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DEVELOPMENT AND SPATIAL PATTERN OF INDUSTRY IN SERBIA

1. INTRODUCTION

In the last 15 years our country did not undergo serious transformation regarding a transition towards a market economy. Transition steps started in the early 1990s were inconsistent, due to external circumstances and the ill-defined relationship of the government to transition. Thus our economy, which was among the pioneers of transition at the beginning of the 1990s, ended up being in the third group of transition economies according to the scope of market reform. It is well known that power balance between the political advocates and adversaries of market reform is key to the success of transition. Due to the consequences of reform measures, which are never neutral, there always are both 'winners' and 'losers' in every phase of the transition process. Some experts (Galic *et al.*, 1998) even doubt that anything of some significance was achieved during the past decade.

The political changes of October 2002 opened up room for accelerating economic transformation. After years of political crisis, real chances for intensifying development appeared. A condition for that was the return of the country into the international community, particularly into international financial institutions. According to Begovic (2003), formulating and realising the macroeconomic policy in our country is under the supervision of the IMF, as part of the EFF arrangement, and its conclusions are that 'the risks of future macroeconomic policy are relatively small, having in mind that the local financial authorities have demonstrated loyalty to full collaboration with the IMF'. According to Begovic (2003), true reform started with democratic changes in

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2000, and it was based on the transition experiences of Eastern European countries. The first phase of this reform involved a reform of economic policies. Because of the political crossroads in 2003, marked by a consolidation of the adversaries of the reform, further transition has been brought into question. A much more difficult phase of the reform is ahead – a comprehensive reform of institutions (according to 'Reform Strategy', 2003). In the previous period serious steps towards a market transformation of the economy have been taken. Transition steps are generally sporadic, inadequate, and lack a strategic framework. It is the very lack of a clear development and transition strategy that represents the most important characteristic and the most serious shortcoming of the current economic situation. The Federal Government and the Government of Serbia have not prepared a general, comprehensive strategy of development, with a transition strategy as its most prominent element. Thus the state is involved with reform in a piecemeal manner, without a clear vision of the steps to come. The effects of changes undertaken are unclear, as well.

In the process of transition from planned to market economy, strategy of long-term economic development gains in importance in comparison with less crucial periods, because the possibility of erroneous policy-making is more prominent, and the conflicts between interest groups more frequent.

The process of transition in Serbian economy is marked by a lack of a clear strategy of development. This is perhaps the most serious limitation of the present phase of the transition process. The consequences of this approach are loss of precious time and energy, huge intensification of existing conflicts, insufficient growth rate, and the danger of dubious end results in respect to transitioning towards a market economy.

Analysing some previous trends of spatial industrial development, planning-developmental perspectives and development strategies of particular sectors, it might be assumed that in the oncoming period, in certain parts of the Republic of Serbia, is expected an increase of ecological risk.

The initiated processes of socio-economic transformation and privatisation with attracting portfolio and direct foreign investments might have significant environmental consequences for the Republic's territory, and therefore a sustainable industrial development strategy is indispensable.

2. A CRITICAL REVIEW OF THE STRATEGY OF LONG-TERM ECONOMIC DEVELOPMENT OF SERBIA

Since the beginning of the 1990s, there has been no legal requirement for producing development (plan) documents. The vision and objectives of economic development of Serbia formulated in the 'Strategy of Economic

Development of Serbia until 2010' give preference to sustainable development of Serbia economy, in the sense of achieving a constantly sustainable growth. This approach to studying complex social, economic and ecological/spatial issues in the period of transition towards a market economy does not have an all-inclusive character. The positions on the role of the market, private property, and foreign investments are not very clear.

In terms of transition, the model offered corresponds neither to the earlier, nor to the newer model of transition towards market economy. This means that the propositions of the 'Strategy of Economic Development of Serbia until 2010' are not based on a neo-liberal approach, typical and dominant at the beginning of the 1990s. In the document offered, there is not a single word about a transition towards a market economy 'in one step', about a 'transitional shock', or a 'radical approach' to transition. There is no stress on the speed and the drastic character of reforms, without taking into account the fact that the transition steps and their sequence have not yet been elaborated. There is no stress on the use of the achieved consensus about the need for the transition towards a market economy, and no mention of the wave of enthusiasm for change existing in the major social classes. Having in mind that the approach in the strategy is one sided, exclusively economic, it could be said that it has the indirect features of a neo-liberal strategic attitude. The model of development it offers is not based on the, lately prevailing, gradualist approach to transition. There are three key points characteristic of the gradualist approach to transition. They are: the gradual transition towards a market economy, depending on the speed of establishing appropriate legislation and market institutions; a dominant insider model of privatisation, preferred because it imposes lower social costs and does not jeopardise so severely the consensus of the most important interest groups in the population; and the sequence of steps in privatising large companies, where privatisation is preferred over restructuring the enterprises. The strategy of long-term development offered does not answer to the key questions regarding transition – it does not commit either to the radical or to the gradual approach.

