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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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In memoriam

RURAL POPULATION AND RENEWABLE ENERGY SOURCES – EXPERIENCES OF THE REPUBLIC OF SERBIA

Mila Pucar, Marina Nenковиć

During the last decade of the twentieth century the use of green (renewable) energy has become the imperative not only in developed countries worldwide, but also in poorer countries like Asia and Africa. The change from traditional to renewable energy sources carries valuable improvements in environmental protection and economic efficacy. This paper through individual examples, explores the possibility of replacing traditional with renewable energy sources such as solar, wind, geothermal, energy of small hydroelectric power plants, etc. worldwide and in rural Serbian communities.

Keywords: green energy, economic benefits, female participation

INTRODUCTION

Energy used to be the driving force for human development throughout the ages and the development of mankind relied on application of different forms of energy. Energy was obtained from sources present in man's immediate surroundings. Throughout history these sources were taken for granted and considered inexhaustible. The 20th century brought a new knowledge of resource exploitation. Not only that man realized that the sources he was using (oil, coal) were irreplaceable, but also that their exploitation produced secondary byproducts such as toxic gasses, with multiple deleterious effects on the environment.

One such problem is the *greenhouse effect* that results from increased concentrations of carbon dioxide, methane and nitrogen oxides in the atmosphere. Accumulation of gasses around dust particles in the atmosphere emanate heat, and the subsequent gradual increase of temperature results in global warming and climate changes in large expanses of our planet (Pugliese M, et al. 2001.). Thus, it has become necessary to examine other sources of energy that would fulfill two criteria: (i) that the emission of toxic

materials into the atmosphere is reduced during energy production, and that (ii) access to the energy source is relatively simple and possible at regular intervals. These criteria are met by so-called "green energy".

Green energy can be defined as the energy that is obtained from renewable sources. Green energy is also sustainable and its production and consumption does not put the environment at risk. Green energy includes wind and solar energy, energy of the sea tide, energy derived from biomass, hydro energy which is derived from small hydroelectric plants, waste energy that is obtained from different waste products (biomass waste, heat waste generated during/in the course of industrial production, and energy derived from the processing of communal waste). Use of renewable energy is increasing worldwide. Not only that it completely avoids gas emissions, but it can also ensure energy-independence at local and national levels. One of the important aims of the use of green energy is to secure a greater degree of energy independence to local consumers, either from imports or from national and regional energy suppliers through large distribution systems (Dukić, 1998.). Green energy is mainly produced from local

sources that are immediately available to the consumer. Also, it is suitable for small, private investments that in turn foster a balanced development of rural communities.

SUSTAINABLE DEVELOPMENT AND RENEWABLE ENERGY SOURCES (RES)

Many declarations deal with the use of RES which is one of the basic postulates of the *idea of sustainable development* elaborated in detail in Agenda 21, Rio de Janeiro (1992), and in Habitat II, Istanbul (1996). As the concept of sustainable development implies the protection and revitalization of the environment and its resources for the coming generations, the use of RES has become a top priority in many countries. According to these declarations, stimulation of sustainable development is based on "developing energy and transport systems in communities primarily by applying more efficient technologies that reduce the negative side-effects of energy production and consumption on human health and the environment" (Agenda 21, 1992.). Besides the idea of sustainable development, the concept of applying RES has been supported by signatory countries of the Kyoto Protocol from

1997. These countries are obliged to reduce emissions of toxic gasses by an average of 5.2% in the period from 2008 to 2012 compared to the level in 1990 (Pucar, 2002.a). As the application of these concepts is based on local energy sources and their exploitation in limited areas, such programmes have already been applied in many countries world-wide, regardless of their level of development. Therefore a healthy environment and an improved quality of life are not anymore solely privileges of the "rich". The main results from applying these programmes throughout the world are the attainment of a certain level of independence from large energy systems, as well as a reduction of the exploitation of otherwise traditional forms of energy such as wood, coal and oil.

The positive effects of applying RES in rural communities are:

- *Ecological.* Decreased air pollution with carbon dioxide and other contaminants; prevention of further deforestation and resulting erosion; reduced health-risks for lung-related diseases among the local population (primarily women and children) from harmful gasses present in the atmosphere.
- *Economic.* Green energy exploitation should create new jobs and encourage participation of the local population in the process of energy production.
- *Social.* The active participation of the local population in decision-making dealing with energy sources could exert a positive psychological effect on the entire community and facilitate the implementation of certain programmes. It is thereby necessary to establish permanent education programmes at a local level for all members of the rural community, especially the female population. The incentive for the local population to participate in these programmes lies in concrete, clearly defined aims that bring results in a relatively short time. These results do not always have to be impressive, but the activities leading to them should be carefully planned so as to provide everyone with the general atmosphere of "something happening" and the sense of being active participants. The results have mostly to do with economic benefits, such as the creation of new jobs,

improved living standards, increased work comfort and environmental protection.

Rural communities are engaged in many programmes often coordinated at an international level, supported by local authorities with active involvement of the local population. In order to achieve these aims, joint action is necessary between energy suppliers, state and local authorities and beneficiaries. It is very important that all participants are well-informed. The local authorities assume a crucial role because of their contacts with beneficiaries. Different means of transferring knowledge to the local population are at their disposal. If this is done in the right way, the public could become the strongest supporter in attempts to promote green energy. A positive outlook is another prerequisite for investing in RES (Pucar, 2002.a).

APPLICATION OF RES IN RURAL AREAS

Energy is essential for life in the mountains, especially for cooking and heating. In order to establish a particular RES that could be used in villages, it is necessary to define the basic forms of energy (in relation to their possible use), as follows:

1. *Household energy* – includes electricity which is supplied to rural areas through large centralized, electro-energetic systems, and energy for heating which the local population mainly obtains by burning wood or low calorie coal during the winter months.
2. *Energy used for technological processing* – includes the energy necessary for performing specific production processes in rural areas, such as milking, making various dairy products, drying fruits, vegetables and medical herbs, etc.

Rural areas possess a great potential for energy production. The only traditional form of green energy that has been present in the past decades in rural mountain areas of the world is water energy (mills have been running on it for ages). It was the basis of early industrial development in these areas, especially in the textile industry. Modern technologies based on solar and wind energy not only further the economic development of villages and lower

health hazards, but to a large extent provide a substitute for traditional sources of electrical energy (Kohler, 2001.). Solar energy is also widely used in heating houses (e.g. in Pakistan, Nepal and Tibet). It also has considerable potential for use in telecommunications, radio broadcasting, etc.

Preconditions necessary for local population involvement

In order to introduce any sort of initiative at a local level, it is necessary to have the government's support through the general strategy and policy for energy development, as well as its legislation, tax policy, administrative and financial relief and technical support, all of which should stimulate the use of local energy sources. Sustainable development of rural communities implies the development of specific policies, laws and programmes that are based on research and sound knowledge of specific situations and the active participation of the local population. Rural communities often lack political and financial power as well as a critical mass for implementing planned aims. Remote mountain communities are often physically isolated, far from major roads and other ways of communication (Pucar, 2002.b.).

In order to accomplish a wider application of RES in rural communities, it is necessary to establish coordination and communication between the key participants in this process (Egger, et al.). Communication creates an important bond between different groups by bringing together their mutual levels of awareness and information to the decision-makers. Many developing countries need to provide rural communities with modern energy servicing which requires a degree of financial, human and technical resources (Sims, 2000.). There is no standardized instruction to be followed in developing an energy programme in a certain region. The ever-changing political map, the comparatively large number of active participants and the diversity of energy sources make a single approach to dealing with the problem impossible. Thus, as a general rule it is best to have a number of possible scenarios at hand (Egger, et al.). Policies and regulations that recognize local property laws are very important for the sustainable development of the village. Rural communities need to

establish control over processes of decision making when local resources are in question, as well as incentives for their management.

Although rural regions have the right to exploit all of the available sources, a country's energy policy should make the move towards easier usage of green energy. Green energy should be seen as a reliable, locally accessible source that can be adapted to suit small and medium-sized needs, and that is ecologically acceptable. The problem of ownership of energy produced by the local community isn't solved – the local population does not supervise it and has not obtained concessions over it. The current situation in this country and the world has changed somewhat. There is increased awareness that large power plants have negative environmental as well as sociological consequences. The local authorities can be powerful initiators of change. However, they are often restricted by the existing large systems of centralized energy servicing and the current high price of Renewable energy sources (Egger, et al.).

Bearing in mind that in mountainous regions women are the most important beneficiaries (in households, peasant production, etc.), securing their active participation in programs for RES promotion and implementation is one of the main objectives in all countries, regardless of their socio-economic development. Introducing them to green energy sources can have very positive sociological and cultural implications on the overall population, especially with regard to the adoption of programmes (Kohler, 2001), considerably in the countries with such economic structure where poorer population prevails.

Socio-economic aspects of RES application

The extermination of poverty is an important aim of green energy implementation programmes in underdeveloped countries. The surplus of produced sustainable energy should be in hands of the local population. The purchase and distribution of stocks opens the possibility of improving economic status of the local population, thus reducing emigration to urban centers with its negative consequences. Natural resources are often underestimated or

even given for free. Governments can help rural communities in establishing the value of resources and securing reimbursement of investments to the local economy. There are examples in which the rural population renounces property rights for the construction of cottages at market price, and then receives concessions for wood-cutting and lumber transport. Tourist revenues, through tax policies, contribute to the development of rural communities. Training is organized to provide employment for the locals, especially women. There is a continuing worldwide trend of privatizing energy distribution systems and involving the local population in this process.

Green energy offers great possibilities in avoiding "dirty industrial" development that the West has already witnessed. However, the adoption of these programs is not simple. Lobbies that support the use of conventional energy sources and exploit resources at a global level are not keen on green energy use. The economic disparity resulting from the uneven development of infrastructure (roads, systems of energy supply) is noticeable in mountainous regions that are not developed into important tourist centers. However, due to the slow influence of negative aspects of development, natural resources have been protected in these areas. Green energy does not have any negative effects on the environment. Also, it secures a decentralized production of energy.

Introducing RES: world experiences

The use of green energy has shown to be more efficient when it is applied at a local level as it cannot compete with traditional energy systems covering larger areas. That is why the governments of a number of underdeveloped countries (India, Bangladesh, and Botswana) have, through the Agency for Non-Conventional Energy and Rural Technology (ANERT, India (Best practice on Renewable Energy: India – Programme on Improved Smokeless Chulas) established by UNESCO in 1986), commenced programmes with an aim to introduce non-conventional energy forms to local rural communities (Nenković, Pucar, 2003.). A special part of the ANERT programme was intended to stimulate the active participation of the female population in these programmes

and train them for application of RES. The whole process was conducted at a local level and was part of the clearly defined National Energy Supply strategy. Solar energy, obtained through the use of different types of energy-transforming systems, is used more and more in mountain regions around the world (China, Tibet, Bolivia, and Nepal). Also, wind energy is widely used in some western countries (Germany, Upper Austria – the village Ebershwang) (Pucar, Nenković, 2003.). The types of RES that are used to a lesser extent than others, such as the use of biomass and plant oils for generating heat (Germany, Upper Austria) are of particular interest.

POSSIBILITIES OF APPLYING RES IN RURAL MOUNTAIN REGIONS OF SERBIA

The Republic of Serbia has very poor results in applying green energy. The elementary sources of energy such as low-calorie coal and liquid fuels are not renewable and up to 40% are imported. It is important to consider the use of other sources of energy that would significantly decrease the irrational exploitation of resources that are being slowly exhausted, and consequently creating a much healthier environment. The main problem is the relatively low price of electrical energy and lack of skilled personnel for the work with RES. The necessary legislative that would set this problem in an institutional framework, as well as an economic programme that would support the use of green energy are also lacking.

Hydro-energy, along with non-commercial uses of RES contributes to only about 15% of the total energy production in Serbia (Nenković, Pucar, 2003.). Therefore, one of the main objectives of Serbia's energy planning strategy should be to stimulate the use of local energy sources that do not pollute the environment and that could reduce imports of non-renewable energy sources. According to international experiences and research conducted in Serbia in the past years (in 2000 a study dealing with the rationalization and substitution of energy with renewable sources was conducted under the auspices of the Federal Government), Serbia's mountain villages would be the main beneficiaries of RES. Mountain villages are in an extremely

unfavorable position for the distribution of energy from centralized systems due to their scattered nature and considerable distance from distributing networks.

Serbia occupies an area of 88,361 km² out of which as much as 22,500 km² are considered mountainous (based on the criteria used for determining whether a region is mountainous, i.e. that more than half of the land-registry municipalities are 600 m above sea-level). This area is inhabited by a population of 721,453 out of a total of 7,479,437. According to programmes sponsored by foreign donations in undeveloped countries rural populations are considered to be the most likely active participant in the application of RES. Since more than 44% (as registered in 2002) of the overall population of the Republic Serbia is rural and uses traditional energy sources, it can be concluded that it is necessary to conduct programmes for RES use in rural, particularly mountain regions (Pucar, 2002.c.)

A draft model of RES application

Using as a starting point, countries that are at the same or similar level of economic development as Serbia, we have created a model according to which RES would to a great extent replace the existing traditional sources of energy (in Serbia's rural areas these are wood and low-calorie coal), as well as secure a degree of independence from large energy systems (at a sub-regional, regional and national level) that these areas have so far relied upon. Due to the unavailability of expensive sources of energy such as coal and oil, the mountain regions of Serbia have in the last ten years been devastated as a result of systematic deforestation and subsequent erosion. The unreasonable and unprofessional management of certain energy sources such as low-calorie coal has brought about an increase in the number of cases of pulmonary infections, especially amongst the younger, female population. Solar energy, wind energy, the energy of small hydroelectric power plants and especially geothermal energy are the future for Serbia's rural communities. Here lies an economic potential that can help in the change of the energy map of Serbia and high unemployment. It could help decrease the

number of people among the rural population that receive state benefits (Pucar, 2002.d).

In order to solve these problems it is necessary to create a draft-plan of RES use. Programmes based on national strategies that envisage the support by both foreign and local donations should be created as soon as possible. These programmes should allow a degree of independence to the local authorities with respect to decision-making regarding the use of energy sources. The programmes should be founded on thorough research of specific local conditions and the potential for developing energy systems based on RES. Also, likely beneficiaries and possibilities for employing members of the local population in energy production should be determined.

The participation of women in programmes for RES implementation

Education of the local population should be based on a previously determined national strategy and after potential RES have been established. It should primarily focus on women who will assume a key role in using RES not only in households and farms, but also in power plants (Nenković, Pucar, 2003.). Educating women is the first step in implementing a programme for RES use. Through lectures that would be held either at the municipal level or at local community centers, women would be introduced to the basic principles of application of different types of RES in households (installation of photo-voltage panels on roofs of houses that could heat and possibly produce electrical energy; use of wind energy or electrical energy; bio-gas production by burning and processing certain categories of communal waste, etc.) (Rural energy- national project on biogas development). Bearing in mind that women have more responsibilities in the household (which is reflected in their choice of energy sources for cooking or heating water), they should have the freedom to choose the source of energy. Attention should focus on the training of women in the essentials of efficient food preparation and maintenance of the equipment used in energy production. In this way the female population would achieve a degree of independence in decision-making and in the upkeep of appliances (Pucar,

Nenković, 2003.). Problems appear in agricultural production which, while still relatively inefficient in Serbia, could be improved by the use of RES at smaller production facilities. Namely, the introduction of heat and electrical energy production and supply from renewable sources at a local level would shift the production of foods to a higher technological level. It is envisaged that the system would be controlled and maintained by the female population previously educated in this area. Up to a certain extent the substitution of traditional with RES would solve the problem of unequal employment opportunities between the genders still present in Serbian society. Due to a traditional (patriarchal) way of life in the Balkans women in rural societies have been the victims of discrimination for years when it comes to working outside the household. The gender/age structure and percentage participation of women in agriculture that belong to the total population involved in agriculture of the mountain municipalities of Valjevo, Brus, Knjaževac, Pirot and Raška, will illustrate the prevailing conditions.

a) A model for the engagement of the active female population of the Valjevo municipality

The municipality of Valjevo belongs to the Kolubara district. It covers an area of 905 km². according to the census from 1991, its population is 98,226 (Annual Statistical Report, 2000.). As according to preliminary results from 2002 the number of inhabitants fell to 96,761 (Annual Statistical Report, 2002.), a slight tendency towards depopulation appears to be taking place. Like most mountain areas in Serbia, the Valjevo municipality traditionally has a larger female population in all of the age groups. Growth of the female population was most pronounced in the 30 to 40 year-old group, which is a favorable trend seeing that "the fittest workers" reside in this group.

The census from 2002 revealed certain changes in the gender/age structure. In spite of the same general trend, the majority of women belonged to the 20 to 39 age group (Annual Statistical Report, 2002.). In agreement with the global increase in size of the female population, the number of women fit for work (from 18 to 60 years of age) continues to exert

pressure on employment (Fig. 1). The Valjevo municipality has a great problem with the number of women fit for work that receive state benefits. Women often work in the household or on small farms (Fig. 1). The graph shows that the female population is more numerous and that a few women work in agriculture. Therefore, according to the Valjevo municipality census, there is a large population of women relying on state benefits that could work in RES application. It is precisely this group that has been engaged in using RES in other developing countries, not only at the household level, but also in agricultural production. A similar situation was observed in other municipalities.

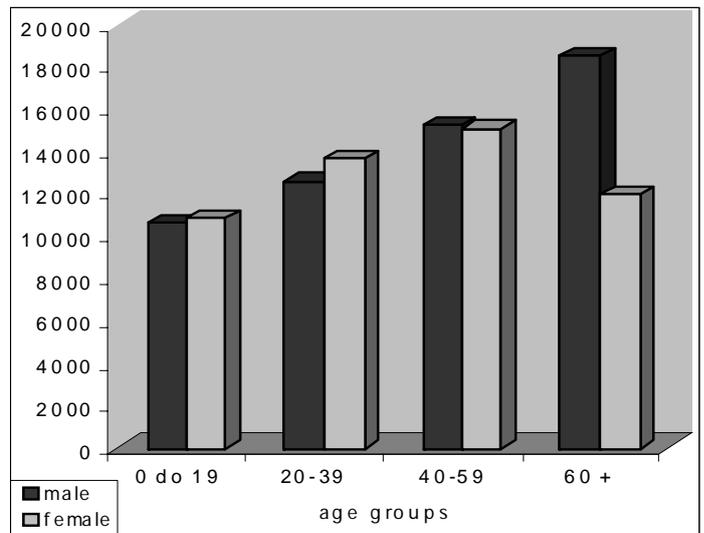
b) A model for the engagement of the active female population of the Brus municipality

The Brus municipality belongs to the Ras district. It covers an area of 606 km². Like other mountain municipalities in Serbia it is depopulated. From the 1991 to the 2002 census its population decreased by 13%. The gender and age classification is similar to the Valjevo municipality, although in Brus significant population aging has also been observed. However, regardless of the age structure, the gender classification clearly shows that a large number of women could be included in RES application with the help of different education projects. Also, according to the diversity of the population based on gender and work, a strong need for stimulating employment at a local level is present. Statistics show that the active population is mostly male. Such a situation should be used for implementing programmes for RES application, thus offering increased employment and improved standards of living to this social category (Fig. 3).

c) A model for the engagement of the active female population of the Knjaževac municipality

The Knjaževac municipality belongs to the Zaječar district. It covers an area of 1,202 km². Like the previously examined municipalities in Serbia, Knjaževac has a negative age structure with a strong tendency towards depopulation. Programmes for RES application (use of solar energy, wind energy, etc.) should focus on

Fig. 1. Gender and age profile of the total population in the Valjevo municipality according to the 2002 census.



Source: COJ, 2002c

Fig. 2. Gender and employment profile of the agricultural population in the Valjevo municipality according to the 1991 census.

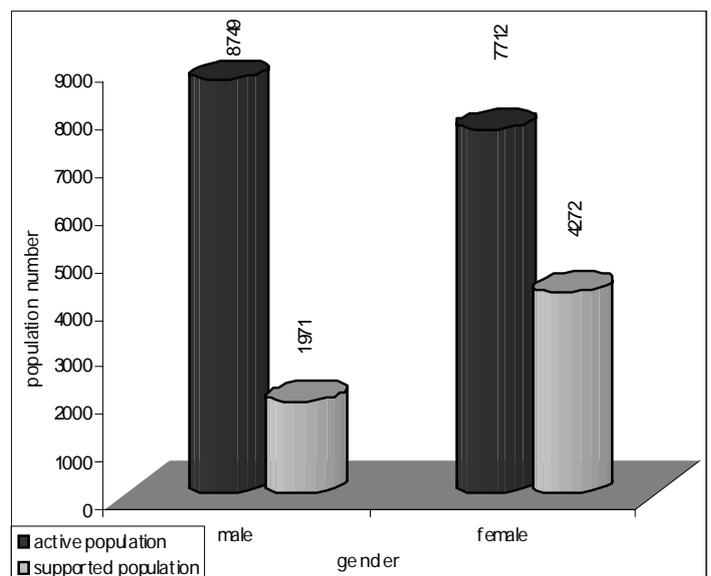
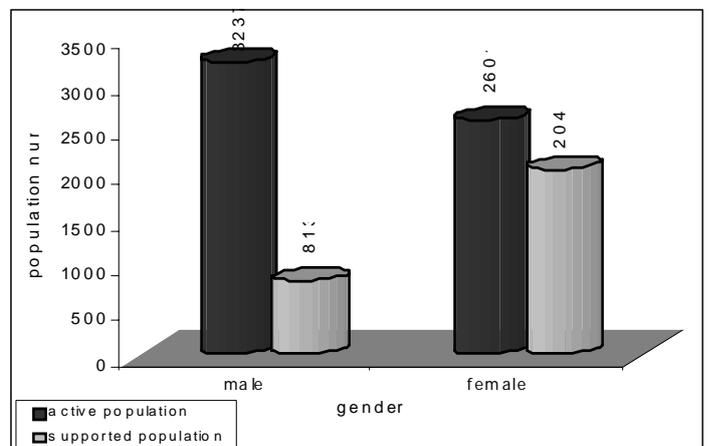


Fig. 3. Gender and employment profile of the agricultural population in the Brus municipality according to the 1991 census.



stimulating the dominant elderly female population at a household level (Fig. 4).

d) A model for the engagement of the active female population of the Pirot municipality

The Pirot municipality belongs to the Pirot district. It covers an area of 1,232 km². Of all of the examined municipalities, the population of the Pirot municipality has the best economic structure, as the percentage of female population on sustenance is negligible (Fig. 5).

The population that works in traditional energy systems should be trained for work in alternative energy sources as part of the programme for RES application. The local rural population should be continuously educated for the use of energy alternatives to primarily low-quality coal and wood and likewise securing the active participation of the female population in programmes for RES implementation. Since the female population predominates in the 20-39 and 40-59 age groups, the gender and age structure is just one of the advantages of this municipality, making it suitable for the introduction of RES (Fig. 6).

e) A model for the engagement of the active female population of the Raška municipality

The Raška municipality belongs to the Raška district. It covers an area of 666 km². Its population is characterized by a stagnating tendency which makes this municipality similar to the Valjevo municipality, despite the fact that 24% of the population works in agriculture. Also, the supported female population within the total population active in agriculture is relatively low. This means that in the coming period, as part of the program for RES implementation, a strategy that would educate the female population in promoting use of RES in meeting local demands should be created (Fig. 7).

The age structure in this municipality is also very favorable. A younger female population in the 30-39 age group is prominent and works in agricultural production which could in turn become economically more profitable with the use of RES as primary energy sources.

Fig. 4. Gender and employment profile of the agricultural population in the Knjaževac municipality

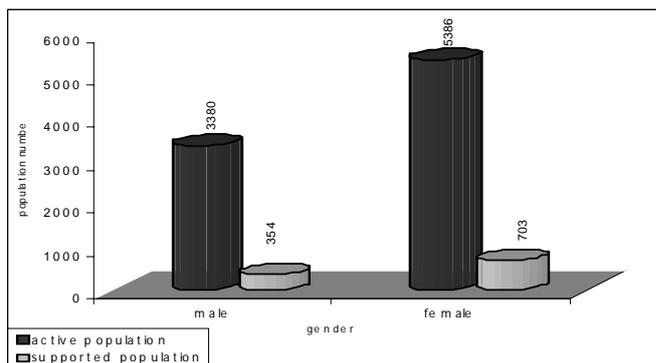


Fig. 5. Gender and employment profile of the agricultural population in the Pirot municipality according to the

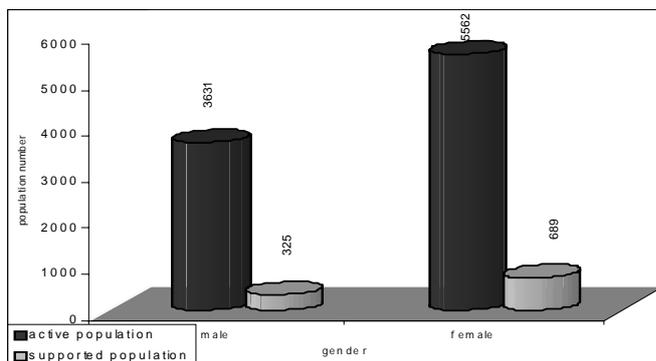


Fig. 6. Gender and age profile of the total population in the Pirot municipality according to the

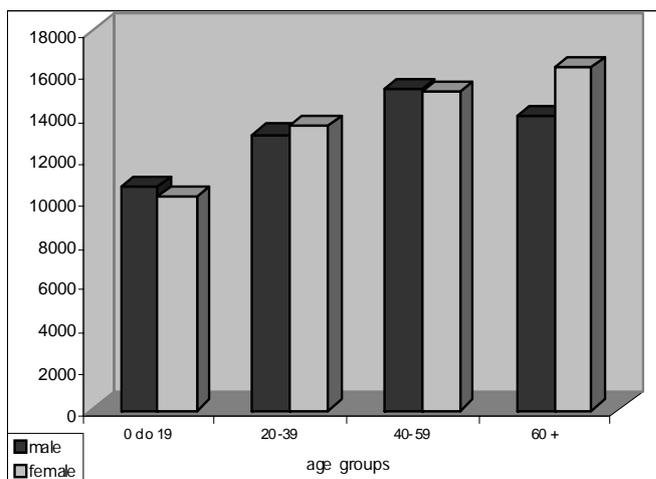
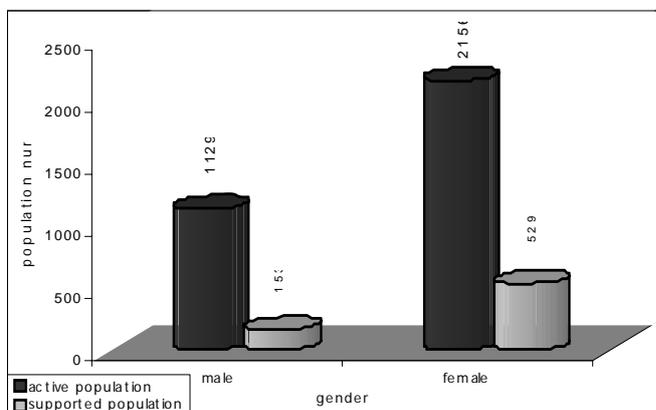


Fig. 7. Gender and employment profile of the agricultural population in the Raška municipality according to the 1991 census.



