for functional typology of settlements

Functional type of settlement	Condition
Agrarian	1 > 0r = 60%
Agrarian-industrial	> >
Agrarian-services	> >
Industrial	> or = 60%
Industrial-agrarian	> >
Industrial-services	> >
Services	III > or = 60%
Services-agrarian	> >
Services-industrial	> >

primarily economic restructuring, is yet to follow. Potentially, they will be the carriers of the future evenly distributed and balanced development of this part of Serbia.

SPATIAL FUNCTIONAL RELATIONS AND LINKS IN THE REGION

With aim of determining the dominant spatialfunctional aspects, processes, relations and links in the Region and in its sub-divisions, the period 1971 - 2002

Table 2: Change of functional types of settlements in the period 1971 – 2002 Source: IAUS, 2008

Functional type	1971	2002	Change 1971-2002
1. Agrarian	29	73	+44
2. Agrarian-industrial	9	20	+11
3. Agrarian-service	590	337	-253
Agrarian types total	628	430	-198
4. Industrial	5	65	+60
5. Industrial-agrarian	11	71	+60
6. Industrial-service	5	67	+52
Industrial types total	21	203	172
7. Service	5	12	+7
8. Service-agrarian	9	5	-4
9. Service-industrial	7	13	+6
Service types total	21	30	9



Picture 1: Comparative presentation of changes in function of the settlement`s types 1971 and 2002 (IAUS, 2008)

there have been analyzed the demographic and socio-economic indicators and they were put in the context of the settlements' functions and the system of settlements. Emphasis is placed on the functional transformation of settlements (based on the change in structure of inhabitants' activities), on changes in types of migrations of the inhabitants (the combination of natural and migration components of the population movements), as well as on the change in the level of socio-geographical transformation of settlements-urbanization and deagrarization (the share of inhabitants active in agriculture, households without agricultural husbandries, the share of employed population in the total active population which is occupied).

The transformation processes of functional

settlements of the Region are carried out in line with the general trend in the Republic. However, it seems that there exist certain peculiarities reflected in the diminished role of the regional centers in transition from agrarian to service settlements. In 1971, 628 settlements belonged to the agrarian type. while in 2002 there were 430, i.e. 198 less. The transition was carried in the direction of secondarization and tertiarization of the agrarian type of settlements, hence out of 590 settlements of the agrarian type, only 337 (253 less) were left; the number of agrarianindustrial settlements increased from 29 to 73 (44 more), and of the agrarian-service settlements it increased from 9 to 20 (11 more). The agrarian type of settlements is still domineering, but there are no hierarchically significant settlements in this group (Table 2,

Table 3: Settlements' structure according to the types of migration of inhabitants from 1981 to 2002 Source: IAUS, 2008.

Type of migration	1981/91.*	1991/2002.**	Change
11 expansion by immigration	40	20	-20
I2 regeneration by immigration	0	0	0
13 weak regeneration by immigration	14	46	+32
I4 very weak regeneration by immigration	12	66	+54
Total Immigrational type	66	132	66
E1 emigration	76	54	-22
E2 depopulation	0	0	0
E3 significant depopulation	141	73	-68
E4 extinction	370	398	+28
Total emigration type	587	525	-62



Picture 2: Comparative presentation of changes in types of inhabitants' migrations 1981/91 and 1991/02 (IAUS, 2008)

Picture 1).

Indicators on the population activities structure change demonstrate the strongest development of the secondary sector, thus the whole Region has kept the "industrial" character. At the beginning of the period of observation when the first effects of industrialization of the country were shown, there were only 21 settlements in the Region whose inhabitants were active in the secondary sector, while this number increased to 203 until the year 2003. i.e. It increased for 172 settlements. Almost equal increment happened in structure of these settlements: the number of industrial and industrial-agrarian settlements increased for 60 (from 5 to 65, or from 11 to 71), while the number of industrial-service settlements increased from 6 to 67 (52 more). Also, the number of settlements of service, i.e. tertiary character had increased. Still, it should be emphasized that the social mobility of population from the primary to other sectors of activities had been of less intensity here when compared to other, more developed parts of Serbia (functional areas of Novi Sad, Kragujevac, Valjevo, Užice, Čačak, etc.). The total number of settlements of the tertiary sector increased for 9 (from 21 to 30); the service settlements increased from 5 to 12 (+7); the service-agrarian ones decreased for 4 (from 9 to 5), while the number of serviceindustrial settlements increased for 6 (from 7 to 13).

The typology of population movements is based on the relationship between the natural and migratory component, according to which the settlements are classified into two basic types: small group of immigration and the large group of emigration ones. The general trends on the Republic's level is that the immigration settlements are municipal and urban centers, settlements with specific functions, suburban and the settlements close to the important transport corridors. Emigration settlements have worse traffic-geographical position; they belong to the type of primary rural settlements and are located mainly in the hilly-mountainous parts of the Republic, i.e. at the higher altitudes. However, in the Region, we came across the examples that stand out of the mentioned general trend (Table 3, Picture 2).

Socio-geographical transformation	1981	2002	Change 1981-2002
City	9	10	+3
More urbanized	11	77	+66
Less urbanized	22	209	+187
On threshold of urbanization	52	253	+201
Rural	589	117	-472

 Table 4: Socio-geographical transformation of settlements from 1981 to 2002
 Source: IAUS, 2008



Picture 3: Comparative view of socio-geographical transformation of settlements in 1971 and 2002 (IAUS, 2008.)

The number of immigration settlements was 66 in 1971, while the emigration ones accounted for even 587. Until the year 2002, the number of immigration settlements increased to 132 (66 more) while the number of emigration settlements decreased to 525 (62 less). According to detailed analysis, it is shown that immigration and emigration happen under the conditions of continuous reduction of natural growth. Intensity of the emigration-immigration processes weakened due to reduction of emigration base, and it often brought to extinguishment of emigration base in rural areas. Immigration is contributed to a large extent by relocation of population from Kosovo and Metohija, which was intensive in the last decades of the last century.

Socio-geographical transformation is expressed in the level of urbanity of the

Region's settlements and it is compatible with the general trend in the Republic. According to the typology of settlements based on socioeconomical indicators (Tošić, D., Obradović, D., 2003) in the period from 1981 to 2002, socio-geographical transformation was most intensive in the peri-urban rings of Leskovac and Vranje, in the villages near to the municipality centers and along the main roads. These are the territories which got a certain character of urban-rural continuum, so their future development should be planned for, with special emphasis on defining development zones and increase of general level of communal equipment. Deagrarisation process and the successive concentration of population and functions partly had the unplanned and uncontrolled character. Certain types of socioeconomic transformation are expressed by

dispersion of urbanity to the rural areas and are felt in the settlements with higher degree of agrarian tradition, which are isolated in terms of traffic and are permanently loosing the population. Regardless their positive features, the changes in socio-economic structures of population in the depopulated settlements do not affect the slowing-down of depopulation processes and in most cases they bring to forming of demographical depression. Declarative support for revitalization of the Region's villages does exist, but there is no realization of this goal. According to the model that is usually applied in our country, urban influences have gradually diffused from city centers to the rural areas and they encompassed many settlements (Table 4, Picture 3).

Improvements and planned development of physiognomic features and contents of periurban settlements and initial urban nuclei according to their role in the planned system of settlements, would also contribute to environmental protection, preservation of landscape, protection and preservation of architectural and cultural-historic heritage and to creation of the urban milieu in these settlements (Maksin - Mićić, M., 2005.). The imperative is to give impetus to socialeconomical transformation of the rural settlements by the centers of settlements communes - secondary urban nuclei, on the one side, and by urbanity diffusion from regional and sub-regional centers on the other.

MODEL OF VERTICAL AND HORIZONTAL DIFFERENTIATION IN THE NETWORK OF SETTLEMENTS

On the basis of spatial functional relations and connections that are substantiated on the territory of the Region and in its surroundings, the vertical-functional and horizontal-spatial hierarchies are identified in the network of settlements. Functional connections and relations in the Region are characterized by insufficient coherency (insufficient functional development of connections between the municipality, sub-regional and regional entities). With aim to develop a coherent spatial-functional organization of Južno Pomoravlje, on the basis of naturalecological, demographic, socio-economic and

other characteristics of its geo-space, the following model for the future multilevel hierarchy in the network of settlements is proposed:

- The first hierarchy line is represented by Vranje and Leskovac as regional centers of similar functional capacities whose zones of influence exceed the borders of Pčinjski and Jablanički districts.
- The second hierarchy line is represented by Vlasotince as sub-regional center. This position is given to it by excellent geographical and traffic position. The similar positions have Vladičin Han and Surdulica as cores of the bi-polar agglomeration of the same name.
- 3. The third hierarchy line is represented by municipality centers of relatively small influential zones to socio-geographic transformation of the surrounding, which include Bujanovac, Bojnik and Lebane.
- 4. The next hierarchical line is represented by municipality centers that have partially developed urban functions, such as Bosilegrad, Trgovište and Crna Trava in the eastern part; Preševo in the south, and Medveda in the north part of the Region.
- Other urban settlements are in the group of centers of the community settlements of general or specific functions.

Functions of centers for the settlements' communities are performed by municipality sub-centers and rural community centers: in the municipality Vranje, the function of the municipality sub-center of a specific spa function has Vraniska Banja, while the function of the rural community centers have Vlase and Rataje; in the municipality Bujanovac function of the rural community centers have Muhovac. Trnovac, Nesalce, Biljača, Žbevac and Klenike; in the municipality Preševo, the rural community centers are Šajince, Donji Stajevac and Radovnica; in the municipality Bosilegrad, the rural community centers are Suvojnica, Mačkatica, Vlasina, Okruglica and Klisura; in the municipality of Vladičin Han, rural community centers are Stubal, Jagniilo and Žitorađe; the City of Leskovac has municipality sub-centers Grdelica. Vučie and Brestovac and rural community center Pečenjevce; in the municipality Crna Trava, rural community centers are Ruplje, Brod, Sastav Reka, Preslap and Gradska; in the municipality Medveđa, municipality sub-center is Sijarinska Banja, rural community centers are Tulare and Lece; in the municipality Lebane, rural community centers are Prekopčelica, Lipovica, Grgurovica and Šilovo; whereas in the municipality Bojnik, rural community centers are Konjuvce, Lapotince and Kosančić.

PROBLEMS OF STRATEGIC DECISION ON THE FUTURE DEVELOPMENT OF THE NETWORK OF SETTLEMETS

There are various options and aims for organization of the network of settlements, but the main strategic issues in development of the network of settlements in the municipalities could be summarized in the following way:

- Should further concentration of functions and population be encouraged in the municipality centers or should the model of decentralized concentration be applied based on more-or-less balanced distribution of a number of municipality sub-centers of the same or different hierarchical position?
- Should the functions of micro-developing centers be advanced in municipality subcenters and in which ones, or should they be developed in terms of functions of services and public-social infrastructure?
- Should the sub-centers be developed in line with the concept of "basic needs", which is founded on urban and rural economy integration for the local market needs, or should they be developed with aim of the export trade?
- Should the new work places be opened according to distribution and qualitativequantitative characteristics of the inhabitants, or should they be concentrated in the urban center with development of daily commuting of the labor force with development of the necessary traffic infrastructure?
- How to secure development of public-social infrastructure in the scarcely populated rural areas encompassed by the intensive depopulation?
- How to use the housing stock in the depopulation villages?

- How to balance the development of discontinuous and dispersed rural settlements with the need for more rational concentration of economic functions and obliging services in the rural community centers?
- Should the objects of public-social infrastructure be located in settlements of the peri-urban ring, which would consequently been given the functions of the rural community centers, or should they be observed as settlements for directing and transferring the influences between municipality center and distant rural centers?

CONCEPT OF DEVELOPMENT OF THE NETWORK OF SETTLEMENTS – DECENTRALIZATION OF FUNCTIONS

Decentralization of work functions and creation of sub-migration systems in the Region would enable sub-regional entities and individual municipalities to apply the model of decentralized concentration of people and functions. The Model of decentralized concentration responds to principles of sustainable development, it is rational in terms of use of space, resources, energy and transport (Grčić, M., 2004.)⁴. Under the conditions in our country, the most suitable instrument for implementation of the decentralized concentration model is the application of the micro-developing nuclei. Micro-developing nuclei are mainly the settlements with developed public-social infrastructure and activities from the service sector, and in them are located the new industrial plants which are adapted to modern technologies, ecological standards and to the local raw materials' use. They encourage development of production which is based on the local resources (wood, livestock products, fruits, etc.), opening of new work places and development of dual (complementary) occupations for the inhabitants. In parallel with agriculture, the industry, craft, trade, catering, tourism and public-social infrastructures are

⁴ For the implementation of the decentralized concentration model under our economic conditions, see: "Development strategy of Kosjerić municipality -Chapter: Development and distribution of industry", by M. Grčić.

developed. Complementarities of agriculture with other activities lead to slowing down of depopulation and to the socio-economic transformation of villages. Consequently, the renewal of villages and revival of rural economy should be grounded on creative integration of the contemporary production and consumption tendencies as well as on integration of the local heritage, resources, culture, tradition and knowledge. Without stimulating evaluation of work and without public affirmation of the quality and the way of rural life, the inhabitants could not be retained in rural areas, nor can their development be improved in spatial and economic terms (Tošić, D., Nevenić, M., 2005.). Microdeveloping nuclei might provide supplement for the rural and city economy⁵.

The second, but the most important function for development of settlements is residence. After agriculture and forestry, the residence function is the biggest occupier of space and the basic element of the integral spatial and urban planning. The key development indicators of this function are dispersion of inhabitants, flats, objects and services of the public-social infrastructure. Complementary to the residence function are the services of public-social character (education, culture, social security, health provision, veterinary, communal-hygienic services), supply, traffic, leisure, etc. Under the conditions of urban polarization and depopulation of rural areas, and because of constant economic crisis, the existing housing stock needs to be treated as one of development resources in settlements. The imperative is a planned stimulation and orientation of housing and housing-business development in the rural regions. The rural population should be provided with conditions for building quality residences and objects of economy, or with the rural quality reconstruction of the existing buildings, with provision of the modern infrastructural (public-social standards infrastructure, hygienicsanitary conditions. traffic. telecommunications, information technologies, etc.) and with respect of indigenous principles and forms of economic, social, ethnic and cultural components or the organization of life in this part of Serbia.

WHAT NEXT? QUO VADIS?

The answers to the questions raised require a dynamic, diversified and integral approach to solving problems in the formation of sustainable hierarchical system of settlements in the Region. The observed trends point to the significant loss of functions of the regional centers, despite the common opinion on the ever intensive centrality of urban environments (which can refer only to the Belgrade centrality in relation to other macro and regional centers), hence they should be continuously developed and strengthened (in terms of their economic, public-social, service, central functions), particularly in Leskovac and Vranje. Also, the future will bring the restructuring and technological upgrading of the secondary activities in the municipal centers.

This will release workforce from the industry and civil-engineering that will then seek employment in the tertiary and quaternary sector of activities, both in the Region as well as in other centers with more developed work functions. With this in view, the activities of these sectors should be developed and raised to a higher level.

In the secondary municipality centers as well as in the settlements which are the centers of communities, it is necessary to achieve the conditions for development of public-social infrastructure, to make selective concentration

of productive and non-productive activities and to give them the role of micro-developing center by securing territorial - horizontal and technological - vertical complementarities and compatibilities of urban and rural economics. If possible, the production should be based on the local raw materials and on the local labor force and it should be generated in the existing industrial plants which are located in rural settlements. The agriculture must be developed in such a way to retain the young work force on the rural husbandries (animal husbandry, property enlargement, and complementarities to agriculture, i.e. rural and other kinds of tourism).

The local infrastructure is one of the key constraints for development of the Region, thus the quality of the road network is necessary to be improved in order to achieve better accessibility of the rural inhabitants to the municipality center and sub-centers. The facilities of public-social infrastructure should be located in line with distribution of users of these services (rationalization of the elementary schools' network, development of institutions for the pre-school child care in bigger rural settlements and in centers of the rural communities, development of health, social and veterinary services in rural parts of the municipalities, enforcement of medical centers by financial and professional restitution). Daily commuting should be enabled by development of public transport for workers and students to the regional, subregional, municipal centers and centers of the settlement communities.

A special problem in the definition and implementation of strategic decisions is that territorial and functional competencies of regional centers of Serbia have not been defined, nor their hierarchy has been established. The same applies to the regional and municipal centers6. Finally, there is an

 $^{{}^{\}mathbf{5}}$ In order to promote functional transformation of a purely agricultural villages, it is necessary to locate industry in this villages (smaller or larger industrial facilities) as well as the activities of tertiary-quaternary sector (which will not only have the goal of providing services to the population, but to engage it in work i.e. to develop the central functions) and give them the role of micro-developing nuclei on the one side, and on the other, they should be linked by the quality network of roads and should have better public transport, with encouragement of the daily commuting of the labor and slowing down the population's emigration. In order to become a micro-developing center or micro-developing nucleus, the settlement has to be developed up to the "functional threshold", i.e. with minimum of functions, which will instigate the spatial-functional organization of the surroundings. With aim of the functional homogenization of geospace, still without illusions possibility about the of urban-demographic concentration in the micro-developing nuclei, D. Tošić recommended this model in elaboration of Strategies for a number of municipalities and regions of Serbia (Kosjerić, N. Pazar, Tutin and Sjenica) as well as in elaboration of the Spatial plans (City of Belgrade, Smederevo and Kladovo).