The problems and limitations of the transition period are particularly neglected in the document. It is apparent that the designers of the strategy played down the costs and the resistances that inevitably appear during transition towards a market economy, especially those of social character.

In the European Union coordination and matching general and particular interests and politics have recently become important, and member countries, as well as candidates or future candidates for membership in the EU, strive to follow up. In the united market of the European Union, where there are no obstacles to the flows of people, goods and capital, and where the measures of deregulation and anti-monopoly legislation are in effect, macroeconomic and

development policies gain a supranational character. This entails a great level of coordination between strategies and ordinances of member countries. Since our country has the ambition to gain membership in the EU in the near future, the strategy of economic development, together with macroeconomic and development policies, should be envisioned in such a way that its content is co-ordinated with the requirements that membership in the EU entails.

During the past decade, countries in transition have witnessed a trend of minimising the plan mechanism that was overly used in the previous period. This was an especially marked tendency during the first years of transition, when the approach of 'shock therapy' dominated, and its greatest proponents were the representatives of international financial organisations, primarily the IMF and the World Bank, and among economic theorists G. Sax, D. Lipton, and J. Kornai. At that time, at the beginning of the 1990s, they insisted on radical and quick reform. This did not include elaborating particular measures and their sequence, and the general framework for transition was sketched out only roughly: first stabilisation, then privatisation and restructuring. This radical transitional strategy turned out, however, to be inadequate, especially in the domain of social services. The instructions of international financial organisations gave the most questionable results in Russia and the countries of the former Soviet Union. Key issues of controversy among economic experts (Nellis, 1999; Stiglitz, 1999) are: the speed and sequence of moves in transition, privatisation and the basic model of privatisation, and the kind and sequence of steps in privatising and restructuring large companies.

Economists who advocate a more balanced approach to transition have recently prevailed over those who insist on the exclusive use of market mechanisms (Stiglic, Gupta, Nelis). Regarding the speed and sequence of steps, these economists advocate a step-by-step approach and the importance of establishing market institutions and legislation. As for the basic model of privatisation, they advocate minimising social cost, overcoming conflicts between the most important interest groups, and distributing social cost more evenly with the aim of preserving social consensus (Hadžic, 2001).

According to the experiences of Eastern European countries, transitional recession is caused by negative rates of economic growth, that is, by a process in which 'healthy' parts and resources from inefficient companies are used in newly founded enterprises. This is the method to provide sustainable economic growth and to achieve increased levels of the GDP in the beginning of transition. New private enterprises become the 'generators' of sustainable economic growth. According to Begovic (2003), transitional recession cannot be avoided, and in Serbia it occurred without transition and before transition, as a consequence of political events during the 1990s, wars, international sanctions,

etc. In 2000, after political changes, when reform was continued, the level of the overall GDP and the GDP *per capita* was 40% of its value in 1990.

When it comes to industrial development, the so-called 'neuralgic points' in the economy have their spatial form:

– the process of privatisation has direct effects on the element of spatial structure, structure of cities and other settlements, the changes in the structure of economic activities, employment, unemployment, social problems, the use of public property and resources, overdevelopment of particular areas, the changes in real-estate prices, etc.;

– there is a lack of coordination between economic policies and the policies of urban and spatial development, regional policies, policies of innovation, policies of using construction land, etc. It is well known that the mechanisms and levers of spatial development are beyond the domain of spatial planning;

– the development of small and medium enterprises is left to chance in terms of economic branches and spatial allocation. There are usually no equipped and prepared sites, there are no exact rules of construction, and the road to getting building (construction) permits, approvals, etc. is full of barriers. It is necessary to remove all the barriers and create the institutional conditions for efficient functioning and directing industrial development and allocation. There is no adequate policy of changing the industrial/economic structure (as the vehicle of all reforms in the economy and the society), as well as no policy of spatial development of industry (and small and medium enterprises) at the strategic and local level.

The strategy does not assign any importance to spatial elements affecting development, not even at the level of distinguishing between developed and underdeveloped areas, establishing 'corridors' and 'key points' of development, environmental protection, etc.

What possibly worries most, at a time when a feasibility study for future membership in the European Union is being made, is the fact that the document, despite declarations of support for this project, does not correspond (or corresponds vaguely and sporadically) to the extremely lengthy and detailed requirements that the present and future members of the Union are expected to satisfy. This primarily concerns obligations in the domain of regional economic Cupertino as a way for the countries in South Eastern Europe to become ready for membership. In terms of contents, the issues in question concern the framework for development policy in the domains of energy, environmental protection, infrastructure, spatial development, agriculture, etc. In brief, it is a matter of content appropriate for sustainable development. It is also a matter of the set of macroeconomic policies, which have to adhere to postulates accepted in market economies and in the countries aspiring to join the European Union or are already its members. In this case it

is a matter of a large number of standards and norms in policy-making. The macroeconomic policies of these countries are characterised by a uniformity of objectives and modalities and a supranational character they aspire to (Vujoševic, 2002). One could argue that, in the current stage of transition and development, it would be too early to compare the development and economic policy to the requirements for membership in the European Union. However, on the basis of domestic experience, and primarily on the basis of sluggishness and superficiality characteristic of everything undertaken in the sign of pro-European tendencies, the aforementioned requirements need to be faced now, in order to assure normal functioning in the European environment as soon as possible.