Problems in model making

In the RES examination of the age and gender structures for the above mentioned municipalities, we arrived at the problem of absence of relevant statistical information concerning the educational level of the female population in different age groups. This information would be valuable in determining the possibilities for employment of the female population. In undeveloped countries, due to a very low level of education women occupy positions that do not require college or higher education (the use of RES at a household level or the maintenance of systems at a household level that do not require advanced technical knowledge). There are signs that the situation in Serbia is different. Namely, the educational structure is generally higher than in undeveloped countries, meaning that the requirement for university educated personnel in power plants can be met.

CONCLUSION

The shift from traditional energy sources to renewable ones is a necessity of the modern world. It is the consequence of a grave environmental situation and many economic reasons. Man's need for more energy is growing by the day, albeit in disproportion to the existing energy supplies. This means that it is necessary to focus on local sources of energy that have been unjustly ignored. However, these problems cannot be solved at random. International experience shows that only joint actions of institutions at local, regional and national levels can create a uniform strategy that would result in an increased use of green energy.

The use of RES at a local level is in its infancy in Serbian rural communities. Ideas that are being systematically implemented in countries less developed than ours have yielded amazing results in the first years of application. The same should be expected in Serbia. Also, such

a trend would exert a positive influence on demographic tendencies and rural development. Besides obvious positive ecological implications, use of RES would bring Serbian rural areas closer to the level of development of their European counterparts. Based on the statistics of the examined municipalities, we concluded that the gender and age structures of the rural areas are suitable for implementing RES application programmes. Bearing in mind the favorable results of scientific research of climatic parameters (suitability for developing solar energy sources, hydro-energy, etc.), we also concluded that Serbia is ready to apply these energy sources. The use of alternative energy sources would improve not only the country's overall energy but also the ecological and economic situation in accordance with the basic principals of *sustainable development*.

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THE ROLE AND DEVELOPMENT PERSPECTIVES OF SMALL TOWNS IN CENTRAL SERBIA

Nenad Spasić, Jasna Petrić

The link between urban centres and the countryside, including movement of people, goods, capital and other social exchanges, play an important role in processes of rural and urban change of a country. Major demographic and spatial changes have been typical for Serbia in the second half of the 20th century, caused by a dynamic primary urbanisation process, i.e. by intense migration trends between rural areas and towns (cities). A special attention in this paper is given to the small urban centres in Serbia (small towns with population of less than 20,000) as the first magnet in proximate contact with the rural surroundings, and the one that therefore could have the greatest influence on organisation structure and development prospects of the rural areas. In addition to being difficult to substantiate criteria for urban classification, small towns themselves do not represent a homogeneous group of settlements, and this makes it even harder to put up generalisations that would fit to all the settlements of this kind either within our country or cross-borders. However, here are identified certain common features for the small towns in Central Serbia and their development perspective is analysed in relation to medium towns and cities of the same territory in consideration. Finally, this paper discusses the importance of policies for small town development in light of a real risk that the process of globalisation may lead to the justification of a new concentration of activities in the large cities, increasing the already significant regional differences in living conditions and economic development.

Key words: *small towns; urbanisation; Central Serbia; rural surroundings; development perspective.*

WHY AN INTEREST IN SMALL URBAN CENTRES?

Within general trend among most nations to 'urbanise', there are large differences in the scale, speed and spatial distribution of urban change and development of urban centres. The immediate cause of virtually all urbanisation is the net movement from rural to urban areas. This process, labelled as the primary urbanisation has been typical for Serbia in the second half of the 20th century and will continue as long as the traditional demographic 'reservoirs' (predominantly rural areas) are exhausted.

Although, traditionally, the debate on rural-urban interactions has been dominated by interest in the ways in which very large cities influence the development of national space, small and medium urban centres are often seen as playing a crucial role in rural-urban interactions given the usually strong link and complementary relationship with their hinterland.

Small urban centres have attracted the attention of researchers and urban policy-makers ever since the 1960s. However, a current increased interest in small towns is based on the growing recognition of the importance of exchanges between rural and urban households, enterprises and economies.

Raw materials coming from rural areas provide a base for functioning of many urban enterprises, while agricultural producers rely on urban-based traders and markets. Most rural dwellers rely on retail stores and services in local (small) urban centres. Also, as it can be increasingly noticed, both rural and urban households rely for their livelihoods on the combination of rural and urban resources, including nonagricultural employment for rural residents and peri-urban farming for urban dwellers. These interactions and links are generally stronger in and around small urban centres.

General paradigms of modernisation and dependency theories justify the view about the role of small urban centres in regional and

rural development. First of all, small towns are seen as centres from which innovation and modernisation would trickle down to the rural population.

With this in view, the most effective and rational spatial strategy for promoting rural development is to develop a well-articulated, integrated and balanced urban hierarchy (Satterthwaite and Tacoli, 2003:12). This network of small, medium-size and larger urban centres is perceived to allow clusters of services, facilities and infrastructure that cannot be economically located in small villages and hamlets to serve a widely dispersed population from an accessible central place (Rondinelli, 1985). Small towns are perceived to play a positive role in such network by offering more service supply points with a variety of services, agricultural inputs and consumer goods to the rural areas (Tacoli, 1998).

On the other hand, a distinctive character and quality of small towns in many areas is under pressure from: population change, economic

restructuring, and insensitive development. Some or all of these factors may change the historic, economic, social, and environmental role of small towns.

Experiences from around the world show that there exist three different levels of decision-making that have a significant impact on the role of small urban centres in economic growth (Satterthwaite and Tacoli, 2003:2). The first is the role of local government, which is best placed to identify local needs and prioritise them in order to define the future action. Local decision-making can help regulating the use of natural resources by rural and urban residents and enterprises, which otherwise can become a major source of conflict. However, while decentralisation has a great potential in terms of both efficiency and responsibility, there may be costs and limitations with regard to revenue, capacity and legitimacy. The second level is the national context, where by far the most important constraint can come from the lack of 'fit' between national macro-economic and sectoral policies and local development strategies. The problem arises because the spatial dimension of national growth strategies is often ignored as well as the issues such as: equitable distribution of and access to land; regionally balanced growth strategies including satisfactory provision of infrastructure and basic services (education, health, water and sanitation); revenue support to local government, etc. The third level is the international or global context. In almost all world nations, the liberalisation of trade and production has reshaped traditional links between rural and urban areas, where the existence of small urban centres may be seriously threatened. However, if foreign investments support local production, they empower the role of small urban centres for the economic base of their proper region.

SETTLEMENT CLASSIFICATION AND CHARACTERISTICS OF SMALL TOWNS IN CENTRAL SERBIA

One of the key problems encountered when addressing urban settlements is the definition of towns, i.e. distinction between urban and other types of settlements. In theory and in practice, there are several criteria that may be applied in distinguishing urban from "non-

urban" settlements: statistical, administrative, functional, sociological, economic, historical, demographic, etc. When observed internationally, a town status and its scope are usually defined by using individual or combination of the following characteristics: settlement size (number of inhabitants), urban way of living, minimum centrality, compactness of a settlement, territorial enclosure, etc. (Vresk, 1980). However, the population size and urban way of living are usually considered as the key features, according to which a town status of a settlement has been defined in the majority of countries (Stevanović, 2004).

In virtually all nations, official definitions ensure that urban centres include all settlements with 30,000 or more inhabitants; however the minimum size of a small town may vary from one country to another. No accurate international comparisons can be made of the proportion of nations's population living in small towns defined by their population size because each nation has its own criteria for determining when a settlement is large enough to be classified as urban (or to have the administrative status, density or concentration of nonagricultural employment to be classified as urban) (Satterthwaite, Tacoli, 2003:8). For example, some nations use population thresholds of between 200 and 1,000 inhabitants to define urban centres (e.g. most Scandinavian countries). On the other side of extreme, countries like Japan use the minimum size of 30,000 inhabitants to define a town. Therefore, what in one nation would be hundreds of small towns would be hundreds of rural settlements in another. Yet, in most countries the lowest settlement size for a town is 2,000 people, and this criterion is usually accompanied by the percentage of population employed in nonagricultural activities (usually 2/3-4/5 of employed persons, sometimes considering only male work force), or it is required that a settlement has some typical urban features (Milićević, 1994).

In Serbia, the Census statistics in the period 1948-2002 used either of the two criteria for differentiation of settlements: administrative (a settlement is proclaimed as town according to law regulations) and demographic-statistical one (urban settlements should have at least 2,000 inhabitants and 90% of nonagricultural

inhabitants, where this percentage may be lower with the increase of a settlement's population size, e.g. settlements with 15,000 and more inhabitants are considered as towns if they have at least 30% of nonagricultural inhabitants). This latter criterion was proposed by M. Macura in the mid-1950s and was applied for determining urban settlements in 1953, 1961 and 1971 Censuses. On the other hand, the administrative criterion which is used by the latest Census (2002) as well as by the 1948, 1981 and 1991 Censuses, allows local (municipal) governments to proclaim the settlement as urban, and is endorsed by publishing the declaration in the Official Gazette of the Republic of Serbia. Such administrative criterion has some serious flaws because it doesn't give differentiated picture of urban settlements in Serbia. Namely, this criterion encompasses urban settlements that vary in size from several hundreds to more than a million inhabitants.

Without any intention to broaden up the discussion on the most apt criteria for classification of towns in Serbia, in this paper we have proposed the following conditional classification of urban settlements:

- Small towns (population up to 20,000)
- Medium towns (population between 20,000 and 100,000)
- Cities (population over 100,000)

Also, in this paper we have limited our observations to the settlements of Central Serbia, i.e. Vojvodina has been omitted from the research, as well as Kosovo and Metohija for which there is a lack of official data.

Apart from urban types, official settlement classification in Serbia also recognises so-called 'other settlements'. Those are non-urban settlements, and according to demographic-statistical criterion are used to be labelled as rural and mixed type of settlements, latter being of transitional type between urban and rural settlements. A category of mixed type of settlements ceased to exist applying the administrative criterion for settlement differentiation (starting from 1981). Namely, all settlements that are not urban have been put in the category of 'other settlements'. In Central Serbia most numerous are in fact other settlements, but they encompass a total of 2,392,408

inhabitants, accounting 43.8% of the total population in this part of the country (2002 Census data).

As it can be observed from the Table 1, according to 2002 Census data, small towns are the most numerous urban settlements in Central Serbia (76% of all urban settlements belong to this category). However, their population intake is the smallest among all three types of urban settlements, due to the fact that some small towns have just a few hundred inhabitants.

There has been a noticeable change in number of small towns in the period 1948-2002, however with the application of administrative criterion for determining urban settlements, the number of small towns stabilised on 89 in 2002, with the increase of just 4 new small towns in Central Serbia since 1981.

According to the conditional classification of small towns in Central Serbia based on their population size in 2002, five groups of small towns can be identified:

- Small towns of 15,000 – 20,000 people: Prijepolje, Velika Plana, Vlasotince, Aleksinac, Trstenik, Negotin, Knjaževac, Priboj, Loznica (9 in total);
- Small towns of 10,000 – 15,000 people: Lebane, Majdanpek, Nova Varoš, Surdulica, Bujanovac, Ivanjica, Sjenica, Požega, Kuršumlija, Surčin (10 in total);
- Small towns of 5,000 – 10,000 people: Čičevac, Umka, Topola, Blace, Veliko Gradište, Vranjska Banja, Ub, Banja Koviljača, Aleksandrovac, Raška, Arilje, Dimitrovgrad, Lapovo, Sevojno, Svrlijig, Petrovac, Dobanovci, Grocka, Vladičin Han, Sokobanja, Bela Palanka, Tutin, Kladovo, Kostolac, Svilajnac, Bajina Bašta, Vrnjačka Banja (27 in total);
- Small towns of 2,000 – 5,000 people: Guča, Zlatibor, Resavica, Grdelica, Ovča, Bosilegrad, Mataruška Banja, Rača, Ribnica, Medveđa, Pinosava, Ljig, Donji Milanovac, Vučje, Beli Potok, Lajkovac, Boljevac, Ostružnica, Kosjerić, Lučani, Despotovac, Niška Banja, Kučevo, Babušnica, Veliki Crljeni, Brus, Mali Zvornik, Krupanj (28 in total); and
- Small towns of less than 2,000 people: Kuršumlijska Banja, Divčibare, Belanovica, Rucka, Pećani, Belo Polje, Sijarinska Banja, Brza Palanka, Jošanička Banja, Bogovina,

Table 1: Urban classification in Central Serbia in 2002

Types of urban settlements	Number of urban settlements	% in total number of urban settlements	Population	% in urban population intake
Small towns	89	76.1	590,869	19.2
Medium towns	25	21.4	1,042,993	33.9
Cities	3	2.5	1,439,739	46.9
Total	117	100	3,073,601	100

Aleksinački Rudnik, Baljevac, Mionica, Sopot, Rudovci (15 in total).

Small towns represent a rather heterogeneous group, in terms of their developmental, socio-economic, demographic, functional, and spatial-physical characteristics. This group includes towns which, regarding their size, function, and location, represent potential sub-regional centres or new medium towns (Negotin, Knjaževac, Priboj, Loznica), as well as small municipal centres which exert no influence outside the borders of their commune, and small urban settlements which function as centres of communities of villages. The group also includes various settlements with one dominant function, such as spas (Vrnjačka Banja, Sokobanja, Banja Koviljača, Vranjska Banja, Niška Banja, etc.), tourist settlements (Zlatibor, Guča, Divčibare), and industrial and mining towns (Majdanpek, Kostolac, Sevojno, Veliki Crljeni, Resavica, Aleksinački Rudnik). Therefore, it is not easy to offer a general definition to this category of urban settlements.

When trying to formulate definition applicable in the urban context of Central Serbia, small towns can be regarded as settlements with less than 20,000 people (according to the 2002 Census) and rating as urban settlements according to the criteria of the statistical service; they have the function (the role) of communal centres or that of supplementary communal centres; they are in direct contact with their rural surroundings, and they represent or would represent the most immediate centres of urbanisation (“vitalisation”) of rural areas.

DEVELOPMENT OF SMALL TOWNS IN COMPARISON TO OTHER URBAN SETTLEMENTS IN CENTRAL SERBIA

Urban population of Central Serbia has noted a remarkable growth in the period 1948-2002. This can be substantiated by the fact that in 1948 there was slightly over 20% of urban residents, and with continual growth of their ratio in total population of Central Serbia, in 2002 they reached the figure of 56%.

When observing the urban population growth according to three different types of urban settlements (small towns, medium towns and cities), it can be noticed that in the period 1948-1971 such increase was mainly due to the growing population of small towns. In this period, small town population grew 2.7 times, whilst for medium towns and cities it grew 2.5 and 2.1 times respectively. This indicates that until 1971, small towns used to be in the first line of absorption of rural-urban migrations in Central Serbia. Some previously conducted research showed that in the 1970s small towns exhibited the fastest rate of growth of GNP, as well as very high employment rate, which indicated a fast economic growth and rapid changes in the socio-economic structure of the population (Spasić, 1984a; Spasić, 1984b; Malobabić, Spasić, 1997).

However, in 1981 the primacy in urban population growth rate was taken over by medium towns, whereas cities increased their population at slower rate than any of the other two urban settlement types.

As it can be observed from the Table 2, the growth of urban population in small and medium towns of Central Serbia was stable and almost equalised in the last two inter-census decades (1981-2002). On the other hand, it is

interesting to notice that the cities of the same territory were at the same time lagging behind in terms of population growth, and for the first time in the period 1991-2002, they marked a population loss. This situation is mainly due to the fact that the negative natural growth appeared in cities (including Belgrade), so basically only small and medium towns provided natural replacement of their populations. Having in mind that small and medium towns are becoming the bearers of population reproduction, some may view them as the poles of future demographic revitalisation of Central Serbia (Stojanović and Vojković, 2005).

When examining small towns of Central Serbia in particular, one should take in consideration that not all of them have had a population growth in the last inter-census period. The small towns with negative demographic trend are usually those with less than 10,000 inhabitants (19), however there is a few with more than 15,000 people that started losing their population (e.g. Priboj, Knjaževac, Trstenik, Velika Plana and Prijepolje).

Small towns of Central Serbia are not a homogeneous group, so it is rather difficult to make any inferences that would equally apply to all of them. There are obvious differences between small towns which are almost as developed as medium ones and those which are not even centres of communes; there are equally obvious differences between mono-functional settlements (mining towns, spas) and those with the tendency to develop more diversified functions. When considering the influence of small towns on their rural surroundings, the ones with a higher degree of economic and social development have a more marked influence on their immediate surroundings and vice versa.

Small towns that function as centres of communes and that are not in the zones of influence of larger towns have a more complex role to play. At the same time, it is difficult for them to serve as centres of development for rural surroundings. These towns are often the centres of communes which are economically underdeveloped, with inadequate infrastructure, limited natural resources, etc. The relationship between a small town – centre of commune and its rural surroundings is of some interest.

As a rule, the majority of all employed persons within a commune live in the town. This clearly undesirable fact is due to a tendency to quickly emancipate the old provincial settlement into an urban centre, so that all available resources (which were often rather modest) have been invested into the centre of the commune. Social and communal facilities and services are also concentrated in the towns, and the same applies to all the quality of living features.

Although small towns used to have the fastest growth rates of both population and GNP, their development is still well behind that of the larger towns in Central Serbia. This is partly due to the fact that larger towns have higher productivity because of better structure of labour force, presence of economy branches with very high accumulation, and so forth. In addition to this, the quality of life in small towns may show the weak points in comparison to medium towns and cities, so that many rural migrants go straight to the larger urban centres, and this may explain population decreases in certain small towns and their communes.

THE POTENTIAL ROLE OF SMALL TOWNS IN REGIONAL AND RURAL DEVELOPMENT

The commonly stated spatial aims of regional planning policies assume that the country's small towns joined by medium town centres contribute to regional and rural development in four main ways:

- By acting as centres of demand/markets for agricultural products from their surrounding rural region, either for local consumers or as links to broader markets. Access to markets is a prerequisite to increasing rural agricultural incomes, and the proximity of local small towns to production areas is assumed to be a key factor in their potential role.
- By acting as centres for production and distribution of goods and services to their rural hinterland. Such concentration is assumed to reduce costs and improve access of rural population to a variety of services (health, education, administration, leisure).
- By becoming centres for the growth and consolidation of nonagricultural activities and

employment through the development of small and medium-size enterprises or through the relocation of branches of large enterprises.

- By attracting rural migrants from the surrounding region offering them job prospects and perhaps decreasing migration pressures on some large urban centres.

The empirical evidence available shows great variations in the extent to which small towns fulfil these roles. Much of this relates to the specific context in which these towns develop, to the quality of transport and communications links, and to the structural conditions prevailing at the local, national and international levels.

Rural producers' physical access to the markets in small towns and the extent of these towns' connection to wider network of urban centres have a key influence on development of small towns. The location of small towns is therefore critical. In many cases, small towns that are located on road axes or along railways and rivers, have better links with wider market networks.

Growth centre theory places a great emphasis on small and medium towns in the distribution of services and goods, where their size is perceived to play a key role in the types of services they provide. Hence, investments in medium towns are assumed to spread to and stimulate small towns, which, in turn, provide a limited range of lower-order services and goods to the rural region. However, empirical evidence does not confirm that the size of town necessarily relates to its economic role within its surrounding region.

Availability of employment, especially in trade, services and manufacturing is an essential precondition for rural migrants to move to small towns within their region. Indeed, the growth of many small towns is linked to their retention capacity for the local rural population. In addition to this, many rural residents prefer to commute into town rather than move, as this helps retain a foothold in agricultural production. Where distances between rural settlements and local small towns are not too great, investment in transport facilities that respond to the rural population needs are likely to benefit them by increasing their options, and

may to some extent reduce pressure on small and medium towns – and by extension on larger towns and cities.

A CRITICAL REVIEW OF SOME OF THE POLICIES PROPOSED FOR SMALL TOWNS

Policy measures for small towns often have a multiplicity of economic, social and political objectives, either explicit or inherent to the wider national strategy. According to Hardoy and Satterthwaite (1986), these policies can be put in five broad categories:

- Policies for development of small towns in more 'backward' and generally more rural regions;
- Policies for development of small towns specifically aimed at supporting rural and agricultural development;
- Policies to develop small towns in more urbanised and generally more industrialised regions, to reduce concentrations of population and investment in the larger urban centres in these regions;
- Policies to slow migration flows or to address the major cause of such migration, e.g. the concentration in larger urban centres; and
- Policies to strengthen local or regional government, including improving public service provision there.

Policies to strengthen the role of small towns have commonly been labelled as 'growth centre' or 'growth pole' policies. Yet, growth centres usually provided much less stimulus to their surrounding regions than expected: this was due to inadequate recognition of factors specific to each centre and to the imprecise diagnosis of existing circumstances in the centres and their regions, resulting in the top-down implementation of policies formulated at the central level.

Policies aimed to help rural and agricultural development with support of small towns were also with doubtful success. The assumption that the location of services in variety of 'central places' would benefit agriculture was often not confirmed in reality.

Policies aiming to develop small towns in more urbanised and generally more indus-

trialised regions are likely to focus along transport corridors. One important element of such policies is to offer incentives to large companies to relocate.

Policies attempting to slow down migration to larger towns and cities by retaining (or attracting) migrants in small towns also have mixed results. The reasons behind the choice of destination for migrants are primarily, but not exclusively of economic nature. They include issues such as: employment, migrants' social acceptability and, to some extent, access to affordable accommodation. These policy measures also encompass improvements in the quality of life in small towns (urban services, communal infrastructure, schools, child-care centres, medical services, cultural activities, etc.).

Although policies for small towns often have an element of strengthening local and regional government, sometimes a real decentralisation is missing. In some cases, the development of local governments and certain public services in centres of communes is seen as the way for such centres to gain the 'urban' status, regardless of their population size and economic base.

The growth, or the stagnation and declination of small towns, and the nature of their economic relations with their rural regions, are often strongly influenced by macro-economic strategies or sectoral priorities that make no explicit reference to spatial dimensions.

The distribution of urban population (and of industrial and service employment) within the urban system from the largest to the smallest urban centre is obviously influenced by distribution of power, resources and capacities within the local government structure. Thus policies intended to support small towns, need to ensure that they are not being undermined by the 'non-spatial' priorities of higher levels of government.

CONCLUSION

Small towns are in the immediate contact with their rural surroundings, enabling them to strongly influence the development of rural areas. Accordingly, in the future, small towns could become miniature centres of "vitali-

sation" and urbanisation of rural areas. That would be the most efficient way to gradually relieve the pressure of rural population on urban centres. In Central Serbia, such a role of small towns ought to be researched in the process of spatial and urban planning of towns and their gravitation zones, especially with reference to developmental, transportation, and other functional connections between the town and its surroundings.

It is not likely that small towns of Central Serbia will be able to play their role in controlling the excessive rural-urban migration unless sufficient and synchronised attention is given to improvements in their quality of life elements. In addition to improvements in the collective and individual standards of living, this also implies the following: increased employment opportunities in small towns as well as in rural centres; improved transportation links and other forms of communication; better communal services; health and social care; environmental protection, etc.

Many of the "urban comforts" and attractions possessed by larger urban centres cannot be found in small towns. On the other hand, they do have other comparative advantages (contact with natural and rural environment, lower costs of living, etc.), which combined with gradual planned improvements in their urban facilities, may generate more attractiveness to life in a small town.

The future for small towns in Central Serbia does not involve turning back the clock but it should be flexible enough to understand how market forces and social trends can be harnessed.

By following some of the key recommendations, planning for small towns should be underpinned by three elements:

- Examining and, if necessary, redefining their key functions;
- Identifying, safeguarding and reinforcing sense of place and local assets; and
- Involving local communities and business organisations in decision making.

Table 2. - Population change in Cities, Medium, and Small Towns of Central Serbia in the period 1981-2002

	Population			Index of change		
	1981	1991	2002*	1991/81	2002/91	2002/48
Cities	1,378,308	1,491,150	1,439,739	108.2	99.2	306.7
Medium towns	900,676	1,027,376	1,042,993	114.1	103.5	410.7
Small towns	513,350	590,928	590,869	115.1	102.5	348.4
Aleksandrovac	5,177	6,354	6,476	122.7	106.1	683.0
Aleksinac	15,734	17,030	17,171	108.2	102.7	304.7
Aleksinački Rudnik	1,927	1,645	1,467	85.4	90.1	137.9
Arilje	4,982	6,074	6,744	121.9	111.9	868.2
Babušnica	2,906	4,270	4,575	146.9	107.5	762.2
Bajina Bašta	6,284	8,555	9,543	136.1	113.1	803.0
Baljevac	1,707	1,614	1,636	94.5	101.6	148.4
Banja Koviljača	5,478	5,516	6,340	100.7	119.4	294.2
Bela Palanka	7,502	8,347	8,626	111.3	103.9	307.9
Belanovica	336	260	266	77.4	102.7	64.5
Beli Potok	3,150	3,069	3,417	97.4	113.9	202.2
Belo Polje	480	568	545	118.3	97.1	383.8
Blace	4,409	5,228	5,465	118.6	107.0	308.7
Bogovina	1,810	1,611	1,348	89.0	85.5	78.0
Boljevac	3,289	3,926	3,784	119.4	99.2	382.5
Bosilegrad	2,029	2,440	2,702	120.3	110.8	222.5
Brus	3,406	4,558	4,653	133.8	102.9	618.3
Brza Palanka	1,699	1,557	1,076	91.6	91.0	104.7
Bujanovac	11,789	17,050	12,011	144.6	72.2	460.0
Ćićevac	5,520	5,398	5,094	97.8	95.8	120.6
Despotovac	3,268	4,170	4,363	127.6	113.4	329.1
Dimitrovgrad	7,055	7,276	6,968	103.1	96.8	239.1
Divčibare	172	130	235	75.6	180.8	602.6
Dobanovci	7,592	7,966	8,128	104.9	105.4	215.8
Donji Milanovac	2,996	3,338	3,132	111.4	95.9	147.5
Grdelica	2,204	2,431	2,383	110.3	99.9	294.5
Grocka	6,394	7,642	8,338	119.5	112.2	294.9
Guča	1,852	2,026	2,022	109.4	100.6	342.6
Ivanjica	8,765	11,093	12,350	126.6	112.2	820.3
Jošanička Banja	1,366	1,296	1,154	94.9	97.2	116.8
Kladovo	8,325	9,626	9,142	115.6	98.0	456.2
Knjaževac	16,665	19,705	19,351	118.2	99.1	410.1
Kosjerić	2,988	3,794	4,116	127.0	109.6	752.7
Kostolac	9,274	10,365	9,313	111.8	93.2	326.9
Krupanj	3,779	4,795	4,912	126.9	104.1	593.4
Kučevo	5,051	4,846	4,506	95.9	101.2	166.9
Kuršumlija	10,550	12,525	13,639	118.7	110.2	581.4
Kuršumlijska Banja	198	185	151	93.4	81.6	36.4

* 2002 Census data are not absolutely comparable with data from the previous Censuses because of the change in methodology. Before 2002, the official statistics of Serbia recorded population with permanent residency in the place where the Census was conducted. However, in 2002, following the UN statistics recommendation, the Serbian Statistics adopted the principle of the present (*de facto*) population, which means that it recorded only the population that was present in the place of residency when the Census was conducted.

