

# FOREIGN DIRECT INVESTMENT IMPACT ON ENVIRONMENT IN SERBIA IN THE PERIOD 2000–2008

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*Foreign direct investment (FDI) is currently the largest source of capital reaching developing countries and a stimulant to economic growth. Although FDI benefits the economy of the “host” country, its impact on the environment can vary from pure exploitation of slack environmental regulations and the creation of “pollution havens”, environmental political “chilling” effect, to the transfer of new clean technologies and the formation of “pollution haloes”.*

*This paper focuses on FDI environmental impact in Serbia, in the period from the opening of the borders to foreign capital in 2000 until 2008, when the FDI in Serbia drastically decreased. The FDI growth of 65 times in the period of five years emphasizes the relevance of this analysis, if sustainable development is to be achieved. This paper envisages FDI impact and visible actual tendencies on Serbian environment, and defines to which of the theoretical concepts it could be arranged. The paper explores whether FDI influence in Serbia resulted in a dominant transfer of pollution intensive industries or a transfer of environmentally friendly technology and know-how, in reducing or improving environmental regulations in Serbia.*

**Key words:** foreign direct investment, environment, sustainable development, developing countries, Serbia

## INTRODUCTION

The change of economic and political systems in the world caused by globalization, the setting up of a global market and intensified capital transit over national borders helped foreign direct investment (FDI) to become a capital resource indispensable for national economic growth. FDI inflow is intensive in both developed and developing countries. Global FDI flow rose five times in the period of 15 years. FDI is particularly important for developing countries. Since overseas development assistance has been reduced drastically over the last two decades, the only way for developing countries to get the funds needed for economic stimulation is through FDI. Competition for FDI is strong, and both developing and developed countries are striving to create more alluring conditions. FDI stimulates a country's economic development and GDP growth through direct and indirect benefits. However, in the context of sustainable development, economy cannot be observed separately from ecology and equity, responsible use of resources and environmental protection.

This paper concentrates on FDI impact on the environment. Since FDI is mobile, which means it can easily change location and choose another country for capital, its impact on the host country's environment can be intense. The climate of preferable conditions for FDI can sometimes include attractive environmental protection regulations. The matter of attractive environmental offer can vary from strict to loose regulations. On the other hand, the fear of losing FDI can restrain countries from tightening their environmental protection laws. As a result of FDI preferences and national strategies for development, FDI impact on the host country's environment can extend from the transfer of high pollution industries and the creation of centers of intensive environmental degradation, through a downscaling of the legislative framework on environmental protection, to positive changes through a transfer of modern eco-friendly technologies, knowledge and awareness of environmental protection relevance. Developing countries are most vulnerable to negative impact of FDI, because their level of sustainable development and environmental protection is below that of developed countries. Since Serbia belongs to the former group of countries, this research concentrates on FDI impact on the environment in Serbia.

The amount of FDI inflow in Serbia increased from 64 million dollars in 2000 to 4,200 million dollars in 2004 (SIEPA, 2008). The intensive growth of FDI inflow poses a question of its impact on the environment in Serbia. This research examines the FDI impact on the environment in the period from 2000 to 2008, since this was a period of intensive FDI inflow and 2008 was also the year when a global economic crisis started, changing economic conditions. By performing a multilayered research based on the available data, this research is attempting to reveal the impact FDI used to have on the environment in Serbia within the examined period, namely to determine whether the environment was degraded or improved. It offers an answer to the question of which theoretical concepts the FDI impact on the environment in Serbia belongs to, and what can be expected in the near future if this trend continues.

## FDI INFLOW VOLUME AND RELEVANCE FOR DEVELOPING COUNTRIES' ECONOMIC GROWTH

Over a long period of time, poor and low income countries depended on Overseas Development Assistance (ODA) if they wanted their economy and growth to be stimulated. However, since 1990 total ODA has dropped

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by more than a half. Greater relevance is transferred to alternative sources of capital to finance national development (ECOSOC, 2000) and FDI became the largest source of foreign capital that reached developing countries.

Foreign direct investment is defined as the investment of capital in a company, located in another country, through which the majority ownership, management and control is acquired, by purchasing existing companies, through mergers, fusion or acquisition of financial assets or by means of manufacture, or by establishing or building new companies (greenfield investment) (Zeković and Savić, 2004, p. 22). FDI is described as companies based in one country (the "home country") which own 10% or more of the stocks of the company located in a foreign country (the "host country") - this amount of stocks is generally enough to enable the home country company to exert significant control over the host country company.

From 1970 to 1990, average annual global FDI inflows amounted to 58 billion dollars, or less than 0.5% of global GDP. In 2000, global FDI inflows reached a total of 1.5 trillion or 4% of global GDP. In 2007 global FDI inflow reached the record of 1700 billion dollars (Economy Watch, 2008). As a result of the global economic crisis, FDI inflows recorded a decline in 2008, which continued into 2009. Although most of the FDI inflows refer to transactions between developed countries (around 88%), the upwards trend of FDI inflows towards developing countries is apparent (Global Insight, 2007). Brazil, Russia, India and China have been predominant recipients of FDI in developing countries over the last decades. They moved from recipients to the sources of FDI, showing their intensive development (UNCTAD, 2004). FDI has special significance for developing countries, since it is observed as a solution for the development of the economy.

FDI can have direct and indirect positive effects on the host country. Direct effects refer to the inflow of new financial resources, capital and production diversification by introducing new companies (OECD, 1998). Positive indirect effects on economic growth are more important: increase of income, local employment, foreign exchange and access to foreign markets, and improvements in income distribution; production capacity: transfer of technology and management practice, stimulation of local suppliers and subcontractors, stimulation of domestic investment, increase in the productivity of domestic companies, integration in global markets, cost reduction

through competition and increase in innovation (WWF, 2003). Inflow of new capital raises a country's GDP through growth of budget income, tax income, productivity and new market expansion (Borensztein et al., 1998). FDI can play the main role in the stimulation of economic growth, although its benefits are sometimes overestimated by government policy.