⁶ Although the SPRS defined 34 functional areas whose borders are not always identical with the borders of districts, the Regional plans generally treat the area of certain districts. The concept of functional area is introduced by the SPRS and it is used in terms of territorial groupings of municipalities that have common interest and are associated with strong gravitational urban centers, i.e. regional center (Derić, B., Atanacković, B., 2000.).. In the spatial planning practice

open dilemma: how to create political and legal framework to resolve the issues of legislative-functional subsidiarity, i.e. vertical and horizontal distribution of competence, obligations and responsibilities in planning between the state of Serbia, region, cities and local communities.

The question – what next or quo vadis (?) will be addressed by a strategy that will be based on the following principles:

- 1. Polycentricity which is instrumented by the nodality basis
- 2. Hierarchy in systems and networks of settlements
- 3. Complementarity between urban settlements and settlements of its closer or farther surroundings
- Functional specialization of smaller centers and functional diversification of bigger urban centers
- 5. Integrality in socio-economic and functional sense
- Social, economical, functional and ecological sustainability in the networks and systems of settlements
- 7. Functional coherency of the central places with settlements of functional interdependency

within the European Union, the functional areas are defined as functional-urban regions. Regarding the dilemmas of spatial planners about the concept of decentralization of Serbia for a balanced regional development as well as about the role of regionalism in it, Đorđević, D. (2004) wrote in the paper: "Decentrelised Serbia" and its spatial development: question of the instrument and the question of concepts", in "Sustainable spatial, urban and rural development of Serbia", Belgrade, IAUS. In this paper, the author emphasizes the issues related to legislativefunctional subsidiarity, i.e. vertical and horizontal distribution of competence, obligation and responsibilities in planning between the state of Serbia, region, cities and local communities. This is not a problem of Serbia alone. Although the national professional and scientific literature tends to idealize the situation in the European Union, it has actually been far from ideal, and this can be described in words of the President of the European Commission José Manuel Barroso "One of the deepest problems of Europe... is the discontinuity between public policy makers and citizens", see Barroso, J. M. (2005). A new European Realism, in The World in 2006, London: The Economist.

8. Subsidiarity in the planning decisionmaking, as well as the responsibility in implementation of planning decisions

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POTENTIALS AND LIMITATIONS OF SPATIAL AND DEMOGRAPHIC DEVELOPMENT IN KOSOVO-METOHIJA LIGNITE BASIN ¹

Nenad Spasić, Ksenija Petovar, Vesna Jokić

The initial research carried out for the purpose of elaborating the Spatial Plan for Kosovo-Metohija Lignite Basin indicated the need to address numerous conflicts and opposing interests in the area concerned. This required the Plan to focus on harmonizing the economic, social and spatial aspects of developing a mining-energy-industrial system (hereinafter MEIS) and its surroundings, devising the new ways for the protection of local population interests and use of novel approaches in dealing with the environmental consequences of lignite exploitation and processing. The area wherein Kosovo-Metohija lignite deposits are found is replete with diverse conflicting interests, including insufficient and uneven development, extremely large overall and especially agrarian population density (among the highest in Europe), unemployment and a sizable portion of the grey economy, low level and quality of services of public interest, ethnic conflicts and polarization, etc. The environmental effects of MEIS activities in a situation of this kind were revealed by the early stages of research in all segments of economic, social and spatial development, along with a high degree of environmental degradation. The main conflict in the Plan area is the one between mining and agriculture, i.e. open pit lignite mining and high-fertility soil covering lignite deposits. The conflict is additionally aggravated by the remarkable density of agricultural population on this territory and high selling prices of the land. Therefore, a substantial part of the Plan's propositions was related to the conditions of settlement and infrastructure relocation, population resettlement and measures to relieve the tensions and prevent the outbreak of potential conflicts in implementing the Plan. The Spatial Plan is conceived as a complex and comprehensive document defining the framework, basic principles, starting points and measures tackling the numerous development conflicts, spatial, social and ecological limitations, including the relevant analytical and data bases deriving from field research and surveys.

Despite the fact that under the UN SC Resolution 1244, the Autonomous Province of Kosovo and Metohija has been under the jurisdiction of the United Nations since June 1999, we believe that the Draft of the Spatial Plan and the research work done for its purpose are still valid, since to this date there have been no attempts to start the formation of new open pits in Kosovo lignite basin.

Key words: large lignite basins, degradation of the ecosystem, resettling of population, settlement network, environmental pollution.

INTRODUCTION

The limited availability of non-renewable natural resources, promotion of human rights (civil and political, economic, social and cultural, environmental) and the increasing environmental problems, are the three most important factors in the modern world arising the awareness of the need for planned development and offsetting of numerous development conflicts. Development problems are particularly prominent in areas of intensive exploitation and processing of energy mineral raw materials, most strikingly in large lignite basins. The high intensity, scope and spread of these processes and environmental degradation, along with numerous developmental conflicts in the above

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The paper is based on the findings of extensive reserach carried out within the elaboration of the Spatial Plan for Kosovo-Metohija Lignite Basin (1987-1990 and 1998 - 1999).

mentioned areas add to the role and importance of the institution of planning (1,5).

Relative scarcity of primary energy sources, and the fact that over 70 percent of overall available energy potentials on Serbia's territory are found in two lignite basis (Kosovo-Metohija and Kolubara) bespeak the importance of these basins for energy sector development, and stress the need for rational utilization of avalable energy sources. Planning is thus faced with a delicate and difficult task of solving the problems inherent in major structural changes in space, as well as adverse external effects and irrationalities resulting from intensive exploitation of lignite, development problems in the zone of MEIS influence, numerous conflicts and the large scope of environmental degradation (2,6).

The work on the Spatial Plan for Kosovo-Metohija Lignite Basin (hereinafter Spatial Plan) started over two decades ago. Stage one took place in 1987-1990 and stage two in 1998-1999 period. In early 1999 the draft of the Plan was completed, but after June 1999 all activities related to this project were discontinued. Meanwhile, several texts based on preparatory work and the draft itself have been published, offering analyses of specific problems along with possible solutions (4,10-13). The authors of this text believe that today, and in the context of current developments in Kosovo and Metohija, it would be auspicious to present the public with the starting points, concepts, propositions and solutions of the Plan, bearing in mind that they are still topical and, moreover, that the approach to this undertaking fully observed the democratic principles and procedurs in defining both the basic premises of the Plan and measures for its implementation (15). That is all the more advisable since the results of field research and comprehensive surveys carried out in 57 settlements in the Kosovo basin range among the few empirical research efforts made in this area over the past two decades. Furthermore, the Draft Spatial Plan of Kosovo-Metohija Lignite Basin in its 1999 form has, to this date, been one of the rare sources on that particular subject (11).

The Spatial Plan was conceived and prepared as a regional spatial plan for an area marked by a large influence of a single activity, i.e. production function (lignite exploitation and processing). The Plan sought to relativize the existing and expected conflicts and opposing interests by harmonizing the economic, social and spatial aspects of MEIS and its surreroundings' development, while leaving room for improvements in technicaltechnological development and lignite processing, as well as novel approaches to resolving the ecological consequences of this development.

Strategic concepts in the energy sector are based on long-term prognoses (for the period of 30, 50 or more years), while long-term prognoses in other fields, especially economy and social development, are considered unreliable. The Plan has dealt with this discord by using different levels of detailed forecasting for different time periods. Thereby more detailed and reliable solutions were proposed for shorter horizons, while longer-term proposals offer only tentative solutions, are often limited to the objectives and main premises, and sometimes presented in several variants. It is assumed that these long-term prognoses will be reexamined in the subsequent cycles of research and planning (7).

We believe that changes in demographic developments, competencies for decisionmaking on development in general and enegy development in particular, do not substantially impair the relevance of research findings and topicality of proposed propositions, which is yet another reason why they should be presented to the professional and academic public.

MAIN CHARACTERISTICS OF KOSOVO-METOHIJA LIGNITE BASIN

The subject of research in elaborating the Spatial Plan is an area the organization, arrangement and use of which is influenced by the exploatation of an energy resource, i.e. lignite. That is why the development of MEIS, the conditions of obtaining the basic raw materials and the manner of their processing were important factors in deciding on the concept of organization, arrangement and utilization of space. The possible variants for the MEIS development in production, technological and ecological terms, essentially

influenced the selection of concepts for the organization, revitalization and use of space in immediate both its and wider surroundings. That is why an evaluation of the proposed MEIS development from the point of spatial organization and arrangement was important as well as necessary. Concentration of mining, energy and industrial facilities in the zone of Kosovo-Metohija lignite deposits today, an in the next 20-30 years, suggests that the evaluation of development variants and the adopted concept and solutions in this zone will essentially influence the concept of the Spatial Plan as a whole.

The Spatial Plan, in addition to the existing, also addressed the prospective limitations related to the development of transportaion and other large infrastructure, the system of settlements, agriculture, distribution of the population etc. in the future MEIS zone. Therefore the need to perceive the MEIS development after the year 2020, until the final depletion of lignite deposits.

The Spatial Plan area may be divided into two specific entities, different from one another in terms of their population, overal development and degree of urbanization.

a) The first entity is that of Priština with several urban, suburban and adjacent village settlements, which, taken together, account for almost half the total number of the population in the Spatial Plan area (401 settlements). This entity is also characterized by a relatively large concentration of economic and other activities, high level of settlement and infrastructure construction, etc. That is also where all MEIS plants are located which, together with Trepča and other industrial centers in immediate vicitnity, contribute to the inferior condition of the environment.

b) The second entity, which includes the remaining part of the Spatial Plan area, is characterized by a predominantly rural nature of the whole area, existence of several smaller centers (Lipljan, Glogovac, Srbica, Klina, Mališevo) with industrial plants and high population density (typical of the entire Province) that displays an upward trend in lowland settlements, despite the population's migration to more developed centers.


Source: Prostorni plan područja Kosovsko-metohijskog lignitskog basena, Nacrt, IAUS, Beograd, 1999.





Source: Prostorni plan područja Kosovsko-metohijskog lignitskog basena, Nacrt, IAUS, Beograd, 1999.

Map 2 - Settlements Network in the Area of Spatial Plan



Source: Prostorni plan područja Kosovsko-metohijskog lignitskog basena, Nacrt, IAUS, Beograd, 1999.

Map 3 – Existing Transport Network

Table 1: Lignite reserves in Serbia

Basin	<i>Exploitable</i> REZERVES (* 10 ⁶ t)	GEOLOGICAL REZERVES	THERMAL VALUE (kJ/kg)	STATE OF ACTIVITY %
Kosovo	8200	10491	7200	0,011
Kolubara	2675	3635	7400	0,354
Metohija	1551	2730	7400	0,000
Kostolac	645	1569	7600	0,351
Kovin	197	240	7600	0,03
Drenica	74	134	7200	0,000
Sjenica	50	184	14200	0,05
TOTAL	13392	18983	7400	

Table 2: Kosovo lignite deposit - population projection in settlements potentially endangered by open pit exploitation over the next 30 years

SETTLEMENT	POPULATION						HOUSEHOLDS							
S	1988.	1996.	2001.	2006.	2011.	2016.	2021.	1988.	1996.	2001.	2006.	2011.	2016.	2021.
Sibovac	1400	1885	2020	2155	2290	2425	2560	175	250	295	340	390	450	510
Ade	1935	2630	2805	2980	3155	3330	3505	205	320	395	460	525	605	700
Dobri Dub	1040	1310	1395	1475	1560	1640	1725	135	175	200	230	260	310	345
Kuzmin	505	535	540	540	545	550	550	99	105	110	120	125	130	140
Crkvena	1630	1865	1980	2100	2220	2356	2455	236	290	325	355	390	435	490
Vodica														
Leskovčić	1005	1155	1230	1305	1380	1455	1530	123	150	170	195	220	260	305
Kruševac	1710	2270	1445	2620	2795	2970	3140	263	360	410	460	510	570	630
V.Belaćevac	3160	3790	4115	4435	4755	5075	5400	376	480	555	650	780	925	1080

The largest population growth is registered in urban settlements of the first zone, followed by urban settlements and municipal centers in the second and, finally, villages in the lowlands. Changes in the number of population are accompanied by changes in its ethnical composition, including the villages, and the the statistical censuses (1961-1981) as well as a Household survey carried out in 1988, registered a continuous decrease in the number of ethnic Serbs and Montengrins in the entire Spatial Plan area. The rationale of a balanced regional development indicates the need to discourage further intensive growth of Priština and "conurbation", in favour of longterm development of smaller municipal and village community centers.

The availability and accessibility of Kosovo and Metohija lignite, and its share in Serbia's energy potential suggest the necessity of their future exploitation regardless of the numerous limitations and conflicts related to that course of action. The Republic will not have an alternative to Kosovo and other coals for a long time yet, at least until the world has come up with new unconventional energy sources.

Kosovo-Metohija lignite deposits are located in the central part of the Province. The deposits

and their immediate surroundings are crossed by main and regional traffic arteries and main lines of other major infrastructural facilities. That is why infrastructure corridors are envisaged for the prospective relocation of the facilities existing in the zone of mining activity and the construction of new ones. Construction of a highway between the southern part of Serbia and Montenegro, across the province, may become topical in the near future. Due to the high capital investments involved and in order to avoid possible relocation, this highway should be routed outside the planned zone of lignite deposits exploitation. The master project of the highway and the relevant feasibility study should examine a number of variants.

Exploatation boundaries of Kosovo lignite deposits (encircling the area of about 270.00 ha) will of necessity be corrected due to the high degree of completed construction and density of population above them, as well as the continuing trend of further construction and settlement. The economy of exploitation of the entire deposit has already become questionable due to intensive growth of urban and numerous village settlements. Unless further growth of settlements above the lignite layer is not limited, exploitation of a large part of the deposit may be endangered.

The present degree of exploration of the Kosovo lignite deposit allows us to fairly confidently speak of the final contours of strip mining in the Kosovo lignite deposit.

These circumstances indicate that the total coal production in Kosovo deposit might be concentrated in 2-4 large open pits ("North" and "South Kosovo").

In the period of the next 40-50 years strip mining will cover only 1/5 to 1/6 of the Kosovo lignite deposit area, thus endangering about ten or so settlements. Towards the end of that period the relocation of part of the railways and the main highway from Kosovo Polje to Glogovac may be required.

Concentration and congregation of MEIS plants is a process that will continue in future. The question of the optimal degree of concentration of Kosovo-Metohija MAIS facilities, is a difficult one to answer, primarily in view of the danger for the environment. In principle, a certain deconcentration of thermal power plants will be necessary in stage I. That is primarily related to "Kosovo C" thermal electric power plant, which has been planned on a new location (Glogovac), so as not to increase the concentration of pollutants in the zone of Priština, Obilić and Kosovo Polje. However, dealing with the problem of environmental polution by means of dispersing MAIS plants will not be acceptable in future. The only true solution is a rigorous control and limitation of overall emissions of damaging waste and other pollutants from MEIS plants. by using new technologies. That is particularluv important for Kosovo and Metohija due to the proximity of several national parks and reservations, present and future tourist regions (Mts Kopaonik, Šara, Prokletije, Mokra Gora, etc.), and a large number of settlements.

It is clear that many issues of the development, organization, arrangement and use of space in the MEIS area are still outstanding, while and the solutions for some others have only been indicated. That is due to the absence of a sufficiently clearly defined long-term energy development strategy on the national level as well as the non-existence of a development strategy of the Province. The degree of exploration in certain areas is still insufficient for a well-argumented proposal of more reliable and precisely defined solutions to many problems, including the ones of key importance for the exploitation of lignite depiositc, relativization of defelopment conflicts, environmental protection, etc. That is why the adoption of the Spatial Plan should be followed by research in all fields required to define the long-term strategies, plans and programmes for spatial development and arrangement, revitalization of natural environment, etc.

CONFLICTS, LIMITATIONS, POTENTIALS AND PRIORITIES OF SPATIAL DEVELOPMENT

Conflicts in large lignite basins emerge in consequence of large-scope exploitation and transformation of coal, but that does not exclude other causes of conflicting interests in these areas. The area of Kosovo-Metohija lignite basin most prominently reveals the following conflicting interests: insufficient and uneven development, exceptionally high overall and especially agrarian population density (among the highest in Europe), unemployment and a sizable portion of the grey economy, along with a low level and quality of services of public interests, ethnic conflicts and polarization, etc. The consequences of developing MEIS in these circumstances are the most pronounced in economic, social, spatial and ecological spheres, which is why the conflicts thus caused are the most complex, especially since they add to those already existing in other spheres of development (8).