The dominant approach in the strategy is sector oriented, and there is no attempt to designate or integrate other important segments of development (social, spatial, ecological, etc.) At that, no general method or model of development was used to ground development requirements to support or help argue for particular strategic choices. There are no projections of macro variables, gravitation models, input/output models, methods of cost benefit analysis, scenarios of development, etc. Quantitative requirements are often idealised (for example the ratio of export in the GDP of 45%), sometimes they are unrealistic, even insufficiently researched, or simply without proof. Thus the adequacy of the proposed strategic choice of the sector for achieving development goals can be questioned. The lack of analytic and prognostic approach to transition problems and an analytic and prognostic method to overcome existing structural disorder in the economy is evident. There is an impression that the authors believe in an invisible hand that will lead Serbia into the EU. The lack of ground and arguments for the assumptions, evaluations, and projections lend the entire approach to the strategy a magical quality. It is so speculative that it is highly doubtful that the general and particular goals of economic development it sets forth can be achieved.

One of the key problems of the economy is its 'heavy' economic structure, characterised by an overly large industrial segment (40%), and, as part of industry, the production of energy and raw materials. This typical structure of the GDP was formed in the 1970s, and it has persisted from year to year without any greater change. At the same time, developed and rapidly developing economies carried out national readjustments of economic structure in the 1980s and 1990s, and found the pillars of development in tertiary activities (retail, handicrafts, public services, financial services). These activities will have higher than average growth and will, together with other tertiary activities, have a principal share in future economic structure.

The document does not propose founding development on tertiary activities, but instead on high technology and specific services.

A separate issue described in the strategy is the grey economy and its role in economic development. The authors start from the ungrounded belief in the importance of the grey economy. They claim that 'the grey economy contributed around 40% of the real national product of Serbia in 2000'. There are studies, including those compiled by the Economic Institute (1996, 1998), which estimate that the grey economy makes around one third of the GDP. It is only in the years of hyperinflation (1992 and 1993) that the grey economy is estimated to be more than 40% of the GDP.

The vision of the future Serbian economy can be summed up as: high standard of living, an attractive environment for investors, employment. The vision of future Serbia is elaborated in eight points that confuse objectives with the economic environment. One of the objectives is exporting around 45% of the GDP, which is nothing new, but it is necessary and can be realised mid-term. The strategy promotes an economy that has found its place between technologically highly developed economies and economies that have cheap labour as their competitive advantage.

The goals of the development strategy are determined in a manner similar to the aforementioned vision. Primary goals set in the Strategy are: (1) achieving a highly satisfying international competitiveness, (2) the development of economic structure that could be integrated with the economy of the EU with least cost and effort, and (3) economic development with an increased role of knowledge. The secondary goals are: (1) employment increase and the increase in using capacities and (2) GDP growth. Our key objection is that, although they are not entirely unacceptable in terms of content, goals formulated in this manner cannot be a factor that would forcefully mobilise the participants in economic development. Instead of all that is mentioned above, the vision could entail: (1) establishing a social welfare and market state, (2) structural adjustment based on above average development of tertiary activities, (3) achieving the level of export of 40–50% of the GDP and (4) reaching a certain level of the standard of living as measured by GDP *per capita* (for example, 7,000 USD).

3. ENVIRONMENTAL ASPECTS OF INDUSTRIAL DEVELOPMENT IN SERBIA

The war in former FRY left Serbia with towering economic problems, including high inflation, unemployment, depression, lower GDP and an unfavourable balance of industry.

Although there has been an industrial decrease and stagnation during the 1980s, industry is the leading production activity in Serbia, performing a dominant part in the GDP, in the employment ratio and the investments in the production funds. From the environmental and resource usage standpoint, the extensive character of the industrial development is also reflected in reproducing the present unfavourable industrial structure and the employment of outdated technologies. Industrial development, until the 1980s, shows an investment intensive character, bound by the choice of some dominant branch structures: ferrous metallurgy (steel production), energy, non-ferrous metallurgy, metal processing, production and processing of non-metals, coal production, oil production and refineries, basic chemical industry, etc. Since 1990, the industrial production in Serbia has witnessed a tremendous decrease. Thus, in 2001 the production plunged to 35% of the 1990s production. Consequently, the industrial employment decreased (from 1,035,000 in 1990 to 643,300 in 2001), and therefore the share of this activity in the overall economic employment was 40.3% in 2001 and 31.5% of the GDP. The industrial assets are used only with 31%, however with substantial branch differences. The above average level of assets usage is perceivable in the resource-intensive branches such as raw materials, energy and intermediary production, whereas in the processing sector it is only average. Such a trend in the utilisation of assets is unacceptable from the viewpoint of sustainable industrial development.