Regardless of the benefit of economic growth stimulation, FDI provides risk to the home country. Negative sides of FDI may be determined as follows: hostile takeovers and extinction of companies in order to gain a monopoly, increase of wages spillover in domestic companies which cannot be supported by productivity growth, increase in unemployment through downsizing in privatized companies and environmental pollution. FDI can correlate with decrease in national economic growth (Moran, 2005). The entry of stronger production systems changes domestic market and pushes out domestic companies with its lower prices. Up to 30% of domestic companies have reported the loss of domestic market after FDI inflow (Lin and Saggi, 2005).

Without adequate local regulations, there is a wide range of possible "direct damages" which can be inflicted by multinational companies. This paper will concentrate on environmental risks, pollution and degradation as a result of FDI inflow in host developing country in the case study of Serbia.

#### **FDI inflow in Serbia**

Countries in the Balkan region, including Serbia, have seen fundamental changes under the influence of various interacting agents of economic integration and transition (Petrakos and Totev, 2000). Serbia has been transiting from a planned economy towards a market one. During the 1990s, Serbia underwent a difficult economic and political period. Like other countries in the Balkans, Serbia went through a period of transitional recession, which overlapped with wars and international sanctions. In 2000, the level of GDP was 40% of its value from the 1990s economy (Hadžić and Zeković, 2005). The political changes in the early 21<sup>st</sup> century opened Serbia to accelerated economic transformation by returning the country into the international community, particularly international financial institutions. Serbia set off on a path of intensive transition towards a market economy. Since it did not have enough capital to go through privatization, it turned its strategy towards FDI as the main source of live capital.

In the year of 2000, with the amount of 64 million dollars, FDI was barely present in Serbia. The very next year the shift to a new economic system was more evident and FDI stood at 165 million dollars. Serbia adopted a new Law on Foreign Investment<sup>2</sup> in 2002, which made FDI easier and stimulated its inflow. In the following years, the rise of FDI was constant and on an upwards scale, rising from 475 million dollars in 2002, through 1,360 million dollars in 2003, 965 million dollars in 2004 to 1,515 million dollars in 2005. In 2006 Serbia attracted a record amount of FDI, up to 4,264 million dollars, proving its attractiveness as an investment target. Unfortunately, FDI inflow plummeted in 2007 and was only 2,295 million dollars (SIEPA, 2008). A similar trend was also evident as well in 2008, with 2,255 million dollars. The year of 2009 brought a further decrease caused by the global economic crisis (SIEPA, 2010).

Economic stabilization and the country's growth are evident. GDP growth in 2007 was 7.2% (SIEPA 2008). Inflows of FDI in Serbia behave similarly as in other countries in transition and development: through privatization of socially-owned enterprises, investment in the food industry and the electronic, telecommunication and financial sectors (Filipović et al., 2006, p. 228–232).

This strategy did not take into account a broader view of economic development and it did not consider sustainable development. The possible impact of intensive FDI inflow in Serbia on environmental degradation and pollution was not analyzed and precaution regulations were not proposed (Hadžić and Zeković, 2005).

#### **CONCEPTS OF POSSIBLE FDI ENVIRONMENTAL IMPACT IN DEVELOPING COUNTRIES**

Intensification of global competitiveness for FDI raises concerns that heterogeneity of environmental standards will give advantage to countries with less demanding regulations, and industries which create pollution will be relocated there. This may result in a global pollution increase. Developing and low income countries are most sensitive to these threats, because they do not have as strict laws and high monitoring capabilities as developed countries. FDI impact on the environment can vary from irreparable damages to improvement of environmental quality. These influences could be classified into four theoretical

<sup>2</sup> Zakon o stranim ulaganjima, Službeni list SRJ br. 3/2002.

concepts: "pollution haven", "race to the bottom", "regulatory chill" and "pollution haloes".

### **Concept of „pollution haven“**

The concept of a "pollution haven" implies global competitive forces which exert influence on foreign investors to locate their industrial complexes in countries with low environmental standards, where operational costs, in the light of environmental regulations, are lower (Gray, 2002, p. 307). As a result, countries may resort to trimming down their environment regulations and monitoring in order to remain competitive (Mabey and McNally, 1998, p. 3). Relocation of polluting industries to poor and developing countries leads to the creation of pollution havens and excessive environmental degradation.

Several research case studies conducted in developing countries support this hypothesis, but empirical evidence of consistency is lacking. The hypothesis is more sector-oriented towards industries that have high costs of environmental preservation and a small possibility of technological alterations, for which environmental regulations are the most important factor when choosing new locations (Gray, 2002, p. 307).

### **“Race to the bottom” concept**

"Pollution haven" is in correlation with a "race to the bottom" concept. Host countries may attempt to exempt or loosen their environmental regulations to become more competitive for FDI inflow. This phenomenon can be based on the actual differences in environmental standards, without further direct actions on behalf of host countries. Studies of national regulation support the "race to the bottom" concept, indicating that countries may have benefits from eased regulations. For example, even developed countries, such as Canada and Germany, have streamlined environmental laws or relaxed enforcement in order to maintain competitiveness and keep investments from going offshore.

On the other hand, empirical evidence tends to refute the "race to the bottom" concept. It is unlikely that the state will change laws on purpose, against national interest. Moreover, most multinational companies apply equal standards on all operations, regardless of the host country, and sometimes these standards can be stricter from national environmental laws. Evidence that a government is modifying environmental laws in order to attract FDI is not obtainable, especially because negotiations

with possible investors are not transparent (Gray, 2002).

### **“Regulatory chill” concept**

The most obvious effect of the global competition for FDI is the chilling effect of regulations and its enforcement. "Competition and the fear of losing potential investors may keep regulations 'chilled', not allowing them to reach their socially optimized level (Mabey and McNally, 1998, p. 39)." This concept affects both developing and developed countries. For example, the attempt to implement tax on carbon dioxide failed, because the USA and Australia were concerned that it would deflect investment to other countries.