The main conflict in the Plan area is the one between mining and agriculture, i.e. open pit lignite mining and high-fertility soil covering lignite deposits. The conflict is additionally aggravated by the remarkable density of agricultural population on this territory and high selling prices of the land, bearing in mind that replacement of the existing technology of strip lignite mining with a new one that could mitigate this conflict is not expected in forseeable future. It is therefore necessaery that plans for future exploitation took into account the following requirements:

- provision of the required institutional, organizational, technical-technological and other conditions for as efficient as possible recultivation of the damaged land and its soonest restoration to its initial purpose;
- occupation of land for mining purposes should not exceed a period of ten years;
- implementation of protective measures at the time of occupation of agricultural land (including the need to reduce external dumps to a minimum). The distance between excavation and recultivation fronts should also be reduced to the absolute minimum which does not endanger normal production;
- recultivation and revitalization of reproductive land potential should be carried out on the basis of thoroughly developed long term plans and projects, etc.

Another important conflict emerges between mining, on the one hand, and settlements, industrial, infrastructural, water supply and other facilities in the zones planned for openpit exploitation, on the other. The problem is extremely delicate and requires professional, serious and just approach. There is a series of institutional, organizational, normative and legal conditions that have to be provided before hand. The Spatial Plan has adopted the fololowing starting points in addressing this problem:

- conditions of resttlement should not place the endangered population into a less favourable situation; on the contrary, it would be desirable if the new settlement offered better living conditions;
- the population to be resettled should be offered a choice of compensation, place of resettlement, construction and arrangement of the new settlement, etc.; furthermore, every effort should be made to meet all reasonable requests by the households, if they fit into the agreed (prescribed) scope of compensation;
- the programme for relocation of settlements, industrial, infrastructure and other facilities must ensure the functioning of existing settlements systems until the relocation is completed;
- in view of the scarcity and high value of agricultural land, as well as domination of agricultural households in settlements above lignite deposits, provisions should be made to appropriately substitute the expropriated land of the households concerned; and
- bearing in mind the existing social, ethnic, religious and other tensions in Kosovo, efforts to solve the resettlement problems must take into account these specific circumstances.

Large-scale strip mining also has other negative effects on the environment, e.g. by reducing the level of underground waters in the vicinity of pits, disrupting the existing ecosystems in the zone of mining operations, affecting the cultural heritage and ambinetal wholes, etc. In the area Kosovo MEIS these influences must be continuously monotired and examined, especially with respect to to prospective substantial increase in coal production.

The third important conflict is created by the development and functioning of the energy-industry complex, wherein thermal electric power plants have the most important role. This conflict is is generally of ecological importance and is manifested in the pollution of air, soil, surface and underground waters predominantly by aggressive gases (SO₂, NO_x, etc.), flue and furnace slag ashes,

environmental "thermal burden", etc. The solution to this problem is generally twofold and implies the application of acceptable technicial devices to control the aggressive pollutants and the selection of appropriate sites for facilities of that kind. In relation to this conflict, the concept of the Spatial Plan has adopted the following criteria:

- balancing of requests for concentration of energy and industrial facilities based on economic and technological grounds and for their space-wise dispersion based on ecology and security of production in extraordinary circumstances;
- sites for new facilities must be selected in a way ensuring that the propagation of their operations' negative influences will, for the most part, spare the zones of concentration of settlements, i.e. population, good agricultural land, valuable natural and cultural heritage and zones which are at present marked by a high degree of environmental pollution; and
- sites for the new facilities must also fulfill certain conditions related to the relief, soil stability, microclimate, degree of completed construction on the site and its immediate surroundings, transport infrastructure, watter supply, etc.

Development and construction of settlements above lignite deposits pose a delicate problem the Spatial Plan had to clearly perceive. The conflict derives from the request to prohibit further construction and settlement on the territory above lignite deposits in order to protect an important energy source (coal), on the one hand, without stopping the development and functioning of a quality everyday life, on the other. In that relation it was necessary to accept a compromise depending on the planned dynamics of open pit exploitation.

Large capital investments in the energy sector bring relatively few new jobs in primary production. In view of the large problem of unemployment in Kosovo and Metohija, the program of investments into new energy facilities must address the problem of productive employment of the existing facilities surplas labour, as well as of the unemployed population, especially in the zones where the settlements and households would be relocated. In that relation the concept of the Spatial Plan included the following criteria:

- construction of new production plants for productive employment should be harmonized with the concept for the development of the settlement network, direction of the urbanization process and incentives for the development of small settlement centers;
- support for the opening of new jobs outside primary energy production in the MEIS area should be channelled towards the zones of settlement, i.e. reception of the population moved out of open pit exploitation sites;
- construction of new industrial facilities should not be planned in the immediate proximity of MEIS plants, and especially not within the lignite deposits exploitation boun daries; and
- employment programs, including aditional training and re-training should, in addition to MAIS production plants be oriented towards civil engineering, public utility and housing construction, recultivation and arrangement of the damaged land, tertiary sector and services of public interest.

Uneven regional development as well as the trend of increasing concentration of the population, activities. investments. and construction of settlements, economic. infrastructure, public and other facilities in Priština and its surroundings, as well as negative consequences of that development are important issues clearly defined by the Spatial Plan. In line with the general concept of the Spatial Plan of the Republic of Serbia (1991 working wersion, dopted in 1996), a view was adopted to encourage the development of smaller municipal centers, as well as centers of village communities (rural provincial towns), and converesely to discourage further extensive growth and expansion of Priština.

This premise was particularly important in the selection of sites to resettle the population from the zones of mining activities. Development of smaller urban settlements and village centeres is encouraged by allocation of investments, improved transport infrastructure, public utilities and construction of social

standard facilities, taxing policy, policy of limiting investments, etc.

Comparison of space suitability indicators for specific purposes clearly reveals that suitability ratings for certain basic purposes (agriculture, settlement, industry and energy) in the predominant part of the territory covered by the Spatial Plan, overlap, meaning that the zones of best agricultural land are simultaneously suitable for the construction of settlements. industrial and enerav facilities and infrastructure. Part of this space is located above lignite deposits and is therefore also important for mining. That is a particularly clear example of opposing (conflicting) interests in relation to the same space, which is why priorities for the use thereof must be defined. In a long term, the order of priorities is as follows: 1) agricultural land, 2) settlement construction, and 3) industry, energy, infrastructure. This order of priorities means that lasting occupation of land of first and second grade fertility for construction purposes should be prevented, and that construction of industrial, energy and infrastructure facilities must not appravate the conditions of development, life and housing in the existing and planned (new) settlements.

A simmilar approach applies to the establishment of priorities in the use of some other important resources, e.g. water. Settlements and population, along with agriculture, have the priority over industry and energy where use of high quality water is concerned (7).

ORGANIZATION, ARRANGEMENT AND USE OF SPACE

The degree of exploration of the Kosovo lignite deposit enbled the Plan to establish the final contours of open pit exploitation with a high degree of reliability, which was not the case with other lignite reserves in Kosovo and Metohija.

As already mentioned, depending on the dynamics of lignite exploitation, i.e. construction of appropriate energy and industrial facilities using coal, it is estimated that the period of exploitation of Kosovo and Metohija's deposits ranges between 140 and 240 years. That is a very long period of time

and is impossible to cover by prognoses of technolgical economic and social development. However, the above-mentioned estimate of the life-time of deposits allows us to draw some conclusions of importance for the solutions proposed for the period until the year 2020, as well as the immediately following years:

- MEIS development in these areas is viewed in a long term perspective; at the same time, it is expected that future modernization of production (based on automtion and robotization) will lead to decreasing labour requirements per unit of production, and necessitate the transfer of surplus labour into other sectors;
- Optimum exploitation boundaries of the Kosovo lignite deposit (with the surface of about 270.00 ha), have been adjusted to the high degree of completed construction and settlement above the deposit, as well as the trend of future construction and settlement: the economy of exploiting the whole deposit is questioned due to intensive gwrowth of urban (Obilić, Kosovo Polje, Lipljan) and other, smaller settlements; unless the growth of settlements above the lignite deposit is restricted, exploitation of a lrage part of the deposit will be endangered;
- In order to protect the deposit from unplanned construction, a regime of minor or major restrictions of construction and spatial expansion will have to be applied to about 100 settlements above the lignite deposits; these limitations have to be offset by advantages in terms of population employment, increased transportation accessibility, availability of public utilities, construction of facilities with public functions in settlements, etc.;
- Construction of settlements and other building projects, require stabilization of landfill in overburden dumps of large thickness in a period of over 50 years, which means that construction of new settlements on landfills after lignite exploitation cannot be counted upon in due course; the period of land stabilization required for construction of transport infrastructure may be reduced, but that would require the use of special measures during landfilling and control of land stabilization in internal dumps; that is

currently the case of internal dumps in the existing open-pits "Dobro selo" and "Belaćevac", where an infrastructure corridor is anticipated;

- Control of construction above the lignite layer will result in more intensive settlement and construction on the rims of lignite basins; that would require coordination of planning and construction in these zones so as to avoid uncontrolled concentration of construction and linear conurbation on both sides of the infrastructure corridor to be formed along the eastern rim of the Kosovo deposit;
- The availability and accessibility for exploitation of Kosovo-Metohija lignites, indicate that their exploitation in the future is a certainty, despite the numerous accompanying limitations and conflicts;
- Kosovo-Metohija lignites are covered by high fertility agricultural land; the predominant part of the land taken for the need of mining will be restored to agriculture by means of planned measures of recultivation and revitalization; the long term concept for the development of open-pits must ensure continuous filling of all depressions created by strip mining, so that at the end of exploitation of the lignite deposit there will be only one or two depressions left which could then be filled with water and turned into artificial lakes.

Also important for the concept of spatial organization and arrangement in this area is the estimate that more substantial changes in technologies of open-pit coal mining will not be forthcoming in due course, and that only their improvement could be expected, including:

- concentration of production within large excavation sites, to ensure greater efficiency of of the deposits, rational use of occupied land, improved economy of the mine, etc.;
- introduction of automated production, control mechanism and appropriate information system, and better conditions for successfull recultivation of the damaged land (3).

Development of thermal power plants in this area was based on the increase of unit and overal capacities, improvement of combustion technologies (for better utilization of thermal power of coal) as well as technologies for the control of harmful emissions of effluents. Chemical industry in Obilić was closed down and its reopening in forseable future is unlikely. We must bear in mind that development of new technologies for coal exploitation and processing is not a certainty worldwide, and that radical changes may be triggered by substantial alterations in prices of main energy products.

Large lignite basins are ones of capital intensive investments. The principles of rationality and economy demand concentration of production plants into large systems, leading to concentration of investments. The specific nature of lignite transformation into electrical energy contributes to the monofunctional character of economic structure in the given area. That is why the MEIS development with this structure and concentration of investments has territorially limited poistive effects (income, employment) in a relatively small space and relatively small scope, bearing in mind that its economic effects are manifested extraterritorially and materialized in the proces of "productive consumption" (9,10,11,12,13).

Contrary to the urban area of Priština, Obilić and Kosovo Polje, the remaing part of the Spatial Plan area is characterized by a low degree of urbanization, insufficiently developed urban centres, low level of tertiary sector activities and relatively poor supply of urban services. Low development level of services and the small percentage of employment in the tertiray sector are characteristic of the entire MEIS area, except Priština, and can be expelained by the following factors:

- capital investments, channelled predominantly into exploitation of energy raw materials and their primary transformation, and the monopoly of state actors in the entire public sector discouraging organization of other economic and service activities in this area;
- proximity of large urban centres (Priština, K.Mitrovica, Peć) and their functional domination contributed to the slow emancipation of other, smaller centers; the population depended on these larger centres for higher quality services, and this trend is realistically expected to continue, unless

appropriate incentive measures are taken to stimulate development of smaller setttlements.

Development of settlement and urban centers network was not observed only within the limits of the Spatial Plan, but also on the entire territory of the Province and Serbia. The settlement system in Kosovo comprises: one center of provincial importance (Priština) and six (sub)regional centers (K.Mitrovica, Peć, Đakovica, Prizren, Uroševac and Gnjilane) with their gravitation areas and networks of municipal and village centers. The system of settlements and centres functioning on the provincial level is fairly balanced. However, observation of the centres' network in the MEIS area, highlights the dominance of Priština with second-rank centers in its immediate vicinity (Kosovo Polje, Obilić, Gračanica). The expected population of these centeres in 2010 will account for about 33% of the total population in the Spatial Plan area, or approximately 85% of the expected number of inhabitants of urban municipal centers in that area. In that relation, development of smaller municipal and urban centers in the Spatial Plan area, as well as centres of village communities should be encouraged in the coming period (17,18,21).

POPULATION MIGRATION AND DISTRIBUTION

The Spatial Plan area is characterized by a powerful population expansion, contrary to demographic trends on the territory of Serbia, which has been undergoing demographic transition with low reproduction and small population growth since the 1960s. The population of the entire zone of MEIS influence (10 municipalities) grew from 369,000 (1961) to 818,000 (1991 estimate), at an average annual rate of 2.77%. At the same time, concentration of the population also increased from 38.3 % in 1951 to 40.3% of the total provincial population in 1981. At the time of elaboration of this Spatial Plan it was estimated that should the trend of population growth continue, the total number of inhabitants in the Spatial Plan area would increase by over 50% until the year 2011, and that the corresponding uward trend in urban (and municipal) centers would be still more prominent.

Strong population dynamics is characteristics of all municipalities in the Spatial Plan area, with growth indices of about 200.0 points. The strongest expansion is found in Priština municipality (index 406.5), and population growth above the provincial average has also been registered in Glogovac and Peć municipalities. Population expansion rests on a high natural rate of growth (of primarily Albanian and Roma population) and is due to a sustained high natality under conditions of improved health care and reduced death rate of the population, especially children of up to five years of age.

Fast population growth and trend of population concentration over the past decades are also found in settlements in the zone of lignite exploitation, especially in the immediate vicinity of excavation sites in Belaćevac and Dobro Selo, Obilić thermal power plant and Priština surroundings, i.e. precisely in spaces where indicators of environmental quality have substantially aggravated. The zone of the MEIS (Kosovo lignite deposit) in 1948 had the population of 26.500, compared with 72,000 in 1988, with the index of growth of 235.5 points, above that of the Province (216.10). This population dynamics in settlements in the MEIS zone is due to the high natural growth as well as to immigration into the zones of mining and industrial activities.

These projections indicate that continuing demographic trends on the territory of the proper and wider zone of the MEIS, will substantially increase the population potential, especially in terms of younger population, and add to the already pronounced overpopulation of the space, and thus sharpen the conflicts between the population growth and economic. social, cultural and spatial development. A special problem is the substantial spatial differentiation of demographic development by settlements, due to the characteristics of their ethnic structure, as well as consequences of the related processes. Active demographic policy would imply a higher degree of education and social engagement of Albanian and other ethnic groups (especially young female population), measures to discourage births, changes in social policy (education, health care) and higher employment. With respect to the concentration and distribution of the population, in addition to incentive measures of the investment policy (distribution of jobs) in order to reduce the pressure in the MEIS, Priština and Peć zones, specific urban measures and control of their implementation are also required.

At the time when this Spatial Plan was worked out, the share of non-Albanian population in this area in the total population was higher than on the level of the entire province, and was particularly prominant in the zone of lignite deposits.

Results of a survey carried out in 1988 in settlements above Kosovo lignite deposits confirmed the process of ethnic homogenization ("ethnic cleansing of settlements") noted in 1971 and 1981 censuses. This process developed in almost all settlements, including those with a dominant ethnic group and ethnically mixed environments. In ethnically mixed settlements, the change of ethnic structure invariably developed towards an increased share of the Albanian ethnic group and the decreased share of others.

According to the findings of this survey, the Spatial Plan area has several groups of settlements with predominantly non-Albanian population. The largest two groups are in the zone of Kosovo-Metohija lignite deposits. The group of settlements with predominantly non-Albanian population in the zone of Kosovo deposit includes: Plemetina, Prilužje, Grace, Devet Jugovića, Donja Brnjica, Kosovo Polje, Bresje, Kuzmin, Ugljare, Preoce, Laplje Selo, Sušica, Batuše, Radevo, Lepina, Skulanovo, Suvi Do, Livađe, Gračanica, Badovac, Okosnica, Janjevo, Gornja Gušterica, Donja Gušterica, Lipljan, Dobrotin and Staro Gracko.