	Population			Index of change		
	1981	1991	2002*	1991/81	2002/91	2002/48
Lajkovac	3,188	3,428	3,443	107.5	101.6	234.6
Lapovo	8,837	8,655	7,422	97.9	94.7	115.2
Lebane	7,966	9,528	10,004	119.6	106.2	520.4
Loznica	17,790	18,845	19,863	105.9	107.2	633.0
Lučani	3,310	4,130	4,309	124.8	104.7	958.9
Ljig	2,632	2,754	2,979	104.6	110.6	319.5
Majdanpek	9,489	11,760	10,071	123.9	85.9	539.3
Mali Zvornik	3,786	4,321	4,736	114.1	111.8	655.5
Mataruška Banja	2,132	2,262	2,732	106.1	124.1	597.7
Medveđa	2,488	3,057	2,810	122.9	93.6	172.4
Mionica	1,438	1,679	1,723	116.8	106.1	312.7
Negotin	15,311	17,355	17,758	113.3	105.3	314.4
Niška Banja	3,854	4,179	4,437	108.4	108.7	495.3
Nova Varoš	8,565	10,424	10,335	121.7	99.3	587.4
Ostružnica	4,060	3,787	3,929	93.3	108.1	177.0
Ovča	2,530	2,444	2,567	96.6	111.0	134.1
Pečani	467	632	493	135.3	81.8	150.3
Petrovac	7,383	7,728	7,851	104.7	110.4	202.7
Pinosava	2,837	2,700	2,839	95.2	107.3	167.5
Požega	10,410	12,552	13,206	120.6	106.3	593.2
Priboj	18,295	22,137	19,564	121.0	89.1	1420.2
Prijepolje	14,543	15,634	15,031	107.5	96.8	577.5
Rača	2,305	2,729	2,744	118.4	104.0	289.2
Raška	5,639	6,437	6,619	114.2	103.3	445.5
Resavica	2,716	2,693	2,365	99.2	91.7	553.9
Ribnica	2,345	2,712	2,779	115.6	104.9	165.3
Rucka	278	317	310	114.0	109.5	97.1
Rudovci	1,883	1,804	1,787	95.8	99.7	161.8
Sevojno	4,655	6,501	7,445	139.6	114.8	406.2
Sijarinska Banja	582	530	568	91.1	114.7	607.7
Sjenica	11,136	14,445	13,161	129.7	93.6	411.2
Sokobanja	7,204	8,439	8,407	117.1	101.5	259.0
Sopot	1,581	1,720	1,752	108.8	102.9	316.8
Surčin	12,575	12,264	14,292	97.5	120.6	420.1
Surdulica	9,538	11,357	10,914	119.1	97.7	403.5
Svilajnac	9,340	9,622	9,395	103.0	109.7	208.0
Svrlijig	5,728	7,421	7,705	129.5	105.6	613.8
Topola	3,482	4,592	5,422	131.9	120.3	574.7
Trstenik	13,239	18,441	17,180	139.3	94.9	542.7
Tutin	6,233	8,840	9,111	141.8	104.6	1842.2
Ub	4,819	5,797	6,018	120.3	109.2	354.7
Umka	5,618	5,005	5,292	89.1	109.2	264.8
Velika Plana	16,175	17,197	16,210	106.3	98.7	236.7
Veliki Crljeni	4,252	4,668	4,580	109.8	101.6	211.9
Veliko Gradište	4,977	5,973	5,658	120.0	103.9	228.4
Vladičin Han	6,207	7,835	8,338	126.2	107.3	675.8
Vlasotince	12,166	14,552	16,212	119.6	112.2	332.9
Vranjska Banja	5,004	5,779	5,882	115.5	103.3	300.4

	Population			Index of change		
	1981	1991	2002*	1991/81	2002/91	2002/48
Vrnjačka Banja	9,699	9,812	9,877	101.2	103.2	436.2
Vučje	3,318	3,492	3,258	105.2	94.4	186.9
Zlatibor	1,237	1,684	2,344	136.1	140.5	2073.9

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IMPLEMENTATION OF STRATEGIC ENVIRONMENTAL ASSESSMENT IN SERBIA – CASE OF SPATIAL PLAN OF KOLUBARA LIGNITE BASIN

Tamara Maričić

Although considered as an important tool for environmental evaluation of plans and programmes, inclusion of strategic environmental assessment (SEA) in Serbian legislation was inevitable as a part of the accession process to the European Union. The first part of this paper will focus on presentation of the SEA system in Serbia and its implication as the result of current geopolitical and environmental trends.

Taking into consideration the economic importance of the mining regions, but also the damage to the surrounding environment, in the second part of this paper the authors will try to review the significance of SEA implementation in spatial planning of Kolubara lignite basin.

Keywords: *Strategic environmental assessment (SEA), spatial planning, mining region*

INTRODUCTION

Strategic Environmental Assessment (SEA) represents a significant tool which ensures that environmental considerations are taken into account in the development of plans, programmes and policies (PPP). On the other side, inclusion of mandatory SEA in Serbian national legislation is at the same time important prerequisite for harmonisation with the European Union (EU) legislation (*Acquis communautaire*), which is a necessary precondition for all countries wishing to join the EU.

The conditions for better integration of environmental protection in the process of urban and spatial planning in Serbia have been improving since the beginning of '90. The main trigger force was the recent legislation in the field of environmental protection, urban and spatial planning and construction. The current SEA system in Serbia is based on a newly adopted Law on SEA, and its main characteristics, advantages and lacks will be briefly described. Special emphasis will be on the strategic assessments of spatial plans for special purpose areas of lignite basins. Experience

of its implementation is still pretty limited, due to the short period of implementation.

From the economic point of view, lignite basins in Serbia are extremely important, but at the same time they generate pollution and damage the natural environment in all aspects. This paper will try to give an appropriate answer to the main question: will it be possible to improve the environment and provide better quality of life for people living in the mining lignite regions with the new regulation on SEA?

There is a lot of definitions of SEA, and the one given by Sadler and Verheem (1996) and often quoted, defines SEA as "a systematic process for evaluating the environmental consequences of proposed policy, plan or programme initiatives in order to ensure they are fully included and appropriately addressed at the earliest appropriate stage of decision-making on par with economic and social considerations".

In more or less the similar forms and scopes, SEA has already been applied in different countries for some time. Its foundations were laid in the USA in 1969, with the Environmental

Impact Statement developed under the NEPA – National Environment Policy Act¹ (Fischer, 2002). Following previous experience with EIA, some SEA-type approaches reflect an extension of EIA trends, and include regional assessments and reviews on the policy level as part of environmental reviews (Dallal-Clayton & Sadler, 1999).

Many European countries had different approaches to assess environmental effects of proposed plans and programmes. Since the EU Directive 2001/42/EC on the Assessment of Certain Plans and Programmes on the Environment (SEA Directive)² became effective from July 2004, the member countries had to modify their legislation in accordance with the SEA Directive.

¹ National Environment Policy Act, (1969)
<http://ceq.eh.doe.gov/Nepa/regs/nepa/nepaeqia.htm>

² <http://ec.europa.eu/environment/eia/sea-legalcon text.htm#legal>

DEVELOPMENT OF SEA SYSTEM IN SERBIA

Since June 2006 Serbia is an independent country (sovereign successor state to the Union of Serbia and Montenegro). The state union of Serbia and Montenegro didn't have legislation and institutions dealing with questions of environmental protection at the state-union level, but each of the states developed its own legislative and institutional support. Therefore, the recent changes¹ have had no actual effect on SEA system in Serbia.

The development of legislation in the area of environmental protection, urban and spatial planning and construction in the last 15 years in Serbia has gradually made conditions for better integration of environmental aspects in urban and spatial planning.

Environmental issues in urban and spatial plans were considered under the provision of the Law on environmental protection² (1991) and Law on planning and arrangement of settlements³ (1995) bases, where the second one required preparation of EIA for some land-use plans. The new Law on planning and construction⁴ (2003) considers environmental protection as one of the principles for spatial arrangement, but it failed to recognise the importance of environmental assessment of land-use plans and stipulated the feasibility study on the project level only.

Environmental impact assessment (EIA), established by Regulation on EIA of facilities and activities in 1992, represented significant tool which connected environmental protection with building and planning. But, although it had political and legislative support on national and local level (regional level is still undeveloped in terms of laws and governing), EIA was often

experienced as an administrative precondition for obtaining a building permit, instead of being an important element of planning and building (Stojanović, Spasić, 2006), which could harmonize public and private interests in an optimal way.

In December 2004, the set of environmental laws was adopted with attempt to synchronise with *Acquis communautaire*, and it included: Law on environmental protection, Law on IPPC (integrated pollution prevention and control), Law on EIA and Law on SEA.

The Law on SEA is developed in compliance with EU Directive 2001/42/EC. Unlike SEA Directive, which became effective three years after adoption and is applied to plans and programmes whose preparation started after that date, this law in Serbia entered into force right after adoption and stipulated that SEA must be applied to plans that are still in the designing process. The lack of adaptation period, associated with the fact that making of manuals or expert guidelines is not explicitly specified by Law, has big chances to lead to a lot of misunderstandings and problems in implementation of this Law. Obligation to make SEA for plans which are still in the designing process can arise two types of problems in practice (Stojanović, Spasić, 2006): how to fit SEA in a dynamic of planning design process already foreseen by the adopted programme, and what to do with the proposed plan that passed all phases, including public opinion, but it is still not formally adopted.

According to the Law, SEA shall be carried out for all plans and programmes (PPs) prepared in the fields of spatial and town planning or land-use planning, agriculture, forestry, fishery, hunting, energy, industry, transport, waste management, water management, telecommunications, tourism, preservation of natural habitats and wildlife, and shall set the framework for future development projects defined by the EIA related legislations; plans and programs which determine the use of smaller areas at the local level, or in cases of minor modifications to PPs that do not require the formal adoption procedure, as well as other PPs, if the competent planning authority determines that there is the possibility of significant impact on the environment.

In the screening phase, there is a potential risk of too bureaucratic interpretation (Stojanović, 2005) which can lead to preparing an SEA for every plan. Practice showed that authorities sometimes decide that SEA should be carried out for some small scale plans, but not for a larger-scale plans, where the possibility for inducing the negative impacts on environment is much bigger (for example the changes of the Master plan of Belgrade 2021).

On the other side, when having several plans for the same territory (e.g. regional plan for the whole municipality, master plan and several regulation plans in the same municipality), there is a possibility for duplicating the work or having conflicts between assessments on different hierarchical scale.

The biggest challenges in the scoping phase are the analyses of alternative solutions presented in the plan (with decision making process and explanation of choices) and identification of needed impacts to be assessed. Defining proper indicators and criteria for evaluation, is also a challenge hard to fulfil with no guidelines and insufficient practice.

The short practice in applying Law on SEA showed that some critical issues should be considered with special attention:

- Due to the lack of understanding, many experts still prepare SEAs like extended EIAs,
- SEA reports are sometimes too detailed, even a few times longer than the plan itself,
- SEA reports are often done in the final phase of a plan, thus unabling them to have more influence on the plan,
- The process of adoption of SEA reports can be very long and at the same time it slows down the process of plan adoption, issuing building permits and investing (two years after the Law on SEA came into effect, less than 10 SEA Reports for different levels of plans were adopted),
- Public participation is proposed for the final phase of SEA process and only in the form of public debate.

¹ the decision for dividing state union Serbia and Montenegro in two independent states was taken after the majority of Montenegro citizens voted for independence on 21st May referendum.

² Official Gazette of Republic of Serbia, no. 66/91 and 53/95

³ Official Gazette of Republic of Serbia, no. 44/95

⁴ Official Gazette of Republic of Serbia, no. 47/2003

SPATIAL PLAN OF KOLUBARA LIGNITE BASIN

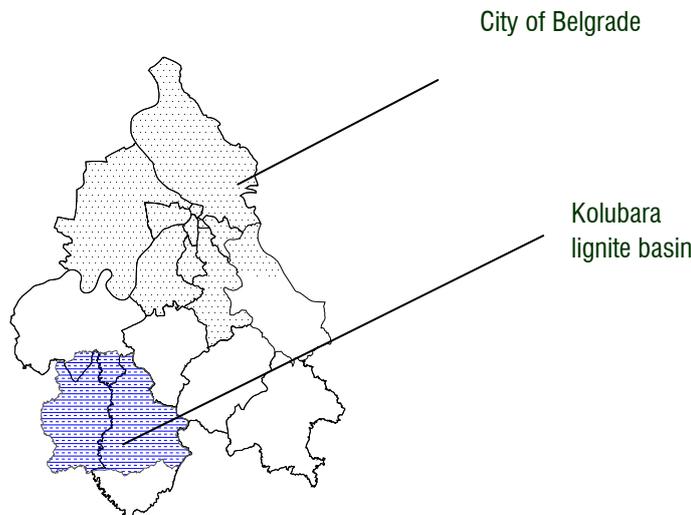
Despite the low level of economic activities in Serbia (about 60 % in comparison with 1990 basis) and the low citizens' standard of living, the consumption of final energy is pretty high, and it depends on import of almost 40%. The volume and structure of energy reserves and resources of Serbia is very unfavourable. The reserves of quality energy products, such as oil and natural gas, are small and constitute around 10 % in the total balance sheet reserves of Serbia, while the remaining 90% of energy reserves consist of various types of coal, predominantly low-quality lignite. In primary energy production, coal participates with 76%, and in the total primary energy consumption with 50% (Ministry of Mining and Energy, 2005).

The coal extraction is done from the eight underground excavation mines and open pit mines in the three mining basins: Kolubara, Kostolac and Kosovo- Metohija basin (the latter is temporarily out of function as a part of the energy system of Serbia due to the transitional status of Kosovo).

Exploitation of the mineral resources in the open pit mining basins has various aspects of environmental impacts. They can be listed as: land intake (agricultural land, forests), relocation of the settlements, water course rearrangement, repositioning of roads and other infrastructure systems, air/water/ground pollution, decrease in level of ground water, etc.

Kolubara mining basin is located 50 km southwest of the City of Belgrade (10 central municipalities), and partly encloses four municipalities (two of them belong to Belgrade suburban municipalities, map 1). It extends at almost 550 km² (25% occupied by open-pit mines and landfills) and provides 80% of coal production in Serbia (IAUS, 2003). Kolubara lignite basin comprises a lot of different types of activities and systems: settlements, open pit mines, landfills, objects for coal preparation and transformation, roads, water supply systems, waste waters treatment plant, recultivated land, agricultural land, etc.

Metropolitan Region of Belgrade



Map 1. Metropolitan region of Belgrade and Kolubara lignite basin

The biggest negative impacts on the environment have the following mining-energy objects:

- open pit mines (four existing, and another four are planned to be open)
- system for coal transport and landfills;
- thermal power plants (one operating since 1956 and another one in construction); and
- industries for coal transformation.

Two plans are currently in the designing process for the territory of Kolubara lignite basin (map 2): Spatial plan of Kolubara lignite basin and Regulation plan for thermal power plant.

Designing process of Spatial plan of Kolubara lignite basin exploitation area started in 1998, based on Decision on compilation and Programme for spatial plan of Kolubara lignite basin exploitation area, which was verified by Ministry for construction and public enterprise "Electric power industry of Serbia". Its overall aim is to provide spatial conditions for rational exploitation of lignite in Kolubara basin, and to neutralise or mitigate ecological and socio-economic negative outcomes of this exploitation. In the development of this area, the priority is given to: further lignite exploitation and transformation; rehabilitation and mitigation of damage induced by lignite exploitation and transformation; protection of social, economic and ecological living conditions of endangered inhabitants; application of environ-

mental protection measures; mitigation of unequal regional development; prevention of unplanned construction on lignite bunk. The different level of prediction was applied for different time periods. Likewise more detailed solutions are foreseen for the near future, and more general solutions are given for a long-term period.

The Regulation plan for thermal power plant¹ (TPP) was firstly initiated in 1991, but drafting its final version started in 2005. The plan aims to provide planning basis for further construction and operation of TPP, and arrangement of location for regional landfill. It spreads on 434 ha and comprises the complex of TPP, the complex of existing landfill for gyps, ash and

¹ The preparation for construction of thermal power plant "Kolubara B" started in the '80, and its location was determined on the periphery of open pits "Tamnava East" and "Tamnava West". In 1991 started the designing of detailed spatial plan for thermal power plant, but was aborted in 1992 due to sanctions by UN Security Council and disintegration of SFR Yugoslavia. The decision on continuation of construction was made in 1996, but because the new legislation on planning and construction was adopted, and because there was not enough financial resources, the whole process was "frozen" for some time.

slug in an open pit, and location for new regional landfill. With the consensus of the Ministry for capital investments and public enterprise "Electric power industry of Serbia", it was decided that regulation plan will be designed in synchronisation with spatial plan of Kolubara lignite basin.

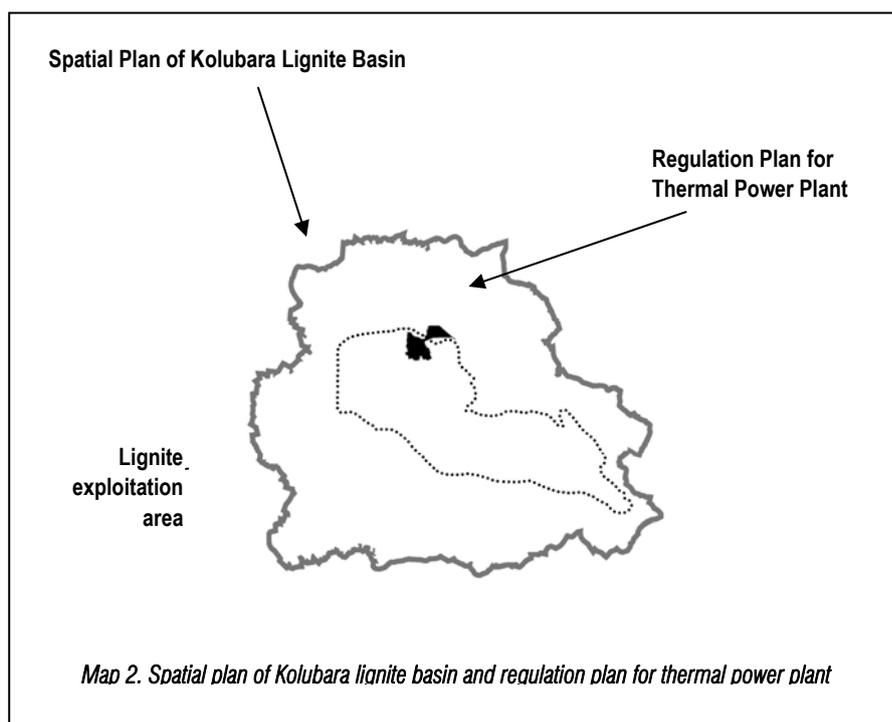
After screening (and consultations with expert organisations), authorities decided that SEA is not needed for the Regulation plan, since the SEA for the Spatial plan will be able to give a more comprehensive assessment and comprise all cumulative effects in that area.

SEA FOR SPATIAL PLAN OF KOLUBARA LIGNITE BASIN – BASIC ELEMENTS

Though the designing process of Spatial plan for Kolubara lignite basin has started 6 years before the Law on SEA was adopted and as it has not been adopted before the Law entered into force, it was obligatory to conduct a SEA for this plan. The screening for SEA of Kolubara lignite basin has been done by the Republic agency for spatial planning, in consultation with environmental protection authority and expert organisations.

The dominant sources of major negative impacts on the environment are mining activities (which comprise open-pit mines, coal preparation and transport, overburden deposits) and energetic (TPPs "Kolubara A" and "Kolubara B", landfill for gypsum, ash and slug in open pit, heating station and coal-dryer), and sub-division facilities. Mining activities induce: rearrangement of three rivers and abbreviation of two rivers, destruction of some water supply systems, relocation of certain parts of eight settlements, relocation of roads, railway and other infrastructure systems. These plan proposals, together with land recultivation and creation of regional landfill, are comprised by SEA.

Based on multi-criteria impacts evaluation of the environmental plan proposals and assessment of cumulative and synergetic effects, the major impacts on the environment have been identified, and they are shown in Table 1.



Map 2. Spatial plan of Kolubara lignite basin and regulation plan for thermal power plant

SEA proposes cooperation between all interested parties, especially the public enterprise "Electric power industry of Serbia" and local communities and implementation of the environment protection measures. Therefore, services for environmental protection need to be strengthened or established in municipalities, LEAP (Local environmental action plan) and monitoring plan of environment quality

have to be done, environmental information system needs to be created, public needs to be informed and has to participate in solving environmental problems.

SEA was composed parallel with finalisation of plan proposal. During the preparation of spatial plan and SEA, the consultations with interested authorities and organisations were made:

Table 1.

Air quality	Emissions from planned TPP "Kolubara B" will be lower than emission limits by the usage of modern technologies. Reconstruction of TPP "Kolubara A" and coal refinement could reduce current high emissions.
Water quality	Decrease in level of ground water. Problem of water supply. Water course rearrangement. Possible pollution of surface and ground water by wastewater from TPP and landfill. Mitigation measures: redirection of water courses, new systems for recycling wastewaters, technical solutions for maintaining the level of ground water, modernisation and construction of water supply systems
Land and landscape	Landscape degradation and land pollution from mining activities and landfills. Mitigation measures: capacious recultivation, recovering of agricultural land, increasing the forests area
Nature protection and biodiversity	Mining activities, land degradation and vegetation loss will cause loss of majority biotopes and relocation of animal species. Mitigation measures: land recultivation, water course arrangement
Cultural heritage	There is no cultural heritage of the big importance, mostly archaeological remnants (40), sacral (15) and traditional architecture (30). Mitigation measures: relocation or conservation
Settlements and inhabitants	Inhabitants' number and structure will decrease. 1164 households (27%) will be resettled. Endangered health. Characteristics of settlements will change. Mitigation measures: compensation of property and organised/individual movements
Infrastructure systems	Destruction of parts of some roads and rivers. Mitigation measures: spatial relocation and rearrangement
Economic development	Increase in economic development on local and regional level, in mining sector and complementary activities

"Electric power industry of Serbia", authorities and expert commissions for plan reviewing in four municipalities that plan comprises, Republic agency for spatial planning, Republic commission for plan reviewing, Ministry of science and environmental protection - Directorate for environmental protection.

Prior to submission of application for granting the SEA report approval, public shall consider the report together with plan proposal on the public insight and during the public debate.

Republic agency for spatial planning (as the competent planning authority) will compile the report on participation of authorities and organizations and the public concerned, which includes all submitted opinions and rationale for all the accepted or rejected opinions, and submit it to Directorate for environmental protection. The Directorate will evaluate and approve or refuse the application for SEA report. Only after SEA report is approved, spatial plan proposal can go into the further adoption procedure.

DISCUSION AND CONCLUSION

Development of mining regions needs to be harmonized not only with economical aspirations and goals, but also in respect to the social and environmental aspects. Making the SEA for mining regions can contribute to the achievement of sustainable development, poverty reduction and good governance, because it:

- evaluates the alternatives with potentially different environmental consequences, not just from the economic point, but also including the ecological, social and health aspects, and helps to derive the best decision;
- analyses expected effects, their character (irreversible or not), durability: long/middle/short-term, possibility, scope (local, regional, global), and induces activities stemming from a major development;
- considers cumulative impacts (caused by several projects);
- analyses direct and indirect activities and their impacts;
- focuses on maintaining a chosen level of environmental quality (instead on mitigation measures).

Serbian Law on SEA is harmonized with EC Directive and, although it was transposed a bit uncritically (without adapting to the local circumstances), it provides a good basis for improvement of impact assessment practice in Serbia. Illogically, more than eighteen months after adoption of the Law on SEA there is still no issued guidance to help the experts in proper implementation of SEAs.

The case study of SEA for spatial plan of Kolubara lignite basin showed that overlapping can be avoided: in the screening procedure it was decided that SEA for regulation plan of thermal power plant will be unnecessary since the SEA for the whole region can give a more comprehensive assessment and comprise all cumulative effects in that area.

The biggest impacts on the environment are caused by mining and energetic activities, and the industries that support them. The strongest impacts are on: air and water pollution, land, landscape and biodiversity, cultural heritage, infrastructure, but predominantly on citizens (health, monocentric economic structure) and their settlements. The most austere situation is in the settlement Vreoci, where around 70% of inhabitants need to be relocated (see: Petrić, 2005). As the main mitigation measure for this case, the relocation of the whole settlement Vreoci with financial compensation was proposed.

Because the spatial plan is of the big importance for energy supply system, the public enterprise "Electric power industry of Serbia" as a proponent has an important role. The plan and SEA are both foreseen to be adopted at the highest level.

The poor level of public participation is still characteristic for all SEA processes in Serbia. By legislation, it is only proposed in a modest form (insight and debate) and at the end of the SEA process. "Controversial" plans like this one can provoke citizens to object and they can feel frustrated and cheated by the state, if everything is not clearly and on time explained to them. Hopefully, politicians and authorities will understand the necessity of collective efforts of all stakeholders for better decision making.

In order to achieve sustainable development of mining regions in Serbia by applying SEA, we need to:

- develop our own guidelines, balanced with the local circumstances and conditions

(instead of using those from the EU countries or relying to the „common sense“),

- have statistical data about important parameters,
- develop environmental monitoring system (EMS),
- educate experts and authorities, especially on the local level,
- include public at the earlier stages of SEA process and increase public participation (to prove the reliability of drawing and implementing SEA).

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CHEMICAL AND RADIOLOGICAL VULNERABILITY ASSESSMENT IN URBAN AREAS

Božidar Stojanović, Milena Jovašević-Stojanović

Cities and towns are faced with various types of threat from the extraordinary events involving chemical and radiological materials as exemplified by major chemical accidents, radiological incidents, fires, explosions, traffic accidents, terrorist attacks, etc. On the other hand, many sensitive or vulnerable assets exist within cities, such as: settlements, infrastructures, hospitals, schools, churches, businesses, government, and others. Besides emergency planning, the land use planning also represents an important tool for prevention or reduction of damages on people and other assets due to unwanted events. This paper considers development of method for inclusion vulnerability assessment in land use planning with objective to assess and limit the consequences in cities of likely accidents involving hazardous materials. We made preliminary assessment of criticality and vulnerability of the assets within Belgrade city area in respect to chemical sites and transportation roads that can be exposed to chemical accidents, or terrorist attacks.

KEY WORDS: *chemical, radiological, terrorism, accident, vulnerability, land use planning*

INTRODUCTION

Over 60% of European population lives in cities, because they are a driving force of the economic development. On the other hand the cities are faced with many kinds of threats, such as: risk of the chemical accidents, radiological incidents, fires, explosions, traffic accidents, terrorist attacks and others. Such threats within cities, find a target-rich environment due to a complex interacting system of people, buildings, infrastructures (utilities, roads, railroads, ports, airports), hospitals, schools, churches, businesses, government, and military facilities, which all together, define a city's way of life. Many of those assets are incompatible with their surroundings involving hazardous establishments. Accidents as these of Bhopal and Mexico City, and more recently of Enschede and Toulouse, have clearly demonstrated how the consequences of industrial accidents may be severely amplified by the adjacency of hazardous installations and high-density population areas [1]. More over the experience of the war conflicts in the past decade has shown that attacks on chemical facilities produced severe impacts to environment and

people [2]. After the tragic events of 11th September 2001, terrorist and criminal acts are now considered credible incidents in the process industries and threat to their surrounding. To-date, the response of both, governments and industry has been to focus on improved physical and cyber security to prevent accidents as well as attacks and the associated consequences [3]. While prevention is clearly preferred, the potential for accident and successful attacks and vulnerability of facilities and cities must be recognized and addressed.