"The concept of 'regulatory chill' can be best described in the following manner: countries refrain from enacting stricter environmental standards because they are afraid of losing a competitive edge against other countries in obtaining FDI" (Gray, 2002, p. 310). The "chilling" attitude of the government has a particularly negative effect on developing countries, which have little or no environmental laws. Although this is the most probable scenario of a government policy, doing this in order to stay competitive while vying for FDI is the hardest to prove.

### **Hypothesis of “pollution haloes”**

Many people fear that high environmental standards will deter FDI, but on the contrary, they can even be preferred by investors (WWF, 2003, p. 10). The costs of environmental preservation are a single segment of a wide range of factors, such as infrastructure, wages, worker productivity, political risks, market growth, that influence a relocation decision. Costs of adhering to environmental regulations are approximately 2–3% of total production costs for most companies (OECD, 1998). This is sector sensitive and in several branches, such as the petrol industry, energy, heavy metals industry, processing of non-metals and others, these costs are much higher and can influence the decision on location.

On the other hand, multinational companies are merely looking for consistency in environmental standards and their implementation. Low environmental standards usually suggest that there could be sudden alterations in legislation, sometimes after the investment has already been placed. According to the "pollution haloes" concept, foreign companies, which are the subject of tighter regulations in the home country, use cleaner technologies

and more efficient management and transfer their knowledge to the host country (Gray, 2002).

The observed FDI impact on the environment does not have one determined trend: FDI can improve, degrade or have no influence on the environment of the host country. Other factors – government regulations, economic growth, sectors which are the subject of FDI, are the main variables that determine how the effect on the host country's environment will vary.

## **FDI IMPACT ON THE ENVIRONMENT IN SERBIA**

Serbia has attracted a significant amount of FDI inflow in the previous decade. The question is how FDI actually influenced the environment in Serbia, whether Serbia turned into a "pollution haven", or it perhaps resulted in law modifications, or moved towards the hypothesis of "pollution haloes". With the actual political strategy based on FDI as the stimulant of economic growth, it is important to establish what aspect of environmental impact can be anticipated in the future according to existing indicators.

### **Research methodology**

Analysis of potential impacts of FDI on the environment in Serbia cannot be based on direct input because of resource constraints, poor history of systematic data collection and an inadequate monitoring system, just as in other developing countries (Bhattacharya, 2002, p. 18). Research of the potential FDI impact on the environment in Serbia was carried out through available indirect data.

Evaluation of FDI impact is multi-layered and based on three different analyses, so that the results of the research would be as relevant as possible, with the available data. In the first analysis, the interdependence between GDP and environmental pollution was examined by the application of Environmental Kuznets Curve (EKC) in the case of Serbia. In the second part, the structure of FDI inflow along with production sectors was examined and it was determined whether they belong to a high pollution industry. In the third step, a comparative analysis of permissible limit values of pollutants in Serbia and in the EU was carried out. The tendency of law modification was part of the research, along with a comparison of laws. The results of the three analyses were compared and a final conclusion was drawn.

### Analysis of interdependence between economic growth and environmental pollution in Serbia

FDI in Serbia has the role of the main financial resources inflow, with the aim of boosting economic development. In 2004, the amount of FDI stock as a percentage of GDP was 17% (UNCTAD, 2005, p. 64). FDI stock as percentage of GDP was in constant increase. In 2005 it reached 20.7%, in 2007 it was 33.1% and in 2008 it stood at 39.5 % of GDP (UNCTAD, 2006 and 2010). It is about one third above the world average. When FDI inflow as a percentage of the gross fixed capital formation (GFCF) is considered, FDI impact on Serbia's economic growth becomes more apparent. FDI inflow as a percentage of the GFCF was double the world average. It is evident that economic development, largely influenced by FDI, will have an important influence on the environment in Serbia. To that effect, it is important to understand the interdependence between economic development and the quality of the environment in Serbia, for which Environmental Kuznets Curve is going to be used (Grossman and Krueger, 1991).

EKC hypothesizes an inverse U-shaped relationship between a country's GDP and its pollution level. According to EKC, increased income is associated with an increase in pollution, through intensified industrialization, production and energy consumption, until a certain level of GDP is achieved, when the process becomes reversible. With an enhanced economy, countries reach the position in which they have enough resources for investment in environmental improvement. EKC "turning point" for the majority of countries was between 4,000 and 5,000 dollars of GDP per capita in 1985 (Grossman and Krueger, 1995), or between 6,200 and 8,000 dollars in 2001. However, EKC is country-specific.

EKC for Serbia was evaluated for the purpose of this research by using some indicators of environment quality – SO<sub>2</sub>, NO<sub>2</sub> and smoke in the period between 2000 and 2008 in Serbia.

The EKC for Serbia shows that, with the FDI inflow from 2000 environmental pollution also intensified. The pollution was not severe, but Serbia passed the critical point of 1,600 GDP per capita when the level of pollution is the highest (Panayotou, 1995). According to the calculated EKC, the tGDP will result in an improvement of environmental quality, is between 5,000 and 6,000 dollars. In 2007 GDP in Serbia reached 5,600 dollars per capita, and it can be said that it was on the top of the reverse-U-shape curve. This suggests that with the further growth of GDP in Serbia, improvements

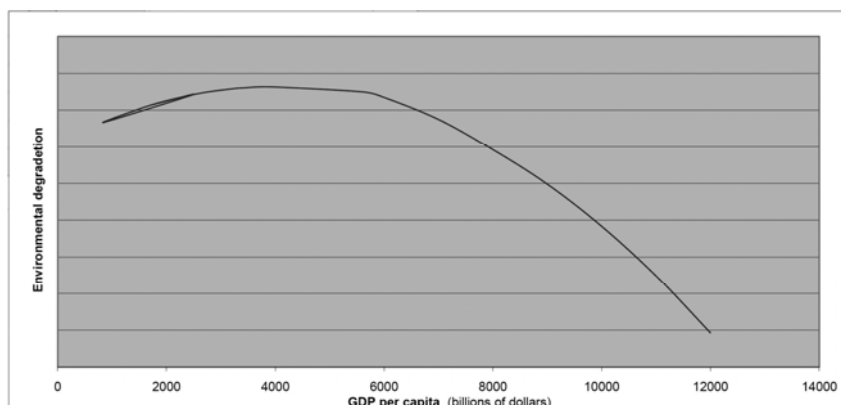


Figure 1. EKC for air pollution indicators for Serbia<sup>3</sup>

in environmental quality and a decrease in pollution can be expected. However, the EKC does not give the whole picture. It shows the potential, but the usage of economical potential depends on national strategies, politics and regulations. Improvement of environmental quality can be achieved if Serbia effectively realizes a sustainable development strategy and implements the Kyoto Protocol<sup>4</sup>, which means stricter enforcement of laws for integral control of pollution and regulations on the emission of pollutants.