The group of settlements with predominantly non-Albanian population in Metohija zone of the deposit includes: Tučepo, Osojane, Poljana, Leskovac, Šaljinovac, Opraška, Berliovo, Vidanje, Klina and Dolac²

² The period after the signing of Kumanovo Agreement and introduction of international administration into the Province in June 1999, witnessed major territorial shifts of ethnic population groups. Non-Albanian population predominantly moved out,

	Population projection								
Municipality	1991(*)	1996	2001	2006	2011	2016	2021		
lstok	50085	55557	61029	66501	71973	77445	82917		
Glogovac	33511	36103	38695	41287	438799	46471	49063		
Klina	52314	57064	61815	66565	71316	76066	80816		
Lipljan	70709	76045	81381	76717	92053	97399	102735		
Peć	34143	36579	39015	41451	43887	46323	48759		
Priština	244376	273470	302564	331658	360752	389846	418940		
Srbica	57248	62370	67493	72615	77738	82860	87983		
Vučitrn	22358	24196	26035	27873	29713	31551	33390		
Mališevo	16018	17477	18937	20396	21856	23315	24775		
Total	580762	638861	696964	745063	813167	871276	929378		

Table 3. Population projection in the wider area - zone of MEIS influence, 1991-2021 (*) based on the 1971.1981 trend)

Source: Spatial Plan of Kosovo-Metohija Lignite Basin, draft, IAUS, Beograd 1999.

Table 4. Population projection in the wider area - zone of MEIS influence, 1991-2021 ((*)(*) based on the 1961-1981 trend)

Municipality	Population projection								
	1991.(*)	1996.	2001.	2006.	2011.	2016.	2021.		
Glogovac	48162	52668	57174	61680	66186	70692	75198		
lstok	32943	35251	37559	39867	42175	44483	46791		
Klina	50649	54567	58485	62403	66321	70239	74157		
Lipljan	70021	75013	80005	84997	89989	94981	99973		
Peć	34441	37016	39591	42166	44741	47316	49891		
Priština	240022	266915	293808	320701	347594	374487	401380		
Srbica	55436	59662	63888	68114	72340	76566	80792		
Vučitrn	21819	23393	24967	26541	28115	29689	31263		
Mališevo	15793	17140	18487	19834	21181	22528	23875		
Total	569286	621625	673964	726303	778642	830981	883320		

Source: Spatial Plan of Kosovo-Metohija Lignite Basin, draft, IAUS, Beograd 1999.

Tabela 5: Ethnic structure of the provincial population in the zone of Kosovo lignite deposits

Ethnic structure in %		Albanians	Serbs	Montenegrins	Turks	Roma	Yugoslavs	Muslims	Others
Total popolation of the	1971.	72,0	18,2	4,4	0,5	1,7			3,2
Province	1981.	76,4	13,1	3,1	0,3	3,1	0,2	2,7	1,1
Kosovo lignite deposit,	Population	60,6	26,8	1,6	0,07	3,4	0,8	1,7	0,1
1981	Households	51,4	37,2	2,4	0,07	5,8	0,2	1,5	0,2

Source: Spatial Plan of Kosovo-Metohija Lignite Basin, draft, IAUS, Beograd 1999.

It is to be expected that further development of open pit exploitation of lignite will influence the increase of international tensions in this area. It is therefore necessary to approach the problems of relocation of endangered settlements from the mining zone very carefully, and offer solutions based on thorough preparations and detailed

especially from ethnically mixed and lone settlements. Non-Albanian ethnic groups (Serbian, Montenegrin and Roma population) was almost entirely moved out of the Metohija zone of the lignite deposit, while this proces was somewhat slower in the Kosovo zone, due to territorially grouped settlements with the majority Serbian population. More reliable data on the present ethnic structure are unavailable. consultations, as well as appreciation of requests of both the resettling population and the host community. Particular note should be made of the fact that settlements above the Kosovo deposit that will potentially be relocated in the next 50 years (Table 1) are predominantly inhabited by the Serbian which population, requires complete transparency and respect of international pacts conventions (Aarhus Convention. and International Pact on Civil and Political, as well as Economic, Social and Cultural Rights, etc.) in order to prevent the abuse and manipulation with lignite exploitation for other purposes (10-13).

RELOCATION OF SETTLEMENTS AND POPULATION RESETTLEMENT

Situation, limitations and potentials

High population density and socio-economic characteristics of the population living in the Spatial Plan area, and especially above the Kosovo lignite deposit, substantially limit the use of lignite for electricity production. In addition to the clashing utilization of the two main natural resources in this area – lignite and agricultural land – with exploitation of one limiting the use of the other, there is yet another limiting factor – the population. Two important features define the population's limiting role in this area. The first one is its

numerical size, reflected in the large density of population, in consequence of a high natural growth rate and low intensity of migrations. The second is the highly unfavourable socioeconomic structure of the population characterised by a low level of education, unfavourable structure of qualifications, domination of traditional patterns and systems of values, exclusion and static primary forms of groups, etc.

Under the present circumstances it is impossible to plan the resettlement of population from the lignite mining area to more distant parts. This limitation is, on the one hand, imposed by the political situation and poor interethnic relations, and, on the other, by the low educational structure, inferior labour skills and closed nature of primary groups, all of which reduce individual territorial mobility of families and households to be resettled due to expansion of lignite mining.

The Spatial Plan offers the following modalities for resettlement:

- Organised resettlement of parts or whole settlements, either by establishing and arranging new settlements, or by expanding (settling) the marginal zones of the existing settlements, which in terms of their spatial and other relevant characteristics may receive new households; organized resettlement requires the provision of building lots for new construction;
- Individual resettlement of households, with provision of land to substitute the expropriated one in zones where the required agricultural land can be provided for this exchange (by purchase from the private sector, conversion of state-owned land into private ownership, recultivation and upgrading of lower fertility categories of socially owned land) and
- Individual resettlement of households opting for payment of the expropriated land and real estate.

The high density of agricultural population and scarcity of cultivable land under circumstances of territorially immobile population, result in continuing expansion to land of inferior fertility, and especially that which is traditionally used for pasture, as well as forest land, etc. Due to the scarcity of land and its extremely high selling prices, appropriate measures are necessary to stimulate the change of occupation of purely agricultural households towards activities demanding smaller surfaces of land and enabling the use of low-skilled labour, especially of the female population. There is no doubt that the traditional organization of households and their size particularly prominent among the Albanian population - creates enormous difficulties and interferes with the change of professional orientations of households and their transfer from agricultural to non-agricultural activities. Therefore the change of occupation of households would have to be gradual (tax and other facilities and incentives to invest part of the compensation for expropriated real estate into production and other non-agricultural activities, etc.).

The housing fund in Kosovo lignite deposit (57 settlements) is of a recent nature. Four fifths of housing buildings were constructed in the past 30 years. A half of residential buildings are of good quality and meet the modern standards. The average housing surface per member of household (of about 13 square meters) is fairly favourable in view of the overall housing situation in the Province. Other housing buildings are of post and petrail type (filled with earth or unburnt brick 17.2%, and burnt brick 31.3%), and the overall surface of this category of buildings accounts for about 40% of the total housing surface on the territory observed.

Possible concepts and solutions

On the whole territory of the Spatial Plan there are three basic groups of settlements that should be distinguished by the degree of exposure to threat from expansion of lignite mining and its transformation into electricity.

The first group is composed of settlements on the pits, on their rims and in the zone of intensive influence of thermal power plants. These settlements are directly endangered by mining operations, either because of resettlement due to expansion of excavations, or due to various, as a rule negative, consequences for everyday life and economic activity etc. According to different variants for the expansion of open pits in the MEIS area

until the year 2020, directly endangered settlements are: Sibovac, Ade, Dobri Dub, Vragolja and Kuzmin. To this group we should also add Crkvene Vodice, located in the vicinity of an open pit, as well as Kruševac and Obilić, both suffering the consequences of pollution (coal transport, dumps, etc.). Under the present conditions of mining and processing of lignite in Kosovo thermal power plants, the life of the population in this group of settlements is extremely difficult. People are exposed to diverse forms of pollution (transport of coal and other material required for the excavation and processing, emissions of gases and particles, open dumps, chemical and mechanical pollution of agricultural land and the river Sitnica, etc.). On the other hand, due to limitations for the development and construction of settlements (in view of the prospective relocation) the quality of life in them is stagnating or worsening.

Conceptions and solutions proposed for this group of settlements are based on two views:

The first view expects that the required level of technological discipline in the work of the MEIS (emission standards) will soon be achieved, and will thereby reduce, at least to the tolerable level, the damaging influence on the environment and enable the continuing of settlements in the zones of excavation pits rims and zones of intensive influence of thermal power plants and their auxiliary facilities.

<u>The second view</u> assumes that the existing practice in the operation of MEIS in Kosovo and Metohija and the competent state and parastatal services will continue, as will the regulations that subordinate the local population to the proponents of the so-called general interests.

Households resettled from settlements in this group tend to move to more developed parts or municipal centres in the vicinity (Priština, Kosovo Polje, etc), due, in particular, to the following reasons:

 The so-called fair compensation for expropriated land is insufficient to buy appropriate lots of agricultural land at market prices; that is why the households concerned tend towards the purchase of lots in peripheral zones and (unlicensed) construction of houses in urban settlements;



Source: Prostorni plan područja Kosovsko-metohijskog lignitskog basena, Nacrt, IAUS, Beograd, 1999.

Map 4 – Limitations and conflicts in exploitation of Kosovo lignite basins – construction completness of space, relocation of settlements and infrastructural systems



Source: Prostorni plan područja Kosovsko-metohijskog lignitskog basena, Nacrt, IAUS, Beograd, 1999. Map 5 – Limitations and conflicts in exploitation of Kosovo lignite basin – natural values, cultural-historic monuments



Source: Prostorni plan područja Kosovsko-metohijskog lignitskog basena, Nacrt, IAUS, Beograd, 1999. Map 6 – Limitations and conflicts in exploitation of Kosovo Lignite basin – agriculture, air pollution from TE power plants



Source: Prostorni plan područja Kosovsko-metohijskog lignitskog basena, Nacrt, IAUS, Beograd, 1999. Map 7 – Division of Kosovo Lignite Deposit on Spoil Fields



Source: JP "Elektroprivreda Srbije", Beograd, 2001

Map 8 – Settlements with Serbian and Other Non Albanian Ethnical Groups – Estamation for 2001 base on survey in 1988

- An additional motivation for a household to remain in the vicinity of the MEIS is the policy of offsetting the inadequate compensation by an offer of employment; in order to allay the dissatisfaction with the compensation received for the expropriated land and real estate, which falls short of its market value, the expropriation beneficiaries provide employment for one (or two) members of the household resettled (or subject to expropriation), and thus keep the household on a daily gravitational isochrone between the place of living and place of work; and
- An independent factor for the selection of the place of living and work after the expropriation of real estate and land holding is the aspiration for a socially and economically more developed environment (settlement) offering larger chances for employment, earning (and often illegal transfer to the grey economy, more profitable in densely populated and larger settlements), education, health care, social welfare, etc.

The second group is composed of settlements indirectly threatened by lignite mining and processing works. Indirect threats to settlements include all forms of pollution. environmental difficulties in transportation, pressure on settlement funds on the part of population resettled from the mining area, increased demand for building lots and real estate, prohibition and limitations to licensed construction due to prospective expansion of excavations, etc. Settlements belonging to this group are more numerous and include even municipal centres, and in particular Priština. In order to reduce the danger for the second group of settlements it would be necessary to: (a) ensure the required level of technological discipline in the work of the MEIS and thereby reduce, if not eliminate, the negative consequences for the life and work in the settlements concerned; and (b) encourage the economic and social development of other settlements in the Spatial Plan area and other parts of Kosovo-Metohija. to make them attractive destinations for housing and economic activity of households relocated from excavation sites or their rims.

These potentially immigration settlements form the **third group of settlements** in the Spatial Plan area. The term immigration settlements denotes the settlements receiving the displaced population, either through organised relocation of entire settlement or parts thereof (mahala), or through spontaneous and independent settlement of displaced households.

Organised resettlement of households from the pit sites is the more desirable variant:

- A large number of heads of households in settlements directly endangered by lignite mining (Ade, Crkvena Vodica, etc.) believe that the MEIS and competent municipal services are obliged to ensure organised relocation of entire quarters; in addition to being more efficient, this kind of relocation is supported also by strona social. psychological, cultural and economic reasons for ensuring space-wise proximity of the population on the new location; the life in these local communities is relatively poorly individualised and they are still dominated by the collective and communal spirit even in primary groups, as a form of economic and social protection and safety, as well as social control and preservation of traditional values in the primary group and local community; in any case this attitude is legitimate from the point of view of rights and interests of the local community and needs to be observed as much as possible. and particularly in cases when it represents a specific request of the local community; and
- Organized resettlement of households is an acceptable variant for immigration settlements as well, providing that the set rules are observed, and in the first place those related to public utility and infrastructural conditions on new lots and participation in the cost of public utility provisioning and increasing the quality of life in the settlement as a whole; serious conflicts between the domicile population and settlers emerge because the newly arrived population starts to use public utility and other settlement funds (public standard facilities, infrastructure and equipment, etc.), without previously participating in the cost of their construction, without paving an appropriate compensation for their use or a compensation different from that of the domicile population which, as a rule,

contributed to the construction of these funds in villages and smaller municipal centres.

Organised resettlement and appropriation of part of compensation funds for equipment of immigration settlements (public utilities, infrastructure, public standard) i.e. upgrading of public utility and other standards of immigration settlements, would reduce the cause for conflicts and intolerance between the domicile population and settlers, and channel the investment of funds provided as fair compensation, into immigration settlements.

Equipping of immigration settlements and spatial arrangement in settlements close to open pits

As the cases of previous displacement of the population due to open-pit mining of lignite and other activities (formation of reservoirs, etc.) reveal numerous solutions to the detriment of the local inhabitants, the related propositions of the Spatial Plan attach special importance to these considerations.

Field research and surveys show that the majority of households opted for the so-called collective, organized form of resettlement, implying that the beneficiary of expropriation, i.e. the competent state service, should provide the conditions for all households (or those who so wish) from one quarter, or part of the settlement, to move together to another location. This kind of resettlement obliges the beneficiary of expropriation to ensure timely provision of the land (building sites) to be allotted to households, construction of settlement infrastructure, suprastructure, etc.

The main danger related to immigration settlements is reflected in the lower quality of life, due to the large pressure of resettled households. The estimate of fair compensation for expropriated real-estate owned by households and evaluation of the value of settlement funds in settlements relocated due to expansion of lignite mining, need to show the value of citizens' real-estate, resulting from the public utility standard and quality of life in the settlement separately from the value of settlement funds. The part of compensation for settlement funds, public utility and other infrastructure should be channelled into public utility equipment and increase in the living standards of immigration settlements.

Notwithstanding the fact that resettlement to immigration settlements will follow the market criteria (purchase of building lots etc.) it would be necessary to timely obtain the agreement of the immigration settlement's local community, which would only be possible with a consistent and financially arranged plan for that settlement's expansion, construction and completion of settlement infrastructure and suprastructure and appropriate financing secured for this purpose.

Channelling of financing into settlement funds of potentially immigration settlements (public utility and other infrastructure, public standard, etc.) should be organised, or at least coordinated, at the level of the Republic or the Province. That could be done through a special fund for the disbursement of compensation for settlement funds (relocated settlements) and part of funds for public utility equipment of settlements and individual lots, to immigration or new settlements according to the established (and verified) programs for the arrangement and construction of settlements (provision of zones for housing construction, etc.).

It would also be desirable to elaborate a methodological instruction for the development of regulation and other urban plans, in view of the specifics bound to emerge in immigration or newly-formed settlements (formation of new lots, improvement of public utility equipment of settlements, etc.). This instruction should comprise the basic elements for the arrangement of lots, minimum equipment standards and organization of households' lots. etc, in order to avoid the high costs which inevitably result from unprofessional construction, and inferior results obtained in that kind of urbanisation and equipping of settlements.

Status of the local population in settlements endangered by open pits

The status of the local population must be more precisely defined from the point of view of their resettlement, or survival in the zones of MEIS influence. In that relation, the following requirements are considered essential: Formulation of long and medium term (at least ten-year) settlement relocation programs, precisely defining the boundaries of open pits, limits and areas of protective zones, dynamics of resettlement and boundaries of thermal power plants influence (all forms of pollution, material transport, etc.);

Clear and precise definition of the conditions of expropriation for households, as well as the rights and obligations of the local population, conditions of resettlement (with a choice of different options with respect to directions of resettlement) and construction, provision of agricultural land, building lots, etc.; in other words, clear and easily understandable review of resettlement conditions and the population's rights under the law; and

Definition of the protective belt between the pits and thermal power plants, on the one hand, and settlement area, on the other, so as to prevent the former from endangering the life and work of the population in settlements on the rims of excavations, or in the vicinity of thermal electric power plants; field research at the time of Spatial Plan elaboration revealed numerous difficulties for the local population and inadequate protection from lignite mining activities: open pits encroach on the settlement area, cross the holdings and plots of households, reduce the size of holdings through the so-called partial expropriation³ and in different ways endanger the life of the local population (drained wells, cattle falling into the pits, dangers for the movement and playing of children, landslides, etc.); protective belt must be wide enough to secure the settlement from the negative influences and ecological damage and ensure unobstructed everyday life and safe communication of the settlement with its surroundings; the settlements which due to the expansion of mining excavations find themselves within the boundaries of the protected zone, must have the same status – the right to relocation – as those directly endangered by open pits and thus anticipated for relocation (22).