From the environmental and spatial protection standpoint, some main industrial problems in Serbia are: irrational usage of existing industrial locations and equipment; material-intensive production character with an immense utilisation of raw materials, energy, water, and land. Furthermore, there are massive consequences for the environmental quality; conflicts with the environment and particular settlements structures; exceeded emissions of pollutants in the air, water and soil; endangered biodiversity; industrial waste, agricultural, forest and construction land degradation; negative impacts on the quality of life, housing and health, etc. In Serbia's industry dominates raw material, energy and intermediary production sector: production of electric energy, coal, oil and oil derivatives, ferrous and non-ferrous metallurgy, production and processing of non-metals, building materials, basic chemical industry, etc. Because of the outdated technology in numerous production branches, Serbia's industry is very extensive in terms of energy sources and resources usage, often very wasteful, with a quite costly participation of energy, raw materials and water in the produce's costs per unit (Zekovic, 1997).

According to the EU Programme on the Environment and Sustainable Development (1993), it is estimated that the environmental quality in the Danube basin, Vojvodina, Sava valley and Eastern Serbia are among the most endangered in Europe. The fact that Yugoslavia is a signatory country of the Declaration on

Sustainable Development (1992) imposes several questions: Has the planned industrial development of these areas accepted the environmental demands? Did this encompass respective environmental aspects in governing the industrial spatial development in our regulations on the construction of investment facilities, foreign investments, free zones, and concessions?

The existing legal acts in the domain of environmental protection and development regulate the duties and responsibilities of economic actors rather insufficiently. For example, according to the Act on Foreign Investments in FRY (1996), and Act on Foreign Investments in the Republic of Serbia (2002), the import of equipment and other basic production means which represent the foreign investor's deposit is tax-free. From the environmental point of view, a free technology transfer could have negative consequences. In the same Act, the agreement on foreign investment does not contain provisions on environmental protection, and the agreement on founding an enterprise contains only a general provision on the environmental protection. The consent for foreign investment is issued by the Ministry of Economic Relations with Foreign countries, with no obligation to consult the responsible Republic's department for environmental protection. Under the Act on Foreign Investments in FRY, it is prepared for the foreign investor to acquire a concession for facility, plant or plant section construction, utilisation of natural or generally used goods under the condition not to endanger the environment. According to the federal Act, in the concession agreement there are no propositions on the conditions of environmental protection.

During the NATO aggression, many industrial assets have been destroyed or damaged. Especially heavily damaged were sections of the chemical industry, oil complexes, metal-processing complexes, power plants and power installations. During the aggression, in Serbia, some 25% of the overall industrial capacity was damaged. According to the accessible data of Group 17 (1999), in the bombardment, some 80 industrial enterprises, employing 150,000 workers were damaged. By destroying capital equipment of the petrol-chemical, chemical and oil complexes, a considerable share of highly hazardous and dangerous substances was released in all environmental mediums.

4. PLANNED DEVELOPMENT AND SPATIAL PATTERN OF INDUSTRY IN SERBIA

According to the Spatial Plan of the Republic of Serbia (1997) the model of controlled polycentric distribution of activities is the basis for long-term spatial planning in Serbia. From the spatial viewpoint, the model is based on existing large and medium-sized industrial/city centres and city/industrial centre

development in insufficiently developed areas (figure 1). This concept entails considerable decentralisation in the development and distribution of industry and will be carried out through the controlled concentration of industry. This approach consist of:

– partial removal of industrial activities from urban areas, particularly selective dislocation from the Belgrade region;

– more balanced regional development and distribution of industry;

– intensifying industrial development in certain zones in the Danube Sava river belt and in certain large, medium-sized and small industrial/city centres;

– development of more complex and high technology in the Belgrade agglomeration and in certain other industrial centres.

In regard to the spatial-ecological goals of industrial development and distribution, favourable locations for the placement and development of industrial facilities have the following features: (1) the best location-development capacity is the Danube (in European corridor VII) and Sava river-front belt and zones in the valleys of other large rivers (in European corridor X), (2) a number of industrial/city centres have an advantageous transport position and other comparative advantages, as well as certain limitations (insufficient water supply, difficulties in removing and treating waste water, environmental limitations, etc.), (3) primary agricultural-raw materials areas are found in the Pannonian and Peripannonian zones and larger valleys, (4) zones/centres with favourable conditions for the development of smaller, special primary processing facilities (wood industry, food industry, etc.), (5) zone with favourable conditions for the development of extraction industries and power production.