EKC for air quality indicators does not give a full overview, therefore the result needs to be taken with reservations. Grossman and Kruger (1995) determined the turning point of 7,500 dollars for water pollution, so it can be expected that water pollution in Serbia will still be on the rise. If the turning points of 16,300–16,600 dollars for CO, and 37,000–57,000 dollars for CO<sub>2</sub> (Cole et al., 1997) are taken into account, it is evident that the overall improvement of environmental quality in Serbia requires much more time and a higher level of the economic growth.

Besides income, there are also other factors that influence the quality of the environment. Studies

have shown that political freedom, democracy, density and structure of industry are of equal or even greater importance than income for determining environmental quality (WWF, 2003). GDP can create favourable conditions, but actual environmental improvement depends on effective public participation and strong civil society which can exert pressure on the government demanding higher environmental quality and sustainable planning if it is to become a reality (Perović, 2008). Environmental improvement depends on government development strategies and their implementation.

### Analysis of pollution intensive industrial sectors' presence in dominant FDI in Serbia

Since economic development is not the only element which determines FDI environmental impact, as there are also technological characteristics of production that must be taken into account, there is a need to examine the character of companies and industries which arrived in Serbia as FDI from 2000 to 2008. The research enquired into the scope of the largest FDI in Serbia belonging to high pollution industry sectors – the so called "dirty" industries.

There are two ways for determining high pollution industrial sectors. A conventional approach identifies those industries which have incurred high levels of abatement pollution expenditure in total expenses as "dirty" (Low and Yeats, 1992). By this criterion, five sectors emerge as leading "dirty industries": iron and steel, non-ferrous metals, industrial chemicals, pulp and paper and non-metallic mineral products. The other, more direct approach, considers the emission intensity per unit of output (Mani and Wheeler, 1999). This research will use the ranking of high pollution industries proposed by Mani and Wheeler.

To determine which scope of FDI in Serbia belongs to high-pollution industries, the 40

<sup>3</sup> The EKC for pollution indicators for Serbia was calculated for the purpose of this paper on the bases of the data obtained from the Statistical Office of the Republic of Serbia and the Serbian Environmental Protection Agency

<sup>4</sup> Orientation to sustainable development of Serbia is declared by the adoption of the National Strategy of Sustainable Development of the Republic of Serbia (Nacionalna strategija održivog razvoja Republike Srbije. Službeni glasnik RS, br. 101–07), by its implementation in the Law on Planning and Construction (Zakon o planiranju i izgradnji, Službeni glasnik RS, br. 47–03) and the Strategy of Spatial Development of the Republic of Serbia 2009–2013–2020. Serbia ratified the Kyoto Protocol in 1997, and the Law on the ratification of the Kyoto Protocol was adopted in 2007 (Zakon o potvrđivanju Kjoto protokola uz okvirnu konvenciju ujedinjenih nacija o promeni klime, Službeni glasnik RS, br. 88–07), by which act Serbia joined the ranks of 191 countries.

largest FDI in Serbia (according to the data of the Serbian Investment and Export Promotion Agency, 2008) were analyzed.

FDI inflow in Serbia in the observed period was primarily directed towards the tertiary sector, namely into banking, real-estate and market. "The processing sector attracts a smaller amount of FDI, while the greater part is directed towards the banking sector, commercial activities, trade, insurance, hotel industry, logistics and storage, business services etc" (Zeković, 2009, p. 27). Foreign direct investment in the tertiary sector makes 58% of all FDI. Primary investment in the tertiary sector is not unusual. The situation is similar in other countries. The opening of borders in 2000 and the transfer from an industrial to a post-industrial economy created new open positions for companies in the services sector (Petrakos and Totev, 2000). Privatization of banks that began in 2001 attracted a large amount of FDI. The potential for taking over this part of the market, together with establishing companies, attracted investment in commerce.

Since the tertiary sector does not have direct influence on environmental pollution, it is exempted from this research. If the largest FDI in the primary and secondary sectors in Serbia is classified by Mani and Wheeler's rank of "dirty industries", it can be noticed that investment in high-pollution industries is evident, but the amount of investment does not indicate the prevailing presence. In ten high-pollution intensive industries 17.3 % of FDI is invested, or, if the tertiary sector is exempted, 41.4 %. By examining "dirty" industries that have an impact on specific elements of the environment, it may be concluded that water in Serbia is under an extremely highest risk of pollution. In industries which Mani and Wheeler classified as high water pollutants, 70.8 % of FDI is invested in Serbia, the tertiary sector excluded.

All in all, FDI in Serbia does not show the tendencies of dominant investment in "dirty" industries and the creation of "pollution havens". The situation has been neither too positive, nor too negative. Significant portion of FDI in "dirty" industries belongs to Brownfield investments – privatization of state enterprises and acquisition, by which the overall level of pollution pressure on the environment in Serbia has not grown.