APPROACH TO IMPLEMENTATION OF THE PLAN'S CONCEPTS

Priorities for the development of MEIS until 2020 have to do with the construction of new thermal power plants of 12000 MW and, in that relation the opening of new open pits ("North" and "South" Kosovo), as well as reconstruction, i.e. expansion of thermal power plants "Kosovo A" and "Kosovo B", reconstruction and possible expansion of the coal drying plant, construction of auxiliary facilities and plants, etc. These capital investment efforts will be preceded by extensive research, elaboration of development and technical documentation, adoption of a Spatial Plan, etc. In that same period numerous accompanying activities will also take place, being highly important from the point of view or spatial organization and arrangement, e.g. relocation of several settlements, and the river Sitnica and its tributaries, construction of reservoirs, relocation of a part of major infrastructure and other facilities, formation of internal spoil dumps, start up of organised recultivation of the damaged land, etc. In this period the MEIS area will also be the scene for the solution of numerous general development problems, including most importantly: uneven development. unemployment, regional equipping settlements, communal of construction of social standard facilities, especially in villages, etc.

Implementation of the lignite deposit exploitation plan as well as the above mentioned development priorities must be supported by appropriate policies to be pursued by the competent state bodies and organizations. Guidelines for the definition of development policies include: regional development, investments, taxes, credits and

³ Partial expropriation is permitted by the Law on Expropriation and implies the expropriation of a part of a household's rel estate, usually agricultural land, while the house with gardens remains the property of the household. Partial expropriation is favourable for its beneficiaries (state owned firms), because the expropriation price of agricultural land was even five to ten times lower that the market price (prices of agricultural land on the territory of Kosovo andMetohija were substantially higher than in other parts of the Republic) and the compensation for the house and gardens was calculated on the basis of real market prices. The local authorities were obliged to advise the uninformed and uneducated owners of real estate of their rights, including the right to refuse partial expropriation, which the ahtorities often failed to do regardless of their or the expropriated citizens' ethnic affiliation.

other forms of stimulations; energy, agriculture, water management, industry, services, etc., development of settlements, protection and promotion of the environment; social and individual standard, etc. (19,20).

The inadequacy and disparateness of the existing legal regulations governing the development of MEIS, along with numerous problems and conflicts requiring specific legal solutions, indicate the need to address the aspects of the current and future development of the MAIS and its immediate surrounding in a single legislation. This does not exclude the need to work out the implementing by-laws and harmonize the existing regulations of direct or indirect bearing on the development and arrangement of the MEIS area.

The Spatial Plan will be implemented through national, regional or sectoral development plans, programs and projects, spatial plans of smaller territorial unites, urban plans of settlements and technical documentation for the MAIS plants, major infrastructure, management of watercourses, redistribution and arrangement of agricultural land, recultivation and revitalization of damaged land, etc.

All aspects of development of the MEIS and its surroundings, must be the subject of continuing research. In that relation it would be necessary to elaborate and occasionally update long and medium term, as well as annual, research programs and establish special funds for this purpose.

Continuing research work, development planning, monitoring and control require the development of a specific segment of the information system and monitoring of the MAIS area. Development and use of the information system, organization and monitoring of research, development planning, arrangement and revitalization of space and solution of development conflicts in this area demand appropriate institutional solutions. These in the first place include the establishment of a special agency, committee or permanent commission to coordinate the work related to MEIS development. Experience of developed countries points to the establishment of a special fund (or funds) replenished from the prices of produced energy and used to deal with the above mentioned development conflicts (resettlement, recultivation, environmental protection, etc.).

CONCLUSION

Relative scarcity of electric energy sources in Serbia and its surroundings, compared with other countries, and the fact that over 40 % of the total available energy potentials of the country is located in two large lignite basins (Kosovo-Metohija and Kolubara) speak of the exceptional interest of these basins for energy development and thereby also for the overall development of the country.

These circumstances suggest that rational utilization of this kind of energy sources is necessary. Capital investments are involved in the construction of mining and energy facilities, and the effects thereof are not fully manifested until these facilities have become operation. The negative effects of investments into exploitation and use of lignite are revealed in a relatively narrow space, while the positive, external effects are spread wider through consumption. Investments energy by themselves do not produce "negative" external effects, which in fact appear indirectly, as consequences of inappropriate technologies, violation of regulations and non-existence of a long term energy development strategy. A number of negative external effects are manifested in a relatively short time (occupation of space, destruction of agricultural land) while the other (larger) part are only revealed in a longer term (degradation of natural resources, environmental pollution, endangered functioning of everyday life of surrounding settlements, social-economic transformations and relocation of household and settlements, ecological consequences of harmful emissions etc.). Negative external effects are phenomena that have not been sufficiently examined even in other countries, which is why it is difficult to be precise about the time of their manifestation. However, it is certain that their manifestations are of a predominantly long term nature.

The area of influence of coal exploitation and use in large lignite basins is relatively limited and local (capital investments, occupation of land) in some aspects, somewhat wider in others (degradation of the environment,

relocation of settlements, negative external effects), and in others still goes beyond regional boundaries (energy use). This suggests that the problems of long term development, manifested in large lignite basins (large structural changes, monofunctional economic development, degradation of natural resources and the environment as a whole, resettlement etc.) cannot be perceived and solved in local frameworks, but only in the context of overall development of wider territorial units, thus within regional development. Therefore, long term development of large MAIS, and long term policy for spatial arrangement and rehabilitation in zones of their influence, in terms of their contents, importance, nature, forms and area of manifestation belong to the sphere of regional planning.

The long term nature of large MEIS, as well as structural changes, conflicts and negative effects in the zones of their influence, impose the need for long term planning, on the one hand, while on the other, the specific development characteristics and consequences of mining activities and energy production on a wider territorial scale call for regional planning. Long term planning in large lignite basins is also important in view of the large number of actors and the need to harmonize their interests and activities. Furthermore, the regional approach also provides the most appropriate platform to mitigate structural disproportion in development, neutralize development conflicts and perceive (positive and negative) external effects. That is why long-term regional planning is indispensable for planned orientation of future development of large MEIS and for rational arrangement, rehabilitation and use of space in the zones of their influence.

The work done in the research and planning for the Spatial Plan of Kosovo-Metohija basin in the 1987-1990 and 1998-1999 periods provides important experience in methodological, organisational and technical – technological terms. A potentially large MEIS is faced with numerous limitations, related primarily to the relocation of settlements and infrastructure, resettlement of the population in a situation marked by a high degree of completed construction and population density in the space above lignite deposits, large share of agricultural population, its multiethnic composition and pronounced ethnic tensions. The Spatial Plan has offered the basic premises to resolve the ongoing and future development conflicts, spatial, social and ecological limitations, including the relevant analytical basis and data base resulting from field research and surveys.

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GOVERNMENT'S INVOLVEMENT IN REGIONAL POLICY AND DEVELOPMENT IN THE STATE OF OHIO, USA

Andrea Šehić

Brownfield redevelopment has been playing a leading role in urban development in the state of Ohio for some time now. Being one of the most industrialized states in the US, Ohio has been struggling for a long time with numerous consequences of businesses that were shutting down, moving out of Ohio, or restructuring. The State officials have been addressing and taking care of these issues very carefully, and with a lot of concern and attention. Furthermore, the officials have been cooperating on all levels of government, which created a very positive and encouraging environment for successful redevelopment projects.

The State has been focusing on comparative advantages of regions, and assisting where the demand is. The State has also been encouraging regional development by providing programs especially designed for ones in need, or valuing projects that propose a regional component/strategy. With establishing public-private partnerships between applicants and the government as the fund provider, a very important way of cooperation is established, and maintained, throughout the funding process.

With the evident burden that brownfields impose on all participants in the process of redevelopment, it is sometimes difficult to see the overall benefit of such actions. The crucial role of government's support has proved to be the key to successful implementation of brownfield projects. Enabling continuous flow of funds, establishing intergovernmental relations, along with enabling public-private partnerships, and tightly linking the participants in the process of redevelopment resulted in successfully completed projects, which brought new life and brighter perspective to communities that haven't been able to struggle through this complex process on their own.

Key Words: redevelopment, brownfields, investments, state government, public-private partnerships, priority investment areas

INTRODUCTION

The goal of this paper is to present an example of government's attempt to encourage development on the regional level, through programs and funding opportunities, crafted in a way to initiate and incentivize distressed regions in the State of Ohio, USA.

Having in mind the industrial background of the State of Ohio, it is no wonder that this characteristic influenced many regions in the State to change, restructure their economy, retrain their working force, and overall adapt to the new era and new market demands. After decades of painful changes, the time has come for those regions to seize upon the new trends and attitudes that have begun to revalue their special qualities.

The government's role in this situation has been to help overcome the market failures by

investing in brownfield redevelopment in order to make the impacted regions attractive for future development - urban, regional, economic and environmental. By offering funds, the State has been successfully mitigating the negative connotations of brownfields, therefore bringing the so much needed capital back to its distressed areas. On the regional level, brownfields impose an array of challenges, such as environmental liability concerns and financing obstacles, due to the fact there is no financing available for such impaired land. By filling in this gap, the State has been very successful in leveraging its initial investment in these areas, and bringing new values to the regions - redevelopment. new jobs, and overall making its regions vital and competitive in the market.

GROWING NEED FOR BROWNFIELD REDEVELOPMENT IN THE STATE OF OHIO

Brownfields have become a very serious topic in the urban environment lately. They have been defined as abandoned, idled, or underused industrial and commercial properties where redevelopment is complicated by known or potential release of hazardous substances or petroleum [2] [5].

In the real urban and regional perspective, all of those mentioned types of sites and properties present a significant problem, as well as an opportunity for regions. These properties impose economic and social costs on localities and neighborhoods by reducing property values, creating blight, and becoming targets of vandalism and criminal activity. Yet they also hold such a broad array of opportunities for the development of new housing, businesses, and public amenities in cities and its respective regions [6].

A special concern should be directed to the old industrial areas, as they most often include all of those types of problematic land, require a serious brownfield redevelopment action and a revival of older industrial urban economies. Older industrial cities possess a unique set of characteristics and resources that, if fully leveraged, could be converted into vital competitive assets. These include distinctive physical features - including waterfronts. walkable urban grids, public transit, and historic architecture; important economic attributes - such as dense employment centers, universities and medical facilities, and, for some cities, proximity to more economically robust metropolitan areas. Furthermore, older industrial cities are still important centers of regional identity, inspiring a sense of pride and place, which, while often abstract, can be the first step for change. After many years of painful economic S0 restructuring, the time is now for these cities to seize upon new trends and attitudes that have begun to revalue their special qualities. Brownfield redevelopment in that sense should be one of the leading, restructuring and revitalizing steps in those cities. Major demographic shifts - migrations, an aging population, and changing family structures are altering the size, makeup, and locational choices of the households in both the US and Ohio, to the benefit of the regions that offer the opportunities and amenities these groups seek. Economic trends - globalization, the demand for educated workers, and the increasing role of universities - are providing areas with a unique chance to capitalize upon their economic advantages and regain their competitive edge. And forward-thinking political leaders and constituencies businesses, local and state elected officials, major foundations, and key environmental and community organizations - are speaking more and more often about market-based urban development, reflecting these groups' growing awareness of the revitalization and competitive, sustainable metropolitan growth [7].

Still, not only cities are the ones responsible for addressing vacant, abandoned, or

contaminated land and structures. State governments play an important role as well, because local improvement of the redevelopment process often depends on state-level legislative reform, which is not always forthcoming [6]. This is why these complex issues should be addressed as much comprehensive as possible, utilizing all levels of governments, and all concerned parties, both public and private.

SUCCESS IN THE STATE OF OHIO: CLEAN OHIO ASSISTANCE FUND

Brownfield redevelopment has been playing a leading role in urban development in the state of Ohio for some time now. Being one of the

most industrialized states in the US, Ohio has been struggling for a long time with numerous consequences of businesses that were shutting down, moving out of Ohio, or restructuring. The State officials have been addressing and taking care of these issues very carefully, and with a lot of concern and attention. Furthermore, the officials have been cooperating on all levels of government, which created a very positive and encouraging environment for successful redevelopment projects.

During the previous Governor Taft's administration, Ohio voters passed Issue 1, which authorized release of bonds to provide grants to stimulate the redevelopment of brownfields. Legislation signed by Gov. Bob



Figure 1. Priority Investment Areas Map 2008

Taft created two separate brownfield grant programs - the Clean Ohio Revitalization Fund and the Clean Ohio Assistance Fund. [10]

Furthermore, "Turnaround Ohio" agenda [3], created by the (current) state government as a vision and a plan to move Ohio forward, strongly states that a section of the agenda named *Revitalizing Our Cities and Towns* "is our commitment to give local leaders the tools they need to create jobs and attract investments to make their communities vibrant centers of commerce. There are no great states without great cities, and we will pursue a revitalization plan and an urban investment agenda..."

The problem of vacant and abandoned land is especially addressed. The agenda very clearly and precisely states the challenge – "Development of brownfields – urban and rural sites with environmental contamination – costs six to eight times what it costs to develop pristine land. The public sector must help narrow this differential. Ohio should not be using taxpayer dollars to promote unchecked sprawl or to encourage the abandonment of cities [3]."

A continued commitment by the State of Ohio towards brownfield redevelopment through the Clean Ohio Assistance Fund (COAF) offers opportunities for *Priority Investment Areas of the State* [1] to strive to redevelop brownfields, revitalizing and investing into old assets, in the *distressed* communities of Ohio. More specifically, those areas are designated by the Ohio Department of Development every six months, and include *distressed cities/counties, labor surplus cities/counties, situational distress cities or inner city distress.*

The Ohio Department of Development through the Clean Ohio Assistance Fund has awarded 108 grants, totaling more than \$39 million to Priority Investment Areas across Ohio over the past five years. The investments are helping to transform Ohio communities by redevelopment, investments and job creation. These projects have leveraged more than \$412 million in new private and public investment on brownfields, and are anticipated to create and/or retain 4,306 jobs [2].

In addition, the State of Ohio through the Ohio Department of Development and its Urban





Figure 2. Clean Ohio Assistance Fund Projects' Map 2002-2007

Development Division has been successfully implementing a state-wide *competitive* brownfield financing program, the Clean Ohio Revitalization Fund (CORF), which attracts private capital to brownfield redevelopment activities and new investments throughout all areas of Ohio. Over seventy CORF cleanup grants have been funded, resulting in more than \$500 million in new construction, completed or underway, with another \$1 billion proposed over the next few years [2].

APPROACHING THE PROBLEM: HOW DOES THE STATE DO IT?

In order to address such complex issue as brownfield redevelopment, the State has taken a comprehensive, interdisciplinary approach to this particular problem. This encompasses the economic and environmental aspects, regional collaboration and integration. The state also diligently worked government on with cooperation establishing other government agencies, largely with the Ohio Environmental Protection Agency and the U.S. Environmental Protection Agency (USEPA). Clean Ohio Assistance Fund and Clean Ohio

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Revitalization Fund are jointly reviewed and evaluated by the Ohio Department of Development/Ohio Environmental Protection Agency teams, which coordinate in decisionand policy-making on a daily basis. Cooperation with the federal USEPA serves as an additional source of funding, since USEPA, through the ODOD, distributes funds for loans, to interested parties that can get brownfield redevelopment and cleanup money.

The State has been also focusing on comparative advantages of regions, and assisting where the demand id. The State has been encouraging regional development by providing programs especially designed for ones in need, or valuing projects that propose regional component/strategy. With а establishing public-private partnerships between applicants and the government as the fund provider, a very important way of cooperation is established, and maintained, throughout the funding process.

CHALLENGES & BENEFITS OF BROWNFIELD REDEVELOPMENT

With the growing demand for available land in urban areas, brownfield sites provide a valuable source of the needed space in dense and already overused urban structures of cities. On the other hand, brownfield redevelopment imposes certain *challenges*, compared to other real estate development projects, such as:

- Environmental Liability Concerns both developers and property owners want to manage past and future liabilities associated with the property's environmental background
- Value of Location vs. Cost of Redevelopment – while these properties are often found in urban locations that are ideally suited for redevelopment, the cost to clean them up can be a competitive disadvantage when compared to suburban, greenfield sites.
- Financing Obstacles loans for these types of properties are often unavailable, as brownfield sites are considered impaired land, not eligible for financial support. Clean-up expenses can exceed the value of the property, so they may directly affect the feasibility of the particular project.

These are indeed the main challenges that the government is required to support - alleviation of environmental issues, and even more important – financing obstacles and gaps, which make this type of redevelopment very difficult and complicated.