The framework for industrial development consists of these potential belts: (1) the Danube – Sava rivers, (2) the Velika Morava and Juzna Morava rivers (Central and South Serbia), (3) the Zapadna Morava river (Central Serbia), (4) Timok river (East Serbia), (5) Vojvodina region – Drina river basin – Lim river, (6) Kosovo region, (7) direction Belgrade – Pancevo – Vrsac (Romanian border), (8) Tisa river basin (in Vojvodina region), (9) Ibar river, (10) direction Zajecar – Bor – Majdanpek – Pozarevac – Belgrade, (11) the Prahovo – Negotin – Bor – Zajecar – Paracin belt, (12) direction Kraljevo – Kragujevac – Batocina, (13) direction Loznica – Valjevo – Lazarevac, (14) Metohija area and the direction towards Gnjilane and Vranje.

In addition to the existing free (economic) zones (Belgrade, Novi Sad, Nis, Pancevo, Smederevo, Kovin, Lapovo, Prahovo and Sabac), potentials exist in 14 other locations for the formation of new free zones (Subotica, Zrenjanin, Vranje, etc.). In general, the formation of new zones will be limited and will be based on a rigorous analysis of needs, possibilities and restrictions.

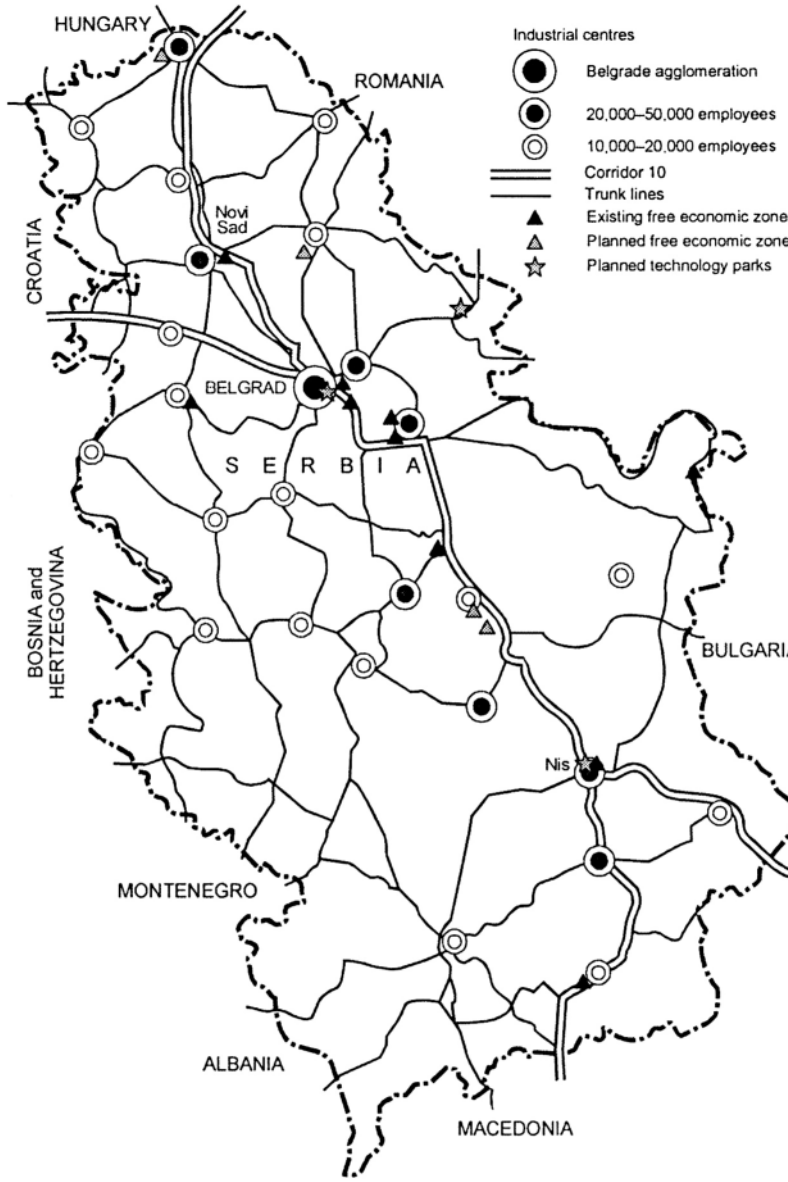

Fig. 1. Spatial distribution of industry in Serbia

In the strategy for the development of Serbia (Ministry of Science, Technology and Development of the Republic of Serbia, 2003), has been planned an initiative for establishing the technology and science parks in Serbia. The technology parks represent one of the most effective forms of assisting and promoting the development of high-tech small and medium size enterprises