However, methods for vulnerability assessment in respect to accidental or intentional hazardous events, particularly terrorist attacks involving chemical and radiological (CR) materials and various weapons, have not been sufficiently developed. Some methods and guides have been developed for some important assets, as exemplified by: chemical facilities [4], buildings and public areas [5], transportation infrastructure [6], and some others. Although these methods include some spatial aspects, they do not enable inclusion of the results on vulnerability assessment in land use planning.

This paper presents preliminary results of developing a generic methodological frame-

work for analysis of vulnerabilities of specific assets in pair with the chemical and radiological threats. Main steps in this framework include identification of critical assets and vulnerable zones in urban area, and implementation of results in the formulation of mitigation strategies, specifically in the process of land use planning, site selection and spatial arrangement of critical and sensitive assets. Results of a preliminary study of the vulnerability of assets in the vicinity of dangerous establishments within Belgrade city area are presented.

DEFINITIONS

In practice, the terms in risk management context are commonly used in various ways. Therefore, it is useful to define how these terms are used and how they relate to each other. These definitions were derived from material used by the US National Infrastructure Protection Center [7], taking into account some specific characteristics of chemical and radiological risk management.

Risk is the potential for some unwanted event to occur. Risk is a function of the likelihood of

the event occurring and its consequences. The likelihood of the event occurring depends upon threat and vulnerability.

Threat is the capability of an accident on chemical or radiological site, or intention of an adversary to undertake actions that are hazardous to an organization or community's interests. Threat can be intrinsic, related to factors internal to the system (failure, sabotage), and extrinsic related to factors external to system (terrorism and others). Extrinsic threat is a function of the adversary only and the owner or user of the asset cannot typically control it. However, the adversary's intention to exploit his capability may be encouraged by vulnerability in an asset or discouraged by its resilience.

Vulnerability is best understood as any weakness in an asset or community that can provoke accident or can be exploited by an adversary to cause damage to an organization's or community's interests. More precisely, vulnerability is defined as an estimate of the inability of an asset to tolerate impacts over time and space. A **vulnerability assessment** addresses the susceptibility to attack and the broad range of physical-chemical-radiological threats to the security and safety of assets. It provides a basis for an estimation of the probability of realization of adversary threat.

Asset is anything of value (people, natural and built environment, facilities, economic and societal activities). Assets are what a community or organization needs to carry out the mission. The more critical the asset is to a community accomplishing its mission, the greater the effect of its damage or destruction.

Consequences are effects if the threat is carried out against the assets. Consequences of a chemical and radiological event may include deaths, illness; contamination of people, environment and property; economic losses, and psychological impact.

Countermeasures (mitigation measures) are actions or devices that mitigate risk by affecting an asset, threat, or vulnerability.

ROLE OF LAND USE PLANNING (LUP) IN RISK MANAGEMENT

Land use planning (LUP) represents a framework for spatial arrangement of urban structures and functions, as exemplified by housing, job locations, infrastructure, recreation, water, nature and agriculture, etc. Accident and threat control and assets protection objectives have to be balanced with other planning objectives, such as the efficient use of land and resources, and must take into account existing physical, programmatic, and fiscal constraints.

The need of land-use regulations around hazardous installations was one of the factors leading to the revision of Directive 82/501/EEC (the Seveso Directive) [8]. In the resulting Directive 96/82/EC (Seveso II Directive) [9], the European Commission has considered the introduction of land use planning requirements in the vicinity of sites falling under the obligations of the Directive as a necessary measure for the mitigation of consequences of accidents [10]. The recent amendment of the Seveso II Directive, has furthermore stressed the need to develop common guidelines, calling for the development of a common database, to be used in order to assess the compatibility between the establishments and their surroundings [11].

Directive through controls on the siting of new establishments, modifications to existing establishments and new developments such as transport links, locations frequented by the public and residential areas in the vicinity of existing establishments. In the long term, land-use planning strategies shall ensure that **appropriate distances** between hazardous establishments and residential areas, areas of public use and areas of particular natural sensitivity or interest are maintained, so as not to increase the risks to people, as shown in the Fig. 1 [12].

The problem of incompatible land-use planning around hazardous installations seems to exist due to improper implementation of a plan, and interchanging of plan implementation with planning. Such a conclusion stems from a number of suggestions, proposals, models on how to solve existing or potential conflicting situations as illustrated in Fig. 2.

These cases consider the problem of precise land-use planning related to hazardous installations after zoning is already established, i.e., after the general land-use plan is already approved.

Important areas excluded from the scope of the Seveso II Directive include nuclear safety, the transport of dangerous substances and inter-iate temporary storage outside establishments and the transport of dangerous substances by pipelines.

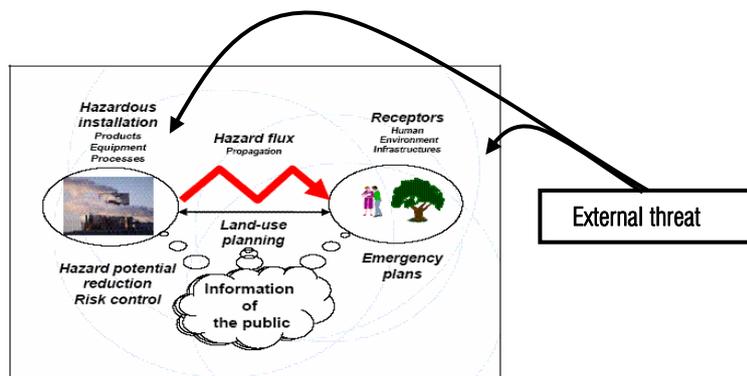
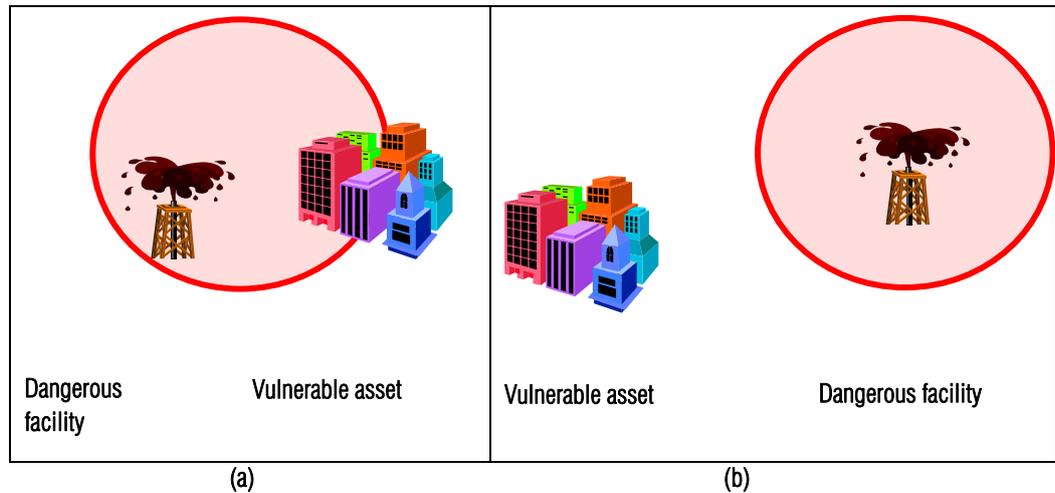


Fig. 1 – Role of land use planning in risk management

Fig. 2 - Illustration of a common conflicting situation, which occurs due to isolated licensing processes: (a) conflicting situation and (b) non conflicting



However, as accidents from various sources and terrorists and other attacks against assets do continue to occur, it is necessary to limit the consequences of such accidents not only for people (safety and health aspects) but also for the environment (environmental aspect). In that respect, the land use planning should include all risks in planning area taking into account vulnerability of valuable assets.

METHODOLOGY

The vulnerability assessment integration in urban planning process typically occurs in two major phases: (I) risk assessment, and (II) planning, as shown in the Figure 3.

Main steps of the methodology are:

1. Vulnerability screening determines if further risk management is needed. In this step assessor identifies critical asserts and assess the threat in urban area. Identification of critical assets begins with identification of the LUP issues (existing and planned land use pattern, hazardous zones, sensitive zones, buffer zones, infrastructures, etc.), then proceed with creation of an all-inclusive list of critical assets (sites involving CR materials, government establishments, transportation infrastructure and facilities, public places, commercial and financial buildings, cultural and religious buildings, and others). Key indicators for estimation of an asset criticality are: symbolic importance, functional importance, economic value, people count, effectivity of safety

management system, time to recover and accesibility. Threat assessment defines the degree of the threats against an asset by evaluating the intent, motivation, tools, weapons and possible tactics of those who may carry them out. The process involves collecting

historical data about hostile events and evaluating terrorist group existence, their intent and capability to use CR agents against critical asset. Preliminary vulnerability assessment would be carried out by use of multicriteria analysis (MCA) matrix of pair identified assets

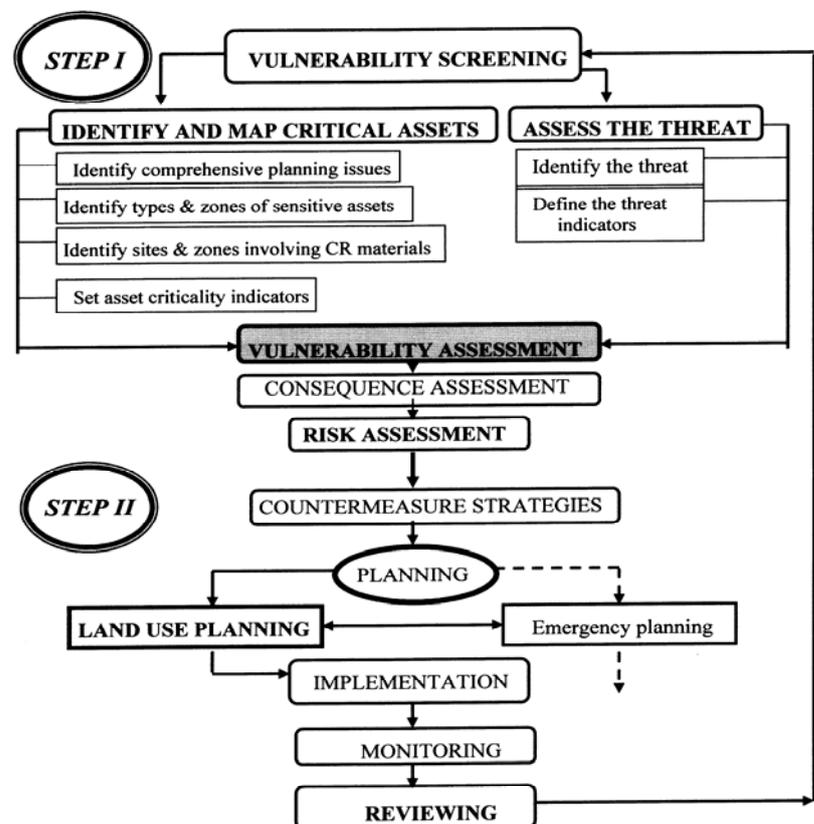


Fig. 3 - Methodology for integration of vulnerability assessment in land use planning

and threats. Criteria for the asset criticality estimation are based on the criticality criteria of each indicator, ranking them from “extremely important” (5) to “less important” (1). Determination of the threat level include relative ranking of threats against each asset on the list, using numerical scale and ranking

them from “critical threat” (5) to “negligible threat” (1). After calculating the scores and ranking the critical assets, a screening thresholds would be applied. The selected items form the prioritized critical asset list which should be integrated in the composite city map showing specific geometries that

include vulnerable assets as zones, lines and points. The assets having highest priorities would be further assessed to determine detailed threats, vulnerabilities, consequences, risks and countermeasures.

2. Consequence assessment analyses the nature and severity of the adverse effects associated with identified causal factors. This process begins with creation of scenarios that pair identified assets and threats, followed by exposure assessment and estimation of effects on the assets, in particular on people and environment. Consequence assessment includes two estimates: level of possible accident, e.g. geographic scale, and type and intensity of effects.

3. Risk assessment uses qualitative or quantitative analysis to integrate the results of consequence assessments with the estimation of vulnerability e.g. probability that these consequences can occur.

4. Countermeasure strategies, that include: terrorist attack deterioration and prevention, improvement of physical security, reducing threat and vulnerability, limiting consequences and remediation of consequences. The most important task for spatial planning is exclusion of further settlement in vulnerable and risky zones.

5. Planning assumes preparing of two main types of plans: land use planning and emergency planning. Inclusion of a range of security and safety measures into comprehensive and local land use planning can contribute to reducing vulnerability and limiting consequences of an extraordinary event occurring. Planning elements are: spatial arrangement of spaces and activities, site selection for particular uses, area development planning including buffer zones in vicinity of hazardous establishments and installations, relocation of hazardous or vulnerable assets, building and structure protective requirements, security measures in infrastructures planning, identification of evacuation routes, determination of implementation rules, etc.

6. Implementation of plan includes conducting planned activities by responsible authorities and developers according to prescribed rules, phasing and costs.

Table 1. – Vulnerability screening (assets criticality analysis) criteria

	Criticality indicator	Criticality criteria	Factor value
1	Functional importance	International	5
		National	4
		Regional	3
		Municipal	2
		Local	1
2	Economic value*	More than 100 mil. USD	5
		50 – 100 mil. USD	4
		10 – 50 mil. USD	3
		2 – 10 mil. USD	2
		Less than 2 mil. USD	1
3	People count in hazardous zone*	More than 1,500	5
		1, 500 – 120	4
		120 – 61	3
		60 – 11	2
		10 – 0	1
4	Ecological sensitivity	Underground water-supply protected zones	5
		Protected natural assets	4
		Valuable agricultural zones – fertile land	3
		Surface waters	2
		Unfertile land	1
5	Type of chemical - radioactive material	Extremely toxic/radioactive	5
		Highly toxic/radioactive	4
		Toxic/radioactive	3
		Highly flammable/explosive	2
		Flammable/explosive	1
6	Quantity of chemical - radioactive material	More than upper threshold value (UTV)	5
		Between UTV and lower threshold value (LTV)	4
		100-50 % LTV	3
		50 – 10 % LTV	2
		Less than 10% of LTV	1
7	Ratio (separation distance/ required safety distance)	Less than 0.1	5
		0.1 – 0.25	4
		0.25 – 0.50	3
		0.50 – 0.75	2
		0.75 – 1.00	1
8	Safety system affectivity	Low	5
		Poor	4
		Moderate	3
		Good	2
		High	1

* Adopted from: Risk Management Guidance for Health, Safety, and Environmental Security under Extraordinary Incidents, American SHRAE, Atlanta, Georgia, 2003

7. Monitoring includes an evidence of the land use plan implementation and extraordinary events occurring in the space of plan.

8. Reviewing assumes evaluation of implementation planning objectives and tasks and setting up the proposals for further reducing of vulnerabilities of the critical assets.

RESULTS

We carried out a preliminary study of the CR vulnerability of assets within Belgrade city area. At present, there are no recognised specific terrorist threats from use of chemical-radio-logical materials and weapons. Taking into account that some chemicals and radioactive materials may be particularly attractive targets, as great potentials for greater consequences if released, we identified sites involving these materials in study with the aim to test proposed vulnerability assessment methodology. We carried out procedure of vulnerability screening as the first important step of procedure. A list of 46 sites and facilities involving hazardous materials prepared, and additionally main transportation routes of hazardous materials. On the basis of general vulnerability screening indicators we developed a specific assets criticality indicators and ranking criteria, as shown in the Table 1.

Each establishment was estimated using these indicators and criteria. After calculating the scores and ranking the critical assets, a criticality categorization of the assets was applied, as follows: (1) high, having score 30-40; (2) moderate (20-29); and (3) low (les than 20). We got a list of 14 highly critical establishments that belong to the first category. These establishments are shown in the Fig. 4 together with corresponding hazardous zones, represented by cycles of 500 and 1,000 meters in radius [13]. We made, also, vulnerability screening of the main transportation routes of hazardous materials. Results of the highly critical rail and road routes are shown in the Fig. 5 [14]

The results indicate that most of hazardous zones and transport routes are in conflict with densely populated areas (housing, businesses) and protected underground water sources. Responses to the present weakness of spatial arrangement of sensitive and hazardous assets

were set up in the new Belgrade general plan. These include: planed options for sitting of new establishments, reconstruction and relocation of existing establishments, and new rules and conditions for the implementation of plan by application: quantitative risk assessment, safety barriers and zones, safety barriers and corridors on transportation routes, new safety criteria in a building design, monitoring and public participation.

DISCUSION AND CONCLUSION

Despite the great advance in theory and practice of urban planning, there are still many

unsolved problems, particularly in respect to the assets security and safety in cities. Existing regulatory framework in the land use planning and building involves consideration of natural and man-made disasters, but do not take into account the threat from intentional attacks on valuable urban assets.

In this study we proposed a methodology for inclusion of the vulnerability assessment procedure in the process of land use planning. By application of this methodology framework urban planning becomes more complex, and also requires huge volume of information. This is the reason for testing only the first step of

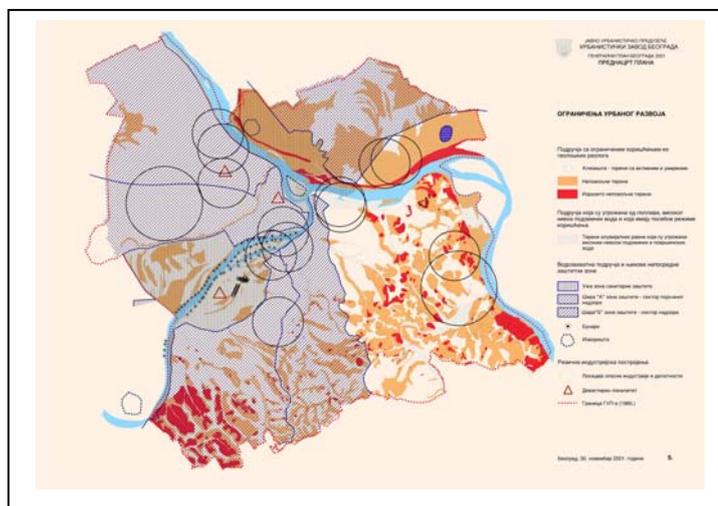


Figure 4 – Hazardous sites and vulnerable zones in Belgrade

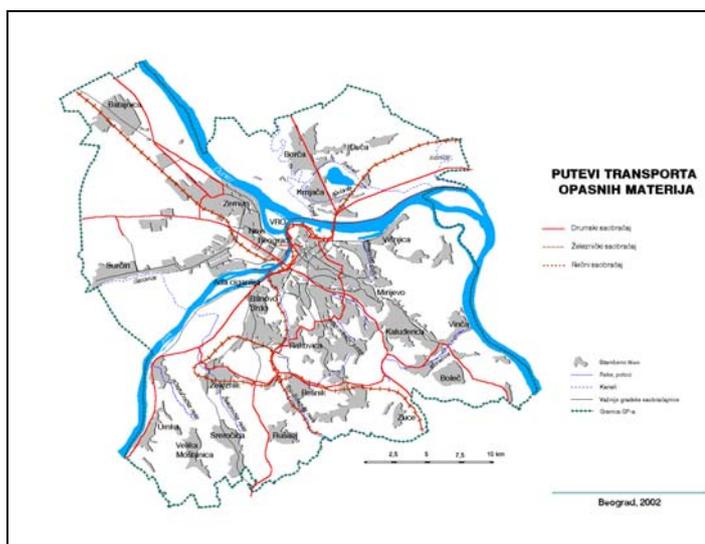


Figure 5 – Road & rail routes for transportation of hazardous materials in Belgrade

methodology, e.g. vulnerability screening of assets in the case of urban area of Belgrade city, based on available data about hazardous establishments, installations and transportation routes and spatial arrangement of the sensitive assets. The results of vulnerability screening show that despite qualitative approach it was possible to identify, estimate and categorize critical assets. This methodology enabled us to prioritise critical assets, for further investigation. However, by using the table of safety distances adopted from Christou&Porter [11], we defined hazardous zones for each of 14 establishments on the list of highly critical assets. After spatial analysis of hazardous zones it was possible to propose mitigation measures that were applied in the General urban plan of Belgrade city.

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CHASING THE LIMELIGHT: BELGRADE AND ISTANBUL IN THE GLOBAL COMPETITION

Aleksandra Stupar, Cenk Hamamcioglu

The purpose of this paper is to analyze and compare main changes of contemporary Belgrade and Istanbul - two urban nodes at the crossroads of different and multileveled flows. Following the same pattern of global activation, inevitable competition and networking, these cities are trying to synchronize their multidimensional background, establish new patterns of global behavior and adjust them to the dynamism of modern life. Consequently, their historical role has been modified, urban tissue has been developed, recreated and regenerated, and the output of this process represents an attractive testimony of their global initiation.

Revealing the ambiguous nature of strong economic forces as well as a new fusion of urban cultures, Belgrade and Istanbul are structuring the globalized image with the new key-elements. However, their true potential and the real efficiency of this process should be re-evaluated - the changed physiognomy of the city could improve its position in the global hierarchy and facilitate its integration into the global community, but, sometimes, local limitations are too complex and too strong to be ignored.

INTRODUCTION

Although the process of globalization represents an ambiguous spin which integrates and segregates different space and time scales, levels and nodes, it could also be conceived as a unique mode of urban development, adjusted to the contemporary needs and the speed of uncountable flows.

Following the main course imposed by the top-global cities, urban-scapes all over the world are trying to achieve globally acceptable image as a new testimony of their economical spin-off. Twisting between newfangled global esthetic and inherited patterns of local cultures, virtual openness and real limitations, cities are struggling for the best position in the global hierarchy that should facilitate their initiation in the worldwide city networks. However, this cruel but inevitable competition could bring to the urban surface an amazing, creative and vivid patchwork of hidden symbols, signs and forgotten meanings that represent a starting point for the reinvention of urban attractiveness.

Belgrade and Istanbul, two interesting examples interlinked by specific historical circumstances, have decided to apply this logic for the future development. Although different in their size, structure, organization and cultural context, these cities share the similar position - placed at the crossroads of multiple inherited and newly created flows, but mostly considered as a global periphery. Facing the difficulties caused by specific political and economical situation, they are trying to establish an alluring image for the future using their own potentials and guidelines of the city branding.

REPOSITIONING THE CROSSROADS

As one of the oldest cities in Europe, Belgrade shared the history of Thracian-Cimmerian and Scythian tribes, as well as Celts and Romans. It was the target of Ostrogodos, Avars and Slavs, and an important frontier stronghold of Byzantium (during the 11th and 12th century). It became a Serbian town in 1284, its capital in the beginning of the 15th century (under Despot Stefan Lazarevic) but Turks captured it in the 16th century. During the next two centuries it was of great strategic importance

for the Austrians and the Turks, and both conquerors 'molded' the city according to their own cultural and military needs. From the 19th century, (1867) Belgrade expanded rapidly and finally (after 1918) became the capital of the newly founded Kingdom of the Serbs, Croats and Slovenians. However, during the Second World War, the city of Belgrade suffered inestimable damage caused by German occupying forces, being also a target of the Allies' bombing that destroyed all the bridges on the Sava and Danube, and demolished many residential areas.

Although Belgrade lost in this war more than 50000 citizens and faced great poverty, it slowly started to recover becoming the important international political, economic, cultural and sports center in Europe. For more than 30 years (especially between 1960s and 1990s), it had been the place of important international meetings. Just to mention the most important like: the First Conference of the Heads and Governments of the Non-aligned Countries in 1961, the Conference on Security and Cooperation in Europe /OSCE/, the UNESCO Conference, annual meetings of the

World Bank and the International Monetary Fund, the 6th UNCTAD. Belgrade was the organizer of various cultural, sport, and other events. Today, after numerous political changes and NATO bombing in 1999, Belgrade, now the capital of the Republic of Serbia modifies its urban essence. Trying to regain its lost position in the global networks and to recreate its international spirit, the city and its local government emphasize its advantages as symbols of the future development.

Similarly, Istanbul has a very attractive geopolitical position at the junction of two continents. Because of its distinctive situation and its preserved topography and harbor, the city had been settled by different tribes and colonies since the 7th century B.C. In this century, Megara tribe, which had escaped from Dorian attacks from Greece, established the first settlement - a city named Byzantion. The city was captured by Persians, Macedonians and Romans became the capital of East Roman Empire (in 395 A.C.) and changed the name from Byzantion to Constantinople. It had a status of the capital city of two world empires in the Mediterranean Basin - The Byzantine (East Roman) and Ottoman - until the establishment of Turkish Republic in 1923. In the meantime, when conquered by Ottomans in 1453, Constantinople finally became Istanbul.

As a unique coastal city with the location on the trade routes, Istanbul was a strong political, administrative, trade, religious, scientific and cultural center and the most populated European and Middle-East city in the 17th century, with 800.000 inhabitants (Ana Britannica, 1993). During these centuries, city expanded in glory with the long-lasting peace and richness. During the Ottoman hegemony, the city gained a very lively urban society in which various social groups, as well as diverse activities, spaces and monumental buildings of different areas integrated. However, in the 19th century Istanbul was overthrown from its pedestal by some western European cities with flourishing industrialization and its decay was also influenced by the policies of incapable administrators and regression process of the Ottoman Empire. However, Istanbul's population continued to increase because of the immigration flow from the Balkans caused by the collapse of the Empire.

After the transfer of national administration to Ankara, the situation slightly changed, but, after 1950s, the new economical policies influenced an impetus with a dramatic change in size, density and facilities due to the increasing activities of industrialization and international trade. Since 1990s Istanbul has become the host town of the international economic and political meetings such as the Black Sea Economic Cooperation (KEI) meeting in 1992, the United Nations Conference on Human Settlements-II (Habitat-II) in 1996, the 17th meeting of North Atlantic Treaty Organization (NATO) in 2004, as well as numerous sports competitions (Class 1 World Offshore Championship in 1999, the 32nd European Basketball Championship for Men in 2001, Istanbul Formula Grand-prix in 2005).

Today, Istanbul has different problems generated from the contradictions of urban life but, at the same time, it is trying to achieve the best possible position on the global platform integrating the fundamental history with the needs of contemporary urban life.

Obviously, the inherited/historical role of Belgrade and Istanbul are transposed into a new system of values and their positions are now (re)questioned in accordance with different empirical data that could illustrate diversity among them. Measuring and analyzing their power and connectivity and categorizing them into the new hierarchical system(s) these two urban nodes have to 'insert' themselves into a new geography of globalization that only 'identifies' cities with evidence of world city processes. Therefore, it is not surprising that Istanbul found its place among high connectivity gateways (Taylor at al, 2002), as a node of principal component clusters in Europe (Taylor, 2001) and/or as a cluster nucleus (type I) of band II Arenas (Derudder et al. 2003). Belgrade, owing to its decade long political and economical isolation, still has to be 'registered' as a globally accepted urban node. However, a new political atmosphere has influenced its presence on the global scene and now it is also included in numerous databases dealing with global civil society/global governance (Taylor, 2004), media networks (Kratke, 2003), advertising, accountancy, NGOs and international banking systems.

Both cities were candidates for the Olympic Games: Belgrade (before its stagnation, for 1992 and 1996 Olympics) and Istanbul (for 2000 and 2008), but although their location and sport facilities were considered as their advantages, they did not get this chance for economical and media spin-off. For example, although Istanbul's motto for 2008 Olympics was "The Meeting of Continents", its symbolical position of the crossroads of Asia and Europe was not sufficient for election. As the main 'contra' argument the political and seismic instability were stated, but the main reason actually was the important competitive advantage(s) of Beijing - the financial guarantees from the government and the commercial potential of the huge Chinese market that will be entered by the international, globalized capital.