#### Analysis of law regulations on environmental protection in Serbia

One of the criteria that multinational companies consider when choosing host countries is legislation on environmental pollution and efficiency of its enforcement. As the pollution

Table 1. Ranking "dirty industries" according to Mani and Wheeler (Mani and Wheeler, 1999, p. 5)

Rank	Air pollution	Water pollution	Metals	Overall
1.	Iron and Steel	Iron and Steel	Non-Ferrous Metals	Iron and Steel
2.	Non-Ferrous Metals	Non-Ferrous Metals	Iron and Steel	Non-Ferrous Metals
3.	Non-Metallic Min. Prd.	Pulp and Paper	Industrial Chemicals	Industrial Chemicals
4.	Misc. Petroleum	Miscellaneous Manufacturing	Leather Products	Petroleum Refineries
5.	Pulp and Paper	Industrial Chemicals	Potterv	Non-Metallic Min. Prd.
6.	Petroleum Refineries	Other Chemicals	Metal Products	Pulp and Paper
7.	Industrial Chemicals	Beverages	Rubber Products	Other Chemicals
8.	Other Chemicals	Food Products	Electrical Products	Rubber Products
9.	Wood Products	Rubber Products	Machinery	Leather Products
10.	Glass Products	Petroleum Refineries	Non-Metallic Min. Prd.	Metal Products

Table 2. Distribution of the largest FDI in Serbia in "dirty" industries ranked by Mani and Wheeler

Rank of „dirty industries" by Mani and Wheeler		FDI in Serbia (SIEPA, 2008)		
Rank	Overall	Company	Investment (in billions of dollars)	Percentage (%)
1.	Iron and Steel	U.S. Steel-Sartid	250	6.2
2.	Non-Ferrous Metals			0
3.	Industrial Chemicals			0
4.	Petroleum Refineries	Biotech Energy Lukoil-Beopetrol	380 210	14.6
5.	Non-Metallic Min. Prd.	Holcim-Novi Popovac Lafarge	170 126	7.34
6.	Pulp and Paper	Ball Corporation	60	1.4
7.	Other Chemicals	Stada	475	11.8
8.	Rubber Products			0
9.	Leather Products			0
10.	Metal Products			0
Air Pollution				
9	Wood Products			0
10	Glass Products			0
Water pollution				
4	Miscellaneous Manufacturing			0
7	Beverages	Interbrew-Apatinska brewery Coca Cola Carlsberg	427 142 100	16.6
8	Food Products	Phihp Morns-DIN JTI Droga Kolinska Grand prom	611 100 100	20.1
Metals				
5	Pottery			
8	Electrical Products			
9	Machinery	Fiat CIMOS	700 100	19.8
	Outside the highest pollutants	Hellenic Petroleum Neochimiki-Petroleum Raf.	50 31	2

level of industrial production is higher, environmental regulations are more important for relocation decisions (Mabey and McNally, 1998). To understand fully if FDI inflow induced the transfer of old and polluting industries to Serbia, it is necessary to conduct a comparative study of Serbian and other countries' environment legislations. For this comparison, European Union legislation was chosen because the EU is the main source of FDI in Serbia, and as well the rival territory for attracting FDI. Permissible limit values of the commonest water

and air pollutants that were in force between the year 2000 and 2008 were compared.

Serbian legislation allows for higher levels of pollutants in water and air, by up to 50%. However, these differences in tolerated parameters are not drastic, except for smoke and nitrogen dioxide. When it comes to certain limit values, Serbia has a stricter criterion than the EU. Major differences are evident in water pollutant regulations, as waterways are under the biggest threat of degradation.

Table 3. Comparison of permissible limit values of the commonest air and water pollutants – Serbia to EU legislations<sup>5</sup>

Pollutant	Serbian to EU Permissible limit values comparison
SO <sub>2</sub>	same
Smoke	higher
NO <sub>2</sub>	higher
CO	lower
Lead	same
Trichloroethylene	higher
Carbon tetrachloride	higher
DDT	higher
Trichlorobenzenes	lower
Simazine	lower
Polyaromatic hydrocarbons	same
Pentachlorophenol	higher
Octylphenol	higher
Nonylphenol	lower
Nickel	lower
Naphthalene	lower
Lead	lower
Isoprene	lower
Hexachlorocyclohexane	higher
Hexachlorobutadiene	same
Hexachlorobenzene	higher
Fluoranthene	higher
Dichloroethane	higher

Although environmental laws in Serbia do not offer numerous opportunities for transferring pollution intensive industries, there is another problem that should also be considered. Serbia has 25 air quality control stations, six of which do not have the capacity to measure all pollutants in the air, and only 12 water quality control stations (Republic Hydrometeorological Service of Serbia, 2009). Such a small number of environmental quality control stations devalues the importance of legislation and gives opportunities for pollution intensification to remain undetected or not linked to the concrete source. This could be the element that attracts pollution intensive industries to Serbia.

As much as 30% of Serbian laws that should be harmonized with EU legislation refer to the field of environmental protection (Dulić, 2008). In the period from 2000 to 2008, Serbia passed only seven new environmental laws. Law synchronization with the EU, the modification and tightening of environmental protection regulations was quite slow-paced in the observed period. However, three of the adopted

laws (Law on Strategic Environmental Impact Assessment – SEIA, Law on Environmental Impact Assessment – EIA, Law on Integrated Pollution Prevention and Control – IPPC<sup>6</sup>) were crucial for environmental protection, especially for the control of industrial pollution. This way a basis for further regulation improvements was constructed. Environment quality station network has not been expanded or improved yet. The real reasons of slow changes and synchronization are impossible to determine, whether it is the “chilling regulation” effect, the fear of losing competitiveness for attracting FDI or of losing the existing domestic industries which could not meet the new required criteria, or perhaps other politic consensuses.

### REVIEWING THE COURSE OF FDI IMPACT ON THE SERBIAN ENVIRONMENT – TOWARDS THE CONCEPT OF “POLLUTION HAVEN” OR TOWARDS THE CONCEPT OF “POLLUTION HALOES”

During the intensive industrialization after the Second World War, the former Yugoslavia made great progress in economic transformation, which resulted in high pollution and hazardous effluents. During the 1990s

specific political conditions induced industrial decline, but without a positive turn in the environmental situation. At the beginning of 2000 the quality of its environment was almost the same as before 1990 (Stojanović, 2001, p. 24). With the political turnover in 2000, Serbia entered the period of intensive economic transformation. As a low income country, it based its economic development on FDI. Because of specific conditions of international isolation and economic sanctions, FDI inflow started with a delay compared to other developing countries. Between 2000 and 2008 Serbia attracted 15.8 million dollars of FDI (SIEPA, 2010). The intensive FDI inflow might have had an impact on the environment. The question is, with which theoretical concepts of FDI impact on the environment – “pollution haven”, “race to the bottom”, “regulatory chill” or “pollution haloes” – can the case of Serbia be labelled.