However, in spite of these and many other challenges that brownfield redevelopment may incur, we should never deny the opportunity and importance that this land holds down for central cities – it generates new economic activity, increases tax revenue, improves physical amenities, increases safety, and creates a new urban atmosphere. We could easily answer the question "why invest more money and redevelop a brownfield?" by categorizing the main benefits of such redevelopment process into the following:

- Bring Out Hidden/Locked Property Value, a value that couldn't have been used due to contamination or any other issues that are constraining the use of a property
- Environmental Benefit, that is achieved by removing any potential hazardous materials or substances from the site
- Economic Benefit, bringing new investments and new tax payers, and starting a new economic activity on an existing property
- Community Benefit, which can be measured in all of the above, as well as in aesthetics parameters, in capturing history of a place and reviving it, or creating a totally new asset in the community; caring for past, but valuing the present and future trends and needs at the site, fitting it accordingly within its surroundings.

All of these factors should be further analyzed in terms of aforementioned distressed communities, to which the Fund is exclusively intended for. This is the only steady source of funds for them, having in mind the fact that their projects for redevelopment are evaluated on the rolling time schedule as long as the funds are available, and more importantly – there is no competition involved. This translates to the fact that as long as the projects fulfill the requirements and provide sufficient documentation regarding the future use and development on site, they become a grantee. This process, however, might be lengthy, but is more than well-appreciated by the eligible communities.

Since its inception, Clean Ohio Assistance Fund has been awarded with \$10 million per biennium. This might seem like a lot of resources, but what has actually been happening is that after the eligible potential grantees became familiar with requirement and procedures - the fund has been lacking significant amounts of money. This gap turns out to be between 50 and 60%; still, the Fund has been able to level out this misbalance by reappropriations from previous year when it was just instituted and communities were not aware of this fabulous opportunity. This year, Clean Ohio Assistance Fund had to discontinue the application process, as it ran out of funds for prospective projects; however it was able to maintain the disbursement payments for the ongoing projects.

As there is a significant need for such funding source, the Clean Ohio Assistance Fund is seeking for an increase of the budget. This will enable the Ohio Department of Development to continue to serve its most needed constituents, and keep on building its communities and the overall economy. These types of investments not only spur further economic development. but also encourage Ohio's cities to strengthen and retain young professionals that would otherwise leave the state in search of a better future. These redevelopments can surely be the catalyst for making the communities more appealing and competitive, and certainly a place for future generations to enjoy and keep building on.

STAKEHOLDERS' PERCEPTION & EVALUATION OF THE CLEAN OHIO FUND

In order to evaluate performance and future needs for the Clean Ohio Fund resources, seven stakeholder meetings were planned, organized and hosted by the Urban Development Division throughout the summer of 2007. These meetings gathered more than 300 participants (current and future/possible grantees, government officials, private sector representatives, and all other interest groups) and supplied input and feedback "from the field". All stakeholders, with no exceptions, strongly stated that "there's no other way to revitalize brownfields without Clean Ohio". Clean Ohio Fund programs are viewed as highly successful, accomplishing the established goals and objectives. Not just that they are bringing economic and environmental benefits to the troubled places in the State of Ohio, but are seen as key catalysts and initiators of so needed private investments, that would have been impossible without the State's assistance and support [4].

To further portray the success of these funding programs serves the fact that Governor Strickland, in his State of the State speech proposed (and eventually got) another \$400 million specifically for the Clean Ohio Fund as a crucial part of his economic-stimulus plan to revitalize the State's downward-sloping economy. Even Ohio's Republicans, who are in general opposing Strickland's plan, stated that "the \$400 million in Clean Ohio funding that democratic governor included in his plan has a wide support among Republicans. The 7-year old program is very well accepted by lawmakers of both stripes because the cleanup program has spread near and far with 87 of Ohio's 88 counties getting projects funded." [8] [9]

CONCLUSION

With the evident burden that brownfields impose on all participants in the process of redevelopment, it is sometimes difficult to see the overall benefit of such actions. The crucial role of government's support has proved to be the key to successful implementation of brownfield projects. Enabling continuous flow of funds, establishing intergovernmental relations, along with enabling public-private partnerships, and tightly linking the participants in the process of redevelopment resulted in successfully completed projects, which brought new life and brighter perspective to communities that haven't been able to struggle through this complex process on their own.

Analyzing the brownfield "issue" from a broader perspective, we can infer that, with government's assistance, these communities did not just get a redeveloped piece of property, ready for a new use; they have acquired a new *asset* - a new development catalyst of the particular neighborhood –

capable of spurring new economic activity and bringing people back to the communities. This type of redevelopment might require a lot of resources in order to become reality, but the results show that the redevelopment, once completed, generates benefits to all of the involved - end-users of the treated property. surrounding neighborhood and its residents, government and its officials, local property values and economic activity, and the overall image of the area. Not all of these parameters can be easily measured, but the practice has showed dramatic increase of interest in brownfield redevelopment after the initial steps have been made, and first projects have been completed. After all, these projects will unquestionably and unconditionally become reality with the growing market demands for prime urban land and locations that are already overused and overcrowded. Brownfields will, therefore, open a whole new perspective and perception of how we address contemporary urban - all in order to serve to the best of our communities, for both present and future times. Securing additional funds will therefore play the key role in making the big plans come true, carefully guiding its communities towards a proved path for success and prosperity.

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STRATEGIC EVALUATION OF ECONOMIC FEASIBILITY OF MOUNTAIN TOURIST REGION DEVELOPMENT – CASE STUDY OF STARA PLANINA¹

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This paper covers theoretical, methodological and practical discoveries and evaluation of the economic aspects of development and planning of the mountain tourist regions. The basic aspects of economic-spatial theories, analysis and methods are presented for research of

development effects in the mountain regions. It is also pointed to the basic terms of the mountain tourist regions development in the countries of the European Union which realize respective development results The work analyses significance of tourism in development of the mountain regions characterized by the capability for innovative activities, i.e. starting the whole range of complementary activities which reversibly influence the forming of growth and development poles. Especially are analyzed commercial and non-commercial effects of realization of the mountain tourist centers in ecologically saved, but as a rule, economically not enough developed mountain regions.

The approach in the strategic evaluation of the economic feasibility of development of the tourist region is considered in accordance with the experience of the countries with higher degree of mountain region development, on example of Stara planina. The analysis of economic feasibility of mountain region development Stara planina covered the following segments: market, consumption, number of employed, investment means and economic effects of exploitation. Considering the fact that Stara planina is region covered by the Park of Nature and Tourist region for which the Spatial plan is done, a special problem was harmonization of development and protection functions, i.e. evaluation of economic and ecological acceptability for development implementation. The Spatial plan foreseen rational model of sustainable regional development of the Stara planina region based on integration of urban and rural economies on one side and development of tourism and protection of nature, on the other.

Key words: sustainable development, tourist region, economy, protection, evaluation, Stara planina.

INTRODUCTORY REMARKS¹

The basic question that influences all aspects of the sustainable development of mountain regions strategy, including the fundamental decisions about its realization, presents the balance between development aims on one side and protection of resources on the other side, as a condition and a consequence of development. The protection of resources is related to natural and cultural values of the mountain regions. The natural values cover all elements of the natural environment that are a condition for realization of developmental activities. The difference between natural resources that have to be preserved is usually emphasized together with the ones that should be developed with different degrees of priorities and intensities.

In the countries with a higher degree of development of the mountain regions, tourism represents dominant economic activity since it possesses capability for innovative activities, i.e. towards the movement of the whole spectrum of complementary activities. Tourism is the generator for development which possesses capability to transfer innovations to agriculture and to other fields which supplies it with different products, semi-products and services that might be considered as the key for prosperity of the mountain regions. Besides, tourism has innovative capability turned towards markets outside the specific mountain region which will depend on its competitiveness in search of the specific tourist product, i.e. the image of the mountain region.

The mountain tourist regions in the West European countries accomplish significant development results, primarily in incomes, with adequate ecologically adaptable protection system of the nature and

¹ This paper was completed as a part of the project "Sustainable development and organisation of spa and tourist settlements of Serbia" which has been financed by the Serbian Ministry of Science and Technologycal development

environment, which is tested on the sample of the Park of nature and tourist region of Stara planina.

CONDITIONALITY OF ECONOMIC FUNCTIONS

The existence of different interests in selection and means of realization of the socialeconomic development and its relation towards the protection of mountain regions influenced the creation of different approaches. For research of economic aspects of development and protection of mountain regions, different economic-spatial theories are applied, as well as analyses and methods, selected by their significance:

1. analyses of basic economic functions of the mountain region, is an integral part of the scientific approach to consideration of the development and protection which covers research about the relation between economic, human and natural systems; economic systems cover economic activities of man in the mountain regions, such as: development of tourism and complementary activities, food production, exchange and consumption of goods towards sustainability oriented and effectiveness of functioning; human systems cover sphere of biological creativity, esthetics elements, and morality. which together constitute framework for all human activities in the mountain regions and can be stated that the economic system is a sub-system of the human system; natural system represents a complex of elements of the material realities which directly influences and is in inter-relation with human and economic system; considering that the expansion of human and economic systems is connected with exploitation, but limited by boundaries of the natural resources in the mountain regions, scientific researches on relation between these systems are determined towards a definition of acceptable activities and means for realization in the mountain surroundinas. harness of market mechanisms, protection measures for the natural surroundings and integral planned policies.

According to Perman P. (1966) and Giuseppe M. (1995), the basic economic functions of the natural system of the mountain regions can be grouped as follows: the use and transformation of natural resources for agricultural production and realization of capital investments in development of tourism, without damaging effects of the natural surrounding; usefulness of natural resources, in the form of satisfying material, esthetic, spiritual, scientific and recreational needs: absorption of harmful effects in line with the assimilative capacities of the natural environment; and elimination or compensation of side effects towards the local community and renewal and protection of natural resources.

2. analysis of influences and effects of development to the mountain regions with cognition that development derived projects miaht have negative consequences for the surrounding and that the decision making about its implementation must be conditioned by the planned process of identification, evaluation and comparison of development effects and fulfillment of demands related to the protection of natural values of the mountain regions: assessment ٥f influences should identify parts of the mountain regions where development has a potential to provoke useful or harmful effects; each of these influencina elements should be described in the sense of capacity and conditions of the human environment including the shape, trend and quantity of the proposed changes; evaluation covers identification of three key types of influences of the developmental projects in the mountain regions, being (HMSO, 1995, Spasic N., 1994 and Weston J. 1997): direct and indirect effects of development and public assessment on changes of the mountain regions.

Direct development effects are expressed by its locality, influence or transfer and include consideration of: (a) nature and quantity of changes in accordance with the significance of influence to humans, natural and created values, as well as the possibility to prevent, mitigate and remove negative tendencies; (b) the existing forms of land use and resource values; (c) spatial status in accordance with division to national, regional and local interests and the way of management; and (d) significance of influence according to the possibilities for change of the living qualities for the local communities, satisfaction of urban inhabitants needs and quality of resources depending on its specificity.

At a glance, such approach looks simple: the effects of development should be scientifically evaluated, and the intention of space planned. In this case there are few problems. Primarily, lack of necessary scientific information, such research process is long; it demands knowledge of the cause and effect links and selectivity. A conflict in the planning process might be created questioning the acceptance of the results about effects of development on changes in space. The expert's opinion is not the only one that is important, public opinion is also important. The conflict between the expert judgment and public opinion is a clash of different understanding of change values which cannot be quantitatively expressed and technically sufficiently treated, but can marginally change the evaluation. Public does not consider statistical, financial and political terms of developmental influence, but increment or decrement of quality of the environment. Public observes the effects of development, caused as consequence of running different activities in space, acceptable only in case that they can compensate imposed risks to the surrounding. Also, significant analytical difficulties of such complex task and need for valuable judgment, demands collection and consideration of a great number of information and inevitably include significant degree of subjectivity, meaning that the evaluation of influence might be used with an aim to skip problems and manipulate with results, satisfying the investors' and influential stakeholders' interests (Culilingworth B. 1997 and Rees J. 1994).

According to HMSO (1995), one of the approaches that treats the evaluation of influence of the development in relation to strategic planning of the mountain regions is determination of the significance of its geographic level, where we distinguish influences of a) international significance,

which produce effects that are tangible to international subjects interests, such as the regions protected by the Alpe Convention and other mountain regions which are in the developmental and protection sense under the influence of many countries; b) state significance which includes the effects that influence the interests of the mountain region development determined by the politics of a country; c) regional significance which mainly relates to the part of the mountain region situated within a certain municipality.

The indirect effects of development emerge by the influence of more development factors, outside the market mechanisms, are manifested at the wider mountain surrounding and include positive effects which are materialized through consumption and negative effects manifested as a consequence of the lack of adequate policies for development and protection.

Perceiving the consequences of developmental effects not valued at the market, demands operationalization of the concept of external effects in management of the mountain regions based on theoretical considerations: a) optimization - consistency with effectiveness; b) compensation - financial transactions between producers and recipients of effects; c) internalization - considering the characteristics based on potential "market" effect; and d) distribution - social and spatial, symmetry and asymmetry in use of the resources and services (Perman Ρ. 1996). These considerations do aim towards not improvement of the quality of the natural environment, but only try to include the question of natural environment into the traditional system of prices and markets.

Public evaluation on changes of the mountain regions covers opinions and proposals of the local inhabitants and visitors about locations suitable for development and identification of negative and positive consequences of development, or changes in quality and offers in the region.

The evaluation process of the influence of economic development to the mountain region, based on a kind of valuable ranking, enables research of the significance of all influences in order to offer information to decision makers about the power and size, short- terms or longterms, return or non-return; guality standards of the human environment; sensibility of receptors: coordination with the human environment policy, etc. In methodological sense, determination of importance of any single developmental effect is complex and demands skilled attitude determined by developmental priorities, ecological criteria for protection and rebuilding of scenery and the expenses derived.

Comparison of effects of developmental alternatives aims to selection of the best or the most balanced solution, based on the researched values of their characteristics. where the question is who should undertake it - an expert, politician or public. In case the selection is undertaken only in accordance with the expert principles of scientific overview and results of technical evaluation of fundamentally political questions, there is a possibility that the solution does not obtain adequate support. On the other side, if the selection is undertaken only in the process of political guesses and public consultations, than it is foreseen that "balanced" solutions suffer partiality - in favor of the most influential stakeholders.

 analyses of optimal economic activities in use of the mountain resources, represents research of economic, social and ecological effects to rural and urban locations and their inhabitants, which derive from different forms of development and modification of the basic purpose of land; illustration of the application of multidimensional methods for determination of optimal purpose of the

land, represents the study on spatial planning from the concession perspective on the local municipalities for the use of mountain resources; after collecting data about relevant marks of the mountain regions, first step towards analytical evaluation of the land purpose is identification of variations in purposes, such as: application of concessions for exploitation of natural forests resources, waters, ores, etc., which is positive in case employment improvement of and development of the region, but negative in case of limits in agriculture, tourism and the condition of the natural environment; new ways of concession for exploitation of natural resources of the mountain regions with right to realize tourist-recreational activities which represents less attractive solution from the economic aspect due to the higher starting investments, but also a long term solution which is in balance with principles of the sustainable development; application of alternative mountain region for exploitation of natural resources which is positive from the ecological aspect, but less attractive from economic aspect; and halting all economic activities in mountain regions which is "positive" solution from ecological, but unacceptable from the economic aspect.

The presented variations can be valued according to the three basic groups of criteria, economic, social and ecological, which can be further divided into more components. The precision improvement of the planned information demands creation of the matrix of multi –criteria evaluation of the development effects to the existing spatial needs, where the opinion is given by different interested groups.

 analysis of the economic values of resources of the mountain region capable to be determined on basis of the market transaction, but independently from it; in case that the resources are subject of

Table 1: Basic criteria for evaluation of the variations in land use

Source: Giuseppe M. (1995)

ECONOMIC CRITERIA	SOCIAL CRITERIA	ECOLOGICAIL CRITERIA
Employment in the primary sector	Attractivness of destination	Psychological and esthetic qualities of scenery
Employment in the secondary sector	Recreational attractivness	Rareness of eco. and bio. components
Agricultural production	Tourist possibilities	Consistence with the existing landscape
National reservses of resources	Traffic and infrastructure	Consistence with the existing historical-cultural contents
Profit on basis of concession		

market transaction they have certain monetary value which can be used when defining its social value; however market and market prices will rarely exist and will not give correct indications about the social value of the resource and quantitatively natural flows, if they are in form of the public goods or when the change of natural environment happens (in that case, any achievement to evaluate social value of the resource will demand a big number of information about exploitation of the resource and will demand alternative approach of evaluation in physical units, for example, tones, hectares, etc, and the selection will depend on shape of the observed natural good). Individual and social preferences (needs, wishes, demands) in relation to the natural goods reflex expected benefits from their use (or existence). Ethic arguments might suggest that the use of resource is a true natural right, but that the existence of this right enforces limits in a way that these resources might be used by people. The question is raised how these rights and limits might be included into the economic maximum of usefulness. Defining the rights and limits in the use of resources has to be considered in the process of decision making which have potential influence on the living environment, but for which, other relevant information is needed besides economic.