(SME), together with the development of new technologies in the given environment. As a rule, technology parks are an integral part of any strategic plan for economic and spatial development of towns, regions and states. The development areas for technological parks are planned in the magisterial infrastructure corridor of Serbia mainly in Belgrade, Nis (South of Serbia) and Vrsac (bordering town near Romania in East Serbia). The main focus is on providing support to newly founded SME, through various forms of production and technical cooperation, joint ventures and capital investment, the exchange of business experience, abilities and connections with foreign partners in order to optimise the regional potentials. The core objective for the development of SME within the technological parks is the introduction of profitable production, along with the efficient utilisation of limited resources and implementation of the highest environmental standards. From the point of view of local and regional environmental interests, the main priorities in the selection of development activities and business programmes are: (1) harmonisation with resources and capacities, (2) an increase in the employment rate, (3) acceleration of the economic growth rate and GDP, (4) high return rates of investment, (5) contribution to a more even distribution of activities and production facilities, (6) attracting of foreign investments and additional business activities, (7) application of energy efficient and environmentally friendly technologies, (8) an increased share of modern technology and innovation in the region.

The first technology park development area in the Republic of Serbia is initiated by pharmaceutical concern Hemofarm Group in Vrsac, covering 30 ha, having a well-equipped infrastructure (roads, railway, waterworks and sewage systems, electrical energy supply, telecommunication networks, gas mains, landscaping and parking), with a customs outpost and freight companies in the immediate vicinity. The Yugoslav Airlines Flight Academy and the airport are also located on the outskirts of Vrsac. The extention of the Vrsac airport is currently under the planning process.

In the Spatial Plan of the Republic of Serbia (1997), the development and concentration of immovable industry on current industrial sites has been envisages:

– revitalisation of black metallurgy capacities in Smederevo;

– structural transformation and development of non-ferrous metallurgy and cooper and tint processing in Bor and Majdanpek, Kosovska Mitrovica, Sevojno, Jagodina and Podrinje;

– development of production and processing of coal (lignite on the territory of Obrenovac-Lazarevac, Kostolac, Kosovo basin, Ibar area, Kovin, etc.) and oil;

– development of basic inorganic chemistry in Prahovo, Novi Sad, Sabac, Krusevac, Cacak, Loznica, Lucani, Kosovska Mitrovica and other minor centres

and basic organic chemistry in Pancevo, Novi Sad, Beograde, Krusevac, Subotica, etc.), and pharmaceutical products (Vrsac, Belgrade, Leskovac, Sabac, etc.);

– development of metal processing industry, especially the automatisation equipment production in the domain of electric joints, electric machines, processing equipment, goods (freight) and special vehicles, vessels, motors, measuring and precise instruments;

– exploitation and processing of non-metals (in the area of Ibar and Kopaonik, Gornji Milanovac, Mladenovac, Arandjelovac, Beocin, V. Popovac, Kosjeric, Kraljevo, Uzice, etc.);

– development of food processing industry;

– production of building materials (the area of Vojvodina);

– sand and gravel extraction (several sites in the Danube basin and Morava basin), etc.

5. EXPECTED ENVIRONMENTAL CONSEQUENCES OF INDUSTRIAL DEVELOPMENT IN SERBIA

Keeping the present industrial structure and sustaining the industrial development trend in Serbia, from the environmental and resources use standpoint might have following consequences:

– further excessive use of non-renewable or partially renewable resources – fossil fuels (coal in Kolubara basin, Kostolac basin and Ibar basin (also in Kosovo basin), oil in Stig region, copper (RTB Bor, Majdanpek in the East Serbia), non-metals, gravel and sand, building stone, water, etc.;

– ineffective use of non/renewable resources with global ineffectiveness of production factors;

– development of environmentally highly hazardous industrial capacities and branches: chemical industry (Belgrade, Pancevo, Novi Sad, Sabac, Subotica, Krusevac, Kosovska Mitrovica, Cacak, Prahovo, Lucani, etc.), production and processing of oil and oil derivatives (Novi Sad, Pancevo, Belgrade), ferrous metallurgy (forge in Smederevo), coal and electric energy production in Power Plants Kostolac A and B, Power Plant NT, Power Plant Kolubara (also in Kosovo's power plant) and tinted (non-ferrous) metallurgy complexes (RTB Bor), etc.;

– industrial development on the basis of imported (non-renewable) resources, Zekovic (2001): black metallurgy (around 3 million tons of imported iron ore), refineries (annual oil refining volume in refineries of Belgrade, Novi Sad and Pancevo ranges from 3.34 million to 5.35 million tons, out of which 2.04 million tons are imported, chemical industry, non-metal processing, etc.;

– development of locationally and tech-economically demanding industries, extensively using huge quantities of water, energy, massive land areas, a large scope of freight transport;

– increasing problems of industrial waste deposition, etc.