THE GLOBAL ACTIVATION VS. LOCAL LIMITATIONS

The Belgrade metropolitan region, with its 1,6 million residents, has always been considered as the gate to the East and the door to the West. Therefore, it is now trying to benefit from its position of the communication hub of the SE Europe and its new connectivity is based upon two international rivers (Danube, as the European corridor VII, and Sava) and a section of the European corridor X (highway network). Belgrade is also plugged into the European network by an international airport, the international railway system, two ports and four railway stations. Additionally, its integration is oriented towards other important urban nodes in SEE (Bucharest, Sofia, Thessalonica, Sarajevo, Zagreb) and Central Europe (Ljubljana, Budapest).

At the same time, Belgrade is recognized as a promising node for locating the business - the idea supported by the Serbian government and Belgrade Authorities. Therefore, the commitment to the integrity and security of foreign investments has been emphasized, as well as the new tax incentives and the lowest income tax rates in the region. Consequently, Belgrade was awarded the name "City of the future in Southern Europe", which is the outcome of the competition organized by the specialized edition of the Financial Times for foreign and direct investments, FDI Magazine. This title has

a great importance for the future development and investments because it represents the result of the evaluation based on various criteria – economic potential, cost effectiveness, human resources, IT and telecommunications, transport, quality of life and FDI promotion.

Being aware of the inherited infrastructure problems, during the last 5 years Belgrade improved its road and telecommunication network and renewed its infrastructure. At the same time, the reconstruction and extension of the Belgrade International Airport (with a future cargo center and a railroad connection) has started in order to achieve the level of alternative sub-regional UAC (according to the Air Traffic Infrastructure regional Study for SEE by Nordic Aviation Resources AS). There are also four important projects facilitating Belgrade's inner connectivity and efficiency – the Belgrade light rail system, the Interior City Ring Road, the new cable car route that will connect two parts of the city across the river Sava and island Ada Ciganlija and, finally, a new bridge over the river Sava which should solve traffic problems in the central city area.

In accordance with the Master plan of Belgrade (2003) and the new Regional spatial plan (2004), the activation of urban potentials is using a global recipe that favors images of open, dynamic, vibrant cities. Therefore, the urban development has accepted the environmental protection and sustainable development as a global goal, aiming at:

- the old city center as a place of cultural identity;
- New Belgrade as a new alternative city center suitable for business and commercial activities;
- the riverbanks (with existing industrial and railroad structures which should be removed) – as a future multipurpose centers with marinas, recreation and leisure activities;
- the city suburbs – as a new industrial and commercial areas.

Following the basic guidelines and strategies given by its Master plan, Belgrade metropolitan area and its local government intend to stimulate future urban development, which have to reveal new perspectives for our society, to revive its cosmopolitan spirit and to create

an urban environment attractive for the new techno-elite. In the meantime, 13 sites have been leased (for construction up to 99 years) to the foreign investors – Merkator (Slovenia), Airport City (Israel), Meshulam Levinstein (Israel), GTC (Netherlands), Durst (Austria), Cappoto Build (Lichtenstein), Expo center Eastern Europe Ltd (Great Britain, Cyprus), National brands (Russia), Veropulos (Greece), ABD (Israel) and Montmontaza (Croatia).

The globally recognizable urban face was also made-over by several new public facilities – the Belgrade Arena (hall 'Limes'), Sveti Sava temple, the business center "Usce", the new Drama theatre and numerous projects of reconstruction (old theatres, parks, residential buildings, museums etc.). The Gallery "Zoran Djindjic", a new Opera, the Belgrade Marina, a new Aqua park and the tower on Avala will round a new phase of transformation and activities and all of them should become new/renewed landmarks.

In the case of Istanbul, the political changes in the national government in 1980s, oriented towards the global comprehension of trade and market, were indicated in the urban life of citizens and urban landscape. The GaWC inventory of world cities also noticed this progress and pointed out Istanbul as a "gamma" city according to the most prevalent firms taking place worldwide (Beaverstock, V. J., Smith, R. G, 1999).

Today, Istanbul has more than 12 million inhabitants living in its metropolitan region located just at the water/land/air transportation crossroads of Europe, Asia and Africa comprising a huge hinterland beyond (Southeast Europe, Black Sea Region and Middle East). Beside its excellent position and significant labor force, it also profits from its effective historical, cultural and business connections. Simultaneously, Istanbul metropolitan area is directly attached to the main global networks by two international airports (Atatürk International Airport with a capacity of 20 million person/year and Sabiha Gökçen International Airport with a capacity of 3.5 million person/year with 90 thousand tone cargo), two main seaports (Haydarpaşa – Karaköy seaports) and two international motorways (E5 – TEM) connecting Europe and

Istanbul with Ankara. On the other hand, the city has rail connection to Europe ("Sirkeci" station) and to Anatolia and Middle East ("Haydarpaşa" station) but this network is not in a good condition because of the governmental policies supporting the road and air transportation since 1950s.

Approximately half of the industrial corporations (45%) in Turkey are based in Istanbul. Therefore, it is important to emphasize that Istanbul is the economic center of Turkey (and its 70 million habitants) comprising the most of the national-international financial and banking associations (Istanbul Government, 2005). Istanbul also provides a linkage between the whole country and the international trade sector. Consequently intensive activities of production and distribution shape Istanbul and recognize it as a candidate for one of the global business and management nodes rather than a peripheral one.

During the last 10 years, Istanbul has been reinforcing its infrastructure and connectivity in order to make it compatible for the contemporary global needs. Unfortunately, the spreading of the road network and the construction of the second Bosphorus Bridge in 1990 encouraged the north part of the city to grow endangering the vital elements (forests and fresh water supplies). At the same time, Istanbul is trying to overcome its topographical obstacles and to manage its complicated internal communication with the metropolitan network/transportation master plan. Therefore, this plan highlights the importance of the light rail system and its synchronization with other transportation networks. Besides, there are two other projects:

- Bosphorus Tube Gate/Corridor Project (to be Marmaray) – under construction since 2004 – which will connect with a light rail system both sides of Istanbul under Bosphorus and will have a capacity of 75 thousand citizens per hour in one direction;
- Third Bosphorus Bridge Project (not approved yet) which could jeopardize the natural landscape in northern side of Bosphorus.

However, Istanbul has to take into account the benefits of being a waterfront and it should activate completely its water networks in order to unite its two sides more effectively.

Istanbul's Master Plan (1995) also underpinned its present/future role of intensive center for services, business, tourism, culture-art, entertainment and recreation while the industrial and manufacturing facilities are decentralized and moved to the outskirts. At the same time, the main directions of its development are:

- preservation of the old city "Istanbul peninsula-Galata" and other historical districts on both sides of Bosphorus respecting their cultural identity and historical morphology of housing;
- introduction of new corridors and districts for the global business activities (such as "Zincirlikuyu-Levent-Maslak" districts on the European side, "Kozyatağı" district on Asian side, projects for "Haydarpaşa World Trade Center" and "Cruise Harbor") which should become globally recognizable areas with high business towers, hotels, halls, shopping malls and other facilities;
- revitalization of the old trade harbor and the railway station on Asian side;
- rehabilitation of old and devastated industrial waterfronts into cultural, entertainment and leisure complexes like "Golden Horn Cultural Valley Project";
- rehabilitation/reconstruction and transformation of unhygienic neighborhoods according to the Istanbul Earthquake Master Plan (2004);
- decentralization of industry and manufacturing to the peripheral areas on both sides.

BRANDING THE CITY

In the competitive world, every city has to use a strategic manipulation focused on competitive advantages and local potentials. Therefore, they become the essence of urban marketing which has several phases (Ashworth and Voogd, 1990; Haider, 1992):

- analysis of opportunities and market;
- formulation of goals and strategies;
- planning of marketing programs;
- organization and implementation;
- final elaboration and evaluation.

Consequently, whenever a city wants to attract investments and 'improve' its total image it should include the logic of marketing process in the urban development - addressing the global and local level of place promotion and perceiving it in a context of political economy

and/or various marketing strategies. At the same time, one of the most important issues of urban marketing represents activation of cultural potentials, their development and adjustment to the new urban needs. Therefore, it is obvious that culture and spectacle have become two pivotal points of the new city attractiveness, as well as stimulators of urban regeneration and urban economy (Bassett, 1993, Zukin, 1995).

Istanbul and Belgrade, as cities with rich historical and multi-ethnic background, started to use these elements as well. Completely in accordance with the myths of the global order, the advantages of multicultural context have been launched together with numerous identities and connections between tradition and new flows. The city space has been marked as a democratic, open, tolerant, advanced and cosmopolitan and the symbioses of culture, esthetic and symbolic became an inseparable part of economy, which was clearly visible at the field of consumption. The symbolic spatial images influenced the appearance of new urban frames and their economical importance increased. Consequently, cultural and historical values became the basic generators of urban economics directed towards the contemporary tourism, and their role has been additionally reinforced by cultural industry, introduction of mass events and spreading of symbolic cityscapes. Therefore, it is noticeable that the cultural symbolism has derived from the economical and social power of new elite simulating the act of ritual giving and establishing the complex mixture of art, politics and market. Finally, both cities gradually transformed themselves into a new commercial system of values implemented through a redefined set of tokens and symbols.

In order to become globally acceptable, Belgrade and Istanbul emphasize their own easily recognizable uniqueness. Therefore, adopting the globally imposed 'urban menu' - with new office buildings, gentrified areas, regenerated river/sea fronts and old industrial areas, attractive museums, galleries, theaters, modern sport arenas, theme/leisure parks and ethnic restaurants, these two cities are also trying to complete their 'homework' in order to enhance their appearance.

Consequently, Belgrade and Istanbul started to use the same set of five basic marketing campaigns identified by Ward (1996):

- selling the frontier and early town promotion;
- selling the resort;
- selling the suburb;
- selling the industrial city;
- selling the post-industrial city.

They have been adjusting it to the local conditions, applying the same logic and channeling them to the similar audience - mainly investors, business firms, corporate headquarters, new elite, sports teams, tourists or new residents, but sometimes also to the local communities - as the future voters. At the same time, these two urban nodes (although with different starting positions in the 'wannabe world cities' race) are caught into the complex competition for different levels of command functions, spectacular world events and, above all, (un)expected urban boosterism. However, these images of the future are often limited just to a ravishing rhetoric and political manipulation, offering the utopian scenario of the urban development, with questionable outcomes.

Evidently, the sustainability of the urban development today is based upon a powerful combination of politics, media, international corporate capital and economical competitiveness. Therefore, the local elite becomes closely involved in the process of local governance and has strong impact on the city image promoting its own vision of urban growth which often clashes with the public good. The pressure of deadlines (i.e. important dates and events) also changes the planning procedures - adjustments are made according to the 'event schedules', covering the needs of different international sports, cultural, political and scientific gatherings. Unfortunately, as the triggers of the further global promotion they become more valuable for the city image than well-balanced co-existence of different local communities.

LAUNCHING THE NEW GLOBAL IMAGE

Legging behind the mainstream of globalization, Serbia and its capital became a black hole of the global networks. During the decade-long isolation Belgrade lost its position of the

recognizable regional center of SE Europe and its well known cosmopolitanism diminished by the increased nationalism. The global and local media, although using completely different perspectives, created an atmosphere of fear, isolation and threats, emphasized by the everyday reality - thousands of refugees from Croatia, Bosnia and Herzegovina and Kosovo, poverty and dictatorship. However, the 21st century has brought new political scenery, and one of the first signs of globalization was appearance of the famous brand names, as well as an increase of the production and consumption of symbolic goods - especially clothes, food, popular culture and sport. At the same time, this 'imported' global esthetic had a tendency to become a new, ideologically acceptable image of the new society, oriented towards European and global integration. Fortunately, the local identity of Belgrade during 1970s and 1980s has also been rediscovered, and its key elements now represent the main guidelines for the new urban attractiveness.

Although exposed to the numerous internal and external influences Belgrade government decided to support three main potentials of the city - its entertainment/cultural, sports and business capacities. Simultaneously, the motto "Belgrade always wins" (reflecting Belgrade spirit and its long history of struggles with different conquerors) and the slogan "The city of good vibrations" underline its main advantages:

- central location and proximity to the important regional nodes;
- connectivity;
- business-assistance programs;
- low costs of living;
- young and educated labor force;
- concentration of sports and entertainment facilities;
- natural amenities;
- traditional hospitality.

At the same time, several sectors identified as the most prominent tourist potentials - transit, business/congress, river and cultural tourism have the same aim to attract different European/world markets.

Recently, Belgrade also became a 'city break' destination which is the result of its new atmosphere and the interesting nightlife - in

the city center (bohemian quarter Skadarlija, pedestrian area, Dorcol - as a zone of fashionable cafes, numerous clubs, etc.) and along the riverbanks. The role of rivers in the city life has been also used as an element of global identification, as well as the position and activities on the river island Ada Ciganlija representing a unique oasis close to the city center, with excellent sports facilities (including water and extreme sports) and various entertainment and cultural events.

However, Belgrade's potential for sports manifestations is not limited just to one area - different sport complexes are scattered across the city - in the city center or close to it. Consequently, different sports events are used in promotions of its new international openness. As a result, Belgrade was selected the host of the 2005 European basketball, volleyball and shooting championships (basketball - with Rome; volleyball - with Novi Sad, Vrsac and Podgorica), the World hockey championship for the II division (2005), the European water-polo championship (2006). It will also host the European table tennis championship (2007), The 9th European Youth Olympic Festival (2007) and the 25th Summer Universiade (2009).

Its multiple layers of history and culture have also been used for the tourist promotion - primarily, Kalemegdan - the Belgrade fortress with the 600 years long history, and the story of Despot Stefan Lazarevic and his medieval capital Belgrade that was the 14th and 15th century tourist town for passengers and merchants traveling by the river. The Belgrade cultural and historical heritage is also emphasized as a part of city attractions - beside numerous museums and theatres, Vinca archeological site and the Botanical Garden Jevremovac, the cultural manifestations such as BITEF, BELEF and BEMUS have become the important representatives of Belgrade's cultural international networking.

At the same time, Belgrade again activates its congress and expo facilities - "Sava" Congress Center, which is the largest congress and concert building in the Balkans with 14 halls, and the Belgrade fair complex. Finally, in 2005 Belgrade hosted the annual EBRD summit that

encouraged economic reforms and positive changes in the region.

However, the most interesting story about the connection between the urban essence and the city economy represents the case of New Belgrade. Born on the deserted marshlands between the historical cores of Belgrade and Zemun, New Belgrade represented a clear political statement of the new post-war Yugoslav society. Following a ritual pattern well known for centuries, this offspring of the Athens Charter and the huge political ambitions of President Tito, played an important role in a symbolical initiation of the newly established communist system. Apart from its comparative advantages over other parts of Belgrade metropolitan area, it was, from the beginning of its construction, the pivotal point of regime propaganda accepted with a great enthusiasm by the masses. It was a symbol of modern state, completely directed towards its progress. Unfortunately, during the years to follow, it played a role of a huge dormitory, without the necessary concentration of urban activities for creation of the planned alternative center of Belgrade.

Surprisingly, from the 1990s situation has been rapidly changing - due to its excellent connectivity, good infrastructure and available sites for large development projects, New Belgrade has become a very attractive area for local and foreign investors. Residential, commercial and business sites have been offered by the Marketing Department of the Agency for Building Land and Construction of Belgrade. Together with important facilities (such as the most luxurious hotels "Intercontinental" and "Hyatt Regency", "Sava" Congress Center, the sports hall "Limes", the new railway station, business center "Usce") they created the new City - a symbol of urban development and the important regional business node. The new tokens are implanted in the Modern urban tissue and one of the most significant and meaningful transformations is the 'resurrection' of the building of the Central Committee, which was, due to its height, one of Belgrade landmarks and a symbol of communist power.

During the 1990s, this building lost its political significance and role becoming an office

building with one of the regime's TV stations. Therefore, as a 'legitimate target' it was damaged during the NATO bombing. However, the tallest building on Balkan (134m) was not completely destroyed, but 'rebuilt' by the firm "European construction" which organized the spectacular grand opening in July 2005, under the title "From communism to capitalism". This event actually represented an initiation of a new power (power of profit), a new/old landmark and a new role New Belgrade is taking in the future.

Following the same worldwide marketing pattern, Istanbul's government promotes a vision of a regional center of the Middle East, Balkan and SE Europe with a potential for a future global city. Decided to be a creative-intelligent-production node and to compete with other world cities, the Istanbul Metropolitan Municipality (İBB), OECD and National Planning Association (DPT) underlined the importance of sector strategies (concerning the decentralization of industry), space management and further development promoting it as a:

- regional service center;
- regional finance center;
- tourism and cultural city;
- science and technology city (Istanbul Metropolitan Municipality, 2005).

In addition, Istanbul government proclaimed entertainment, international meetings/congress and international cultural activities as the main potentials for boosting city economy but it also (re)discovered the importance of international sport competitions. Therefore, during the competition for the host of the Olympic Games, an Olympic village including "Atatürk Stadium" (with capacity of 80.000 people) was constructed and it is now in use for different international events. However, Istanbul still has to resolve numerous social and infrastructure problems that present a serious drawback for the implementation of every plan and project.

Simultaneously, the huge number of citizens and the cosmopolitan life style of people necessitate multi-functional spaces with cultural, recreational, shopping, entertainment and leisure facilities adjusted to the needs of different groups. However, its present 24-hours active urban life, full of various excitements, caused the specific image of the city "which

never sleeps". Therefore, Istanbul represents a unique mixture of shopping and entertainment areas focused around characteristic streets like "İstiklal Caddesi", "Nişantaşı" and "Bağdat Caddesi" or shopping malls like "Akmerkez", "Metrocity", "Carrefour", "Carosel" where all global brand names could be found.

Istanbul, with its facilities, is also a suitable place for international meetings/congresses and cultural activities. "Lütfü Kırdar International Congress and Concert Hall", where the recent XXII Union of International Architects 2005 Congress was held, and "Atatürk Cultural Center" are the most famous, but there are also two more centers under construction - "Istanbul" and "Sütlüce" (Fuarplus, 2005). However, beside the contemporary buildings, there are a few historical spaces, such as "Yerebatan Sarayı", "Aya İrini" and "Esma Sultan Yalısı", which reflect a distinctive and mystical atmosphere of the city. The specific cultural and environmental milieu is also used for the Istanbul's candidacy for the European Capital of Culture 2010, under the motto "The City of 4 Elements".

At the same time, Istanbul, as a trade and industrial city, has already taken steps to become a regional center of financial activities. Therefore, its open economy policies enforce the construction of the global and national commerce offices and numerous computing business towers at "Zincirlikuyu-Levent-Maslak" and "Kozyatağı" districts. These areas also host the international hotels ("Four Seasons", "Hilton", "Princess Hotel", "Hyatt Regency", "Intercontinental" etc.) which are the inevitable inventory of all cities exposed to the global capital. These globalized spaces also redefine the city skyline offering a unique image made of high reflective facades of "Türkiye İşbankası", "Sabancı Holding", "Süzer Plaza", "Elit Residence", "Metrocity" and other business and residential towers taking their place beside huge religious monumental buildings (mosques-churches-synagogues).

Nowadays, while the discussions continue, the effort to build the World Trade Center also emphasizes the support of Istanbul government to attract the global corporations.

However, the historical districts and monumental buildings also reflect the magnificent

cosmopolitan and multi-religious background of Istanbul as an important tourist potential. The peninsula's hills crowned by mosques (Süleymaniye, Sultanahmet ect.), "Hagia Sofia" serving as a museum, "Topkapı Palace" of the sultans and the atmosphere of the "Grand Bazaar" with the surrounding from Ottoman period are just some of many attractions. In contrast, "Galata" and "Taxim" districts with modern buildings from the 19th century represent the new, cosmopolite spirit of the city; while the historical Bosphorus villages-mansions, museums and art galleries reveal quite different urban identity also used as a recognizable city brand. Finally, with the application of "The Golden Horn Cultural Valley Project" which will reinforce the social and urban life of "Halic" and its historical surrounding (peninsula-Galata) will increase the number of visitors and create a new urban landmark.

CONCLUSION

Using the aggressive campaigns or transforming the space and economy of a city it is possible to create a new urban outlook that could hide or totally deny negative and unattractive images. The new urban flexibility, revitalized or reconstructed downtown areas, business opportunities, advanced IC and technological development, excellent connectivity and accessibility, healthy and ecologically sustainable surrounding, as well as a great number of cultural and sports spectacles are announced as qualities which should be (re)considered, but, at the same time, they should transmit important messages to their potential users - attractive, cosmopolitan, dynamic and hospitable urban background. Relying on this logic, Belgrade and Istanbul, each in its own way, have included these elements into the wishful images and advertisements deliberately promoting new urban symbols.

Bearing their *fatum* of the millennia crossroads, they could only try to reconcile their layers of history, present and future in order to enhance their position. Therefore, they are creating a new skyline that displays new centers of power, and their urban development is channeled and shaped to attract the attention of important investors. However, it is not possible to follow

just one direction - in the world of globalization every city has to achieve its 'omnipotence' as the only guarantee of its survival.

Balancing between tradition and innovation, the city branding of Belgrade and Istanbul could solve some problems, but one question remains - are we capable to continue their urban (hi)story or will they become just one of the Orient-Express mysteries?

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COMPLEX HISTORY AS A SOURCE OF PLANNING PROBLEMS: OLD BELGRADE FAIRGROUND

Marta Vukotić Lazar, Jasmina Djokić

The Old Belgrade Fairground complex is the large area in the center of Belgrade that is completely isolated from other parts of Belgrade: it is one of the most devastated city areas, populated by poor inhabitants, often by those from the marginal groups, burdened with tragic history and it represents one of the hardest problems for planners to solve. It is situated on the left bank of the Sava River between two bridges and downtown New Belgrade. Opposite to it, the Sava Amphitheatre slopes down the Belgrade Ridge towards the river.

The complex was built in the thirties of the 20th century across the River Sava in the area that was an unpopulated swamp – Belgrade was situated on the right Sava bank. It was meant to be modern extension of oriental city, which could represent the western tendencies of the young state (Kingdom of Yugoslavia) and its capital. Modern and monumental complex of exhibition and commercial pavilions was built, and started its life with national and international fairs and exhibitions.

World War 2 changed its destiny: German occupation forces transformed the complex into the concentration camp, where thousands of people were tortured and killed.

After the war, new republican government, both communist and antifascist, had double frustration regarding this space: it's tragic (during the War) and "capitalist" (before the War) past, so complex that was absolutely ignored in the period of the postwar renewal, and the result is described at the beginning of this text.

This paper discusses the possibility to conciliate historical roles of the complex, and to realize it's potentials in the modern world. Facts of the complex's history are presented in the first part of the paper. Further on, these facts are analyzed in the context of contemporary city development of Belgrade in particular but globally, too..

Finally, some guidelines for crossing the gap between this area and the rest of the city are presented in the third part of the paper.

Keywords: *Old Belgrade fairground, urban identity, history of the city, urban reconstruction*

INTRODUCTION

If we say that history of a city is one of its basic guidelines for its future development, especially in European urban practice, it is not a poetic statement, but the fact so obvious that we don't even mention it. The Planners and architects are trying to preserve historical buildings and ambient, habits and values of inhabitants, everyday life, and the concept of space of the time, in order to plan such urban structures that would be comfortable for citizens and attractive for visitors.

Even more, city's history is nowadays one of the most utilized urban resources. Branding cities and searching for authenticity in globalized world rely on history of the

particular city, or even city area. In search for tourists and investments, the city governments and urban professionals all over the world, especially in Europe, use history as a resource in competition with other cities. Every small difference, anything that makes a city "special" comparing to the others, similar in size, economic and human potentials, is being used for better position in the world cities market.

Sociologist Sreten Vujovic says that "...studying a city requires paying attention on timeness, because history and time are contents of the city, and historical ambient arise from pure temporality". (Vujovic, 1997) Yet, case of the Old Belgrade Fairground is quite opposite. Both, the city government and architectural and planning professionals are

very indisposed to talk about history of the complex, and almost totally inhibited in taking any action about the site. Reason might be found in its very complex history, during which the role of the Fairground has been changing in the most frustrating way. Changes were dramatic, and layers of the past could hardly coexist in the same physical structures. Nevertheless, they have to.

Today, the Old Fairground is completely isolated from the other parts of Belgrade. It is situated on the left bank of the Sava River between two bridges and the New Belgrade downtown area. On the opposite side of the river is the old city central zone. River Sava with several bridges is seen as a kind of a boundary instead of being a connection(s) with

the rest of the city. Also, this area is not functionally integrated in the urban pattern. It is one of the most deteriorated city zones, populated by poor inhabitants, most of them from marginal groups, and burdened with tragic history.

In this paper, we are discussing whether it is possible to conciliate historical roles of the complex, and to realise its potentials in the modern time. The facts about the history of Fairground complex are presented in the first part of the paper. In the second part, we analyse reasons and circumstances for marginalized status and neglectance of the Fairground site since World War Two, trying to find a proper explanation for this very particular area. Finally, in the third part, the new strategies and initiatives for future development are presented.

HISTORY OF THE OLD BELGRADE FAIRGROUND

The Period between two world wars

After World War One, the new period in the life of Belgrade started. Belgrade became a capital of the new state - Kingdom of Serbs, Croats and Slovenians, which lost more than million people during the War, and contributed in victory. Before that war, there were numerous problems in making good relations with some European countries, such as economical disagreements with Austro-Hungarian Empire, as well as a negative image of Serbia, due to the brutal murder of the royal couple in 1903. So, this was a new opportunity to show democratic potentials and gain respect among other countries. Rapid development of the city started: after centuries under Turkish Ottoman jurisdiction, Belgrade got the opportunity to spread across rivers Sava and Danube. It became an important river quay (landing-stage) and a railway crossroad. Also, Belgrade became the administrative, cultural, trade and industrial centre of Kingdom, although its capacities were insufficient and system of the governing was inadequate.

There were two different wholes in the urban pattern of the city: old core, principally oriental but nice and vivid, which was centre of complete public and social life, and on the

other hand the new parts - "amorphous and chaotic agglomeration" (Nedic, 1977). Plans that were made before the War were partial, created with no wider strategy for the urban development. As a result of intensive industrial growth strong migrations were going on and illegal settlements arose along main roads to the city. However, it was not possible to take real action without strategy for the whole city - a master plan was needed.

In 1919 municipality of Belgrade decided to get new master plan, by public competition. Master plan was published in the year 1923. It was a good basis for further development and reconstruction, and included extension of the city centre on the left bank of the Sava river. One of the important decision was the project of Belgrade Fair on the left bank of the river (Maksimovic, 1980).

The arrangements for realisation of Belgrade Fairground started in 1936. The basic concept of the project was radial distribution of pavilions around one central building - tower, which had two main functions: to be an exhibition pavilion, and to be an urban mark, visible from distant parts of the city. It was a monumental modern open plan. Building works were very rapid, and in 1938 the first exhibition was held in seven big pavilions, and in more than 20 small private pavilions.

Beside its economical and representative value, Old Belgrade Fairground was very important for the history of Serbian urban planning for several reasons:

- Process of its planning, designing, building, as well as its financial aspect was organized through transparent



public procedure. Many professionals, private investors and citizens were included in decisions making, despite the organizing and procedural problems. This is a fact of great importance, not only for the success of Fairground realization, but for strengthening the confidence of citizens in the institutions.