The concept of economic valuation of the mountain region resources demands discussion on dimensions of the resource values and techniques for their determination, with critical review about their application. The values that are analyzed have more dimensions and might be presented as: existing, current, optional, quasi-optional and total value. Following the practical experiences of the economic analyses, values can be considered as individual or social profits derived from the way of present or future use of the mount region values. The existing value of the mountain region resources derives from ecological preferences for their maintenance in the present form and it is only connected to particular ways of use. The current value of use of the mountain region resources derives from their potentials and the economic and social profit derived from that. The optional value of the use of the mountain region resources can be defined through the monetary amount, payable at present by which the right of the open purpose options is realized for the resource, and difference that can derive between it and the expected marked surplus in the future. Quasi-optional value of the resource relates to the benefit that can be achieved by holding the existing and including alternative purpose options in the future. The total economic value covers the sum of all value classes that have a base in human preferences and can be represented as a quantity function of natural goods in the mountain regions that are used in a certain period of time.

Techniques for evaluation of the natural resources have an aim to define effects that derive from the use and damage caused by lowering the quality of natural resources. Many ways for approach of the problem exist. First way would include attempts of direct evaluation of the benefits and damages derived from the use of natural resources and it comprises three approaches: hedonistic valuation, valuation of travel expenses and contingent valuation. The second way uses indirect approach to valuation represented in the method of dosed answer. The third way represents the method of economic-ecological multi-criteria evaluation where the approach combines qualitative and quantitative information.

The method of hedonistic valuation is based on the rating of the natural resources which as public goods do not have market price, but presume that their value can be defined through services or distinctive features that contribute to pleasure. Under what circumstances is this way of evaluation possible and adequate: the examples can be variable ownerships. neighborhoods. approaches or qualities of the elements of the natural environment, for example air (or vice versa atmospheric pollution). While on one side, the clear air is not a market product; on the other it can influence the price of residential locations. The research of this impact shows that tendency exists in rental growth people are ready to pay, depending on the higher standard of the air quality. In these circumstances statistical techniques (for example regression analyses) can be a good tool for identification of the location suitability, while the other determinants of the residential rent are observed as constant.

The method of valuation of the travel expenses is defined by destination and its developing possibilities based on tourist, recreational or cultural potentials. The basic principle of this method, based on theory of consumers demand, follows the relation between expenses (in the sense of time and money) and frequency of visitors who travel and stream to such destinations. A conclusion is derived from the researches that the function of travel expenses and frequency of visits grows with the growth of variable quality which represents destination quality and can be interpreted via the demand line.

According to Guisspe M. (1995) the method of contingency valuation is used in two cases: for evaluation of readiness to pay for improvement of the quality or quantity of some good in the surrounding and for evaluation of readiness to accept compensation for possible damages in the surrounding. Method operates by data obtained from the survey of representative samples of population (time determined contingent), and on the basis of its content, their interest for changes in the surrounding is presented in relation to nature, implementation, expenses, etc. The questionnaire as a methodological procedure for data collection. facts and opinions of the particular number of examinees, depending on the type of questions, can be: closed - where answers are limited in advance and data presentation easier and open - where a possibility of free expression exists, but data presentation is harder. The way in which the survey is conducted might have significant effects on results of evaluation. The confident answers can be received easier by carefully defined questionnaire (closed model of survey) with prior suggestions about the specific problems, solutions and consequences of the planned project. Improvement of quality of the natural environment by selection of evaluation that this has to be paid or compensation to be made, leads us to the question of competency in aggregation of individual or social interests, time moments of this decision and the

referential point for comparison of losses and gains.

According to Perman P. (1996) dosage as an evaluation method consists identification of effects (dose) of the human environment load, i.e. change of values of goods and services. As an indicator of value, the prices for the related media are used in units. In the second phase their evaluation is done in form of monetary values for each unit of negative and positive effects of the protection and development.

The method of multi-criteria evaluation, according to Guisspe M. (1995) takes into consideration integration of different information which will enable decision making with the minor degree of conflicts (or the major level of consensus). Integration of different information about the values of the mountain regions contains some methodological problems, such as: differences in time scale (comparing to ecology, economy mainly analyses short term and mid-term effects); differences in spatial scale (spatial scales of ecological variables are often very small, while the scales of economic variables are big) and differences at the measuring level of variables (need for information of the combined type). The method has an aim to secure wider frame for evaluation of gains and losses of the mountain alternatives, by constituting detailed social, economic and ecological effects and taking into consideration interests of different social groups which are under the influence of the mountain solutions, from which the compromising solution is identified, one that satisfies all three conflict values of economy: efficiency, equivalence and sustainability.

The samples of development integration and protection of the mountain regions, which are of significance for application of the previous approaches are: developing needs of the local community in the protected mountain regions, inclusion of the local communities in planning and application of the protection projects and enabling the local population to realize benefits through employment, additional incomes and compensations, stimulation of traditional forms of land use and eco-tourism as the most important economic activity compatible with sustainability of the bio-diversity (Walther P., Kohler T., 2002).

Methods of project evaluation in the mountain regions can be divided into the general and special ones: general methods of evaluation are: expenses and profit analyses, analyze of the spatial suitability, analyze of the values of the human environment system, evaluation of the countryside suitability, planned case balance, matrix of realized aims, valuation of the spatial attractiveness, etc. Special methods of valuation are valuations of the border capacity, first stage realization, etc.

Optimal use of the mountain region resources

The analyses of the relevant economic factors represents precondition for defining the rational model for use of renewable and non renewable resources of the mountain regions. A special attention in the analyses would be dedicated to the use of resources under the existing and changed circumstances, acceptance of changes in relation to other factors of the surrounding and the ecological significance and possibilities for quantification of the social benefits from the way resource is used, in other words direction and intensity of changes as appendix to planned alternatives (Smyth, A.J. 1993).

In practice, it is very difficult to precisely execute quantification of the social benefit on basis of the usage ways in the mountain region and conventional economic model which enables us to understand this in a simple way, might be presented as highly aggregated function where the resources are observed through variables in the usage or production processes:

Q = (C,L,R), where

Q – Function of usage or production; C-capital; L- labor; R-resource

Analyses of the economic factors is a complex one, due to its multi-criteria function where

 Table 2: Influence of the economic factors on the use of mountain region resources

Source: Smyth A.J.(1993.)

GROUP OF FACTORS	CHARACTERISTICS			
RESOURCES				
Renewable and non renewable	Quality and quantity			
Labor	Disposability, engagement and seasonal components of work profiles			
Capital	Rationality of use of the basic tools			
Knowledge	Literacy rate and level of education			
Capacity	Kind of capacities and ways of spatial usage			
Exploitation efficiency	Refund of the invested means			
ECONOMIC SURROUNDING				
Exploitation expenses	Level, seasonal and annual variations, risks			
Income of the use	Level, seasonal and annual variations, risks			
Investments	Availability, scope and realization, interest rates			
Market	Approach, interests, location's image, prices			
Inhabitants	Rate of changes, migrations directions			
SOCIAL INTERESTS				
Aims	Maximising the usefulness, minimising conflicts, satisfaction of needs			
Risk escape	Coefficient of the absolute, relative and partial risk escape			
Realization	Development priorities, inclusion of local communities in tourst offer, concessions for the use of the			
	natural resources of the mountain regions			

economic, physical and social aspects overlap and each in its own way decide the way the mountain region resources are used.

There are two basic questions connected to the presented economic factors of use of the mountain regions natural resources (Perman P. 1996): a) question of the positive economy: is it, in the economy of usage of the resources, possible to achieve the condition where trends of their exploitation will both renew and have the same values in an unlimited time period, with respect to capacities of the resources and limitation of their use and b) normative question: which scope of use of the mountain region resources should have a priority as an optimal in realization of the long term concept of development.

The concept of the optimal use of the mountain region resources have several meanings, as well as different understandings about the limits and consequences that can appear by application of the certain activity in space.

In order to direct discussion to understanding of the optimal way of use of the mountain region resources, according to Perman P. (1996), it is necessary to analyze a few definitions:

- optimal way of use of the natural resources understands leaving the present conditions to future generations;
- optimal way of use presents realization of non-declining usefulness for a representative part of society;
- optimal use is the level of economic activity which leaves the quality of surroundings unchanged, with development policy directed towards maximizing net use from development, services and quality of natural resources;
- optimal use of natural resources enables such development which would satisfy the needs of present generations without compromise with possibilities for future generations to satisfy their needs; and
- alternative approach to optimal use is focused on realization of the planned documents and development policy under the condition to satisfy standards of the

optimal protection of resources; the mentioned condition is based on presumption that the limits exist above which the exchange of natural capital by human action is not possible; this approach is focused on the relation between economic and ecological and opens the question of defining the optimal protection as justified, or unjustified limitation for development.

Within the new knowledge about the concept for optimal use of resources some similarities exist on attitudes in moral, ecological and economic arguments. The moral arguments for use of natural resources are based on the obligation for a long term preservation of their quality which not only considers the optimal use, but the optimal protection of the mountain region resources. The ecological arguments for use of the natural resources are based on the overview of possibilities for protection of the ecological diversity on basis of the correct selection of space purpose. The economic arguments for use of the natural resources are based on consideration of the justification and efficiency in realization more options for use and protection of resources as a condition for development.

According to Perman R. (1996) dispute and explanation of the economic activities in connection to relations towards the use of the mountain regions resources have the following aims: to define and explain concept of economic efficiency and optimality through the usage activity of the mountain region resource; economic efficiency is directed to such activities that will enable instant efficiency, i.e. maximum usefulness (static usage of resources), while the economic efficiency is directed to accumulation of resources and division of rights to present, but also to the future optimal usefulness (dynamic use of resources); and to analyze and explain instruments under which are market and public policy competitive to influence the usage of resources and how gualitative, guantitative and substitution effects of the resources usage influence the change on market and public policy. According to Common M. (1995) a few categories and instruments exist for control of resources usage, such as: direct control (legal specification of the permissive exploitation, processes and equipment); indirect control (price stimulation and taxation for certain scopes of the resources usage); social influence (pressure by interested groups, education about the problems of the existing and possible scopes of use) and moral conviction (possibility for compensation by introduction of new technologies for tax reduction).

Conducting the public policy on usage of natural resources is reflected in the policy of spatial planning which part includes rating of influences and alternating locations of developmental activities and process of its integration into the sector's policies and the process of the surrounding monitoring. Considering the qualitative and quantitative effects, series of possible options of economic activities, the planned solutions are directed to selection of the best or the least bad solution, achieving a kind of an optimal difference between potentially clashed economic goals and protection of the natural environment. In the countries with market economy, a document which overviews the total quality effect of development, is a pre-investment study where the best possibilities for investment (with the best relation between profit) expenses and are researched alternatively; regional basis and regional connections are studied: competitive alternatives are compared; possible reactions of local and regional inhabitants and authorities are explored. The provisions of the planned solutions and elements of pre-investment study are framed by the regulations of a long term plan, i.e. by provisions of the legal and management regulations, like instances where the protection of the welfare interests are secured, together with the interests of the local society, human environment, etc. On basis of the achieved plan document and positive results of the pre-investment study, the bearer investments orders the investment of documents and their value is tested by detailed investment studies (Dabic D. 1998).

The process of development, protection and structure of the mountain regions contains specific aspects where potentials and limits of the natural and created resources are considered, possibilities for the most appropriate trade activities, inter-relation of tourism and complementary activities, tourist image and demand for a tourist product at the market, means for inclusion of the local population into the development and protection processes, ways of financing and managing the development, possibilities for social-economic influence (from the national, regional and local level, private investors), harmonization with the natural surroundings, etc.

Social-economic aspects for the mountain region development integrate different analyses and evaluation of plans and projects for developments and cover:

- investment analyses for development, i.e. profitability of the project, by application of commercial criteria of expenses and benefits; evaluation of the project consists review of the mutual and external expenses and individual studies of costeffectiveness (financial, location, etc), definition of investment priorities, etc.;
- 2 analyses of social-economic effects on regional and national level on the basis of: data between tourist and other services; investments which can be conditionally divided on investments in capital infrastructural systems and objects and investments in tourist objects: influence of the tourist development to national income and social-economic structure (foreign trade balance and expenses by the unit of investment, capital expenses by an employee, etc); multiplier effect of tourist development which creates new profits and expenditures for other economic sectors: employment in category of direct employment in sector of tourist services and indirect employment which relates to sectors which are under the indirect influence of tourism; regional benefits of revenues on the basis of direct taxes (from employees in tourism, tourist and other enterprises) indirect taxes (on consumers goods for tourists, etc), state financing subventions (through for regional development, investment in infrastructure, improvement of the natural environment, municipal project for development of tourism. elaboration of planned documents, etc); economic aspects in view to the length of tourist season, trade and provision of the land for construction of tourist objects, etc; and non-quantitative

effects of development such as standard of the local inhabitants, services to local inhabitants from use of public and sportrecreational objects, degradation of natural and social environment, education about the land resources and the region, etc;

- 3. analyses of the other facts of development, such as: sensitivity of tourist market to external influences (changes in political, economic and social structures, etc); competition of other mountain tourist centers; the length for development of a tourist centre (average is 10 or more years), for which it is necessary to have the flexibility of developing program in accordance to new scopes of request that might occur at the market (alternative subjects of the centers, improvement of sky transfer system, new ski-paths and summer programs in space, etc.) and
- survey on social-economic interests and developing subjects policies according to the development of mountain region and its priorities.

The effects of development of the mountain regions from the tourism aspect might be summarized as advantages and limitations. Advantages are economic (increased revenues, gross domestic product, foreign trade, redistribution of revenues towards mountain regions, etc.), development of infrastructure and services, opening of new working places, protection of the natural environment. education of the inhabitants, diversification of trade (industries complementary to tourism), regionalization of the economic development with an aim to integrate offers, increment in revenues (taxes, rents, tariffs, etc), creation of the country's attractive image abroad and raising the living standard in mountain regions, holding the inhabitants, etc. Numerous confinements which the organization, construction and outfitting of space make more difficult and more expensive emerge due to more factors: distance from the emissive and other centers in the valleys, underdevelopment and non-arrangement of the local environment, difficult traffic accessibility and permeability, danger of the natural disasters, regime for the protection of nature, big winter energetic needs and needs for thermo and hydro isolation, very short building seasons, increased expenses for maintenance, great investments (especially in infrastructural construction, necessary participation of state funds, etc), social problems, destruction of spatial and cultural surroundings (in case of non adequate application of plan and tourist influence), sensibility to external factors, growth of land values, influence to the natural environment, etc.

Creating systematic conditions for protection and development of the mountain regions, by priorities cover: identification, reservation and protection of resources until putting it in a planned function, i.e. regulation of the regime of space use and sanctions for negligence; and management of resources of the mountain regions with establishment of responsibilities and obligations for developing subjects and competent institutions in charge of plan application. In any case it is necessary to determine the limit up to which the development should be forced, regulated or limited, i.e. in case that the tourism is the framework for development of the mountain region (accelerated economic, social and spatial changes) effective control and measures for protection of the natural environment should be defined: when development is not successful, despite availability of resources, alternative directions of tourist development have to be determined, together with the analyses of cost-effectiveness of competitive and existing economic sectors; and when the tourist development effects degradation and erosion of unique locations and resources, but has significant social economic benefits for the local population, decision has more to be based on political factors.

POSITION AND BASIC CHARACTERISTICS OF STARA PLANINA TOURIST REGION

A special problem of regionalization of the mountain tourist regions derives from situations where tourism overlaps with the protection of the natural and other functions of the general social interests. In such cases a semi-functional region is established comprising the protected area (national part or park of nature) with tourism as one of the special functions and its development is coordinated with another special function which consists protection of nature; this is in practice confirmed through organization of national and regional parks in the greater part of the Alps mountain regions. Only some mountain regions are protected and arranged exclusively for cultural use today (example is the park Engadin in Switzerland), while the majority is treated according to the French type model for protected regions, with triple level of protection, as in the case of Stara planina.

The region of Stara planina represents the area of natural goods and main natural tourist protection in the strategic frame of the sustainable development of Republic of Serbia, with the completed Spatial plan and includes Park of Nature and the tourist region Stara planina of 1540 km².