According to the Spatial Plan of the Republic of Serbia (1997), in the planned state of the environment, most of settlements and Serbia's areas are classified as category IV and V in terms of polluted sites (a better quality environmental zone). The exception is Pancevo, Bor, Sabac, Kosovska Mitrovica (Kosovo region), Subotica, Baric, Krusevac, Loznica, and Lucani, which equate with considerably polluted locations of the II category. To the locations of the category II belong Obrenovac, Kostolac, Prahovo, Kikinda and settlements in the Kolubara basin. The planned environmental protection measures are mostly in the sphere of previous effect revitalisation or protection, without preventive actions concerning future development.

If the current trend of global ineffectiveness of production factors will persists, concurrently with ineffective use of natural resources in industry and the realisation of proposed development policies in this field, very environmentally unfavourable effects might be expected in future. Furthermore, some negative ecological consequences are foreseeable in respect of the planned development strategies and perspectives, economically uncertain development results and outcomes, together with socially unacceptable spatial resource usage. Therefore, it is essential to define a strategy of sustainable industrial development within the spatial planning.

6. POSSIBILITIES OF SUSTAINABLE INDUSTRIAL DEVELOPMENT IN SERBIA

The general objective of sustainable industrial development is the development of economically profitable production, with products which are environmentally friendly (i.e. fundamental environmental sector restructuring). Furthermore, the decrease of polluting substances in air, water and soil, waste decrease, efficient use of (non) renewable resources, suspension of certain production types would meet this end. General strategic objectives encompass: employment increase, production restructuring leading towards a bigger share of processing industries, development of small enterprises (as 'regional catalysts' of development), development and application of more advanced technologies, coordinated territorial distribution of industry (in urban and regional context), rational use of non-renewable resources, a more efficient use of renewable resources, decrease of polluting emissions from industry, minimisation of industrial waste, substitution of certain resources, etc.

Table 1. Scenarios of industrial development in Serbia – the framework, hypothesis, perspectives and environmental assessment of spatial impacts

Status quo scenario	Modest development scenario	Sustainable industrial development scenario
• Conservation of the branch structure • Application of existent technologies • Weak employment effects • Financial output of industrial development in further devastation of local environment • Additional pressures on the environment in respect to the resource utilisation and polluting • Production planning with a strong political support • Confusion about an array of indicators and restrictions • Maintaining the existent spatial structure of industry • Increase of production and transport costs • Societal inertia in the planning-application of new technologies and knowledge • Deficiency of specific infrastructure capacities for the development of new and existent production • Information deficit for initiating different production possibilities and modalities	• usage of local and regional potentials • decline of the raw materials and energy sources sector • strategic branch development through the management of technical and financial aspects (without the environmental) • the risks of abandoning certain production segments • a modest increase of employment • adaptation to the centralised approach in decision-making on the industrial development • growth of economy of scale, instead of economy of 'effects' • location incompatibility of particular productions • aggravation of the environment • restriction of industrial development consequences and certain 'excessive' effects upon environment • restricted role of the environmental protection and output effects • short-term projects within existent industrial capacities and locations	• production reinvestment in the raw materials and energetic sector and coordination with the capacities of the local environment • consumption and production (de) stimulation of particular industrial products • founding the industrial development on sustainable visions and the control of environmental capacities • preventive approach in environmental management in industry • creating competitive advantages and the promotion of the local and regional environmental potentials and life quality • efficient application of the environmental impact assessment for all industrial projects (*ex post, ex ante*) • promotion of new industrial production based on local environmental capacity • environmental factors inclusion to all phases of the industrial project-ecomanagement • strengthening the communication network and the infrastructure quality • modest employment increase • industrial development in rural and lagging areas • increasing role of environmental factors in the local development policy, development and spatial plans, industrial projects and decisions on industrial development

• Deficiency of specialised research centres and innovative industrial enterprises • Ineffective use of soil, energy, water • Conflicts with the surrounding areas and functions	• further spatial concentration instead of 'spatial organisation' • contingent pressures of urbanisation in certain towns • conflicting potential with settlements contents • considerable risks of endangering tourism potentials by industrial development • services development directly linked to the production • further jeopardising of the environmental quality	• coordination of industrial programmes with the planned land use • training programmes for industrial ecomanagement • creation of the national centre for promoting a 'clean' production • development and cooperation promotion of small enterprises • creation of a small enterprises consortium for reducing business costs • acceptance of the Business charter on sustainable development (as a non-governmental investment instrument) • public participation on location decisions • decrease or elimination of negative effects on the quality of environmental elements • mixed land use and a better spatial organisation • industrial location dispersion • possibilities of production location in resident parts of the settlements

In this paper, an effort has been made to assess a preliminary framework, with hypothesis, perspectives and spatio-environmental effects of potential industrial development scenarios in Serbia (table 1). Starting from basic trends of the reform process, the privatisation, foreign investments dynamics and the structure of future industrial development, three scenarios have been identified: (1) the status quo scenario, (2) the modest development scenario and (3) the sustainable development scenario. Each of them has certain implications in the institutional domain, the industrial structure, societal development, environment and land use.