A conclusion can be drawn from three different analyses that Serbia did not escape a negative FDI impact on environmental quality, but also a high degradation of the environment and pollution did not occur – it did not turn into a “pollution haven”.

GDP in Serbia in 2000 was 800 dollars per capita. Low GDP indicates a high level of poverty, which poses the main threat to environmental pollution and degradation. In the period of seven years, GDP in Serbia was raised to 5,600 dollars per capita (Statistical Office of the Republic of Serbia, 2008). The quick hike in GDP had a positive effect by reducing the period of negative effects of poverty on the environment.

During the observed period, many multinational companies came to Serbia. “Dirty” industries (without the tertiary sector) make 41.4 % of FDI in Serbia (SIEPA, 2008). Openness to FDI and a low level of development bring along characteristics of other developing countries, such as intensive inflow of high-pollution industries. But the overall level of pollution in Serbia in the period of intensive FDI inflow did not increase significantly. Large scale of FDI, excluding the services sector, came through brownfield investment. Takeover of existing industrial complexes resulted in a change of the work system and technological innovation, without increasing the number of industrial complexes in Serbia and exerting a higher pressure on the environment (Mabey and McNally, 1998). Old, large state-owned companies in Serbia are mainly non-flexible systems with outdated technologies (Zeković, 2009, p. 30) and cause the majority of pollution incidents.

<sup>5</sup> According to the Directive of the European Parliament and the Council on environmental quality standards in the field of water policy, and amending Directives 2000/60/EC and 2008/50/EC of the European Parliament and of the Council on ambient air quality and cleaner air for Europe, Pravilnik o graničnim vrednostima, metodama merenja imisije, kriterijumima uspostavljanja mernih mesta i evidenciji podataka. *Službeni glasnik RS*, No.54/92 and 30/99, Pravilnik o opasnim materijama u vodama. *Službeni glasnik SRS*. No. 31/82 and 46/91.

<sup>6</sup> Zakon o strateškoj proceni uticaja na životnu sredinu. *Službeni glasnik RS*, br.135/04, Zakon o proceni uticaja na životnu sredinu. *Službeni glasnik RS*, br.135/04, Zakon o integrisanom sprečavanju i kontroli zagađenja, *Službeni glasnik RS*, br.135/04.

The loosening of regulations with the aim of becoming more competitive is not evident. On the other hand, the introduction of new laws, which create the base of integral pollution control of investment, shows a tendency towards tightening the legislation. But, legislative in force in period 2000–2008 which regulates permitted levels of pollutants in the air, water and soil was from the 1990s, and was not changed in the observed period. Serbia did not turn to the “race to the bottom” concept. The existing laws were enforced. Even the existing permissible limit volumes of pollutants did not differ drastically from the EU. It cannot be determined if there were deliberate attempts to avoid enforcement of laws in some cases.

An overall conclusion of this research implies that the FDI impact on the environment in Serbia is closest to the concept of “regulatory chill”, or in other words, that in the researched period the government and the local community did not invest enough efforts in environmental quality improvement and tightening the legislation.

The confirmation of the “regulatory chill” concept in Serbia in the period between 2000 and 2008 is present. In the period of eight years, significant law changes in the environmental protection sector were not introduced. Only seven new laws were adopted, although the number of laws needed to be synchronized with the EU is much higher. These laws were adopted after 2004, when Serbia approached the GDP of 5,000 dollars per capita. Dasgupta et al. (1995) claims that there is a strong connection between GDP and legislation force. The example of Serbia confirms this. Introduction of the National Strategy of Sustainable Development in 2007 and SEIA, EIA and IPPC shows a tendency towards stepping up environmental protection. Although the new laws were introduced, the improvement of environmental pollution monitoring and new sets of environmental control stations, which had been announced, were never realized. Monitoring is as important as regulation, and “chilling” the government investment in it is the same as “regulatory chill”.

Unfortunately, FDI inflow in Serbia did not bring along technology and know-how spillover. There is no evidence of “pollution haloes”.

It is important to emphasize the fact that analyses in Serbia indicate that the biggest threat of pollution is aimed at water. The largest amount of FDI in Serbia is in high water pollutants, and the conflict with the EU legislation is most evident in the area of water pollution. Besides that, in Serbia, as in other developing countries, 90% of wastewater is discharged without previous processing (Mayor and Binde, 2001).

## Conclusion

The conclusion of this research is that FDI impact on the environment in Serbia can be placed in the concept of “regulatory chill”. FDI did not intensively degrade the environment in Serbia, but on the other hand, neither did it bring about its improvement through positive technology and knowledge spillovers. Serbia did not manage to escape the transfer of “dirty” industries, but this type of FDI was not dominant. Most notable is the slow environment regulation modification and imposing of stricter environmental protection measures, absence of political will and resources for more intensive environmental quality improvement and pollution control.

The research gives an optimistic prediction. With further economic growth, awareness of the importance of sustainable development and investment in environmental protection and improvement will also rise. Preparations for better regulation of pollution and environmental protection started during the observed period, but adjustments of new environmental laws and plans took place in 2009 and 2010. In 2009 Serbia adopted a set of so called “green laws”, 16 new environmental protection laws<sup>7</sup>, synchronized with the EU. Furthermore, a Strategy of Spatial Development of the Republic of Serbia was also adopted this year, envisaging sustainable development. In 2010 the Serbian government passed a new National Strategy for the Inclusion of Serbia into Clean Development Mechanisms under the Kyoto Protocol<sup>8</sup>. All of this shows positive tendencies in environmental protection and further tightening of pollution regulations and the prevention of “dirty” industry transfer through FDI.