Stara planina is the best quality high mountainous region in the Republic of Serbia (excluding Prokletile and Sarplanina in the Province of Kosovo and Metohija ruled by UNMIK) suitable for contemporary year-round tourist activities and recreation, as well as the cultural presentations, for ecological, exclusive agricultural production of healthy food and other activities that are complementary to the Park of Nature and tourism (forestry, waterpower engineering, production of clean clean industrial and energy, craft manufacturing, etc.). The natural conditions and resources are among the most important natural conveniences for development of winter and summer tourism and recreation, integral with other means tourism of and complementary activities. The spatial capacity enables realization of tourist centers and settlements, as well as sport-recreational offers in space. Stara planina relief by morphometric shapes and landscape characteristics with hydrological resources represents extreme tourist and recreational potential. High mountain massif with direct middle mountain surrounding occupies about 110km², in highaltitude belt above 1500m.a.s.and around 340km² in high altitude belt between 1000 and 1500m.a.s. The main potentials of tourist development are ski-paths at Stara planina, water accumulation "Zavoi" and watercourses with suitable locations for realization of highly commercial tourist centers in the municipalities of Knjazavac, Pirot and Dimitrovgrad with inclusion of under-mountain villages into the tourist offer. Special tourist potentials on a wide high-mountainous area of Stara planina (in municipalities Knjazevac, Pirot and Dimitrovgrad) are terrains suitable for high-quality downhill and cross-country skiing (with cold expositions, height differences of paths to 1000m and snow lasting for 5 months. together with the suitable grass terrains of continual slopes and little forests) international and domestic significance, not only for the recreational skiing, but also for sport competitions of international and national ranks, by standards of the World Ski Federation (FIS). A significant potential represents rich cultural heritage (especially ethno-values of traditional villages and tourist manifestations) with more intensive and organized presentation and use, renewal of neglected traditional handcrafts, etc. Special potentials for development of tourism are preserved nature and natural values of the Park of Nature Stara planina. under the condition to intensify and organize protection, presentation and control of use. The convenience represents the expressed interest of foreign and domestic capital for construction and exploitation of tourist-recreational complexes and infrastructure.

Since the rational economy of the mountain tourism understands year-round use of the offered capacities and since there are enough potential, numerous ways of tourism in winter and summer periods are anticipated. The tourist contents, recreation and sport in the Park of Nature and tourist region Stara planina will be zoned and organized in two basic high zones: mountain and sub-mountain, with about 60000 stationed users. Mountain zone will represent higher mountain belt with dominant mountain offer in space and new tourist accommodation for about 40 000 based users. in direct contact with that offer (at the entrances of Alpine and Nordic ski paths with ski lifts starting points, starting points of mountaineering, mountain resort paths and other mountain offers in space). Sub-mountain zone would include lower foot of mountain and its wider surrounding within the Plan area, with hills and valleys and offers in space and accommodation in the existing villages and mixed settlements and town centers for about 20000 stationed users. The total minimum capacity of the downhill ski paths of the

mountain tourist zone will be about 41.000 simultaneous skiers (9.500 at the territory of Knjazevac municipality, 25.700 at the territory of Pirot municipality and 6.000 at the territory of Dimitrovgrad municipality). Approximately, the maximum number of skiers who can ski at the same time is estimated to around 68,500 as the border capacity of the ski resort of Stara planina, but the approximate maximum capacities of ski resort in some sectors might be bigger from the ones stated by the Plan, if detailed explanation the economic by justification and ecological acceptability for bigger burden of space can be proved. A minimum of 49 main ski lifts (3 with cabins and 46 others) with the minimum of 143km downhill ski paths are planned in all six sectors.

DEVELOPMENT OF STARA PLANINA TOURIST REGION

According to potentials of the Stara planina tourist region, realization of the planned activities and objects in function of tourism will represent the key developmental project in the region. Developing option that would include development of Stara planina tourist region would depend only on small and medium enterprises (in further text SMEs) and the existing industrial branches, with extremely difficulties in solving the question of non privatized enterprises and starting the economy, redundant employees and prequalification of workers, sale of goods and creation of convenient business conditions. with long term backwardness in development and solving the key problems of the local economy.

For evaluation of the economic feasibility of developing projectsⁱ in accordance to the EU criteria, the most important are: 1) competitiveness at the market; 2) influence to living quality; 3) improvement of the living environment; and 4) reduction of the unemployment rate. Regarding the project case for Stara planina tourist region, all four conditions for positive evaluation of the project are completely fulfilled.

 The project can be very competitive in terms of tourist services prices and attractiveness, i.e. occupancy of the tourist capacities, specially having in mind enormous potentials and facilities for development of the year-round tourism;

- successful development of tourism would multiply influence the improvement of living standard of the local inhabitants – employment, additional incomes, security and long term employment and increase of the attractiveness of the region for life, etc;
- 3. tourism is a sector with relatively small pollution in the surrounding, under the condition that the infrastructural objects are placed and controlled in adequate way, primarily traffic, water supply, system for refinement of waste water, etc; eventual pollution from development of tourism can be solved by assignment of ecological taxes (payable at the entrance of the Park of Nature/ tourist resort), or from the part of incomes received by tourist activities; and
- 4. one of the key developing effects of the project is employment for local inhabitants through various kinds of business and guarantee for the long term demand for tourist products of the region, placement of the local community product and local working power.

In the evaluation of the project's economic feasibility for development of Stara planina tourist region the following is also perceived:

- region's macro aims relating to start of development: this criteria is fulfilled because the project is compatible with the natural and economic resources, under the presumption for further development of the food industry (and agriculture) and the accompanying obliging services (primarily through development of SMEs);
- availability of human resources and financial means: this criteria is fulfilled, because the project can solve: a) employment problem attractiveness of the and reaion. attractiveness for habitation and work (in relation to the demographic structure of the region); and b) problem of the dynamic economic development start of region based on lobbying and means for financing the priorities of the tourism development from public and private funds, such as: national investment fund for realization of public ski

resorts, concession for engagement of foreign and domestic capitals for construction of the major infrastructural objects and accommodation capacities; credit support to investors and rural households for construction and decoration of the objects in tourist services (accommodation and alternative rural economy), etc.;

 cost effectiveness of the project for public and private investors: this criteria is fulfilled, since a positive net economic effect is expected for the municipality and inhabitants' revenue by realization of the project and the whole development of the region; also positive effects are expected for private investors and the analysis of the economic feasibility, i.e. effects of tourism development in a long term period would be useful (in the course of segments elaboration a more detailed assessment of economic effects will be conducted for particular investors).

Contemporary approach to development of the Stara planina tourist region contains more reasons for elaboration by stages and carrying out a long term planned concept (Dabic D., 1998). The elaboration and selection of the most convenient alternatives of planned stages contain three basic flows: physical, financial and social. Physical study, on the basis of the detailed overview of the existing natural and created conditions and resources of the mountain regions and their surroundings determines spatial, functional, technical and technological sub-regions, supra-structures and infrastructures, together with stages for realization of the tourist offer. Financial study is based on the physical study data and interests and possibilities of the main planning actors. It is done for all real alternative stages of realization. In cases of smaller mountain's centers, financial study is, by the rule, accomplished for a known investor, and in cases of the bigger centers this study explicitly presents parameters for the potential investor (as the bearer of the commercial investments). Study of the social verification flow of alternatives of the planned stages actively treats participation of the main actors during the work, decision making and realization of the plan. In realization of the new developing

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projects, as it is the case with Stara planina, the acceptable stage can be realized as a real investing program only if two important conditions are fulfilled: (a) securing investments for the basic infrastructure and necessary non-commercial public objects (with the desired subventions of the commercial entities) and (b) attraction and animation of the investors with state guarantees for safety of the capital, acceptable deadlines for refund of the capital, free disposal of profit, etc.

Analysis of the economic acceptability of development

Acceptability of the sustainable development concept of the Stara planina tourist region can be observed from the two aspects: ecological and economic.

Considering the equal demands for protection and sustainable development and in accordance with the state legacy, good practice and respect of IUCN recommendations relating to managements of Category B (protected landscapes/protected sceneries) protected areas, the spatial zone of the triple protection is determined and the condition for the environmental protection is fulfilled, thus construction of tourist-recreational the infrastructure at Stara planina is enabled. Definition of this category of protection, aims and principles/methods, besides sustainability of biological and spatial diversity and preventing the abuse of the resource and soil, insists on demand for the local community support with securing support for its socioeconomic recovery and improvement, as well as preserving the tradition.

The analysis of economic acceptability for development of the tourist region Stara planina covers the following segments: market, consumption, number of employed, investment means and economic effects of exploitation.

The analysis of the market is done by main segments of the tourist offer and covers the season's length and minimum degree of use (number of visitors/users by season). In order to make the project acceptable it is necessary for the tourist season to last up to 9 months and the minimum degree of use of the stationary capacities is 60%.

Table 3: Market analysis by segments of offer

Tourist offer	Season's period	Season's length	minimum % of use	Capacity	Number of users
Winter – skiing etc.	4-6 months (VII-IV, V)	120-180 days	60	Simultaneous skiiers	Skiiers/days
Summer program	4-5 months (VI-IX, X)	90-120 days	30	Simultaneous users	User/days
Tourist accommodation	9 months (XII-X)	about 240 days	40-60-70 Home-apparthotel	beds	Visitors/nights

Table 4: Economic effects analysis by segments of offer

Tourist offer	Number of users/services	Amount per user/service	Average revenue per
			day
Winter – skiing, etc.	Ski-lift tickets, catering and other (ski-	Average cost per person/day	10 Euros
	schools, equipment, etc)		(ski-pass)
Summer program	Ski-lift tickets, program organization,	Average cost per person/day	10 Euros
	catering, etc.		(hiker's day)
Tourist accommodation	Hotels, apartments, households	Average total spending per person/day	25 Euros
		without segment of winter and summer	(pension day)
		offers	

Table 5: Structure of separate investments

Offer	Description	Standard	Investment (in Euros)
Tourist	Hotel,	23 m ² per bed	25 000 per bed or 1100/ m ²
accommodation	apartment, household	15 m ² per bed	15 000 per bed or 1000/m ²
		8 m ² per bed	4 500 per bed or 560/m ²
Ski resort	Ski lifts (average)	Length or height difference.	1 500 000/km or about 4000/m height difference
	paths	length	600 000/km paths
	technical service	according to km paths	5 000 000/100km paths
Summer program	Offer in space	Hiker's paths and other programs	1500 per user
		Aqua-city	3000 per user

The global analysis of consumption-turnover is presented on the basis of the total average consumption by a visitor, i.e. by the economic effects of segmental tourist offers during the exploitation. Economic effects incurred by realization of the Stara planina tourist region project is about 60 000 stationed users (beds), secures employment for about 16 000 workers.ⁱⁱ In addition to this number of stationed quests there are about 40 000 hikers. Gross turnover from the work of the tourist resort, mountain centers, settlements and spots, as well as the sub-mountain capacities is possible to envisage according to the real duration of the tourist season which should be about 120 days in winter with possible 70 hikers' days, and 120 days in summer with 80 possible hikers' days. Under the use of 70% of all capacities in a year it is possible, in perspective, to realize a gross revenue of about 420 000 000 Euros per year, i.e. net revenue of about 27 600 000 Euros.

According to the previous indicators the economic effects comprised by realization of the smaller mountain tourist center with about 3000 stationed users (such as Golema reka in

Knjazevac municipality) would secure employment for 600 workers and realize gross revenue of about 21 000 000 Euros, i.e. net revenue of about 1 380 000 Euros per year.

The evaluation of all necessary investments depends on the level of the project documentation details and is determined on the basis of the total area capacity of all objectsⁱⁱⁱ.

Economic effects of exploitation are analyzed in theory and approximately, but with application of foreign provisions for calculation of return period for invested means which justify adequacy of investment. On the basis of framed indications of the economic effects of exploitation, it can be concluded that approximate period return of the for investments in development of the mountain tourist center is 8.5 years for ski resorts, summer offer in space about 4 and accommodation capacities from 2.5 to 11 years depending on the kind. The guickest return of the means have investments in development of summer offers in space, ski resorts and accommodation capacities in households and apartments, while the slowest return have means invested in development of hotels. Although the return period of means is acceptable considering the size of investment, in this particular situation it can be corrected depending on conditions for securing investments and efficiency of plan realization.

Financial aspects of Stara planina tourist region development might be overviewed in accordance with evaluation of investment in protection, but also by revenues from visits/use of the Park of Nature. On basis of the average assignment for the protected mountain regions in EU which is about 2.000 Euros/km², it can be evaluated that the assignment for protection of the Park of Nature Star planina can be around 2 300 000 Euros per year. The greatest part of the financial resources might be from the budget, i.e. revenues/ residence taxes or the use of Park of Nature resources. Further additional finances can be secured by concessions for water usage, usage of grasslands, ski-resorts, business licences, donations, etc.

 Table 6: Global economic effects of exploitation of the mountain tourist center

Investments	Extent of investment in %	% Capacity per object	% means		Time of investment return in years
			Reproduction according to investment	Net revenue according to investment	
Ski resort - total ski lifts paths baze and equipment	<i>31</i> 28 1.25 1.25	-	3.7	2.5	8.5
Summer program offer in space aqua city	4 1.5 2.5	-	0.4 0.6	0.35 0.4	4 4.4
Accommodation - total hotel apartments households	51 14 25 12	10 30 60	1.3 4.7 4.7	0.6 3.7 4.1	11 5.2 2.6
Internal traffic Total	<i>14</i> 100				

CONCLUSION

Development of tourism in the mountain tourist regions in Serbia that has started far later from the city and spa, today has more and more dominant part not only in investments but also in tourist turnover (Dabic D., Milijic S. 1998).

Sustainable regional development of Stara

planina region will be based on integration of urban and rural economies on one side and development of tourism and protection of nature on the other. In accordance with recommendations of the planned practices of the EU countries with the higher degree of development of the areas, tourism represents for certain years now one of the most dynamic fields of complex, commercial and noncommercial development especially ecologically preserved and economically not sufficiently developed mountain regions. Tourism as an industry within the frames of prioritized aims, insists on preservation and improvement of natural and cultural heritage, i.e. on defining mutual interests for rational use



Figure 1. Spatial Plan for Park of nature and tourist region Stara Planina (tourist resort, mountain centers, settlements and spots, protection of nature, ski area, etc.)

and wise management of the space, which is a pre-condition for sustainable development. Intensifying the development of tourist region Stara planina, in other words tourism with complementary activities, as the bearer of the whole economic and spatial-functional organization would contribute to: start of dynamic economic development, working engagement of inhabitants, attractiveness of the region for residence, deceleration of negative demographic processes, increase of living standards for local inhabitants with simultaneous provision of conditions for solution of other developing problems.

Regional aspect of development is based on the potential of Stara planina for realization of the year-round tourist activities, where this space will become the pillar of tourism in Eastern Serbia, which will in time become the pillar of total development. Conditionally, towards the tourist region of Stara planina will gravitate inhabitants of macro-regional centre Nis, and the centres of functional regions of Pirot and Zaječar, together with the municipalities of the Eastern Serbia. Also, the region will attract clients from Belgrade and Vojvodina, as well as Bulgaria and through them wider emissive regions.

Sustainable socio-economic and spatialecological development of the Serbia's region will be based on:

- compatibility of tourist potentials with natural and economic resources, with presumption for development of the organic, i.e. traditional food production and accompanying obliging services (primarily through development of SMEs) in line with the needs of the tourist region;
- high standards of tourist services;
- valorisation of relatively convenient geographical site of Stara planina, increase of living standard of inhabitants of Serbia, as future users of services of the tourist region at a higher degree of organization of the tourist offer;
- valorisation of two European multi-modal corridors (VII and X) where Stara planina is sited, as well as better connection with secondary traffic at these corridors;

- more intensive use of the airports in Nis and Sofia with an aim to improve access to Stara planina;
- qualitative transformation of traffic at the approach corridors of Stara planina, creating the conditions for network (complementarities) of tourist offer of the surrounding with tourist offer of Stara planina would influence the whole transformation of Timok developing base, i.e. increase of its significance in spatialfunctional organisation of Serbia;
- Activation and qualitative transformation of development centres economy in nearby and macro-regional surroundings, creating material base for development the leisure function and recreation of the inhabitants that could be realized in Stara planina region.

Economic effects of realization of the tourist region Stara planina project, according to the long-term vision, would secure employment for more thousands workers and realization of significant financial revenues, where a part would be set aside for the protection of the Park of Nature.

Due to the significant and non-exploited potentials of the mountain regions, Serbia has not become a space where the concept of sustainable development is successfully applied, but a training ground for testing of extreme economic interests characteristic for the countries in transition, where besides the spatial plans as a regulatory development documents, master plans are also exposed.

Although carrying out of Master plans regarding touristic development in Serbia is nowadays favorized, their partial approach should be avoided. Spatial planning, based on integral approach with balancing resources and economical potential, has been given new tasks and goals. Therefore, it is necessary to introduce new segment in process and practice of spatial planning, as an instrument of protection of public interest and investment realization, segment which would be related to assessment of economical feasibility of development priorities.

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ⁱ European Parliament, web site

"Besides directly employed workers (permanent and seasonal) came to increase of number of employees in complementary services (agriculture, communal services, traffic, etc) where the scope of business will significantly be increased by development implementation in the mountain region

" Derived according to the structure of investments for development of the mountain tourist centre Brezovica at Sar planina. For details see IAUS (1991:54-64).

http://www.europarl.eu.int/stoa/publi/168439/chap1_e n.htm II Posidos disectivos handa da statuto da statu

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