- This spatial composition became a metaphor of an urban complex that was completely realised according to the plan. Every single detail was planned and designed by professionals, without improvisations so often used in the previous period.
- The composition and details were modern. Old Belgrade Fairground is still a symbol of modernity, or at least its aspiration for modernizing the whole country, and particularly its capital.
- Previous characteristics are underlined by the fact that the complex is situated across the river, on the new area that previously had not been considered as a part of Belgrade. "Taking possession" of this land was in manner of democracy, economical prosperity and modernity, which was almost



a statement directed both to citizens and to the European countries.

It is exceptionally important to emphasize this modernizing impulse that the complexes provided. The importance of the Old Belgrade Fairground for the urban history of Belgrade is not its architectural excellence, but emancipating efforts and potentials of the society that were represented through the building process.

The construction of the public buildings, particularly for cultural purposes, compliant with the previously foreseen plan for giving shape to Belgrade area, was one of the important objectives of the 1923 year's General plan.

Promoting Belgrade as a tourist city in 1936, as well as the fact that Belgrade – Zemun road had already been made, gave a special inspiration to the preparations for building the Belgrade Fairground on the left bank of the river Sava. It was the first move in city extension of the left bank of the Sava, in accordance with the urban planning conception of the 1923 year's Master plan.

Although the rivers Danube and Sava are the most dominant values of Belgrade's environment, the city was traditionally built and developed, not on the river banks, but on the crag. However, the river banks, together with the Belgrade Fortress are the impressive parts of the Belgrade Panorama. Zemun is partly oriented towards the Danube, so it is also the characteristic part of the city situated on the left banks of the rivers Danube and Sava. In the same period, on the left bank of the Sava river a civil airport with hangars covered with concrete shells, according to the project of Milutin Milankovic, was built, as well as "the Modern Area", the project by architect Mihajlo Radovanovic. It was a triangular shaped residential area, consisting of collective multi-storey buildings and family houses with front gardens drawn up in line, located on the exit of Zemun towards Belgrade. These two cultural and historical areas represented the initial steps towards realisation of "The Old Belgrade Fairground".

In August 1936, the body named the "Technical Bureau", organized within the Association, made new plans for pavilions, enabling a beginning of the preparatory works

on the left bank of the Sava. The architects Miliivoje Trickovic, Djordje Lukic and Rajko Tatic, the members of the Technical Board of the Belgrade Municipality were engaged to examine the existing plans of general disposition and pavilions on the fairground, and to submit their opinion in the form of official report.

The complex was opened in 1937. by the "First Autumn Fair". At that time the space was dominated by four big and two smaller pavilions that were under the auspices of the Society for Organizing Fairs and Exhibitions, with the Central Tower, as well as the exhibition pavilions of the several foreign countries: Germany, Italy, Romania, Turkey, Czech-Moravian Protectorate and Hungary. Beside



these, one has to mention the pavilion of "Nikola Spasic Foundation" and more than 20 private pavilions. (Pravda, Beograd 14.X 1936.)

Belgrade press reported about all the events concerning the construction of the pavilions as well as the preparations and realisations of the numerous exhibitions: international automobile fair, concerts, sport competitions, fashion shows etc.

In short time not only that Belgrade became the meeting point of businessmen from Yugoslavia and foreign countries, but it also hosted one of the leading fairs in the South Eastern Europe.

Breaking out of the war in September 1939, and the state of emergency in the North and the West of Europe effected the situation in Yugoslavia. However, in the period between 1939 and 1941, the Technical Board published "The Statutes Draft for Realisation of the Belgrade City Regulation Plan According to the Regulation Draft" and "The Plan of Belgrade and Zemun". But, the German air attack in April 1941 dramatically destroyed Belgrade and cut all the activities in its economic, social and cultural life.

The World War Two and communist period

The World War Two changed destiny of this complex in the most tragic way. The Sava river became a border between Serbia, occupied by Germans and ruled by puppet government, and Independent Croatian State, the Nazi country with numerous concentration camps in which hundreds of thousands people were killed. The occupation forces transformed Belgrade Fairground complex into the concentration camp. At first, it was mostly for Jewish people (Judenlager Semlin), who were brutally killed, and later Serbs, Romanies and political prisoners were taken there.

More than ten thousand Jews, thirteen thousand Serbs and people of other nationalities were killed in this camp, but precise number and names of victims had not been recorded. Also, the majority of victims was never

buried properly in a tomb, and there were assumptions that some of these bodies could be anywhere in the complex still now. These facts strongly determine future use of this area.

During the Alliance bombing in spring 1944, all buildings of the "Old Belgrade Fairground" were destroyed except the Central Tower and "Spasic Pavilion", that were used as the camp hospital.

Several years after the war, the area was no man's land. At the beginning of the sixties the pavilions, that were not ruined during the war, were adopted and given to the artists to use them as ateliers. Today, they are still there, but dilapidated, unkept and surrounded by storages, garages, car repair services, workshops, illegally built poor housings etc.

PARADOX OF TOO MUCH IDENTITY: STOP THE WATCHES

This short historical review shows how difficult it is to obtain a decision on future plans and to determine the future vision of this important area in Belgrade. The problem is complex and has many aspects: social, economical, even political, but crucial points are cultural and ethical. While urban communities in the modern world are struggling to create clear and strong urban identity, the Old Belgrade Fairground has too much of it.

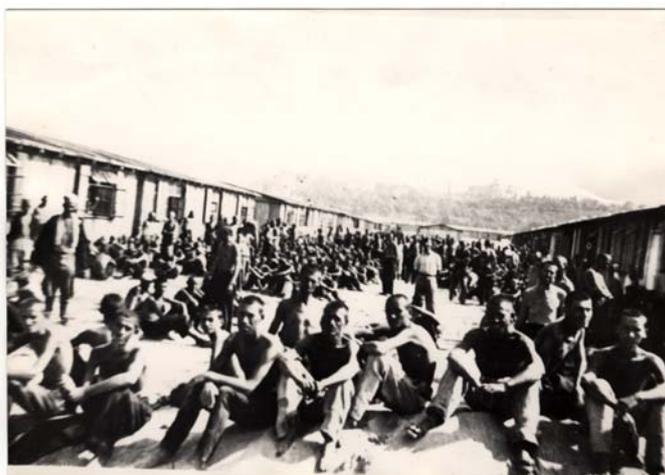
In short, the first phase of complex's history, as well as an idea of its realisation, was induced by strong will of state and the city to encourage the modernisation of the city life. It was about economical and cultural growth, and about

adopting values of western, democratic world. The following statement well illustrates the impulse of modernization: "The Old Belgrade Fairground complex is situated on the left bank of the Sava, between two great steel bridges connecting Western Europe with Balkan and East. The developers gathered, not only from Belgrade and other Yugoslav cities, but from many European and Balkan countries..." (S.M. Beogradske opstinske novine april – jun 1937)

This phase was interrupted by the War. The brutal policy that was taken at that time left unchangeable consequences: Jewish community has never recovered after this disaster. Today the number of Jews in Belgrade is considerably smaller comparing to the period before the War. The tragic destiny of thousands people tortured, humiliated and murdered has not been properly honoured and marked.

Structures which survived war became a shelter for poor people. Homelessness as known in western countries was rare in the socialist Yugoslavia, but this kind of housing - illegal use of different kind of buildings for home, could be compared with it. These buildings were not appropriate and without adequate infrastructure for living... Artists, painters and sculptors, used to live there among the others. Even when recognised as eminent some of those artists still continued to work in the ateliers. This was not an insult for victims, but whole situation insulted these new inhabitants and their right to decent house.

The absence of any planning activities was, and still is, the result of deep frustration about identity of this place. What is to be identified as basic point in area's history? Identity, according to Encyclopaedia Britannica, is (a) sameness of essential or generic character in different instances, and (b) sameness in all that constitutes the objective reality of a thing (Encyclopaedia Britannica, 2002). The question is: what is essential, constitutive character of this place? Character is based on the concept of use, idea and values that were transposed on this city area, but how to conciliate components in character which



are not only incompatible, but totally opposite. How to integrate memory on tragic period for city and its citizens into the urban pattern? And finally, is there any possibility to keep some hope for alive and respect for the dead, and materialise both in the same structure?

Not an easy task for planners and the government to do, but something has to be decided. For many decades, this area was an ignored space, planning-free zone; all city governments were pretending that problem does not exist.

THE STRATEGY OF THE CITY GOVERNMENTS IN THE SOCIALIST ERA

After the War, the priorities in reconstruction of destroyed city were infrastructure and housing. Roads, railways, bridges, water supply, industry, public administration and cultural capacities, and the majority of housing were completely destroyed during the war. Total renewal had to be done, and human resources were seriously damaged: thousands of people killed, refuges and orphans, people without homes and families burdened with war traumas. It was obvious that problem of monumental complex was not a priority on the list. There was a lot of work to be done before: build infrastructure, start industry, rebuild economy. But, the questions how is it possible not to intervene for decades and why, could not be avoid.

After the World War Two, the Kingdom of Yugoslavia was transformed into republic, as a result of socialist revolution which took part in that period. The new communist political elite government imposed various priorities: rebuilding the country, creating new institutions, making a position in a polarized world, as well as making the attitude towards "capitalist" history and previous regime. To our opinion, the destiny of the Old Belgrade Fairground after the World War Two reflects some attitudes of the new political elite and its policy towards the historical background, both social and symbolical of this site. We will present several reasons in order to understand why decision about future of the area was so difficult.

Firstly, the new political elite were both antifascist and communist at the same time. It had great respect for all war victims, regardless of their ethnical origin – the communist regime was strictly against any kind of nationalism. At the same time, there was a strong opposition toward anything related towards ex-regime. In other words, problem as well as potential solution was frustrating for the new political elite, as it was not possible to separate memories of tragic past from political and social structure (environment) in which it had happened. Most of concentration camps all over the Europe were reconstructed exactly as they were during war, with intention to memorise these terrible moments of mankind history, or as Edwin Heathcote said "not to allow people to forget" (Heathcote, 1999). For the new political elite, this meant reconstruction of bourgeois complex, and consequently probability of support to bourgeois habits of citizens.

Secondly, new regime wanted to monopolize the modernization processes of the country. Any previous effort regarding modernization was minimized, if not completely denied. The industrialization and urbanization were imperatives, and a kind of continuously repeated mantra of communist regime. As whole industry was ruined during the war, there was a simulation that everything should start from the very beginning. Also, pre-war urbanism was considered as conservative and anachronous, even if falsification of historical facts was necessary. Such an attitude led to ignoring Master plan from 1923, and few realized complexes in the territory known as New Belgrade (old airport designed by famous physician, astronomer and civilian engineer Milutin Milankovic, as noted above), including Old Belgrade Fairground.

On the other side, as antifascist associations preserved memory of the War, destroying structure relicts and reuse was out of question. At the end, nothing has been done about the Fairground for many years. New Belgrade arose around it, planned and designed in manner of modernism. New Fairground was built on the other bank of the river, opposite to the old one, so Old Belgrade Fairground lost the function and became just a toponym.

In communist/ socialist period, two master plans for Belgrade were made. In the first one (from the 1950.), the concept of Belgrade extension on the left bank of Sava was dominant and based on the principle of modern urban planning: wide, straight streets – axes, opened plan due to Charte d'Athenes.

Some basic characteristics of communist society enabled such deterioration of the area, and preservation of status quo for decades:

- Every aspect of economy was planned and centralized. In the market economy, there are many participants in city development, and it would be hardly possible to keep the area in the central part of the city without any developmental concept. Centralized economy may tolerate such "black holes" in urban fabric. The private or civil initiatives were not permitted in the field of memorial architecture and protection. In spite of that, the Old Belgrade Fairground was of the importance for the history and memory of Belgrade; it was neither protected nor marked as an important city memorial and historic site.
- The city land was in state ownership. So, legally this area belonged to the city, and the city government managed it.
- Urban planning was also centralized, with the city government, or more precisely Communist Party as the main factor in the planning process. All decisions were made at the Party Committee level and professionals just had to implement them.

TRANSITIONAL PRESSURE

It is hard to recognise the precise moment when socialist era ended and transitional period started. In other socialist countries of eastern block it is easy to define the breaking point, but in former Yugoslavia, this process was parallel with brutal decay of country, wars and nationalism. However, for Old Belgrade Fairground the radical change happened in 1987 when the complex was pronounced a cultural heritage of Belgrade. This meant new treatment regime for the area, which included protection and conservation. The decision was rather formal, as there was no particular action, but it was of enormous importance because it



protected the area of illegal building or other kind of intervention by private investors.

Although we can not specify exact start time of transitional processes, one should recognize that liberalization of market could hardly devastate complex. In the circumstances of free market, within the state with a high level of corruption and criminalization of public services, and unsuitable law and juridical systems, there are many wealthy investors interested for these pieces of land. For this paper, it is irrelevant how they got their funds: legally, illegally, or, perhaps, by war profiting, but they were and still are looking for space. They are interested for gaining the profit from the investment, and do not take care on historical and symbolic meaning of the site.

The demand for the building land in Belgrade is very high. The position of Old Belgrade Fairground is very good: on the bank of the



river, in the central zone, and infrastructural corridors passing nearby the complex area.

Another very important aspect of possible misuse of the Old Belgrade Fairground considered public asset. Public assets are, at the same time connected to laws, economy and mentality. In western countries that were without system discontinuity, mechanisms for

protection and reproduction of public assets have been established and have been continuously improved. The legislative about this topic is precise and moderate developers are considering it, and citizens are aware of its importance. In Serbia, none of these exists: laws about the protection of public assets are not specifically defined, instruments for their implementation are insufficient, and state is too weak to realise even these laws. Developers, on the other side, are aggressive in making profit. Nevertheless, prime problem is absence of citizen's consciousness and emancipation on this topic. People are not aware of their own responsibility for the preservation of the public asset.

The tradition of personal and community engagement disappeared during socialist regime. Centralized governing and decision making at the Communist Party level resulted in total exclusion of citizens in matters about city's future. The hierarchy was extremely rigid and inflexible, and non-institutional effort could not give any result. Partly, it was caused by ideological motto that Party already knew people's needs, but crucial reason was procedural.

Also, many people in Serbia and other countries of ex Yugoslavia, identify anti-

fascism and communism. Hundreds of thousands Serbian citizens lost their lives as victims of fascism, and most of them were not communists. The historians, sociologists and other researchers are already studying this phenomenon, and it is far too complex to be explained in this paper, but its reflections are recognizable in people's behaviour and treatment of historical monuments from period of World War Two.

The city parliament verified *Detailed Urban Plan for Monumental Complex Old Belgrade Fairground* in year 1992. The reason for this was "to enable reconstruction of monumental complex and building a memorial object. This is to be done in order to reconstruct complex as it was at the time of transformation into the concentrate camp..."

THE WAY OUT

The first impulse for preservation and reconstruction of the Old Belgrade Fairground was strictly individual. Art historians, planners, architects and journalists progressively realised imperative of personal engagement in struggle for such objectives. Previous regime did not leave any space for individual action or initiative, so some time was needed for people to take a new role – the role of active and conscientious citizens.

The institutions were too rigid and indolent, regarding bureaucratic inertia which is immanent to every system: ideological or democratic. Gradually, idea of historical and urban importance of the Fairground was developed through separate activity of intellectuals and enthusiasts. Then, their practice was articulated in series of public discussions, panels, exhibitions. Finally, this became a wide action which mobilized not only professionals interested in this topic, but citizens who want to keep the memory and different layers of urban identity.

The basic indicator of possible planning solution was, ironically, half life of the complex in post-war period. Art is the only human effort that does not insult the dead and is a stimulus for alive. And, historically, ateliers and artists' activities are referred to this space. On this basis, Belgrade Master plan 2021 acknowledged Old Belgrade Fairground as an area for

general reconstruction. Actually, it means that the Fairground is considered the cultural heritage to be protected as a whole, ambience treated integrally due to previous structure, use and memories. This is implemented into the Plan, and it is a matter of time when Detailed Plan for the area is going to be made.

CONCLUSION

After all, it is rather obvious there are two complex historic stories about the Old Belgrade Fairground. The first one is the history of the Fairground itself, from grandiose and modernistic idea, to ruined structure which is source of planning problems. Another one is the story of politicians' and planners' trouble to decide what to do with it. Result of both is The Fairground as it is today: devastated, inhabited with poor, although urban population, excluded from city's life, but with potential to be reconstructed and renewed. The possibility to keep memory of every important phase of the Fairground is its most precious item. At the same time, that is the only implication of the planning process that lasted for decades. Paradoxically, it is not negligible.

The case of Old Belgrade Fairground proves that in some situations it is preferable not to make a decision than to make a wrong one. Political and other social circumstances did not allow treating the Fairground in manner that could incorporate all layers of its complex history into solution, but made possible to keep status quo.

Also, there is another verdict that ensues after analysing case of the Old Belgrade Fairground. It concerns eternal question about "ideal planning circumstances". The planning of Fairground's reconstruction took many years, and in that period the completely opposite systems were on. The nature of socialism is complete centralization of political, legislative, financial power and still it was not environment

that allowed creation and implementation of good and lasting arbitrage. The limitation factor was ideology: power was there, but paths of its usage were directed by ideology.

Total and wild liberalization of the market is major characteristic of period that came after. The best possible action was to protect the complex of possible disturbance caused by private financial capital. Slowly, as legislative was consequently constituted and social awareness grew, the procedures for creating worthy solution were established.

The inheritance and the history can not be treated appropriately in extreme social and economical conditions. Ideological socialist government was crucial at the time, but selective in order to keep own supremacy. Afterwards, during transitional period, developers in the free market have their own priorities. Only socially aware society and society emancipated through democratic procedure is capable to recognise and protect historical and other values and public assets. Moreover, we will have an opportunity to test this statement in the case of Old Belgrade Fairground and its future.

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ATTIC EXTENSION AND THERMAL RENOVATION OF THE RESIDENTIAL BUILDING (Case study)

Milica Jovanović-Popović, Ana Radivojević, Dušan Ignjatović, Martin Elezović

Buildings are the only resource growing constantly. Although relevant data for Serbia is not available, it is presumed that even more than 50% of energy production is spent on buildings in our country. This conclusion is based on two facts: the present industrial production and the state of buildings. In order to establish measures for energy efficient refurbishment, one residential building was analyzed in Belgrade. The chosen building represents the construction period when application of thermal insulation was not obligatory according to building regulation. As more than 35% of buildings were built in that period, they represent great potential for energy savings through the process of refurbishment.

INTRODUCTION – Scope of project

Buildings and built environment are the only resource that is constantly growing. At the same time, almost 50% of total energy production in developed western countries is spent in buildings. Although relevant data for Serbia is not available, it is presumed that even more than 50% of energy production is spent in buildings in our country. This conclusion is based on two facts: the present industrial production and the state of buildings. At the same time, according to the results of the Population Census in 2002 by the Statistical office of the Republic of Serbia, more than 35% of buildings in Belgrade were built in the period from 1950. to 1970. when application of thermal insulation was not obligatory and buildings were built without any thermal protection. These buildings represent high potential for energy savings through the process of renovation and refurbishment.

In order to establish measures for energy efficient refurbishment, residential building in Cvijiceva street 112-120 was analyzed. Since the building was built with a flat roof, a vertical extension of building was designed as one of the measures. The sale of new apartments at the market is proposed as the best way for financing the refurbishment.

Case study treats a multistory residential building in Cvijiceva street No 112-120, Belgrade. The selected building is built in 1957, covers the area of 620 m² and consists of basement, ground floor and 5 floors. Due to its length it has three separate entrances, and contains, in total, 38 flats, most of them in private property and 2 commercial units located in the ground floor.

The existing building is of a massive structure and in all aspects is built according to relevant regulations of the time of its erection. So far it has not been a subject of any significant changes of its original volume, apart from mass individual interventions of tenants regarding terraces and loggias on the courtyard side of the building. Due to the need for extra space of the existing flats in most cases these parts were closed and transformed into a living space.

In spite of visible consequences of poor maintenance of the building over the time (neglected facade, damaged metal covers along roof and terraces, neglected flat roof) the building is in a satisfactory state today. Having in mind the time of its erection, it is certain that, besides the noted imperfections, comfort of the building, especially thermal one, is far from being satisfactory according to the nowadays practice and regulations.

So far, the building has not been connected to the district heating system, so the heating is provided by the local heating system in individual flats. Today in most cases this considers the use of thermal-accumulated furnaces, while originally a system of individual chimneys in each habitable room has been provided.

As a result of the present state and defined principles and objectives, there are three independent groups of interventions on the building represented in this project:

- a) Thermal insulation of the building envelope;
- b) Renovation of a heating system, e.g. connection of the building to the district heating system
- c) Extension of the building by addition of one more storey over the existing flat roof that is intended for residential and working units for young scientists from the University of Belgrade

It should be noted that Pilot project as a framework for the design project anticipates different forms of domestic and foreign donations. They should be partly realized through donation of a particular materials and products that should be implemented on the building, such as:

- Roof windows, included in the Serbian Product Program, from VELUX A/S
- Radiator thermostats from Danfoss A/S;

- Velocity regulated pumps from Grundfos A/S;
- Insulation products from Rockwool International A/S;

PLANNED INTERVENTIONS

Energy improvement of existing building envelope

Energy improvement of a building envelope of the existing building, proposed by Design program, is realized with addition of a new thermal insulation layer along the thermal envelope of the building, including a renovation of the existing wooden windows.

Addition of a new layer of thermal insulation with appropriate mortar layer finishing should be conducted on the following parts of the building in the noted thicknesses:

- along existing facade walls – 10cm (new $U=0.3W/m^2K$)
- along inner walls surrounding staircases, corridors and halls – 5cm in case of existing 38cm thick walls, or 8cm for 25 or 20cm thick existing walls
- along the lower side of floor structure above the car acces to the courtyard – 10cm
- along the lower side of floor structure above basement or building entrance – 5cm

Addition of thermal insulation layers, in case of walls, should be applied to the masonry wall, in which case the existing rendering should be knocked off from the wall. In case of floor structures, existing reed ceiling should be removed and replaced with a hung armature net and fine steel net as a carrier of the insulation layer and support for final mortar layer.

Renovation of the existing wooden windows concerns their additional sealing and painting, and, in case of those facing the court yard side of the building, suppliace of new external roller shutters. In case of more serious damage of windows, which will be noted during the realization of this intervention, repair or, if necessary, the replacement with new windows will be performed.

Taking into account the diversity of individual tenants' interventions so far, primarily regarding closing of terraces and loggias, use of different colors on wall surfaces (defined on

particular drawings in the project documentation) should be performed. This particular intervention will help in the simplest and easiest way the process of unifying the appearance of the building in spite of present variety in types, shapes and sizes of windows. Regarding thermal renovation and optimization, masonry parts of walls of closed terraces should be treated in the same way as other solid parts of facade walls by addition of 10cm thick thermo insulation layer together with an adequate mortar layer finishing.

Considering the bad state and the lack of thermal insulation in the existing layers of a terrace on the 5th floor of the building along Cvijićeva street, this part of the building needs a special reconstruction. Since its position is in its whole length above the flats on the 4th floor, existing flat roof layer should be removed and further on replaced with new layers including a thermal insulation one.

Described procedure of facade repairment includes replacement of all damaged metal cover along facade openings, terraces and loggias, as well as painting of metal parts of banisters with adequate protective paints.

Connection to the district heating system

Planned connection of the building to the district heating system is a subject of a separate part of the project regarding thermo-technical instalations.

From the perspective of building interventions necessary for this purpose, connection to the district heating system requires transformation of part of basement space placed in the I entrance of the building into the heating substation room. This room is placed in the part of the common space of the building towards Cvijićeva street, used for wood storage at the time and not in use nowadays.

For the purpose of implementation of a central heating system, within the staircases and corridors of each unit of the building (entrances I, II and III), main vertical instalations, as well as horizontal distributive instalations to each flat within the network were placed. Horizontal parts of instalations are supplied with individual heating gauges. Since the

existing chimney channels are not in use anymore, some of the chimneys that were placed along the corridors have been partly demolished and transformed into new channels meant for placing vertical network of the heating system, as well as for other instalation systems that are needed to complete interventions on the building.

Vertical extension of the building

Vertical extension of the building has been done over the existing flat roof by adding a new attic. New floor space covers the total surface of the building, equal to one of the typical existing floors, due to which a new system of columns is placed along the edge of the 5th floor terrace supporting the floor structure extension of the last existing floor.

Volume of the additional floor is respecting the given urban conditions and is matching the height of the neighboring buildings. In order to provide the best possible interpolation with the surroundings, roof terrace along the neighboring building towards Ivankovačka street is made, while on the other end of the building there is a corner terrace on the street side of the building that improves connection of neighboring roofs.

Within the limits of the new attic floor, several units (studios) are designed for residential and work purposes for young scientists – assistants from the University of Belgrade during their postgraduate studies.

In order to provide to most possible space for the attic floor and since implementation of the central heating system is a constitutional part of the Pilot project, the existing chimney channels are closed and their roof endings demolished, wherever it proved possible. However, according to the current building regulations, one chimney for each flat has been provided as a so called spare chimney.

Access to the new residential units are provided trough the existing staircases by adding one more level of stairs. At the same time, adequate reconstruction of existing lift (elevator) houses is also done, in order to provide an unobstructed access to the new storey. Reconstruction considers dimensional change of lift houses by demolition the existing

and building a new one according to the current regulations. Position and size of new lift houses are adjusted to functional needs of a new storey, but it should be noted that this intervention does not consider any moving of the existing lift mechanism.

Due to the increasement of number of stories of the building, instalation of a fire hydrant network is planned and placed within the staircase space. This intervention imposes a new connection to the street water pipe and installation of a new water gauge. Besides the fire hydrant network itself, a special room for placing a hydro station unit is made in the basement space of the first entrance of the building. This particular installation system and all relevant interventions are described in details as a part of the technical documentation regarding water supply and sewage system of the building.

New residential and working units in the attics are designed as a system of small independant units for individual users. Depending on the space potentials, there are two types of units: Type A – a studio of approximately 30 m², consisting of a combined room, kitchenette and a bathroom, and Type B – a one bedroom unit of approximately 45 – 50 m² that consists of the same rooms plus a separate bedroom.

According to the design project, residential units, regardless of their type, are built and equipped in the following way:

Materials and structures

1) Structural elements of a new storey

- *Additional staircase level* towards the new storey - reinforced concrete staircase
- *Walls* - massive, reinforced according to the relevant seismic regulations; depending on demands related to thermal, fire-protection or other building regulations, built with ceramic blocks, or bricks; Disposition of structural walls should be in accordance with position of an existing structure.
- *Roof structure* - wooden, having a form that is in accordance with the relevant urban and technical conditions. Primary roof structure is designed as a system of horizontal roof beams leaned on the edge of a massive floor structure, or a massive wall; secondary structure is made of nailed thin wooden

elements 5/25cm that are placed on an adequate distance. Horizontal stiffness of the roof structure is provided with a wooden plank layer placed over the upper side of secondary structure.

2) Roof envelope:

- roof cover - plasticized ribbed steel plates
- thermal insulation - 20 cm mineral wool
- ceiling - gypsum plates

Structure of a roof envelope is designed as a double ventilated one, preventing overheating during the summer period.

3) *Facade walls and inner walls around staircases* (as in the energy renovated existing part of a building) - thermal insulation layer of mineral wool of adequate thickness (10 cm on a facade; 8cm towards staircase) with an adequate final mortar rendering layer.

Along terraces in the attic floor, facade wall is made as a light wooden structure filled with 14 cm mineral wool and finalized from the

inside with gypsum plates, and from the outside with plasticized ribbed steel plates (same is used as a roof cover).