The strategy of industrial eco-restructuring entails the decrease of the relative importance of particular branches of the basic and intermediary sector (e.g. energetic, ferrous and non-ferrous metallurgy, non-metals, production of building materials, etc.). Furthermore, it entails the increase of the importance of materially intensive branches, high-tech production, with the reparation of existent plants effects upon the environment.

The sustainable industrial development adopts the application of the preventive approach: involvement of the spatio-environmental criteria, optimisation of the material input use, minimisation of polluting substances, restructuring of the production pattern towards an environmentally acceptable technologies, etc. This concept leads towards the decentralisation and decrease of global developmental disparities, development of small urban centres, balance provision between socio-economic and spatio-environmental objectives, a more rational land use, better infrastructure access and an overall increase of the quality of life (Zekovic, 2000).

The initiated processes of socio-economic transformation with attracting portfolio and direct foreign investments might have significant environmental consequences upon the Republic's territory, and therefore a sustainable industrial development strategy is indispensable.

6. SUSTAINABLE INDUSTRIAL DEVELOPMENT POLICY

The aim of the industrial policy is the creation of conditions for the development of an innovative and market competitive industrial sector, which should provide an environmentally sustainable production. In planning the sustainable development, the industry ought not to perform as an environmental problem, but to act as an active party in solving developmental problems. Sustainable industrial development entails the definition of a framework of the general and sectoral industrial policy. The first is directed at a better use of production

factors and the creation of a unanimous ambience for all production branches, and the second has a sectoral and territorially bound character.

In regard to European Environment, The Dobrish Assessment (1995) for the sustainable industrial development, the synchronisation of various elements is indispensable: location, better use of technology, control of polluting emissions, management of the industrial waste and the prevention of its creation, resource management, industrial risk management.

The sustainable industrial development policy ought to be directed at achieving the balance between the profit of the enterprises and the long-term effects for the society. According to Zekovic (1998) this encompasses: (1) definition of explicit objectives and environmental protection level in this activity, (2) the application of innovations in the industrial strategy, towards enabling an 'environmentally friendly' development, (3) the application of the EIA Directive (1985) and introduction/implementation of the Directive IPPC (1996) for industrial enterprises and Directive (2001), (4) a clear responsibility concept for environmental damages, (5) emission standardisation for all industrial sectors, depending on the technology type, etc., (6) development and use of 'clean' technologies and BAT (best available techniques), (7) rational energy use in industry, (8) fiscal reductions and support for enterprises which acknowledge environmental demands in practice.

The sustainable industrial development policy, which treats the market competition and the environmental protection as a unanimous process, embodies the application of an integral measure package: (1) dialogue with the industry and its associations (chambers, consortiums, etc.), (2) industry distribution management, enhancement of spatial and strategic planning, (3) definition of the role, duties and rights of involved actors, (4) usage of environmental policy instruments and especially the usage of economic instruments, (5) governmental support of the sustainable industrial development concept, but also of responsible ministries, encompassing the financial, fiscal and other assistance.

7. CONCLUSION

The transition of the economic system towards market economy leaves deep traces on the development and spatial planning policy as well as on industrial planning in Serbia. Strategic planning of the territorial development of industry means managing change and creating change, i.e. ways to restructure the process of development as part of its socio-economic, spatial and ecological context. It also means creating and managing new spatial organisation, the role of new development and location factors, changing the role of space and 'ecological

factors', changing the location performance of industry and creating new 'aggregate' forms of industrial location.

Based on the former industrial development trend, planned development prognosis and further endangering of the environmental quality in Serbia, it is estimated that an approach change in spatial management, environment protection and resource use is necessary. Sustainable industrial development implies the definition of development managing modes of this activity (at the national, regional and, local and sector level), concerted with the principles of sustainable development. The environmental management of industrial development is not possible without envisaging the impact of plans and projects upon the environment, socio-economic segments, and the identification of duties and responsibilities regarding the environment. The definition of a sustainable development strategy is necessary based on: (1) implementation of sustainable industrial development strategy and application of the EIA Directive (1985) and introduction/implementation of the Directive IPPC (1996), (2) strategy of non-renewable and renewable resources use, (3) integral spatial planning, (4) principles of democratic spatial planning, (5) productive eco-restructuring of the existent industry with regard to eco-efficiency of material inputs, (6) public participation in planning and decision-making on industrial development /location, etc. The implementation of strategic industrial development and foreign investments in the Republic of Serbia depends on local/domestic economy potentials in respect to economic restructuring and privatisation, possibilities of attracting foreign capital in the form of merger or acquisition and policies and instruments of development management beyond spatial planning (macroeconomic, investment, fiscal, industrial, regional, environmental, land use, etc.).

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