What impact FDI will have on the environment depends primarily on Serbia. In order to take advantage of FDI for environmental quality improvement through a transfer of modern technologies and knowledge, which Serbia itself does not have the money for, it must create an attractive framework for more FDI, which must also be an ecologically preferable one. Environmental protection requires well-organized decision-making processes and integration of environmental aspects in policy and planning. The precondition is the creation of a transparent and efficient system – administrative, legal, political and financial,

<sup>7</sup> See Official Gazette of the Republic of Serbia, No. 36–09 and No. 38–09.

<sup>8</sup> Nacionalne strategije za uključivanje Republike Srbije u Mehanizam čistog razvoja u okviru Kjoto protokola za sektore upravljanja otpadom, poljoprivrede i šumarstva, Službenom glasnik RS, br. 8–10.

eliminating extensive and overlapping spheres of activity and competence (Njegovan, 2004, p. 88). Attention must be primarily paid to institutional capacity increase and government employees have to be responsible for monitoring and environmental protection education. Synchronization of laws with the EU has to be performed with greater speed. Laws should compel multinational companies that come to the country to put ecology before profit, with the help of citizens and non-government organizations. Only with environmental and resource protection is it possible to ensure adequate sustainable economic development. Serbia needs to compose a serious strategy of sustainable development, a strategy of how to use FDI positively for improving the quality of life, economy and the environment.

## References

- Bhattacharya, A. (2002) *Environmental Technology Diffusion in a FDI Regime. A developing Country Perspective*. CSI Conference 2002; International Institutions and Multinational Enterprises: Global Markets, Global Players; at the University of Innsbruck; Innsbruck, <http://topics.developmentgateway.org/uploads/media/fdi/0212001.pdf>, accessed Feb 2009.
- Borensztein, E., De Gregorio, J. and Lee, W.J. (1998) How Does Foreign Direct Investment Affect Economic Growth?, *Journal of International Economics*, No. 45/1, pp. 115–135.
- Cole, M.A., Rayner, A.J and Bates, J.M. (1997) The Environmental Kuznets Curve: an Empirical Analysis, *Environmental and Development Economics*, No. 2, pp. 401–416.
- Dasgupta, S., Mody, A., Roy, S. and Wheeler, D. (1995) *Environmental Regulation and Development: A Cross-Country Empirical Analysis*. World Bank, Policy Research Department, Working Paper No. 1448.
- Directive 2008/50/EC of the European Parliament and the Council on ambient air quality and cleaner air for Europe, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:152:0001:0044:EN:PDF>, accessed Feb 2009.
- Directive of the European Parliament and the Council on environmental quality standards in the field of water policy and amending Directive 2000/60/EC, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2000:327:0001:0072:EN:PDF>, accessed Feb 2009.
- Dulić, O. (2008) *Prezentacija*, <http://www.ekoplan.gov.rs/src/download-523/upload-centar/dokumenti/prezentacije/prezentacijadulic-24-sept-08-en.ppt>, accessed Feb 2009.
- EconomyWatch (2008) *Foreign Direct Investment in 2007*, <http://www.economywatch.com/foreign-direct-investment/2007.html>, accessed Feb 2009.