4) *Windows* - mostly adequate roof windows; in case of facade walls, when necessary, wooden or PVC windows, or balcony doors, the structure is of single frames with thermo-isolated glass and equipped with external roller shutters

5) *Partition walls* - 6.5 or 12 cm brick masonry walls; depending on a type of a room, walls are plastered and painted, or tiled with ceramic tiles.

6) Floors:

In apartments: in bathrooms and kitchens – 1st class ceramic tiles, in other rooms – 1st class beech parquet.

Staircases and access – casted terrazzo.

Drawings

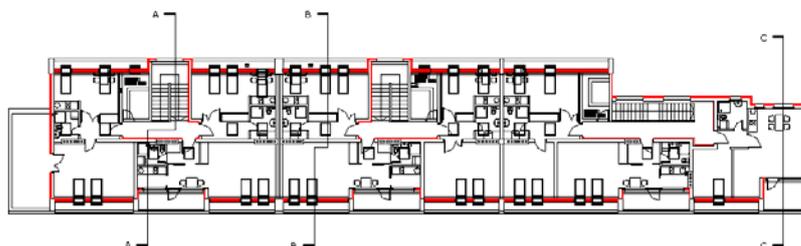


Fig.1. Extension of the existing building, attic layout

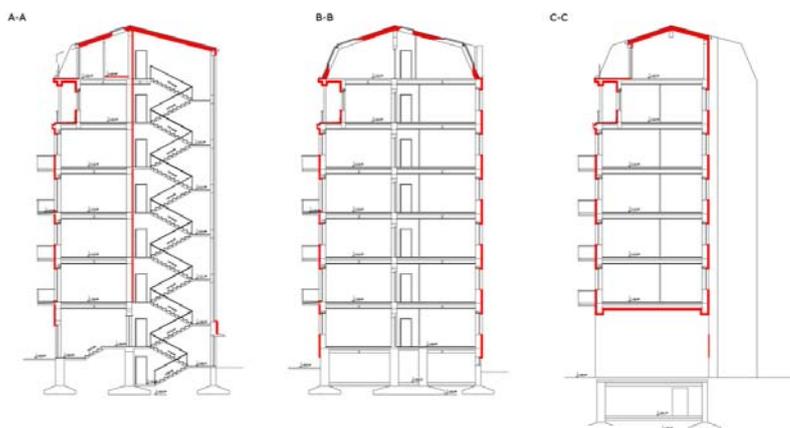


Fig.2. Cross sections, existing building with attic extension

Pictures of existing building and 3D model of suggested refurbishment

Fig.3. Street facade, residential building, Cvijićeva str. 112-120



Fig.4. Street facade after refurbishment, residential building, Cvijićeva str. 112-120



Fig.5. Court yard facade, residential building, Cvijićeva str. 112-120



Fig.6. Court yard facade after refurbishment, residential building, Cvijićeva str. 112-120

Installations and equipment

As proposed by the design, residential units are equipped with electrical and low voltage installations (phone, cable TV, intercom, prepared for local area network). This, requires introduction of new vertical distributive installations through the staircase space. For the need of water and sewage installations, existing vertical installations are extended, or if they cannot provide connection of all units to the existing networks, the installations should go through staircase space. Distribution of these horizontal installations within residential units should be done over the existing roof / under the new floor. Electrical boilers should be installed in each apartment.

These installation systems are subject of separate parts of technical documentation.

Individual residential units are equipped with built-in kitchen elements, including refrigerator and stove, as well as fully equipped bathroom, each of them having a washing machine. The units are designed and equipped with built-in cupboards.

PRELIMINARY ENERGY & IEQ ANALYSIS

The main aim of this analysis is to investigate energy saving opportunities for the reconstructed building. The analysis will emphasize the importance of improving building envelope as well as cost-benefit gain caused by lowering annual energy costs while improving indoor environment comfort.

The dynamic building model (DOE 2.2) is established for the Base case and for the reconstructed case. All building's parameters are determined and they represent typical building's usage and characteristics. The only two differences between analyzed buildings are presented in Table 1. The buildings are analyzed for the Belgrade typical meteorological climate data (TMY2).

Energy Analysis

The obtained results presented hereafter verify suitability of implementing insulation improvements as an effective energy efficiency strategy. Estimated monthly energy load has been reduced by 59÷100%, while estimated annual energy load has been reduced by 65%.

Economic Analysis

The economic analysis is performed for the following assumptions:

- 15 % of heating load is provided by electric resistance heating
- 15 % of heating load is provided by Split system unit Heat pump
- 70 % of heating load is provided by electric resistance heating with heat storage

Electric resistance heating with heat storage is widespread way of heating exploiting the fact that the utility rate has attractive night tariff which is four times cheaper than day tariff. Other tariff specific parameters such as red and blue zone tariff have been also analyzed. The possibility of implementing district heating is also included into consideration.

It is most likely for the Base case that the electricity usage will be at level above 1600 kWh/Mo. i.e. the electricity cost will be calculated by red zone tariff. For the Improved case it is most likely that the blue zone tariff will be used. District heating cost is calculated on €/m² basis. There is another way of charging that involves €/kW (Improved case will have reduced Installed Heating Capacity), which could yield lower District heating cost. The last one should be verified by further analysis.

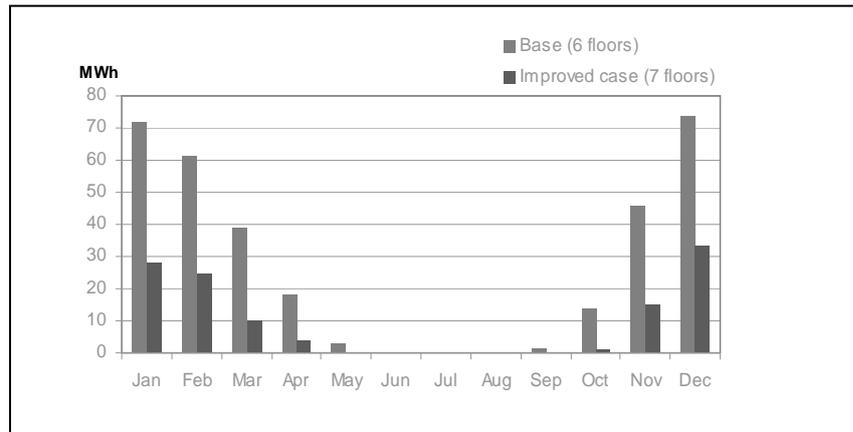
Indoor Environment Quality

Improving insulation level will have significant influence on indoor air temperature as well as issues concerning mean radiant temperature and temperature asymmetry. On the other hand it is possible to introduce more fresh air and still to have lower energy bills comparing to Base case. The only drawback is that the summer indoor air temperatures will be higher, but this could be easily resolved by Natural ventilation.

Table 1. Differences between two analyzed

	Base Case	Improved Case
External Wall Construction	Brick 38 cm	Brick 38 cm + Styrodur 10 cm
Roof Insulation	N/A	Styrodur 20 cm
Number of Floors	6	7

Picture 1. Annual Energy Load



Picture 2. Annual Energy Cost

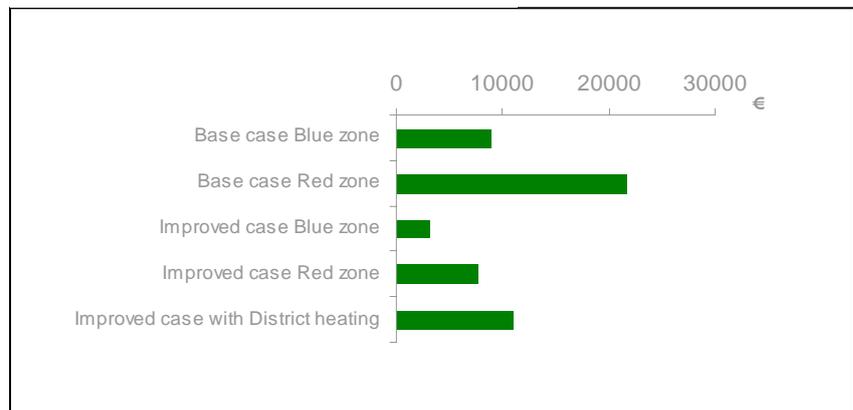


Table 2. Simple Pay Back Period Analysis

	Annual Electricity Cost Savings	Simple Pay Back Period
Improved Case Red Zone	18.629 □	???
Improved Case Dist. Heating	10.785 □	???

CONCLUSION

About 50% or more of produced energy is spent in buildings and about 35% of buildings in Belgrade are built in the period when there were no building thermal protection regulations. Accordingly, energy efficiency improvement through building refurbishment is one of the methods for energy savings at the national level.

Residential building in Cvijiceva street was analyzed as a pilot project. Refurbishment measures were: improvement of envelope thermal characteristics by adding thermal insulation on external walls, repair of windows and doors, connection to district central heating system.

This preliminary energy analysis have shown that improving insulation level will lead to both

Energy cost and Indoor environment improvements. Detailed Energy and Indoor Environment Quality analysis should be performed in order to verify and further improve results hereby presented.

The preliminary cost analysis has shown that it is possible to finance all the measures of refurbishment by extending the building, adding attic on the flat roof and selling new flats at the market.

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MAN-ENVIRONMENT INTERACTION: A REVIEW OF MODERN ARCHITECTURE OF LIBYA IN TRANSITION

Dobrivoje Tošković

The oil production has influenced evolution of housing types and a variety of civic and commercial buildings never present in the simple market place of the old town.

A lot of buildings are erected in the recent past. The New Architecture became more sanitary in comparison with the old one, but it is mainly formless.

The following pages explore architectural examples of this Transitory Phase showing evolution from the Old patterns to a New Architecture, functionally, structurally and aesthetically. Through a set of the newly introduced housing types, new mosques, commercial establishments, public buildings as well as health and educational facilities characteristic progress and deviations as well as new lessons are shown.

INTRODUCTION

Modern Architecture in Libya is a reflection of a Society in Transition, in Search, in Flux, in Evolution which, at this very juncture of change has, often, been led astray to believe that any severance with the past is progress, beauty and significance.

The oil production has influenced evolution of housing types and a variety of civic and commercial buildings that has never been present in the simple market place of the old town such as: municipality, library, police station, cultural club, health centres, schools, hotels, banks, etc and each of these expressing political and social aspiration of the country in developing.

A lot of buildings are erected in the recent past. The New Architecture became more sanitary in comparison with the old one, but it is mainly formless. This is not difficult to dispel but requires hard work to combat, if Libya wishes to avoid looking like any other modern building group anywhere in the world and to keep the Arab character of the architecture.

The significant and worthwhile architecture was possible in this country, where the modeling of only climate was so marked and the amounts of money spent so significant. That the Libyan should have deviated not only from organic precedent but from the compulsions of Geography, Climate, Economy and Sociology as well, can only be explainable by the fact that forms and fetishes, so easily being embraced today, have been forced on them willingly or unwillingly by a group of some practitioners, mainly geometers.

If the designers operating in Libya from practically every country, derived inspiration from the dynamics of the Geography and Heritage of the country, -INSTEAD OF COPYING SUPERFICIALLY FROM VARIOUS MAGAZINES, they would certainly have produced on this area of the desert a unique type of architecture (as the Fezzan-Ghadames "SAHARN STYLE" arose over the sand in its original form despite limited materials). Fig. 1

Thus, one of the greatest art deviations that have befallen Libyan towns during the past decade of boom and urban aggradizement is

the breakup with the significant aspects of the Arab Tradition and Heritage in buildings and building towns. I do not mean to imply that the deviation consists of a departure from tradition and heritage merely because of this fact, per se. By no means. WHAT I stress IS THAT



Fig.1.



Fig.2

FACTS, FORMS AND FEATURES EXISTED IN THE STRUCTURE OF THE TRADITIONAL LIBYAN BUILDING, which are considered germane, even to the essential and basic structures of towns and buildings in contemporary thought. Fig. 2

The following pages explore architectural examples of this Transitory Phase showing functional, structural and aesthetical evolution from the Old patterns to a New Architecture. Characteristic progress and deviations as well as new lessons are shown through a set of the new introduced housing types, new mosques, commercial establishments, public buildings, together with health and educational facilities.

"HAUSH" - TRADITIONAL POPULAR

HOUSE TODAY

"HAUSH" IN CITIES, built privately began to open more space on the street, sacrificing the advantages of the courtyard, which has now been reduced in size and lost its predominant importance as the core of domestic life. The main rooms are accessible through a corridor, the auxiliary rooms are located in the rear, and the courtyard serves mainly utility functions.

The stone masonry walls or concrete blocks are load bearing walls supporting mainly concrete or travetti roofs.

AESTHETICALLY, it is an unimaginative and uniform design made by geometers, (see an example from Tripoli) where environmental factors are neglected due to the designer's

limited knowledge, experience and feeling for a specific local habitat. Fig. 3

THE VILLA

- **FUNCTION.** As a recent type of accommodation in this country replacing the old "MANSION" house, it is a detached building surrounded by gardens. Quite frequently, though, villas are also surrounded by high masonry walls to ensure privacy.

Design patterns—generally reflects the models found in Western Europe, or those of single family houses in the United States. There is no central "patio" as a nucleus of the domestic life. The building has openings to the exit into a garden or street. The main rooms are accessible through an entrance hall from which a small corridor leads to utility rooms. Bed rooms are usually arranged upstairs.

- **STRUCTURE.** The stone masonry walls, reinforced structure frame or concrete blocks are load bearing walls supporting mainly concrete or travetti roofs.

- **SHAPING.** As far as modeling is concerned there are three main trends today: Cosmopolitan, Neo-Classical, and a modern version of the Traditional "Saharan Style".

THE COSMOPOLITAN Villa Style covers the majority of the villa environment. These villas very often achieved their aesthetic measure from the "copy-paste method" of so called "modern" trend, or by trickery or contorted structural gymnastics. On the other hand in some examples there is an aesthetic quality, scale, even a reasonable adjustment to the climate requirements, but there is lack of a domestic flavor to stamp them as distinctly local design. Above is one example among many that has been "sown" on the Soil of Libya. Fig. 4

THE NEO - CLASSICAL STYLE - (see Fig. 5) done in an almost literal form, though demonstrating the strong reaction being evidenced against the bizarre architecture of the Cosmopolitan Villa; perhaps to point to and accentuate two dangers and thus alert architects to the correct course:

FIRSTLY, from a scientific point of view, this style is not suitable for the harsh habitat of Libya as environmental factors are not used consciously in shaping of the building. Neither is culturally affiliated with the richness of Arab Architecture, nor is it artistically related to the capacity of the State being able to afford giving birth to a significant domestic architecture adapted to the contemporary need of People as well as to the modern technology of building. Hence applying sentimental copyism is not the answer and therefore a literal return to classical style is not the course to be followed.

SECONDLY, it is a break to the evolution and progress of the architectural thought. For



Fig.3



Fig.4



Fig.5



Fig.6

designers belonging to an old school of architecture, be they Arabs or foreign, who are more versed with, and romantically and sentimentally attached to former styles of architecture perhaps because of the lack of knowledge in philosophy, science and art of contemporary architecture, potentially they are just as much a block in the path of realizing a great and new Domestic Expression in Architecture as the soulless, mechanical, uninspired practitioners of "modern" architecture who are devoid of any romance and sentimentality in creative architectural design.

GENERALLY, this construction is not so familiar to the majority of Libyans. Today very few citizens - mainly rich people can afford this costly type of building where surface

decoration of walls call for high experienced craftsmen and these artisans are disappearing like in other countries.

THE MODERN VERSION OF THE "SAHARAN STYLE" -

It seems to be a sign that encourages one to believe that the Libyans are, finally, awakening to the fact that if they must copy original and fine "SAHARAN STYLE" introducing effects of contemporary materials - it has far deeper roots to borrow from, bore into or buy from.

While some cosmopolitan villas have been adjusted to the climatic requirements but lack a feeling of local expression, in these cases of Modern version of the "Saharan Style" is reversed: more attention should be paid to the



Fig.7

environmental factors as far as living under burning sun and sand-storm conditions is concerned. Fig. 6

Local elements, imagination and more shade and shadow - and new style results.

THE APARTMENT BUILDINGS

As a more recent type of accommodation - similar to those found in European countries this type has about 120 sq.m. of floor space per family unit and a very high percentage of ground coverage. In many examples the blocks share party walls.

FUNCTIONALLY, the central courtyard loses its original importance and it begins to function as a light well. The living areas of the dwelling are, therefore, found to open outside onto the street.

These types of buildings have two to four storeys. Access to the dwellings is by a staircase. Every dwelling is equipped with a loggia or balcony. The dwelling consists of one living room of about 30 sq.m.; two bed rooms, one dining room, kitchen and bath - altogether arranged around one entry hall or corridor. Very often, there are two corridors, one connecting the main rooms and another linking utility rooms or bath with bed rooms (see Fig. 7).

STRUCTURE The reinforced concrete is used in structural frames, floor and roof slabs. The filling walls are of stone or concrete blocks. Often in two-storey dwellings the reinforced concrete structural frame is replaced by concrete block bearing walls.

SHAPING The buildings are more a cosmopolitan creation than an Arab expression of the architecture. This is true particularly when the privacy of living is concerned. Where the designer has forgotten such a fact the people corrected him by adding wooden "musharabiah" or other typical Arab element of the architecture.

However, there are endeavors to keep privacy and to give an Arab character to the exterior architecture of the apartment buildings. One of the best endeavors is the performance of the contemporary materials incorporating the traditional - Arab architectural elements into a modern fashion. The results achieved in some

buildings show a correct course to be followed in further searching of a new Libyan architecture.

A characteristic motif in this light is the combination of "clay-musharabiah" with the reinforced concrete frame, often, cantilevered and altogether forming a modern version of the traditional verandah, keeping privacy - a typical feature of Libyan living (see Fig. 8).

MULTISTOREY DWELLINGS (over four storeys) are very rarely used in Libya. The only examples of this kind of accommodation can be seen in Tripoli and Benghazi in a very small extent, in private and Government possession.

In the current implementation of the Government's Housing Programme the types of



Fig.9

eight-storeys building are designed in a cosmopolitan fashion, where an economic and visual preoccupation prevailed over the domestic pattern of living. The lack of privacy is a characteristic disadvantage of these designs. Fig. 9

MOSQUES TODAY

- Although in the majority of Settlements the Mosque has kept alive its traditional importance as dominance in the general sense; however its character and style have changed greatly under the influence of the universal forces now operating in the country. The Oil potentials influenced, like in

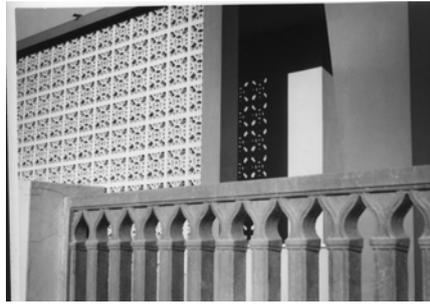


Fig.8

other fields of the development, recruitment of architects from abroad. A mass construction started writing a new story about Libya. And similarly, as direction of winds from the sea and the desert - penetrating and mixing one another, the imported architects brought ideas and styles from their own countries expressing their own experience, knowledge and feeling.

The new forms have been introduced into the shaping of this religious architecture. Changes are in three realms: volumetric, stylistic and functional.

- Generally as a result, the Mosque today is bigger in size; new materials are used, together with the new method of construction; increased economic potentials of the country, but also the role of Islam which cannot be underestimated when new aspiration of the country is concerned.
- The deliberate combination of religious and shopping activities under one and same roof, became a manner in modeling, a sign of an unlimited creative possibilities for architects dealing in this country.
- For a further exploration of the achievements in this field it can be noted that three characteristic types exist today on the soil of the Country: TRADITIONAL, NEO-CLASSIC, and MODERN STYLE. There are also examples of the mixture of these styles.

a) The traditional version

Keeping its simple function the Mosque of this group consists of prayer's hall, minaret and washing basins as well as entrance portico.

Structure is a combination of reinforced concrete and stone mainly in the Coastal Area, while mud bricks are still used in the desert, although the use of concrete and stone is partial.

It should be stressed that due to the absence of rain in the desert area, mud material is considered quite permanent, and therefore some successful efforts have been made to combine mud with cement. Fig.10

Roofing also differs from area to area. In Tripolitania, and Cyrenaica roofing of the prayer's hall is usually one domed structure while in the Fezzan it is flat and made of palm wood beams with mud topic.

The aesthetic results are variable depending on the designer's experience in manipulation with new materials, and his knowledge of the local flavor, as well as local environmental factors.

b) Neo-classic style mosques

The Mosques of this group - are a true expression of the old school. Although designed in contemporary materials, the Mosque is a show piece of former styles to which its designer is more versed and sentimentally attached.

Depending on the extent to which the designer was conservative and romantically preoccupied by the old styles - the achievements show variations from literally old expression to the attempts to bring a piece of new together with old into the fashion of the Mosque. Below is one characteristic example from Tripoli:



Fig. 10

"GIAMA" ATTUGAR

This is an orthodox - old approach to the fashion of the Mosque as far as style is concerned. However, in its overall concept there is something new: incorporation of shops into the building. The shops influenced size of the building both in its horizontal and vertical directions as well as its functional treatment distinguishing religious function from that of commercial use. Environmental factors as far as heat is concerned have been used consciously by providing shade and shadow. The entrance to the prayer's hall is differed from those going to shops. The building is square in its basis.

- The STRUCTURE of the Mosque is a combination of reinforced concrete and local limestone. Structural elements are columns, bearing walls, beams, slabs, one domed roofing and minaret. The minaret is to a certain extent square in its basis and then octagonal with two cantilevered rings for the Imam addressing prayers (now only a formal element keeping tradition as this physical activity disappeared).
- The location of the Mosque near Central Market as well as its co-location being accessible from a Ring Road on one side, and forming a Square with commercial establishments on the other side, is a masterpiece of getting, keeping the role of the Mosque as a focal point not only for congregation of People but also for the orientation of citizens within the City of Tripoli.

The geometry of the building is one of the characteristics of the VOLUME.

The applied proportioning of the Mosque itself as well as its composition with the surrounding shopping area is a quality of SCALE which achieved its aesthetic measure from juxtaposition between large-open square, its horizontally arranged shops and the monumentality of the Mosque, its vertical minaret and the dome.

The TEXTURE of the Mosque evolved from a combination of climate requirement (by providing shade and shadow), from paraphrasing of material used and from stylistic details determined to be seen

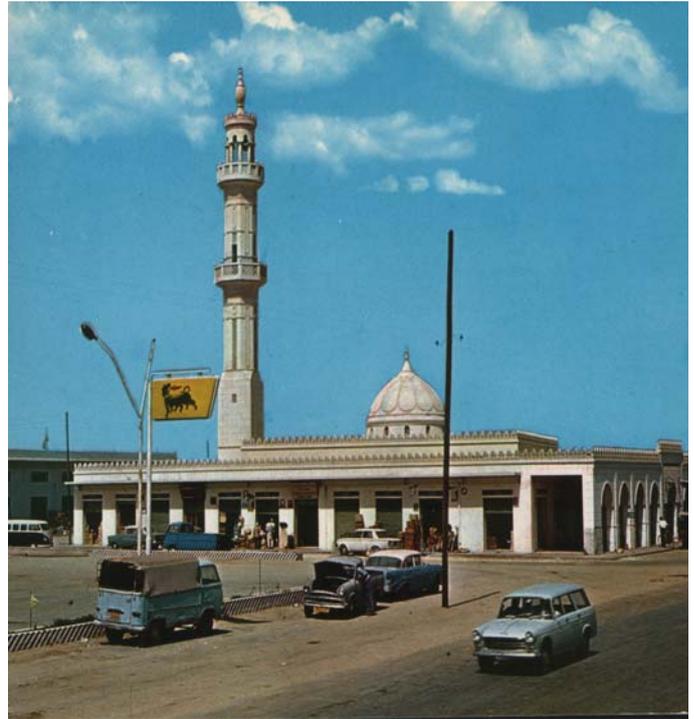


Fig.11

(edged roofs by a low-wall crenellation). Catching color is not used as an element for surface treatment. (See Fig. 11).

THE SIDI BINLIMAN MOSQUE

Representing a modern architectural Idiom and approach in its overall structure, form and style, and so giving something new in this environment, - the Mosque is a visual relief to the beholder after being sick by seeing so much copyism before it. Keeping the traditional simplicity and sincerity now expressed through new materials and building technique as well as contemporary aesthetic measure, the Mosque is an example of the course to be followed.

Not only is the architecture itself improved but also its surrounding is synchronized into appositional balance. The contrast of old and new is vivified by visual know-how. Functional and esthetic space are reconciled at one side and on the other, the Mosque is so disposed in space that the visibility of form is maximized from internal and external view points in accordance with optical dictates. For static and kinetic conditions of viewing, a richness of silhouette, skyline and vertical texture is achieved through spatial simplicity and clarity arresting attention and commanding an aesthetic by sheer weight. A slow, almost

imperceptible movement of urban envelope and forms is brought out by the location of this long-lasting dominance seeing from the sea.

Although simple in its floor-design, the Mosque is a show-piece of a NEW FUNCTIONAL ORGANIZATION where separation of the minaret and washing basins from the main building is the major characteristic. The main building is only for praying. But here, a new approach is also achieved, unusual in practice in this country: the praying activity is organized in two levels. The building is a two-storey one, thus contributing on its increased capacity. The two main entrances are designed in such a way that one is leading to the ground floor directly, and the other is leading through a staircase to the first floor. On the left and right side of these two-centrally located entrances, are smaller doors, one on each side.

The Washing Basins and WC are designed in a separate-small building, at the level of the ground floor, located just in front of the main entrances, so that the communication between these two activities is easy.

THE MINARET is relatively tall and circle in its basis. The entrance door is oriented towards the prayer's hall and is easy accessible from the courtyard leading to the both site entrances.

Like in other Mosques recently erected, this Minaret also keeps the traditional function of the Imam in its physical term although this activity is replaced by the modern - radio system of communication between the Imam and the prayer's.

ENVIRONMENTAL FACTORS as far as heat, sand-storm and ventilation are concerned, are used consciously in the Design. The windows of the ground floor are small in size. Excluding the entrance side, on each of the remaining three sides of the main building is designed six windows to meet day-light requirements. Small openings just under the projected first floor are designed purposely for ventilation.

The both day-lighting and ventilation of the first floor is composed into one whole of horizontally set windows immediately under the roof slab. This provides a reasonable illumination and suitable ventilation as well as a protection from the desert wind. To all this should be added the role of openings of the dome.

THE STRUCTURE OF THE MOSQUE is a true expression of its simplified functional concept. The main bearing element, not seen in the majority of the built mosques, is the reinforced concrete FRAME - rendering new materials and modern technology of building as well as new designer's possibility in the manipulation with the structural elements satisfying functional, environmental and aesthetic requirements of the PERIOD. Designed as a dual frame it provided the necessary rigidity of the structure as a whole and at the same time an unobstructed visibility of the interior. There are four FRAMES of this kind: two parallel set in each direction. Vertically crossing one another, they form a horizontal frame at the roof level bearing the dome.

Roofing is by reinforced concrete one domed structure at the centre, and by reinforced concrete slab subdivided into eight parts. Standing as a single structural element and because of



Fig.12

its height and stability requirements the minaret is enforced at the foot level.

Generally, THE BEAUTY of this Mosque evolved from the relationship of functions to form distinguished structural elements—it is composed and shaped in the spirit of these technological ages. It lies in its quality of scale where the geometrical and monumental volume of the prayer's hall is juxtaposed by the vertical and dynamic minaret.