- ECOSOC (2000) *Financial resources and mechanisms* (ch.33 Agenda 21). Report of the Secretary General. Commission for Sustainable Development. Eighth Session, [http://www.un.org/esa/sustdev/csd8/sg\\_finance.pdf](http://www.un.org/esa/sustdev/csd8/sg_finance.pdf), accessed Jun 2006.
- Filipović, M., Hadžić, M. and Pavić, M. (2006) Privatisation Process and the Role of Foreign Direct Investment (FDI) in Serbia-Montenegro. *Agora Without Frontiers*, No. 12/2, pp. 218-246.
- Global Insight (2007) *Foreign Direct Investment Surged 29% Worldwide in 2005*, <http://www.globalinsight.com/SDA/SDADetail7225.htm>, accessed Feb 2009.
- Gray, K. R. (2002) Foreign Direct Investment and Environmental Impacts-Is the Debate Over?. *Review of European Community and International Environmental Law (RECIEL)*, No. 11/ 3, pp. 306-313.
- Grossman, G. M. i Krueger, A. B. (1991) *Environmental Impact of a North American Free Trade Agreement*. Working Paper 3914. National Bureau of Economic Research, Cambridge: MA.
- Grossman, G.M. i Krueger, A. B. (1995). Economic Growth and the Environment. *Quarterly Journal of Economics*, 110, str. 353–77.
- Hadžić, M. and Zeković, S. (2005) Strategic Framework for Sustainable Development in the Period of Transition Towards Market Economy: Critical Overview of the Strategy of Long-term Development of Serbia, *SPATIUM International Review*, No. 12, pp.1-11.
- Lin, P. and Saggi, K. (2005) Multinational Firms and Backward Linkages: A Critical Survey and a Simple Model, in Moran, T. H., Graham, E. M. and Blomstrom, M. (eds.). *Does Foreign Direct Investment Promote Development?*, Washington, DC: Institute for International Economics and the Center for Global Development, pp. 159-175.
- Low, P. and A. Yeats (1992) Do 'Dirty' Industries Migrate?, in Low, P. (ed.) *International Trade and the Environment*. Washington: World Bank Discussion, Paper 159.
- Mabey, N. and McNally, R. (1999) *Foreign Direct Investment and the Environment. From Pollution Havens to Sustainable Development*. WWF-UK. <http://www.wwf-uk.org/news/fdi.pdf>, accessed Jun 2006.
- Mani, M. and Wheeler, D. (1999) In Search of Pollution Havens? Dirty Industry in the World Economy, 1960–1995, in Frederiksson, P. (ed.) *Trade, Global Policy and the Environment*, Washington: World Bank, pp.115–128, <http://www.oecd.org/dataoecd/25/4/2076285.pdf>, accessed Jan 2009.
- Mayor, F. and Binde, J. (2001) *The World Ahead: Our Future in The Making*. Paris: Unesco Publishing.
- Moran, T.H. (2005) How Does FDI Affect Host Country Development? Using Industry Case Studies to Make Reliable, in Moran, T. H., Graham, E. M. and Blomstrom, M. (ed.). *Does Foreign Direct Investment Promote Development?*, Washington, DC: Institute for International Economics and the Center for Global Development, pp. 281-315.
- Nacionalna strategija održivog razvoja Republike Srbije. *Službeni glasnik RS* br. 101-07.
- Nacionalne strategije za uključivanje Republike Srbije u Mehanizam čistog razvoja u okviru Kjoto protokola za sektore upravljanja otpadom, poljoprivrede i šumarstva, *Službeni glasnik RS*, br. 8-10.
- Njegovan, Z. (2004) Priority Environmental Investment Programme: Development and Implementation, *SPATIUM International Review*, No. 11, pp. 84-90.
- OECD (1998) *Foreign Direct Investment and the Environment: An Overview of the Literature*, <http://www1.oecd.org/daf/mai/pdf/ng/ng9733r1e.pdf>, accessed Jun 2006.
- Panayotou, T. (1995) Environmental Degradation at Different Stages of Economic Development, in Ahmed, I. and Doeleman, J. A. (eds.) *Beyond Rio: The Environmental Crisis and Sustainable Livelihoods in the Third World*, ILO Studies Series. New York,: St. Martin's Press.
- Petrakos, G. and Totev, S. (2000). Economic Structure and Change in the Balkan Region: Implications for Integration, Transition and Economic Cooperation. *International Journal of Urban and Regional Research*, No. 24/1, pp.95-113.
- Perović, M. (2008), Green Development and Participation-Implications for Countries in Transition: Case Study of Stara Planina, Republic of Serbia, *SPATIUM International Review*, No. 17-18, pp. 38-44.
- Pravilnik o graničnim vrednostima, metodama merenja imisije, kriterijumima uspostavljanja merih mesta i evidenciji podataka. *Službeni glasnik RS*, br.54/92 i 30/99.
- Pravilniku o opasnim materijama u vodama. *Službeni glasnik SRPS*. br. 31/82 i 46/91.
- Republic Hydrometeorological Service of Serbia (2009) Životna sredina, <http://www.hidmet.gov.rs/ciril/zivotnasredina/index.php>, accessed Jan 2009.
- Serbian environmental protection agency (2008), <http://www.sepa.gov.rs/>, accessed Jan 2009.
- SIEPA (2008) *Investing in Serbia, Strong FDI figures*, [http://www.siepa.gov.rs/site/en/home/1/investing\\_in\\_serbia/strong\\_fdi\\_figures/](http://www.siepa.gov.rs/site/en/home/1/investing_in_serbia/strong_fdi_figures/), accessed Feb 2009.
- SIEPA (2010) *Invest in Serbia: Location. Skill. Profit*, [http://www.siepa.gov.rs/files/pdf/Invest\\_in\\_Serbia\\_site\\_1.pdf](http://www.siepa.gov.rs/files/pdf/Invest_in_Serbia_site_1.pdf), accessed Oct 2010.
- Statistical Office of the Republic of Serbia (2008) *Gross Domestic Product (GDP) of the Republic Serbia 1997-2007*, <http://webzbs.statserb.gov.yu/axd/en/drugastrana.php?Sifra=0001&zb=odel&tab=30>, accessed Jan 2009.
- Strategija prostornog razvoja Republike Srbije 2009-2013-2020, [http://195.250.98.80/media/New%20Folder/STRATEGIJA\\_PRRS.pdf](http://195.250.98.80/media/New%20Folder/STRATEGIJA_PRRS.pdf), accessed Nov2010.
- Stojanović, B. (2001), Some Facts on the State of Environment in FR Yugoslavia Before and After Nato Bombing, *SPATIUM International Review*, No. 7, pp. 24-29.
- Zakon o integrisanom sprečavanju i kontroli zagađenja, *Službeni glasnik RS*, br. 135/04.
- Zakon o planiranju i izgradnji, *Službeni glasnik RS*, br. 47/03.
- Zakon o potvrđivanju Kjoto protokola uz okvirnu konvenciju ujedinjenih nacija o promeni klime, *Službeni glasnik RS*, br. 88/07
- Zakon o proceni uticaja na životnu sredinu. *Službeni glasnik RS*, br.135/04
- Zakon o stranim ulaganjima, *Službeni list SRJ* br. 3/2002.
- Zakon o strateškoj proceni uticaja na životnu sredinu. *Službeni glasnik RS*, br.135/04
- Zeković, S. and Savić, Lj. (2004) Tranzicija i prostor, in IAUS grupa autora, *Strateški okvir za održivi razvoj Srbije*, Posebna izdanja IAUS, br.44, Beograd: Institut za arhitekturu i urbanizam Srbije, pp.17-27.
- Zeković, S. (2009), Regional competitiveness and territorial industrial development in Serbia, *SPATIUM International Review*, No. 21, pp. 27-38.
- UNCTAD (2004) *World Investment Report 2004: The Shift Towards Services*, New York and Geneva: United Nations publications.
- UNCTAD (2005) *World Investment Report 2005*, [http://www.unctad.org/en/docs/wir2005\\_en.pdf](http://www.unctad.org/en/docs/wir2005_en.pdf), accessed Oct 2010.
- UNCTAD (2006) *World Investment Report 2006: FDI from developing and transition economies: implications for development*, [http://www.unctad.org/en/docs/wir2006\\_en.pdf](http://www.unctad.org/en/docs/wir2006_en.pdf), accessed Oct 2010.
- UNCTAD (2010) *World Investment Report 2010* [www.unctad.org/fdistatistics](http://www.unctad.org/fdistatistics). <http://www.unctad.org/Templates/Page.asp?intItemID=2441&lang=1>, accessed Oct 2010.
- WWF (2003) *Searching for the Holy Grail? Making FDI work for Sustainable Development Analytical Paper*, [http://ase.tufts.edu/gdae/publications/articles\\_reports/KG-LZ\\_FDI\\_report.pdf](http://ase.tufts.edu/gdae/publications/articles_reports/KG-LZ_FDI_report.pdf), accessed Jan 2009.