In particular, rate of voids to solid in the shaping of the Mosque is one of the essential qualities achieved. The projected first floor to the ground floor, the subdivision of the main mass of the building by the vertical frames, the horizontal-continual windows to the remaining solid part, all of these elements of the composition lie in a pleasing relationship, balance, proportion, harmony. Color is used wisely: only to underline the design pattern as so to create a more plastic and lively scene. Thus the propriety of this architecture involves environmental factors and the true significance of the structural elements rather than a treatment of empty space.

The art of the minaret lies in its very delicately design treatment where structural and religious requirements are behavioral by being set out into a sincerely expression of the PERIOD: the shaped enforcement of supporting walls from the ground to the first ring level, and the very sharp top of the Minaret as well as its size,

altogether resembles the rocket-propelled capsule of an astronaut - a symbol of this ere. Fig. 12

ADMINISTRATIVE BUILDINGS

Today, most of the settlements are adequately served by the various kind of the public buildings erected recently. The Government built many offices throughout the country, from small Mudiriyah buildings simple in its architectural concept to modern towns' halls, designed to meet present and future need.

The quality of this kind of Architecture PRIVATELY OWNED especially ones in company ownership seem to need to be noted and examined separately. Not only did the wealth of their owners influenced the richness of these buildings, but also the choice of the designer, exclusion of speed in designing, as well as a clear aim to attract the attention of beholder, and demonstration of the owner's power, all those factors contributed to the final appreciation. While the GOVERNMENT BUILDINGS are more a result of the sudden state aspiration, the PRIVATE OWNERS were preoccupied with both accommodation space and the exterior appearance with final guidance to the higher profit for them.

For these - business people, the location and co-location was of a paramount importance. To occupy a "magnetic" position within the Central Areas became a competition between the

developers. A rough investigation will reveal that almost all corners' premises are kept by rich men. They invested a lot of money into the modern styling of their emergent. But as the profit was behind scene, the utilization of land by the maximum of plot coverage, very often resulted in a scale clash from the aspect of a ratio between the height of the object and its distance from the beholder. The lack of building regulations in the term of the visual planning also contributed to this space - scale clash. For these reasons some well - shaped buildings cannot be perceived clearly and easily. Thus the proportioning of a single building by architectural devices giving variety forms of



Fig.13

expression is indivisible from considerations in town scale. Fig. 13

THE FUNCTIONAL ORGANIZATION of these buildings should be observed from two aspects: the user of the building and the public interest. The users (be it a tenant or the owner himself) are more or less satisfied that the interior of the buildings provide comfortable working conditions by adequate connections between rooms, enough day light, protection from solar heat, luxury finishes and so on. But, the maximum of plot coverage guided by profit influenced the design: the entrance doors in majority of new administrative buildings are designed just at the building line, thus immediately from the street foot-path. There is no canopy or portico providing shade and

shadow for the pedestrians, as an essential need for the external life under the burning sun and sand-storm condition in the country. The characteristic examples are new buildings in "24 December Street" where the traditional continual shaded passages are now disconnected, and so the public interest is disappointed.

These buildings are built by the modern method of construction where reinforced concrete skeleton is used as a common structural system. Many imported materials came into play to meet both the functional and environmental requirements, as well as a decorative aim. The buildings are equipped by lifts for purpose of easy vertical communication, and very often are centrally air conditioned. Windows and doors are mainly made of aluminum. As shading of walls is usually provided, the use of glass surfaces is intensified. The advantage of this combination depends on the architectural devices designed for shading purposes. If full shading is provided the enlarged use of glass is justified, but if not the inside condition of work is affected by the sun rays. The protection from sand-storms calls for a special architectural consideration of window details and its precise implementation. A small mistake can cause an uncomfortable life during the "Ghibli" wind coming with its red dust penetrating through a millimeter gap between windows elements.

An aesthetic appreciation of this architecture reveals a variety of the approaches and qualities, from an ultra-modern - cosmopolitan to a mixture of the modern shaping and an irrelevant decoration.

The Oasis Oil Building in Tripoli, for example, offers itself to be noted by its overall pleasant appearance showing something new although strange on the soil of Arab Libya. Functionally the building is a patio type one, where rooms are arranged on the both side of the corridors. The idea to bring a bit of exterior into the interior is a good one - resembling to the traditional

courtyard house. The orientation of the rooms on both sides of the corridor is also acceptable taking into account - that the rooms are air conditioned. However, as the horizontal balcony-shads don't provide a full shading or protection from the sun-rays and sandstorm, it seems that the conditions for work are more comfortable in the rooms oriented towards the courtyard. So the aesthetic measure is achieved by the intrinsic construction reflected on the intensified role of glass surfaces, the concrete pattern and the repetition of the invented balcony-shade patterns (see Fig. 14). Thus, the complete building volume is covered by these three elements creating the texture of the architecture-determined to be seen as a harmonious relationship of voids to solid, underlined by the white color of the balcony-shads /in order to distinguish their plastic qualities and so to provide a lively scene.

But, there are examples where the exterior architecture is characterized by the special emphasis on the treatment of the empty space (the Bank at Misratah, the Saharan Bank at Tripoli and some buildings in Cyrenaica). This surface - behavior resulted into decoration in which the true significance of the structure is camouflaged in irrelevant surface. Thus the decoration of these buildings is not made by paraphrasing functional motifs where the empty space could be brought to life, but it was done by the embellishment of the wall-surfaces in the form of the mural painting. It shows that, without the ingredient of sensuous enjoyment, the practice of architecture must inevitably degenerate into little more than a sordid routine.



Fig.14

CONCLUSION

If the designers operating in Libya from practically every country, derived inspiration from the dynamics of the Geography and Heritage of the country, - INSTEAD SUPERFICIALLY COPYING FROM VARIOUS MAGAZINES, they would certainly have produced on this area of the desert a unique type of architecture (as the Fezzan-Ghadames "SAHARN STYLE" arisen over the sand in its original form despite limited materials).

So, THE COSMOPOLITAN Villa Style covers the most of the villa environment. These villas achieved their aesthetic measure from the 'copy-paste method' of so called "modern" style going, very often, through trickery or contorted structural gymnastics. On the other hand THE NEO - CLASSICAL STYLE - done in an almost

literal form, though demonstrates the strong reaction being evidenced against the bizarre architecture of the Cosmopolitan Villa; may be to point that this style is not suitable to the harsh habitat of Libya as environmental factors are not used consciously in shaping of the building.

Also, it is a break to the evolution and progress of the architectural thought.

It seems to be a sign that encourages one to believe that the Libyans are, finally, awakening to the fact that copy if they must, origin and fine "SAHARAN STYLE" introducing effects of contemporary materials - has far deeper roots to borrow from, bore into or buy from.

Concerning apartment buildings, there are endeavors to keep privacy and to give an Arab

character to the exterior architecture of the apartment buildings.

In the current implementation of the Government's Housing Programme the types of eight-storeys building are designed in a cosmopolitan fashion, where an economic and visual preoccupation prevailed over the domestic pattern of living. The lack of privacy is a characteristic disadvantage of these designs.

Although the Mosque in the majority of the Settlements has kept alive its traditional importance as dominance in a general sense, however its character and style have changed greatly under the influence of the universal forces now operating in the country.

BARCELONA: TOWARDS A NEW URBAN PLANNING APPROACH*

Josep A. Acebillo

In public urban spaces squares, streets and gardens constitute the backbone of any city, and not only of the Mediterranean one.

During the initial phase of Barcelona's urban transformation, immediately after the proclamation of democracy, there was a great deal of confidence in the positive effects of new public spaces. More than one hundred and forty urban spaces were designed over the seven-year period (1981-1988), which clearly contributed to an intense renovation of Barcelona's urban landscape, as well as to the revitalization of its urban identity.

Those urban projects, almost all of which were at a small scale, had a transforming effect beyond their immediate environment, in that they formed part of a broader urban project. This model of urban transformation, in which large-scale changes and substantial objectives are obtained on the basis of numerous small and individual strategically situated interventions, has been labeled 'Urban Acupuncture'. More than 140 urban public spaces have been designed and built during these seven years, and not only that Barcelona changed its urban landscape, but it reinforced its identity and became an international laboratory for urban design.

These new squares had to be both structural and significant: besides resolving functional and programmatic shortcomings, they had to establish symbols of the new era. In order to guarantee this dual structural prerequisite, the

new projects were designed as whole entities by interdisciplinary teams made up of civil engineers, architects, and artists, who did not confine themselves to merely decorating, but rather to safeguard the universal character of the new squares.

Even though the transformation of urban spaces was highly efficient, new urban projects and infrastructural interventions on a larger scale were needed. In addition to complying with sporting requirements, the Barcelona 92 Olympic Project was the catalyst for a larger scale urban project, one that was able to stimulate a global urban transformation on the basis of three principal considerations:

An infrastructural operation that involved the construction of ring roads (40km), and the setting up of a new telecommunications

system such as two towers and a new telephone and fiber-optics network.

An operation for improving the run-down of peripheral zones. The four Olympic areas (Montjuic, Diagonal, Vall d'Hebron, Olympic Village), all connected by the ring roads, were not located in the centre of the city, but in the unfinished outlying areas of the low urban quality.

A change in orientation for the growth and development of the city. With the projects in the Plaça de les Glòries and the road infrastructure, the way was paved for future development toward the North-East, while traditionally it had always been towards the West. In this sense, the most socially conspicuous action of the Olympic project was to locate the Olympic Village next to the sea,

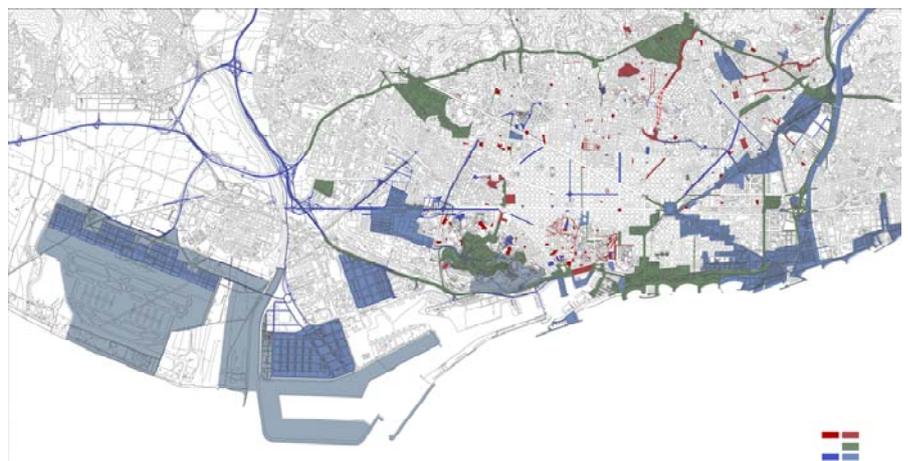


Fig. 0. Three periods of urban renewal

1980-1986. Small scale. Squares, streets & parks

1986-1992. Bigger scale. Sea front, residential and sport areas.

1992-2006. Metropolitan scale. Infrastructure & strategic areas.

* With the author's approval, the paper was reprinted from the journal "Arhitektura i urbanizam", No.18/19, 2006.



Fig. 1. Brainstorming on strategic projects, sketch. Barcelona Regional. 2000.

which revamped the entire seafront. In a parallel way to the Olympic transformation Barcelona had designed a new policy to improve the “historical central area” too.

The urban effects of the Olympic project did not end with the Olympic Games in 1992. On the contrary, Barcelona’s international positioning as a result of the event’s success, the construction of substantial cultural infrastructures (Catalonian Museum of Art, Auditorium, National Theatre, Contemporary Art Museum, etc.) and the restructuring of the historic commercial port into an urban space resulted in Barcelona’s transformation into a first-rank tourist destination.

Before the 1990s, Barcelona had already begun to feel the effects of the crisis and of the industrial relocation. Even though this new tourism activity has been improving the economic situation, it has still been necessary to restructure the entire productive geography

of the city from an industrial economy to a neo-tertiary one. From the perspective of urban development, the new urban projects, aimed at tertiarization, are focused, in a highly different way, on the deltas of the rivers Llobregat and Besòs.

PROJECTS UNDERWAY

On the Llobregat delta (SW) we find the large-scale transport and logistics operations (airport, port, logistical zone, and the Zona Franca Consortium), and closer to the centre, the new ‘Barcelona Exhibition Area’, where we find strong tertiary and residential developments, such as the Plaça Europa, the Legal City, Can Batllò, the new Marina district, Portal de la Fira, the 38 district, etc.

On the Besòs delta (NE), the main element is the 22@BCN district. This is a 200 ha area that is earmarked to be the nucleus of a new tertiary technological district through the

transformation of obsolete 19th century industrial buildings. The new district is structured in three different clusters towards the city: the Plaça de les Glòries in relation to the Eixample, the Fòrum Area which completes the new seafront, and the intermodal Sagrera station, on the basis of the new European, high-speed rail network.

These projects, of a clearly tertiary vocation, must assure the socio-economic viability of the city; however, if they are to be fully compatible with our urban identity, they must pay special attention to certain key issues:

- ⇒ The increase in requirements for mobility by way of two types of actions; namely, the rationalization of public spaces based on a controlled parking system, and the extension of our metro, which will be doubled over the coming five years.
- ⇒ The reuse of our industrial heritage for the new tertiary economy, setting a good balance between the maintenance of our historical identity and the architectural innovation of the new projects.
- ⇒ The use of new building typologies that are capable of successfully combining hybrid programs on the same project, as well as a positive reflection on the conditions that the tower constructions in Barcelona have.
- ⇒ The construction of new districts (one next to Sagrera and the other in Zona Franca) in order to significantly increase the amount of affordable housing.

NEW STRATEGIC THINKING:

PROVIDING AFFORDABLE HOUSING

In the era of globalisation, the application of new technology to infrastructure ought to produce changes in urban planning culture and be based upon a transition from an industrial economy to a neo-tertiary one.

FIRE parameters (Finance, Insurance, Real State, and Enterprise) are necessary but insufficient conditions for fostering change and producing urban planning policies that are both economically and socially sustainable.

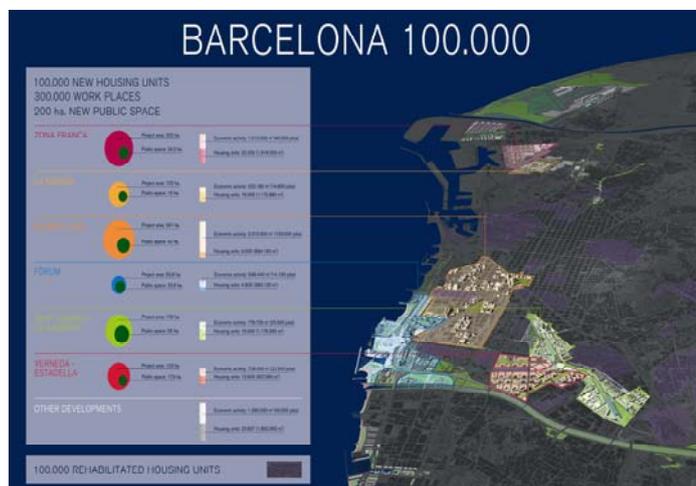


Fig. 2. Proposal of creating new affordable housing clusters in Barcelona. Barcelona Regional. 2006

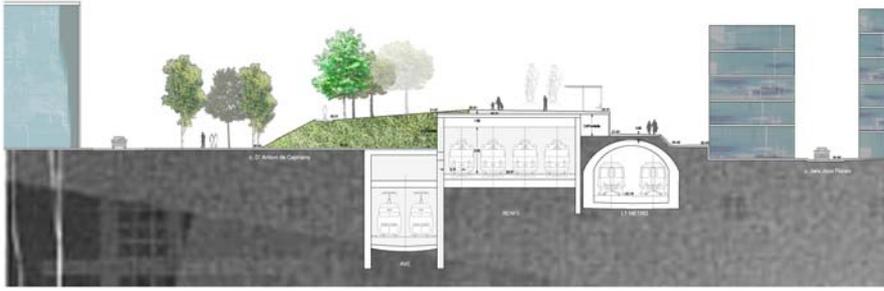


Fig. 3. Project of covering the rails at the Sants district. Barcelona Regional. 2005

All developed cities suffer from widely similar environmental and socio-economic problems. The challenge lies in coming up with solutions that are tailored to each context rather than just trotting out generic solutions that tend to undermine each city's potential and special character.

Contemporary urban planning needs a new ideological boost that is based on: (1) a more complex vision of cities as open systems; (2) a review of urban concentration that allows "critical mass" to be attained (urban densities need to be high enough to support multiple functions); (3) a new approach to urban planning capable of evaluating both material and intangible flows and exchanges.

This new urban planning needs to pay particular attention to housing, public urban spaces, and access. These concepts need to be re-invented and considered as key elements in any new approach.

Public housing, promoted by social-democratic societies in the first half of the 20th Century, wrought great changes in the urban fabric. However, after the Second World War, housing gradually became a "good" subject to market forces instead of a "right". This trend has weakened urban planning because it has deprived it from one of its most important pillars. It has also led to grave social imbalances – young people and immigrants now find it almost impossible to buy a place of their own.

In large cities, soaring house prices are pushing out thousands of key workers to the suburb, which in turn threatens city-centre functions. Housing is the best yarn for weaving

the urban fabric and producing cities worth living in.

New morphological, typological, and technological solutions need to be sought and implemented to meet the challenges posed by longer life expectancy, smaller families, and new lifestyles (many of which have been spawned by the ICT revolution, distance-working and the "home office" are prime examples). In this respect, most of the housing projects undertaken over the last few years have failed to serve either the broader public interest or to take the wider urban context into account.

Massive house-building programmes, even where they produce high-quality dwellings, do not in themselves constitute a new approach to planning. What is required is urban public space that is complex and properly planned, capable of incorporating new inter-cultural

flows, and which facilitates new forms of communication and collective expression.

Public housing and spaces are the main argument for re-considering urban planning in today's fast-changing world. Any new approach must ensure that city-dwellers enjoy non-discriminatory access (both physical and to opportunities in general). Failure to provide such access will undoubtedly spawn future social conflicts.

It might do some of our architecture faculties a power of good if they were to scrap some of their projects for contemporary art museums (and the like) and take a long, hard look at public housing. I firmly believe that the European combination of public housing – urban spaces – accessibility is the only way to prevent social disintegration and urban blight.

This shared, deep-seated conviction lies behind our plans to build a hundred thousand new houses in Barcelona (fig.2). The plans are part of a series of urban schemes based on a cluster approach.

THE BARCELONA EXPERIENCE: PRIME QUALITY OF PUBLIC SPACE

For the past 25 years, Barcelona has gained recognition as an authentic urban design laboratory in its urban-planning efforts.



Fig. 4. The Fórum, a major brown field transformation. Barcelona Regional. 1998-2003

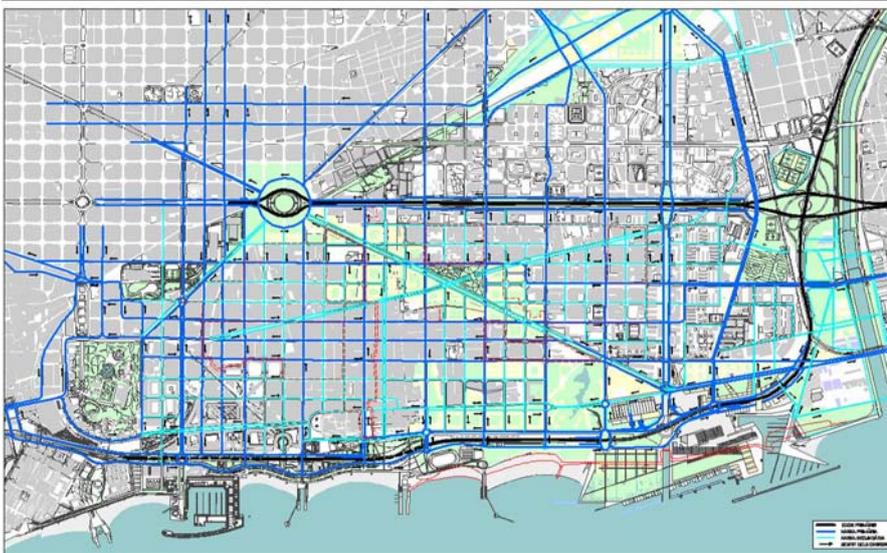


Fig. 5. Eastern part of the city. 22@-, transformation of 115 blocks of the "example" grid. Exhibition Barcelona in Progress.

Since the 80s, quality of urban space has been the touchstone for the transformation of the city, beginning with the creation of gardens, squares and streets. A current example of these subtle but powerful interventions that create public space of a high quality without a major transformation of the urban fabric layout is the intervention in the Sants District designed by Barcelona Regional and currently underway. (Fig. 3)

The scar left by the rail lines that harshly divide

the Sants district will be covered over with a park that acts as a connection between otherwise two separate urban fabrics. The goal is to keep most of the rail lines while creating a high-quality urban space. Accessibility of the entire district will be improved and the arrival of the high speed train to the Sants station will make it a strong city hub.

An example of a project that goes far beyond the domestic scale in Barcelona is the transfor-



Fig. 6. Western part of the city. La Zona Franca., new project with strong emphasis on housing. Exhibition Barcelona in Progress.

mation of the Fórum area where the Universal Forum of Cultures 2004 was held. The Forum area was a major brown-field and contained many service facilities for the city such as a major sewage plant. It was transformed without relocating its facilities, by updating them through state of the art technology.

On the 2.5 km of coastline towards north to the Besòs River, "Fórum", the most important urban project of the city was developed to complete the transformation of the seafront, and its first stage was the Villa Olímpica.

Diagonal Avenue finally reaches the sea by way of a large esplanade which covers infrastructures and facilities.

The new Rambla de la Mina district shapes the construction of the all-new International Convention Center, university campus, and residential complex which will contribute to the regeneration and improvement of this formerly at-risk neighbourhood. Beaches, parks and singular public spaces have thus been created.

PROJECTS UNDER WAY: STRONG NEW HOUSING EMPHASIS

Following is a capture of the current stage of the projects with a strong housing component that are on the working tables of our interdisciplinary teams and that are catalysts of Barcelona's new urban geography. These projects are: A) the ongoing transformation of the 22@ district, B) the Gran Vía –Zona Franca new cluster, and C) the district boosted by the new Sagrera high speed train station.

A) 22@ - Glòries (fig. 5)

The old industrial fabric of the Poblenou district is being renovated and transformed by the 22@ Plan. Old industrial constructions are being turned into buildings geared to housing the activities of the new economy. This new technological district will encompass more than 4 million m2 of economic activity and 40,000 housing units.

The Plaça de les Glòries takes up a new central position that contrasts with the perception of this spot as a frontier between the consolidated Eixample and the industrial periphery of the city. Designed as a 16 hectares park, it will act

as a hinge between the 22@ district and the Eixample and Ciutat Vella.

B) Gran Via – Zona Franca (fig. 6)

The southwest littoral of the city, stretching between the old port and the Llobregat River, encompasses the principal industrial and logistical zone of Barcelona and will become one of the main residential clusters for the city as stated above.

In addition to the port, the proximity to the airport of this area– which will act as an intercontinental hub on completion of its expansion and the new high-speed-train link – gives it strong potential to galvanize the economy of the metropolitan region.

Major urban projects are under way, including the new trade-fair site, the Ciutat Judicial

(complex of legal institutions), the Plaça de Europa and the transformation of the Can Batlló site, and the development of the Marina district with over 10,000 housing units.

C) Sagrera (fig.7)

The Sagrera project creates a new urban centrality for Barcelona triggered by an innovative high speed train station layered on four different levels acting as an intermodal transport node. The station will not only become an important component of the whole public transport system but will also act as a catalyst for a new urban geography.

The buildings, housings, offices and hotels will constitute the largest tertiary cluster of the city. There will also be a large shopping center (over 120,000 m²) and offices (600,000 m²).

A linear park of over 3.5 km in length will serve as a spine for the 8,500 dwellings built on brown – field sites and will link two parts of the city historically separated from each other.

Barcelona Regional. 2000–2006

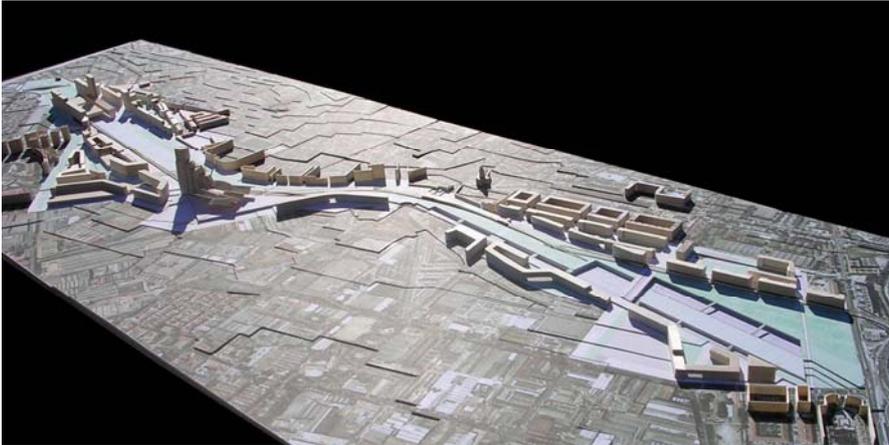


Fig. 7. The Sagrera district and its high speed train station, a new centrality for Barcelona.

In memoriam



Professor Branislav Derić

We are sad to report the death of professor Branislav Derić, a scholar and researcher in the field of regional economics and spatial and urban development planning. He died in January, 2006, only few days after being diagnosed with a fatal disease, which meant that his many friends and colleagues did not have the opportunity to come to terms with the seriousness of his illness.

Born in Zaplanik (Trebinje, Bosnia and Herzegovina), December 5, 1950. He took all his academic degrees in economics, viz., B.Sc. in 1963 (The Faculty of Economics, University of Sarajevo), M.Sc. in 1970 (The Faculty of Economics, University of Belg-

rade), and Ph.D. in 1974 (The Faculty of Economics, University of Belgrade).

He first served as assistant at the The Faculty of Economics, University of Sarajevo, from 1964 to 1970. Then he moved to Belgrade, to work as research fellow of the Economic Institute of Belgrade (1970-1981), and as professor at the Faculty of Geography, University of Belgrade (1981-2006), where he was elected into full professorship in 2001. He was teaching on the introductory courses to planning, as well as on the development programming methods.

As professor, he supervised a number of B.Sc., M.Sc. and Ph.D. theses.

Over the period of some twenty years, from the mid-1960s to the mid-1980s, professor Derić took the advantage of specializing and studying on various general and specific themes at a number of prominent academic and research institutions and organisations (e.g., The Institute of Social Studies, The Hague, The Faculty of Economics, University of Glasgow, The U.S.S.R. Academy of Sciences, Moscow, The Faculty of Geography,

University of Bristol, London School of Economics, The World Bank, Washington, etc.).

During his professional career, professor Derić published a number of books, and some 50 scientific articles. He contributed to more than 50 economic, regional, spatial, urban and other development documents, at local, regional and state/national level, also providing consultancy on a number of international development projects and programmes.

For more than 20 years, he was contributing on various scientific and research projects and programmes as external fellow of the Institute of Architecture and Urban Planning of Serbia, Belgrade.

Professor Derić was a member of a number of national and international professional associations.

By his death, the planning profession of Serbia lost one of its most prominent members.

Miodrag Vujošević, Institute of Architecture and Urban Planning of Serbia, Belgrade.

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